



Bhagyanagar Gas Ltd.
Bhagyanagar Gas
Limited

**Electrical Works for development and construction of CNG
Mother Stations in Hyderabad GA**

Bid Document No. BGL/743/2026-27

**Volume II
of II**

DRAWING

4

E

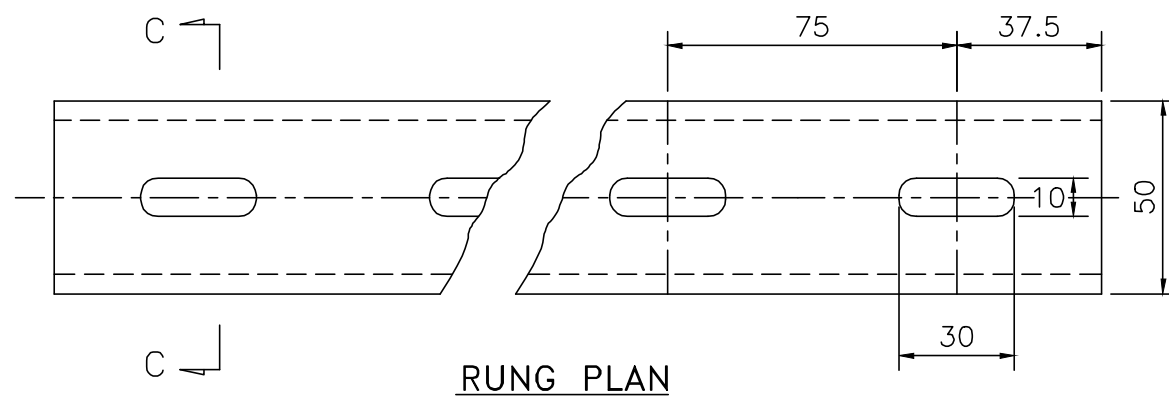
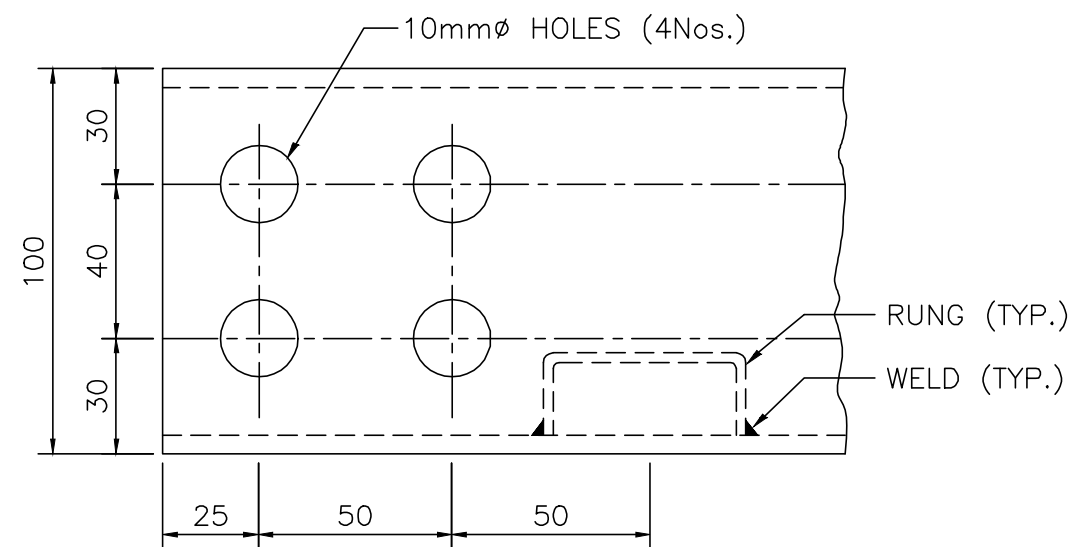
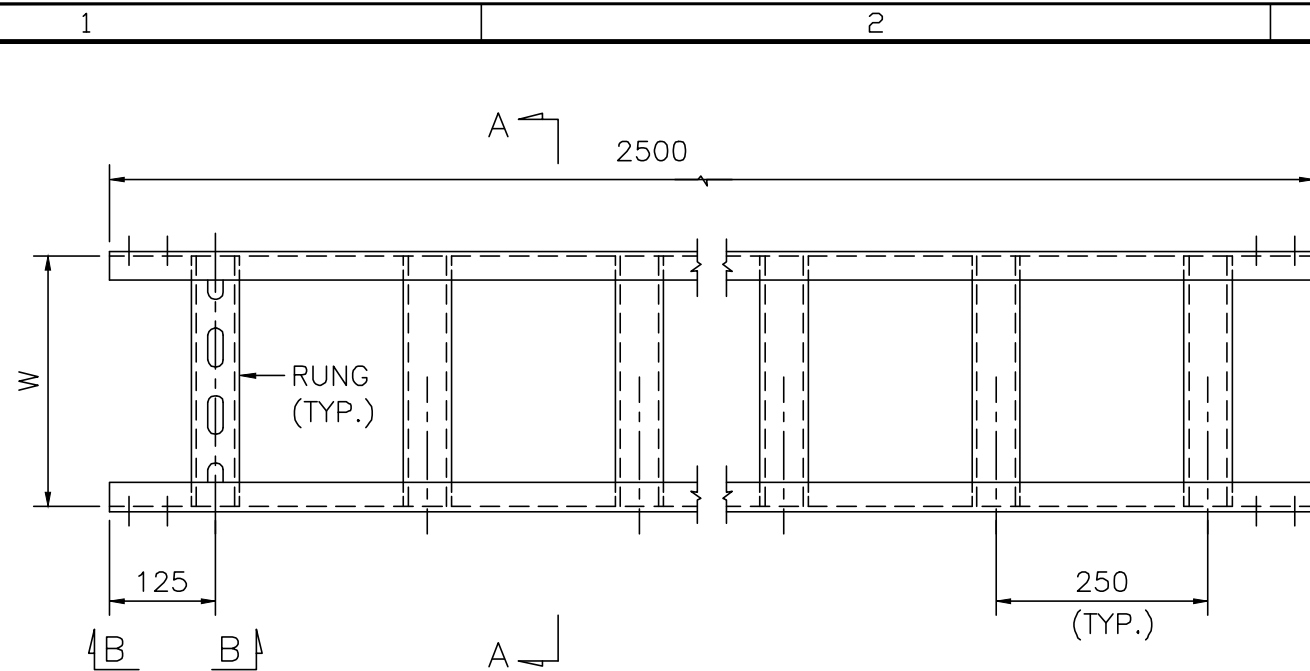
TYPICAL CABLE TRAY INSTALLATION DETAILS

0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

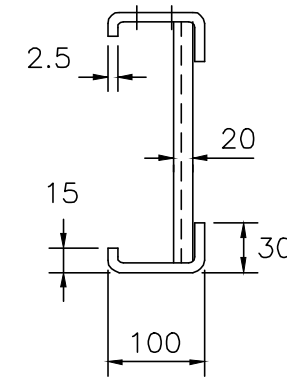
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS

Size	Scale	Sheet
A3	NTS	01 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

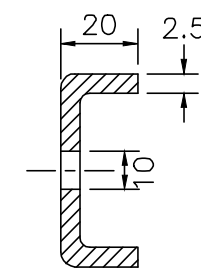
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MATERIAL - 12 GAUGE (2.5MM) M.S.SHEET/G.S/AL/FRP (AS PER BOQ)
 INSIDE TRAY WIDTH (W) - 150,300,450,600,800MM (AS PER BOQ)



SECTION 'A-A'



SECTION 'C-C'

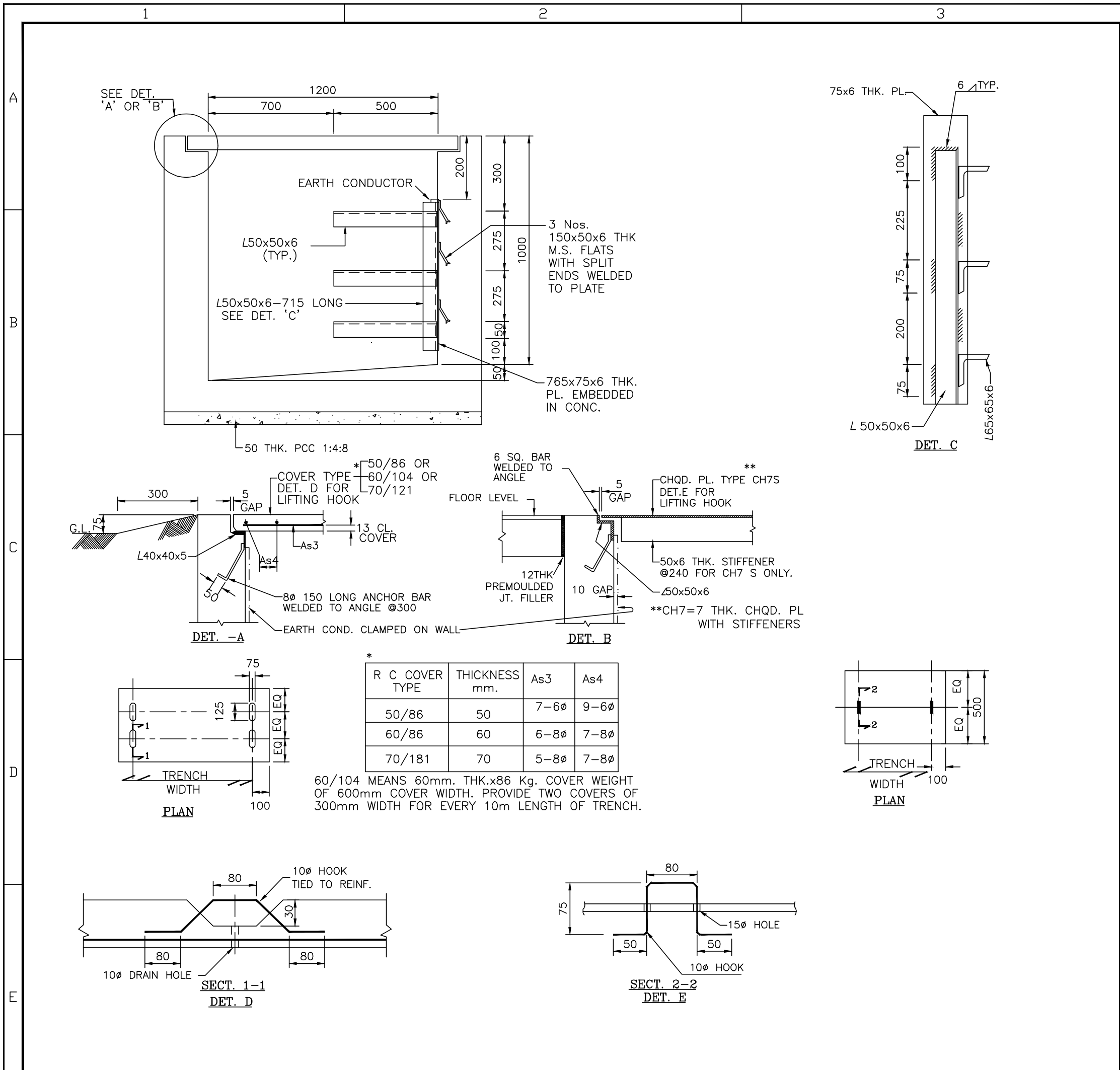
NOTES

1. ALL DIMENSIONS ARE IN MM.
2. M.S. SHEET SHALL CONFORM TO IS2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. CABLE TRAY SUPPLIED WITH OTHER MATERIALS SHALL CONFIRMED TO RELEVANT IS/INTERNATIONAL STANDARDS.
3. THE MATERIAL DIMENSIONAL DETAILS SHOWN ARE TYPICAL FOR GS STRESS.
4. EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRED HARDWARE.
5. CABLE TRAYS SHALL DESIGN FOR 3000mm SUPPORT SPAN UNLESS NOTED OTHERWISE FOR SPECIFIED TRAY LOADING.

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
 LADDER TYPE CABLE TRAY

Size	Scale	Sheet
A3	NTS	03 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	



NOTES

1. ALL DIMENSIONS ARE IN MM.

2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

75x6 THK. PL.

6 TYP.

100

225

75

200

75

L 50x50x6

L65x65x6

DET. C

2

2

EQ

EQ

500

100

TRENCH WIDTH

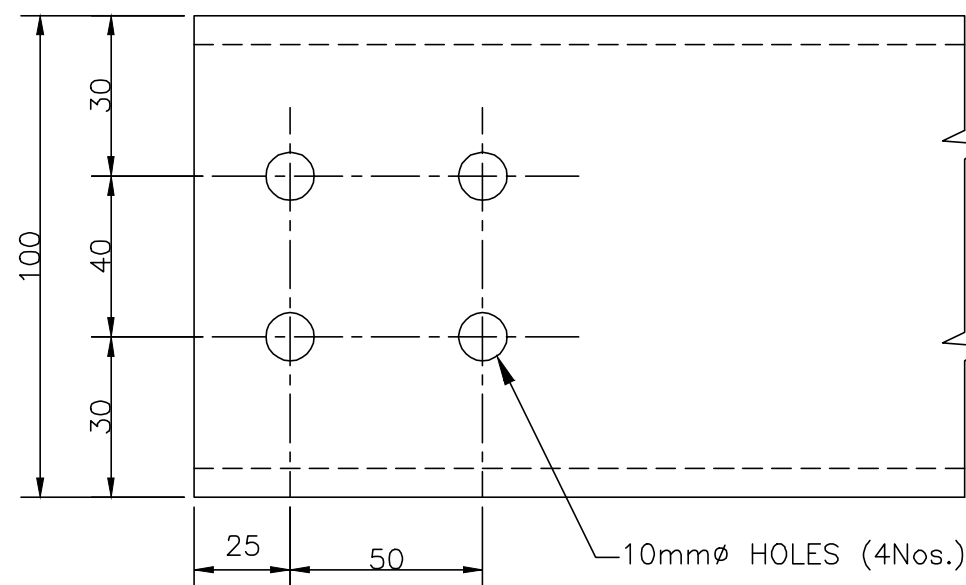
PLAN

0	07.10.16	APPROVED	RKS	PR	KJ	SKH			
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated			

SUBJECT: TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE

Size	Scale	Sheet	
A3	NTS	04 of 62	
Drawing No.		Rev.	
GGNG-E-20714-3010		0	

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SECTION 'A-A'

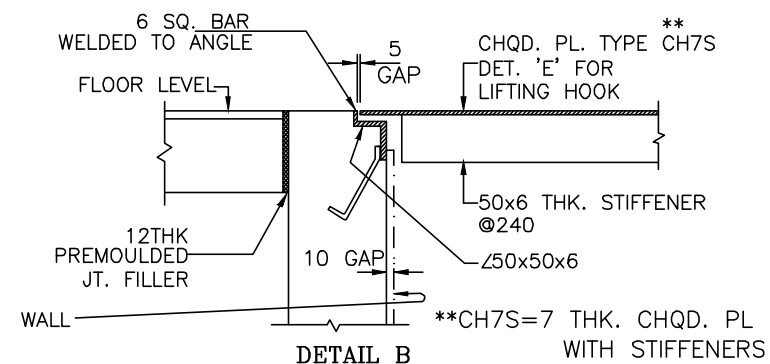
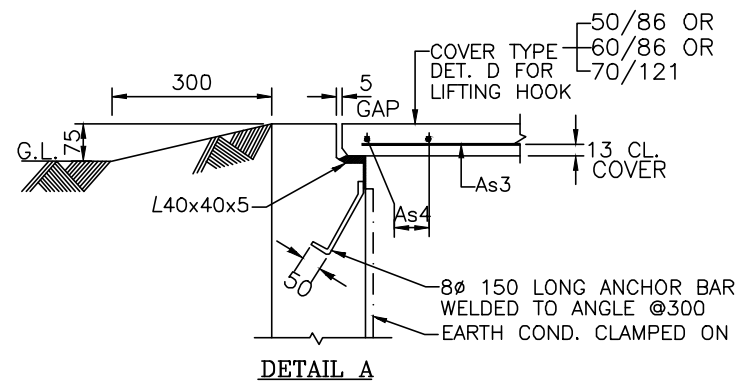
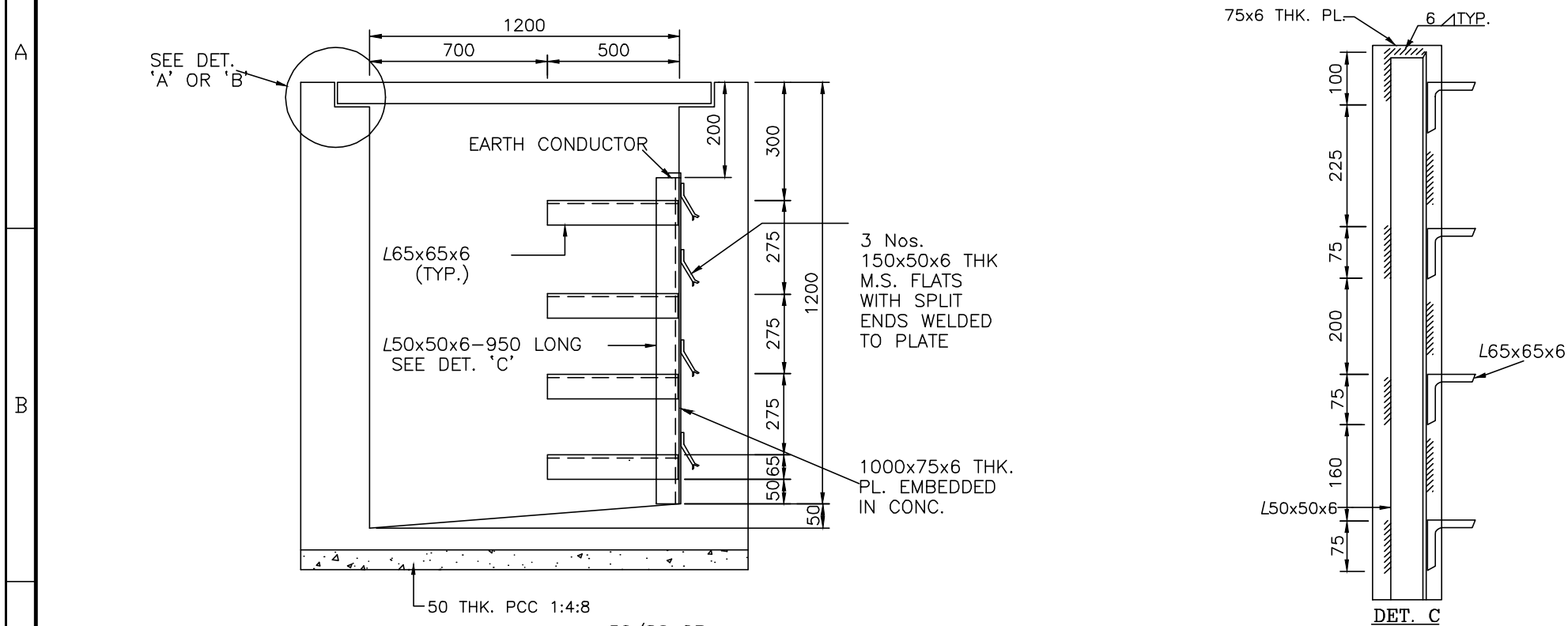
INSIDE WIDTH (W) – 100,150,300,450,600,800MM (AS PER BOQ)
MATERIAL – 12 GAUGE (2.5MM) M.S.SHEET/G.S./AL/FRP (AS PER BOQ)

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
PERFORATED TYPE CABLE TRAY

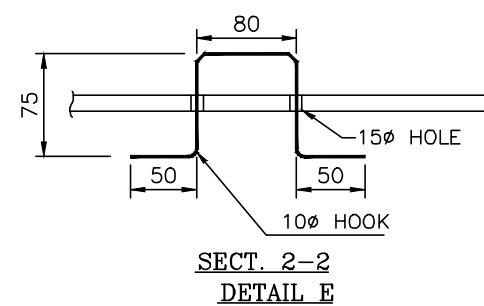
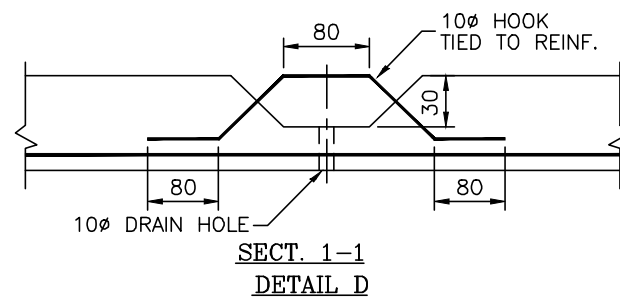
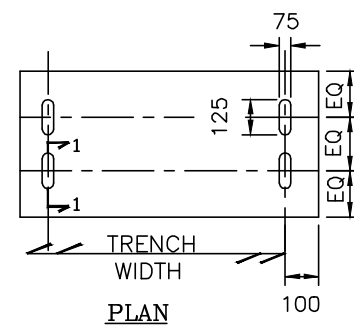
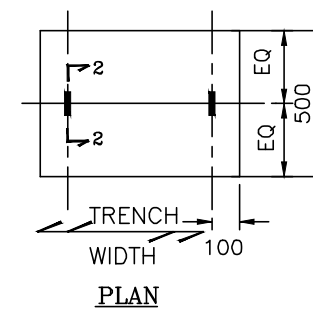
Size	Scale	Sheet
A3	NTS	05 of 62
Drawing No. GGNG-E-20714-3010		

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992



R C COVER TYPE	THICKNESS mm.	As3	As4
50/86	50	7-6ø	9-6ø
60/104	60	6-8ø	7-8ø
70/121	70	5-8ø	7-8ø

60x104 MEANS 60mm. THK.x104 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



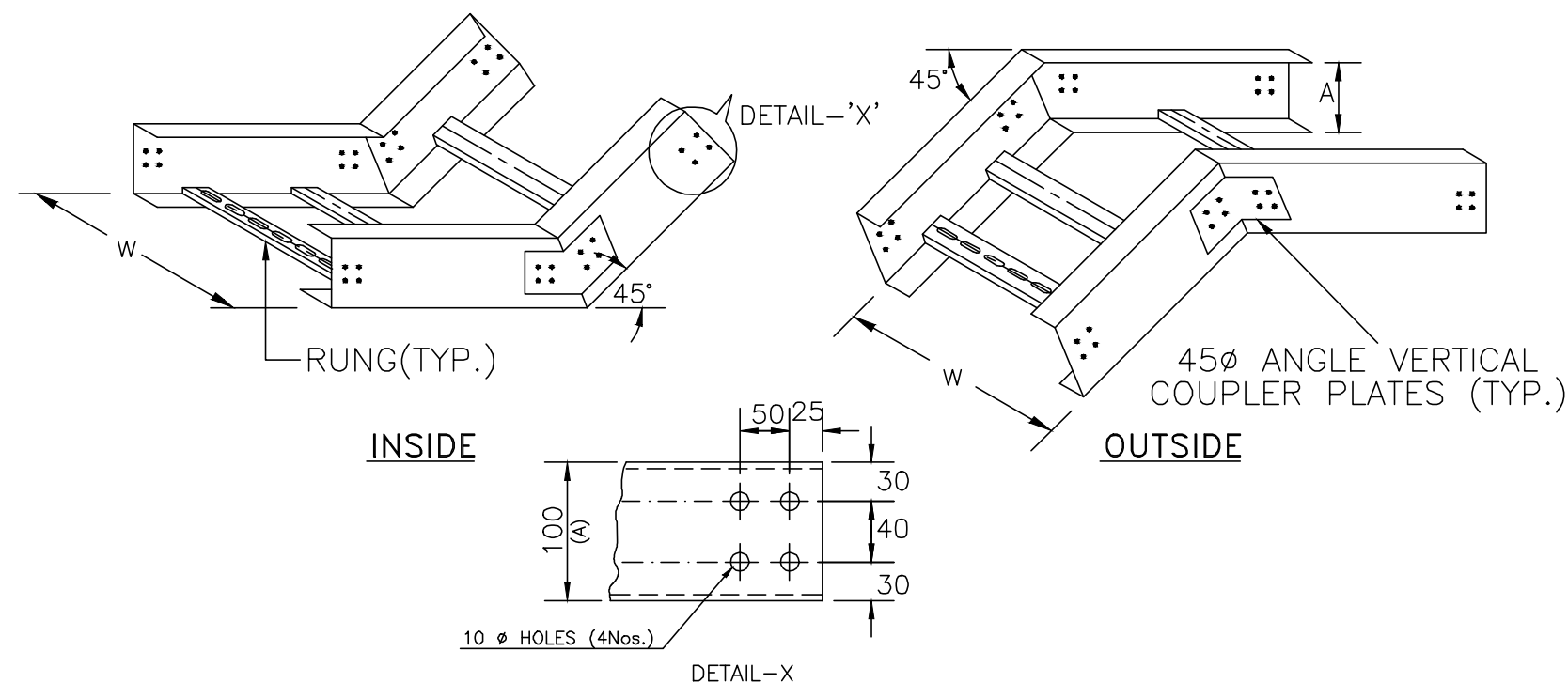
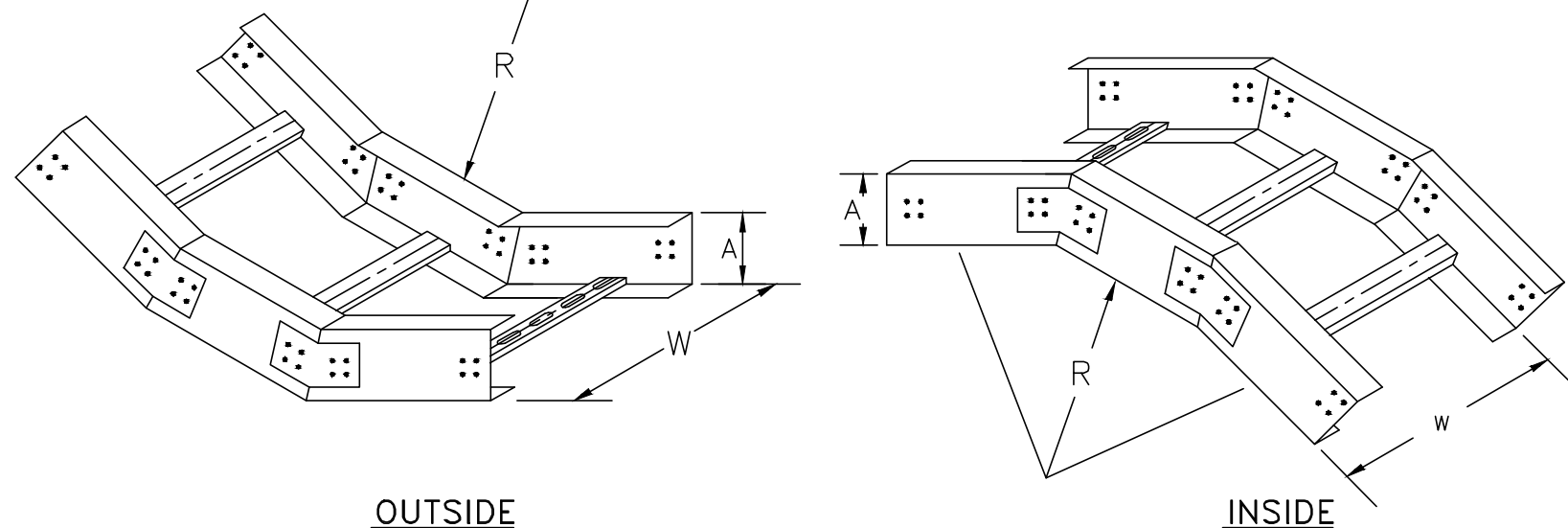
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Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE

Size	Scale	Sheet
A3	NTS	06 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

NOTES

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45° DIRECT VERTICAL ELBOW45° VERTICAL RADIUS ELBOW

- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER BOQ)
(A) DEPTH OF TRAY - 100MM UNLESS NOTED
(R) BENDING RADIUS (AS PER BOQ)

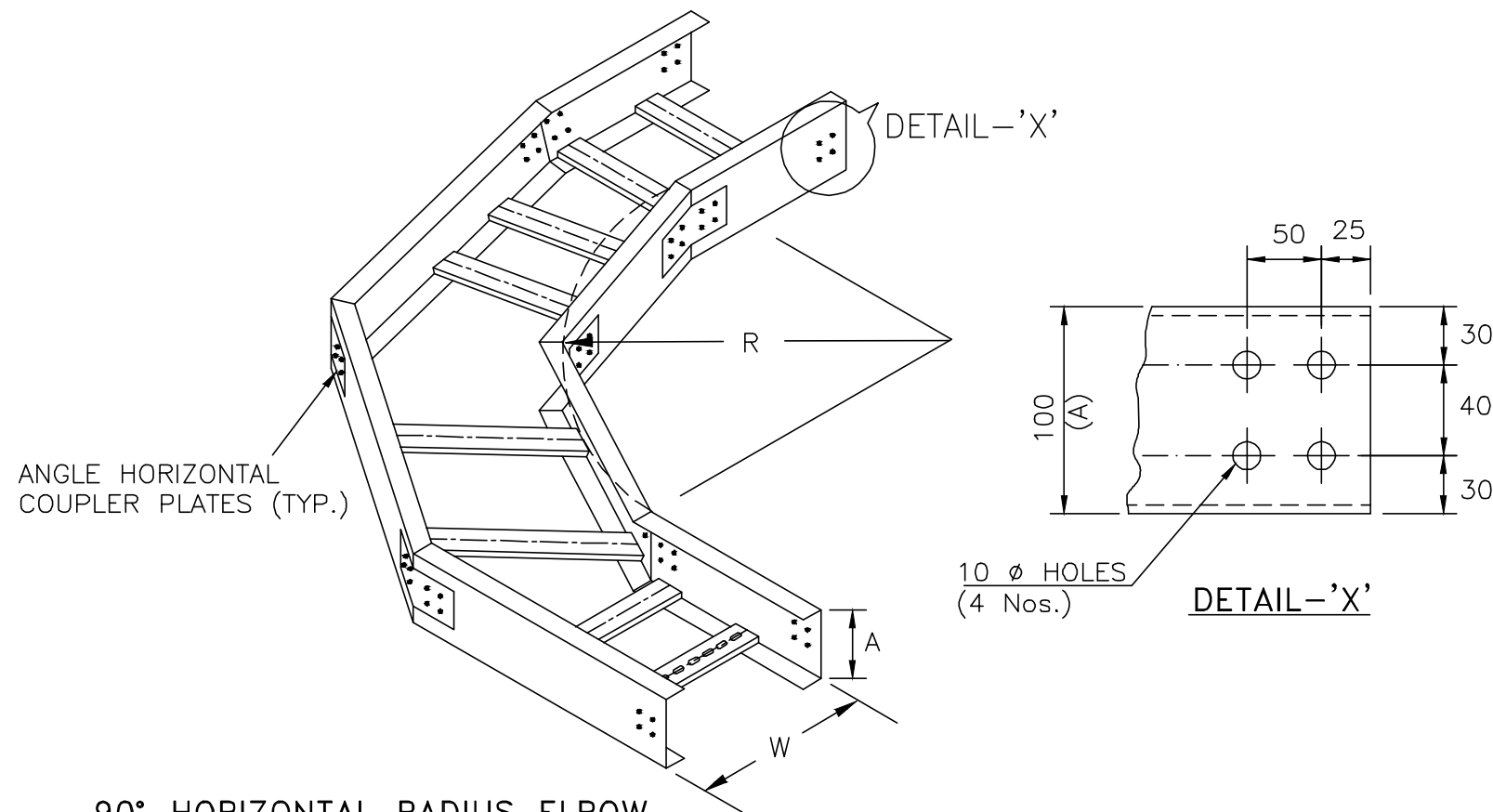
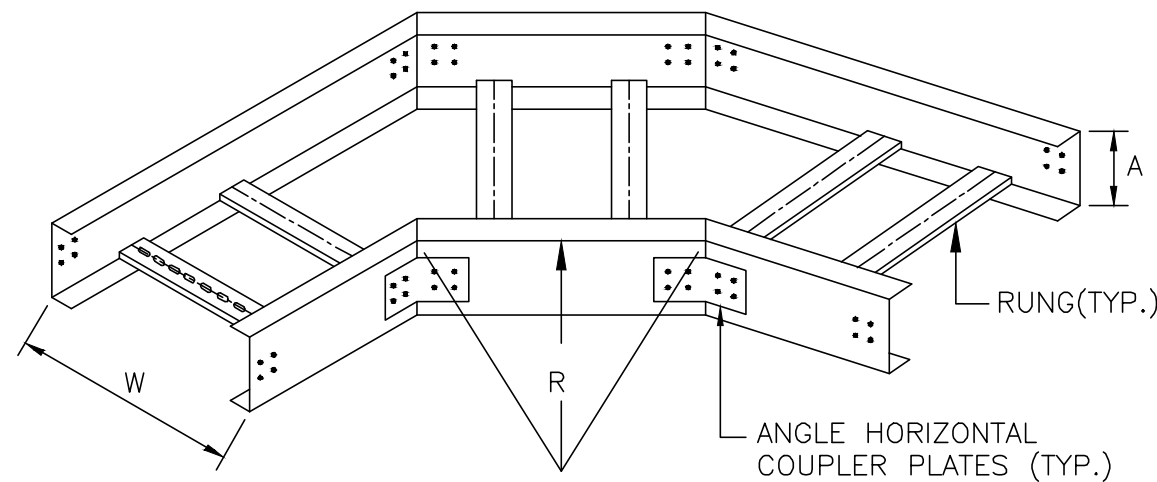
0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT **TYPICAL CABLE TRAY INSTALLATION DETAILS**
CABLE TRAY ACCESSORIES

Size	Scale	Sheet
A3	NTS	07 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

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90° HORIZONTAL RADIUS ELBOW45° HORIZONTAL RADIUS ELBOW

(W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER BOQ)

(A) DEPTH OF TRAY - 100MM UNLESS NOTED

(R) BENDING RADIUS (AS PER BOQ)

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked
				Approved	Validated	

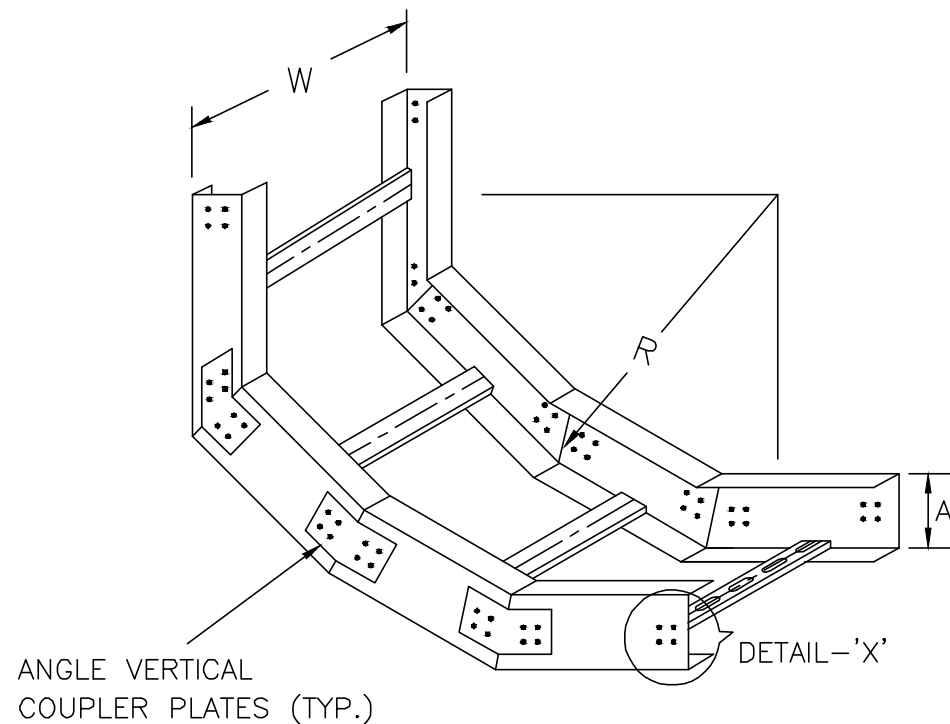
SUBJECT **TYPICAL CABLE TRAY INSTALLATION DETAILS**
CABLE TRAY ACCESSORIES

Size	Scale	Sheet
A3	NTS	08 of 62
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GGNG-E-20714-3010	0	

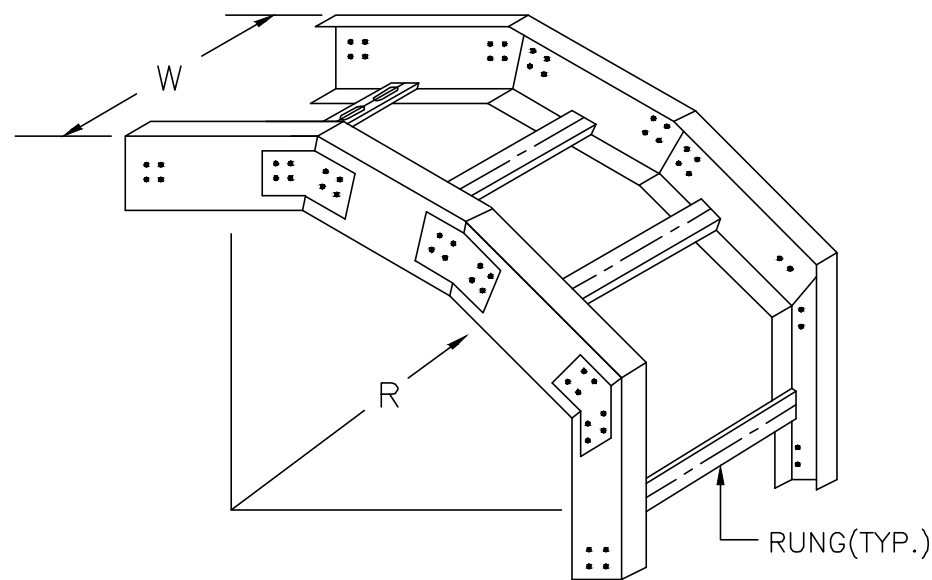
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90° VERTICAL RADIUS ELBOW

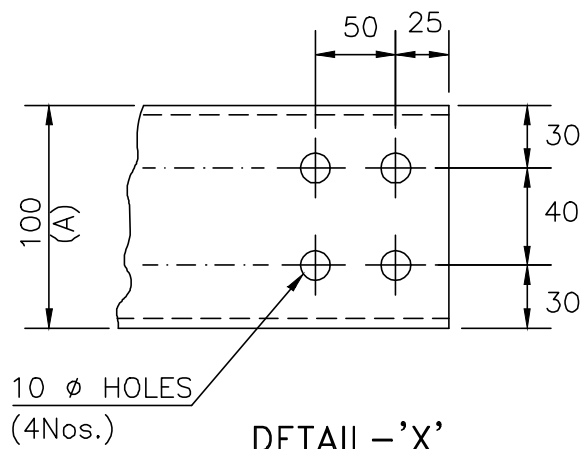


INSIDE



OUTSIDE

- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER BOQ).
(A) DEPTH OF TRAY - 100MM UNLESS NOTED.
(R) BENDING RADIUS (AS PER BOQ).



DETAIL-'X'

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY ACCESSORIES

Size	Scale	Sheet
A3	NTS	09 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

1

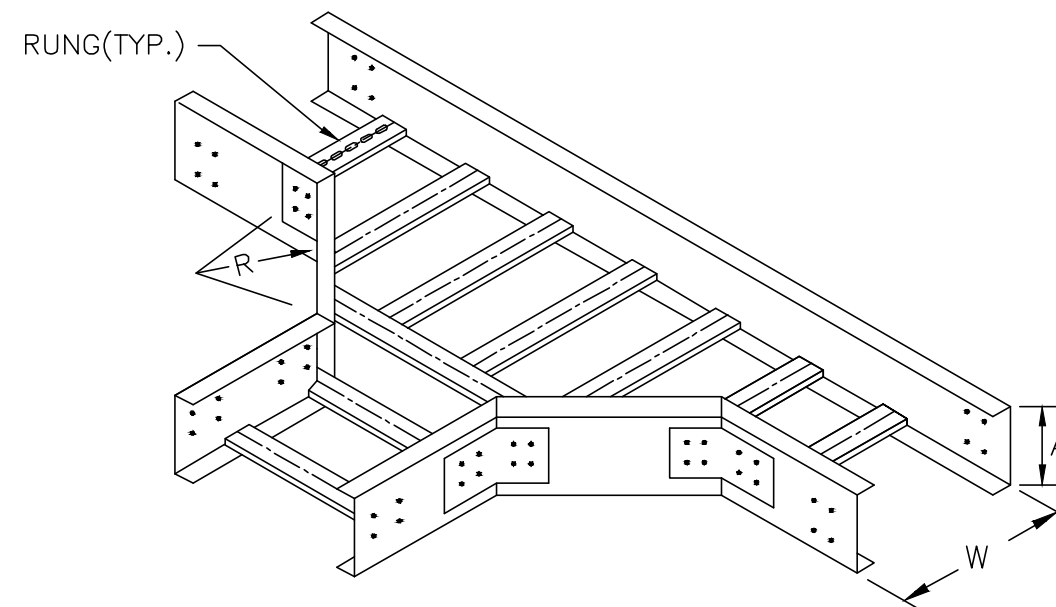
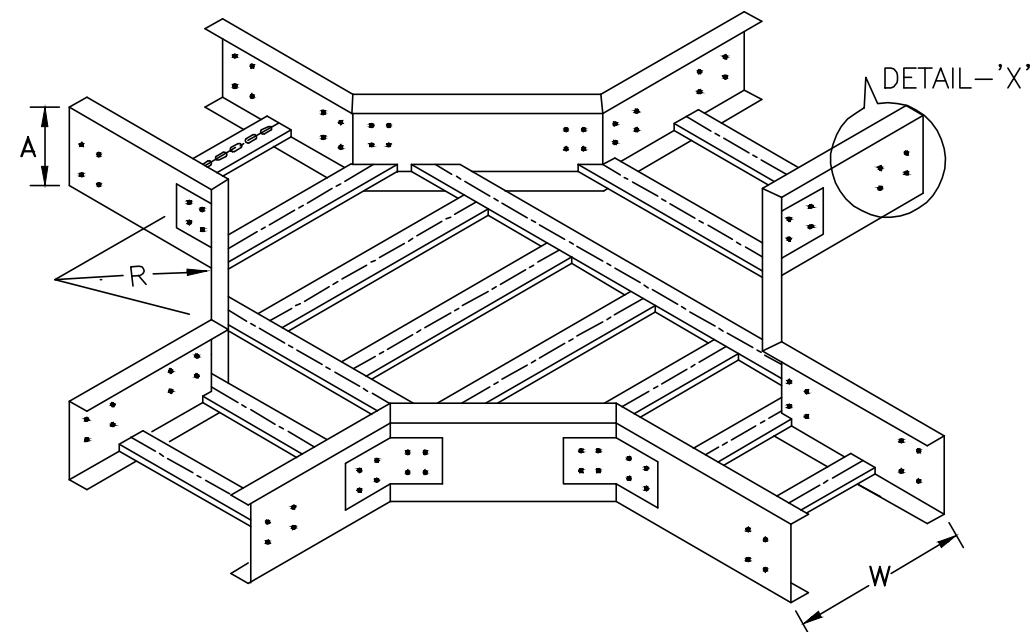
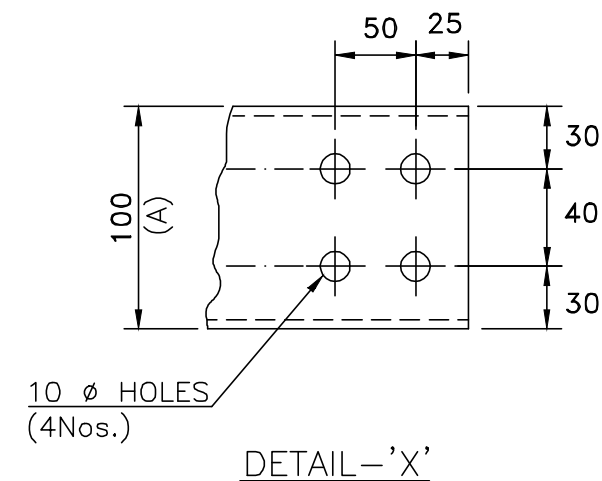
2

3

4

NOTES

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HORIZONTAL RADIUS TEEHORIZONTAL RADIUS CROSS

- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER BOQ)
- (A) DEPTH OF TRAY - 100MM UNLESS NOTED
- (R) BENDING RADIUS (AS PER BOQ)

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT **TYPICAL CABLE TRAY INSTALLATION DETAILS**
CABLE TRAY ACCESSORIES

Size	Scale	Sheet
A3	NTS	10 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

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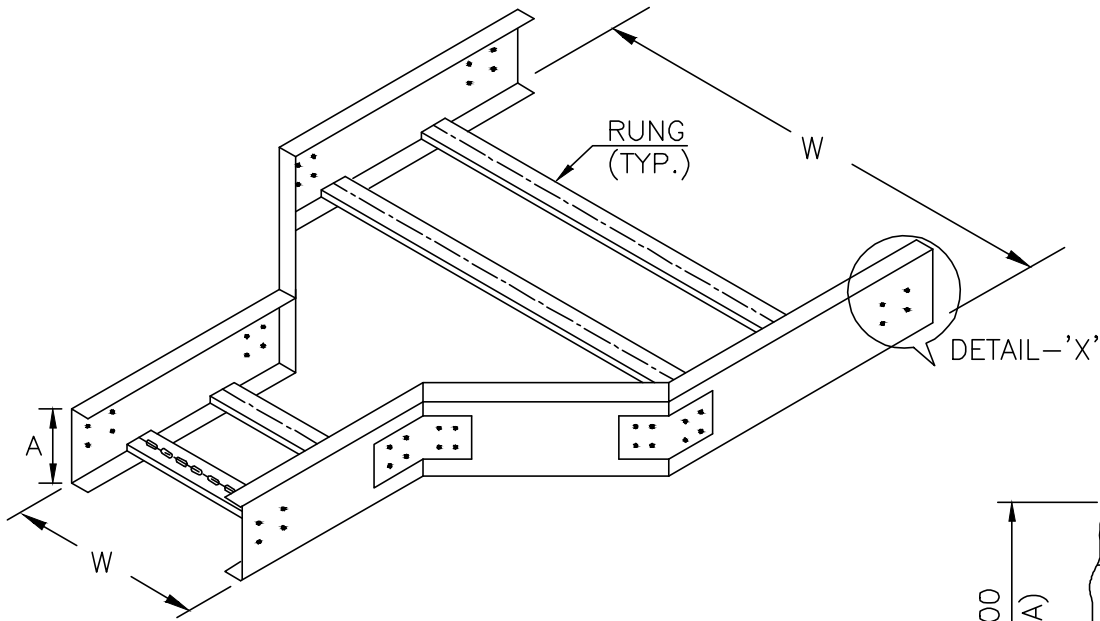
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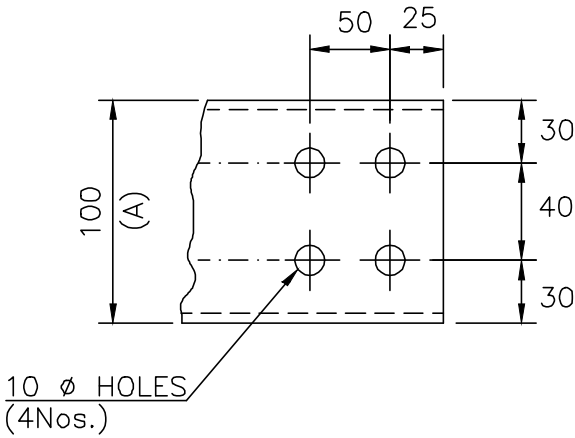
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NOTES

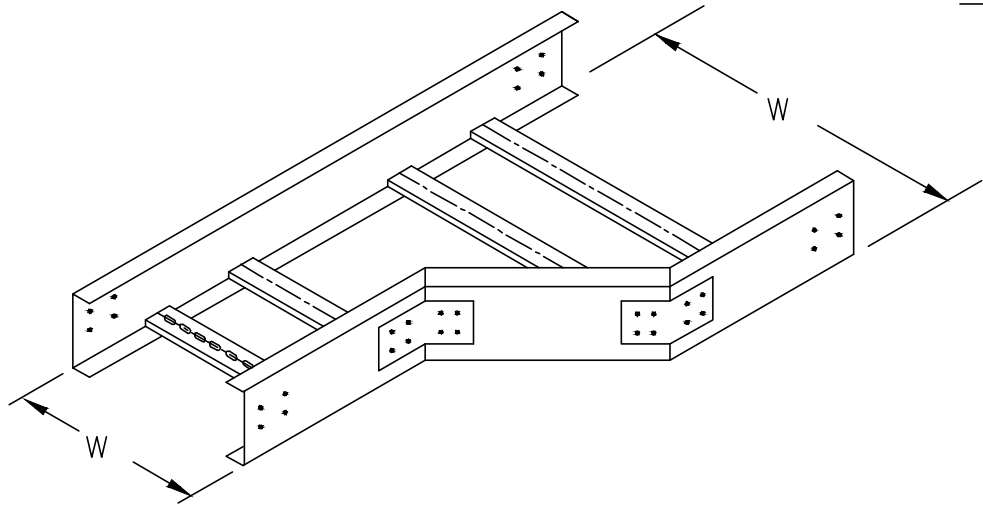
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STRAIGHT REDUCER



DETAIL - 'X'



RIGHT TO LEFT HAND REDUCER

(W) INSIDE WIDTH OF TRAY – 150,300,450,600,800MM (AS PER BOQ)

(A) DEPTH OF TRAY – 100MM UNLESS NOTED

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT			TYPICAL CABLE TRAY INSTALLATION DETAILS			
			CABLE TRAY ACCESSORIES			
			Size	Scale	Sheet	
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			Drawing No.		Rev.	
			GGNG-E-20714-3010		0	

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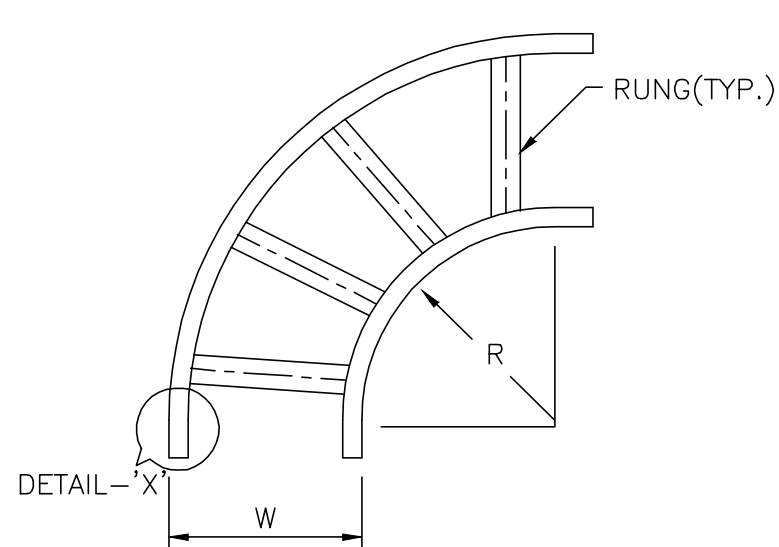
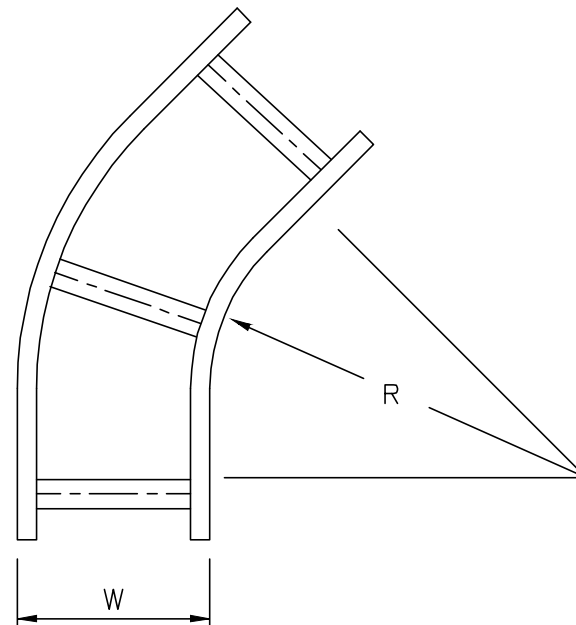
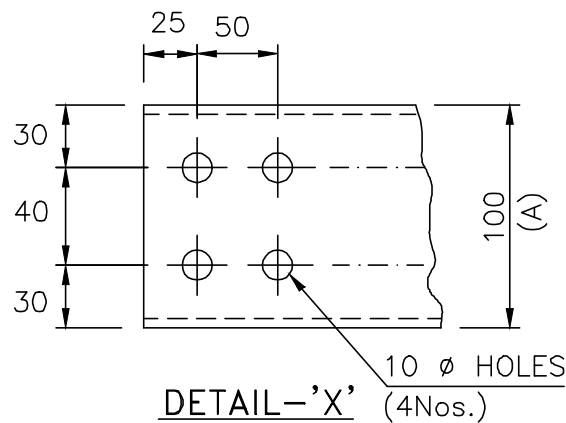
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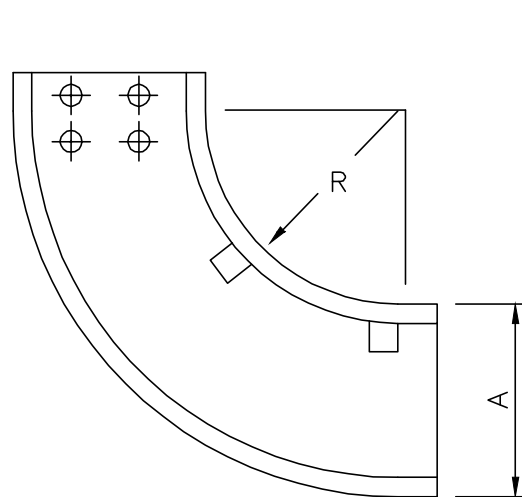
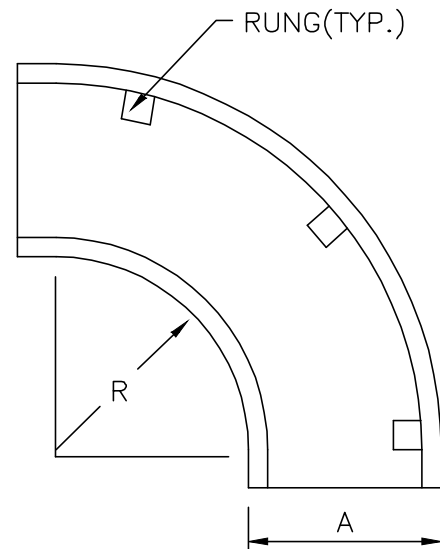
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90° HORIZONTAL RADIUS ELBOW45° HORIZONTAL RADIUS ELBOW

- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER BOQ)
(A) DEPTH OF TRAY - 100MM UNLESS NOTED
(R) BENDING RADIUS (AS PER BOQ)

90° VERTICAL MOULDED RADIUS ELBOWINSIDEOUTSIDE

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked
					Approved	Validated

SUBJECT **TYPICAL CABLE TRAY INSTALLATION DETAILS**
CABLE TRAY ACCESSORIES (FRP)

Size	Scale	Sheet
A3	NTS	13 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

1

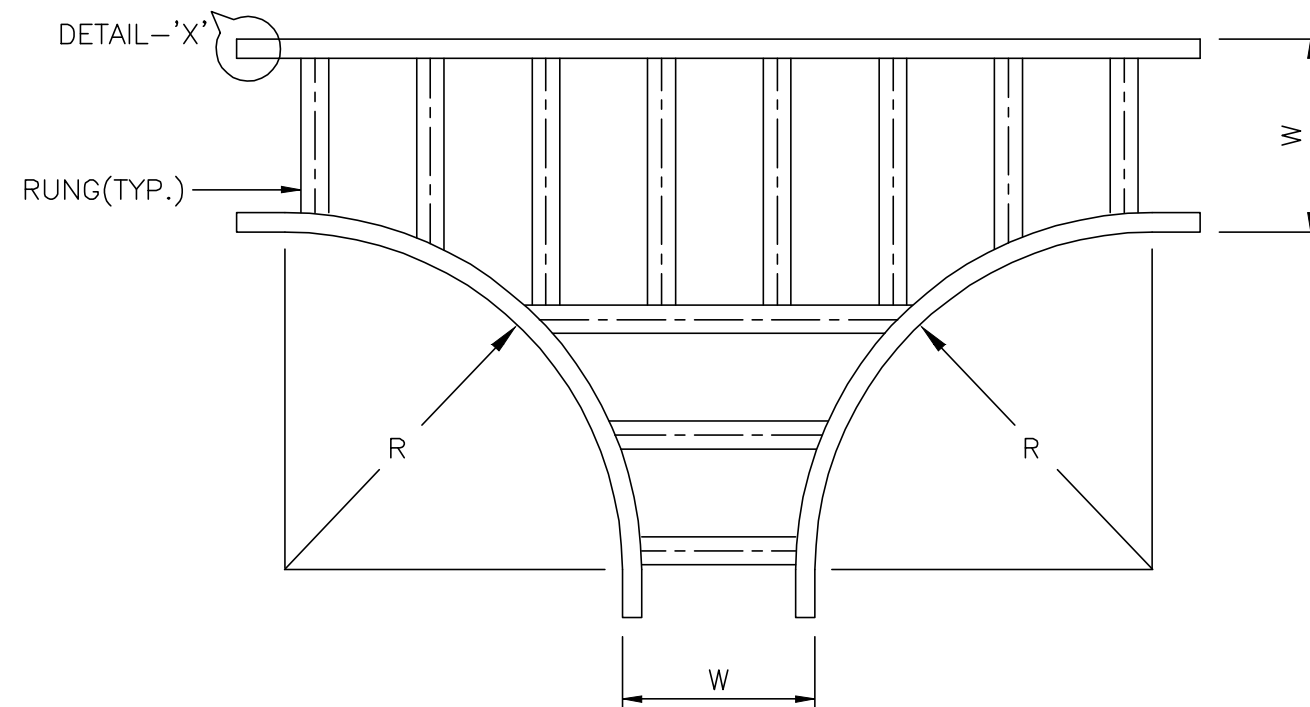
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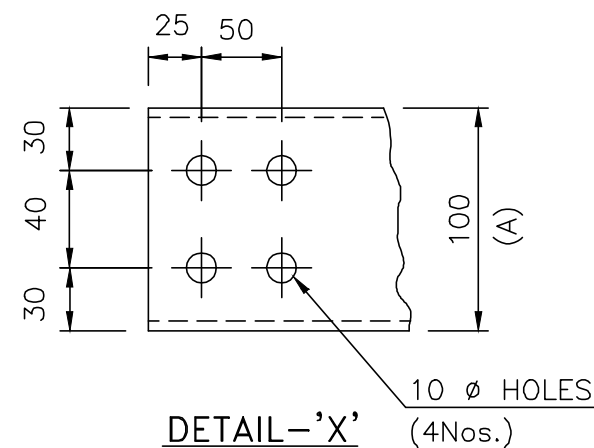
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HORIZONTAL RADIUS TEE



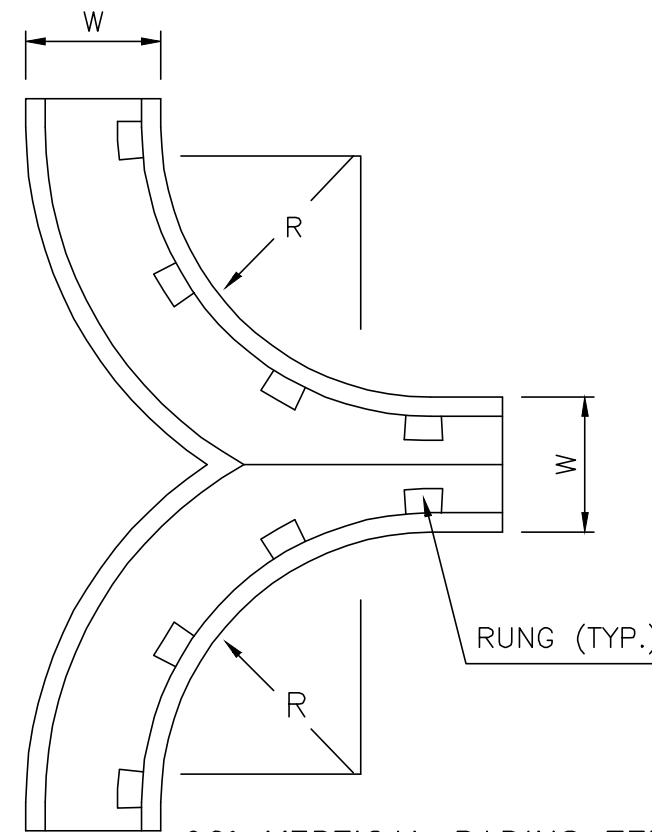
DETAIL-'X'

10 Ø HOLES
(4Nos.)

(W) - INSIDE WIDTH OF TRAY-150,300,450,600,800MM (AS PER BOQ)

(A) - DEPTH OF TRAY-100MM UNLESS NOTED

(R) - BENDING RADIUS (AS PER BOQ)



90° VERTICAL RADIUS TEE

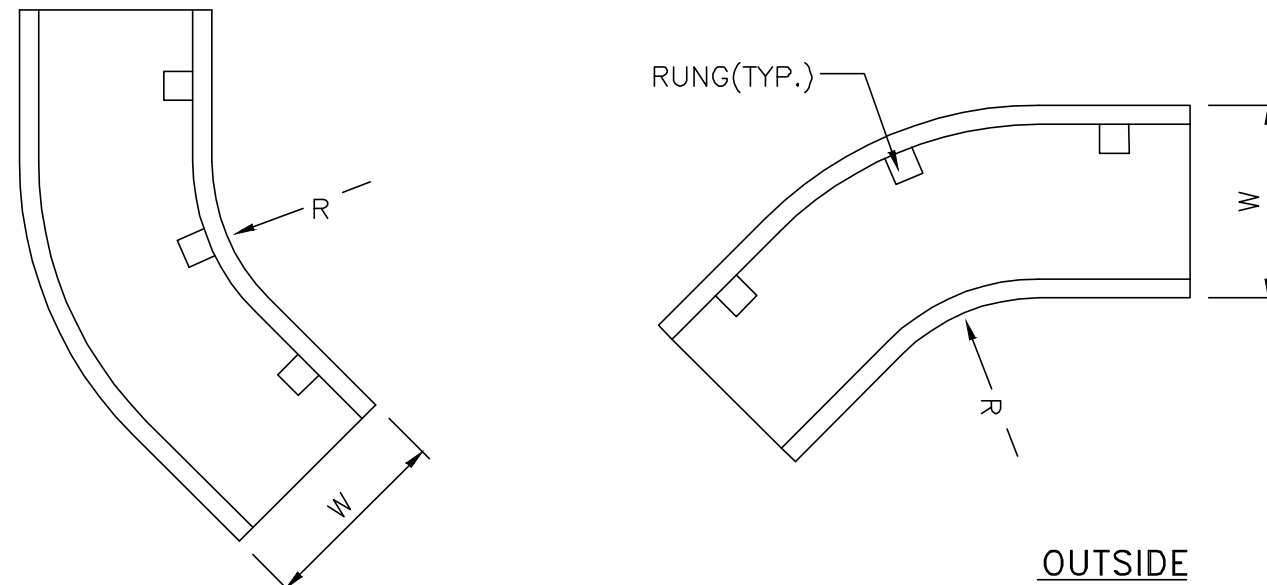
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CABLE TRAY ACCESSORIES

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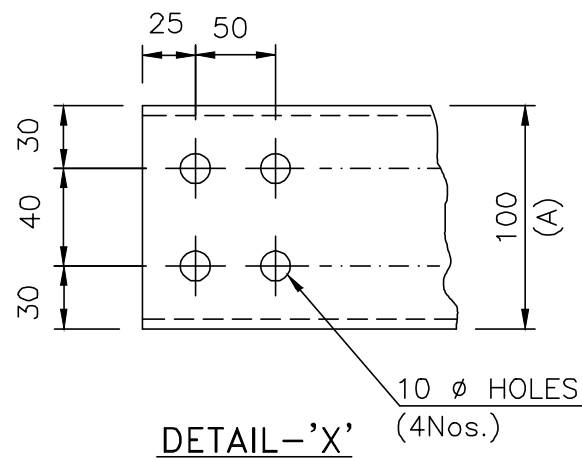
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45° VERTICAL RADIUS ELBOW



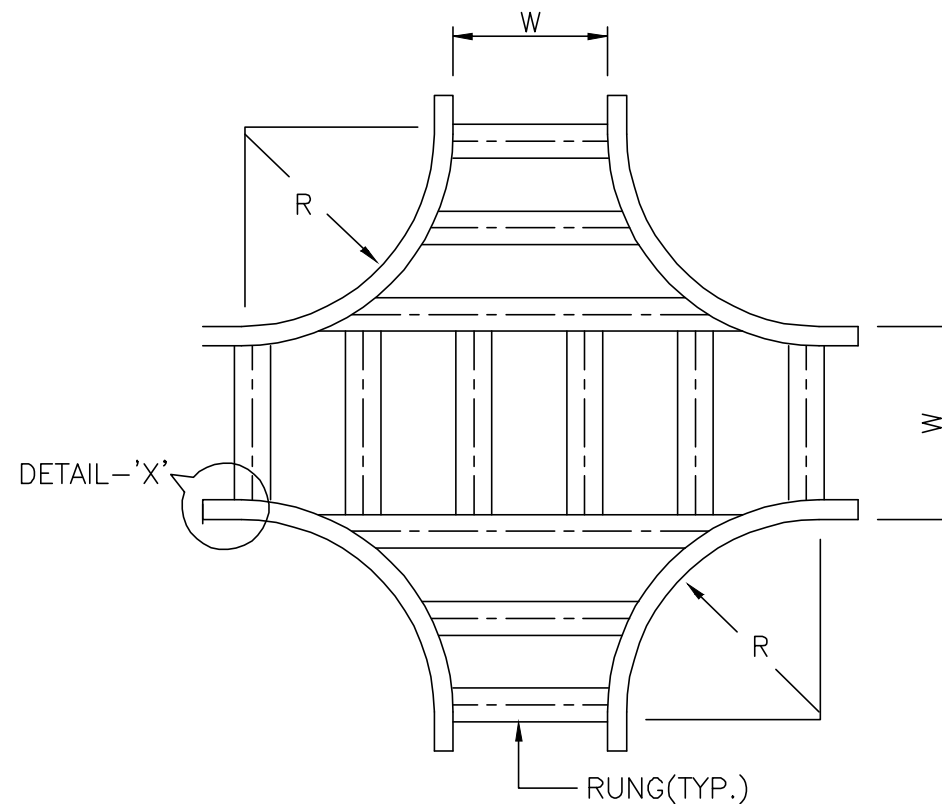
INSIDE

OUTSIDE



DETAIL - 'X'

10 Ø HOLES
(4Nos.)



HORIZONTAL RADIUS CROSS

NOTES

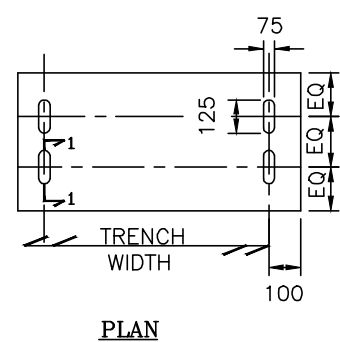
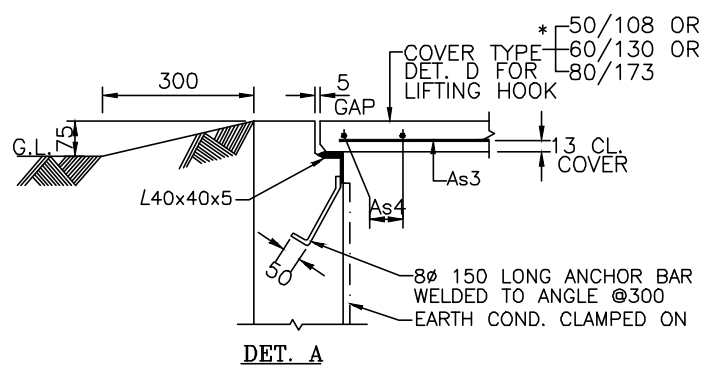
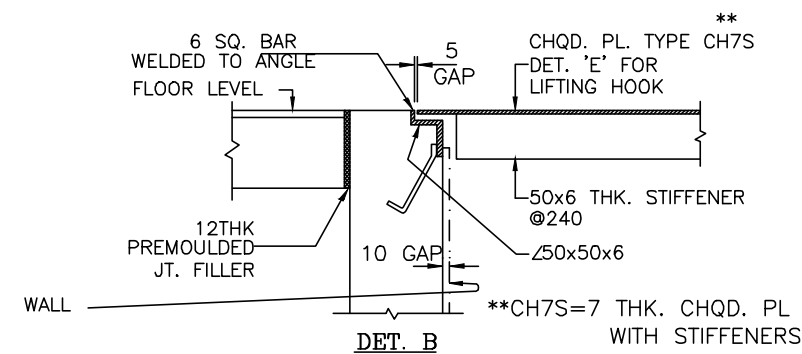
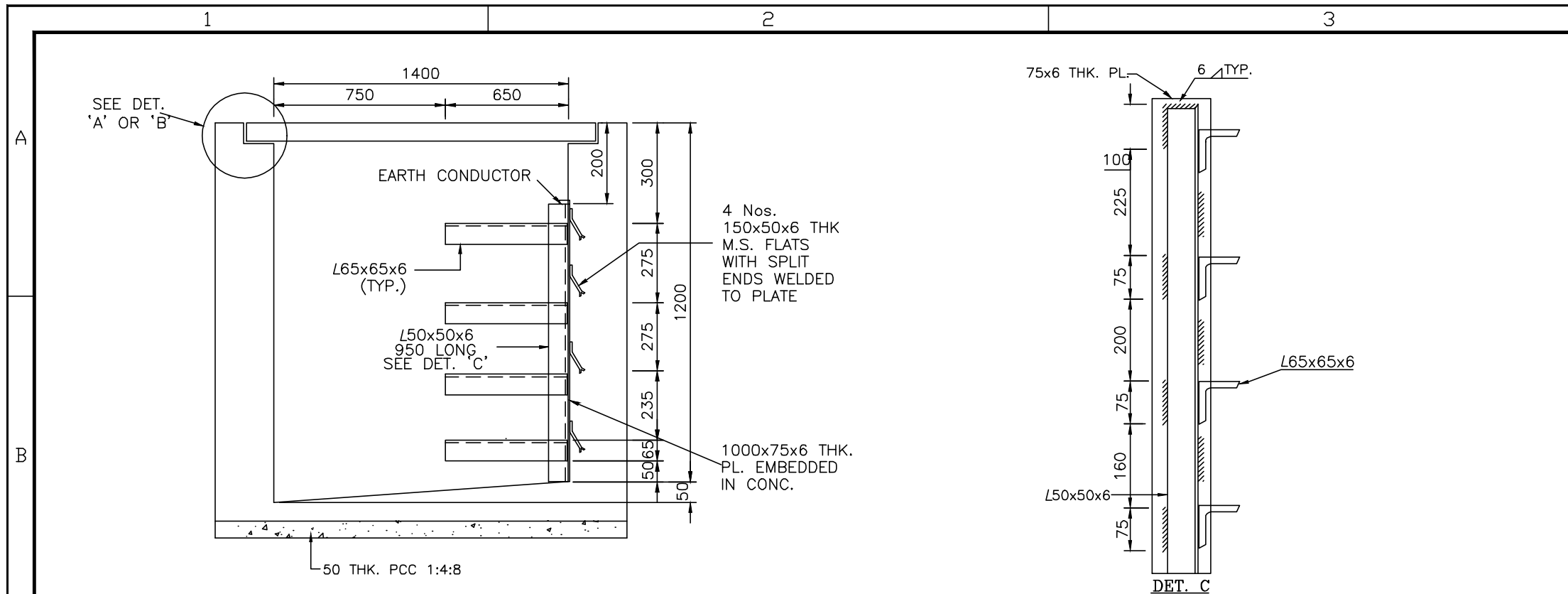
1. ALL DIMENSIONS ARE IN MM.
2. MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER BOQ)
3. M.S. SHEET SHALL CONFORM TO IS2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. CABLE TRAY SUPPLIED WITH OTHER MATERIALS SHALL CONFIRMED TO RELEVANT IS/INTERNATIONAL STANDARDS.
4. EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRED HARDWARE.
5. ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES & HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER BOQ)
(A) DEPTH OF TRAY - 100MM UNLESS NOTED
(R) BENDING RADIUS (AS PER BOQ)

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked
				Approved	Validated	

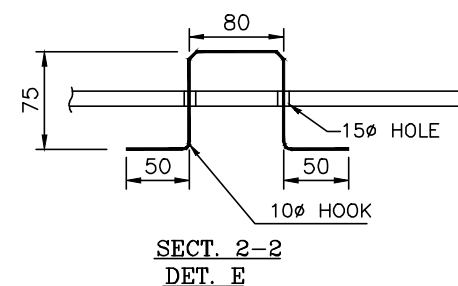
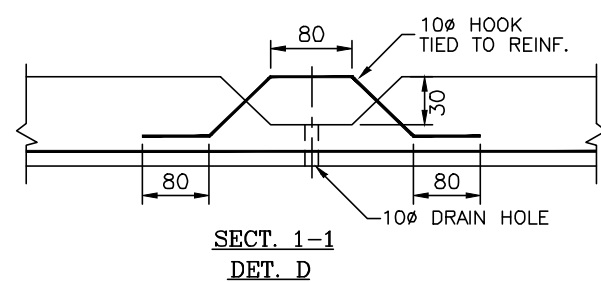
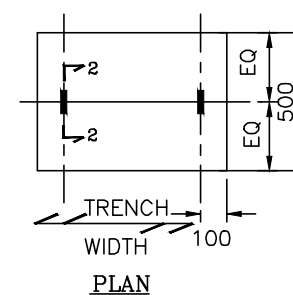
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY ACCESSORIES

Size	Scale	Sheet
A3	NTS	15 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	



R C COVER TYPE	THICKNESS mm.	As3	As4
50/108	50	7-6ø	9-6ø
60/130	60	6-8ø	8-8ø
80/173	80	5-8ø	8-8ø

60x130 MEANS 60mm. THK.x130 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

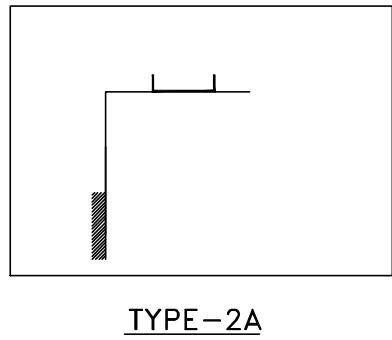


NOTES

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.

0	07.10.16	APPROVED			RKS	PR	KJ	SKH	
Rev.	D M Y	Modifications			Drawn	Checked	Approved	Validated	
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS CABLE TRENCH TYPE									
				Size	Scale	Sheet			
				A3	NTS	16 of 62			
				Drawing No.					Rev.
				GGNG-E-20714-3010					0

1. ALL DIMENSIONS ARE IN MM.
2. FULL LENGTH FILLET WELD WITH RETURNED ENDS TO BE MINIMUM 4MM.
3. ISMC 75 SHALL BE AS PER IS 2062: 1992.
4. WELDING SHALL BE DONE AS PER IS 816: 1969.
5. DIMENSION 'D' TO SUIT ELEVATION OF TRAY AS GIVEN ON CABLE TRAY LAYOUT DRAWING.

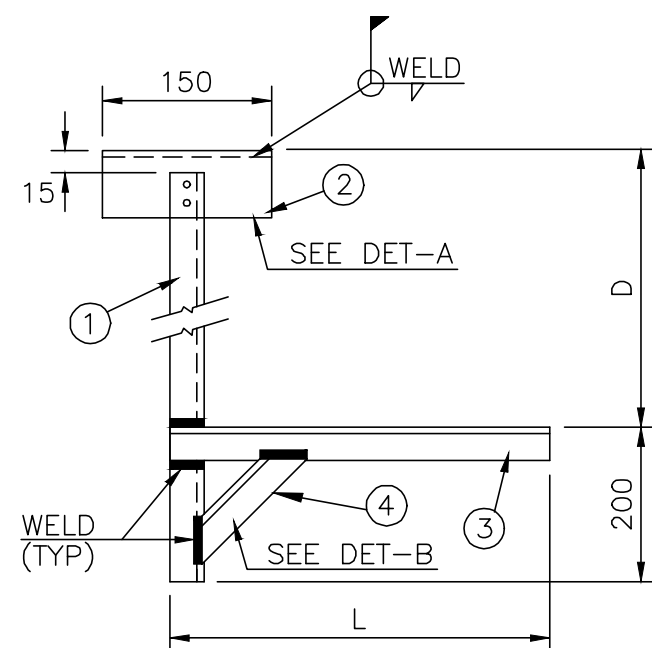
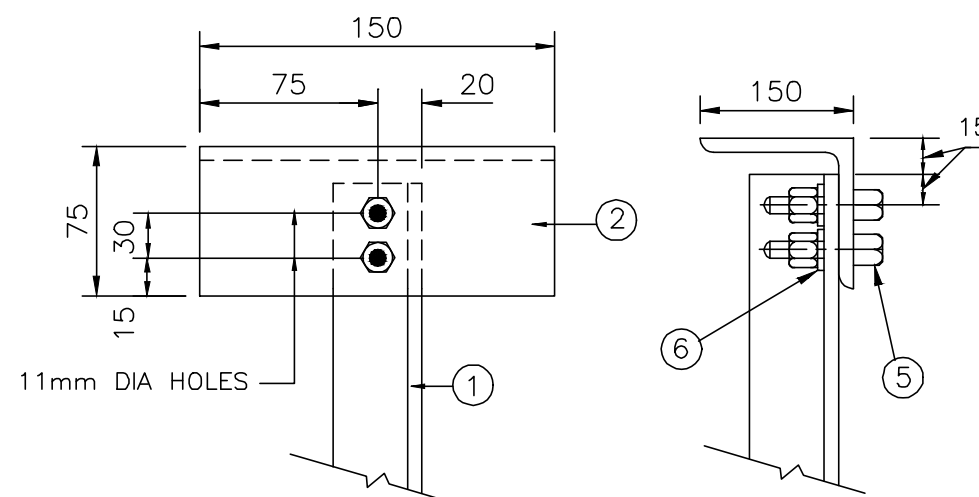


TRAY WIDTH	L	REMARKS
100	250	
150	300	

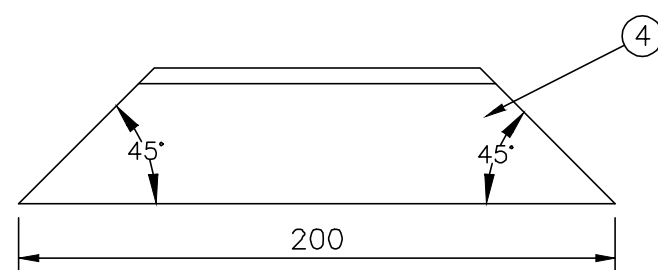
ITEM NO	DESCRIPTION	LENGTH	QTY No.	REMARKS
①	ISM 75	D + L	1	FOR 'L' REF.TABLE-1

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

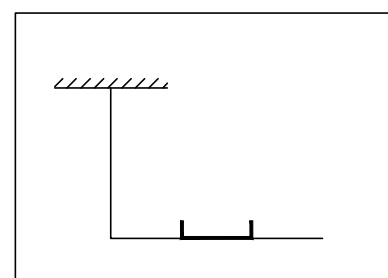
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY CEILING MOUNTED SINGLE SUPPORT

ELEVATION

DETAIL-A



DETAIL-B



TYPE-2B

TABLE-1

TRAY WIDTH	L	REMARKS
100	200	
150	250	
300	400	
450	550	
600	700	

TABLE-2

ITEM NO	DESCRIPTION	LENGTH MM	QTY No.	REMARKS
①	ISA 50x50x6	D+200	1	FOR 'D' REF.NOTE.4
②	ISA 75x50x6	150	1	
③	ISA 50x50x6	L	1	FOR 'L' REF.TABLE-1
④	ISA 50x50x6	200	1	ONLY FOR 600MM TRAY
⑤	BOLT/NUT(M10)	30	2	
⑥	SPRING WASHER (M10)	—	2	

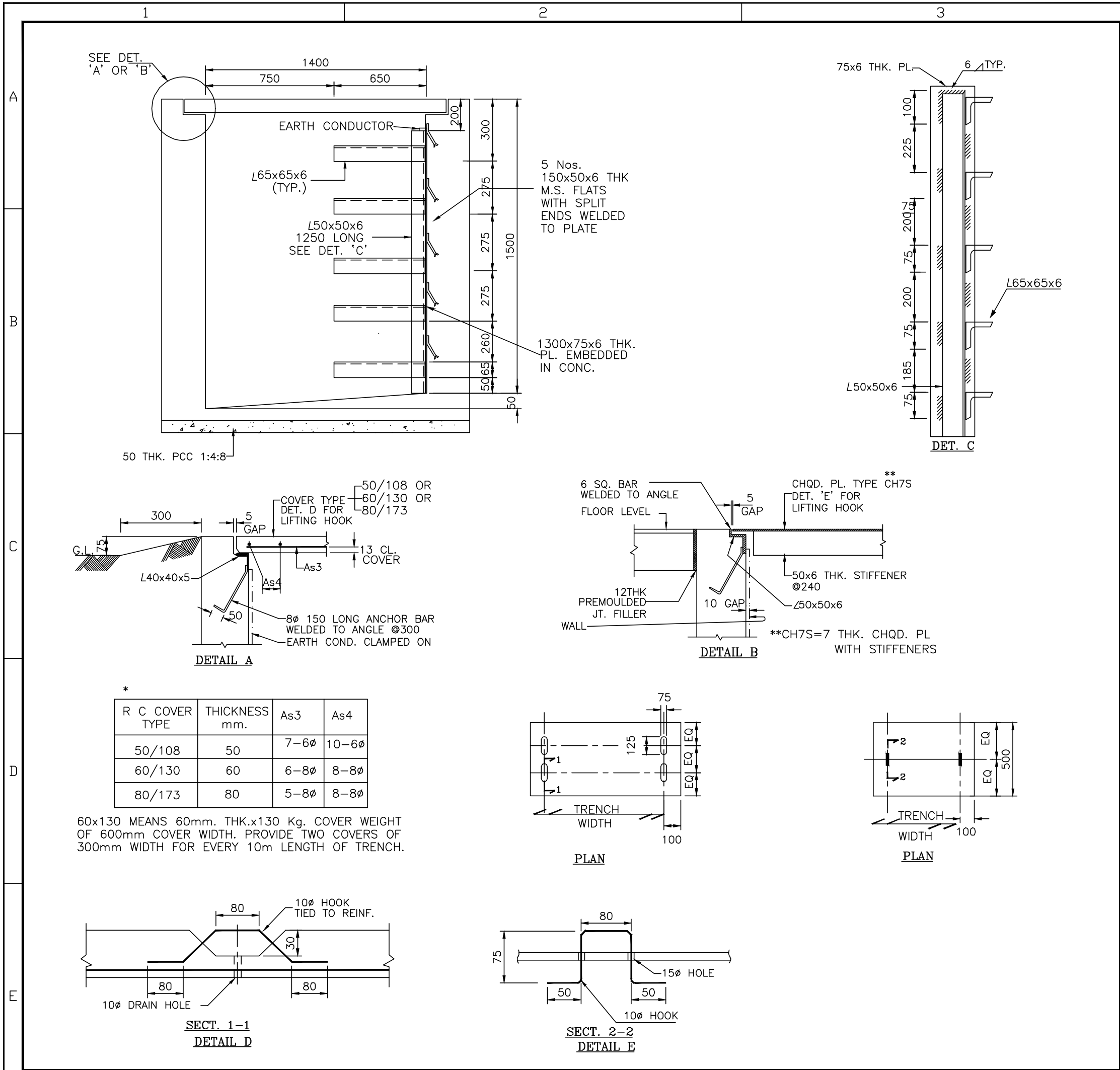
NOTES

1. ALL DIMENSIONS ARE IN MM.
2. FULL LENGTH FILLET WELD WITH RETURNED ENDS TO BE MINIMUM 4MM.
3. DIMENSION 'D' TO SUIT ELEVATION OF THE TRAY AS GIVEN ON CABLE TRAY LAYOUT DRAWING.
4. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
5. NUTS AND BOLTS SHALL BE AS PER IS 1363 (PART-1,2,3): 1992/IS 1367(PART-5): 1980.
6. WASHERS SHALL BE AS PER IS 2016: 1967.

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY CEILING MOUNTED SINGLE SUPPORT

Size	Scale	Sheet
A3	NTS	18 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0



NOTES

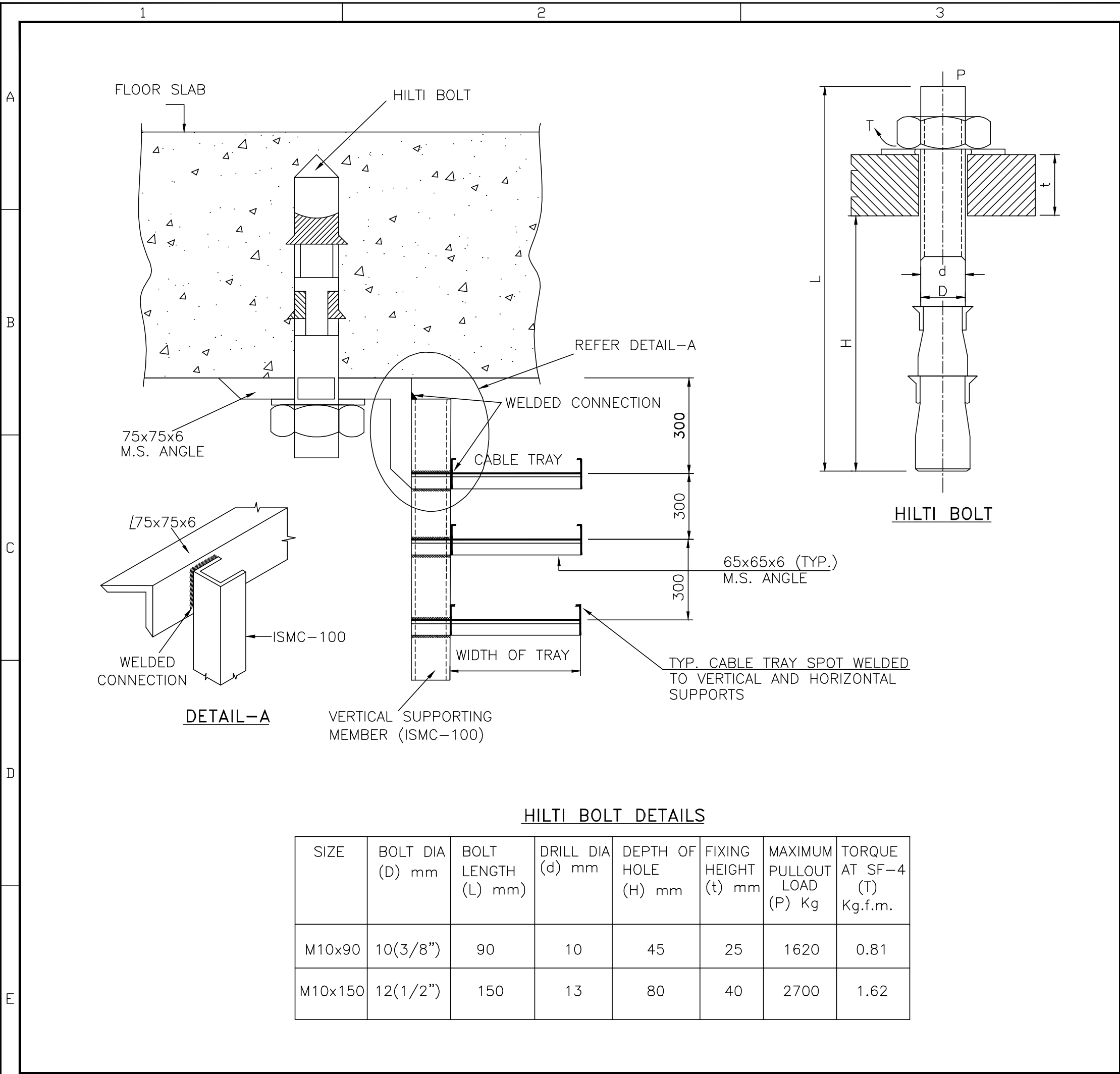
1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

*

R C COVER TYPE	THICKNESS mm.	As3	As4
50/108	50	7-6 ϕ	10-6 ϕ
60/130	60	6-8 ϕ	8-8 ϕ
80/173	80	5-8 ϕ	8-8 ϕ

60x130 MEANS 60mm. THK.x130 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS CABLE TRENCH TYPE - 1415						
Size Scale Sheet			19 of 62			
A3 NTS			Drawing No. GGNG-E-20714-3010			
Rev.						0



NOTES

1. ALL DIMENSIONS ARE IN MM.

2. BOLT SIZE M10x90 SHALL BE USED FOR TOTAL WEIGHT (INCLUDING CABLES, CABLE TRAY ACCESSORIES) UP TO 200 Kgs/METER AND M10x150 SHALL BE USED FOR TOTAL WEIGHT ABOVE 200 Kgs/METER AND UP TO 500 Kgs/METER.

3. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.

4. WELDING SHALL BE DONE AS PER IS 816: 1969.

0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT

TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY MOUNTING ARRANGEMENT CTMH (TYPE-A2)

Size

A3

Scale

NTS

Sheet

20 of 62

Drawing No.

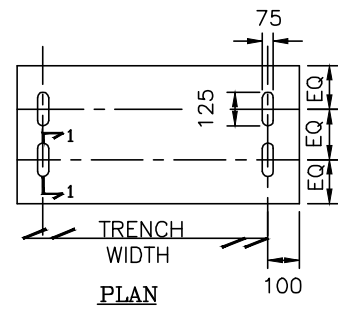
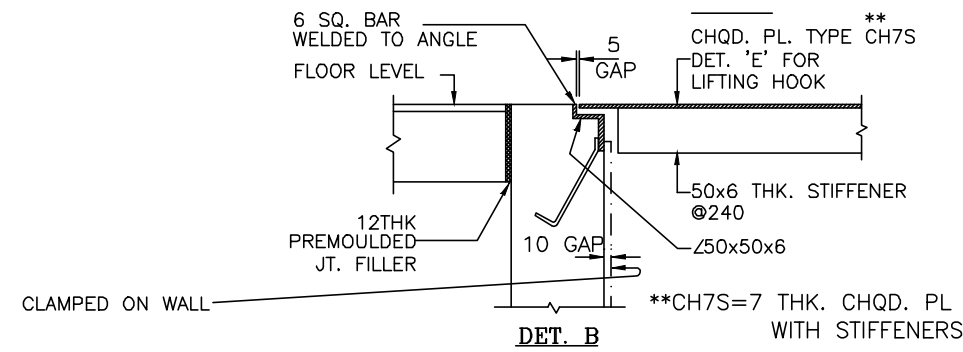
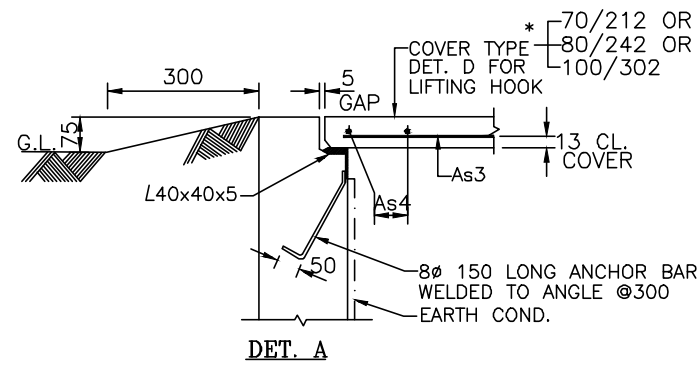
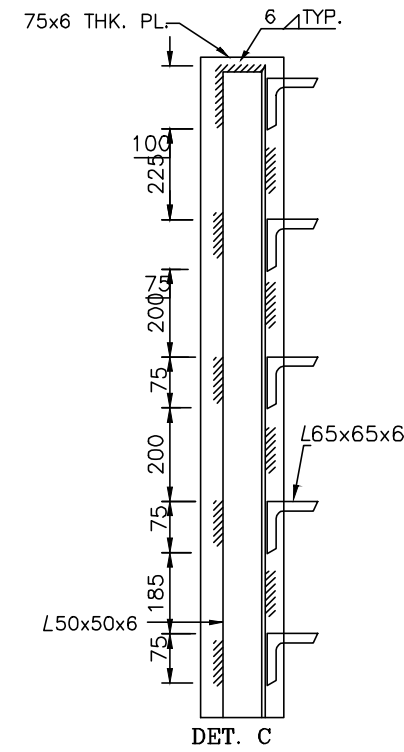
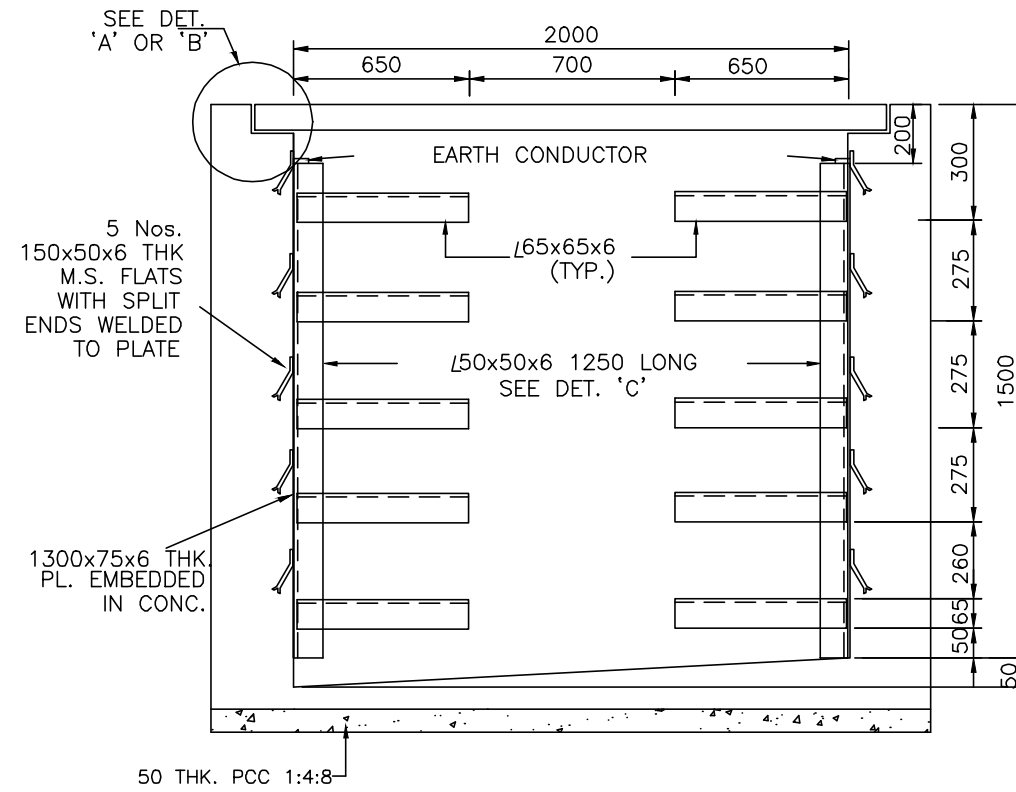
GGNG-E-20714-3010

Rev.

0

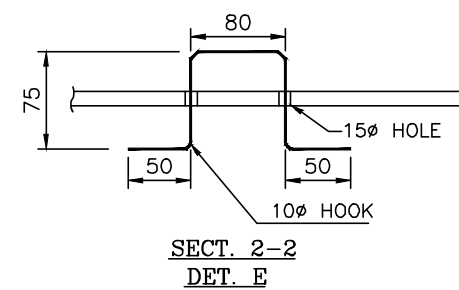
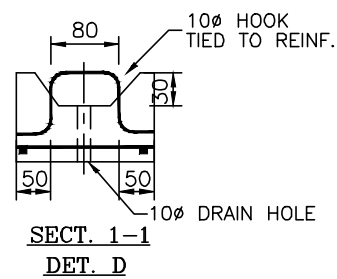
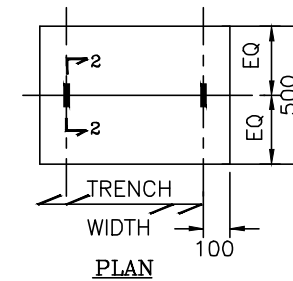
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1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.



R C COVER TYPE	THICKNESS mm.	As3	As4
70/212	70	5-8ø	11-8ø
80/242	80	5-8ø	11-8ø
100/302	100	6-8ø	11-8ø

70x130 MEANS 70mm. THK.x212 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10.0m LENGTH OF TRENCH.

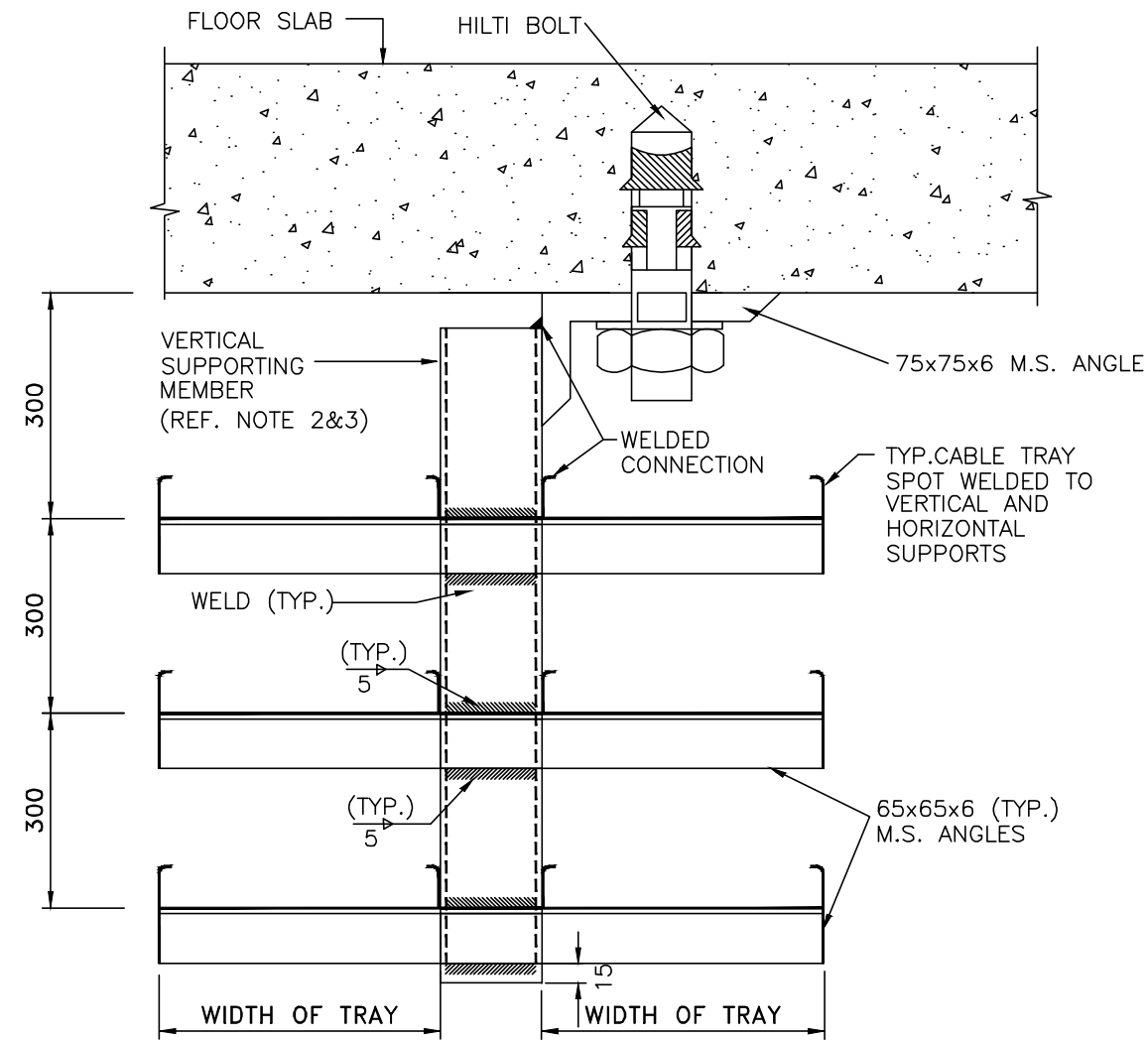


0	07.10.16	APPROVED	RKS	PR	KJ	SKH	
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated	

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE - 2015

Size	Scale	Sheet
A3	NTS	21 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

1. ALL DIMENSIONS ARE IN MM.
2. ISMC 75 UP TO TWO TIERS.
3. ISMC 100 FOR MORE THAN TWO TIERS.
4. BOLT SIZE M10x90 SHALL BE USED FOR TOTAL WEIGHT (INCLUDING CABLES, CABLE TRAY ACCESSORIES) UP TO 200 Kgs/METER AND M10x150 SHALL BE USED FOR TOTAL WEIGHT ABOVE 200 Kgs/METER AND UP TO 500 Kgs/METER.
5. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
6. WELDING SHALL BE DONE AS PER IS 816: 1969.



DRAWING TYPICAL FOR CTMH-T3

HILTI BOLT DETAILS

SIZE	BOLT DIA (D) mm	BOLT LENGTH (L) mm)	DRILL DIA (d) mm	DEPTH OF HOLE (H) mm	FIXING HEIGHT (t) mm	MAXIMUM PULLOUT LOAD (P) Kg	TORQUE AT SF-4 (T) Kg.f.m.
M10x90	10(3/8")	90	10	45	25	1620	0.81
M10x150	12(1/2")	150	13	80	40	2700	1.62

SL.NO.	TYPE OF MOUNTING	NO. OF TIERS
1	CTMH-T1	1
2	CTMH-T2	2
3	CTMH-T3	3
4	CTMH-T4	4

0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT	TYPICAL CABLE TRAY INSTALLATION DETAILS CABLE TRAY MOUNTING ARRANGEMENT CTMH (TYPE-B2)
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1	Size	Scale	Sheet
	A3	NTS	22 of 62
Drawing No.			Rev.
GGNG-E-20714-3010			0

1

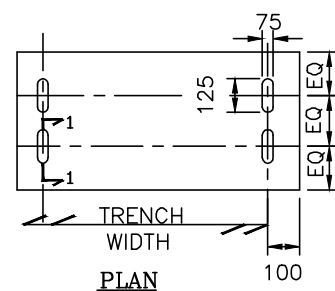
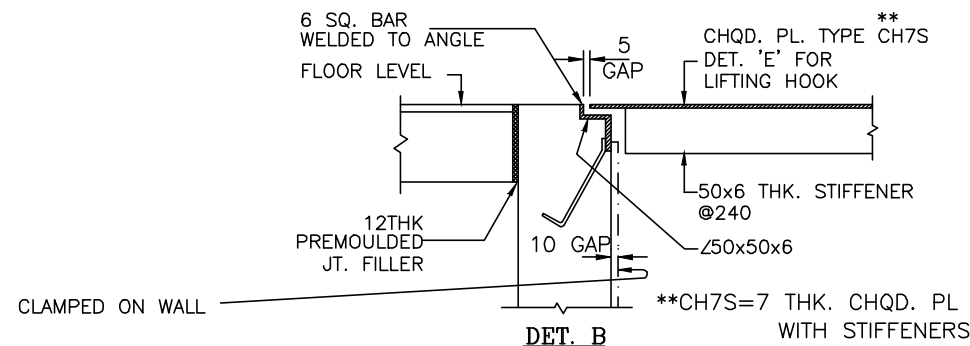
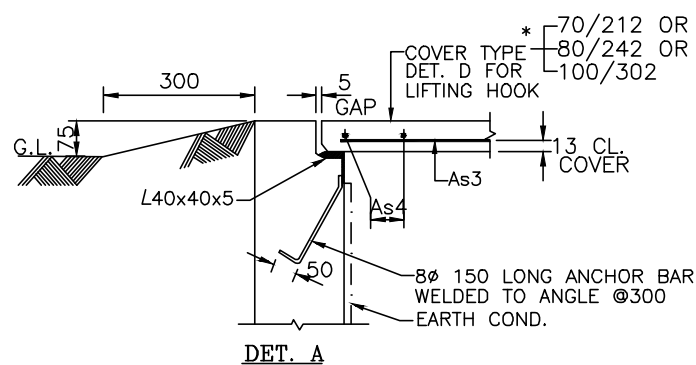
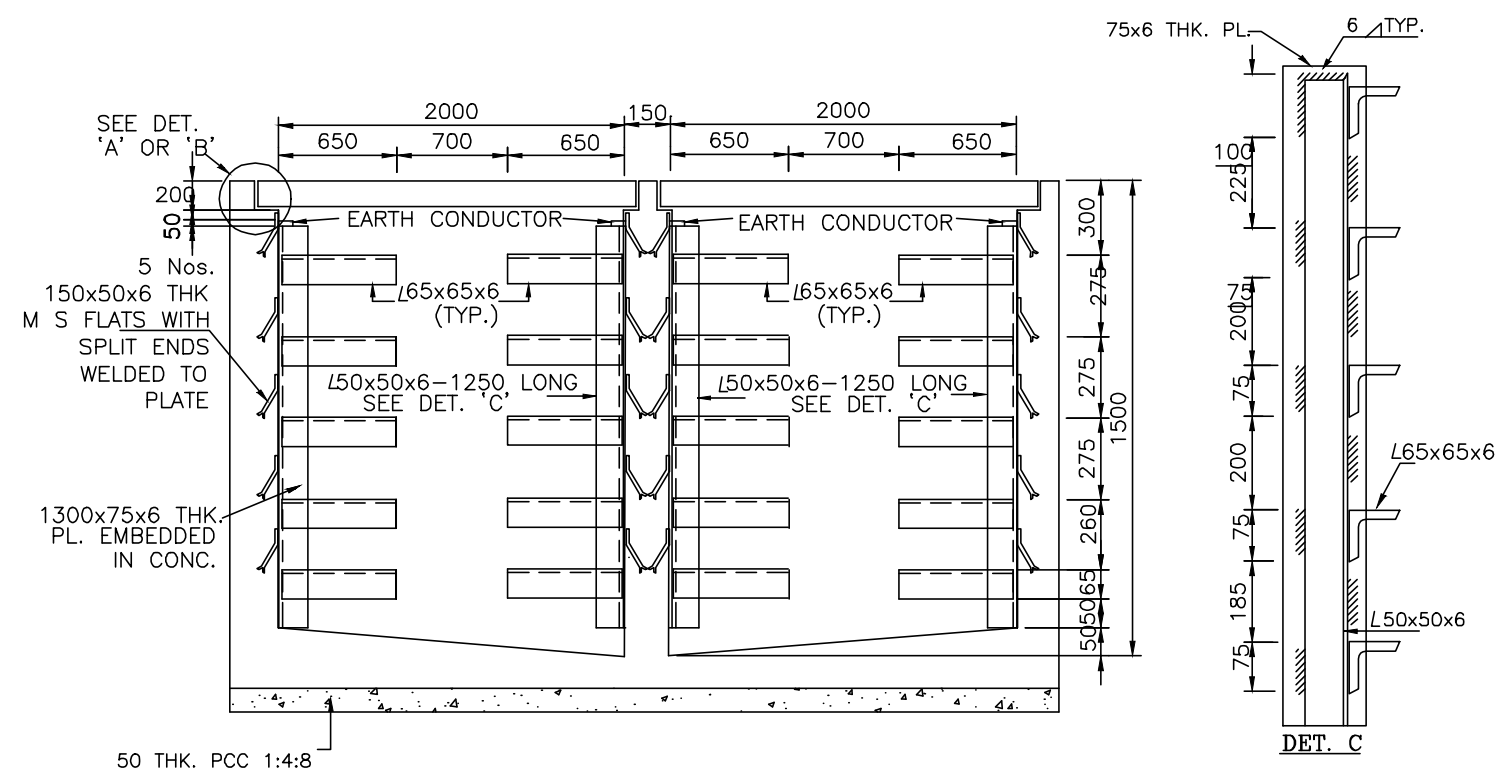
2

3

4

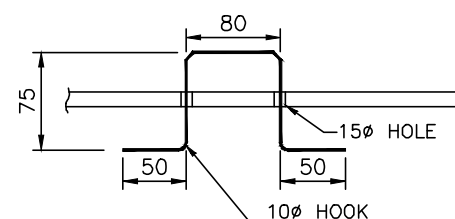
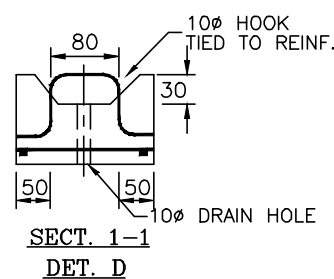
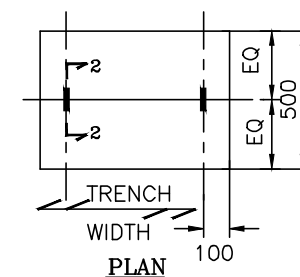
NOTES

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.



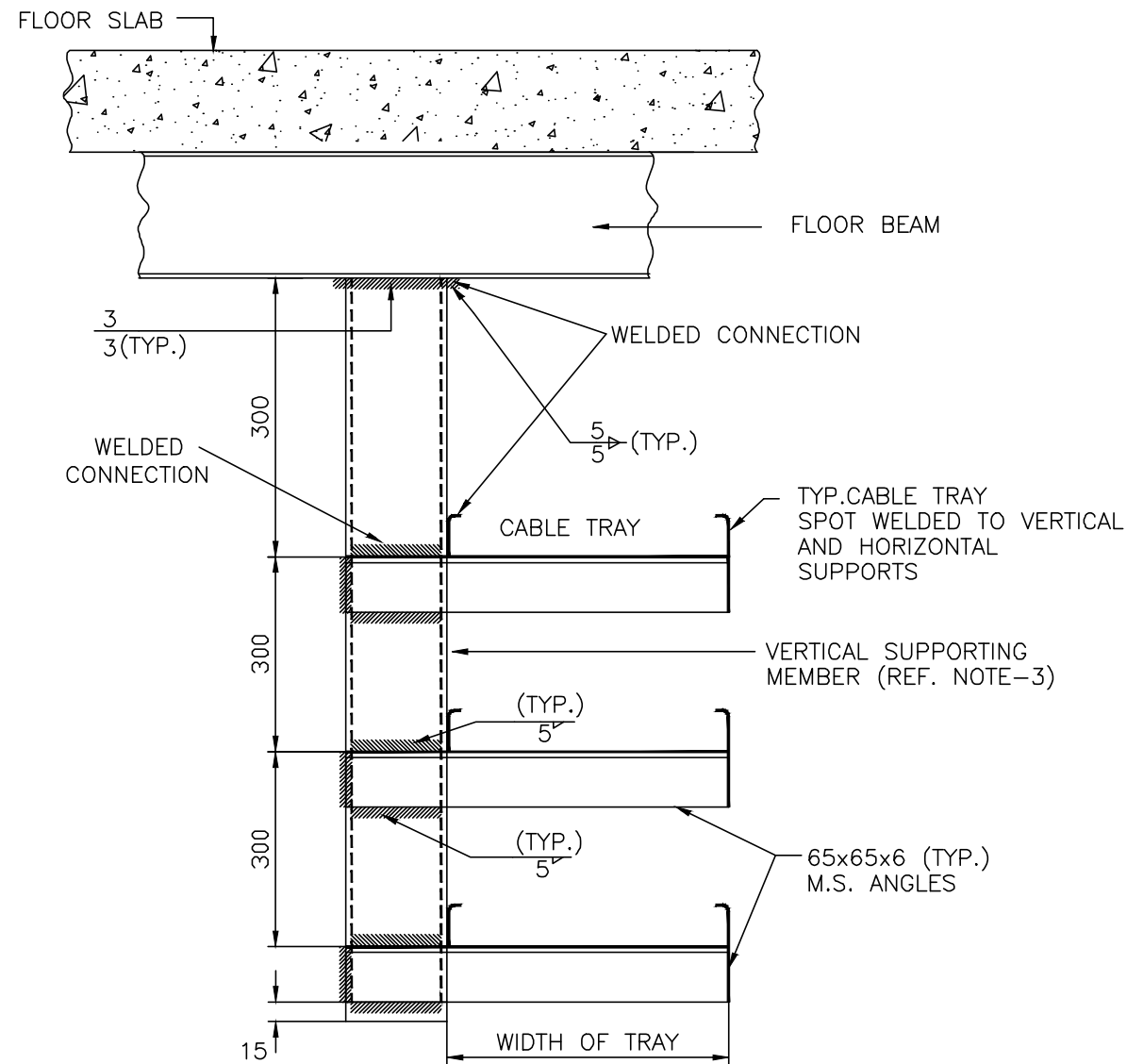
R C COVER TYPE	THICKNESS mm.	As3	As4
70/212	70	5-8φ	11-8φ
80/242	80	5-8φ	11-8φ
100/302	100	6-8φ	11-8φ

70x212 MEANS 70mm. THK.x212 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS CABLE TRENCH TYPE 2/2013						
Size Scale Sheet			23 of 62			
Drawing No.			GGNG-E-20714-3010			
			Rev. 0			

1. ALL DIMENSIONS ARE IN MM.
2. 75x75x6 M.S. ANGLE FOR ONE TIER.
3. ISMC 100 FOR MORE THAN ONE TIER.
4. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.
5. WELDING SHALL BE DONE AS PER IS 816: 1969.



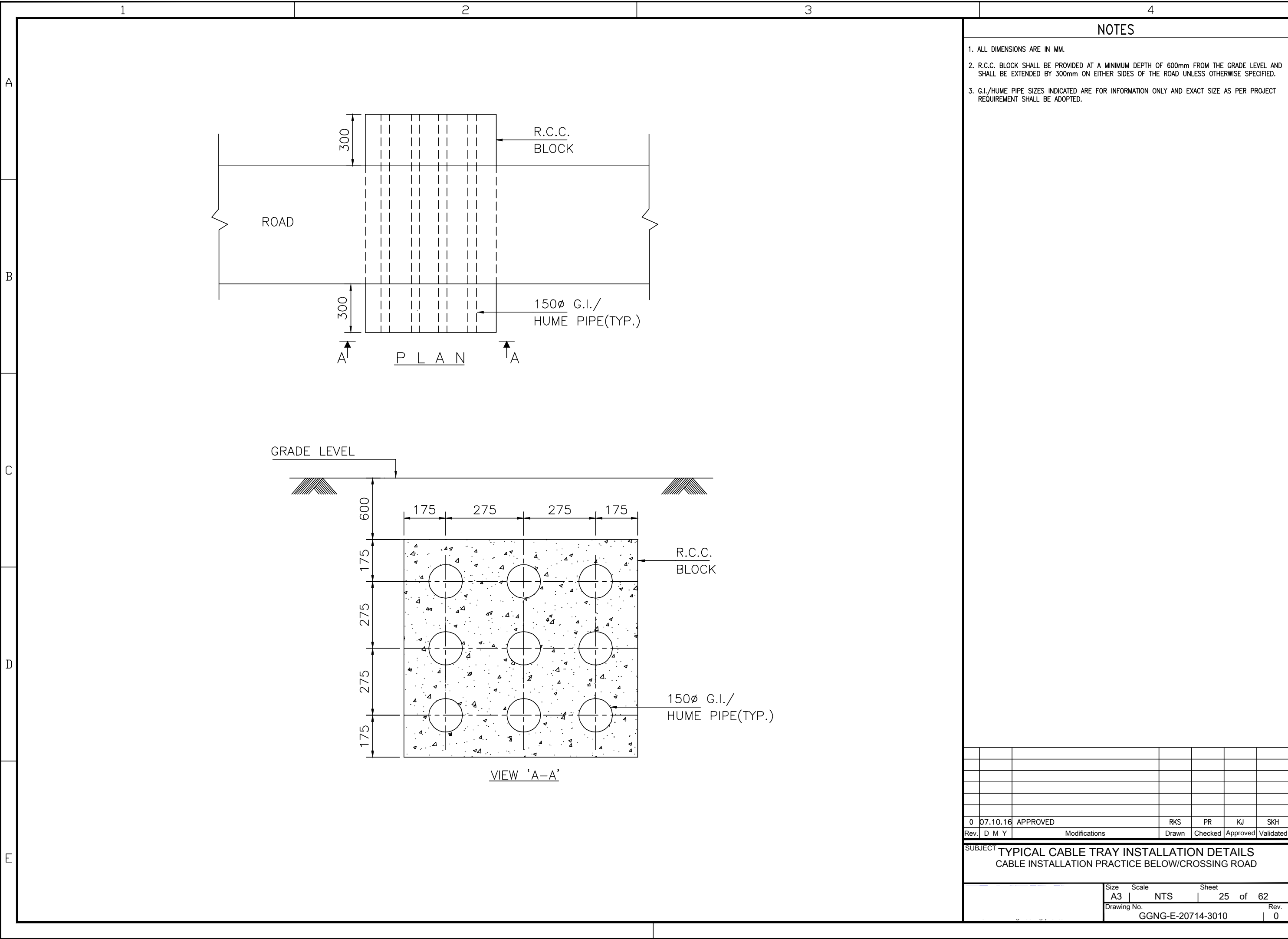
DRAWING TYPICAL FOR CTMH-T3

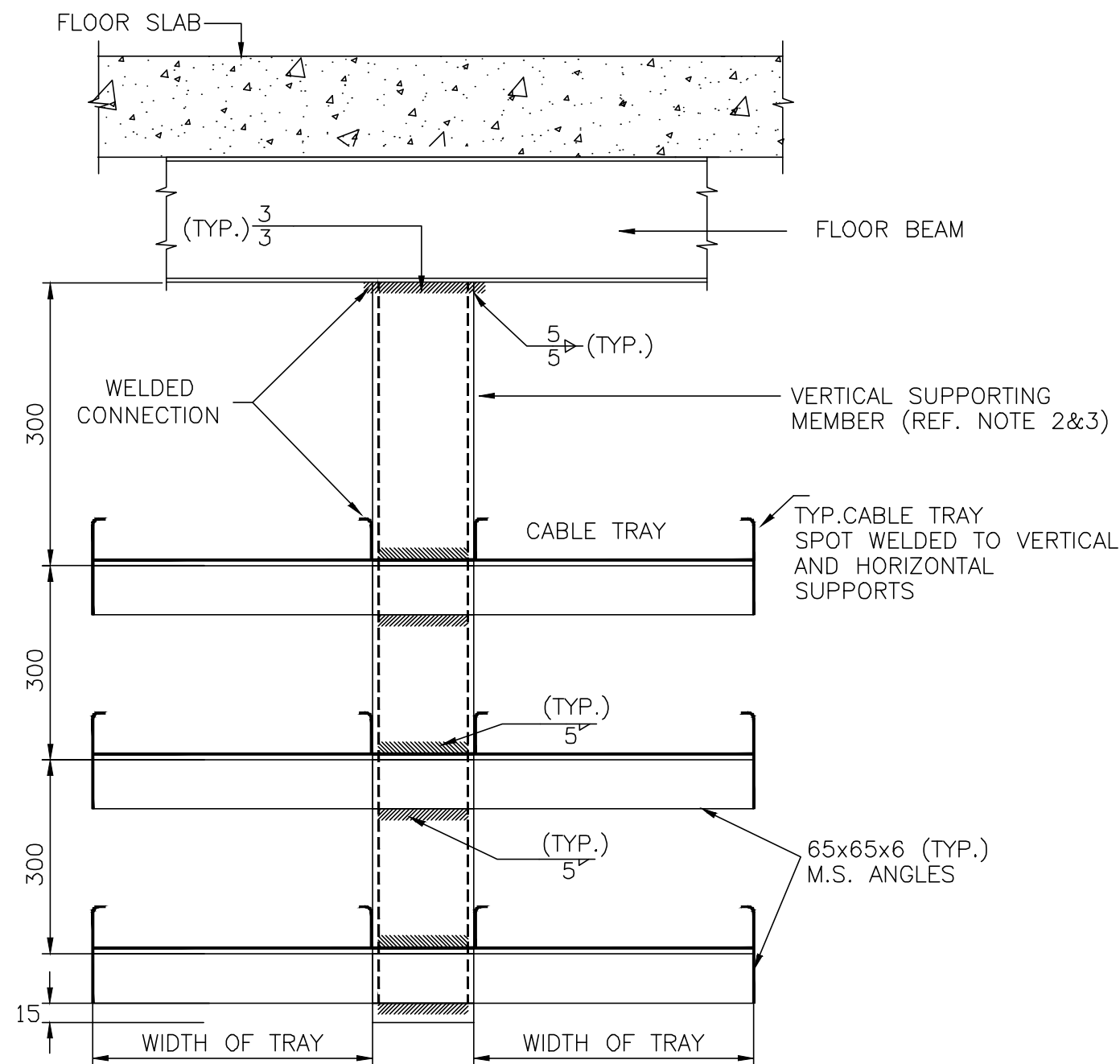
SL.NO.	TYPE OF MOUNTING	NO. OF TIERS
1	CTMH-T1	1
2	CTMH-T2	2
3	CTMH-T3	3
4	CTMH-T4	4

0	07.10.16	APPROVED	RKS	PR	KJ	SKH	
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated	

SUBJECT	TYPICAL CABLE TRAY INSTALLATION DETAILS CABLE TRAY MOUNTING ARRANGEMENT CTMH (TYPE-C)
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Size	Scale	Sheet
A3	NTS	24 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0





DRAWING TYPICAL FOR CTMH-T3

SR.NO.	TYPE OF MOUNTING	NO. OF TIERS
1	CTMH-T1	1
2	CTMH-T2	2
3	CTMH-T3	3
4	CTMH-T4	4

NOTES

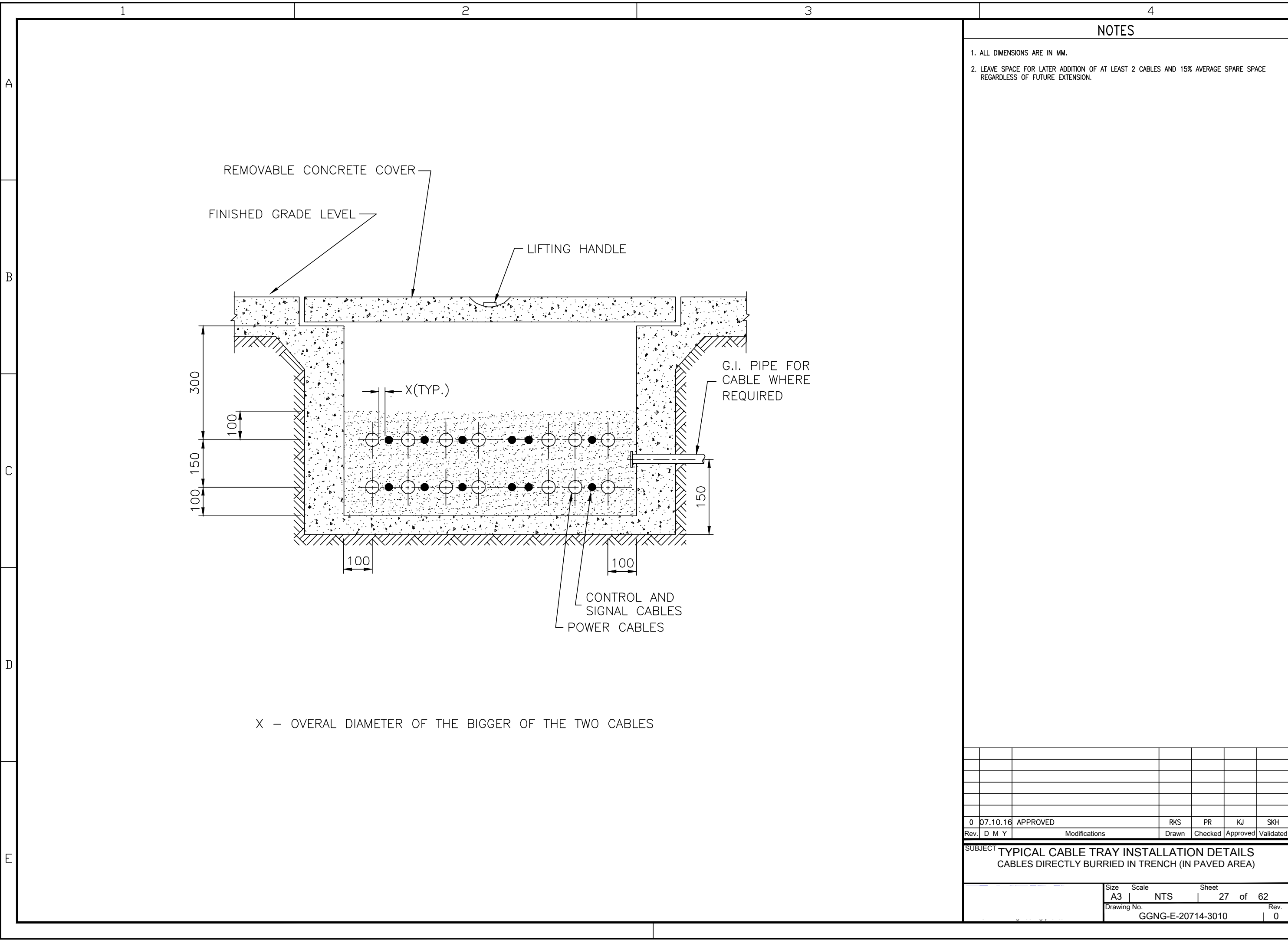
1. ALL DIMENSIONS ARE IN MM.
2. 75x75x6 M.S. ANGLE FOR ONE TIER.
3. ISMC 100 FOR MORE THAN TWO TIERS.
4. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
5. WELDING SHALL BE DONE AS PER IS 816: 1969.

0	07.10.16	APPROVED	RKS	PR	KJ	SKH	
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated	

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY MOUNTING ARRANGEMENT CTMH (TYPE-D)

Size	Scale	Sheet
A3	NTS	26 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

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NOTES

- 1. ALL DIMENSIONS ARE IN MM.
- 2. LEAVE SPACE FOR LATER ADDITION OF AT LEAST 2 CABLES AND 15% AVERAGE SPARE SPACE REGARDLESS OF FUTURE EXTENSION.

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS CABLES DIRECTLY BURRIED IN TRENCH (IN PAVED AREA)						
			Size	Scale	Sheet	
			A3	NTS	27 of 62	
			Drawing No.		Rev.	
			GGNG-E-20714-3010		0	

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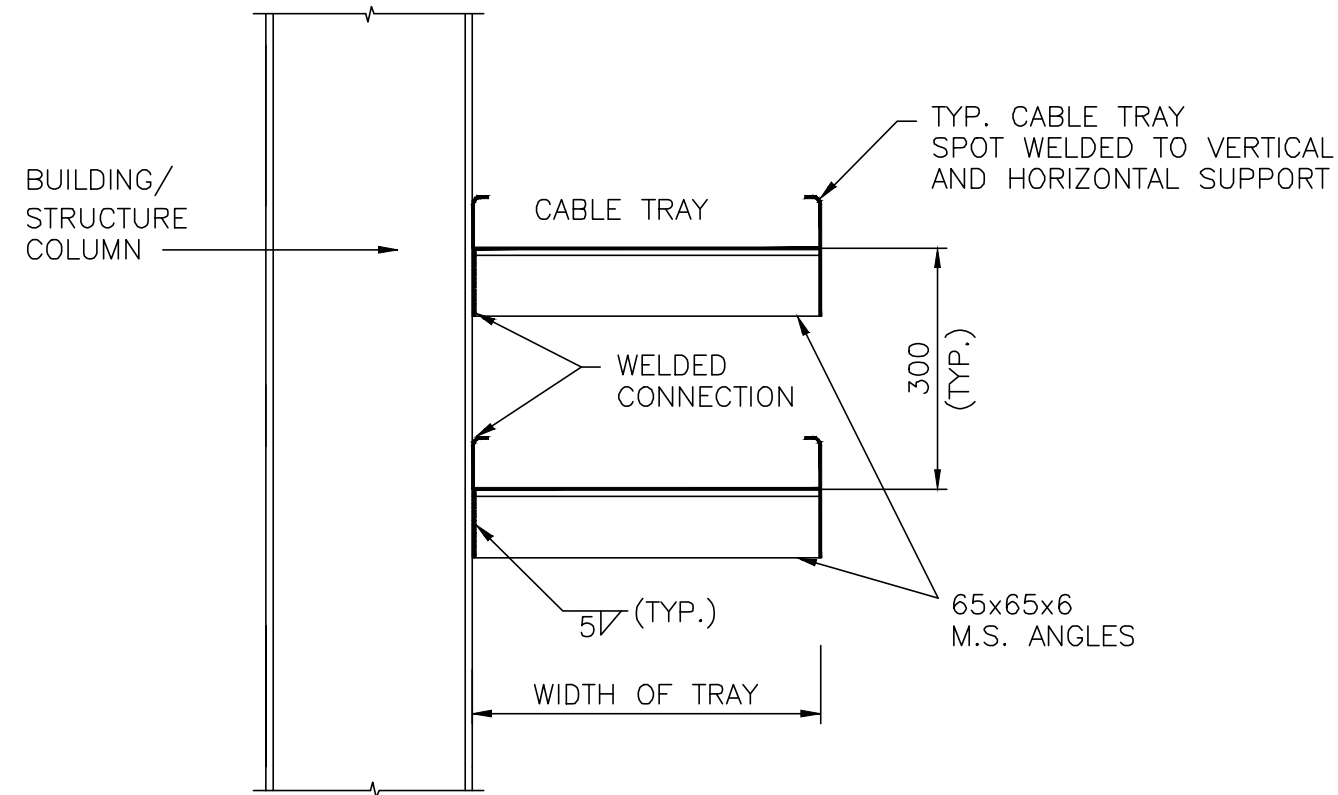
A

B

C

D

E



DRAWING TYPICAL FOR CTMH-T2

SR.NO.	TYPE OF MOUNTING	NO. OF TIERS
1	CTMH-T1	1
2	CTMH-T2	2
3	CTMH-T3	3
4	CTMH-T4	4

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
3. WELDING SHALL BE DONE AS PER IS 816: 1969.

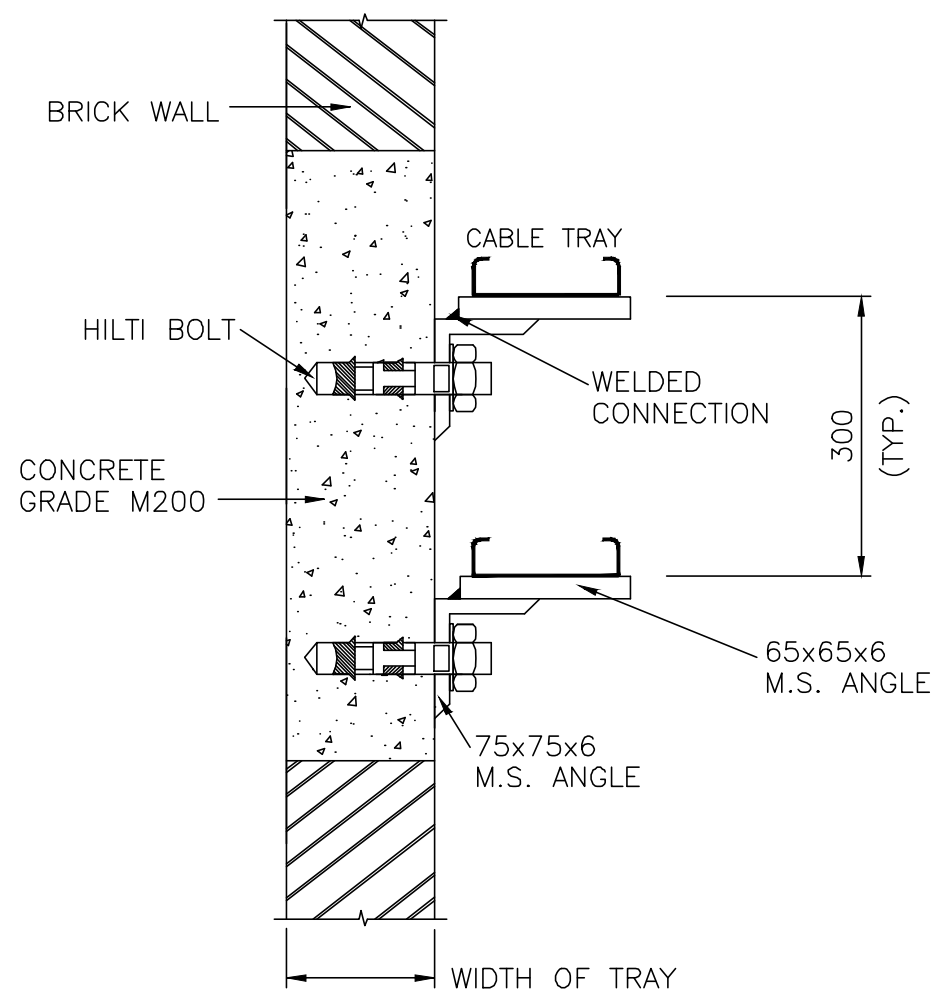
0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY MOUNTING ARRANGEMENT CTMH (TYPE-E)

Size	Scale	Sheet
A3	NTS	28 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. BOLT SIZE M10x90 SHALL BE USED FOR TOTAL WEIGHT (INCLUDING CABLES, CABLE TRAY ACCESSORIES) UP TO 200 Kgs/METER AND M10x150 SHALL BE USED FOR TOTAL WEIGHT ABOVE 200 Kgs/METER AND UP TO 500 Kgs/METER.
3. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
4. WELDING SHALL BE DONE AS PER IS 816: 1969.



DRAWING TYPICAL FOR CTMH-T2

HILTI BOLT DETAILS

SIZE	BOLT DIA (D) mm	BOLT LENGTH (L) mm)	DRILL DIA (d) mm	DEPTH OF HOLE (H) mm	FIXING HEIGHT (t) mm	MAXIMUM PULLOUT LOAD (P) Kg	TORQUE AT SF-4 (T) Kg.f.m.
M10x90	10(3/8")	90	10	45	25	1620	0.81
M10x150	12(1/2")	150	13	80	40	2700	1.62

SL. NO.	TYPE OF MOUNTING	NO. OF TIERS
1	CTMH-T1	1
2	CTMH-T2	2

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY MOUNTING ARRANGEMENT CTMH (TYPE-F2)

Size	Scale	Sheet
A3	NTS	29 of 62
Drawing No.		Rev
GGNG-E-20714-3010		0

1

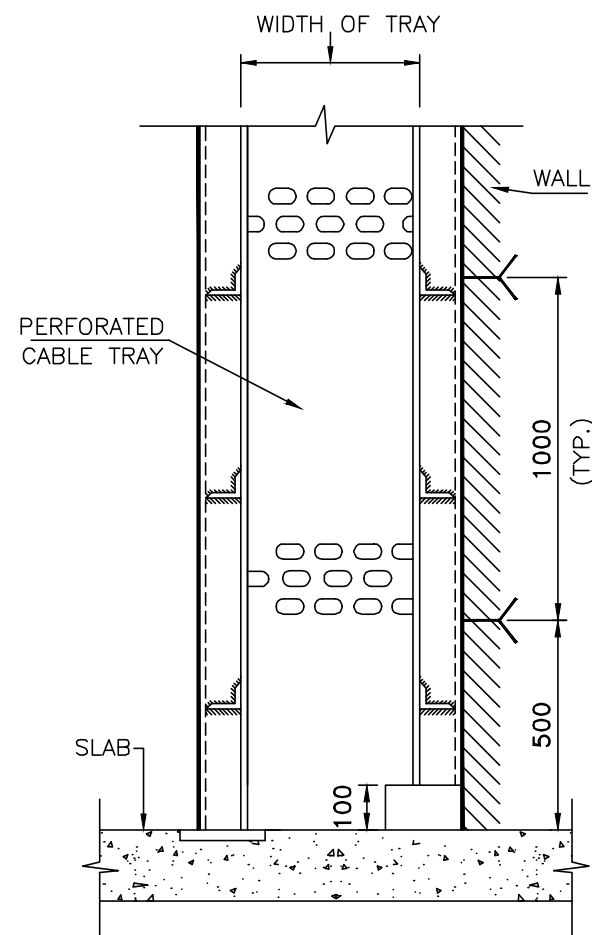
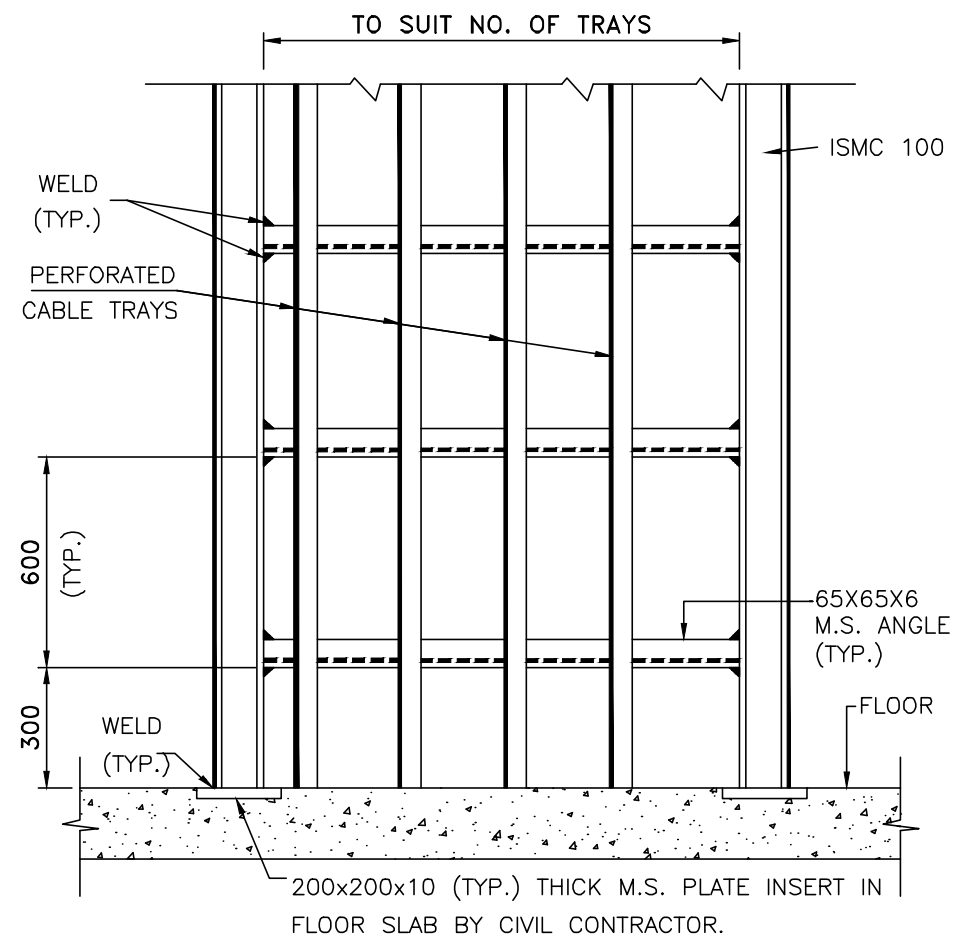
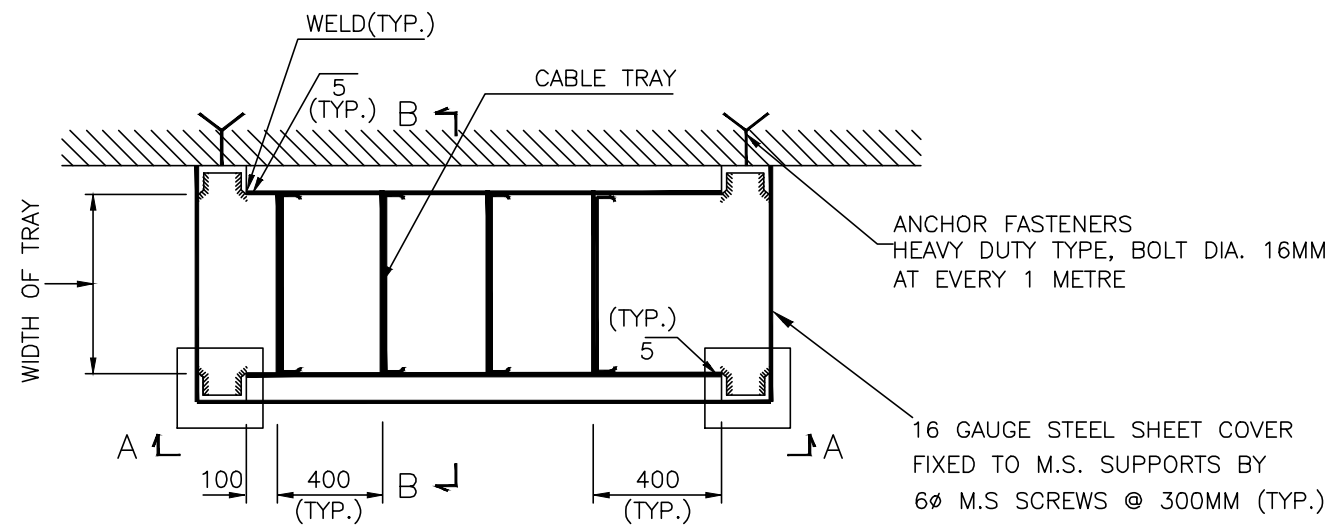
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4

NOTES

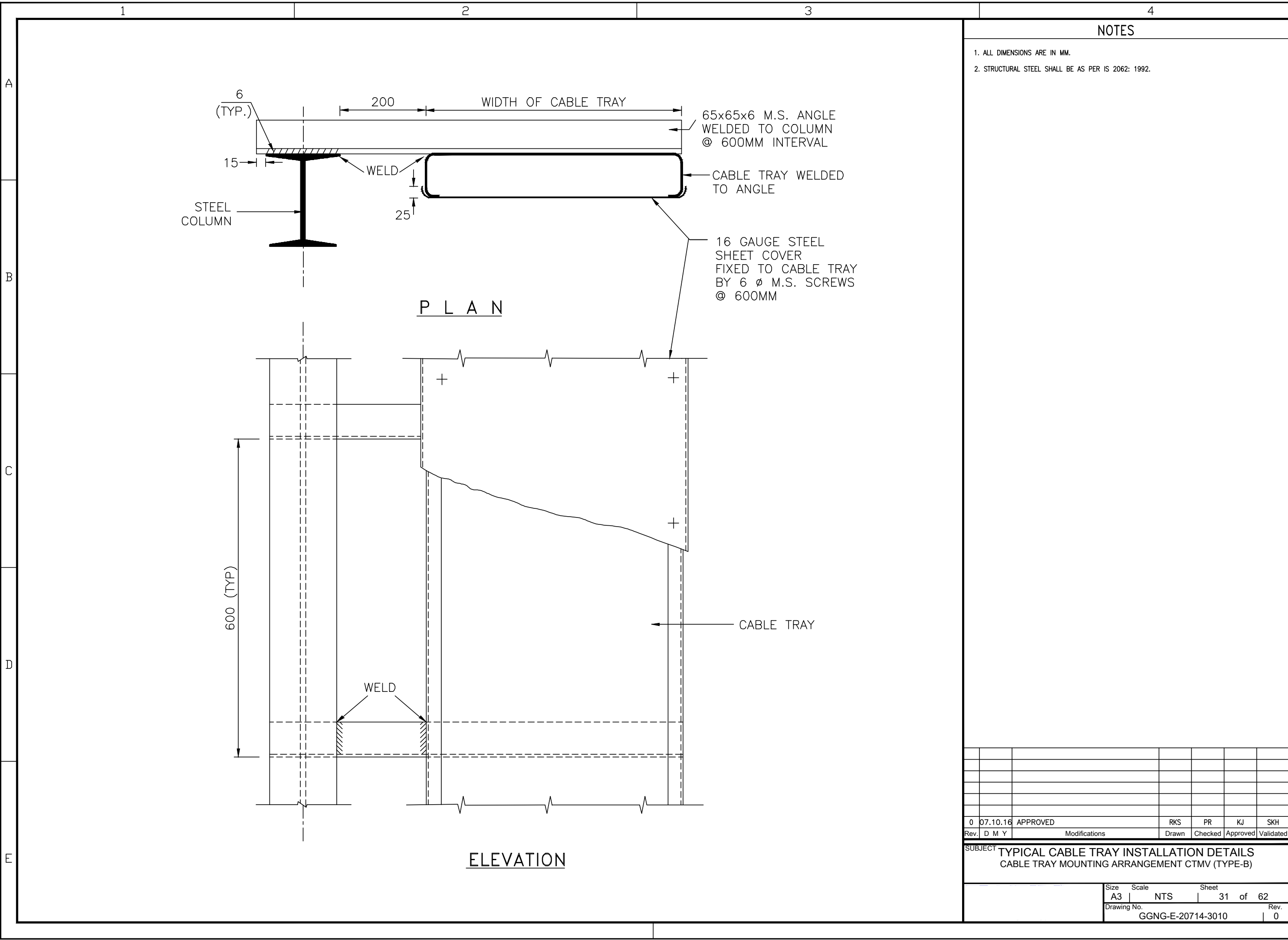
1. ALL DIMENSIONS ARE IN MM.
2. NUMBER OF TRAYS WILL BE AS PER REQUIREMENT.
3. FOR OUTDOOR USE, THE VERTICAL SUPPORTS TO BE SUITABLY GROUTED IN CONCRETE FOUNDATION OR WELDED TO AVAILABLE STEEL STRUCTURES.
4. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
5. WELDING SHALL BE DONE AS PER IS 816: 1969.



0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY MOUNTING ARRANGEMENT CTMV (TYPE-A)

Size	Scale	Sheet
A3	NTS	30 of 62
Drawing No.	GGNG-E-20714-3010	
Rev.	0	



1

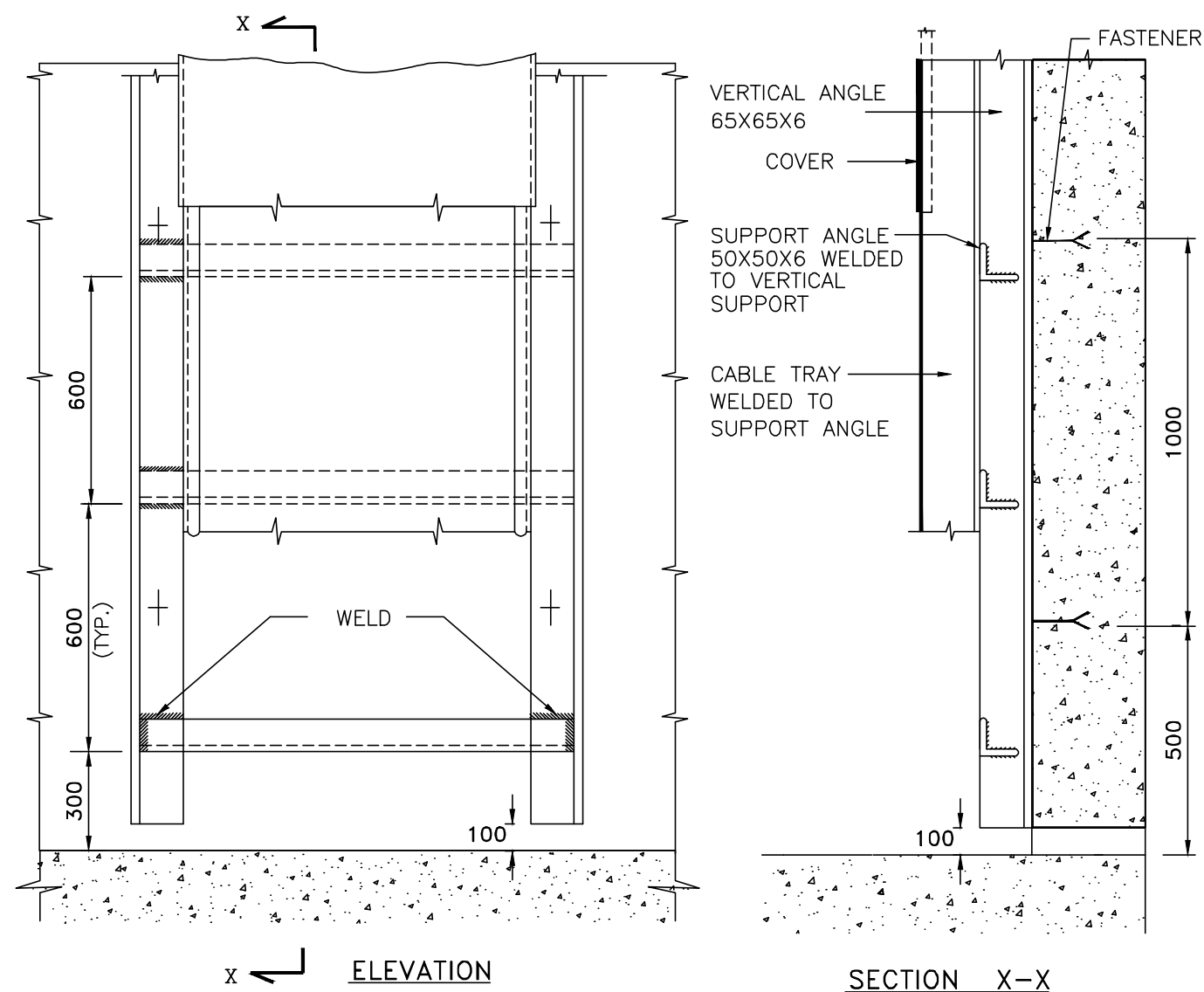
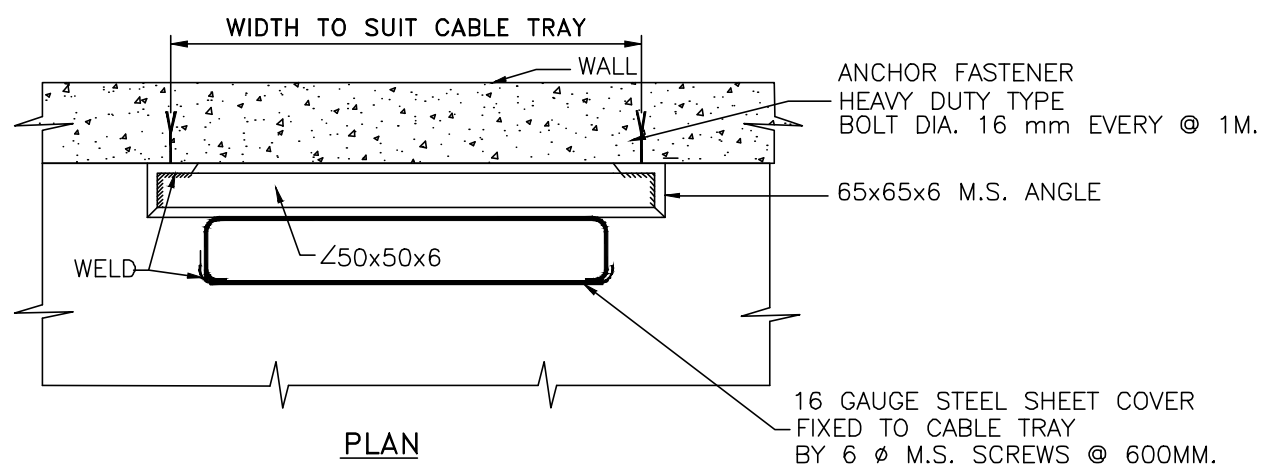
2

3

4

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. NUMBER OF TRAYS WILL BE AS PER REQUIREMENT.
3. FOR OUTDOOR USE, THE VERTICAL SUPPORTS TO BE SUITABLY GROUTED IN CONCRETE FOUNDATION OR WELDED TO AVAILABLE STEEL STRUCTURES.
4. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
5. WELDING SHALL BE DONE AS PER IS 816: 1969.



0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT **TYPICAL CABLE TRAY INSTALLATION DETAILS**
CABLE TRAY MOUNTING ARRANGEMENT CTMV (TYPE-C)

Size	Scale	Sheet
A3	NTS	32 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

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1

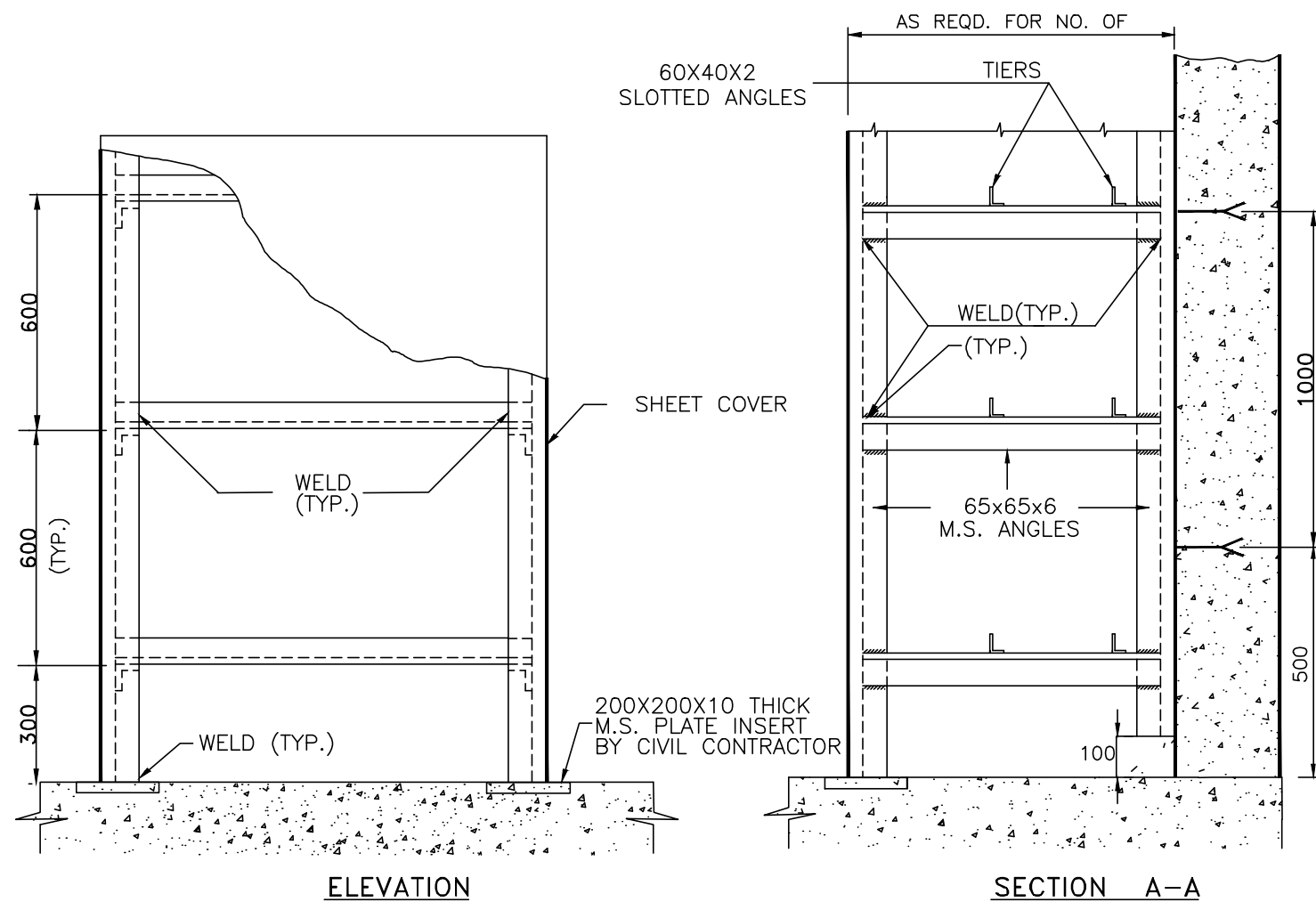
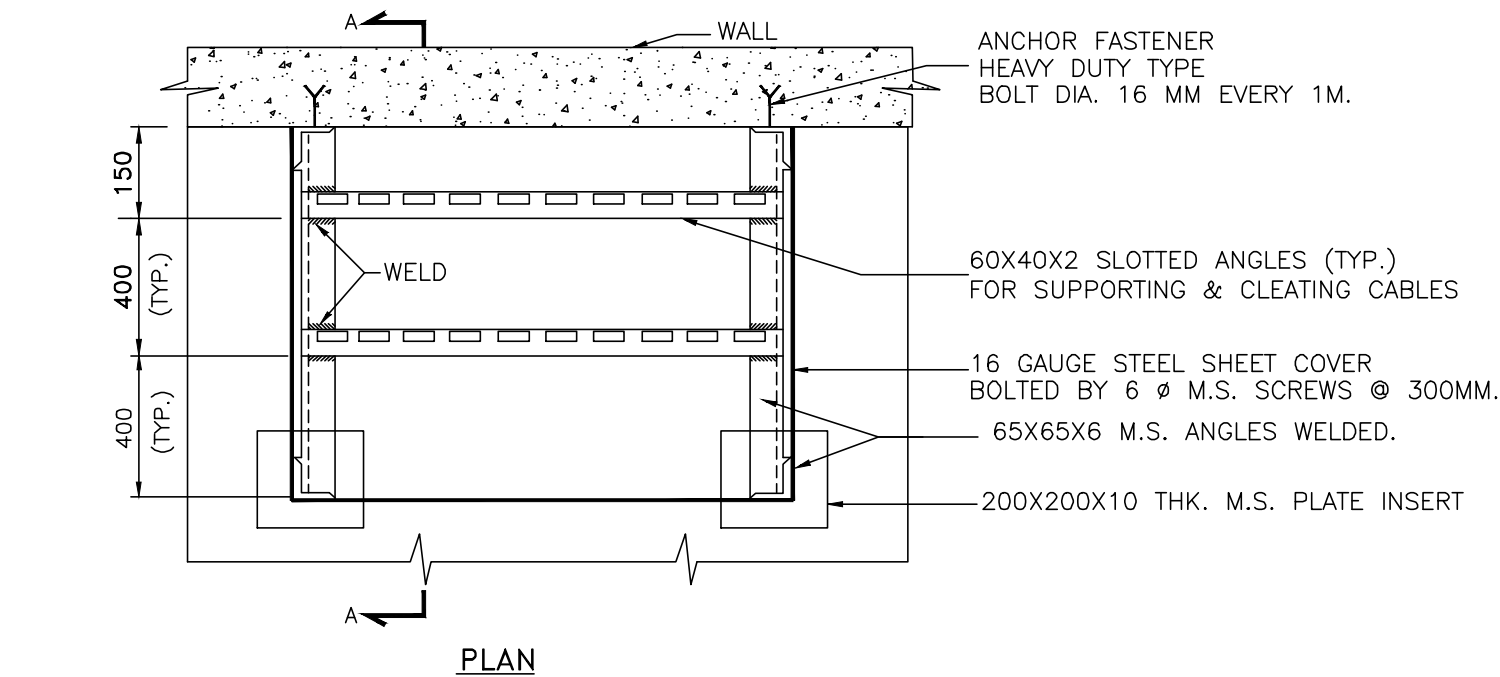
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4

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. NUMBER OF TRAYS WILL BE AS PER REQUIREMENT.
3. FOR OUTDOOR USE, THE VERTICAL SUPPORTS TO BE SUITABLY GROUTED IN CONCRETE FOUNDATION OR WELDED TO AVAILABLE STEEL STRUCTURES.
4. STRUCTURAL STEEL SHALL BE AS PER IS 2062: 1992.
5. WELDING SHALL BE DONE AS PER IS 816: 1969.



0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRAY MOUNTING ARRANGEMENT CTMV (TYPE-D)

Size	Scale	Sheet
A3	NTS	33 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

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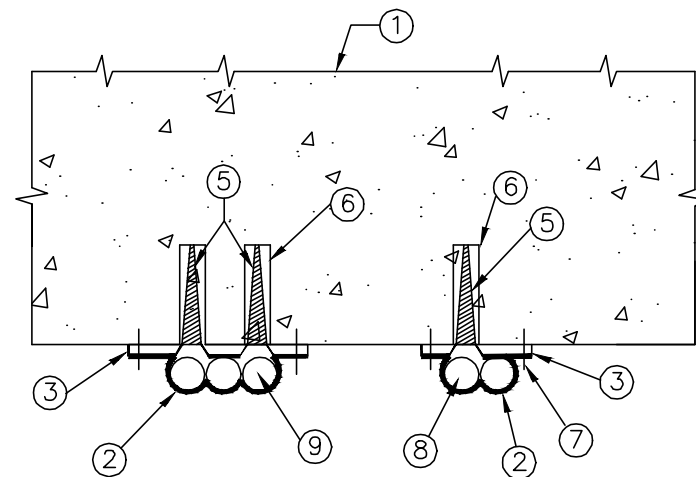
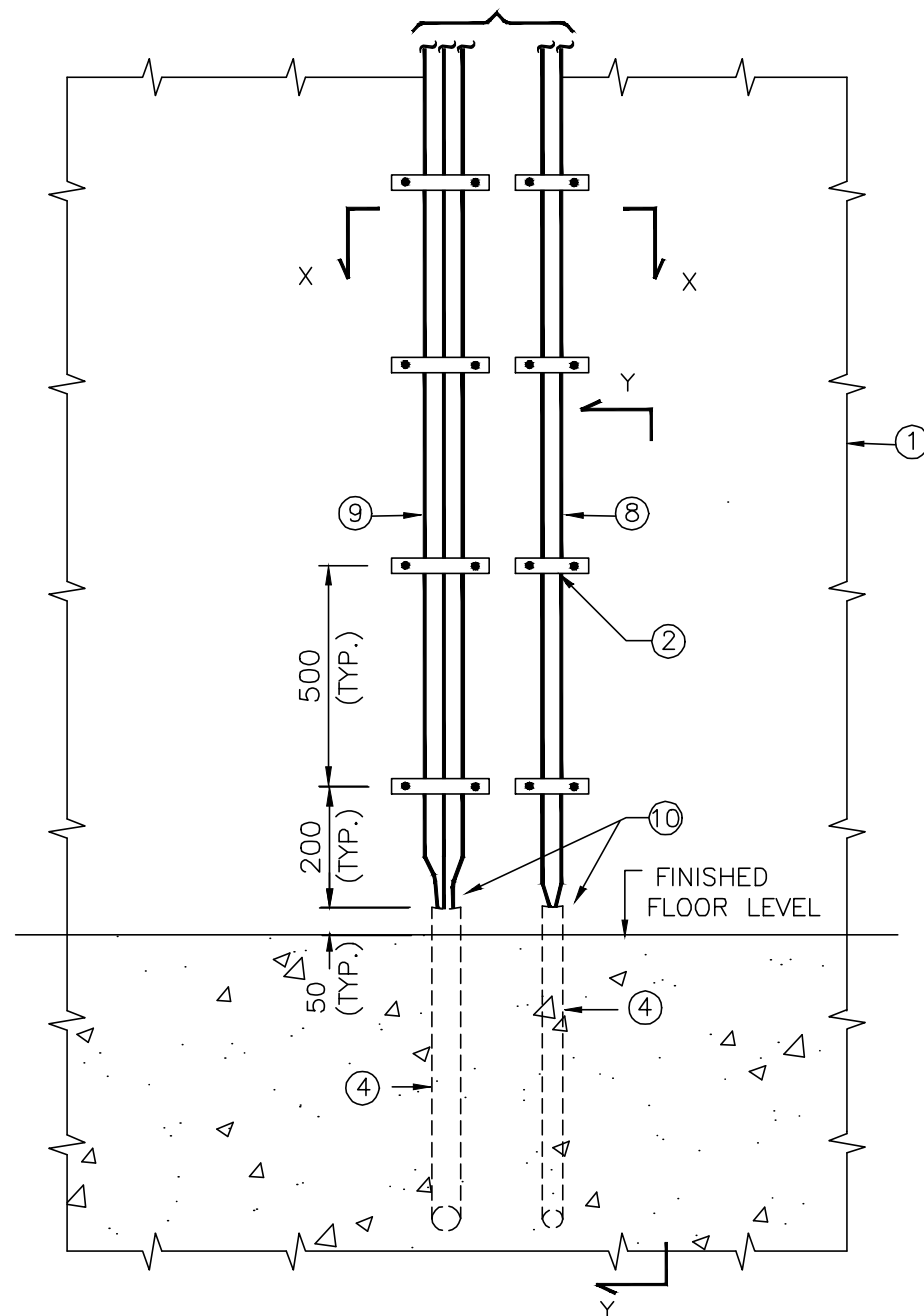
NOTES

1. ALL DIMENSIONS ARE IN MM.
2. MAXIMUM 3 No. CABLES SHALL BE CLAMPED WITH ONE SADDLE. SEPARATE SADDLE SHALL BE USED FOR MORE THAN 3 CABLES.
3. POWER AND CONTROL CABLES SHALL BE CLAMPED SEPARATELY.
4. THE CONDUIT SHALL BE EXTENDED UP TO 2500 ABOVE THE FLOOR LEVEL IN CASE OF UNARMORED CABLES.

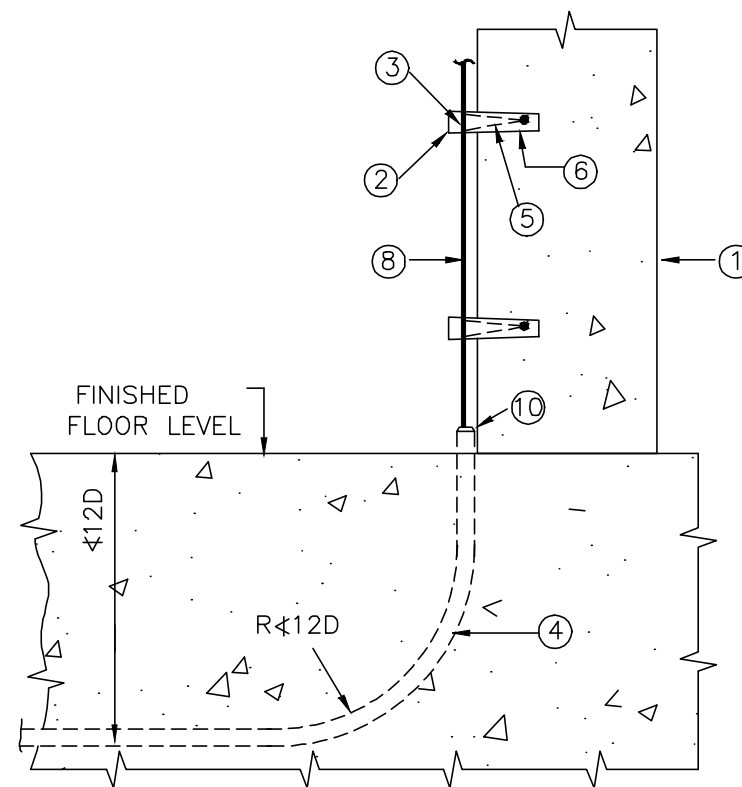
LEGEND

- ① WALL/RCC STRUCTURE
- ② G.I. SADDLE
- ③ G.I. SPACER
- ④ G.I. CONDUIT
- ⑤ 6 ϕ , 35 LONG G.I. SCREW
- ⑥ RAWL PLUG
- ⑦ 3 ϕ , 5 LONG G.I. M/C SCREW
- ⑧ CONTROL CABLE
- ⑨ POWER CABLE (LESS THAN 3Cx70MM²)
- ⑩ WATER PROOF SEALING
- D – NORMAL DIAMETER OF CONDUIT

TO CABLE TRAY/EQUIPMENT



SECTION X-X

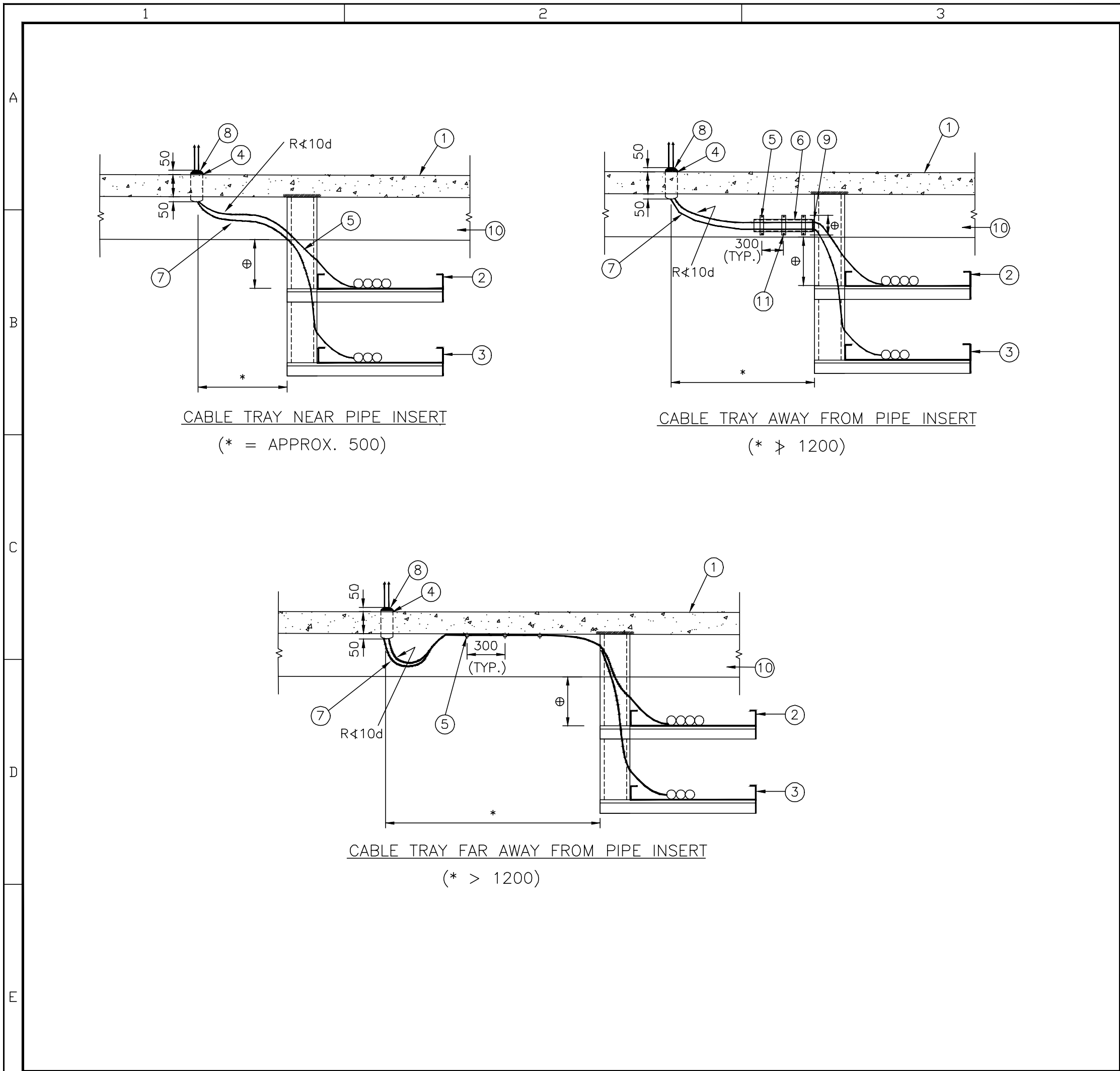


SECTION Y-Y

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked
				Approved	Validated	

SUBJECT				TYPICAL CABLE TRAY INSTALLATION DETAILS		
				CABLE INSTALLATION PRACTICE ALONG WALL/RCC		
				STRUCTURE (CABLE SIZE <3CX70mm)		
		Size	Scale	Sheet		
		A3	NTS	34	of	62
		Drawing No.			Rev.	
		GGNG-E-20714-3010				0

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NOTES

1. ALL DIMENSIONS ARE IN MM.
2. POWER AND CONTROL CABLES SHALL BE CLAMPED SEPERATELY.
3. G.I. PIPE INSERT SHALL BE INSTALLED NEAR THE EQUIPMENT SUCH THAT THE CABLE COULD BE RAISED STRAIGHT TO THE EQUIPMENT CABLE GLAND /BOX WITHOUT ANT OFFSET.
4. ALL EMBEDDED PIPE INSERTS SHALL HAVE MINIMUM 50 LONG THREADED PROJECTION BEYOND THE EMBEDDED PART.
5. THE DIMENSION MARKED THUS ⊕ SHALL BE DECIDED AT SITE. (PREFERABLY THIS SHALL NOT EXCEED 500mm).
7. CABLE SHALL BE CLAMPED SUBJECT TO MINIMUM BENDING RADIUS.
8. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.
9. WELDING SHALL BE DONE AS PER IS 816:1969.

LEGEND

- ① FLOOR SLAB
 - ② POWER CABLE TRAY
 - ③ CONTROL CABLE TRAY
 - ④ G.I. PIPE INSERT
 - ⑤ SADDLE AND SPACER
 - ⑥ 50x50x6 M.S. ANGLE
 - ⑦ CABLE
 - ⑧ FIRE PROOF/WATER PROOF SEALING
 - ⑨ WELD
 - ⑩ BEAM
 - ⑪ 25 WIDE x 3 THICK M.S. FLAT WELDED TO ITEM-6
- d – OVERALL DIA. OF CABLE

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked
SUBJECT				Approved	Validated	
TYPICAL CABLE TRAY INSTALLATION DETAILS						
CABLE INSTALLATION PRACTICE TO						
EQUIPMENTS INSTALLED ON UPPER FLOOR						
		Size	Scale	Sheet		
		A3	NTS	36 of 62		
		Drawing No.		Rev.		
		GGNG-E-20714-3010		0		

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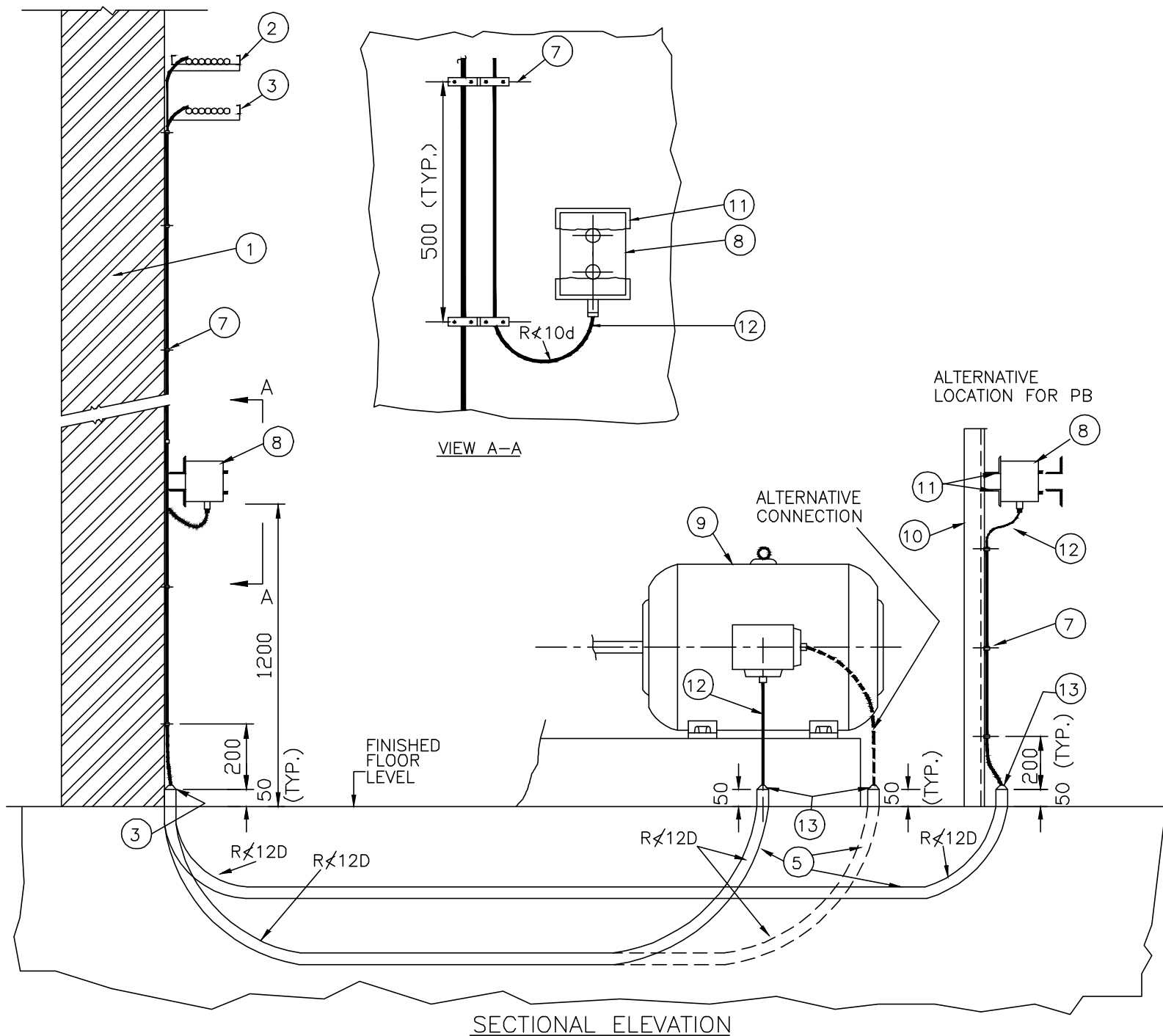
4

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. POWER AND CONTROL CABLES SHALL BE CLAMPED SEPARATELY.
3. THE CONDUIT/PIPE INSERT SHALL BE INSTALLED SUCH THAT CABLE CAN BE RAISED STRAIGHT TO THE EQUIPMENT CABLE GLAND/BOX WITHOUT ANY OFFSET.
4. CABLE SHALL BE CLAMPED/BENT SUBJECT TO MINIMUM BENDING RADIUS.
5. SEPARATE SPACE HEATER CABLE WHERE REQUIRED, SHALL BE LAID ALONG WITH THE POWER CABLE IN THE SAME CONDUIT, IF THE VOLTAGE GRADES OF THE TWO CABLES ARE SAME. OTHERWISE SEPARATE CONDUIT SHALL BE PROVIDED.
6. UNARMoured CABLES SHALL HAVE MECHANICAL PROTECTION UPTO 2500 ABOVE FLOOR LEVEL.
7. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.
8. CONDUITS AND ACCESSORIES SHALL CONFORM TO IS 1653:1972/IS 3837:1976.

LEGEND

- ① WALL/STEEL COLUMN
- ② POWER CABLE TRAY/RACK
- ③ CONTROL CABLE TRAY/RACK
- ④ CABLE TRENCH
- ⑤ G.I. CONDUIT
- ⑥ G.I. PIPE INSERT
- ⑦ SADDLE AND SPACER
- ⑧ P.B. STATION
- ⑨ MOTOR
- ⑩ ISMC-100
- ⑪ 50x50x6 M.S. ANGLE
- ⑫ CABLE IDENTIFICATION TAG
- ⑬ WATER PROOF/FIRE PROOF SEALING
- d OVERALL DIA. OF CABLE
- D NOMINAL DIA. OF CONDUIT



0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked	Approved
							Validated

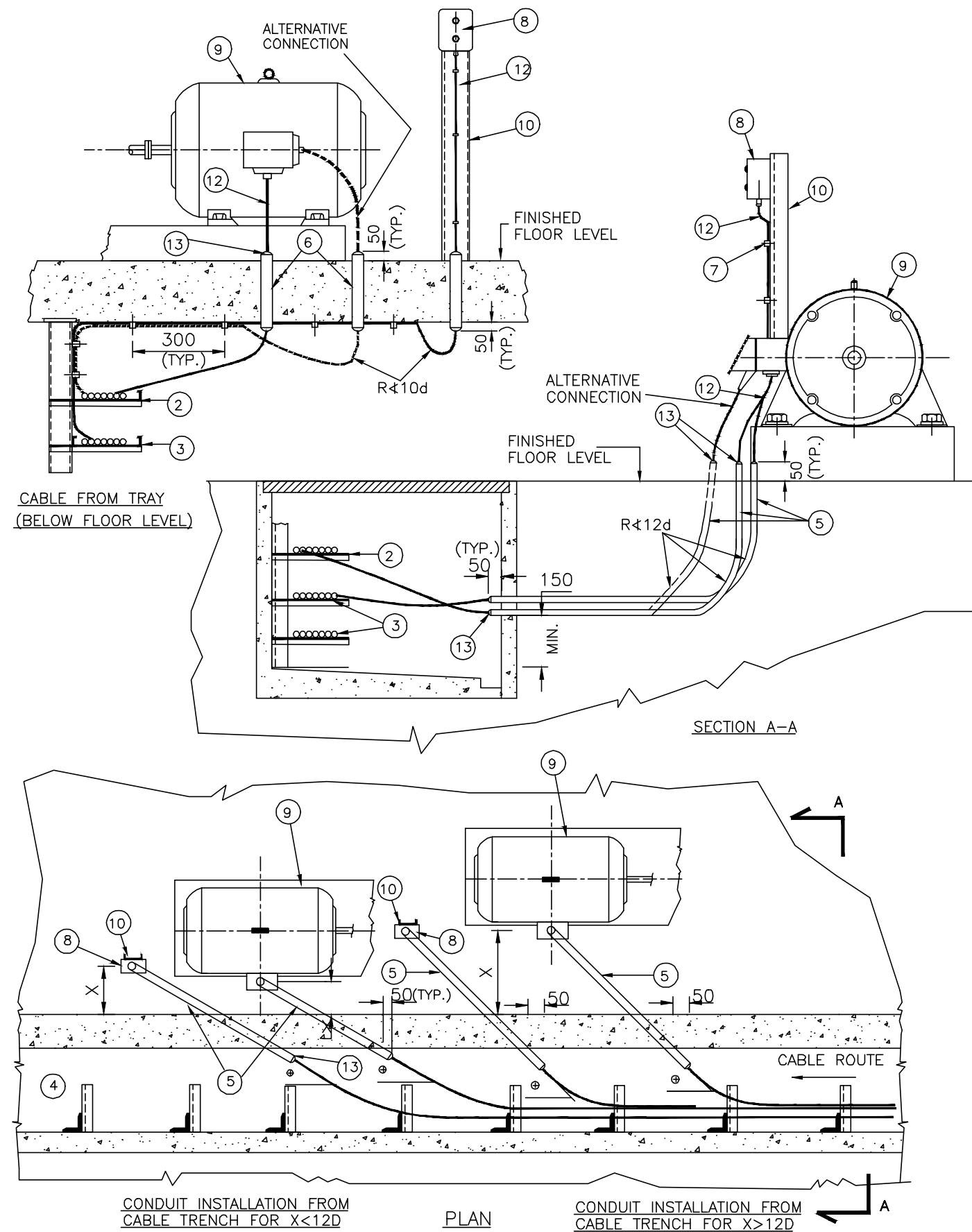
SUBJECT: TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE INSTALLATION PRACTICE TO MOTOR AND P.B.

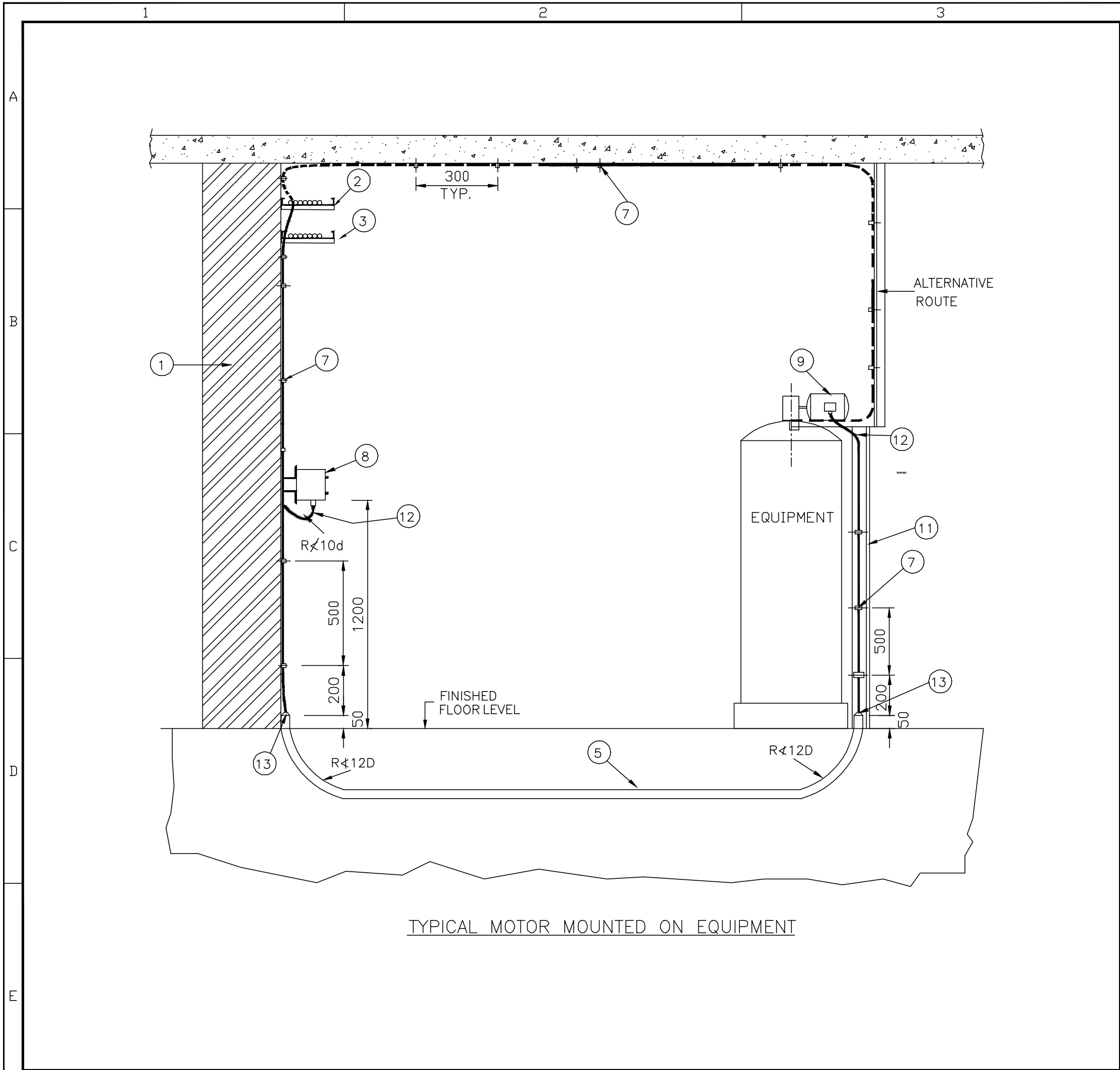
Size	Scale	Sheet
A3	NTS	37 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

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NOTES

- FOR NOTES AND LEGEND REFER SHEET 37 OF 62.
- THE ANGLE MARKED THUS $\oplus$ SHALL BE DECIDED BY SITE ENGINEER/INSTALLATION CONTRACTOR TO SUIT SITE CONDITION.





NOTES

1. FOR NOTES AND LEGEND REFER SHEET 37 OF 62.
2. 50x50x6 M.S. ANGLE SUPPORT FOR CABLE CLAMPING SHALL BE INSTALLED WITHOUT OBSTRUCTING THE PASSAGE AND ACCESSIBILITY, FOR MAINTENANCE OF EQUIPMENT. PREFERABLY THE SUPPORT SHALL BE REMOVABLE TYPE.

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE INSTALLATION PRACTICE TO MOTOR AND P.B.

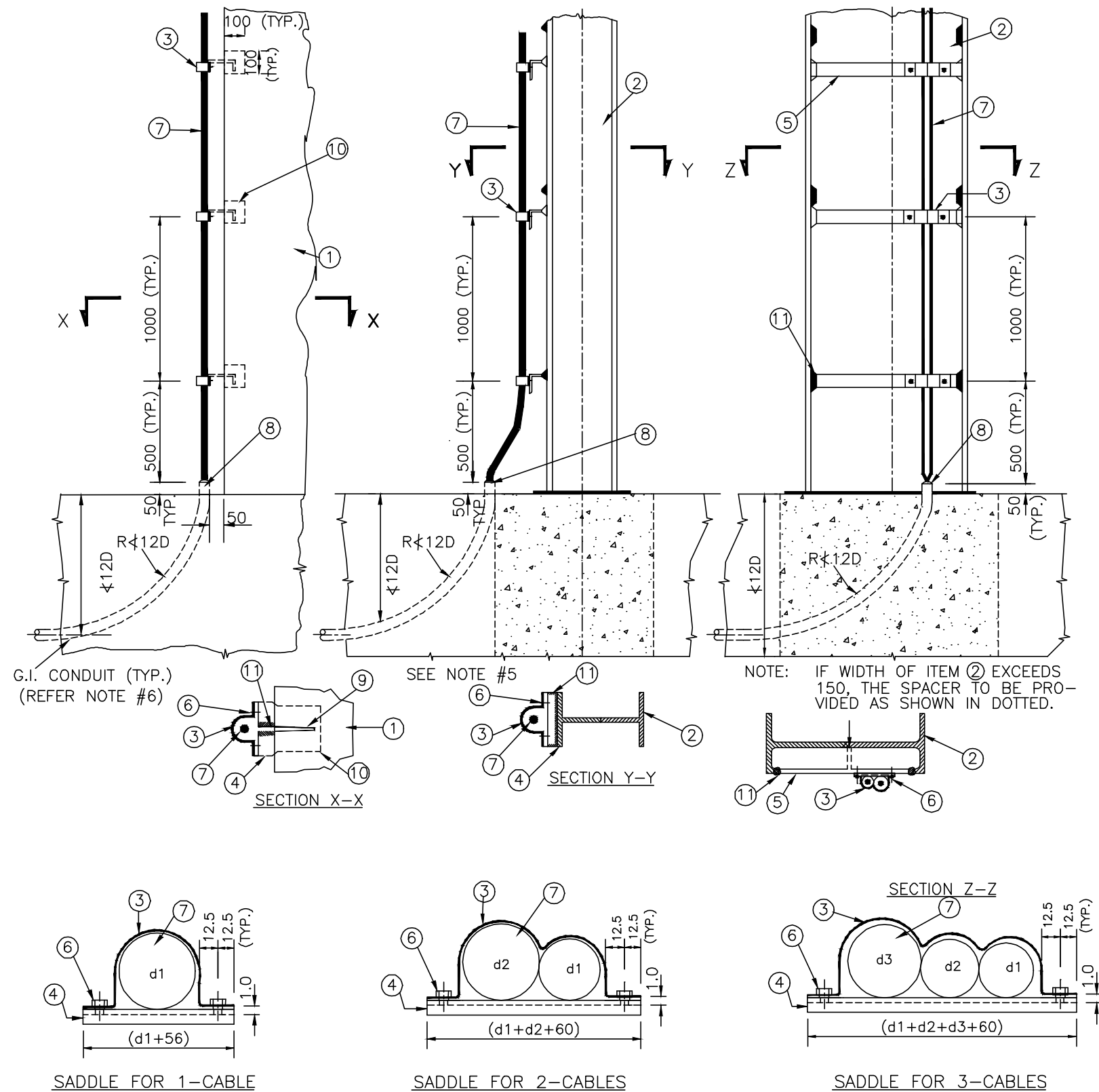
Size	Scale	Sheet
A3	NTS	39 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

LEGEND

1. ALL DIMENSIONS ARE IN MM.
2. MAXIMUM 3NO. POWER CABLES SHALL BE CLAMPED TOGETHER.
3. CABLES OF DIFFERENT VOLTAGES SHALL BE CLAMPED SEPARATELY.
4. SINGLE CORE POWER CABLES SHALL BE CLAMPED IN TREFOIL FORMATION.
5. 2Nos.ANCHOR BARS SHALL BE USED FOR EACH ANGLE SPACER HAVING LENGTH MORE THAN 100.
6. THE CONDUIT SHALL BE EXTENDED UPTO 2500 ABOVE THE FLOOR LEVEL IN CASE OF UNARMoured CABLES.
7. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.
8. NUTS AND BOLTS SHALL BE AS PER IS 1363(PART-1,2,3):1992/ IS 1367(PART-5):1980.
9. WASHERS SHALL BE AS PER IS 2016:1967.
10. WELDING SHALL BE DONE AS PER IS 816:1969.

- ① WALL
- ② STEEL COLUMN
- ③ SADDLE FABRICATED
FROM 25x3 G.I. FLAT
- ④ (50x50x6 M.S. ANGLE)
SPACER
- ⑤ SPACER (25x6 M.S. FLAT)
- ⑥ 8 ϕ ,25LONG G.I. BOLT,
NUT AND WASHER.
- ⑦ POWER CABLE
(3Cx70mm AND ABOVE)
- ⑧ WATER PROOF SEALING
- ⑨ 8 ϕ ,150 LONG M.S. ANCHOR BAR
- ⑩ M 150 CONCRETE
- ⑪ WELD

d1, d2... OVERALL DIAMETER OF CABLES.
D—NOMINAL DIAMETER OF CONDUIT.



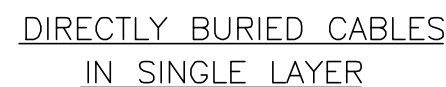
0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT	TYPICAL CABLE TRAY INSTALLATION DETAILS CABLE INSTALLATION PRACTICE FOR POWER CABLES (3CX70mm AND ABOVE)
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Size	Scale	Sheet
A3	NTS	40 of 62
Drawing No.		Re
GGNG-E-20714-3010		(

1. ALL DIMENSIONS ARE IN MM.
2. SINGLE CORE CABLES SHALL BE RUN IN TREFOIL FORMATION AND SHALL BE BOUND BY PLASTIC TAPES OR 3 DIA NYLON CORD EVERY 750MM.
3. CABLE IDENTIFICATION TAG SHALL BE TIED AT BOTH ENDS OF THE CABLE AND ALSO AT AN INTERVAL OF 15 METRES.
4. IF THE MINIMUM CLEARANCE AS INDICATED IN THE ABOVE TABLE FOR CABLES OF DIFFERENT CLASSES ARE NOT FEASIBLE, BRICK BARRIERS SHALL BE USED BETWEEN ADJACENT CABLES.
5. G.I./HUME PIPE SHALL BE PROVIDED FOR ROAD CROSSING AT A MINIMUM DEPTH OF 600 FROM THE GRADE LEVEL UNLESS OTHERWISE SPECIFIED.

- ① CABLE ROUTE MARKER
- ② EARTH BACK FILLED & RAMMED
- ③ PROTECTIVE COVERS, AS PER
APPENDIX-C OF IS:1255
 - a) EARTHENWARE FOR LOW
VOLTAGE CABLES.
 - b) RCC FOR HIGH VOLTAGE CABLES,
WITH HOLE AT EACH END TO TIE THEM
TO EACH OTHER WITH G.I. WIRE.
- ④ POWER CABLE
- ⑤ CONTROL CABLE
- ⑥ FINE SAND/RIDDLLED SOIL COMPACTED.



DIMENSIONS (MIN.)	1100V GRADE CABLES	FOR 3.3KV TO 11KV	22KV & 33KV
D1	750	900	1050
S	⊗ d — BETWEEN CABLES OF SAME CLASS *300mm — BETWEEN CABLES OF DIFFERENT CLASS *400mm — BETWEEN 1/C POWER CABLE AND COMMUNICATION CABLE *300mm — BETWEEN MULTICORE POWER CABLE AND COMMUNICATION CABLE		

⊗ d — OVERALL DIAMETER OF THE BIGGER OF THE TWO CABLES
* — SPACING SHALL BE KEPT BOTH HORIZONTALLY & VERTICALLY

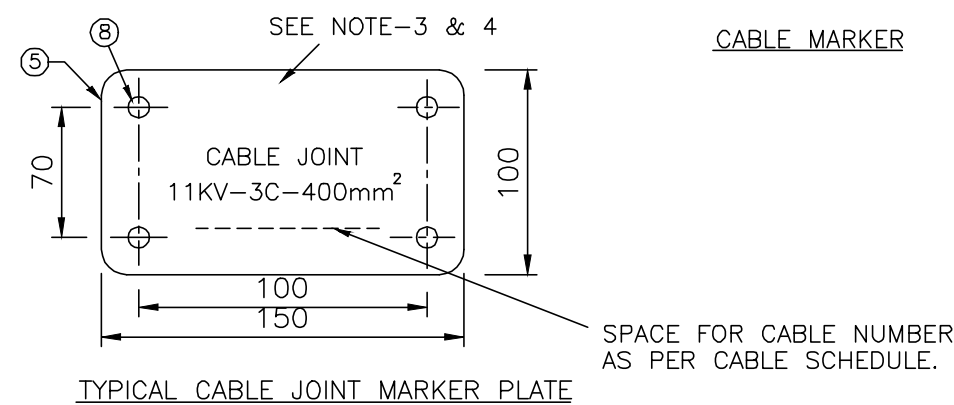
0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
INSTALLATION PRACTICE FOR DIRECTLY BURIED CABLES

Size	Scale	Sheet
A3	NTS	41 of 62
Drawing No.		Rev
GGNG-E-20714-3010		0

1. ALL DIMENSIONS ARE IN MM.
2. FOR NOTES AND OTHER DETAILS REFER SHEET 41 OF 62.
3. a) VOLTAGE OF HIGHEST GRADE CABLE SHALL BE CAST ON THE CABLE ROUTE MARKER PLATE.
- b) VOLTAGE, NUMBER OF CORES, SIZE AND IDENTIFICATION NUMBER OF THE CABLE SHALL BE CAST ON THE CABLE JOINT MARKER PLATE.
4. RAISED LETTERS AND ARROWS SHALL BE CAST ON 10 THICK CAST IRON PLATE (ARROW INDICATES THE ROUTE OF CABLES).
5. CABLE MARKER AS ABOVE SHALL BE AVOIDED ON ROADS. ONLY A TILE SHOWING DETAILS, SHALL BE USED AS MARKER.
6. TYPICAL CABLE ROUTE MARKER AS ABOVE IS SHOWN FOR BEND. ACTUAL PLACEMENT OF ROUTE MARKER SHALL BE DECIDED AT SITE BY SITE ENGINEER/CABLE INSTALLATION CONTRACTOR.
7. THE CABLE MARKER PLATE SHALL BE FIXED BY 4NO. SUITABLE G.I. NUTS.

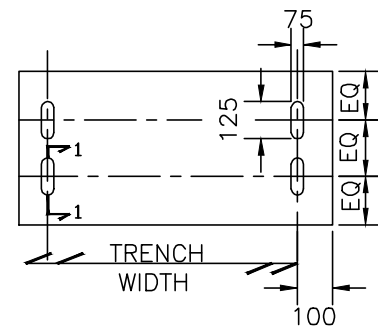
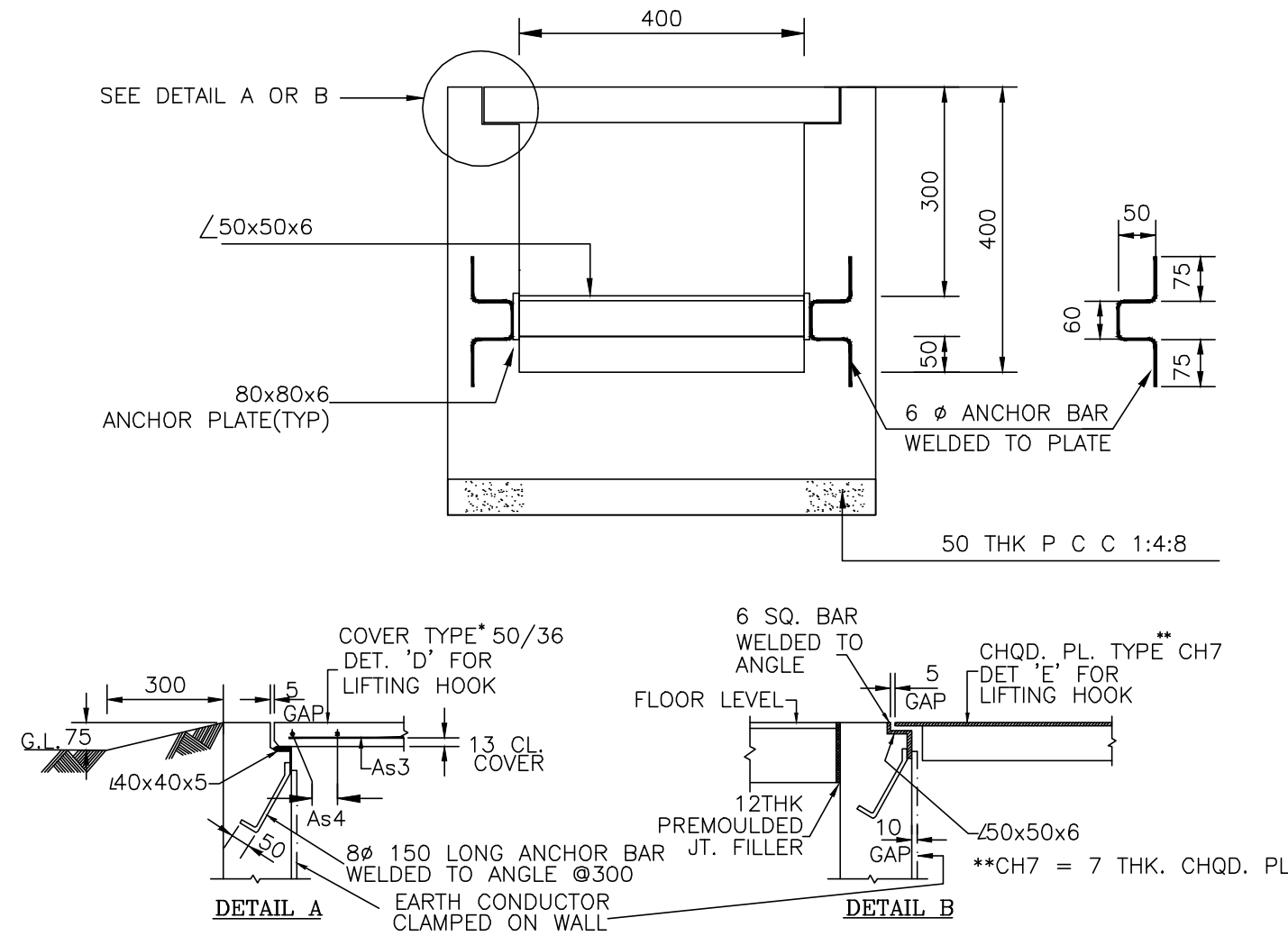
- ① CABLE ROUTE
- ② CABLE ROUTE MARKER
- ③ CABLE JOINT MARKER
- ④ CABLE ROUTE MARKER PLATE (C.I.)
- ⑤ CABLE JOINT MARKER PLATE (C.I.)
- ⑥ M-150 CONCRETE BLOCK
- ⑦ 10 ϕ , 25 PROJ. G.I. STUD
- ⑧ 12 ϕ HOLE



SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
INSTALLATION PRACTICE FOR DIRECTLY BURIED CABLES

Size	Scale	Sheet
A3	NTS	42 of 62
Drawing No.		F
GGNG-E-20714-3010		

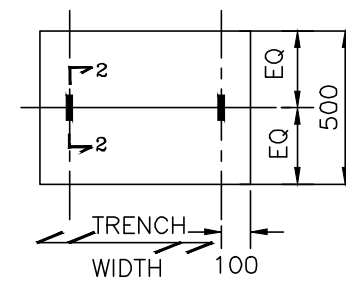
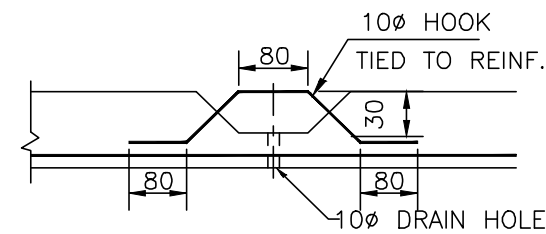
1. ALL DIMENSIONS ARE IN MM
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992



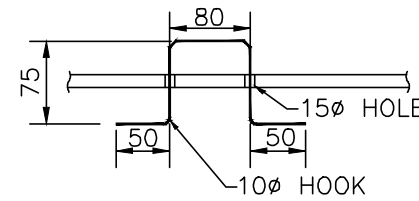
PLAN

R C COVER TYPE	THICKNESS mm.	As3	As4
50/36	50	7-6ø	4-6ø

50/36 MEANS 50mm. THK.x36 Kg. COVER WEIGHT
OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF
300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

PLAN

SECT. 1-1
DETAIL D



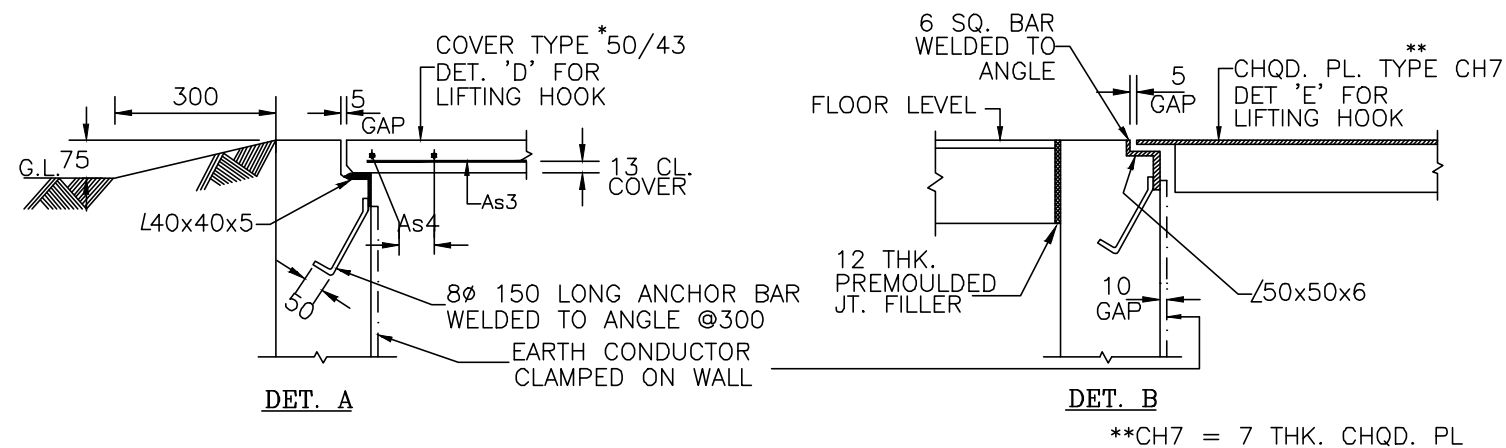
SECT. 2-2
DETAIL E

0	07.10.16	APPROVED	RKS	PR	KJ	SKH	
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated	

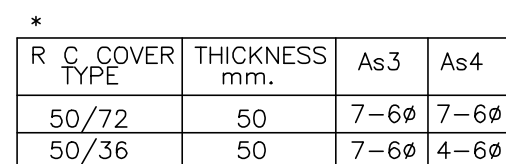
SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE - 0404

Size	Scale	Sheet
A3	NTS	43 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

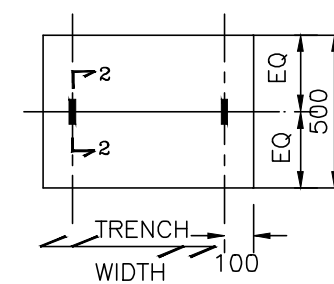
1. ALL DIMENSIONS ARE IN MM
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992



**CH7 = 7 THK. CHQD. PL

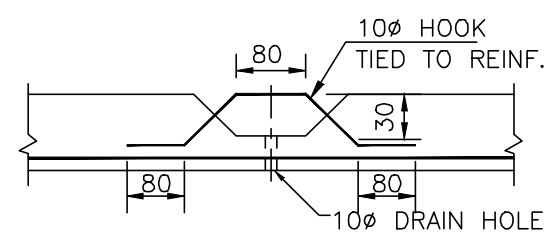


50/36 MEANS 50mm. THK.x36 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

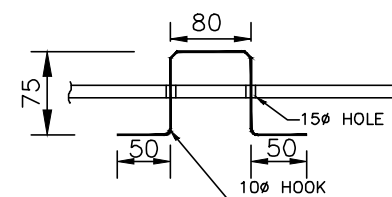


PLAN

PLAN



SECT. 1-1
DET. D



SECT. 2-2
DET. E

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE - 0504

Size	Scale	Sheet
A3	NTS	44 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

1

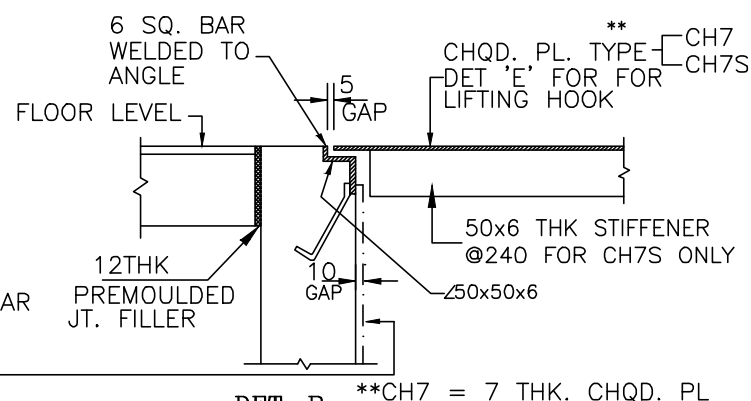
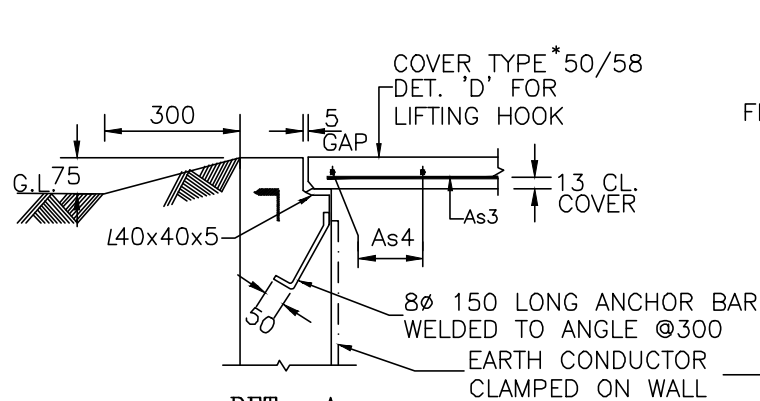
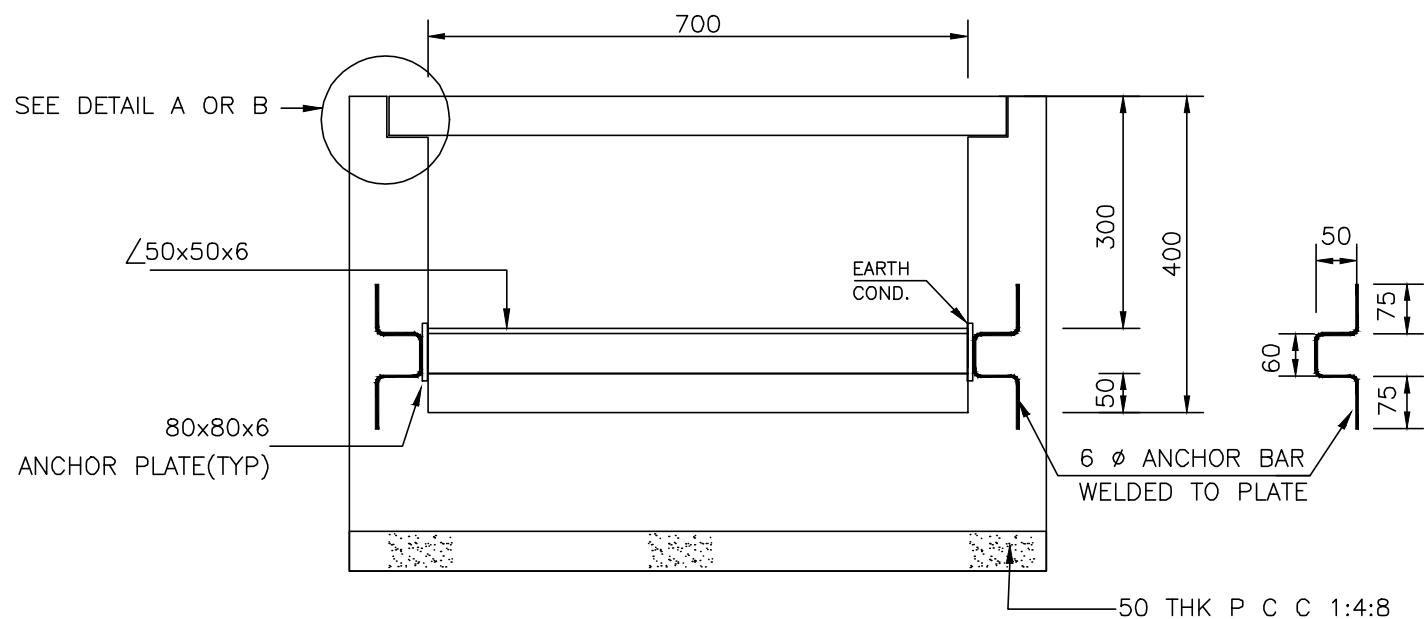
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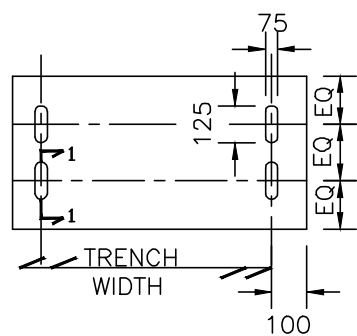
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NOTES

1. ALL DIMENSIONS ARE IN MM
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

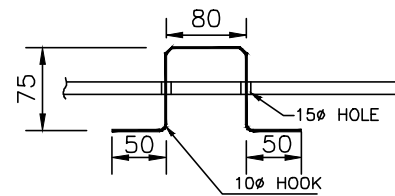
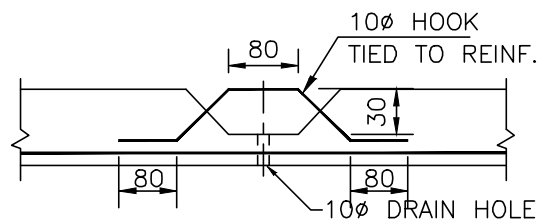
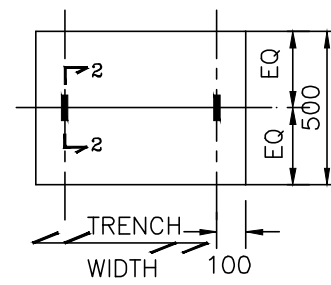


**CH7 = 7 THK. CHQD. PL
CH7S = 7 THK CHQD PL. WITH STIFFNER



R C COVER TYPE	THICKNESS mm.	As3	As4
50/58	50	7-6Ø	7-6Ø

* 50/58 MEANS 50mm. THK.x58 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

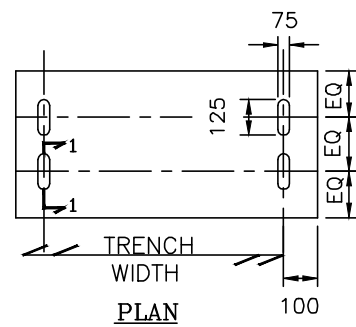
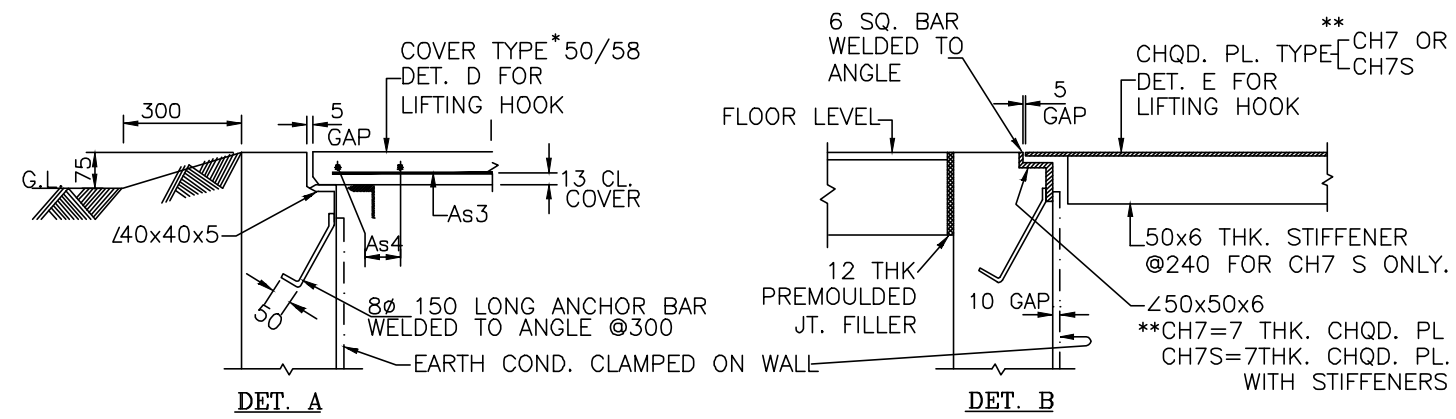
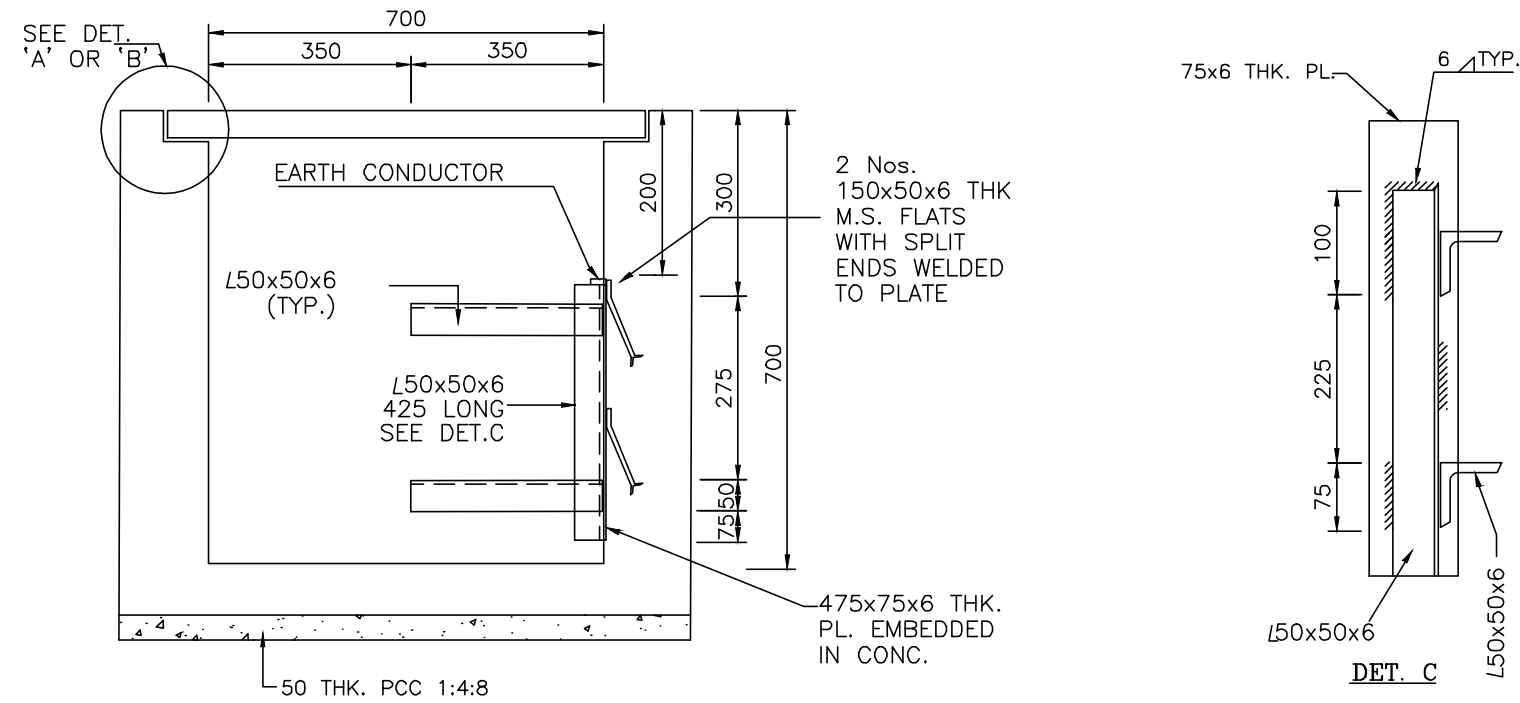


0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE - 0704

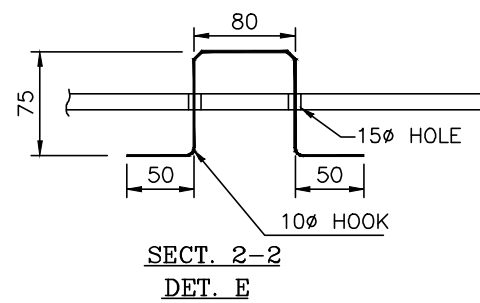
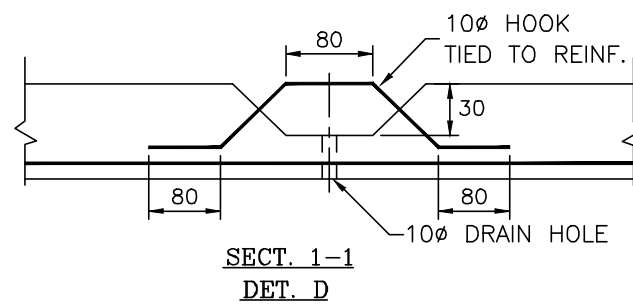
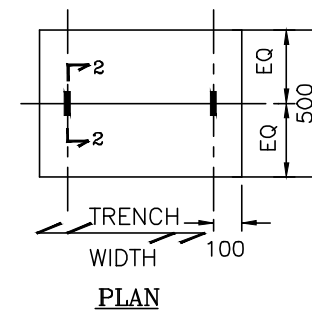
Size	Scale	Sheet
A3	NTS	45 of 62
Drawing No.	Rev.	
GGNG-E-20714-3010	0	

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992



R C COVER TYPE	THICKNESS mm.	As3	As4
50/58	50	7-6ø	6-6ø

50x58 MEANS 50mm. THK.x58 Kg. COVER WEIGHT
OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF
300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

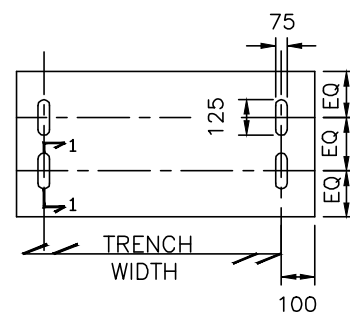
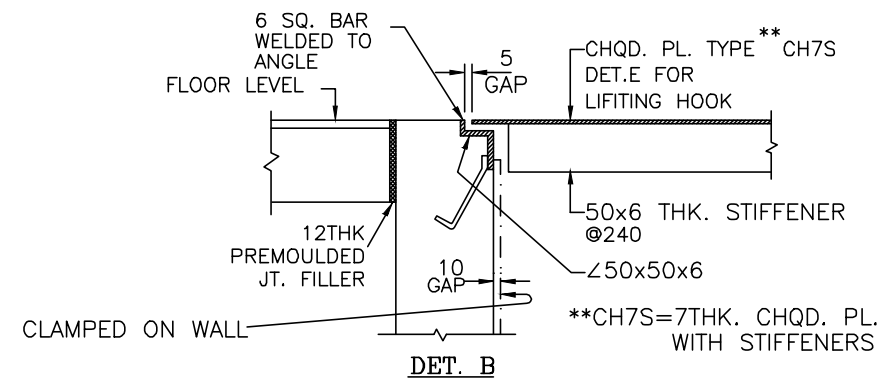
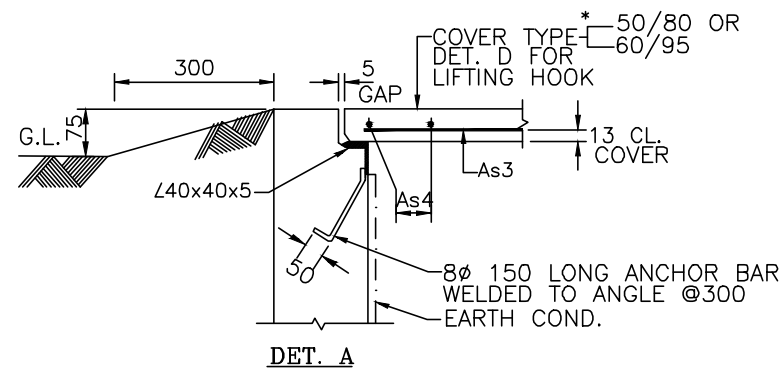
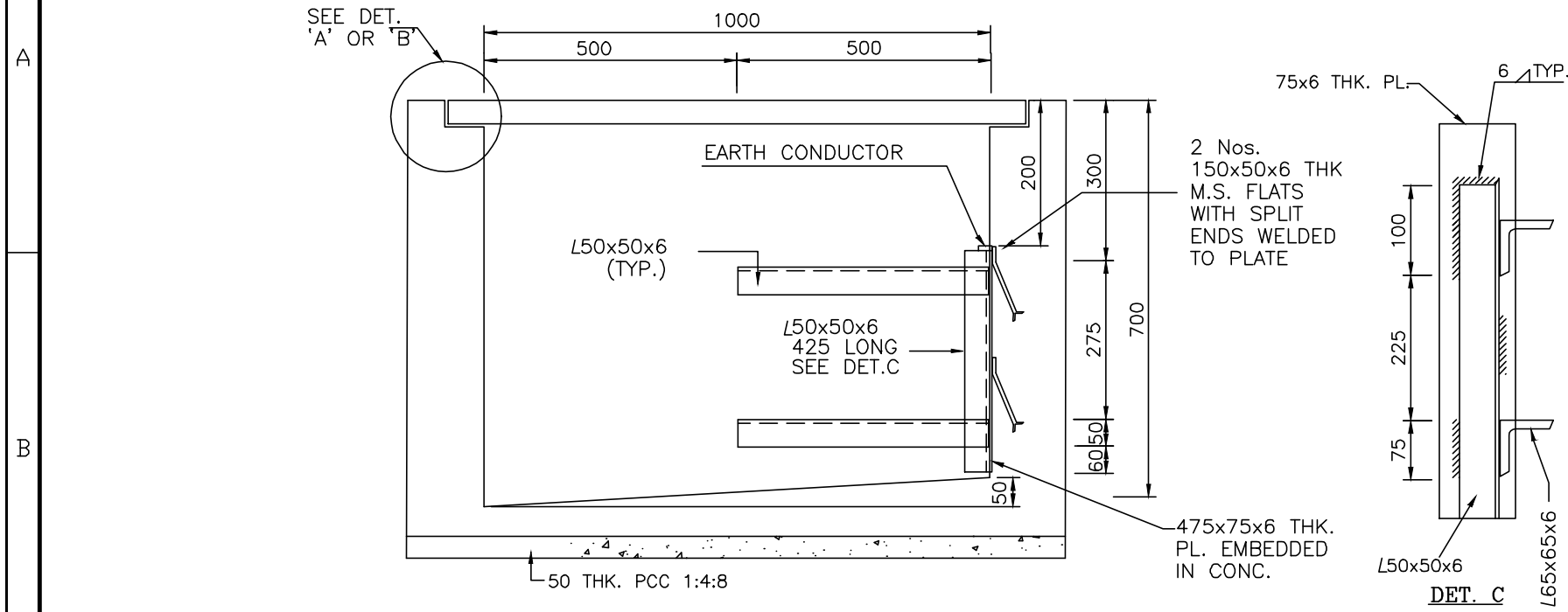


0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE - 0707

Size	Scale	Sheet
A3	NTS	46 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

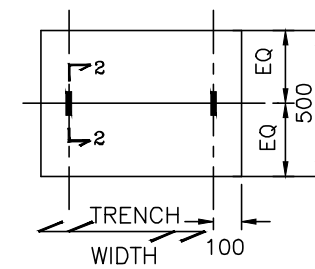
1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992



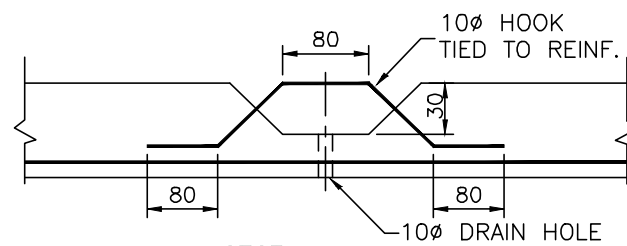
PLAN

R C COVER TYPE	THICKNESS mm.	As3	As4
50/80	50	7-6ø	6-6ø
60/95	60	7-8ø	6-8ø

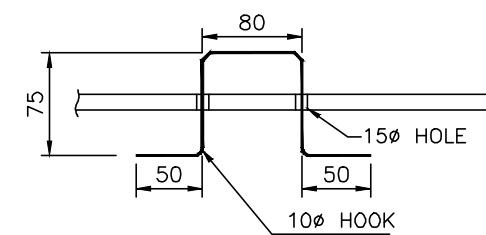
60x95 MEANS 60mm. THK.x95 Kg. COVER WEIGHT
OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF
300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



PLAN



SECT. 1-1
DET. D



SECT. 2-2
DET. E

0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
CABLE TRENCH TYPE - 1007

Size	Scale	Sheet
A3	NTS	47 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

	1	2	3	4
A				NOTES
B				
C				
D				
E				

THE FOLLOWING TIGHTENING TORQUES SHALL BE USED FOR NUTS AND BOLTS USED FOR SUPPORTS, CABLE TRAY OR ACCESSORIES ASSEMBLY.

Metric size (mm)	Recommended Torque (Nm)
M8	12 Nm.
M10	25 Nm.
M12	45 Nm.
M16	100 Nm.

AS THE ABOVE VALUES CAN SLIGHTLY CHANGE FROM ONE CABLE TRAY MANUFACTURER TO ANOTHER, CABLE TRAY INSTALLATION CONTRACTOR TO CHECK THESE VALUES WITH MANUFACTURER DATA.

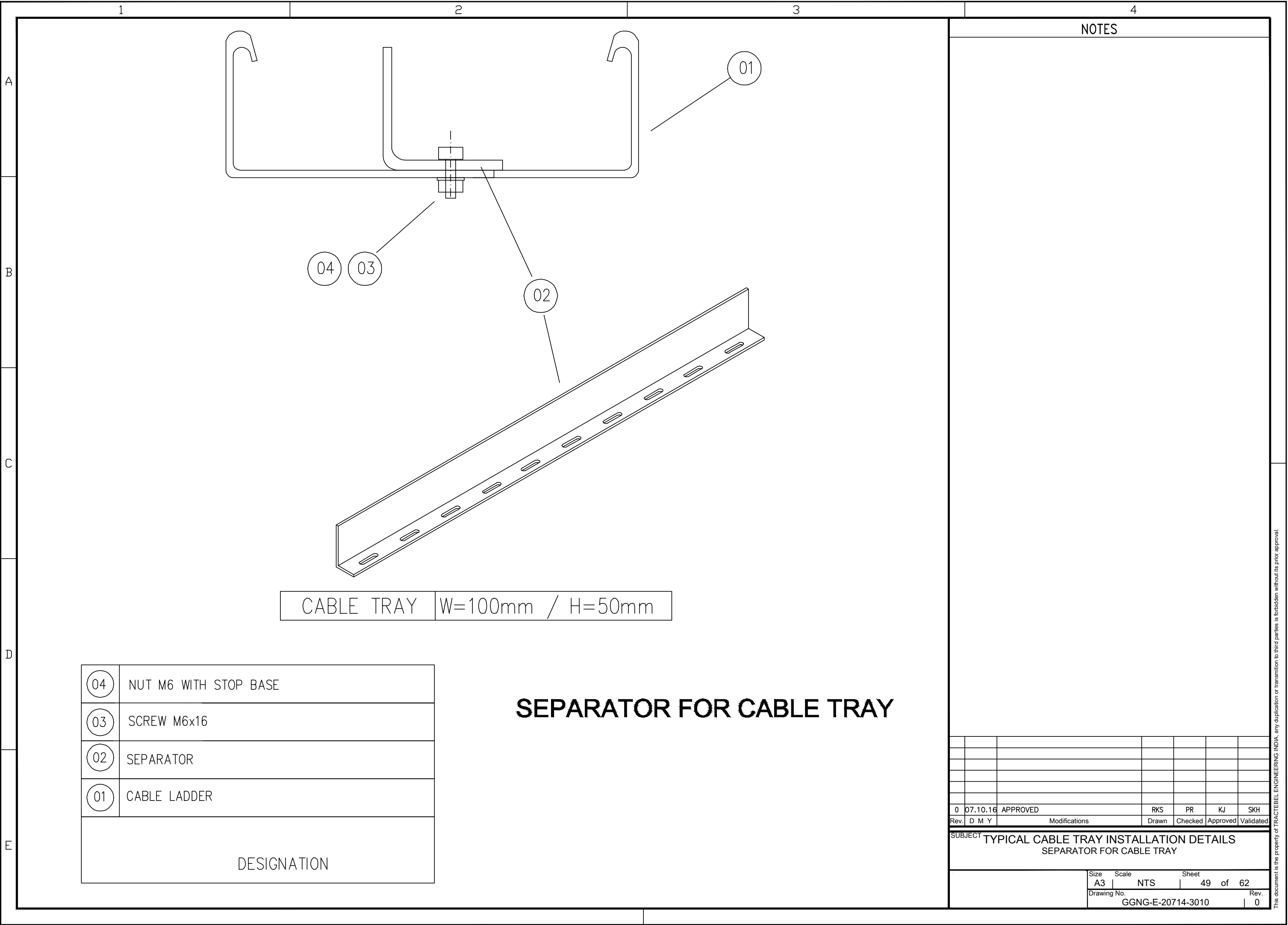
TIGHTENING TORQUES

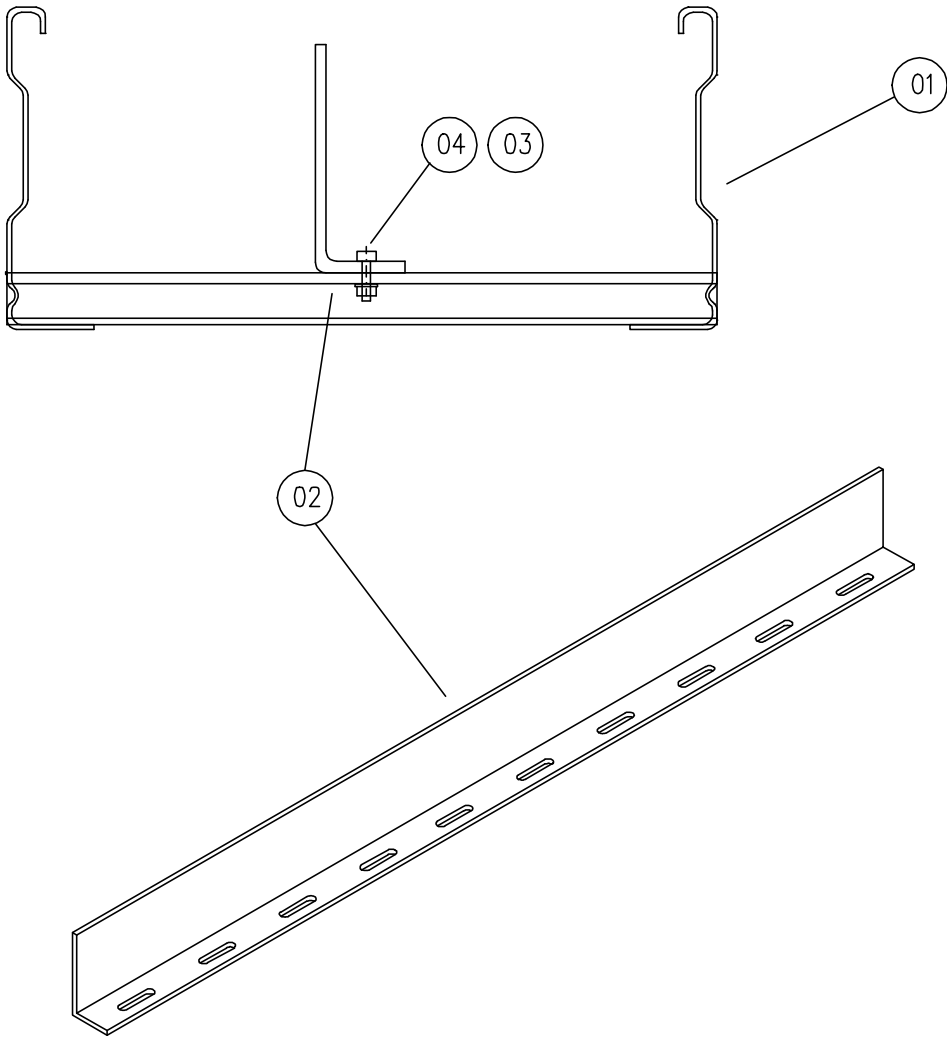
0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked

SUBJECT			
TYPICAL CABLE TRAY INSTALLATION DETAILS			
TIGHTENING TORQUES			

	Size	Scale	Sheet
	A3	NTS	48 of 62
	Drawing No.		Rev.
	GGNG-E-20714-3010		0

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CABLES LADDER	W=300mm / H=100mm
CABLES LADDER	W=600mm / H=100mm

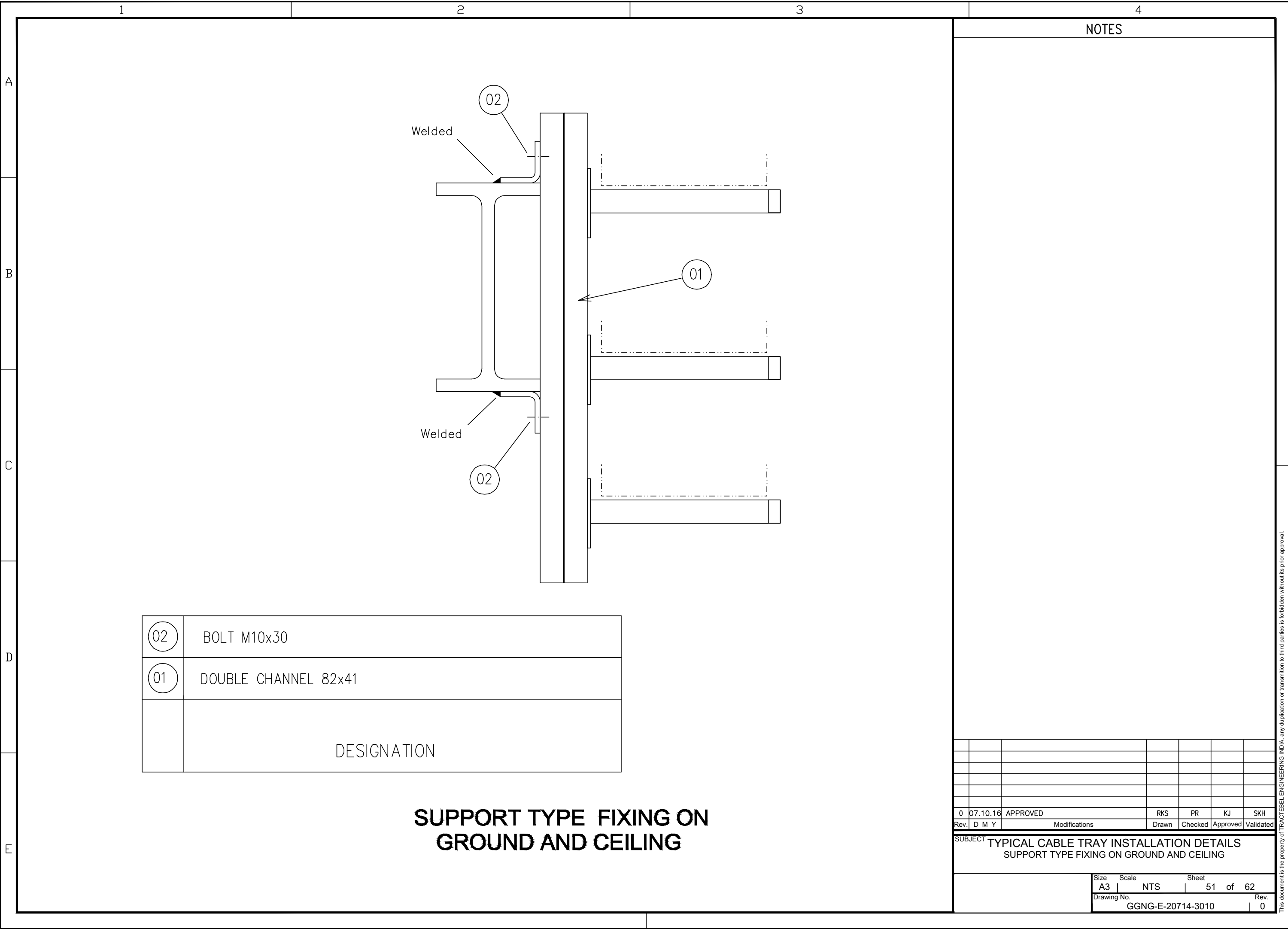
04	NUT M6 WITH STOP BASE
03	SCREW M6x16
02	SEPARATOR H 68mm
01	CABLE LADDER H 100mm
DESIGNATION	

CABLES LADDER SEPARATOR

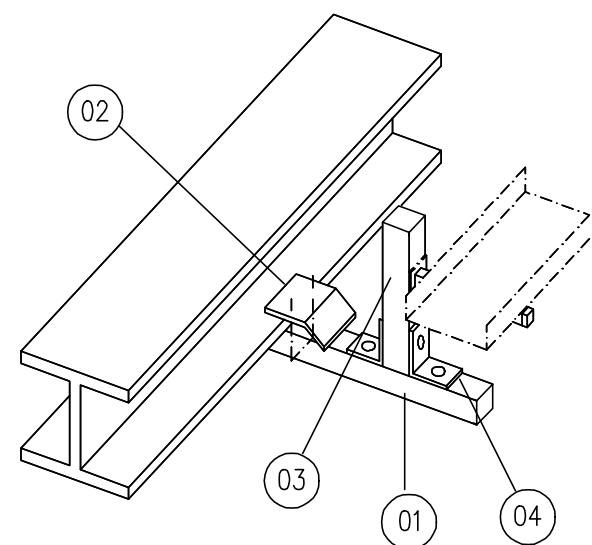
NOTES

0	07.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D	M	Y	Modifications	Drawn	Checked
SUBJECT				TYPICAL CABLE TRAY INSTALLATION DETAILS		
				CABLES LADDER SEPARATOR		
		Size	Scale	Sheet		
		A3	NTS	50 of 62		
		Drawing No.		Rev.		
		GGNG-E-20714-3010		0		

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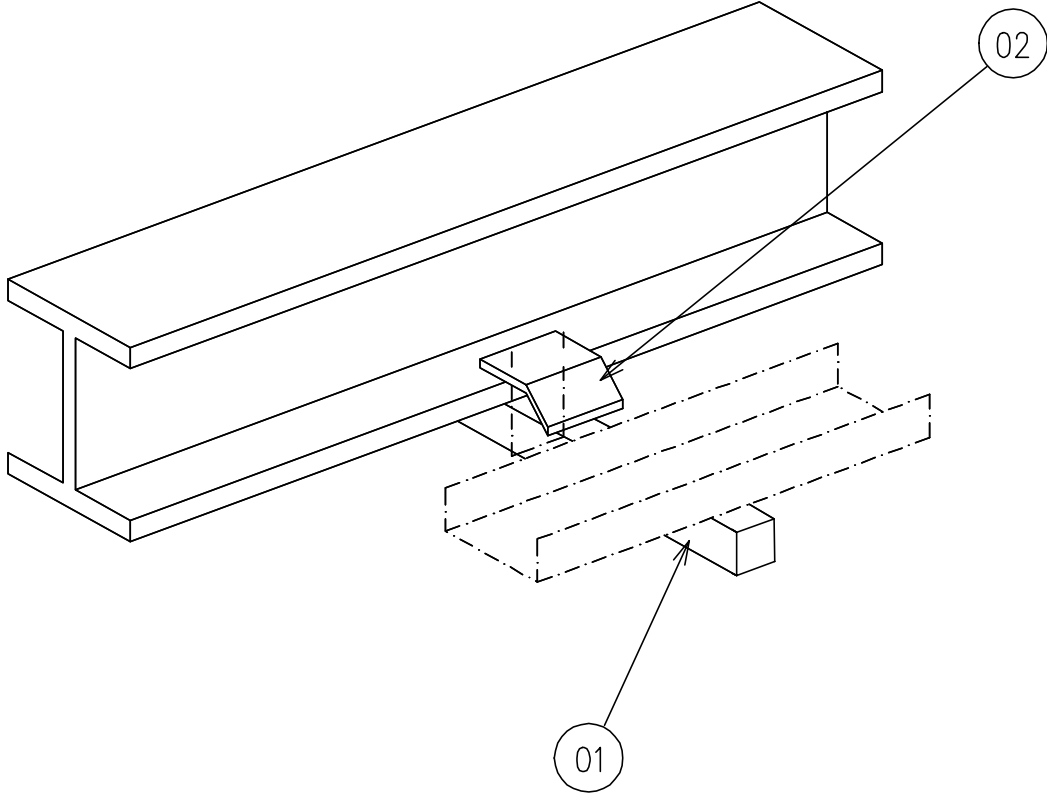
04	TWO HOLE CORNER ANGLE	
03	SIMPLE CHANNEL U 41x41	
02	BEAM CLAMPS FOR U 41x41	SUPPLIED WITH 1 U BOLT
01	SIMPLE CHANNEL U 41x41	
	DESIGNATION	REMARKS

**SUPPORT TYPE
MOUNTING UNDER BEAM**

0	07.10.16	APPROVED	RKS	PR	KJ	SKH	
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated	

SUBJECT TYPICAL CABLE TRAY INSTALLATION DETAILS
SUPPORT TYPE MOUNTING UNDER BEAM

Size	Scale	Sheet
A3	NTS	53 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

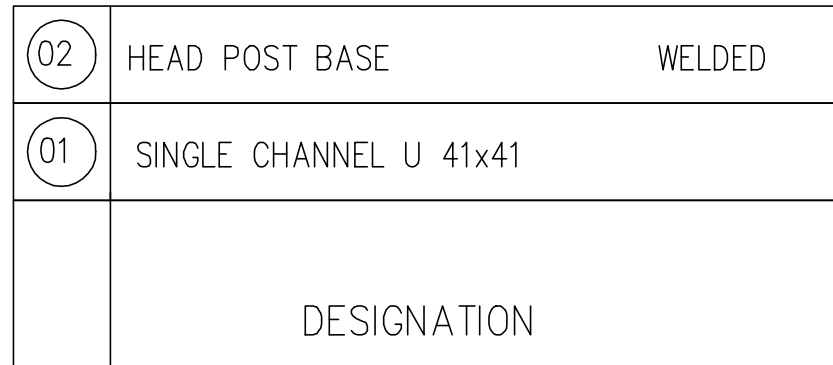
1		2		3		4										
						NOTES										
A	 VERTICAL OR HORIZONTAL MOUNTING ACCORDING TO DRAWING. <table><tr><td>02</td><td>BEAM CLAMPS FOR U 41x41</td><td>SUPPLIED WITH 1 U BOLT</td></tr><tr><td>01</td><td>SIMPLE CHANNEL U 41x41</td><td></td></tr><tr><td></td><td>DESIGNATION</td><td>REMARKS</td></tr></table> SUPPORT TYPE MOUNTING ON BEAM						02	BEAM CLAMPS FOR U 41x41	SUPPLIED WITH 1 U BOLT	01	SIMPLE CHANNEL U 41x41			DESIGNATION	REMARKS	
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							DESIGNATION	REMARKS								
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0	07.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT			
TYPICAL CABLE TRAY INSTALLATION DETAILS			
SUPPORT TYPE MOUNTING ON BEAM			

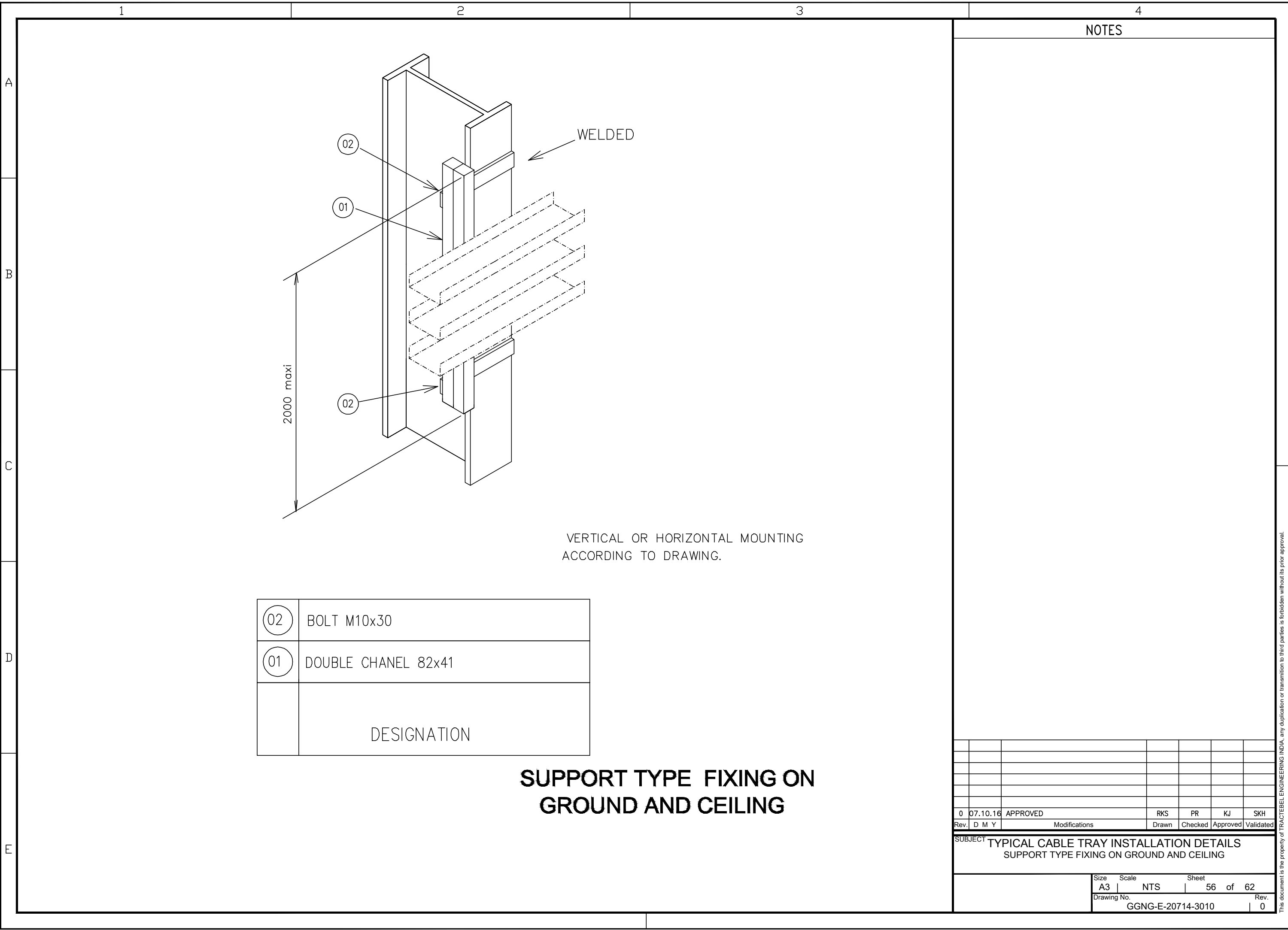
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	A3	NTS	54 of 62
	Drawing No.		Rev.
	GGNG-E-20714-3010		0

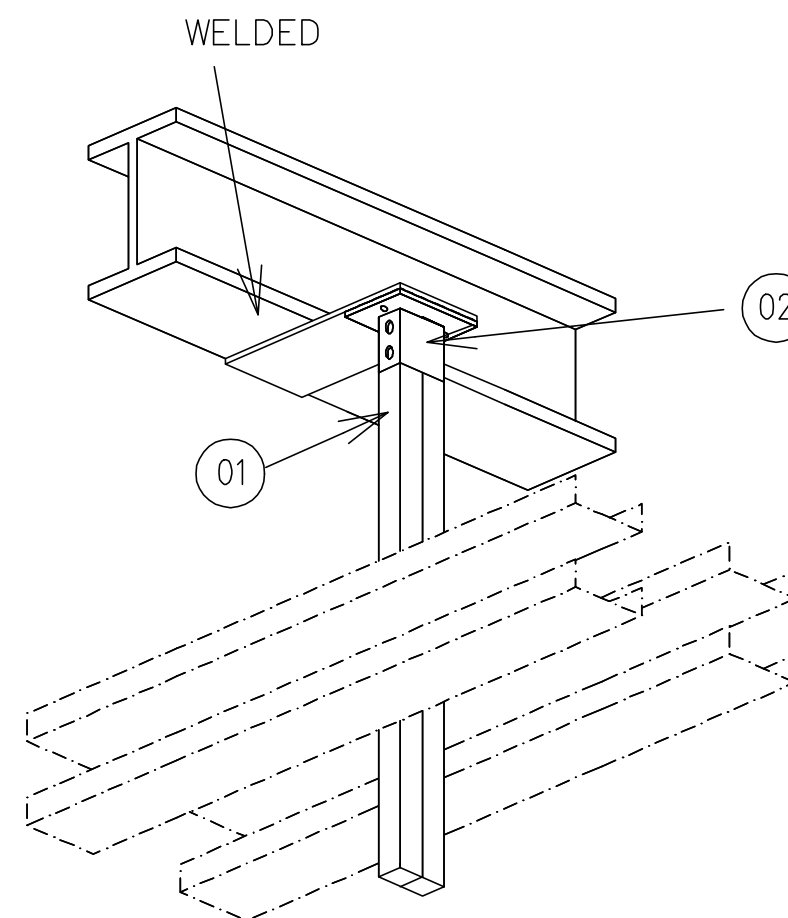
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Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

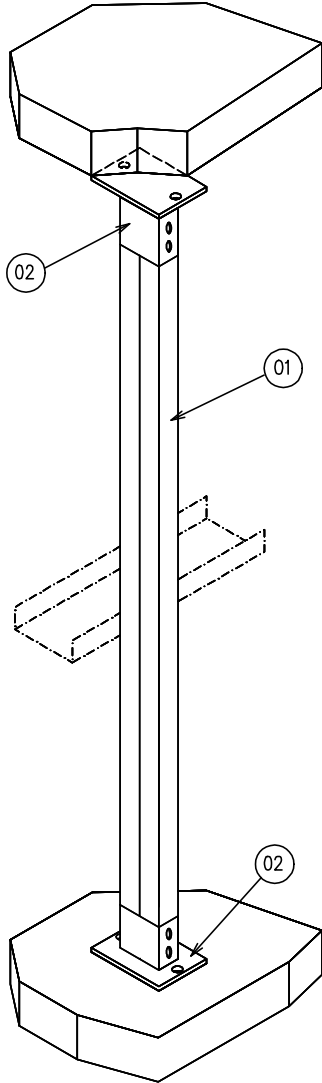
Size	Scale	Sheet
A3	NTS	55 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

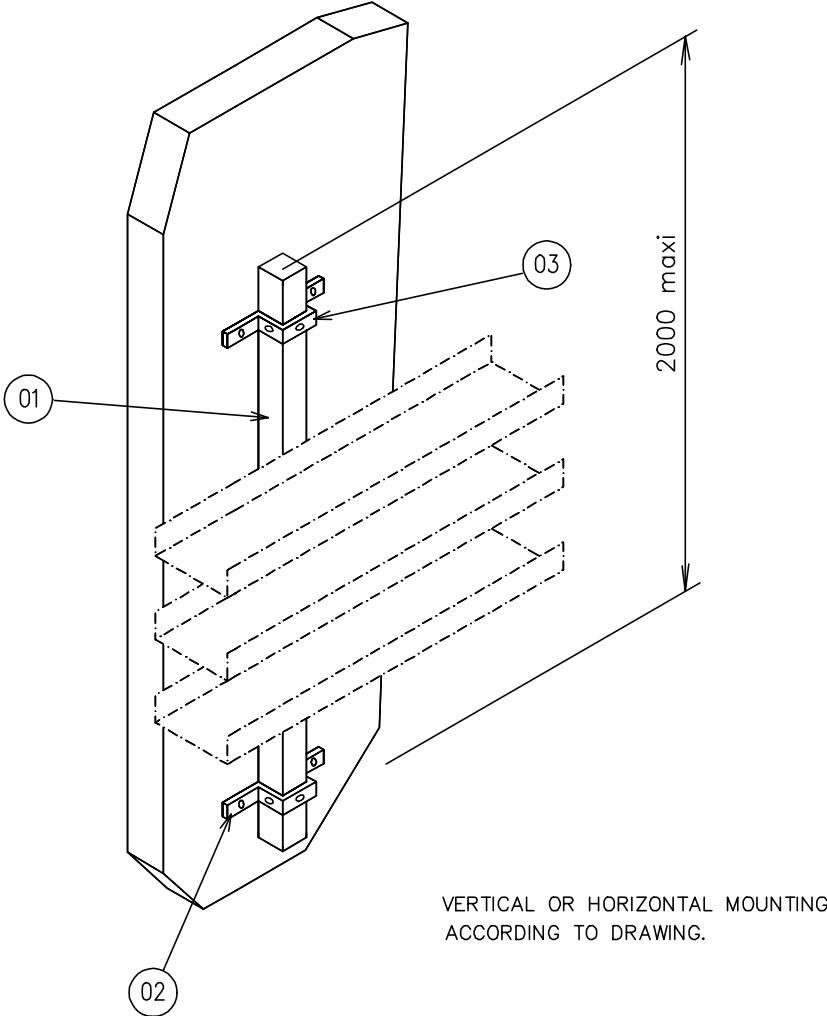


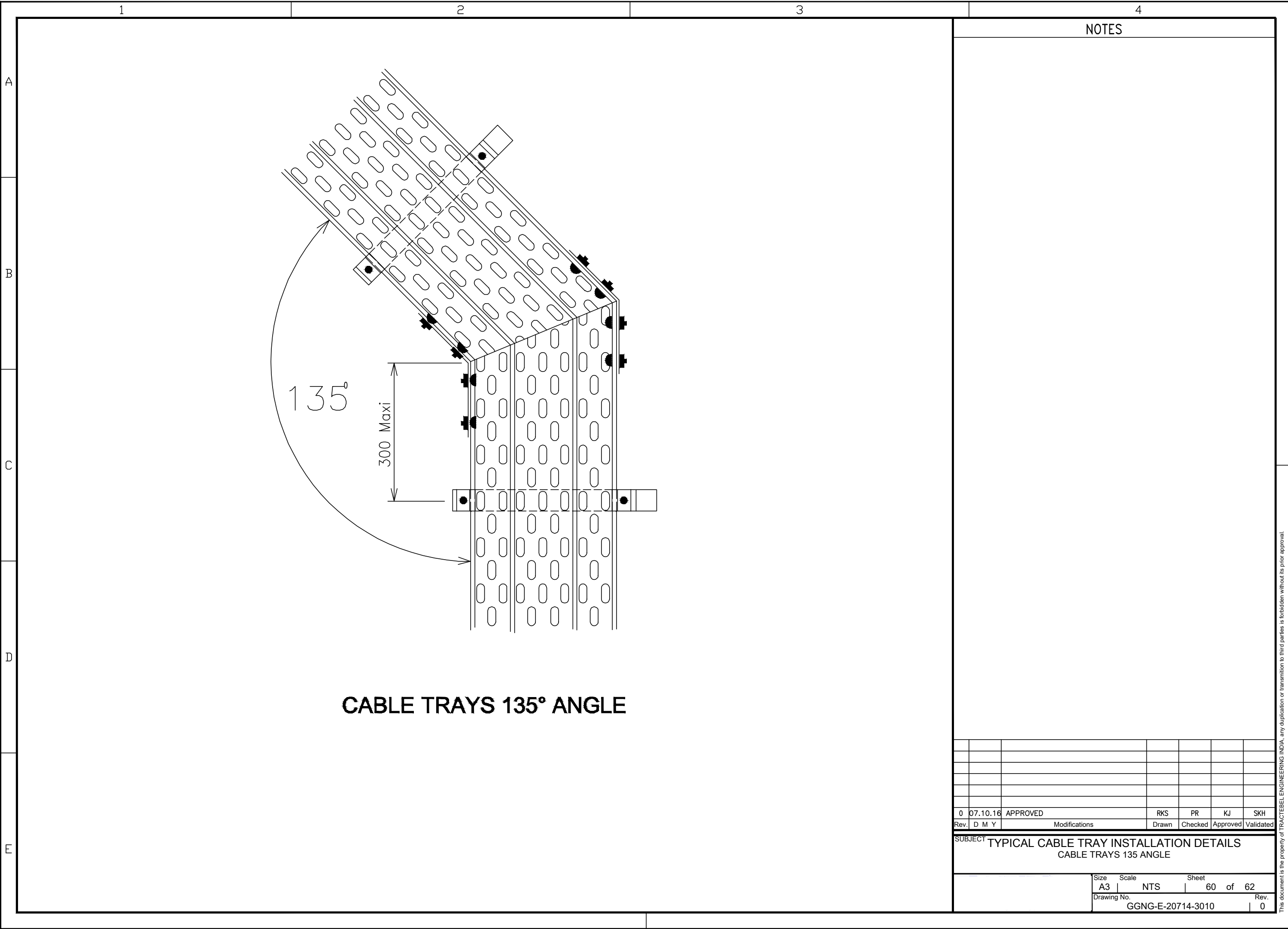


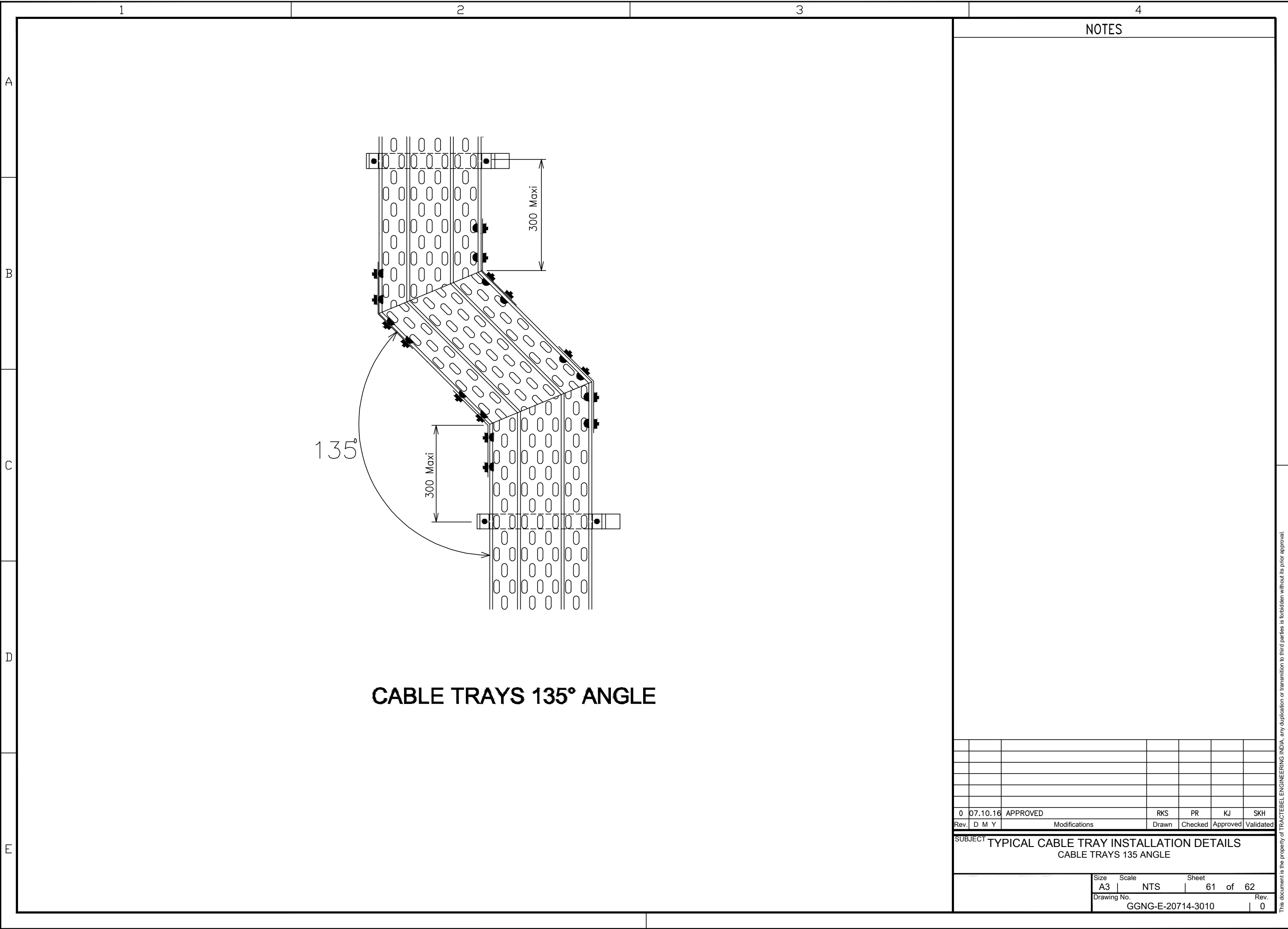
SUPPORT TYPE FIXING ON GROUND AND CEILING

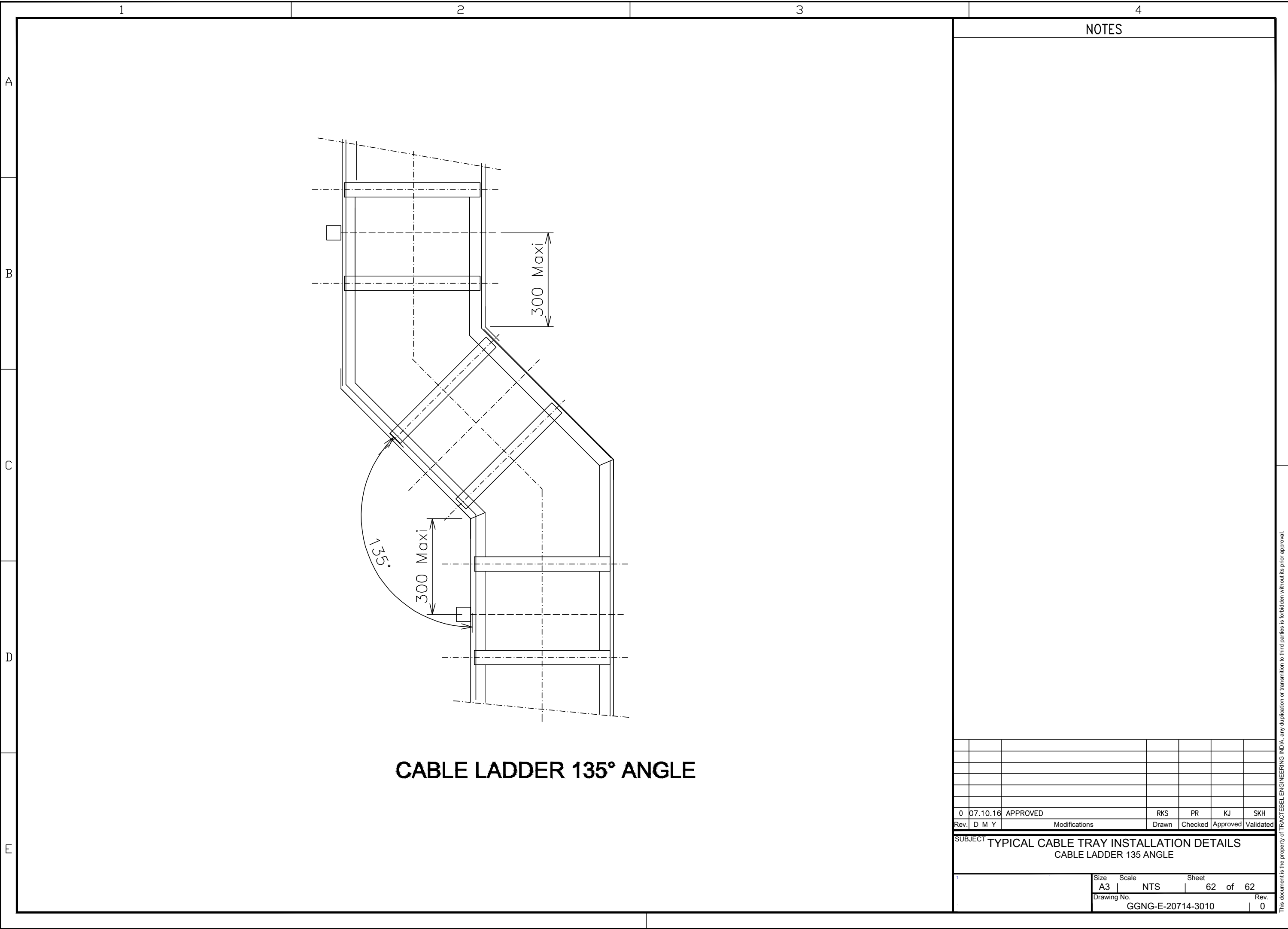
Size	Scale	Sheet
A3	NTS	57 of 62
Drawing No.		Rev.
GGNG-E-20714-3010		0

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		A3		NTS		59 of 62																																																									
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4

E

TYPICAL EARTHING INSTALLATION DETAILS

0	13.10.16	APPROVED		RKS	PR	KJ	SKH
Rev.	D M Y	Modifications		Drawn	Checked	Approved	Validated

SUBJECT TYPICAL EARTHING INSTALLATION DETAILS

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GENERAL NOTES

NOTES

- 1. ALL DIMENSIONS ARE GIVEN IN MM.(UNLESS OTHERWISE SPECIFIED).
- 2. ALL GROUNDING CONDUCTORS SURROUNDING THE BUILDINGS SHALL BE LOCATED ABOUT 1.5M(1500MM) FROM WALLS, COLUMN PEDESTALS AND FENCES.
- 3. ALL JOINTS UNDERGROUND SHALL BE PROTECTED AGAINST CORROSION BY DENSO TAPE(OR EQUIVALENT).
- 4. TIGHTENING TORQUES ARE GIVEN IN THE FOLLOWING TABLE:

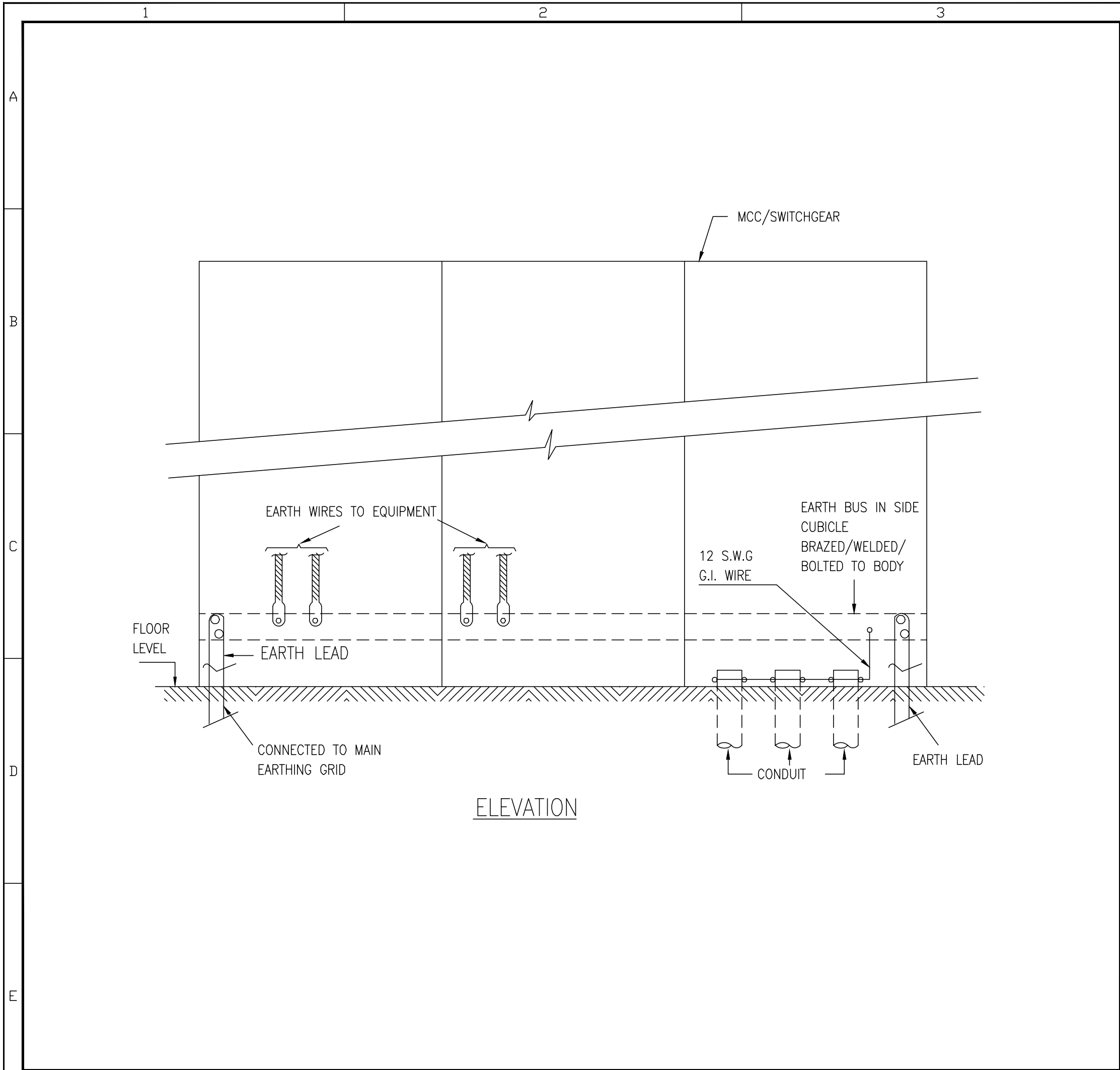
Tightening torques (in m.kg)	
Diameter of screw	Class 5.8 steel screw
M 10	2.86
M 12	4.94
M 14	7.8
M 16	11.83
M 20	26

- 5. METALLIC FENCES AROUND TRANSFORMER AREA AND LONG METALLIC OBJECTS SHALL BE CONNECTED TO THE GROUNDING SYSTEM IN AT LEAST TWO INTERVALS NOT EXCEEDING 50 METERS.
PLASTIC COVERED CHAIN LINK FENCES SHALL BE CONSIDERED IN THE SAME WAY AS BARE METALLIC FENCES, SO THAT SUPPORT POSTS, STAYS AND ANTI-CLIMBING FITTINGS SHALL BE BANDED ACCORDING TO ABOVE TWO METHODS.
- 6. PVC PIPES SHALL BE SET IN CONCRETE CASING UNLESS OTHERWISE SPECIFIED.
- 7. PVC PIPES ARE HEAVY DUTY TYPE.
- 8. ALL ARC WELDS SHALL BE PROTECTED AGAINST CORROSION.
- 9. ELECTRICAL EQUIPMENT LIKE MV/LV SWITCHGEAR, DB, CONTROL PANEL WILL BE EARTHED TO THE EARTHING CONDUCTOR RUNNING ALONG THE EDGE OF THE NEARBY CABLE TRAY, WHETHER AVAILABLE.
- 10. ALL NON CURRENT CARRYING METALLIC EQUIPMENT SUCH AS TANKS, METAL STRUCTURE SUCH HAS HAND RAIL, STRUCTURAL COLUMNS SHALL BE GROUNDED WITH MIN ON GROUND CONDUCTOR. AND TWO NUMBERS IN CASE LOCATED IN HAZARDOUS AREA.
- 11. A TEST LINK SHALL BE PROVIDED IN EACH EARTH PIT.
- 12. EARTH PIT FOR LIGHTNING PROTECTION DOWN CONDUCTOR SHALL BE SEPARATE DOWN CONDUCTORS FROM LIGHTNING ARRESTOR TO EARTH PIT SHALL BE RUN BY SHORTEST ROUTE LENGTH.
- 13. AL ELECTRICAL EQUIPMENT WITH 3-PHASE SUPPLY EG. SWITCHGEAR, POWER AND MOTOR CONTROL CENTERS, INVERTER PANEL, POWER LIGHTING DB, MOTOR WELDING RECEPTACLES. ETC SHALL BE GROUNDED BY TWO SEPARATE GROUND CONNECTIONS.
- 14. NEUTRAL POINT OF TRANSFORMER SECONDARY SHALL BE GROUNDED WITH TWO SEPARATE AND DISTINCT EARTH PIT. TRANSFORMER BODY SHALL BE GROUNDED BY TWO SEPARATE AND DIAGONALLY OPPOSITE CONNECTIONS TO MAIN GROUND GRID.
- 15. STATIC GROUND CONNECTIONS SHALL BE MADE ACROSS FLANGED JOINTS OF PIPELINES IDENTIFIED FOR STATIC CHARGE IN ALL AREAS.
- 16. DCS/PLC GROUND BUS BAR SHALL BE CONNECTED TO DCS GROUNDING ELECTRODE BY TWO SEPARATE PVC INSULATED COPPER CONDUCTORS.
- 17. ALL FLAME PROOF ELECTRICAL EQUIPMENT INCLUDING LIGHTING FIXTURES AND PUSH BUTTON STATION SHALL BE GROUNDED AT TWO POINTS.

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS

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NOTES

NOTES

1. CONNECTION BETWEEN EARTH BUS IN MCC/SWITCHGEAR AND EARTH LEAD SHALL BE WITH MINIMUM TWO BOLTS.

0	13.10.16	APPROVED	RKS	PR	KJ	SKH
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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS M.C.C. & METAL CLAD SWITCHGEAR						
			Size A3	Scale NTS	Sheet 03 of 23	
			Drawing No. GGNG-E-20715-0812	Rev. 0		

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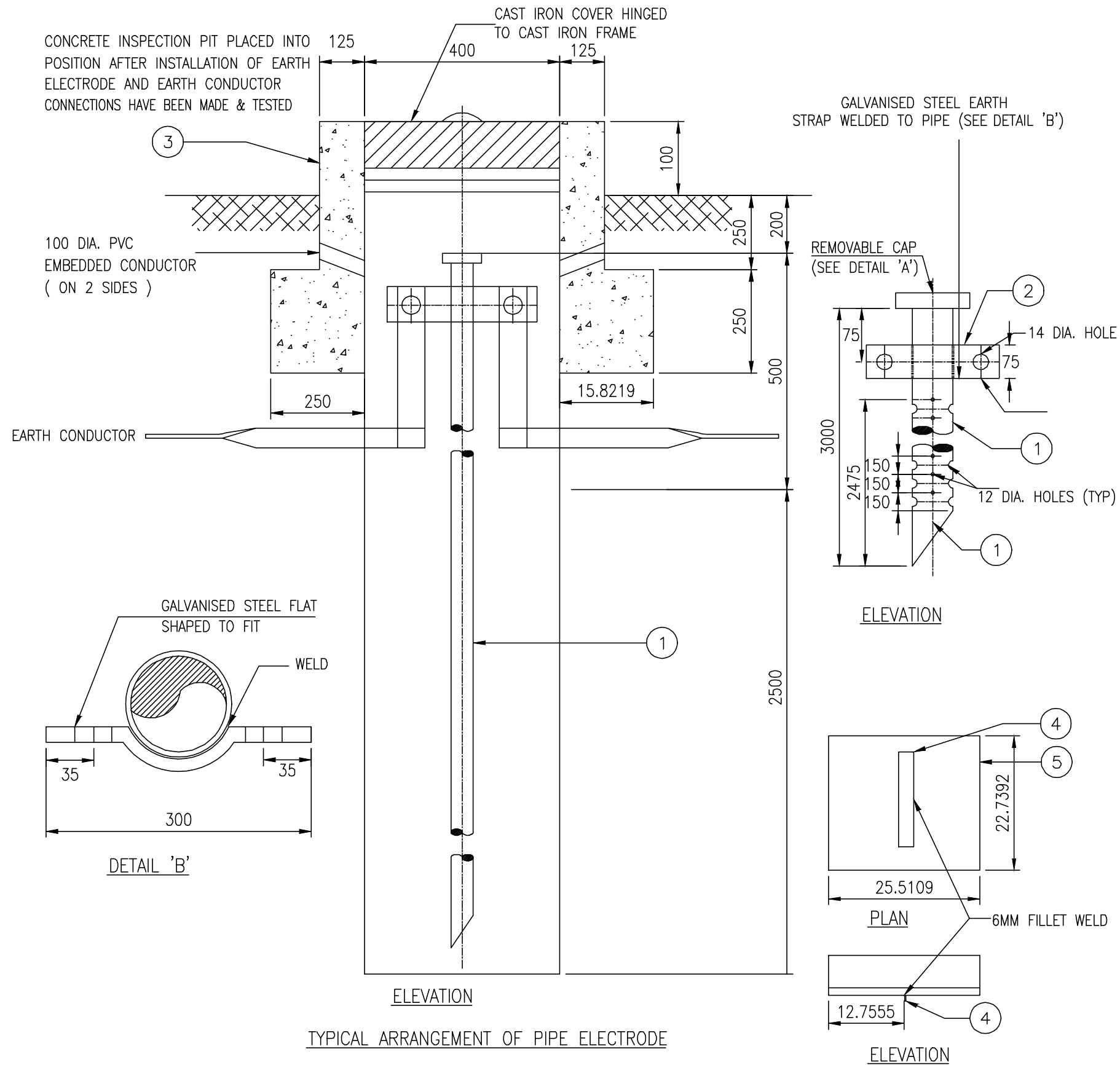
4

NOTES

1. ALL DIMENSION AREA IN MILLIMETER (mm).
2. ALL STEEL WORK SHALL BE HOT DIP GALVANISED.
3. INSPECTION PITS SHALL BE INSTALLED FLASH WITH SURROUNDING GRADE WITHIN PAVED AREAS.
4. UNLESS OTHERWISE SPECIFIED, ALL THE MATERIALS ARE IN CONTRACTORS SCOPE OF SUPPLY.

LEGEND

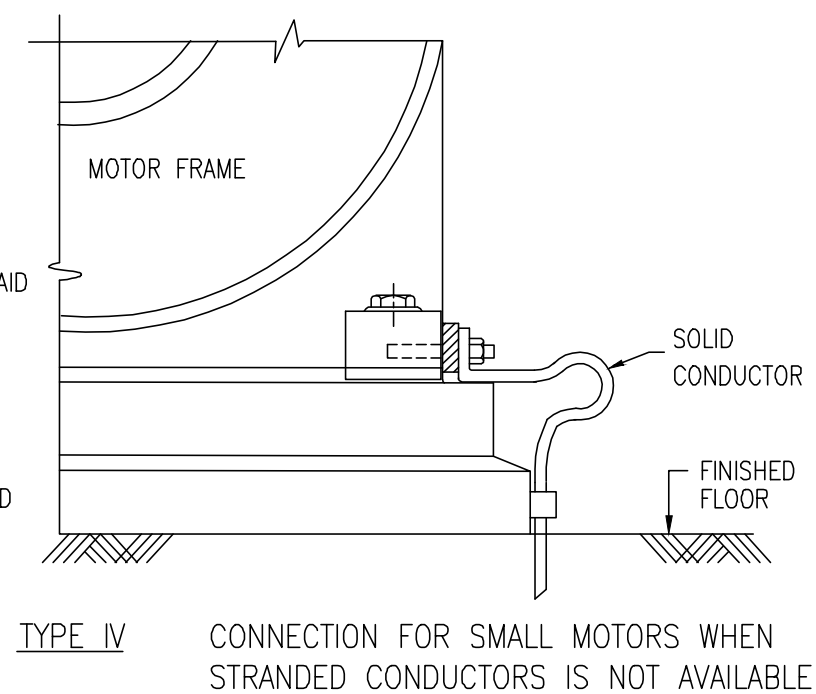
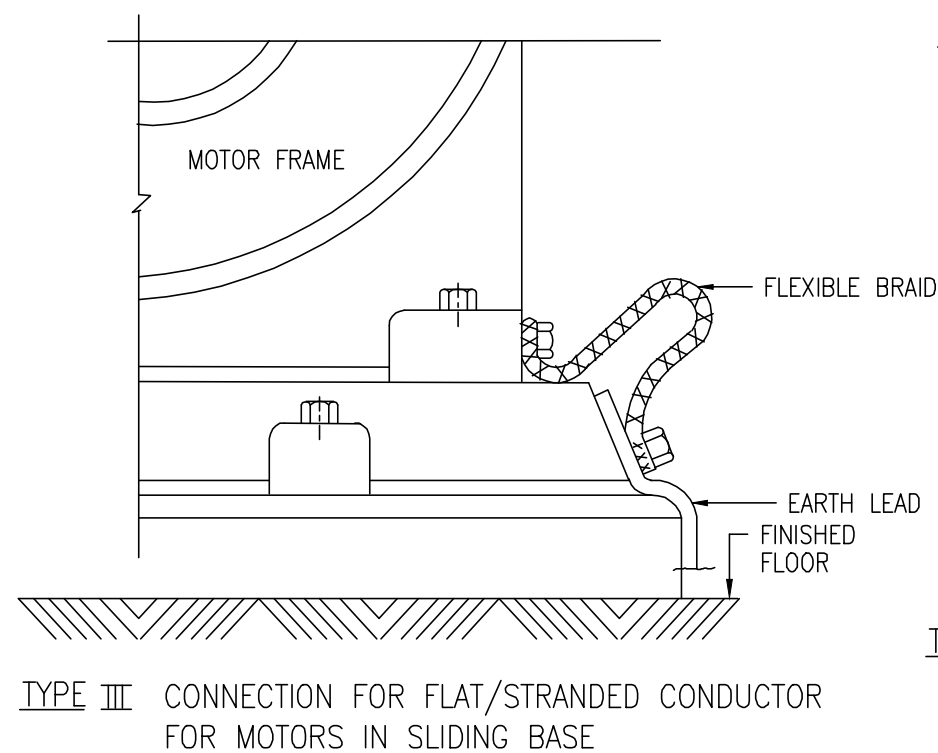
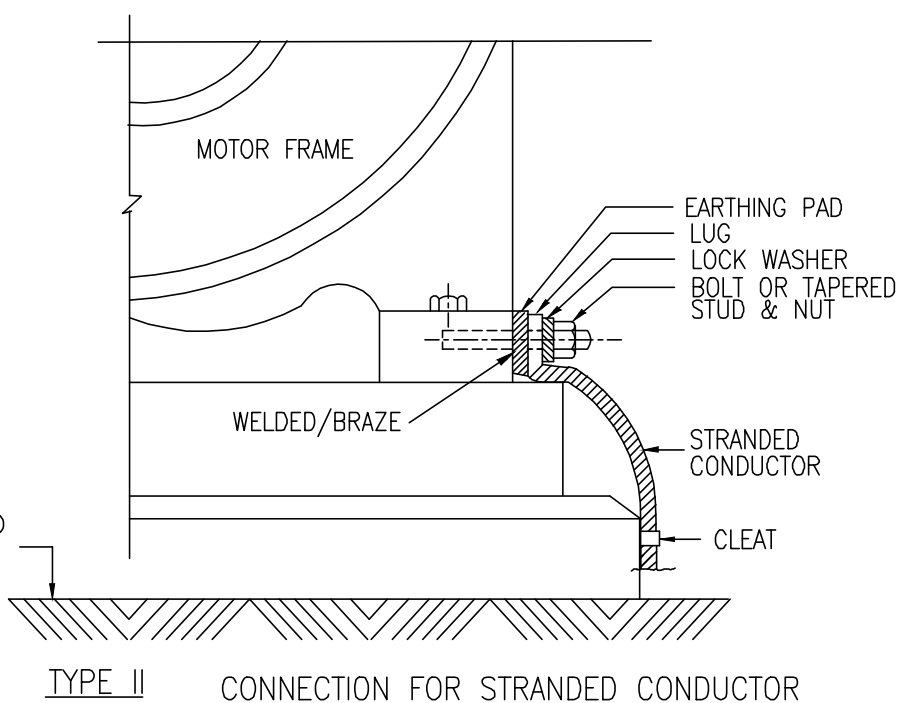
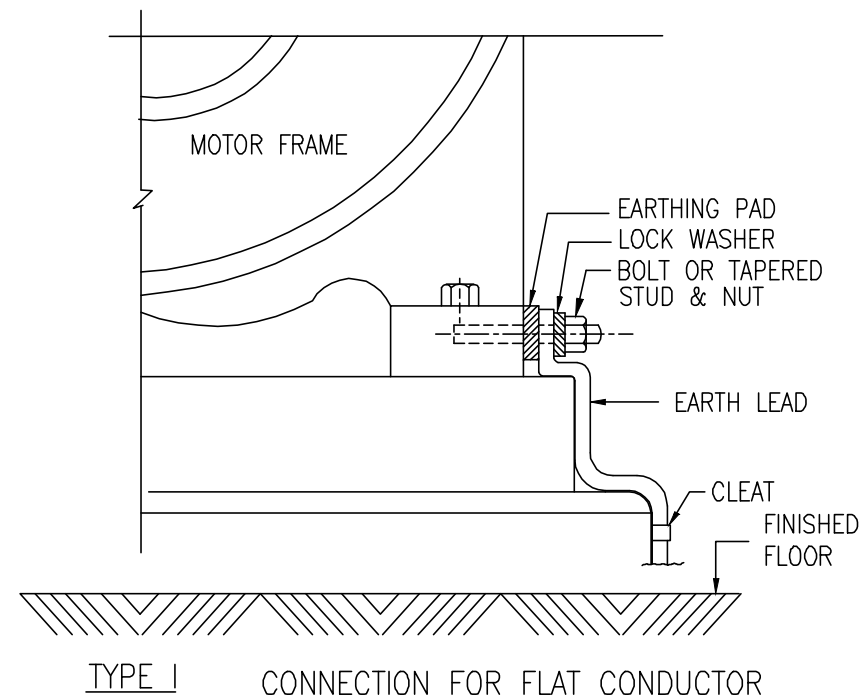
- ① 100mm DIAMETER MEDIUM DUTY GALVANISED STEEL PIPE (CLASS 'B')
- ② GALVANISED MS FLAT (DETAIL 'B')
- ③ CONCRETE INSPECTION COVER
- ④ 90x50x6 GALVANISED MS ANGLE (DETAIL 'A')
- ⑤ 130x130x6 GALVANISED MS PLATE (DETAIL 'A')



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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
PIPE/ROD ELECTRODE

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NOTES

1. NUTS AND BOLTS SHALL BE AS PER IS: 1363(PART-1,2,3):1992/ IS 1367(PART-5):1980.
2. WASHERS SHALL BE AS PER IS 2016:1967.

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
MOTOR FRAME EARTHING

Size Scale Sheet
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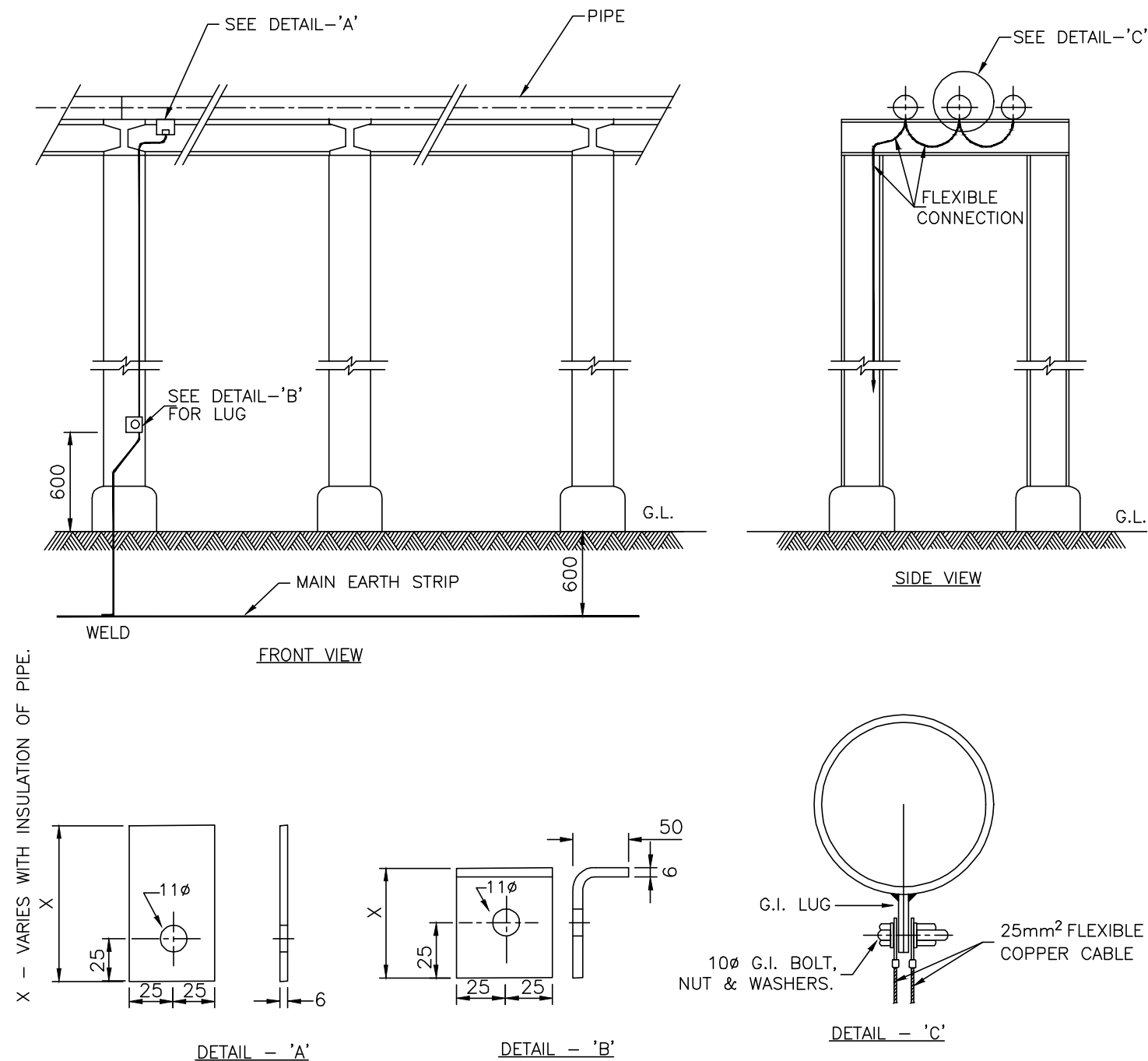
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NOTES

1. ALL DIMENSIONS ARE IN MM.
2. THE PIPE LINES SHALL BE BONDED AND EARTHED AT THE ENTRY AND EXIT POINTS OF BATTERY LIMIT UNLESS OTHERWISE SPECIFIED.
3. NUTS/BOLTS SHALL BE AS PER IS 1363(PART-1,2,3):1992/ IS 1367(PART5):1980.
4. WASHERS SHALL BE AS PER IS 2016:1967.

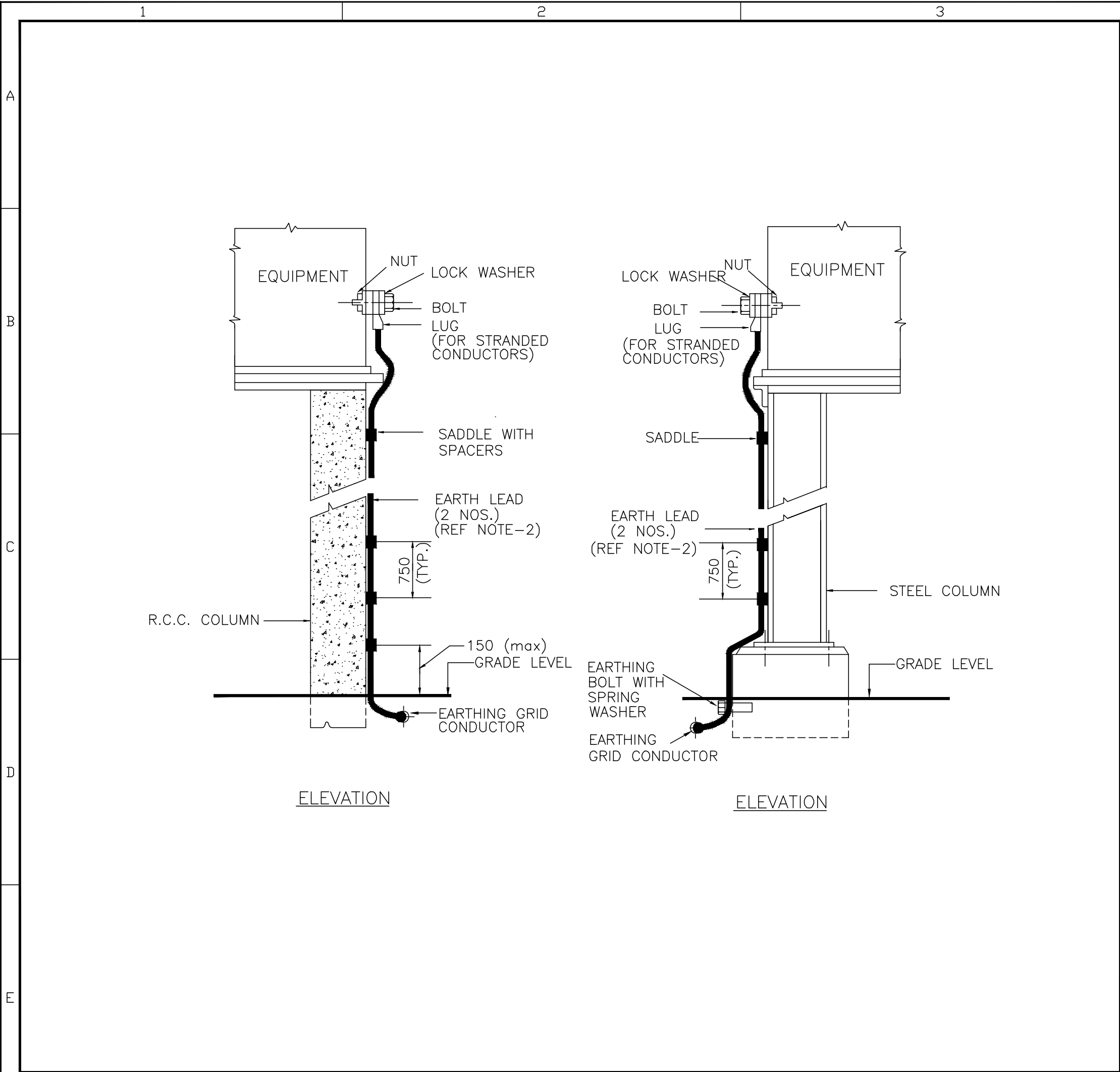


X - VARIES WITH INSULATION OF PIPE.

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
EARTHING OF PIPES ON RACK

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NOTES

1. ALL DIMENSIONS ARE IN MM.

2. THE EARTH LEADS FOR THE SAME EQUIPMENT SHALL BE LAID ON TWO DIFFERENT COLUMNS, HOWEVER, IF THE EQUIPMENT IS SUPPORTED ON ONLY ONE COLUMN THE LEADS TO BE RUN ON OPPOSITE FACES OF THE SAME.

3. IF FLAT CONDUCTOR IS USED THE SAME TO BE SUITABLY DRILLED FOR CONNECTION TO THE EQUIPMENT EARTHING TERMINAL STUD.

4. THE CONDUCTOR CAN ALTERNATIVELY BE WELDED TO STEEL STRUCTURE AT 1000MM INTERVAL.

5. THE CONNECTION BETWEEN CONDUCTOR AND LUG SHALL BE CRIMPED TYPE.

6. NUTS AND BOLTS SHALL BE AS PER IS: 1363(PART-1,2,3):1992/ IS 1367(PART-5):1980.

7. WASHERS SHALL BE AS PER IS 2016:1967.

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SUBJECT

TYPICAL EARTHING INSTALLATION DETAILS
EQUIPMENT ON R C C / STEEL COLUMN

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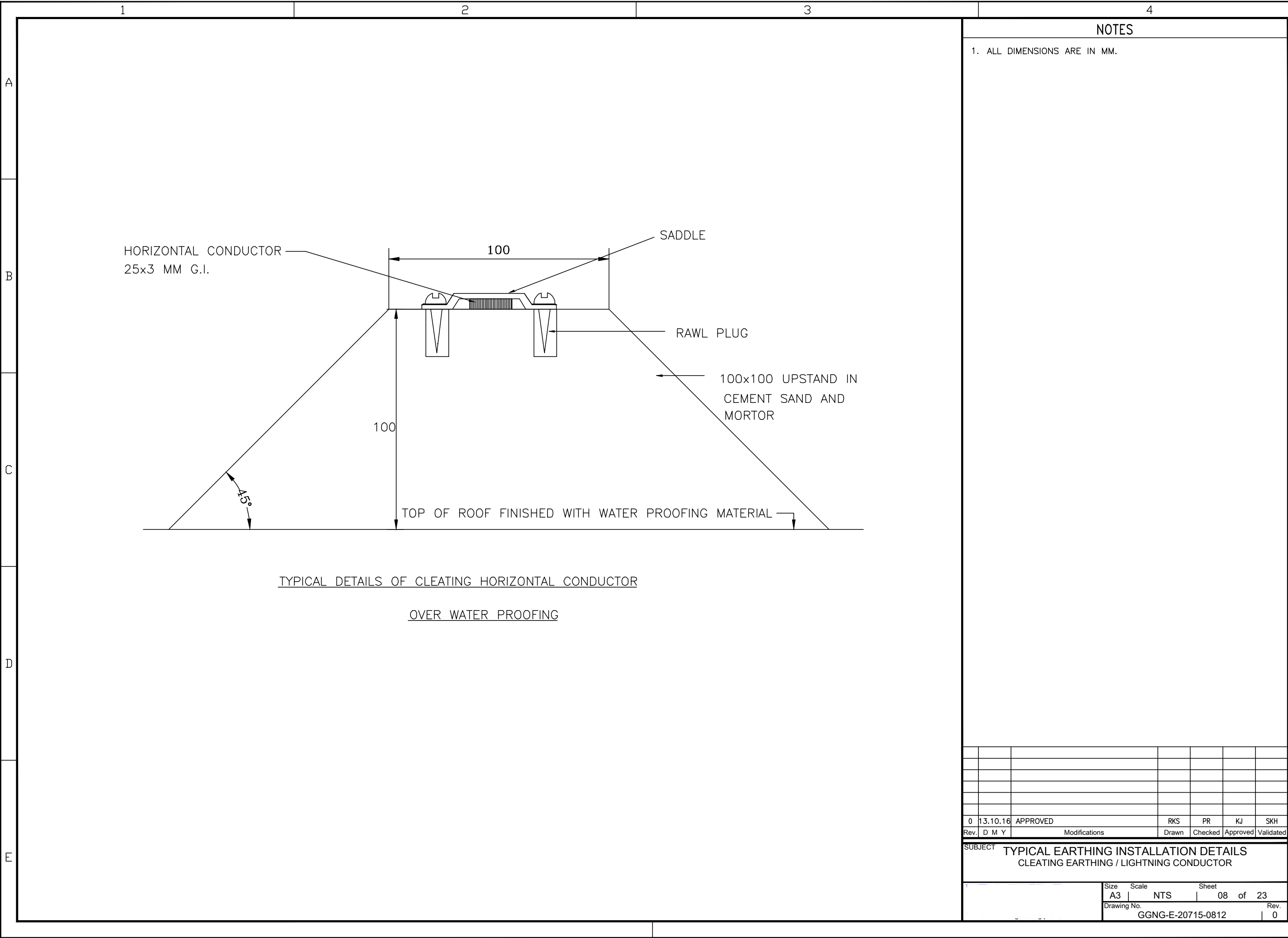
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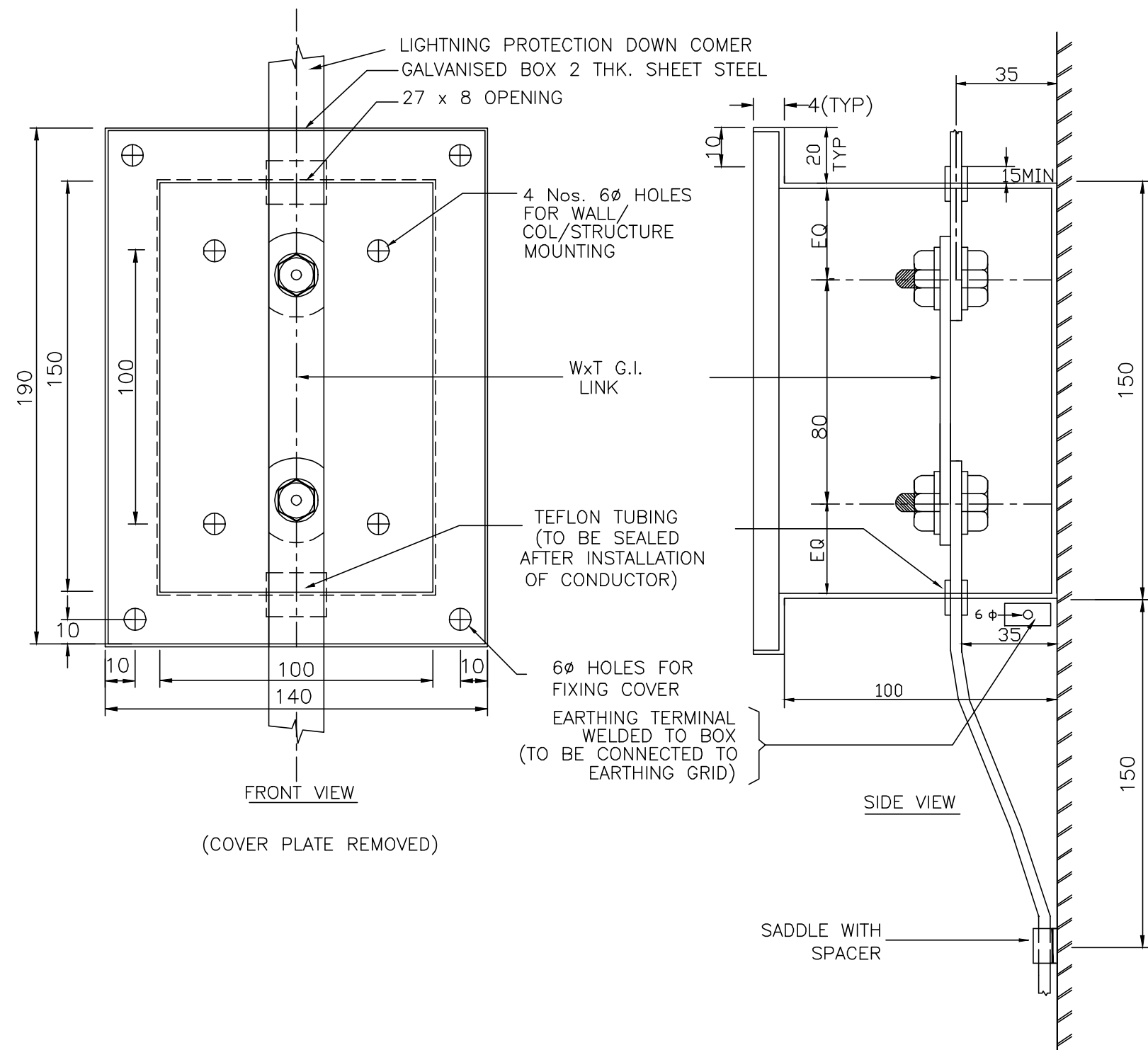
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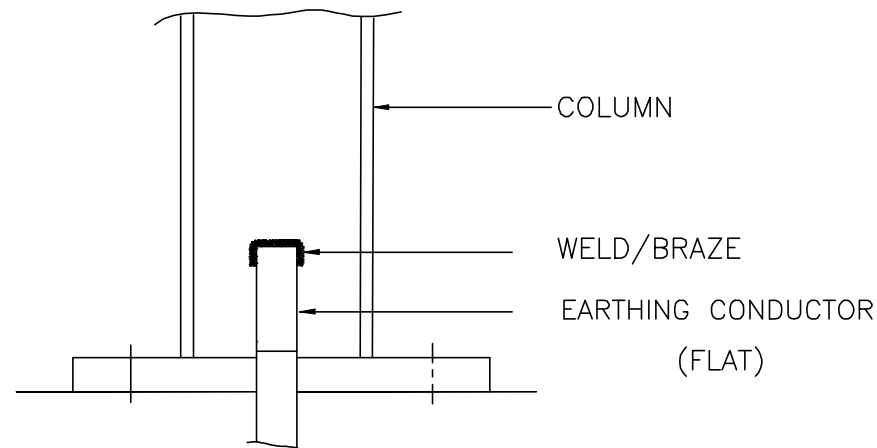
1. ALL DIMENSIONS ARE IN MM.
2. THE DOWN COMER ENTRY AND EXIT POINTS IN THE BOX TO BE MADE WATER TIGHT AFTER LAYING OF CONDUCTOR.
3. THE TEST LINK SHALL BE OF SAME WIDTH AND THICKNESS AS THE DOWN COMER. THE NUTS BOLTS AND WASHERS TO BE OF G.I.
4. NUTS AND BOLTS SHALL BE AS PER IS: 1363(PART-1,2,3):1992/ IS 1367(PART-5):1980.
5. WASHERS SHALL BE AS PER IS 2016:1967.

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS LIGHTNING PROTECTION DOWN COMER TEST LINK						
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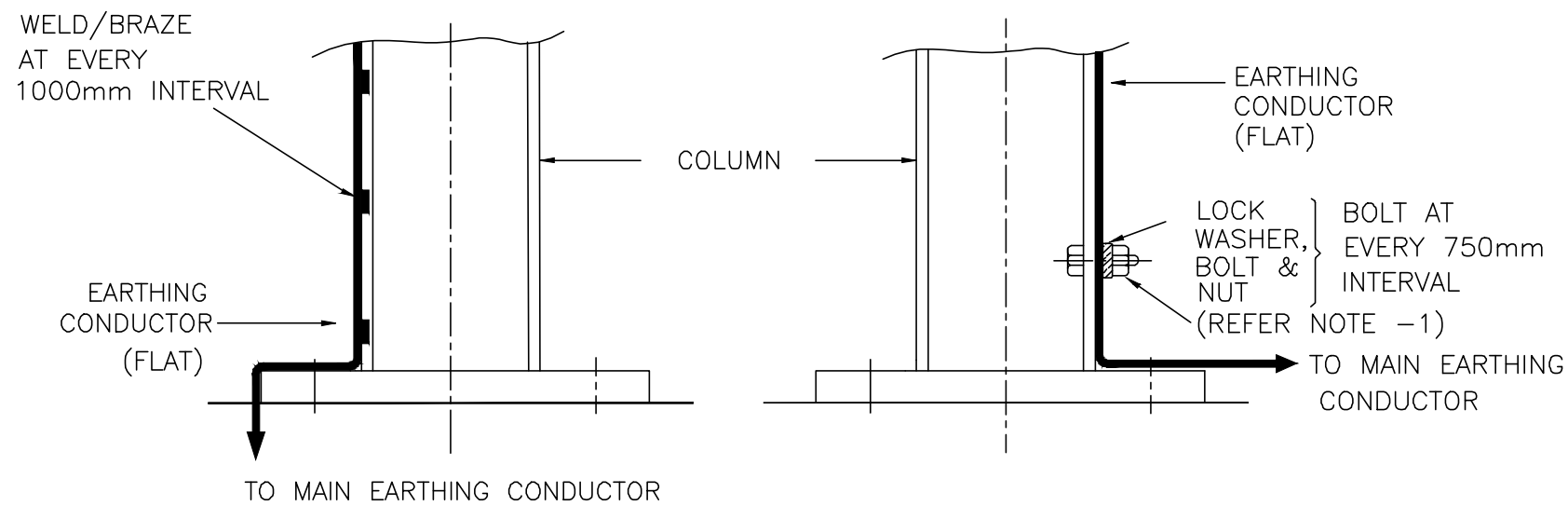
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NOTES

1. IT IS PREFERABLE TO HAVE A RUN ON WEB SO THAT PROJECTIONS OF NUT/BOLTS ARE AVOIDED.
2. NUTS AND BOLTS SHALL BE AS PER IS: 1363(PART-1,2,3):1992/ IS 1367(PART-5):1980.
3. WASHERS SHALL BE AS PER IS 2016:1967.



(i) STEEL COLUMN EARTHING



(ii) FLAT EARTHING CONDUCTOR RUNNING ALONG STEEL COLUMN

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
EARTHING DETAILS STEEL COLUMNS

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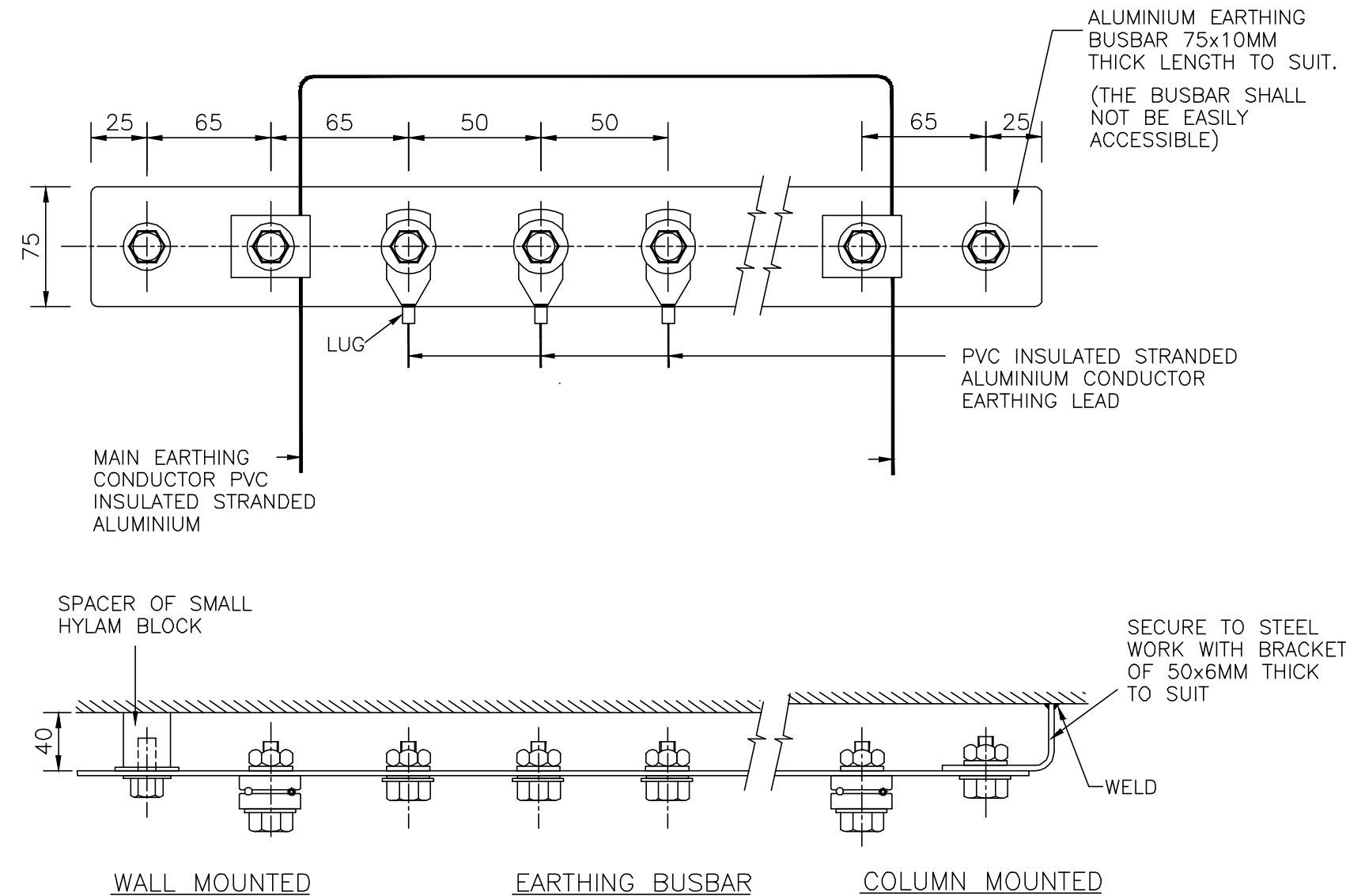
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NOTES

1. ALL DIMENSIONS ARE IN MM.
2. LUG DIMENSIONS TO SUIT VARIOUS CONDUCTOR SIZES USED.
3. FIELD TO ENCASE BUS IN BOX WHEN IN CORROSIVE ATMOSPHERE.
4. NUTS AND BOLTS SHALL BE AS PER IS: 1363(PART-1,2,3):1992/ IS 1367(PART-5):1980.
5. WASHERS SHALL BE AS PER IS 2016:1967.



MATERIALS

1. LUGS. ALUMINIUM (REFER NOTE # 2)
2. NUTS, BOLTS & WASHERS G.I.

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
BUSBARS WALL/COLUMN MOUNTED

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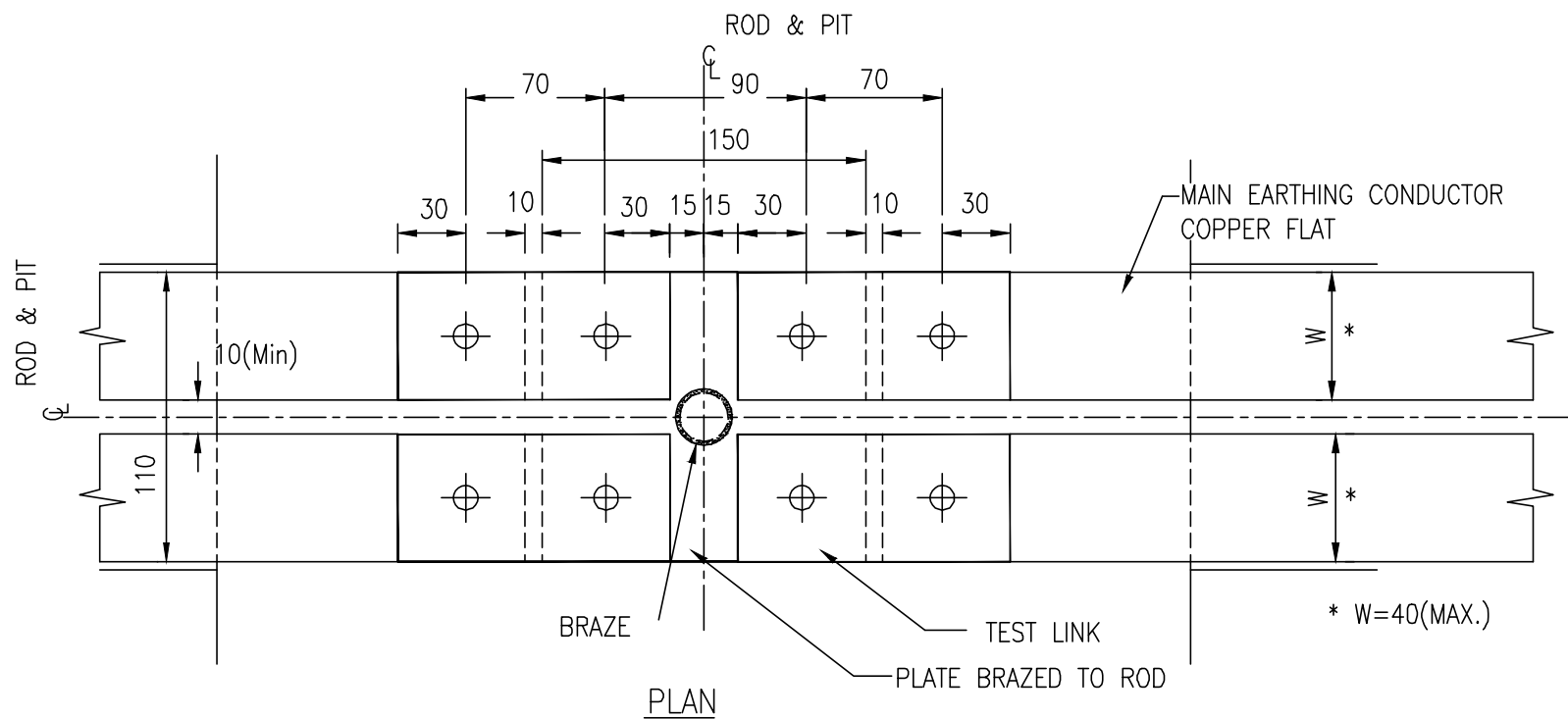
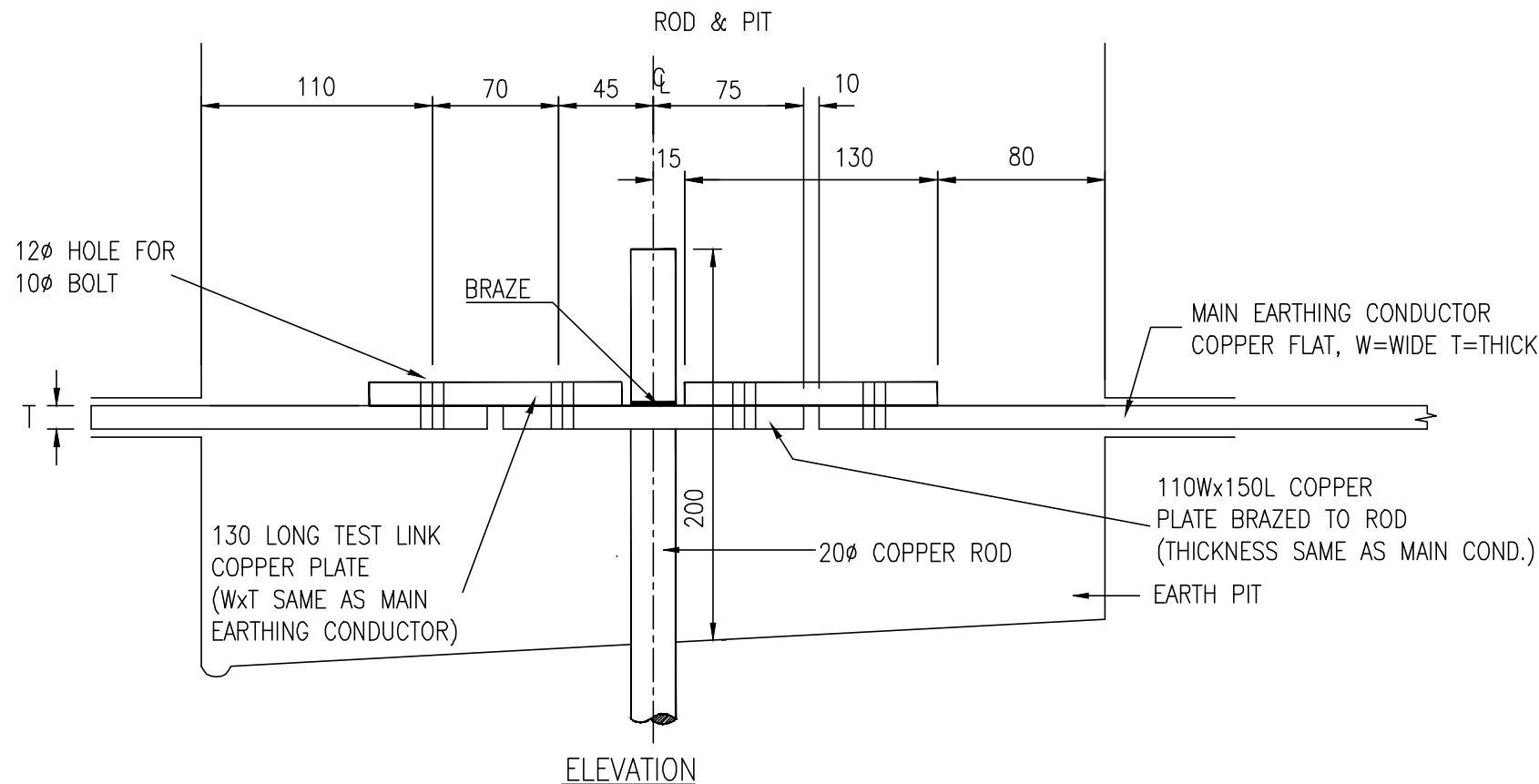
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NOTES

1. ALL DIMENSIONS ARE IN MM.
2. ALL NUTS, BOLTS & WASHERS SHALL BE OF HIGH SILICON BRONZE ALLOY.
3. EXCEPT DIMENSIONS OF MAIN EARTHING CONDUCTOR, ALL OTHER DIMENSIONS SHALL REMAIN FIRM.
4. THE ARRANGEMENT IS TYPICAL FOR CONNECTING FOUR CONDUCTORS ON COPPER ROD ELECTRODE. ACTUAL NO. OF CONNECTIONS TO BE DECIDED AT SITE.
5. NUTS AND BOLTS SHALL BE AS PER IS: 1363(PART-1,2,3):1992/ IS 1367(PART-5):1980.
6. WASHERS SHALL BE AS PER IS 2016:1967.



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					Approved	Validated

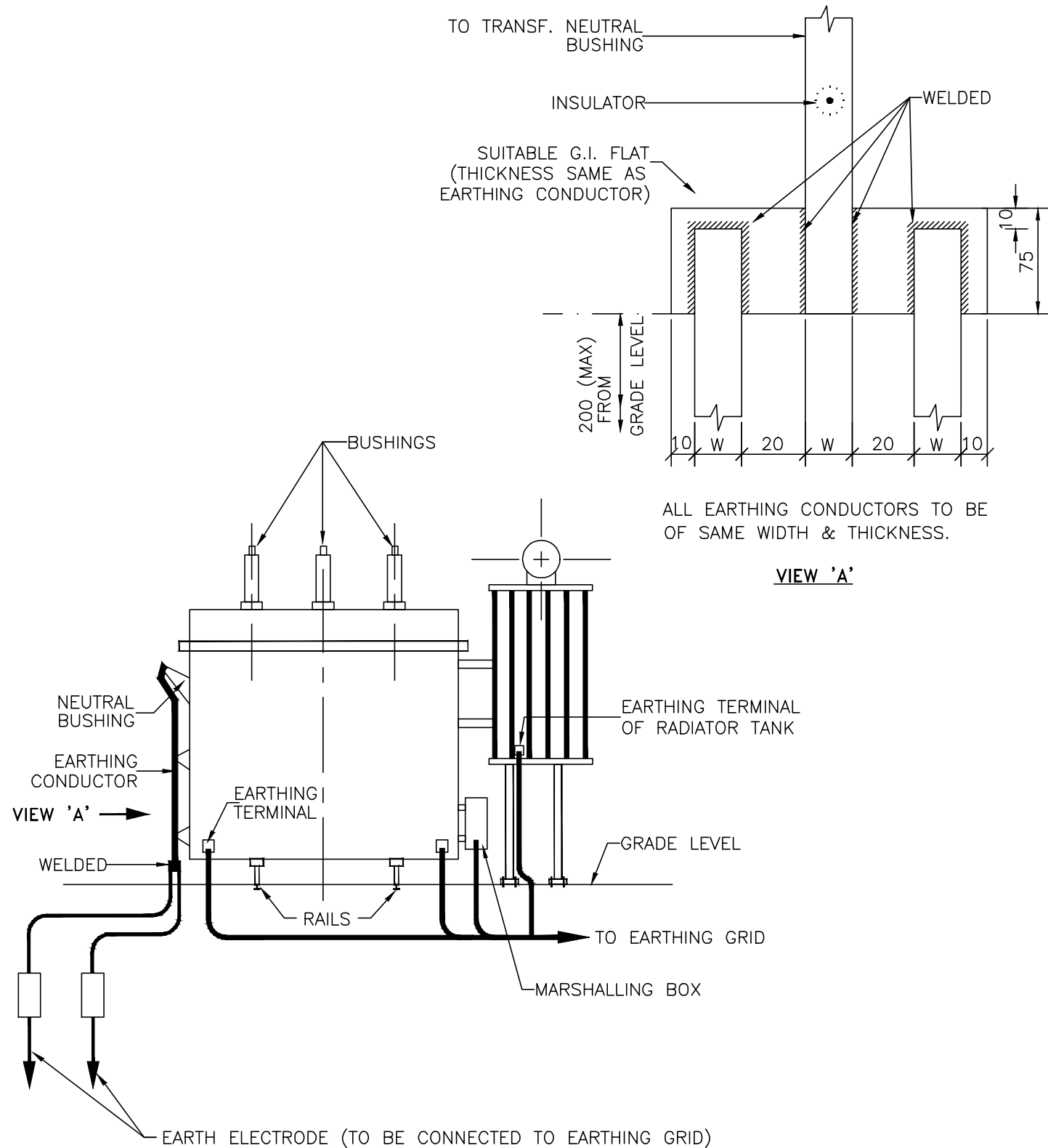
SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
ROD ELECTRODE CONNECTION DETAILS (FLAT CONDUCTOR)

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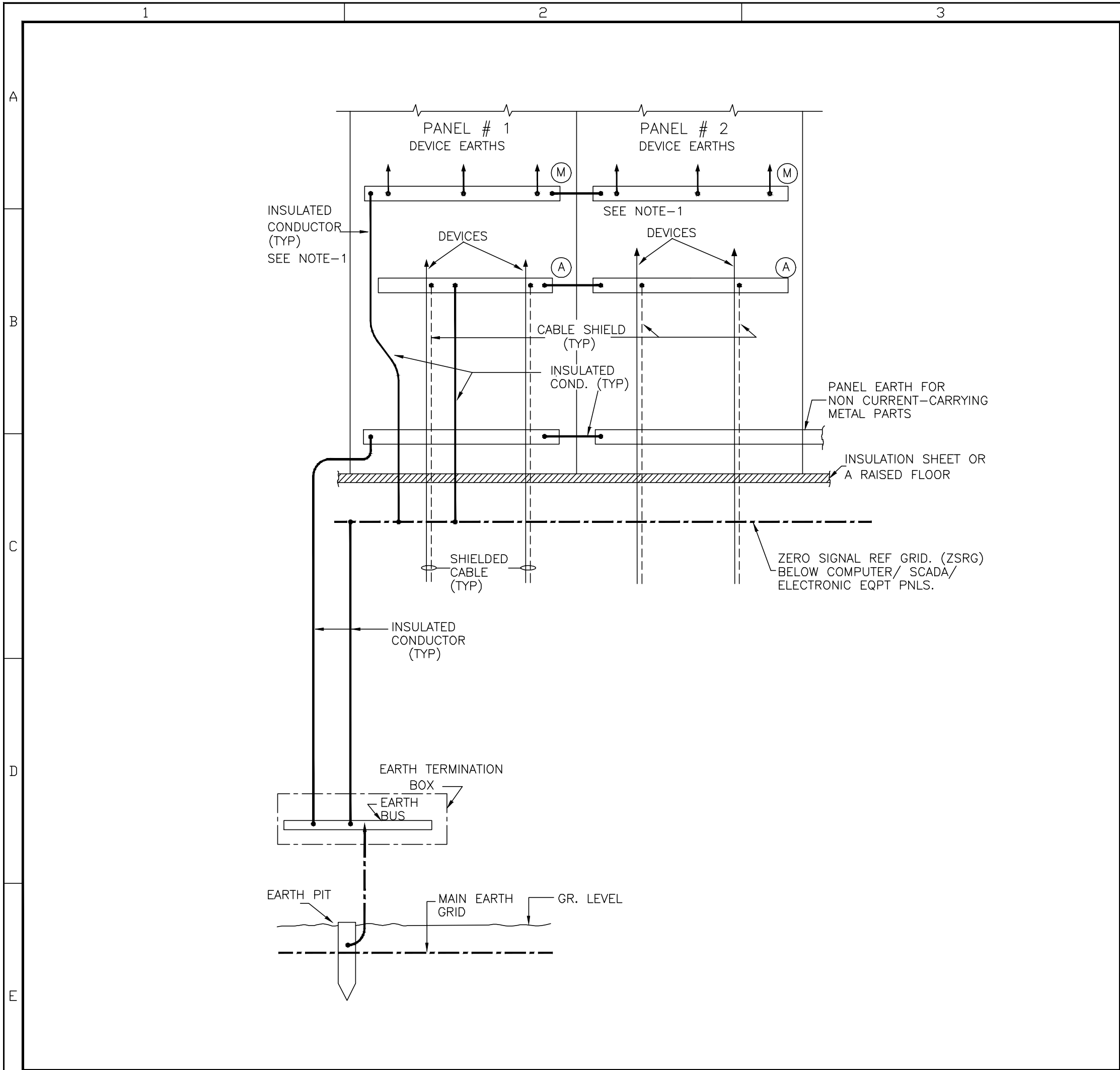
1. ALL DIMENSIONS ARE IN MM.
2. WELDING SHALL BE DONE AS PER IS 816:1969.
3. THE TRANSFORMER NEUTRAL SHALL BE CONNECTED TO TWO ELECTRODES LOCATED APPROX 6M APART IN EARTH TEST PIT. THE CONNECTION BETWEEN TRANSFORMER NEUTRAL AND EACH ELECTRODE SHALL BE MADE BY SEPARATE CONDUCTORS.



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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
TRANSFORMER EARTHING

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NOTES

- 1 EARTH BUSES Ⓐ & Ⓜ MAY BE COMBINED INTO ONE BUS IF TWO SEPARATE BUSES ARE NOT SPECIFIED BY VENDORS
- 2 IF ZSRG IS NOT PROVIDED THE Ⓐ & Ⓜ BUSES ARE BROUGHT BY INSULATED CONDUCTORS TO THE EARTHBUS IN THE EARTH TERMINATION BOX. ONLY ONE EARTHING CONNECTION SHOULD BE PROVIDED FROM THIS EARTH BUS TO EARTH PIT PROVIDED IN THE MAIN EARTHING GRID.

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS COMPUTER/INSTRUMENTATION EQUIPMENT						
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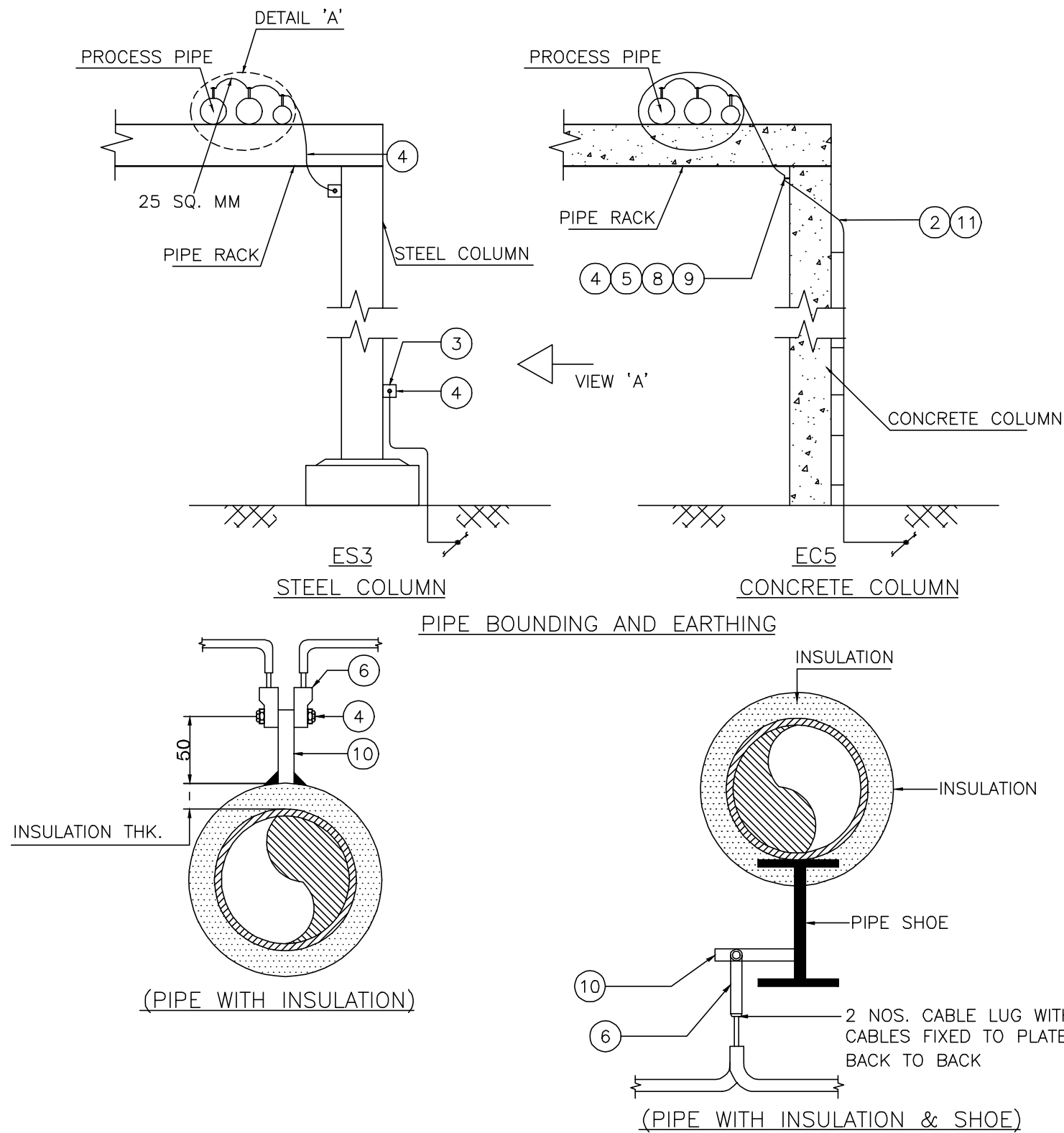
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NOTES

1. ALL DIMENSION INDICATED ARE IN MM UNLESS OTHERWISE SPECIFIED

LEGEND

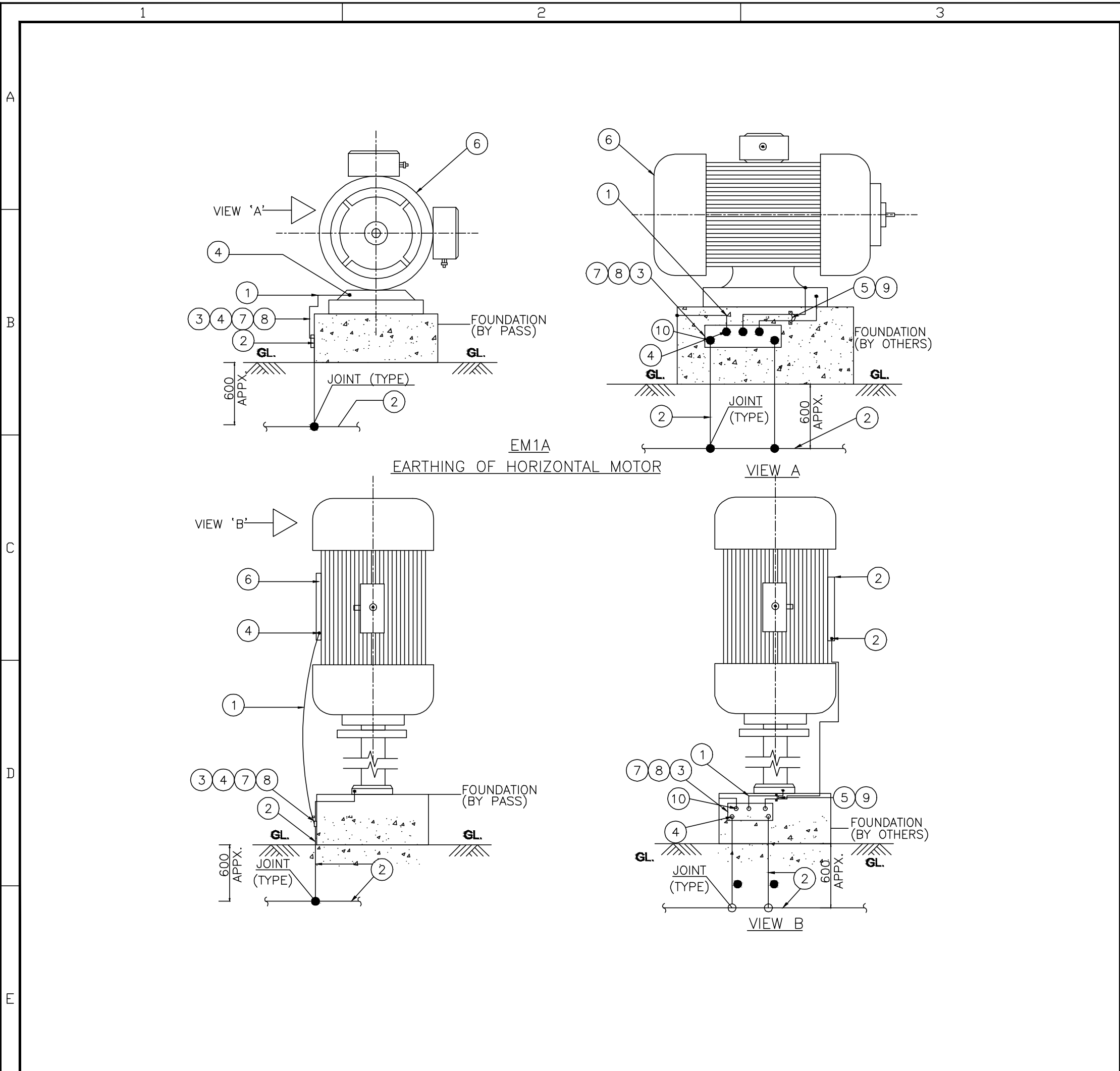
- ① EARTHING STRIP GI
② SADDLE WITH CLAMP (HOT DIP GALV.)
③ EARTHING LUG (100x75x5mm THK.)
④ NUT, BOLT & SPRING WASHER
⑤ EARTH BUS 75x10mm, 400mm LONG
⑥ TERMINAL LUG (25 SQ.MM)
⑦ EARTHING CONDUCTOR (25AQ.MM)
⑧ 12mm DIA. SPACING PIPE(50mm LONG)
⑨ ANCHOR BOLT M8x100mm LONG WITH NUT WASHER & SPRING WASHER
⑩ 50 X 8 G.I STRIP WITH 1 NO. 10 DIA HOLE, LENGHT TO SUIT INSULATION
⑪ EXPANSION ANCHOR BOLT WITH FLATE WASHER (M6x40mm)



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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
EQUIPMENT ON R C C / STEEL COLUMN

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NOTES

1. ALL DIMENSION INDICATED ARE IN MM UNLESS OTHERWISE SPECIFIED.

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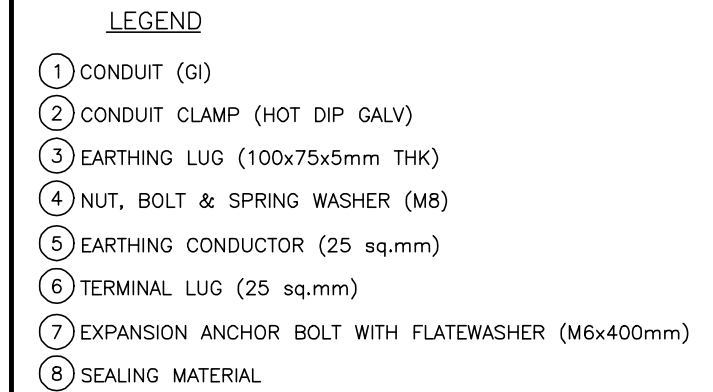
- ① EARTHING CONDUCTOR
- ② EARTHING STRIP
- ③ EARTH BUS
- ④ TERMINAL LUG WITH NUT , BOLT & SPRING WASHER
- ⑤ SADDLE WITH CLAMP
- ⑥ MOTOR
- ⑦ 12mm DIA. SPACING PIPE (50mm LONG)
- ⑧ ANCHOR BOLT DIA 8mm, 100mm LONG WITH NUT,SPRNG WASHER & PLAIN WASHER
- ⑨ EXPANSION ANCHOR NBOLT WITH FLATWASHER (M6x40mm)
- ⑩ NUT, BOLT & SPRING WASHER (M8)

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SUBJECT TYPICAL EARTHING INSTALLATION DETAILS
EARTHING OF HORIZONTAL MOTOR

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1. ALL DIMENSION INDICATED ARE IN MM UNLESS OTHERWISE SPECIFIED.



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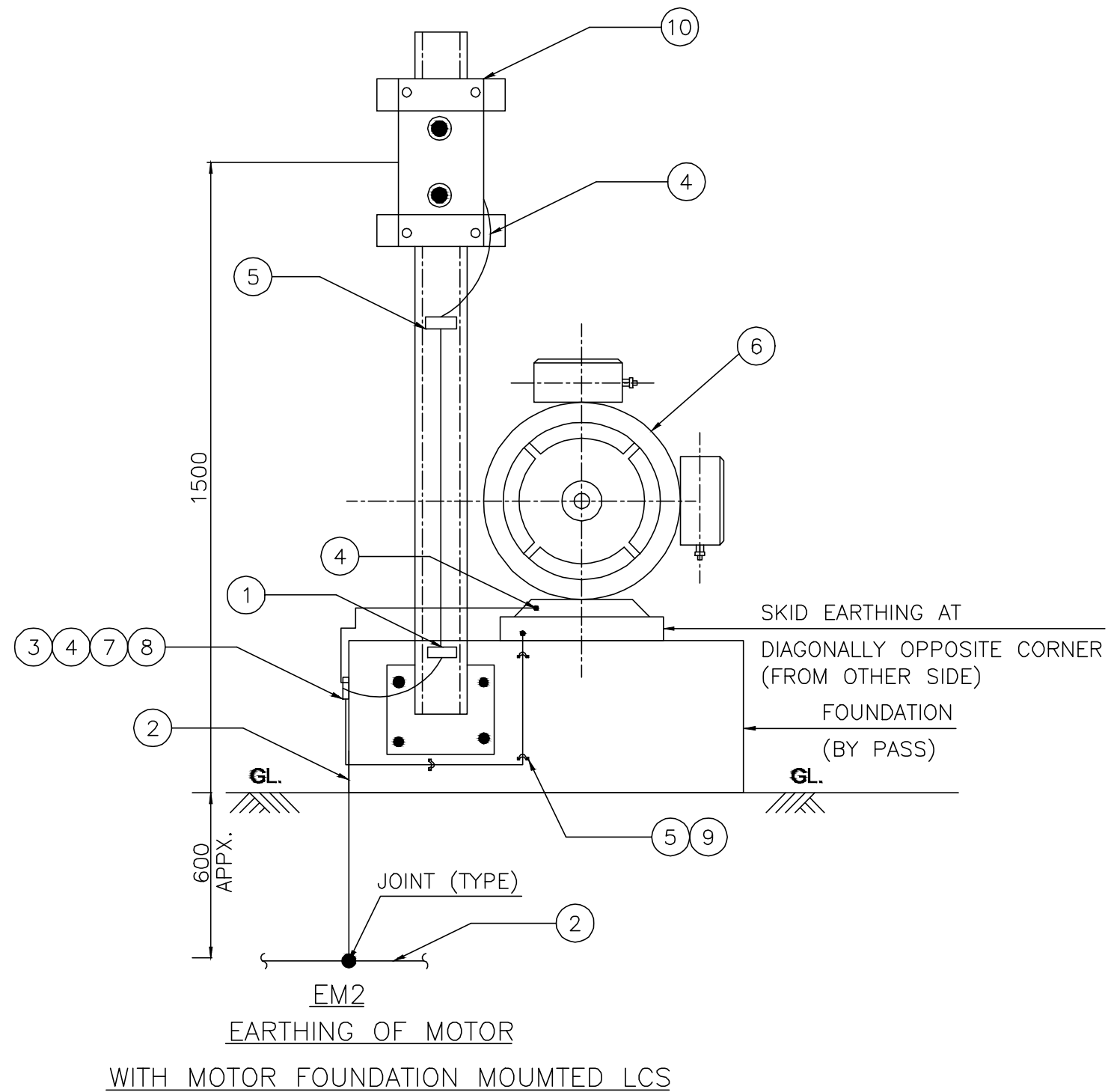
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Size	Scale	Sheet
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1. ALL DIMENSION INDICATED ARE IN MM UNLESS OTHERWISE SPECIFIED.

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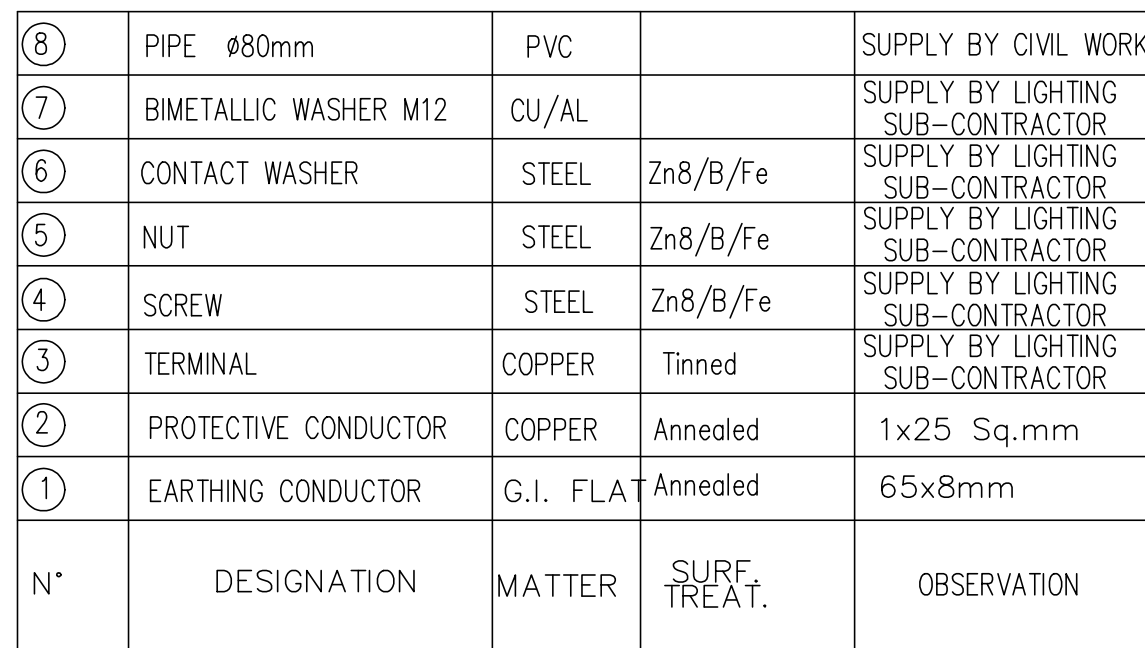
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- ③ EARTH BUS GI
- ④ TERMINAL LUG WITH NUT , BOLT & SPRING WASHER
- ⑤ SADDLE WITH CLAMP
- ⑥ MOTOR
- ⑦ 12mm DIA. SPACING PIPE (50mm LONG)
- ⑧ ANCHOR BOLT DIA 8mm, 100mm LONG WITH NUT,SPRING WASHER & PLAIN WASHER
- ⑨ EXPANSION ANCHOR NBOLT WITH FLATWASHER (M6x40mm)
- ⑩ LOCAL CONTROL STATION



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SUBJECT	TYPICAL EARTHING INSTALLATION DETAILS EARTHING OF MOTOR WITH MOTOR FOUNDATION MOUNTED LCS
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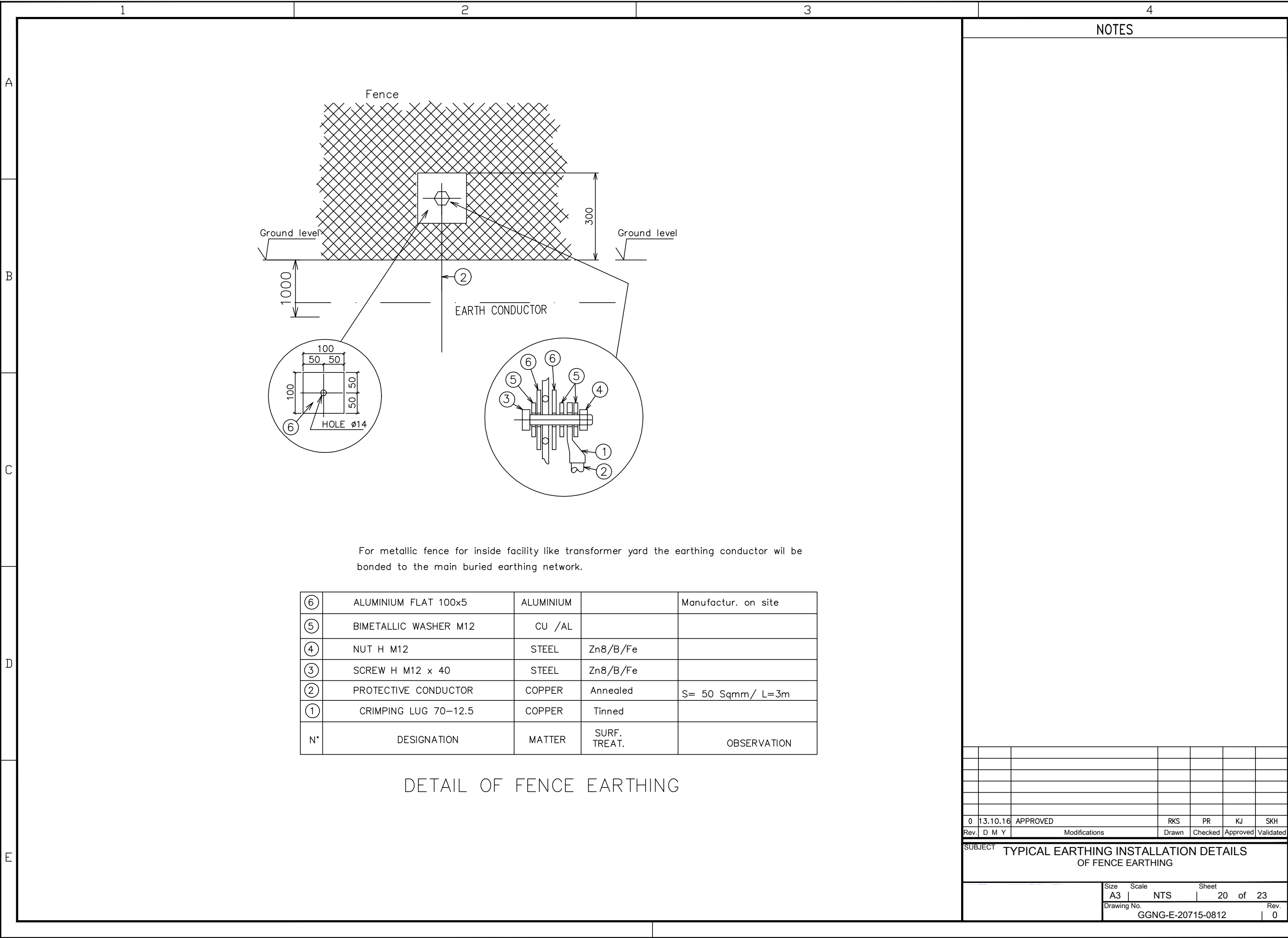


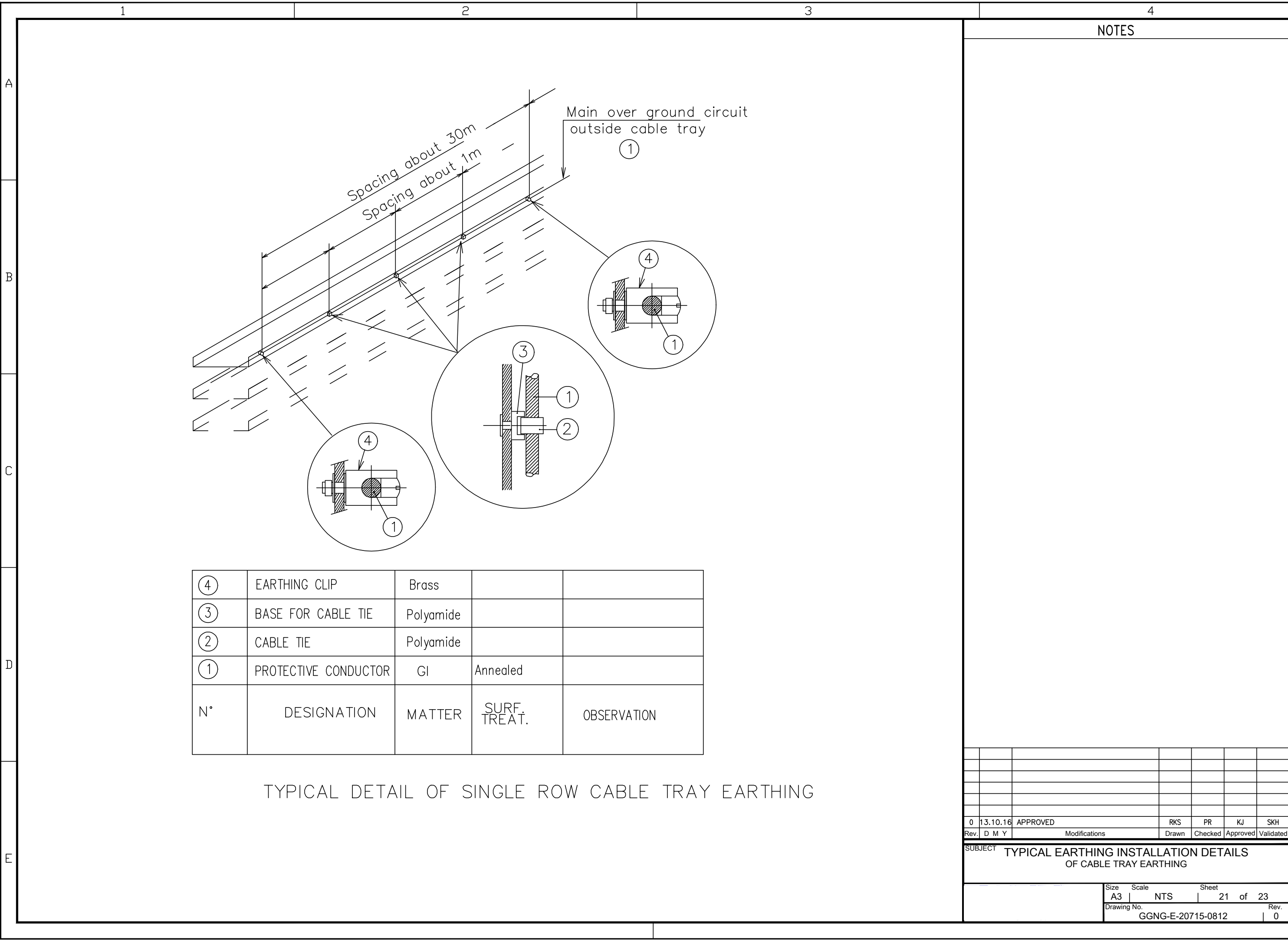
TYPICAL DETAIL OF LIGHTING MAST EARTHING

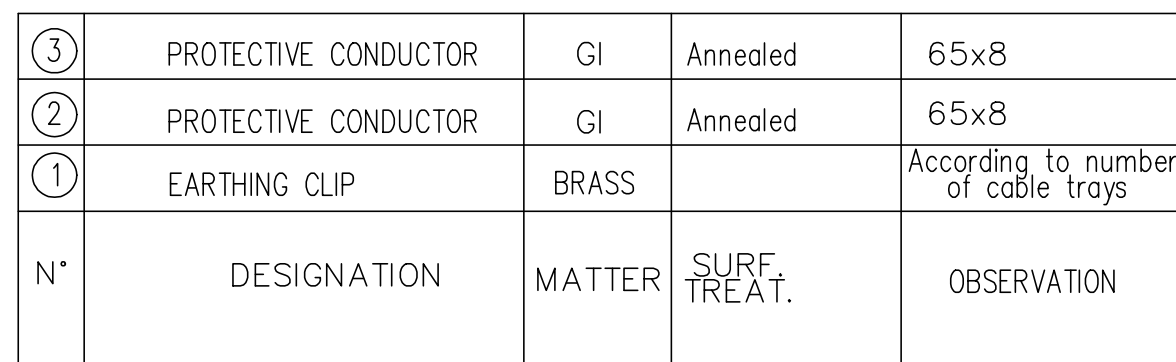
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Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT	TYPICAL EARTHING INSTALLATION DETAILS LIGHTING MAST EARTHING
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TYPICAL DETAIL OF MULTIPLE ROW CABLE TRAY EARTHING

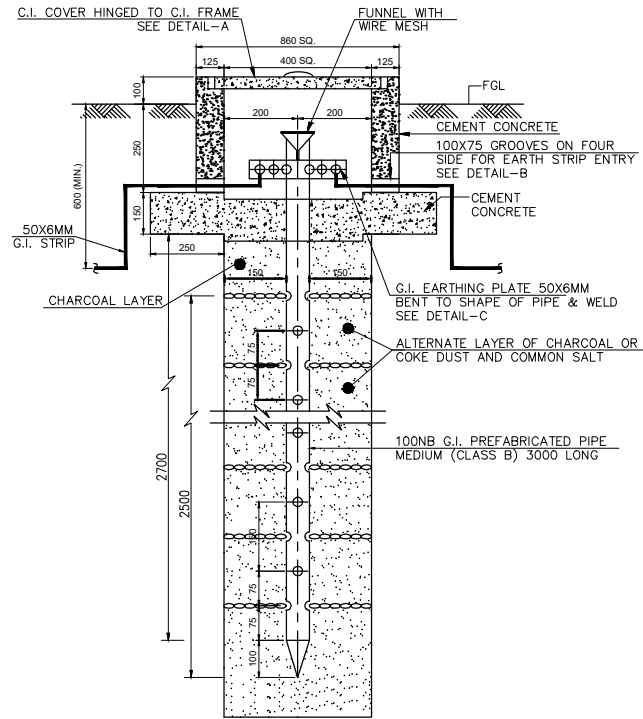
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Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT	TYPICAL EARTHING INSTALLATION DETAILS OF MULTIPLE ROW CABLE TRAY EARTHING
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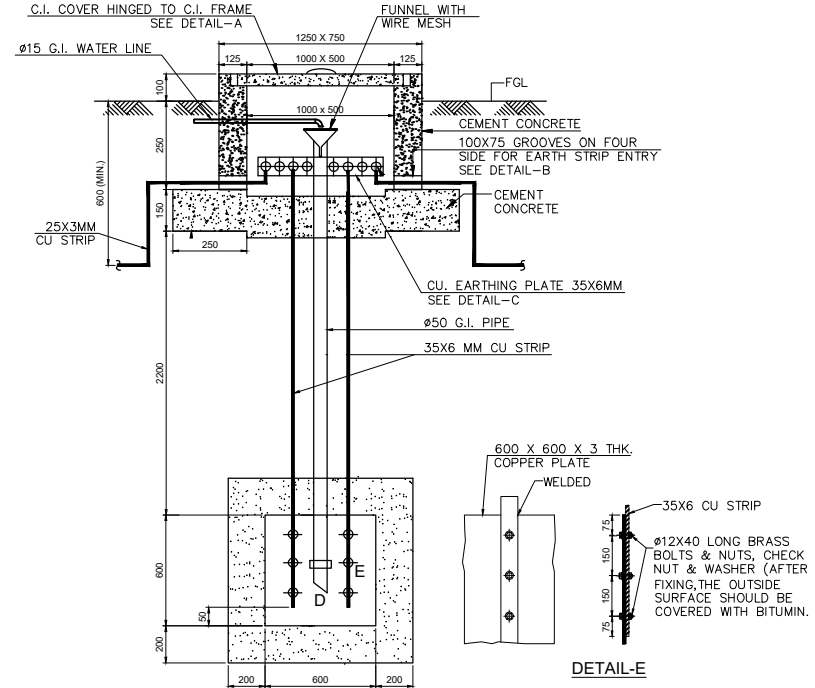
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	Drawing No.			Rev.
	GGNG-E-20715-0812			0

	1	2	3	4																																																																						
A	Bonding jumper			NOTES																																																																						
B																																																																										
C																																																																										
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<table><tr><td>6</td><td>CRIMPING LUG 50–12</td><td>COPPER</td><td>Tinned</td><td>S= 50 Sqmm</td></tr><tr><td>5</td><td>BIMETALLIC PLATE</td><td>CU/AL</td><td></td><td></td></tr><tr><td>4</td><td>BIMETALLIC WASHER M12</td><td>CU/AL</td><td></td><td></td></tr><tr><td>3</td><td>SCREW H M12–40</td><td>STEEL</td><td>Zn8/ B/ Fe</td><td></td></tr><tr><td>2</td><td>NUT H M12</td><td>STEEL</td><td>Zn8/ B/ Fe</td><td></td></tr><tr><td>1</td><td>PROTECTIVE CONDUCTOR</td><td>COPPER</td><td>Annealed</td><td>S=50 Sqmm</td></tr><tr><td>N°</td><td>DESIGNATION</td><td>MATTER</td><td>SURF. TREAT.</td><td>OBSERVATION</td></tr></table>					6	CRIMPING LUG 50–12	COPPER	Tinned	S= 50 Sqmm	5	BIMETALLIC PLATE	CU/AL			4	BIMETALLIC WASHER M12	CU/AL			3	SCREW H M12–40	STEEL	Zn8/ B/ Fe		2	NUT H M12	STEEL	Zn8/ B/ Fe		1	PROTECTIVE CONDUCTOR	COPPER	Annealed	S=50 Sqmm	N°	DESIGNATION	MATTER	SURF. TREAT.	OBSERVATION																																			
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TYPICAL DETAIL OF EXPANSION JOINT OF MAIN CABLE TRAY EARTHING																																																																										
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Drawing No. GGNG-E-20715-0812			Rev. 0																																																																							

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1

2

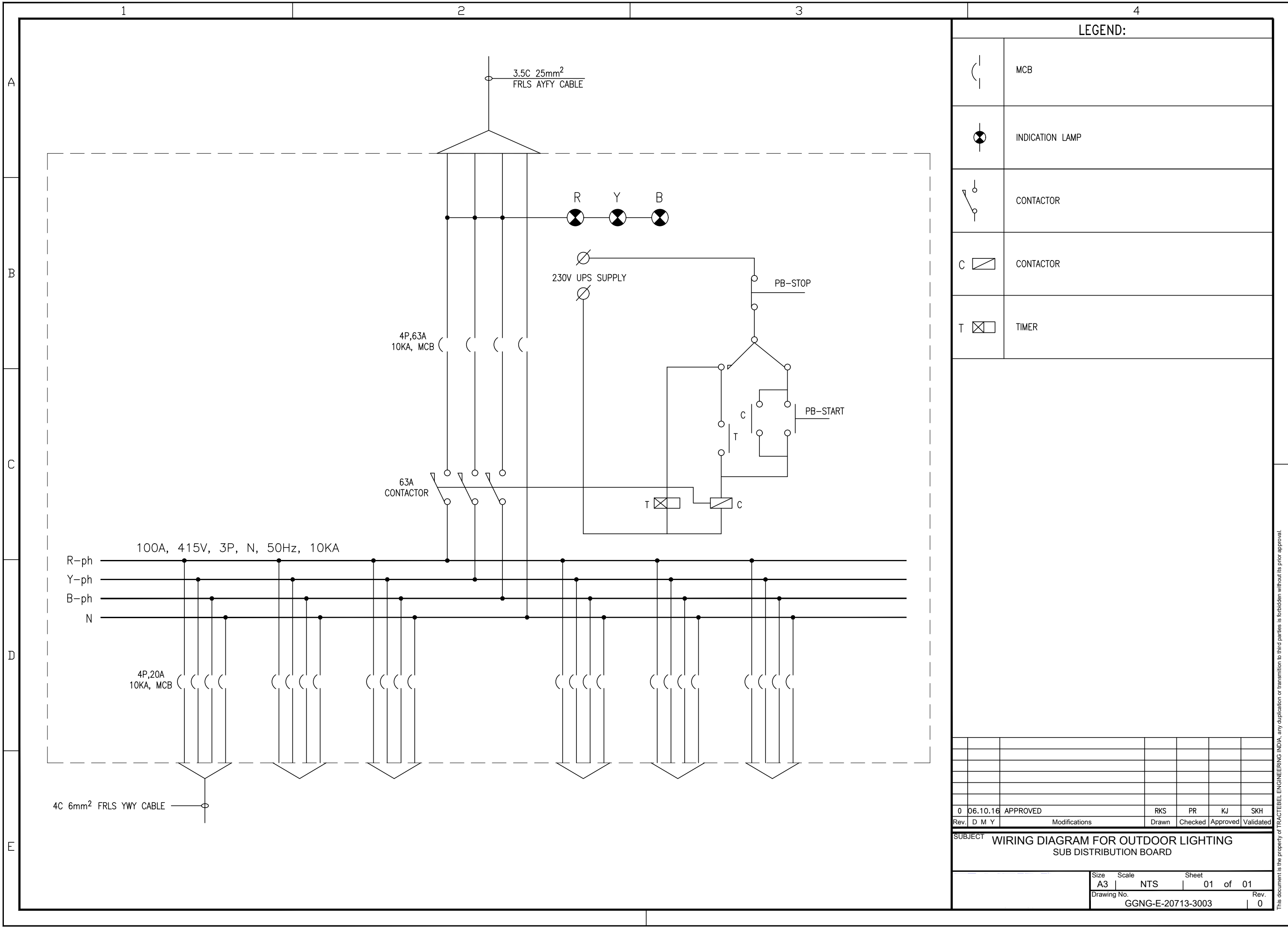


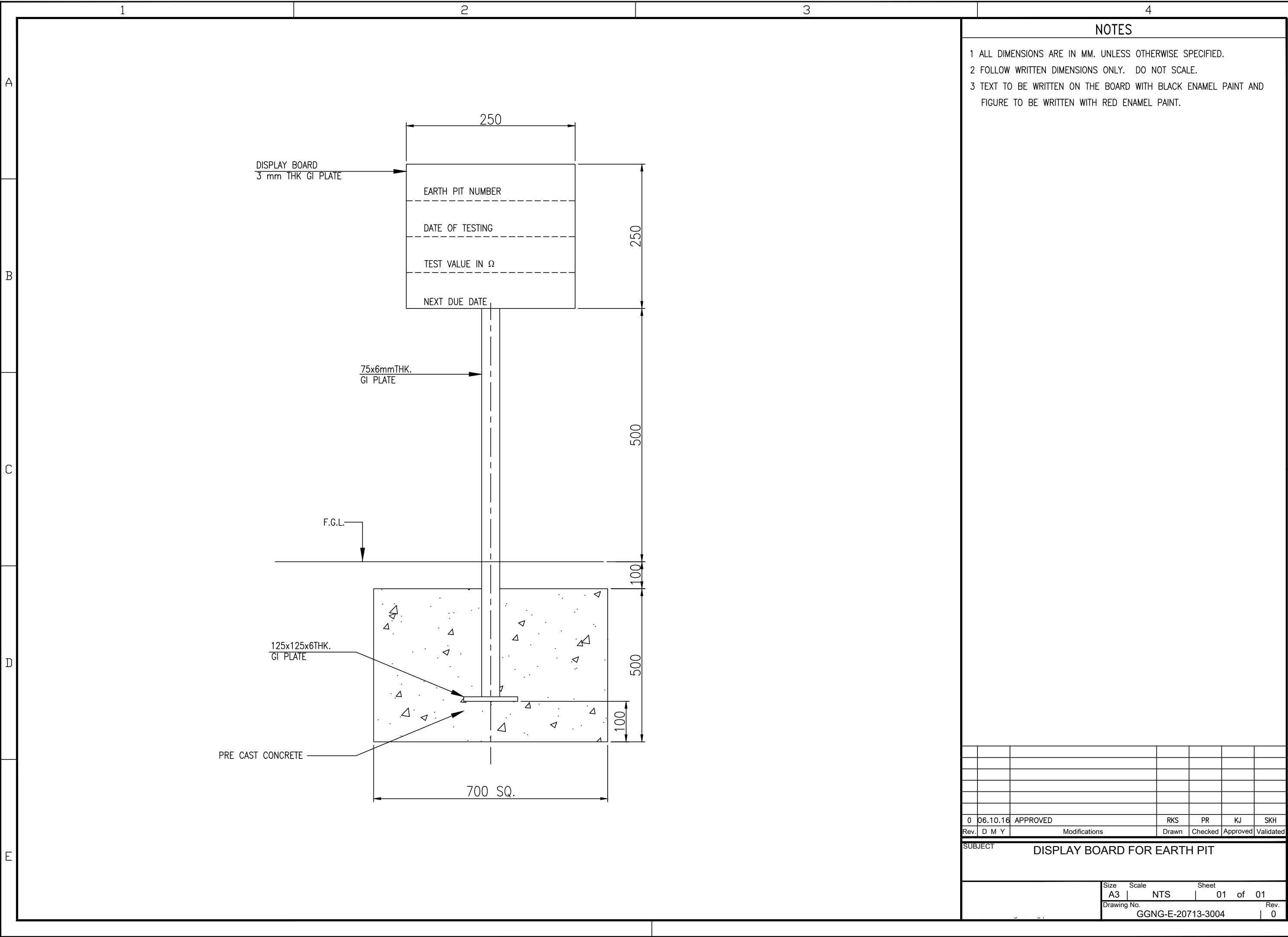
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| 0 | 22.01.24 | APPROVED | RKA | KB | DMY | VG |
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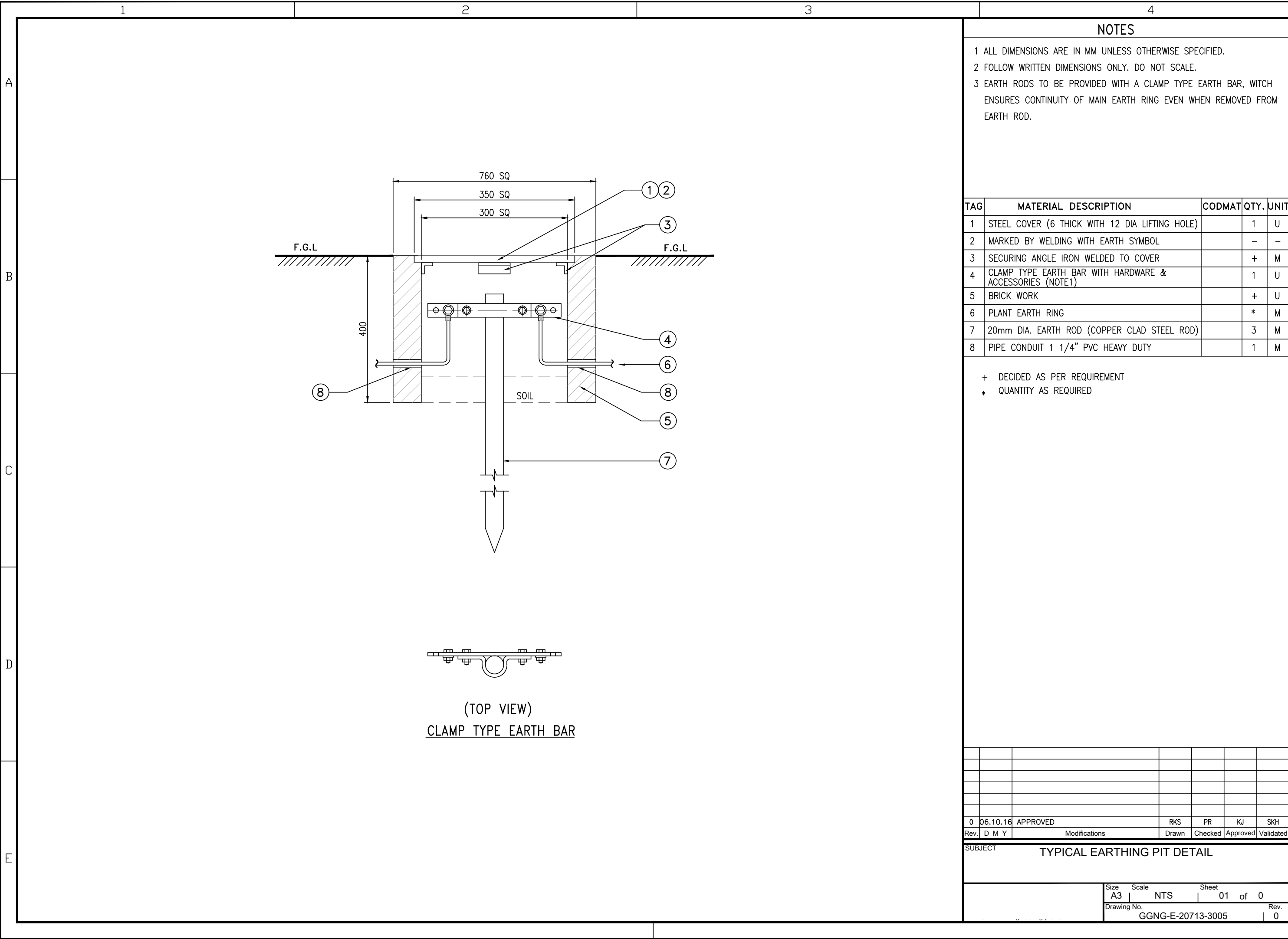
TYPICAL EARTH PIT DETAILS

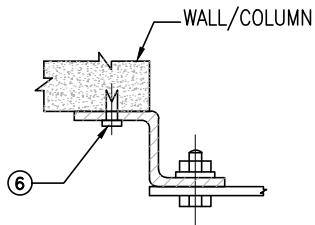
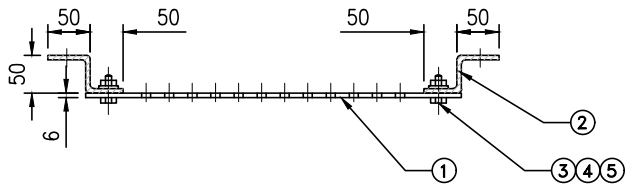
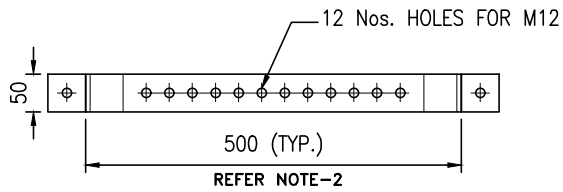
Size	Scale	Sheet
A3	NTS	01 of 01
Drawing No.		Rev.
GGNG-E-20713-3001		0



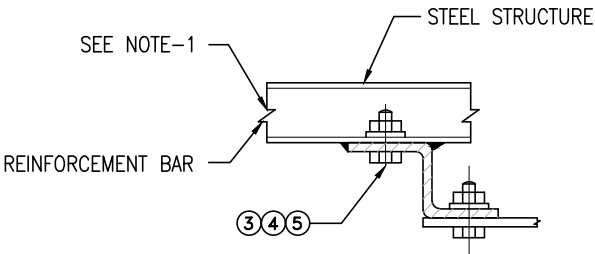


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MOUNTING TYPE-1



MOUNTING TYPE-2

NOTES

- 1 ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
- 2 FOLLOW WRITTEN DIMENSIONS ONLY. DO NOT SCALE.
- 3 EARTH BUS SHALL BE INSTALLED AT CONVENIENT LOCATION NEAR GROUP OF EQUIPMENT PRECISE LOCATION OF GROUND BUS SHALL BE DECIDED BY AS PER SITE CONDITION.
- 4 LENGHT OF BUS TO SUIT AT SITE CONDITION.

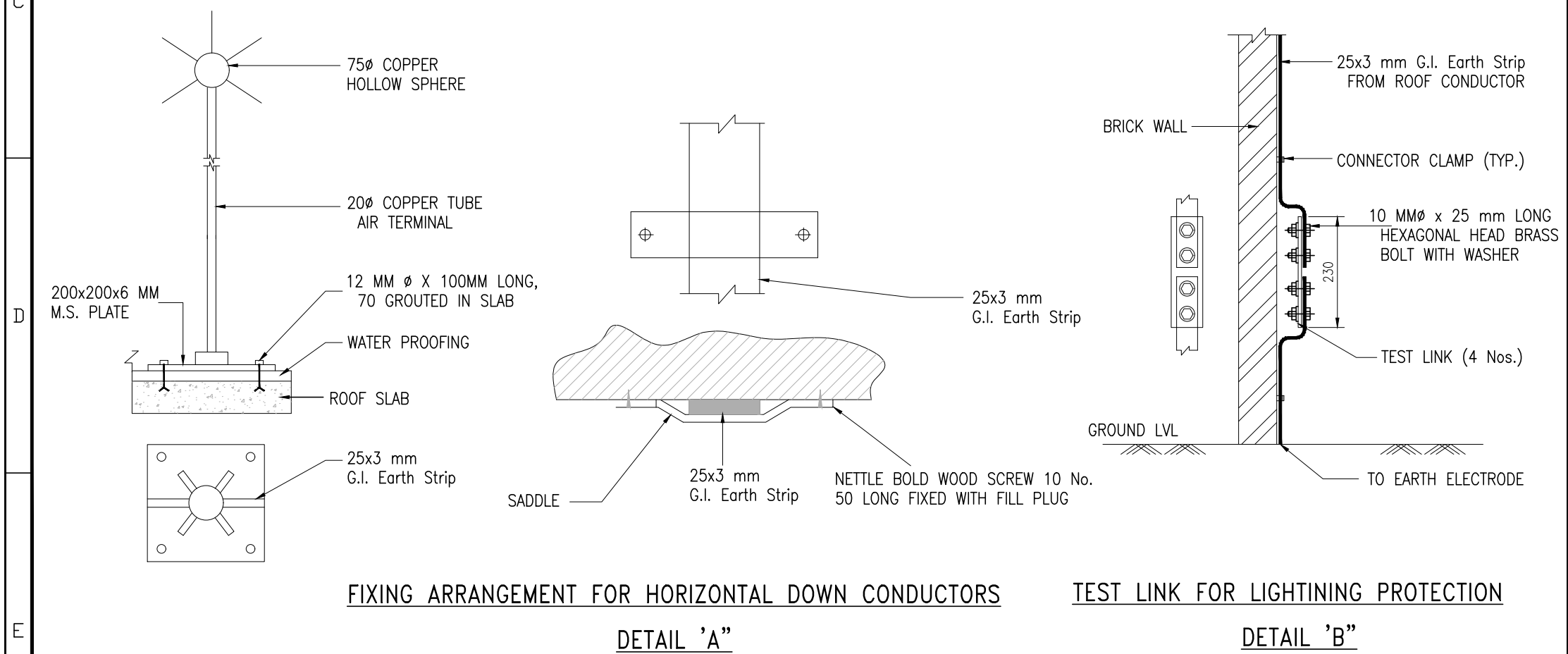
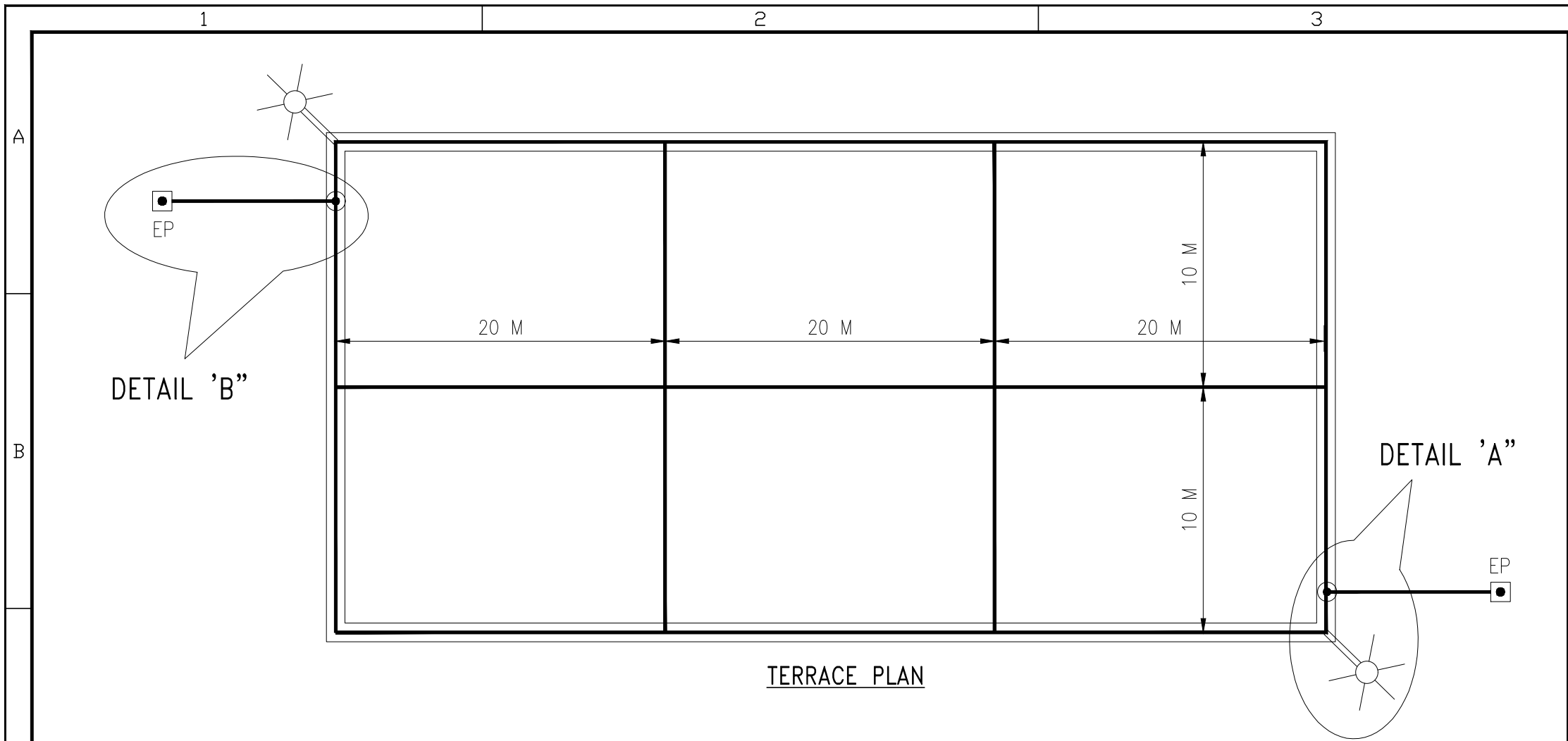
TAG	MATERIAL DESCRIPTION	CODMAT	QTY.	UNIT
1	EARTH BUS 50x6 mm THK. COPPER		*	U
2	MOUNTING BRACKET		1	U
3	BOLT M12 – MS GALVANISED		2	U
4	NUTS (HEXAGONAL HEAD) – GALVANISED		2	U
5	PLAIN WASHER – GALVANISED		1	U
6	ANCHOR BOLT		4	U

* QUANTITY AS REQUIRED

0	06.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYPICAL EARTHING BUS DETAILS

Size	Scale	Sheet
A3	NTS	01 of 01
Drawing No.	Rev.	
GGNG-E-20713-3006	0	



NOTES

- 1 ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
- 2 FOLLOW WRITTEN DIMENSIONS ONLY. DO NOT SCALE.
- 3 G.I. SADDLE TO BE FIXED FOR HORIZONTAL DOWN CONDUCTOR A THE INTERVAL OF 750mm.

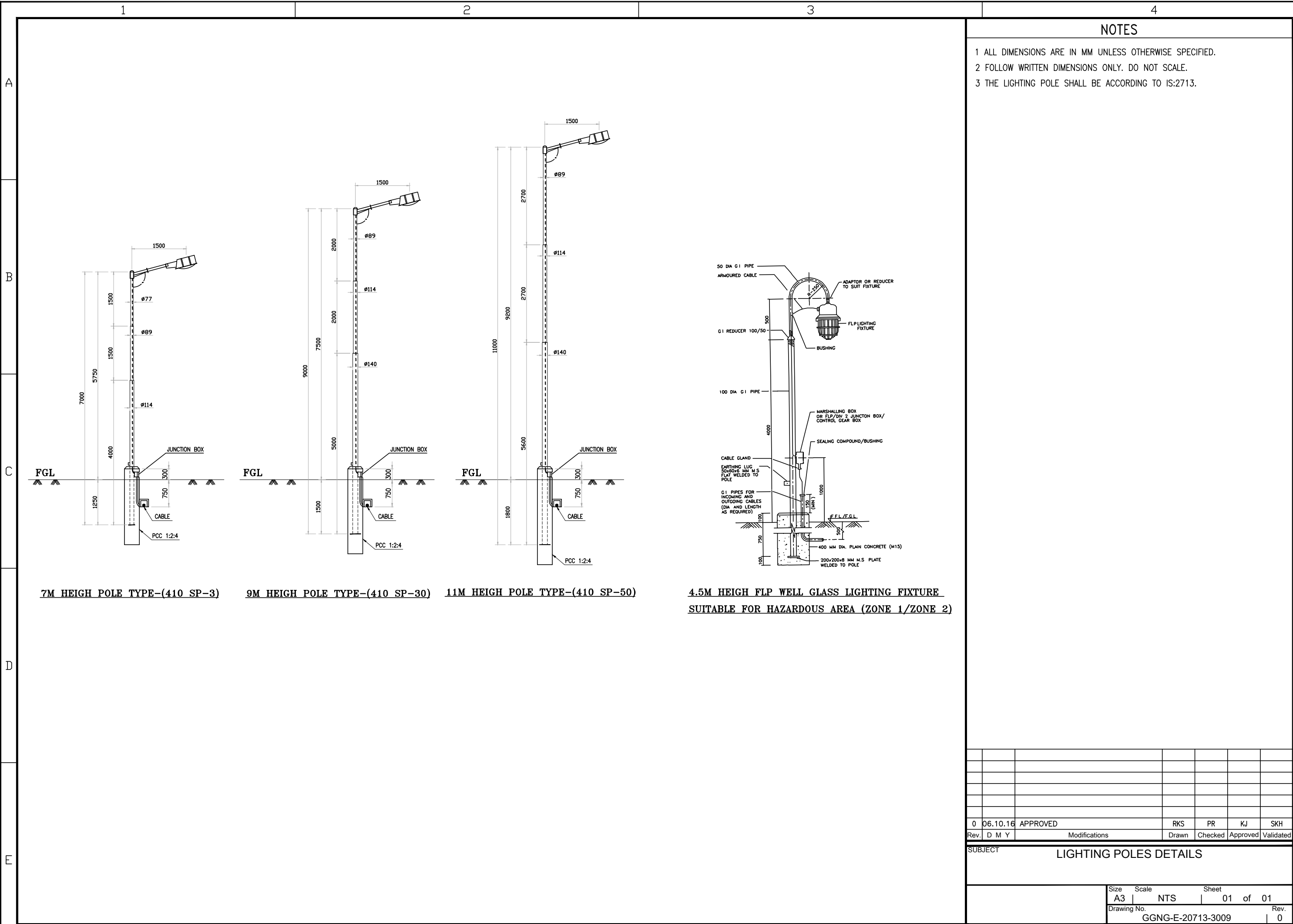
LEGEND

S.No.	SYMBOL DESCRIPTION	SYMBOL
1	25x3 mm G.I. EARTH STRIP	—
2	25x3 mm DOWN CONDUCTOR	●
3	LIGHTNING ARRESTOR (VERTICAL AIR TERMINAL)	⚡
4	EARTH PIT	EP ●

0	06.10.16	APPROVED	RKS	PR	KJ	SKH
Rev.	D M Y	Modifications	Drawn	Checked	Approved	Validated

SUBJECT TYP. LIGHTNING PROTECTION DETAIL FOR CONTROL ROOM BUILDING

Size	Scale	Sheet
A3	NTS	01 of 01
Drawing No.	GGNG-E-20713-3007	Rev. 0



STANDARD DRAWINGS

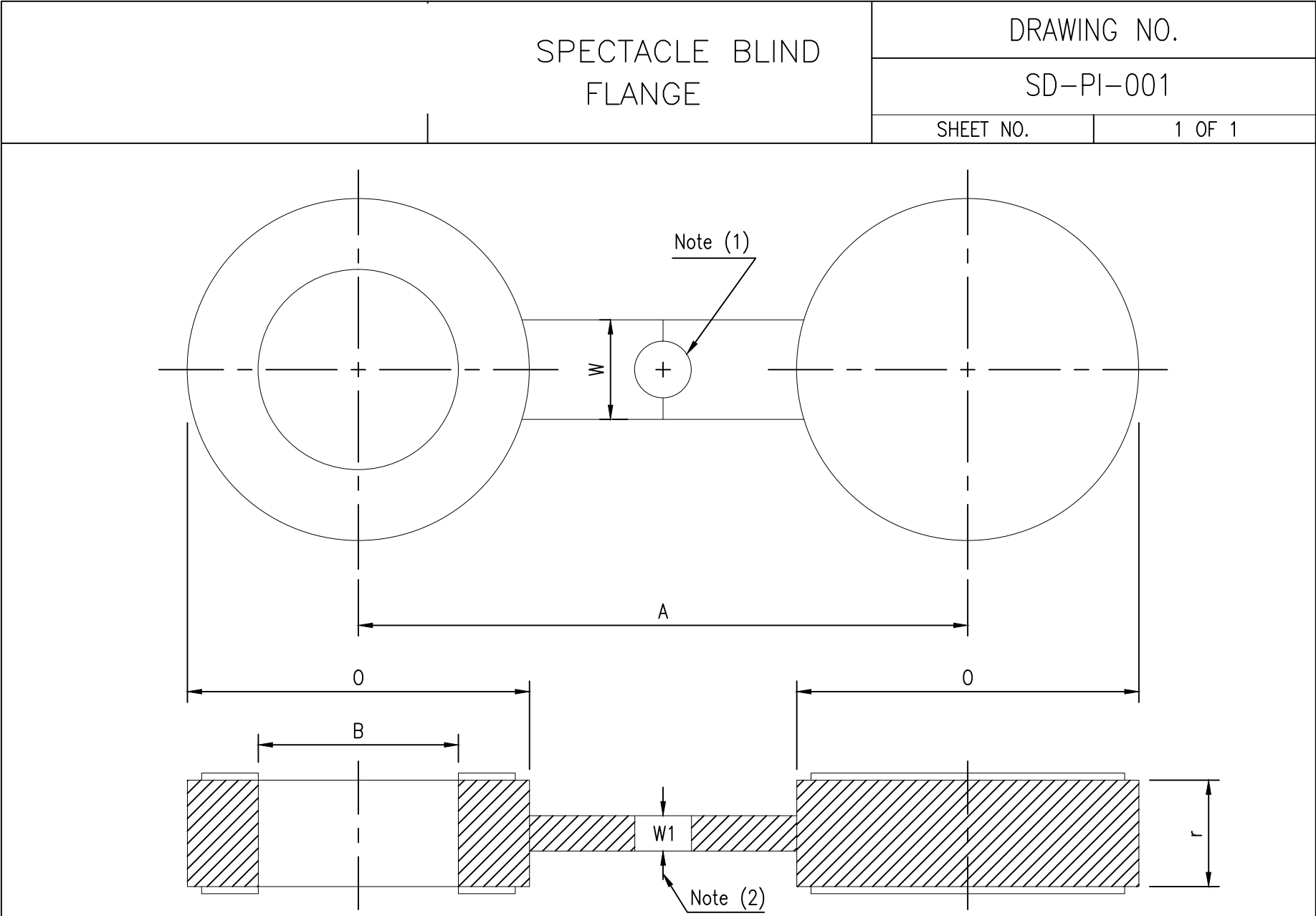


TABLE-4 DIMENSIONS OF CLASS 600 RAISED FACE FIGURE 8 BLANKS

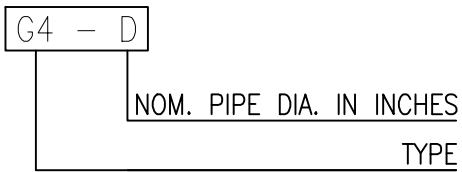
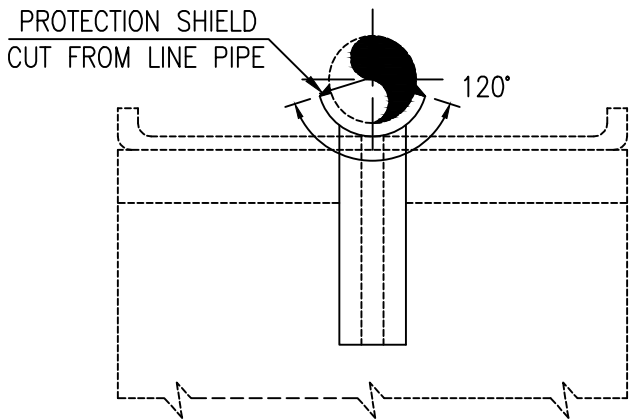
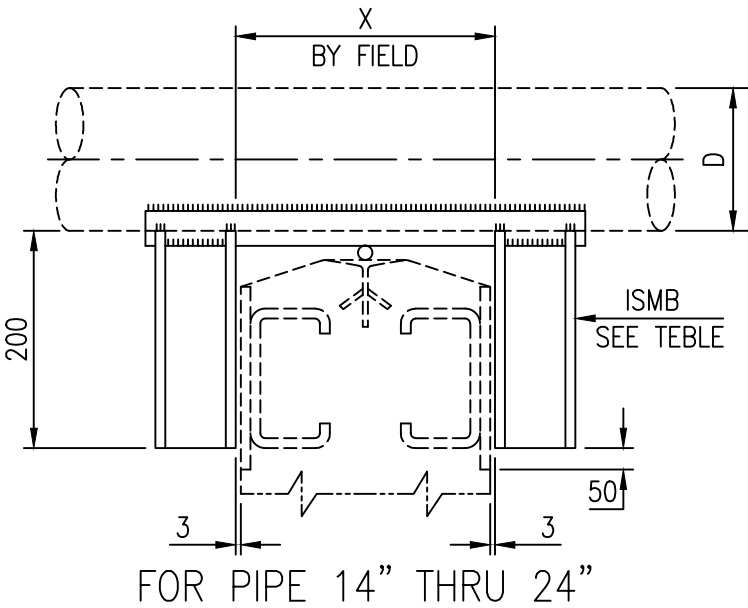
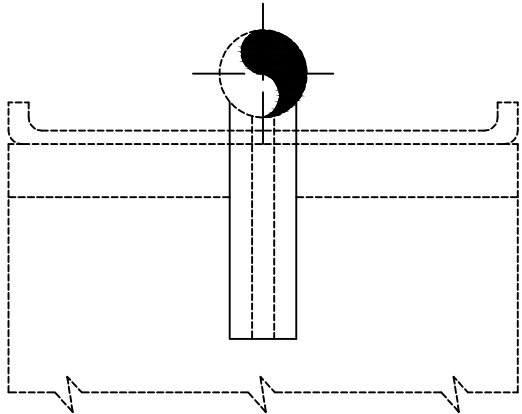
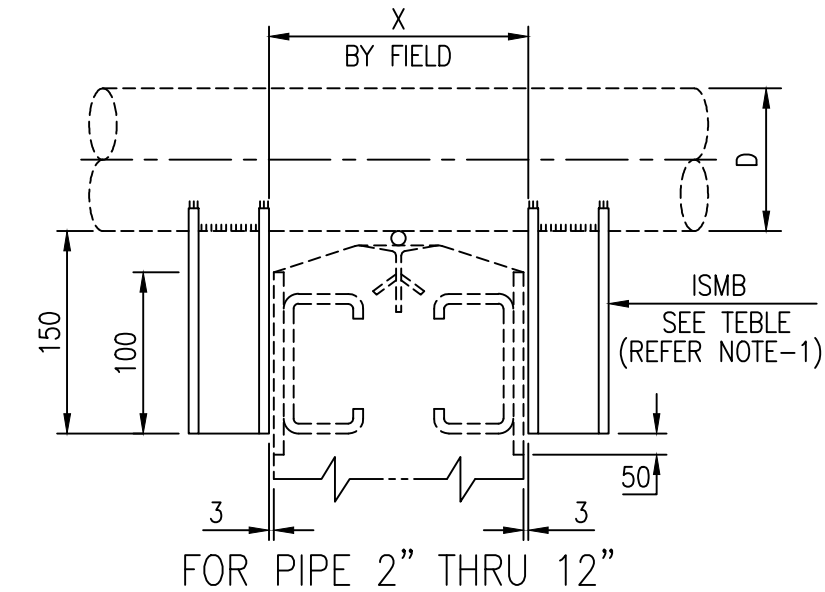
NPS	INSIDE DIAMETER B, in.	OUTSIDE DIAMETER O, in.	CENTERLINE DIMENSION A, in.	THICKNESS r, in.	WEB WIDTH W, in.
1/2	0.62	2.00	2.62	0.25	1.50
3/4	0.82	2.50	3.25	0.25	1.50
1	1.05	2.75	3.50	0.25	2.25
1¼	1.44	3.12	3.98	0.38	2.25
1½	1.68	3.62	4.50	0.38	2.62
2	2.16	4.25	5.00	0.38	2.25
2½	2.64	5.00	5.88	0.50	2.62
3	3.26	5.75	6.62	0.50	2.62
3½	3.76	6.25	7.25	0.62	3.00
4	4.26	7.50	8.50	0.62	3.00
5	5.30	9.38	10.50	0.75	3.38
6	6.36	10.38	11.50	0.88	3.38
8	8.33	12.50	13.75	1.12	3.75
10	10.42	15.62	17.00	1.38	4.12
12	12.39	17.88	19.25	1.62	4.12
14	13.62	19.25	20.75	1.75	4.50
16	16.62	22.12	23.75	2.00	4.88
18	17.62	24.00	25.75	2.12	5.25
20	19.58	26.75	28.50	2.50	5.25
24	23.50	31.00	33.00	2.88	6.00

- NOTES:
- (1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole. and located such that it will not interfere with bolting between two flanges.
- (2) The thickness of the web (or tie bar) dimension W1 shall be 0.25 in. minimum.

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

	ANCHOR FOR BARE PIPE SIZE 2" THRU 24" TYPE-G5 (FOR OFFSITE)		DRAWING NO.	
			SD-PI-002	
			SHEET NO.	1 OF 1

D	8	10	12	14	16	18	20	24
I BEAM	150			200			250	



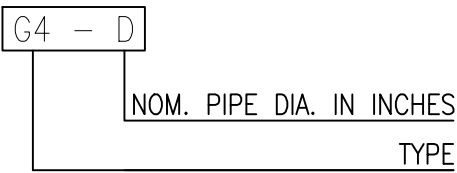
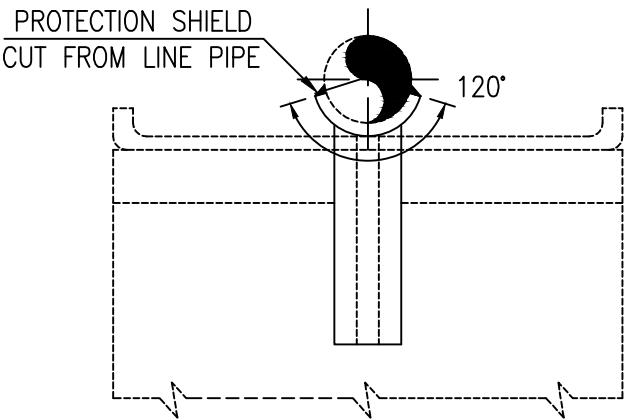
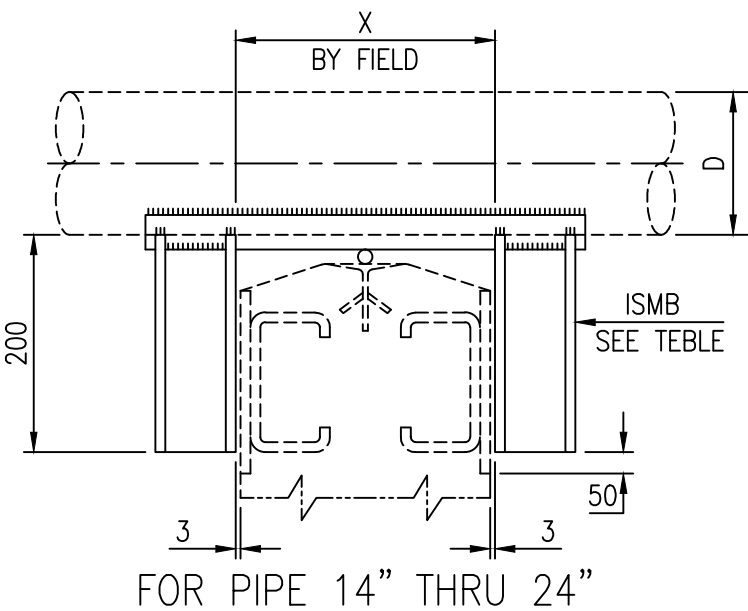
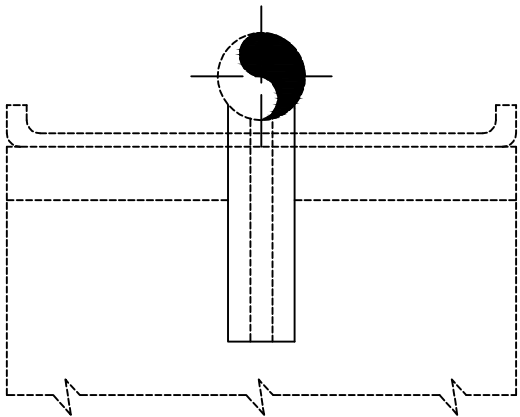
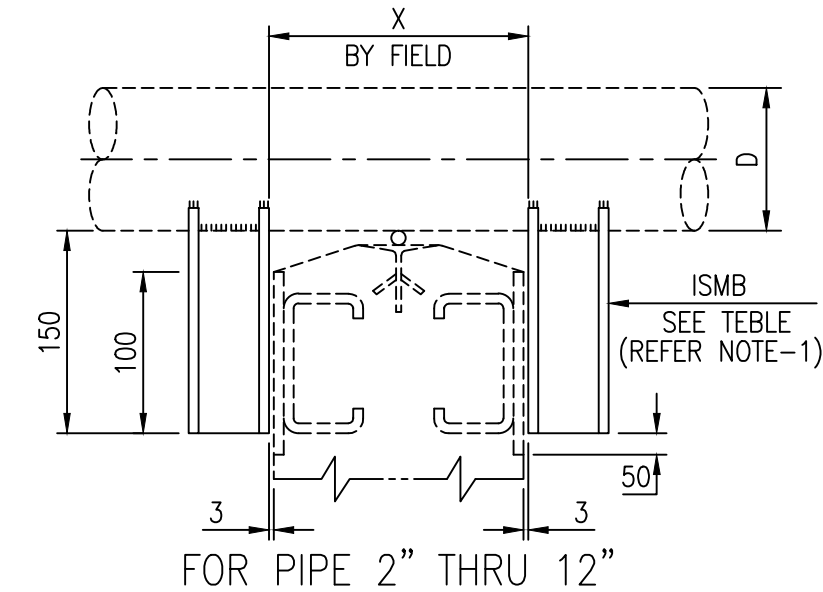
SYMBOL

NOTE:-
1. FOR SUPPORTING DETAILS FOR PIPE SIZE 2" THRU 6", REFER STD. 00004-PL-PI-STD-009

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

CROSS GUIDE FOR BARE PIPE SIZE 2" THRU 24" TYPE-G4 (OFFSITE)	DRAWING NO.	
	SD-PI-003	
	SHEET NO.	1 OF 1

D	8	10	12	14	16	18	20	24
I BEAM	150			200			250	



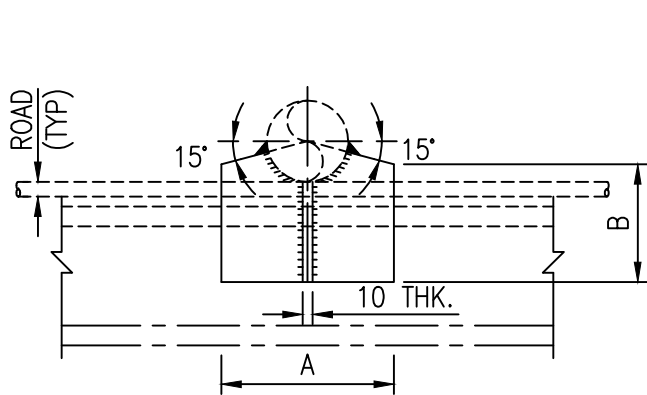
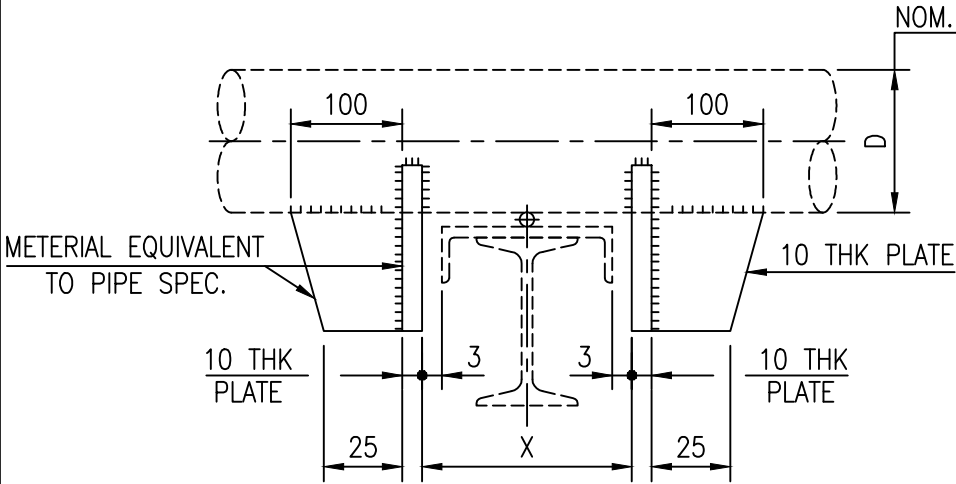
SYMBOL

NOTE:—

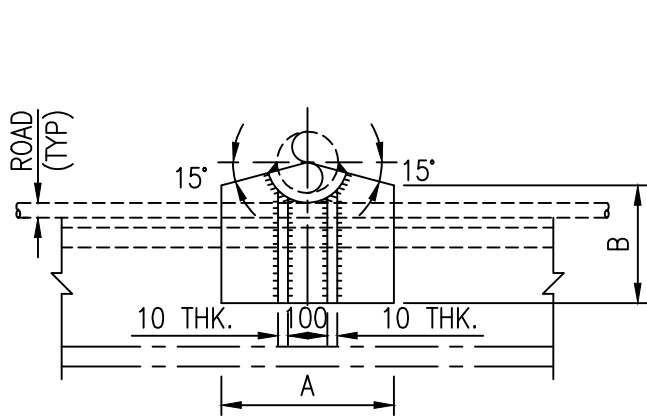
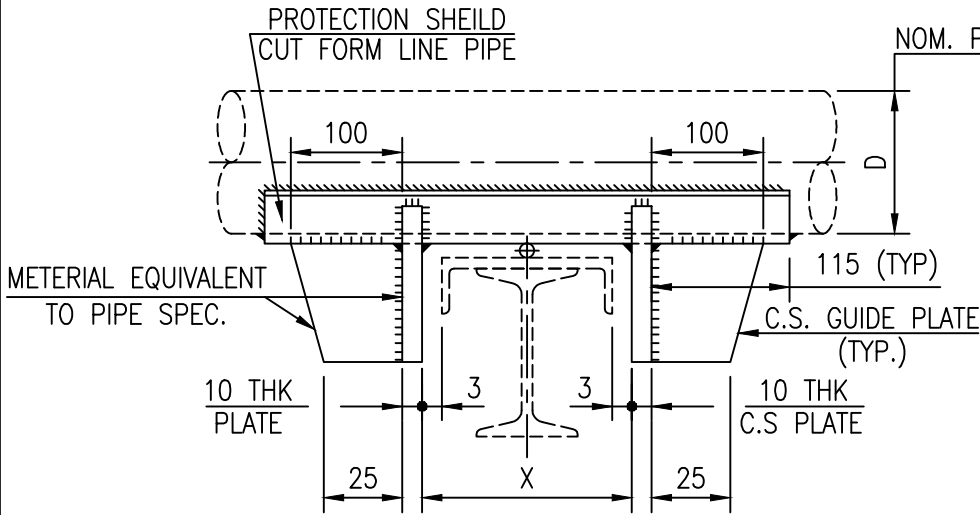
1. FOR SUPPORTING DETAILS FOR PIPE SIZE 2" THRU 6", REFER STD. STD.00004-PL-PI-STD-009

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

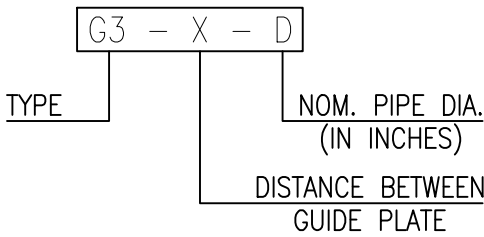
CROSS GUIDE													
D	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
A	100	130	154	208	280	314	364	396	446	498	548	598	650
B	67	78	86	106	131	145	163	175	193	212	231	248	268



CROSS GUIDE 2" THRU 12"



CROSS GUIDE 14" THRU 24"



SYMBOL

NOTE:-
1. PROTECTION SHIELD SHALL BE CUT FROM LINE PIPE.

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

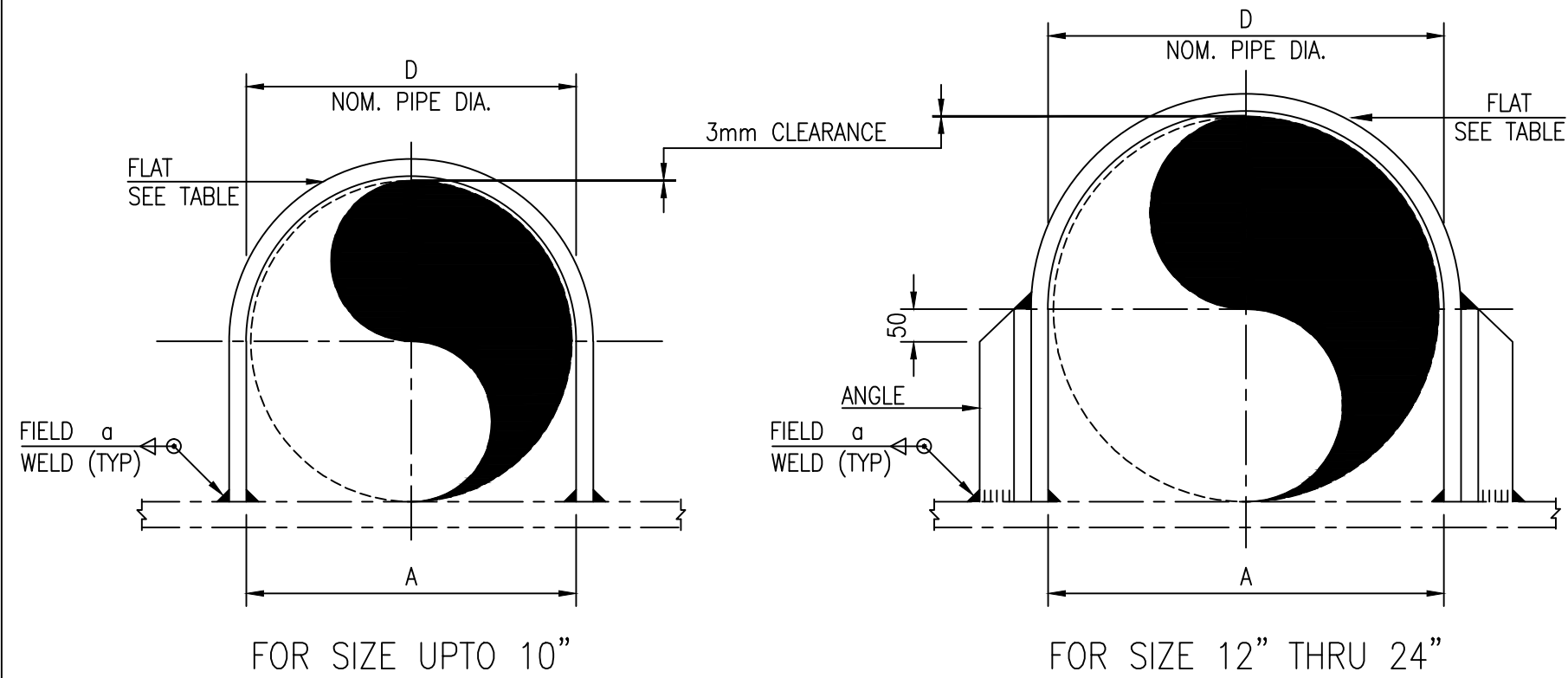
GUIDE SUPPORT FOR BARE PIPE
SIZE 1/2" THRU 24" TYPE-G1

DRAWING NO.

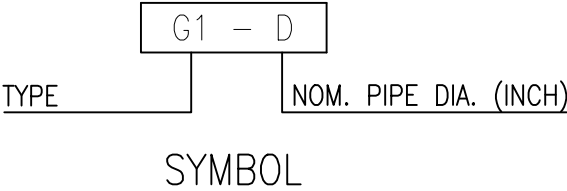
SD-PI-005

SHEET NO.

1 OF 1



D	A	α	FLAT SIZE	ANGLE SIZE
1/2"	26	6	40 x 6	-
3/4"	33			
1"	40			
1 1/4"	48			
1 1/2"	55			
2"	65			
2 1/2"	80			
3"	95	10	50 x 10	-
3 1/2"	107			
4"	120			
5"	146			
6"	174			
8"	225	10	65 x 12	75x75x10
10"	278			
12"	328			
14"	362	10	75 x 12	90x90x10
16"	412			
18"	463			
20"	515			
24"	616			



0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

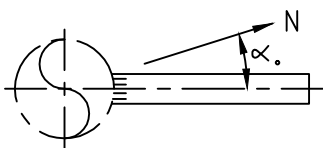
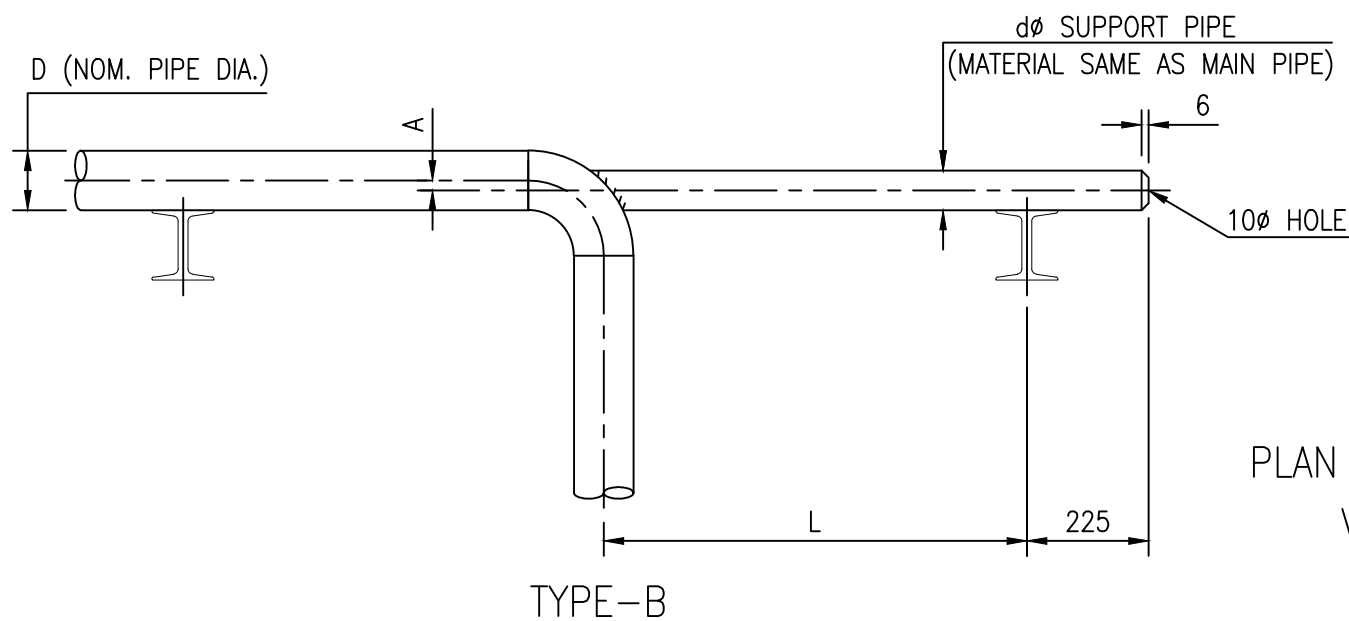
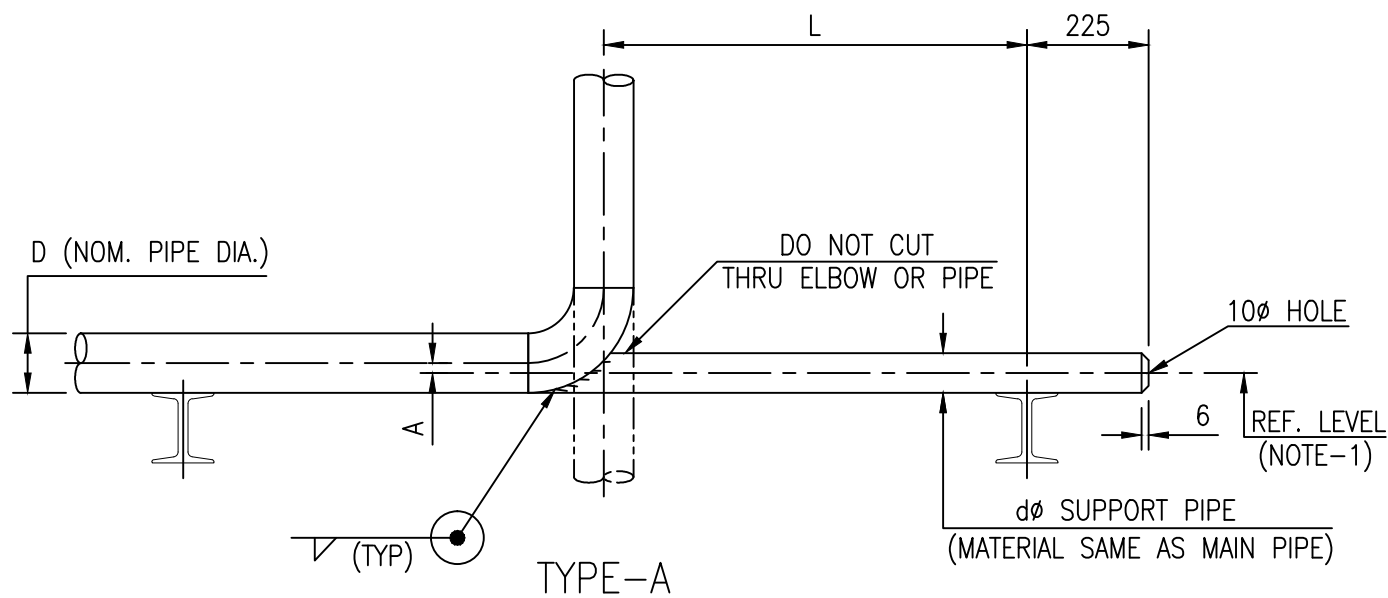
DUMMY PIPE SUPPORT FOR
BARE PIPE SIZE 2" THRU 24"
TYPE-B-39

DRAWING NO.

SD-PI-006

SHEET NO.

1 OF 1

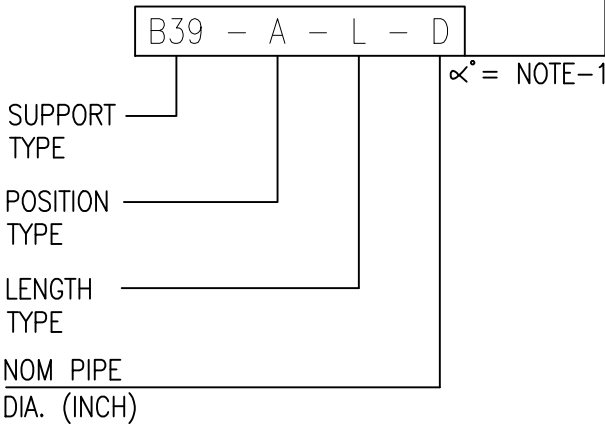


PLAN FOR SUPPORT ON
VERTICAL PIPE

FOR L, 1500 OR LESS		
D	d (NOTE 2)	A
2"	2"-SCH.40	-
3"	2"-SCH.40	15
4"	3"-SCH.40	13
6"	3"-SCH.40	40
8"	4"-SCH.40	52
10"	6"-SCH.40	52
12"	6"-SCH.40	78
14"	8"-SCH.40	68
16"	8"-SCH.40	94
18"	8"-SCH.40	119
20"	10"-SCH.40	118
24"	10"-SCH.40	168

FOR L, OVER 1500		
D	d (NOTE 2)	A
2"	2"-SCH.40	-
3"	2"-SCH.40	15
4"	3"-SCH.40	13
6"	4"-SCH.40	27
8"	6"-SCH.40	25
10"	8"-SCH.40	27
12"	8"-SCH.40	52
14"	10"-SCH.40	41
16"	10"-SCH.40	67
18"	10"-SCH.40	92
20"	12"-SCH.40	92
24"	12"-SCH.40	143

REFER LEVEL
(NOTE-1)



SYMBOL

NOTES:-

1. REF. LEVEL & α . TO BE GIVEN IN CASE SUPPORT IS WELDED TO VERTICAL PIPE.
2. IN CASE SIZE AND/OR SCH. OF SUPPORT PIPE (d) LISTED IN THE TABLE IS NOT AVAILABLE USE NEXT HIGHER SIZE AND/OR NEAREST EQUIVALENT THICKNESS AVAILABLE.

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

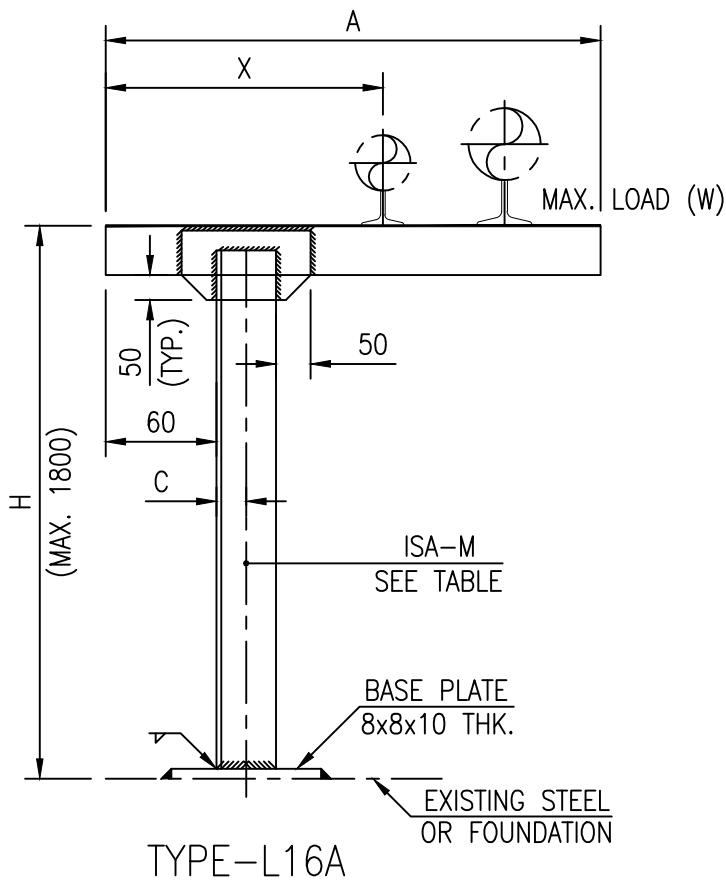
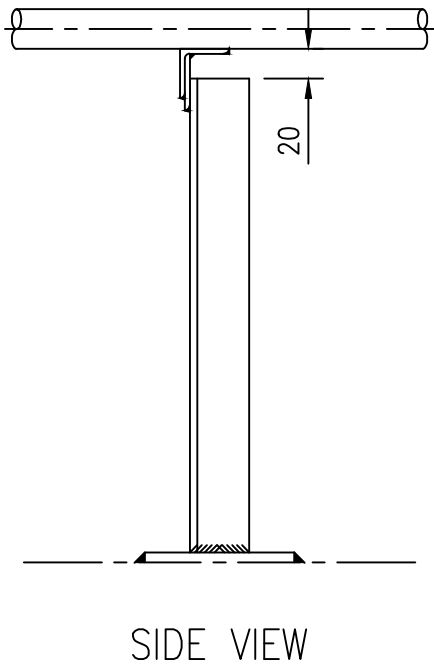
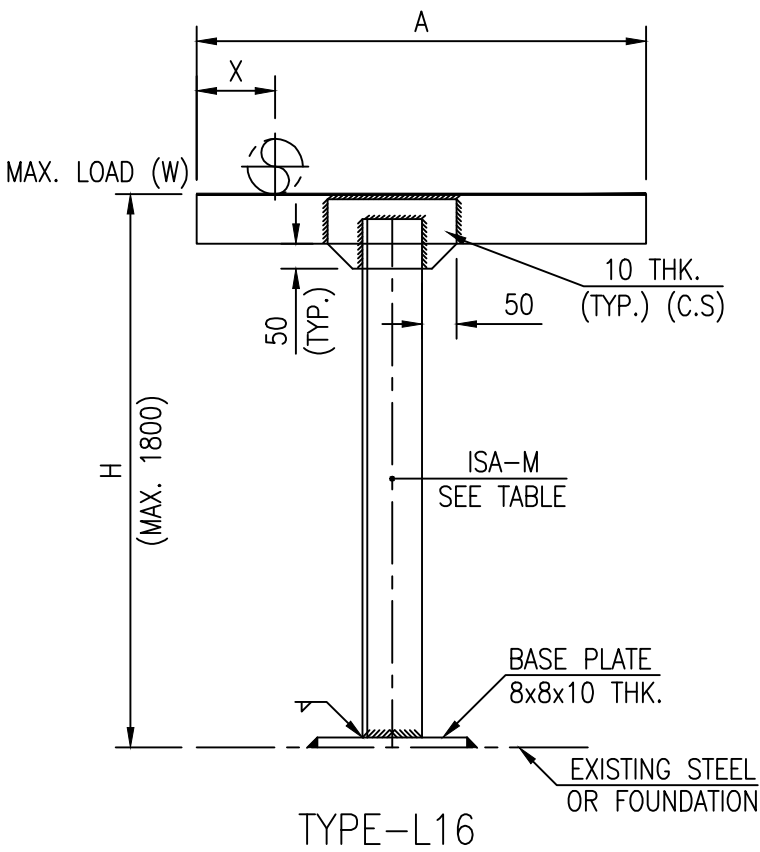
LOW SUPPORT STANCHION
TYPE-L16 AND L-16A

DRAWING NO.

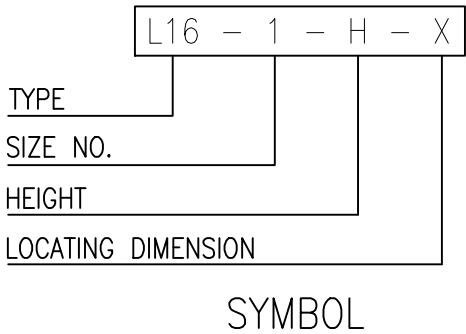
SD-PI-007

SHEET NO.

1 OF 1



NOTE:-
1. DO NOT USE FOR ANCHORING THE PIPE.



SIZE NO.	MAX. LOAD (W) Kg.	M	A	B	C
1	500	ISA 80x80x8	600	150	45
2	800	ISA 100x100x10	700	150	60
3	1500	ISA 130x130x12	800	150	80

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

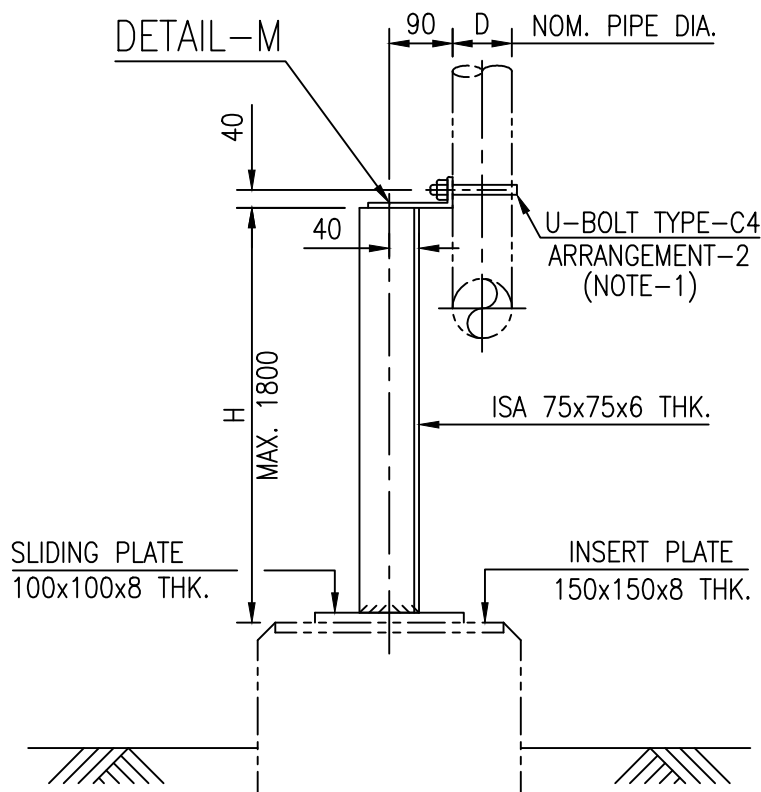
LOW SUPPORT SLIDING AND
FIXED FOR PIPE SIZE 3/4"
THRU 1 1/2" TYPE L-15

DRAWING NO.

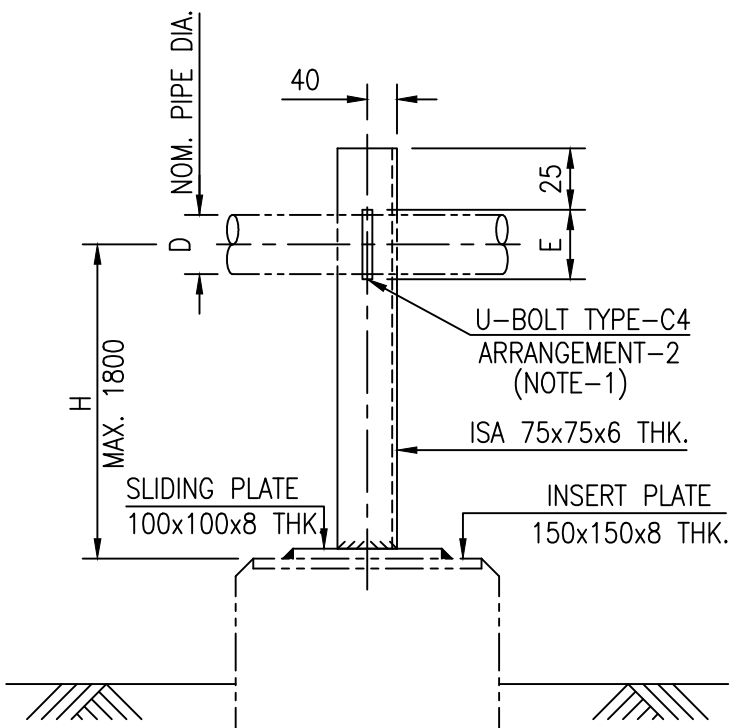
SD-PI-008

SHEET NO.

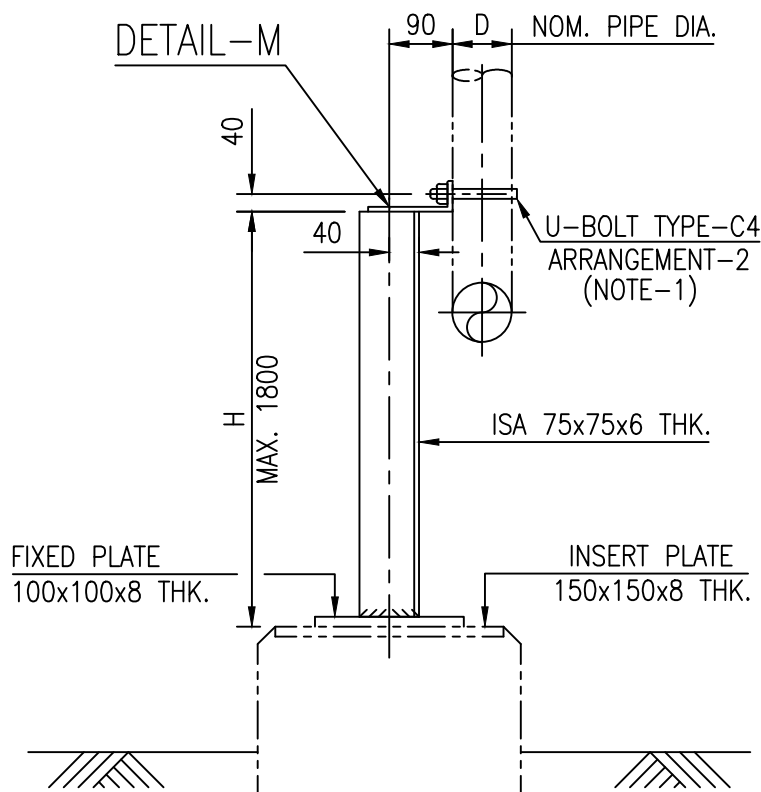
1 OF 1



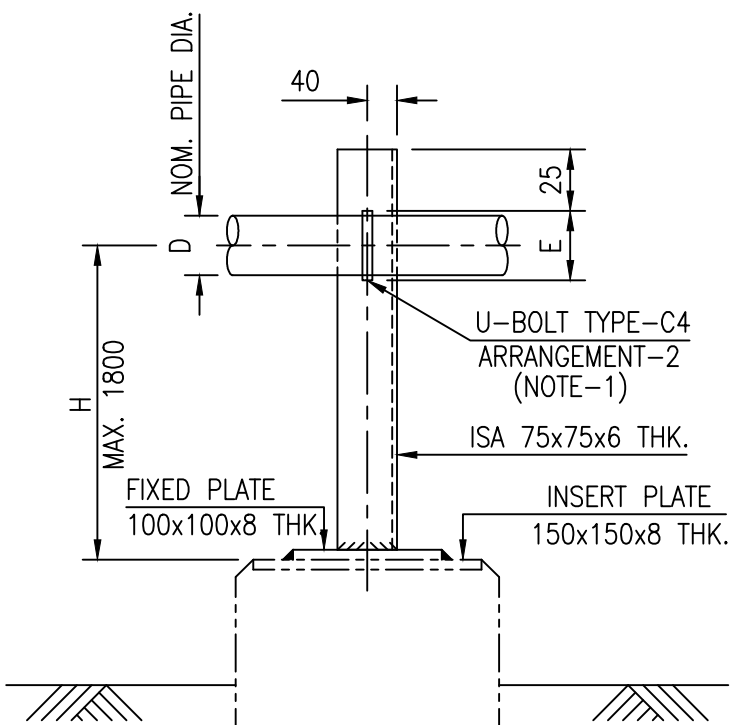
ARRANGEMENT TYPE-1
(SLIDING)



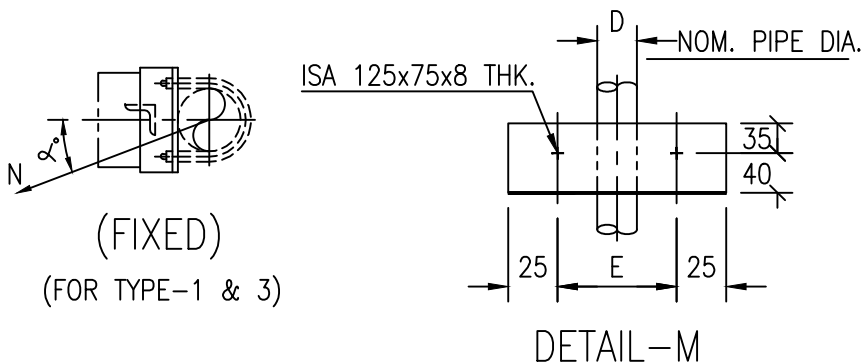
ARRANGEMENT TYPE-2
(SLIDING)



ARRANGEMENT TYPE-3
(FIXED)



ARRANGEMENT TYPE-4
(FIXED)



D	E
3/4"	36
1"	45
1 1/2"	60

$\alpha^\circ =$ (FOR TYPE 1 & 3)

L15	-	1	-	H	-	D
TYPE						
ARRANGEMENT TYPE						
HEIGHT						
NOM. PIPE DIA. (INCH)						

SYMBOL

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

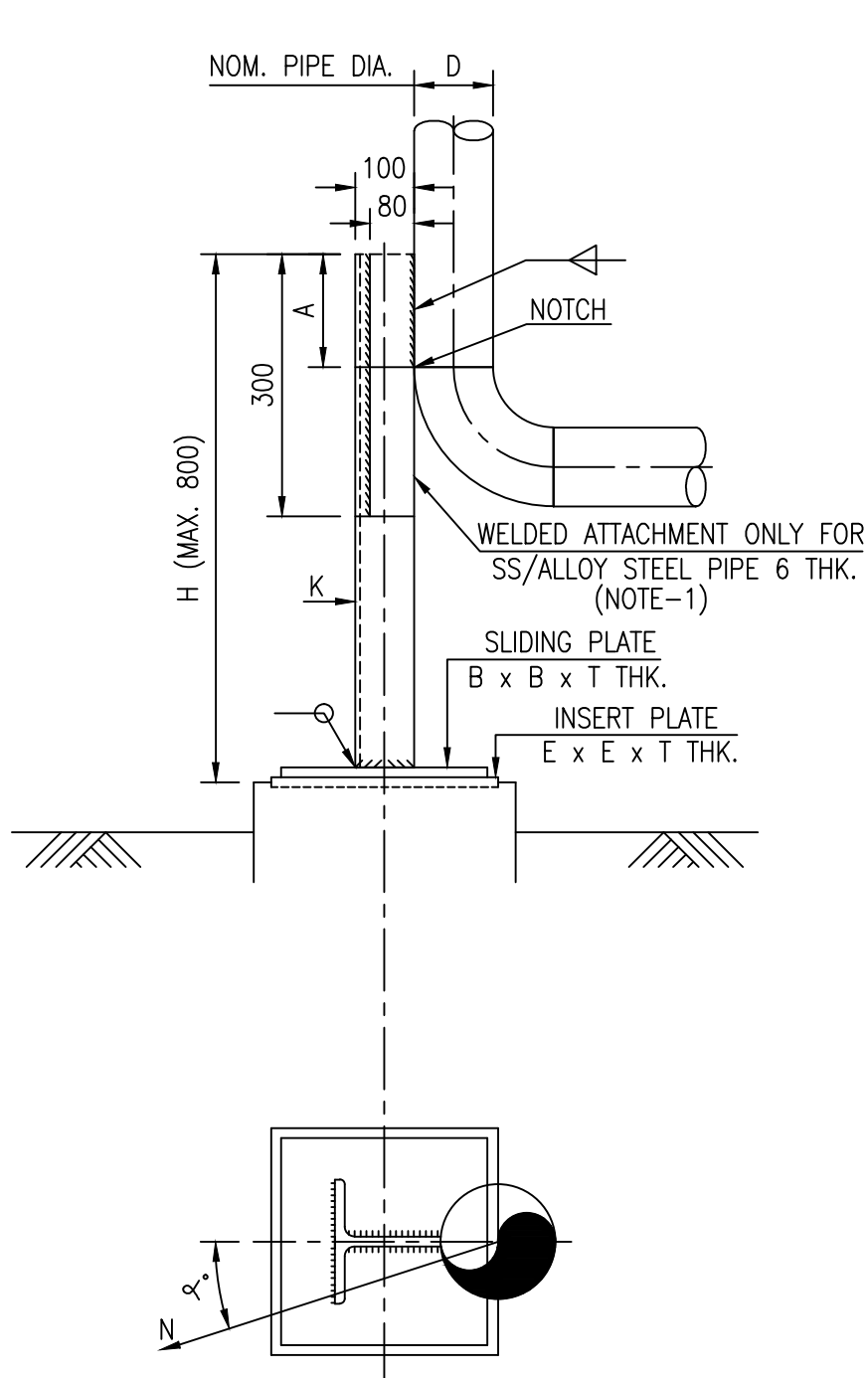
LOW SUPPORT SLIDING FOR
BARE & INSULATED PIPE
SIZE 2" THRU 24" TYPE-L6

DRAWING NO.

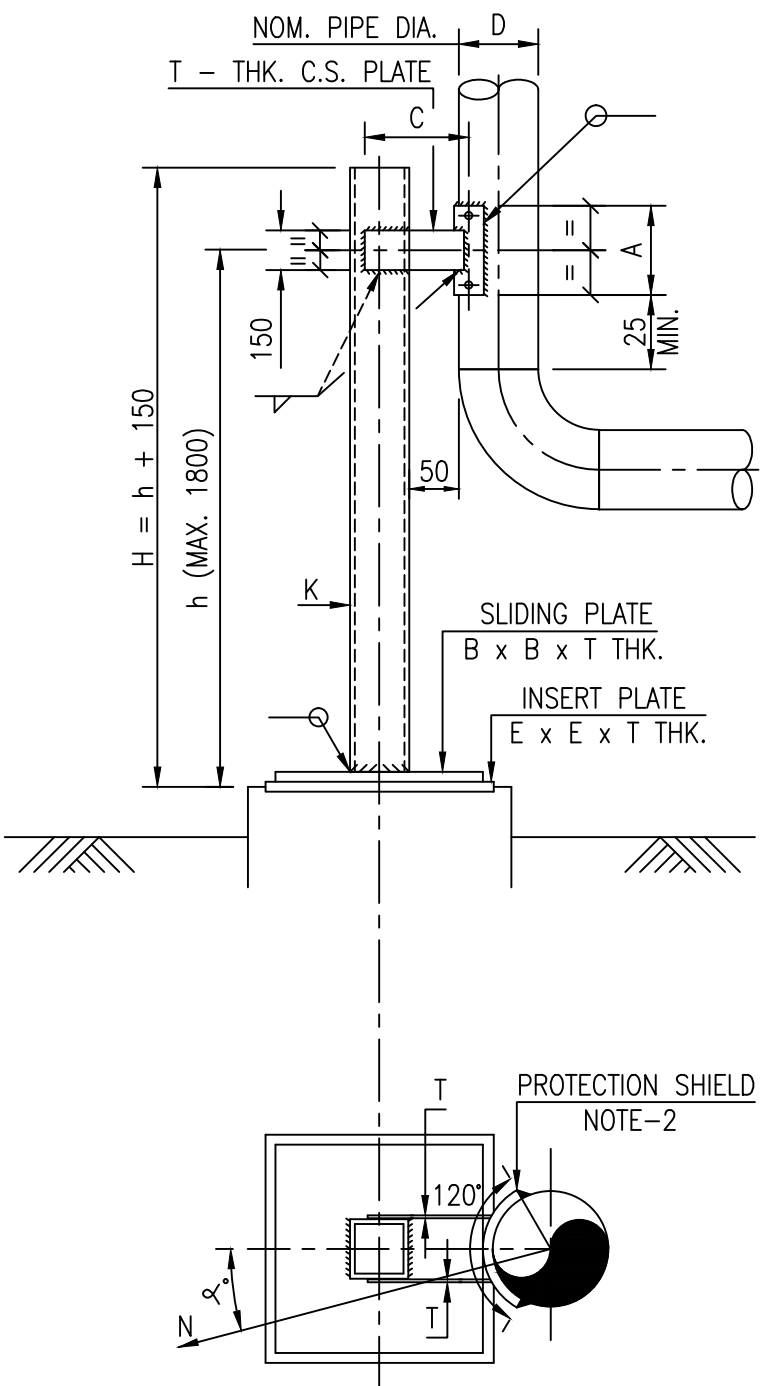
SD-PI-009

SHEET NO.

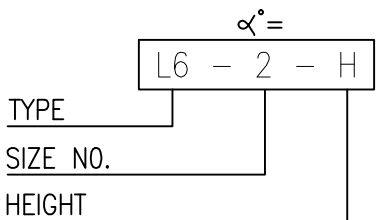
1 OF 1



FOR PIPE SIZES 2" THRU 4"



FOR PIPE SIZES 6" THRU 24"



SYMBOL

NOTES:-

1. MATERIAL FOR WELDED ATTACHMENT SHALL BE EQUIVALENT TO PIPE MATERIAL.
2. PROTECTION SHIELD IS TO BE CUT FROM LINE PIPE.

SIZE NO.	D	K	A	T	C	E	B
1	2" TO 4"	CUT FROM ISMB 200	200	10	-	250	150
2	6" TO 10"	ISMC-125 2 NOS.	200	12	150	300	200
3	12" TO 24"	ISMC-225 2 NOS.	300	12	230	400	300

FOR TEMP. UP TO 400 °C ONLY

0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

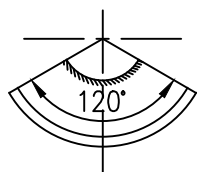
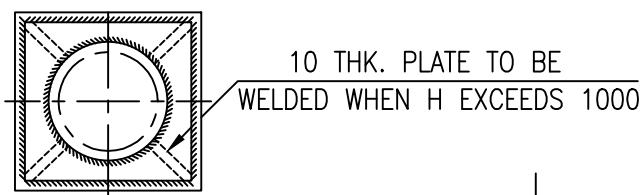
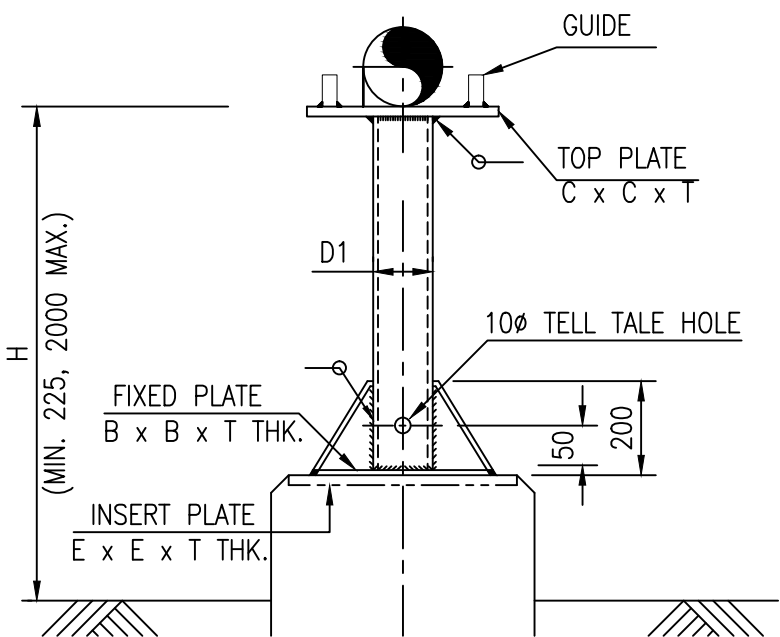
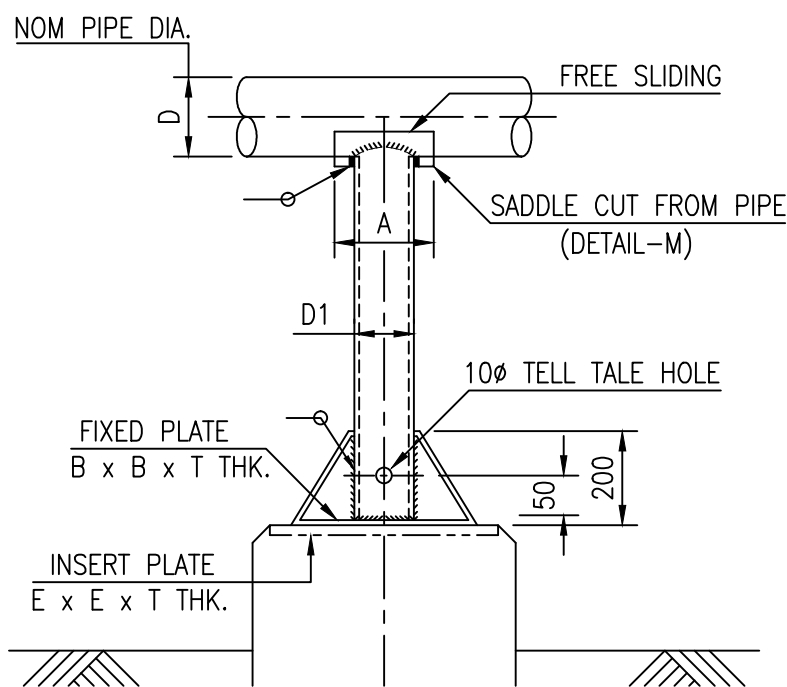
LOW SUPPORT SLIDING FOR BARE
PIPE SIZE 3/4" THRU 36"
TYPE-L5 & L5A

DRAWING NO.

SD-PI-010

SHEET NO.

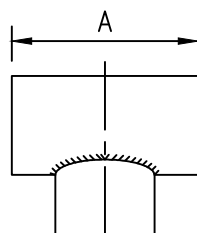
1 OF 1



DETAIL-M

L5 - 1 - H
TYPE
SIZE NO.
HEIGHT

SYMBOL



L5A - 2 - H
TYPE
SIZE NO.
HEIGHT

SYMBOL

SIZE NO.	D	A	D1 (NOTE-1)	C	B	E	T
1	3/4"	2" NB x 100 Lg.	2" HEAVY IS :1239	150	150	200	12
	1"			200			
	1.1/2"	3" NB x 100 Lg.					
	2"						
2	3"	6" NB x 150 Lg.	2" HEAVY IS :1239	200	150	200	12
	4"						
3	6"	10" NB x 250 Lg.	3" HEAVY IS :1239	300	200	250	16
	8"						
4	10"	14" NB x 350 Lg.	4" HEAVY IS :1239	350	200	250	16
	12"						
5	14"	18" NB x 350 Lg.	6" HEAVY IS :1239	400	250	300	20
	16"						
6	18"	20" NB x 350 Lg.	8" SCH. 40	400	300	350	20
7	20"	24" NB x 350 Lg.	10" SCH. 40	450	350	400	20
	24"						
8	26"	30" NB x 350 Lg.	12" SCH. 40	550	400	500	20
	30"						
	36"	36" NB x 400 Lg.					

NOTES:-

- IN CASE SIZE AND/OR SCH. OF SUPPORT PIPE (D) LISTED IN THE TABLE IS NOT AVAILABLE, USE NEXT HIGHER SIZE AND/OR NEAREST EQUIVALENT THICKNESS AVAILABLE.
- MATERIAL FOR SUPPORT PIPE & PLATE SHALL BE CARBON STEEL.

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

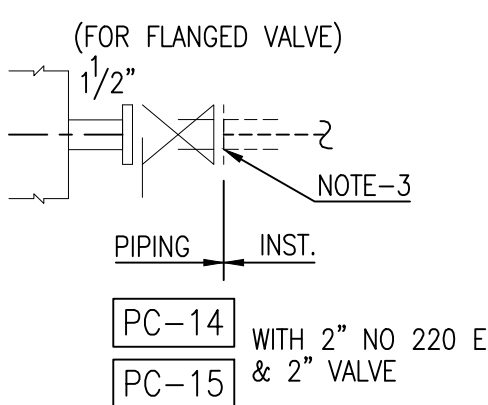
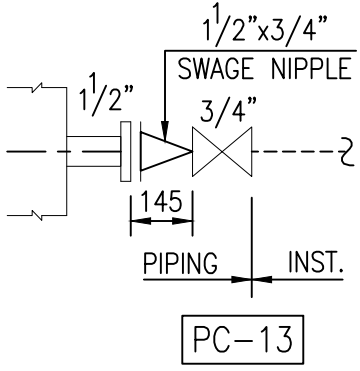
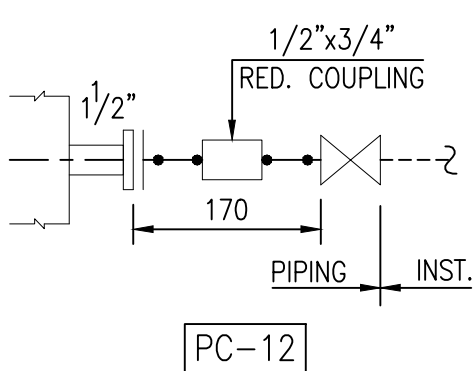
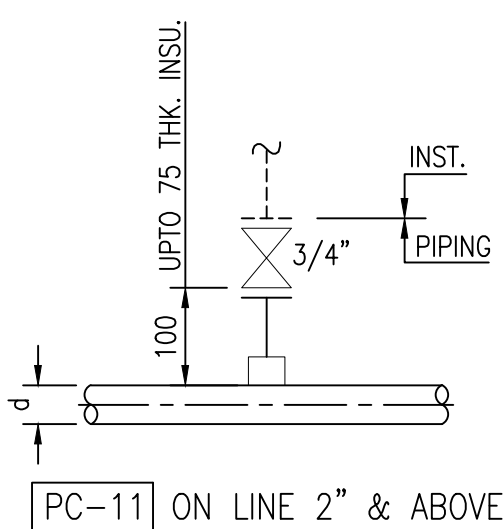
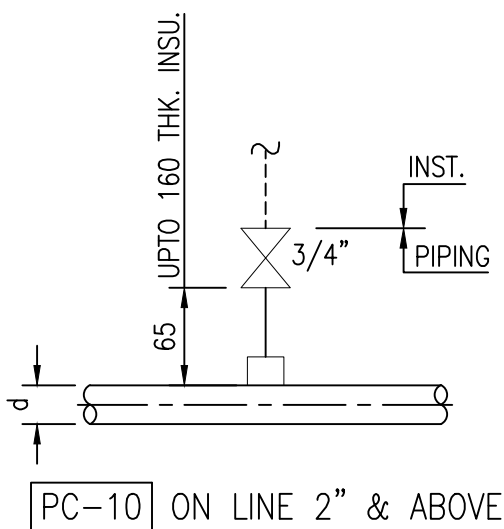
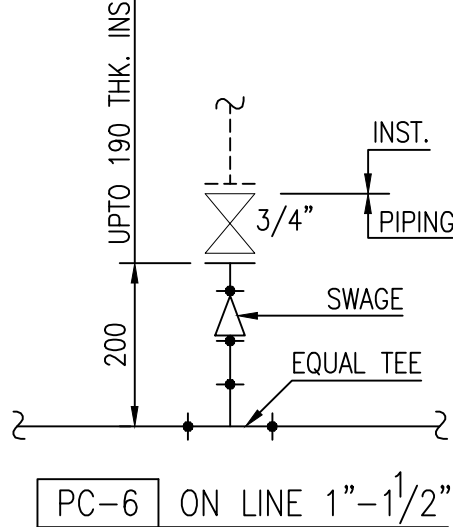
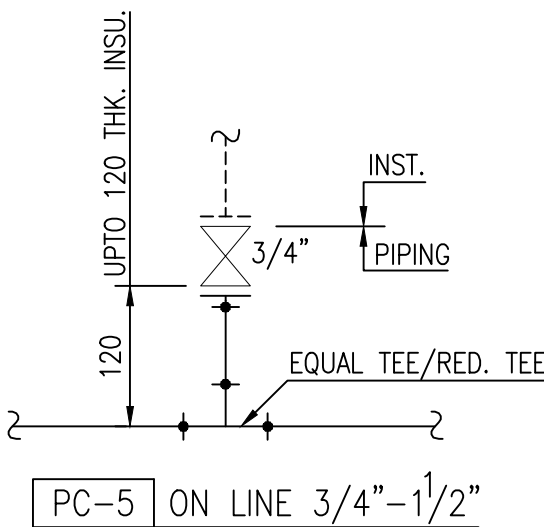
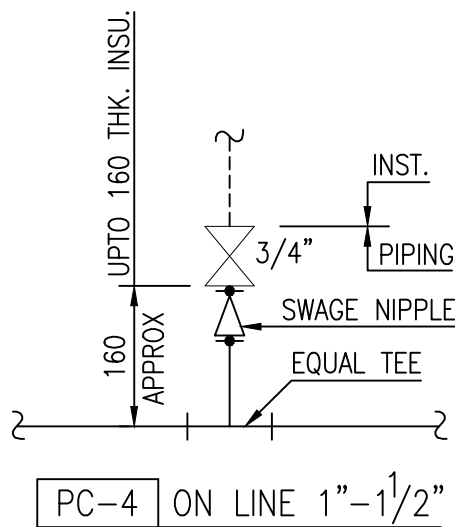
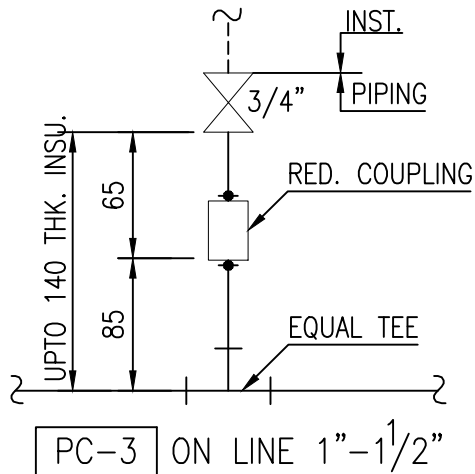
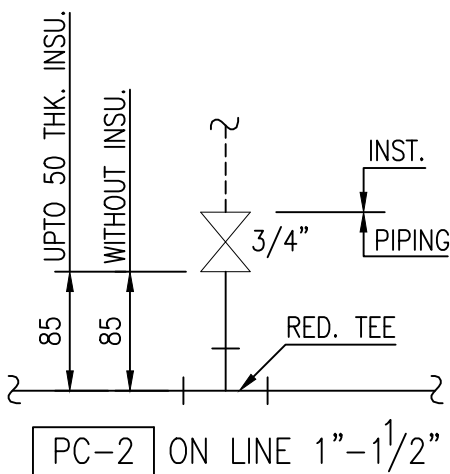
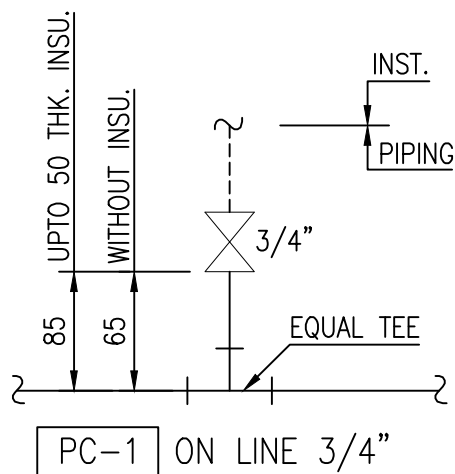
PRESSURE TAPPINGS (PA, PG, PC, PT, PIC ETC.)

DRAWING NO.

SD-PI-011

SHEET NO.

1 OF 1

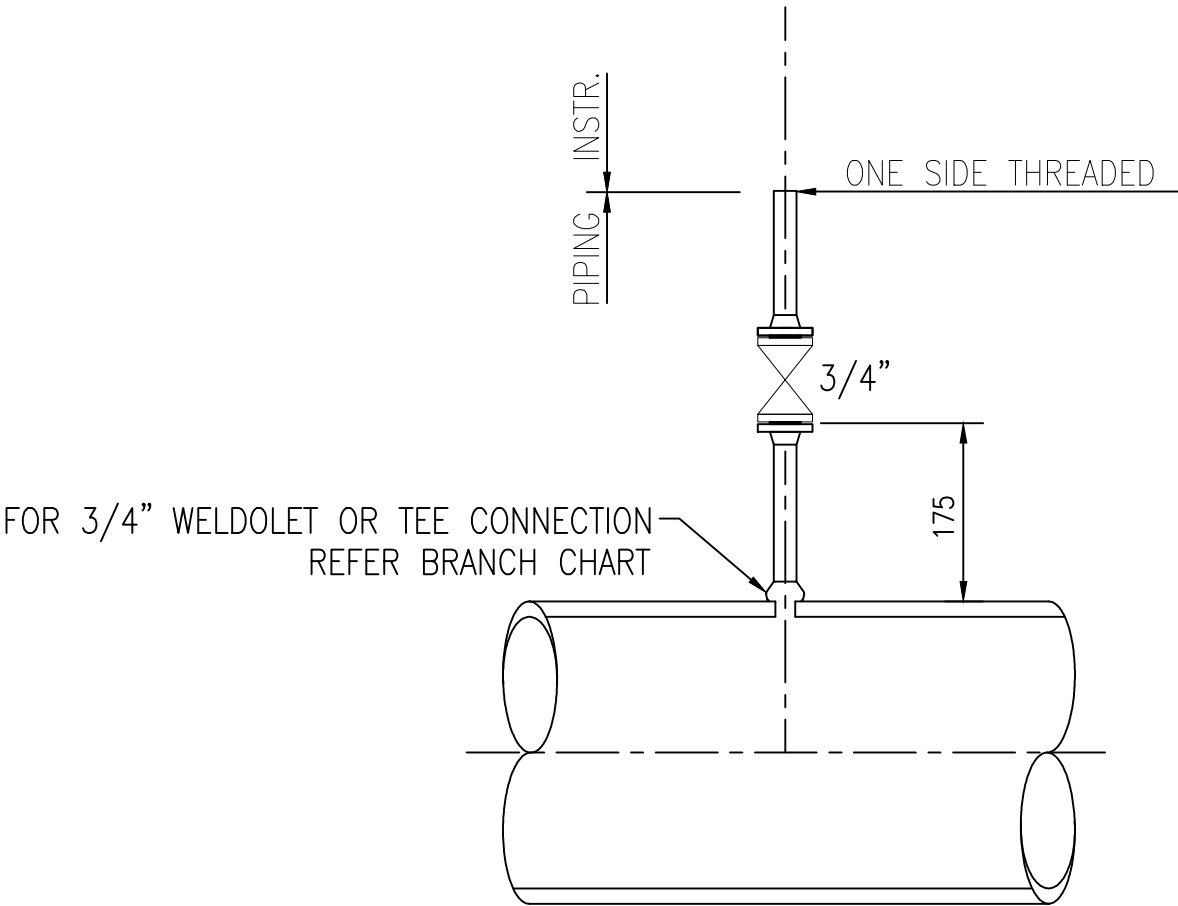


NOTES:-

1. THE INDICATED DIMENSIONS ARE MINIMUM WHICH ALSO COVER INSULATION TO THE EXTENT SHOWN ABOVE IN HIGHER THICKNESS OF INSULATION THAN INDICATED, THE DIFFERENCE SHALL BE ADDED IN THE DIMENSIONS SHOWN ABOVE ACCORDINGLY.
2. PRESSURE TAPPING SHALL BE PROVIDED WITH GATE, GLOBE OR PLUG VALVE (FLGD. SW. OR SCR'D) WITH TEE (EQ. OR RED.) HALF COUPLING (.W. OR SCR'D) OR STUB-IN AS PER PIPING SPECIFICATION.
3. IN CASE OF FLGD. VALVES BOLTING & GASKET ON BOTH SIDES OF VALVE SHALL BE IN PIPING SCOPE.
4. IN CASE OF TAPPING PROVIDED OTHER THAN INDICATED IN THIS STD FOR LAYOUT REASONS DETAILED DIMENSIONS WILL BE CALLED FOR OR CARRIED OUT.

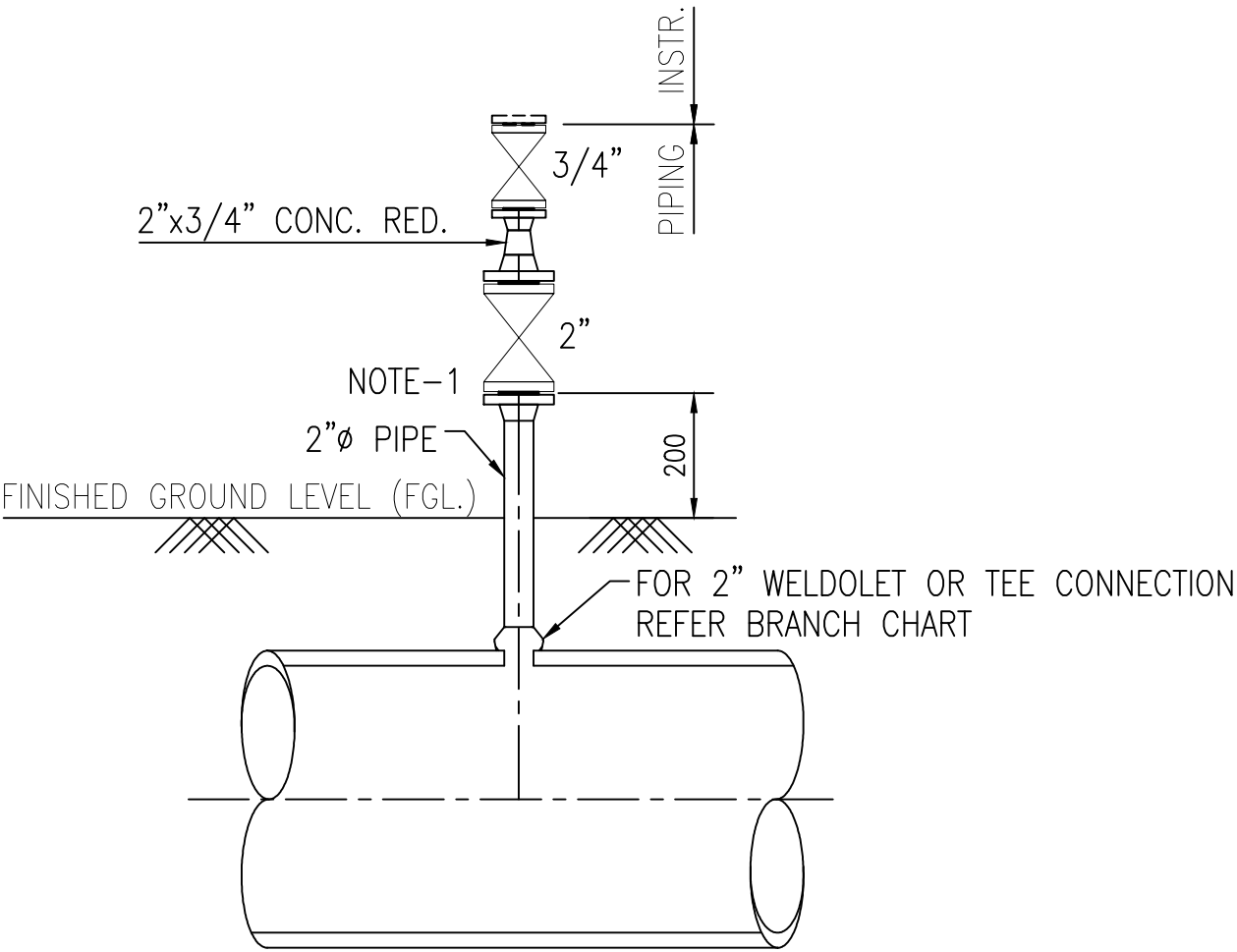
0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

	DETAIL OF PRESSURE CONNECTIONS ABOVE GROUND PIPE	DRAWING NO.	
		SD-PI-012	
		SHEET NO.	1 OF 1



0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

	DETAIL OF PRESSURE CONNECTIONS UNDER GROUND PIPE			DRAWING NO.	
				SD-PI-013	
				SHEET NO.	1 OF 1



NOTE:
 1 INSULATION GASKET SHALL BE INSTALLED.

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

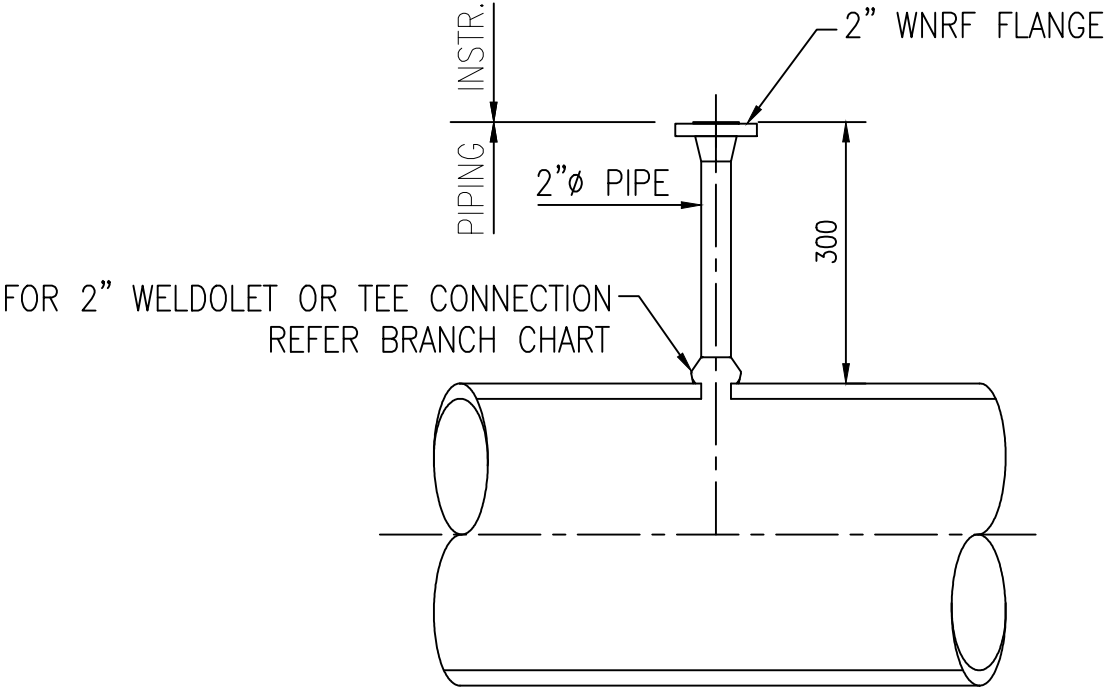
DETAIL OF TEMPERATURE CONNECTIONS
ABOVE GROUND PIPE

DRAWING NO.

SD-PI-014

SHEET NO.

1 OF 1



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REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

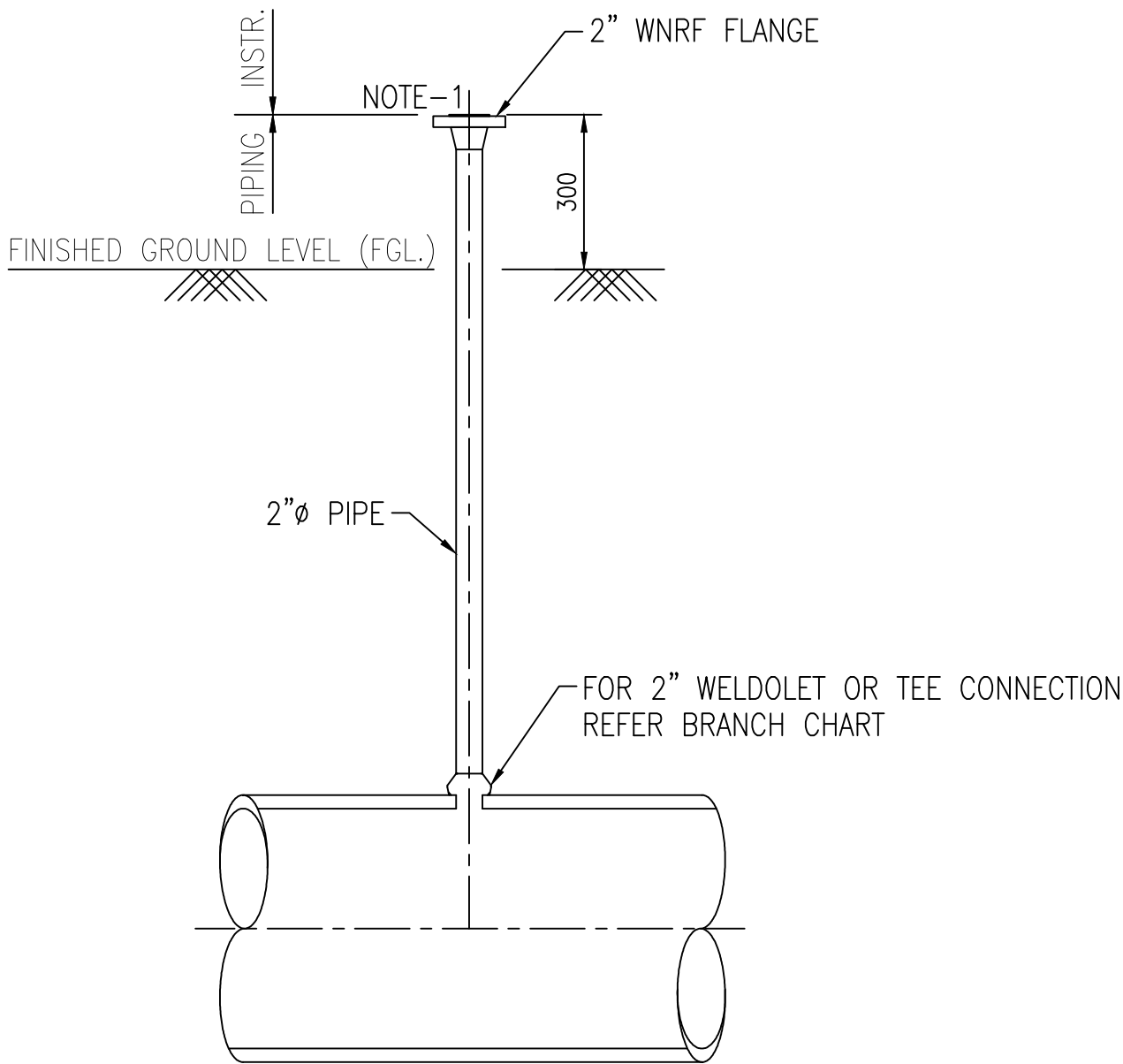
DETAIL OF TEMPERATURE
CONNECTIONS UNDER GROUND
PIPE

DRAWING NO.

SD-PI-015

SHEET NO.

1 OF 1



NOTE:
1 INSULATION GASKET SHALL BE INSTALLED.

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REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

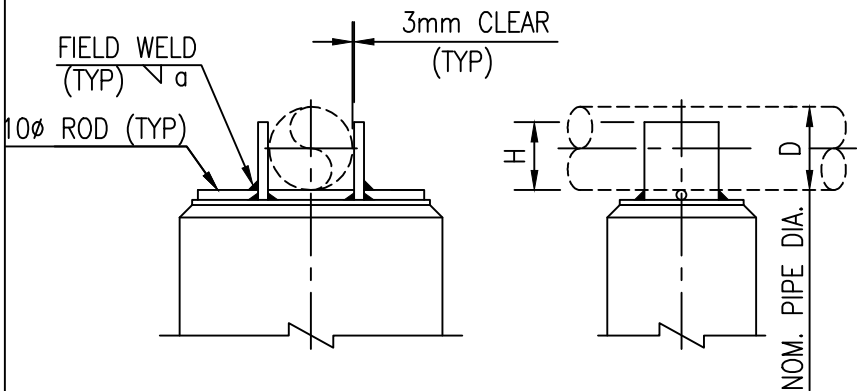
GUIDE SUPPORT FOR BARE PIPE
(SIZE 1/2" TO 24") TYPE G2

DRAWING NO.

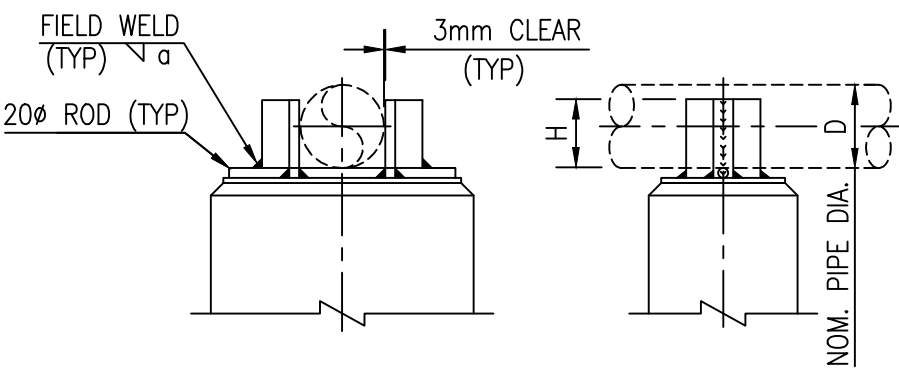
SD-PI-016

SHEET NO.

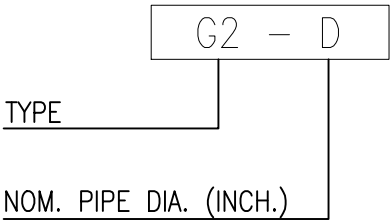
1 OF 1



FOR SIZES UPTO 4"



FOR SIZES 6" THRU 24"



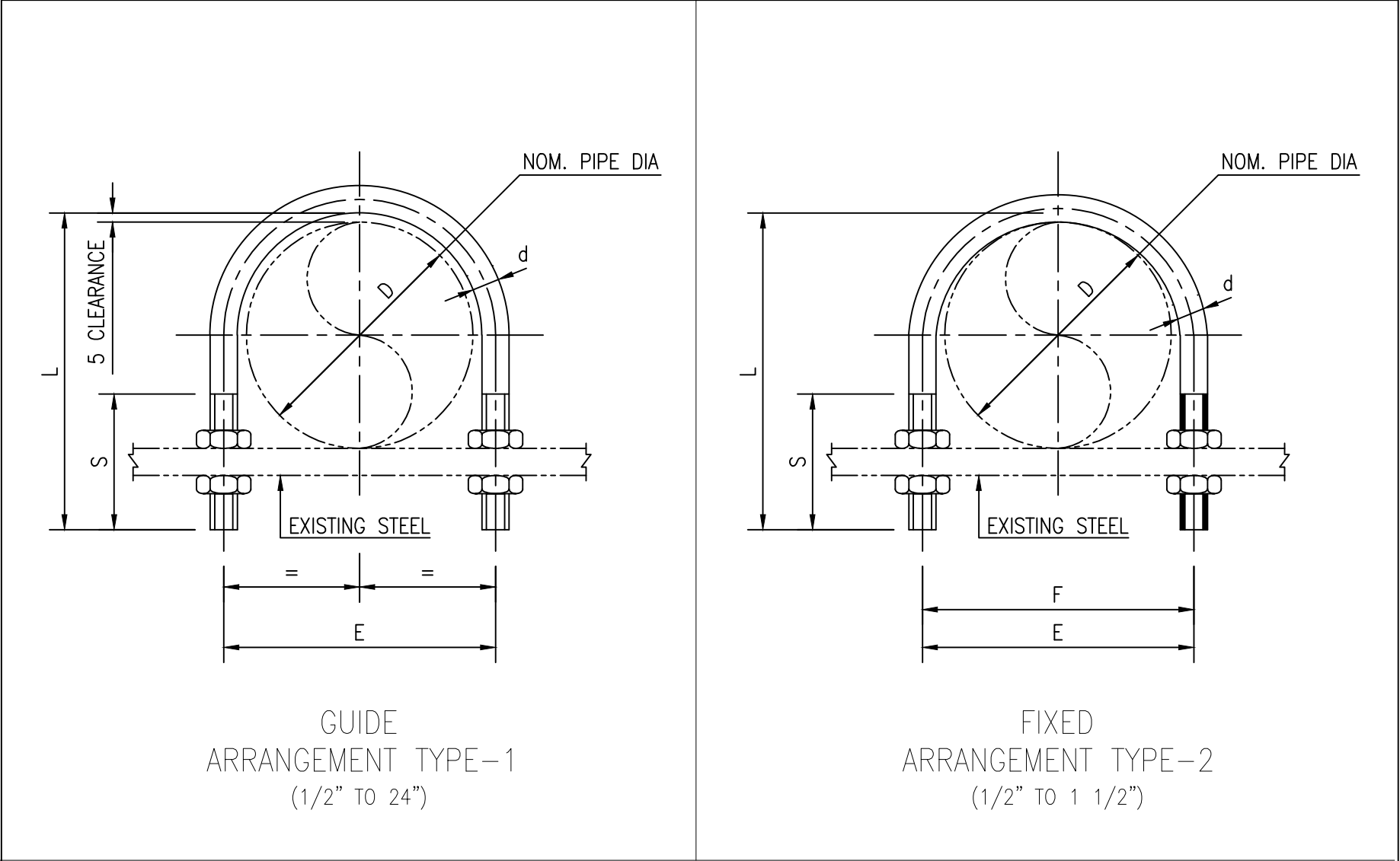
SYMBOL

D	H	a	METERIAL
2" & SMALLER	40	6	FLAT 60 x 10
3" TO 4"	70	6	FLAT 75 x 10
6" TO 8"	130	6	2 NOS. ISA 50 x 50 x 6
10" TO 18"	230	10	2 NOS. ISA 75 x 75 x 10
20" TO 24"	350	10	2 NOS. ISA 90 x 90 x 10

NOTES:-

GUIDE ANGLES SHOULD BE SUITABLY TRIMMED WHEREVER THESE OBSTRUCT ADJOINING GUIDE ANGLES.

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	



C4 - 1 - D

TYPE

NOM. PIPE DIA.
(INCH)

ARRANGEMENT TYPE
ie. GUIDE

SYMBOL

D	O.D. (mm)	'U' CLAMP				
		L	E	S	d	F
1/2"	21	65	30	50	6	24
3/4"	27	70	36	50	6	30
1"	33	75	45	55	8	37
1 1/2"	48	90	60	55	8	52
2"	60	105	72	60	8	64
3"	89	145	106	80	12	94
4"	114	170	130	80	12	119
6"	168	240	190	100	16	173
8"	219	290	242	100	16	226
10"	273	345	296	100	16	280
12"	324	420	351	130	20	331
14"	356	450	382	130	20	362
16"	408	500	435	130	20	414
18"	457	565	490	140	24	465
20"	508	620	540	140	24	515
24"	610	720	645	140	24	620

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

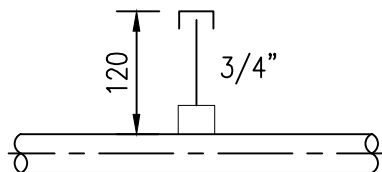
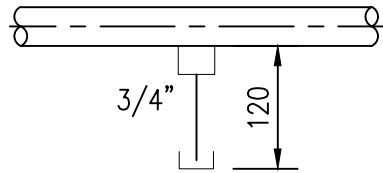
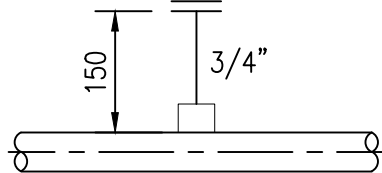
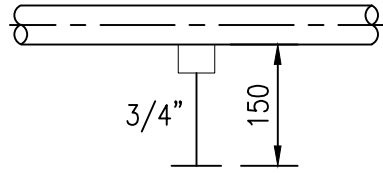
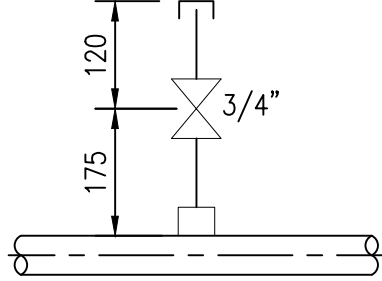
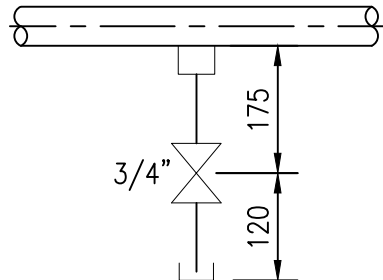
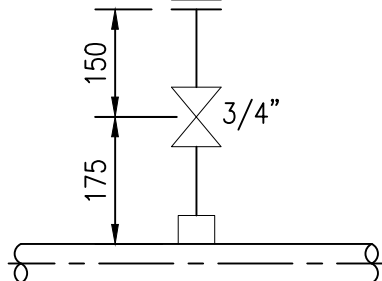
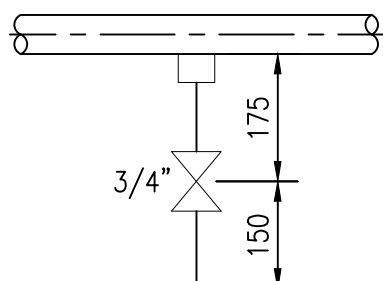
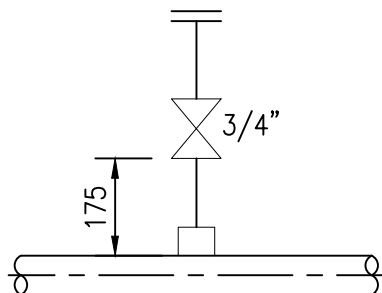
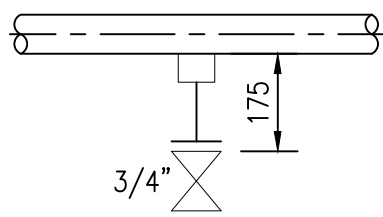
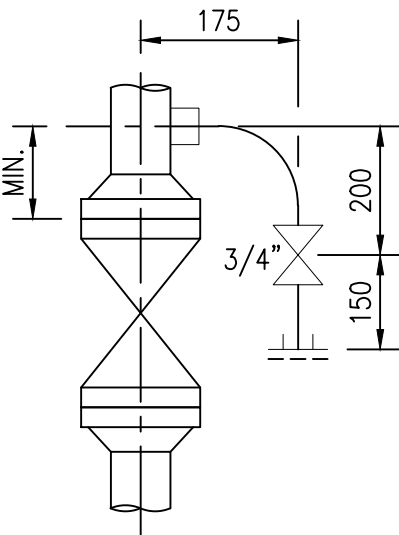
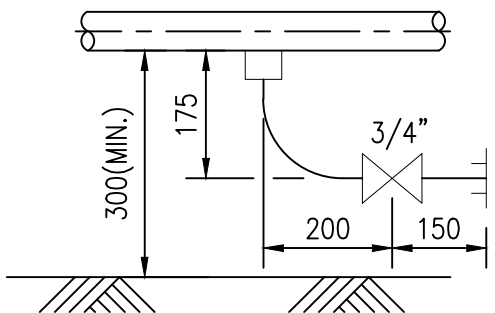
VENTS AND DRAINS
(ON LINES 2" AND ABOVE)

DRAWING NO.

SD-PI-018

SHEET NO.

1 OF 1

TYPE		VENT		DRAIN		TYPE					
VP1 V1C						D1 D1C					
V2F						D2F					
V3 V3C						D3 D3C					
V4F						D4F					
V5F						D5F					
						DC9 DF9		DC10 DF10			
NOTES:— 1. DELETED. 2. VENTS & DRAINS SHALL BE PROVIDED WITH GATE, GLOBE OR PLUG VALVE (FLG'D.) WITH HALF COUPLING. OR STUB IN, WITH CAP OR FLANGE & BLIND FLANGE AS PER PIPING SPECIFICATIONS. 3. DELETED. 4. LEGEND : V = VENT; D = DRAIN; C = CAP; F = FLANGE; P = PLUG.											
0	10.05.17	ISSUED WITH TENDER				US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION				PREP		CHKD		APPD	

VENTS AND DRAINS
(ON LINES 1 1/2" AND BELOW)

DRAWING NO.

SD-PI-019

SHEET NO.

1 OF 1

TYPE

VC1

VF1

VP1

VC2

VF2

VP2

VC3

VF3

VP3

VC4

VF4

VP4

VF5

VP5

VF6

VP6

AS LINE SIZE

150

3/4"

TEE EQUAL/
REDUCING

ON LINE 3/4"-1 1/2"

150 *

3/4"

RED.
EQUAL TEE

ON LINE 1"-1 1/2"

150

3/4"

TEE EQUAL/
REDUCING

ON LINE 3/4"-1 1/2"

150

3/4"

RED.
EQUAL TEE

ON LINE 1"-1 1/2"

3/4"

175

TEE EQUAL/
REDUCING

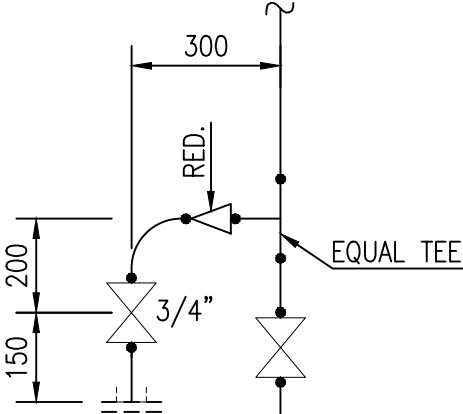
ON LINE 3/4"-1 1/2"

3/4"

RED.
EQUAL TEE

FITTING
TO FITTING

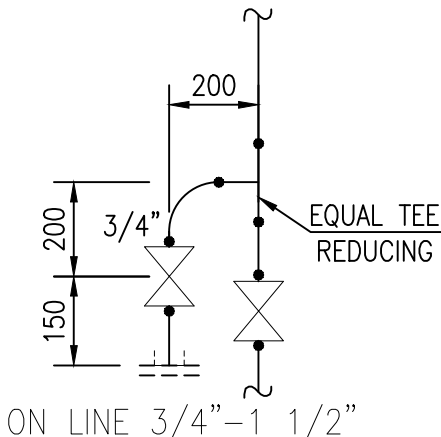
VENT ON LINE 1"-1 1/2"



DC7

DF7

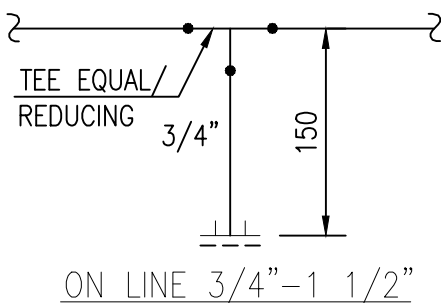
DP7



DC8

DF8

DP8

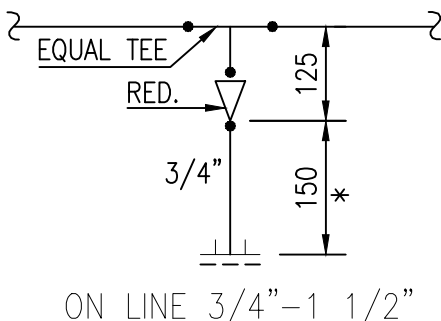


TYPE

DC1

DF1

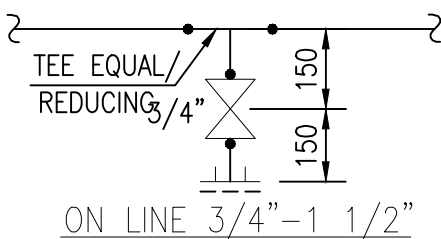
DP1



DC2

DF2

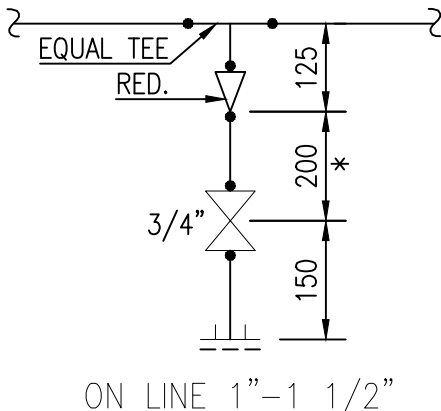
DP2



DC3

DF3

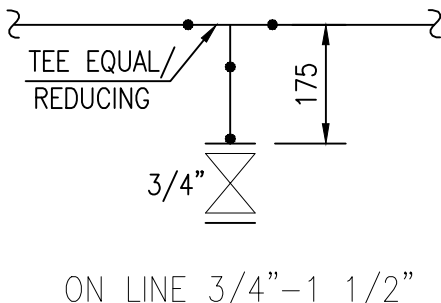
DP3



DC4

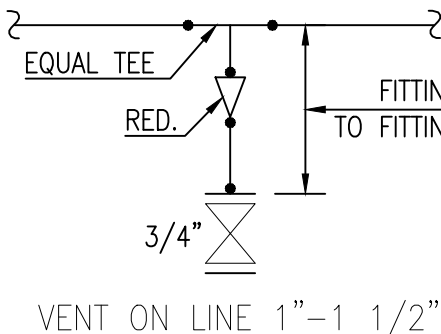
DF4

DP4



DC5

DF5



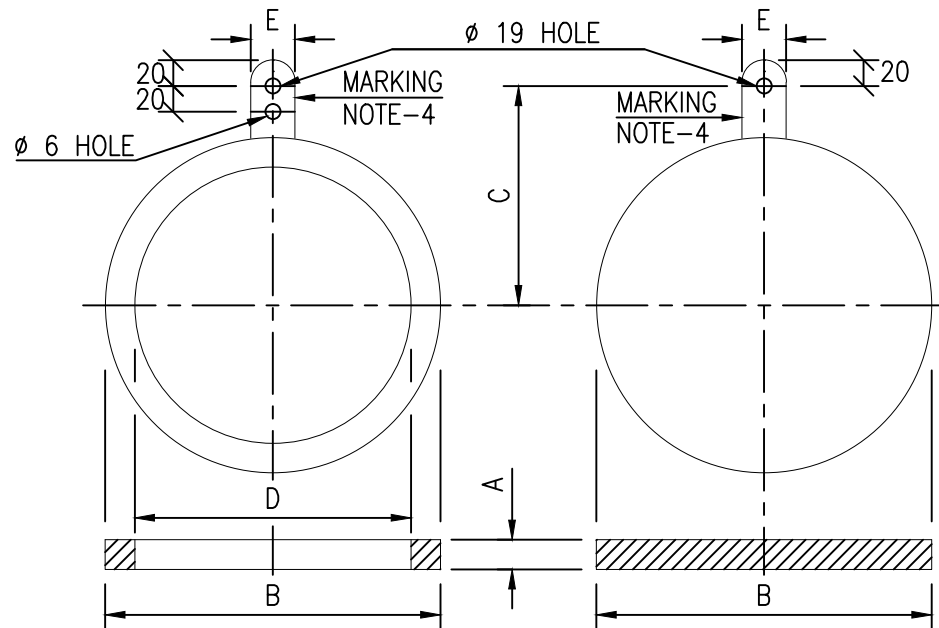
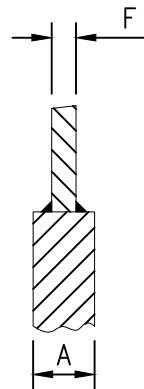
DC6

DF6

NOTES:-

- DIMENSIONS ARE VALID FOR 50mm(MAX) INSULATION THICKNESS, INCREASE DIMENSIONS AS REQUIRED, DIMENSIONS MARKED '*' ARE MAXIMUM AND MAY BE REDUCED TO SUIT.
- VENTS & DRAINS SHALL BE PROVIDED WITH GATE, GLOBE OR PLUG VALVE (FLGD.) WITH TEE (EQUAL OR REDUCING), HALF COUPLING OR STUB IN, CAP OR PLUG FLANGE AND BLIND FLANGE AS PER PIPING SPECIFICATION.
LEGEND : V = VENT; D = DRAIN; C = CAP; F = FLANGE; RED. = REDUCER, COUPLING OR SOCKET; P = PLUG.

0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD



NOTES:-

1. PROVIDE CONCENTRIC SERRATED FINISH ON BOTH SIDES WITH GROOVES 0.8 mm APART AND DEPTH APPROX 0.4 mm.
2. DIMENSIONS ARE FOR FLANGES TO ANSI B16.5 FOR SIZE UP TO 24" & MSS-SP-44 FOR SIZE ABOVE 24" FOR FLANGES TO API 605 CALCULATE DIMN.
3. THE DIA METER RATING AND MATERIAL SPECIFICATION SHALL BE MARKED ON WELDED FIXED PLATE.
4. MATERIAL AS PER PIPE CLASS.

PIPE SIZE INCH	150# FF							APPROX WT KGS		300# FF							APPROX WT KGS		600# FF							APPROX WT KGS		PIPE SIZE INCH
	A	B	C	D	E	F		BLIND	SPEC ER	A	B	C	D	E	F		BLIND	SPEC ER	A	B	C	D	E	F		BLIND	SPEC ER	
1"	5	62	105	29	25	4		0.2	0.1	5	70	115	29	25	4		0.2	0.1	5	70	125	29	25	4		0.28	0.15	1"
1½"	5	82	115	43	25	4		0.3	0.2	5	92	125	43	25	4		0.4	0.3	7	92	125	43	25	4		0.5	0.35	1½"
2"	7	102	125	55	25	4		0.4	0.3	7	108	130	55	25	4		0.6	0.4	10	108	130	55	25	4		0.75	0.5	2"
2½"	7	121	140	65	25	4		0.8	0.6	10	127	150	65	25	6		1.1	0.7	15	127	150	65	25	6		1.2	0.9	2½"
3"	7	134	150	80	40	4		0.9	0.7	10	146	155	80	40	6		1.7	1.0	15	146	155	80	40	6		2.0	1.2	3"
4"	8	170	165	106	40	6		1.8	1.0	13	178	180	106	40	6		2.1	1.2	18	190	180	106	40	6		3.7	2.4	4"
6"	11	218	190	157	40	6		3.7	1.5	18	248	210	157	40	6		7.2	3.8	24	263	225	157	40	8		11.0	6.2	6"
8"	15	275	220	207	40	6		7.5	2.7	21	305	240	207	40	8		13.5	6.3	30	314	260	207	40	10		19.5	10.0	8"
10"	18	335	250	260	40	8		13.0	4.3	26	358	270	260	40	10		22.5	8.8	37	397	300	260	40	10		37.0	19.0	10"
12"	19	405	290	312	40	8		22.0	8.0	30	418	310	312	40	10		35.0	13.8	43	454	325	312	40	15		57.0	27.5	12"
14"	22	445	320	342	40	10		28.0	12.5	34	480	340	342	40	15		52.0	23.5	48	448	350	342	40	15		71.0	33.0	14"
16"	26	510	350	393	40	10		42.0	15.0	38	536	375	393	40	15		70.0	30.0	54	560	390	393	40	20		110	55	16"
18"	29	545	370	445	40	10		53.0	17.0	43	592	400	445	40	20		100	42.0	62	608	415	445	40	20		140	65	18"
20"	30	600	400	496	40	15		70.0	20.0	48	650	440	496	40	20		128	49.0	67	678	450	496	40	20		190	83	20"
24"	37	710	450	597	50	15		120	52.0	57	772	510	597	50	20		210	74.0	81	785	515	597	50	25		307	125	24"
TOLER ANCE	± 0.3	± 0.5		± 0.5	± 1.0					± 0.3	± 0.5		± 0.5	± 1.0					± 0.3	± 0.5		± 0.5	± 1.0					TOLER ANCE

							SPACERS BLINDS 150#,300# & 600# FF	DRAWING NO. SD-PI-021	REV. 0
0	10.05.17	ISSUED WITH TENDER	US	DK	AD				
NO.	DATE	REVISION	DRN	CHKD	APPD				

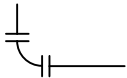
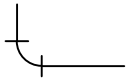
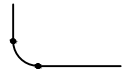
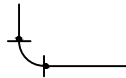
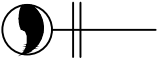
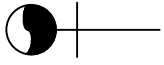
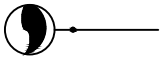
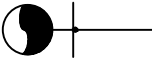
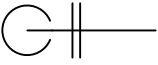
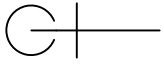
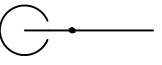
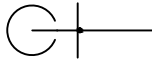
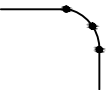
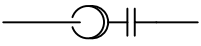
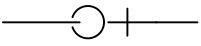
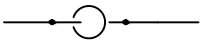
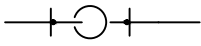
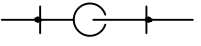
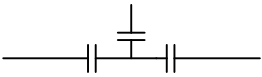
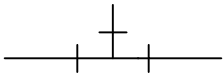
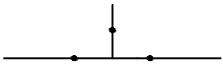
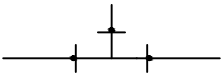
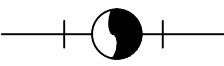
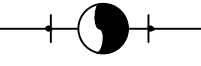
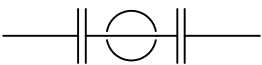
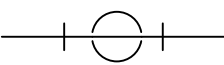
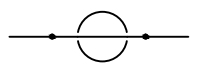
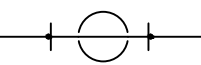
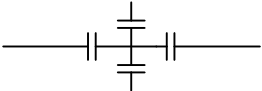
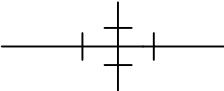
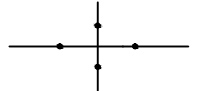
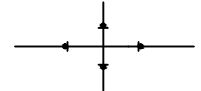
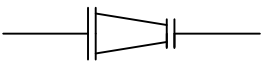
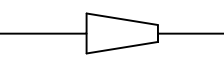
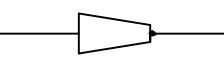
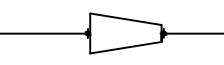
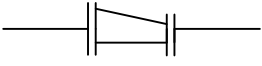
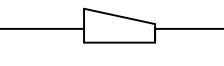
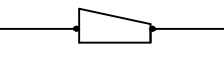
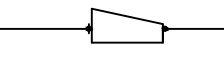
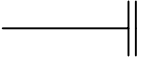
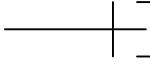
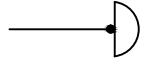
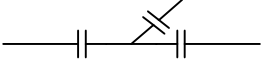
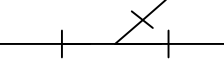
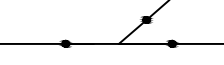
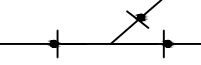
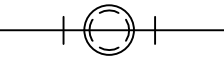
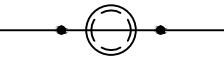
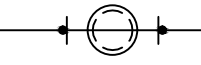
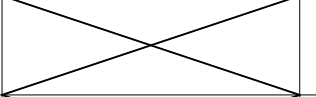
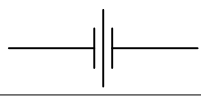
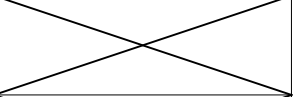
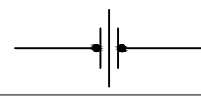
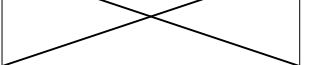
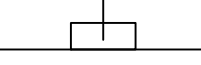
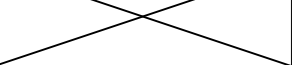
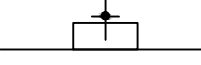
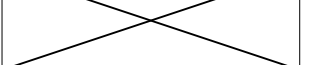
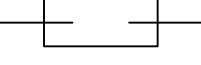
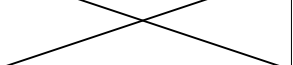
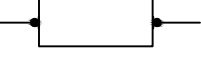
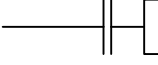
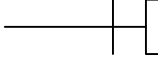
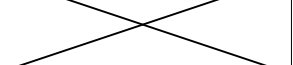
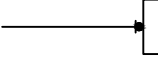
SYMBOLS OF PIPING
ELEMENTS ON DRAWINGS

DRAWING NO.

SD-PI-023

SHEET NO.

1 OF 4

DESCRIPTION	FLANGED	SCREWED	WELDED (NOTE-1)	SOCKET WELD
90° ELBOW				
ELBOW (TURNED UP)				
ELBOW (TURNED DOWN)				
MITERED BEND 90°				
MITERED BEND 45°				
45° ELBOW				
45° ELBOW (TURNED UP)				
45° ELBOW (TURNED DOWN)				
TEE EQUAL/UNEQUAL				
TEE (OUTLET UP)				
TEE (OUTLET DOWN)				
CROSS				
CONCENTRIC REDUCER				
ECCENTRIC REDUCER				
DEAD END				
LATERAL				
SIGHT GLASS				
UNION				
HALF COUPLING				
FULL COUPLING				
HOSE COUPLING				

0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

SYMBOLS OF PIPING
ELEMENTS ON DRAWINGS

DRAWING NO.

SD-PI-023

SHEET NO.

2 OF 4

DESCRIPTION	FLANGED	SCREWED	WELDED (NOTE-1)	SOCKET WELD
GATE VALVE (PLAN)				
GATE VALVE (ELEVATION)				
GLOBE VALVE (PLAN)				
GLOBE VALVE (ELEVATION)				
ANGLE VALVE (PLAN)				
ANGLE VALVE (ELEVATION)				
CHECK VALVE (PLAN OR ELEVATION)				
ANGLE STOP CHECK VALVE (PLAN)				
ANGLE STOP CHECK VALVE (ELEVATION)				
PLUG VALVE (PLAN)				
PLUG VALVE (ELEVATION)				
BALL VALVE (PLAN)				
BALL VALVE (ELEVATION)				
NEEDLE VALVE (PLAN OR ELEVATION)				
RELIEF VALVE (PLAN)				
RELIEF VALVE (ELEVATION)				
CONTROL VALVE GLOBE TYPE(PLAN)				
CONTROL VALVE GLOBE TYPE(ELEVATION)				
CONTROL VALVE BUTTERFLY TYPE(PLAN)				
CONTROL VALVE BUTTERFLY TYPE(ELEV.)				
SOLENOID OPERATED VALVE(PLAN OR ELEV.)				

0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

SYMBOLS OF PIPING
ELEMENTS ON DRAWINGS

DRAWING NO.

SD-PI-023

SHEET NO.

3 OF 4

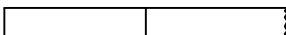
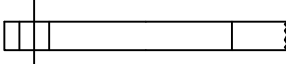
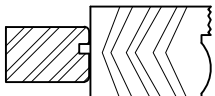
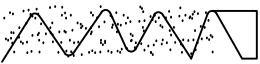
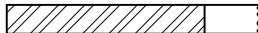
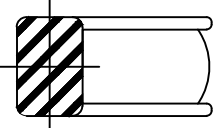
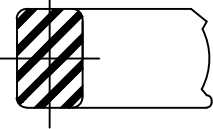
DESCRIPTION	FLANGED	SCREWED	WELDED (NOTE-1)	SOCKET WELD
BUTTERFLY VALVE (PLAN OR ELEVATION)				
DIAPHRAGM VALVE (PLAN OR ELEVATION)				
3-WAY PLUG VALVE (PLAN OR ELEVATION)				
4-WAY PLUG VALVE (PLAN OR ELEVATION)				
EXPANSION JOINT				
ANGLE CONTROL VALVE				
CHAIN OPERATING VALVE				
GEAR OPERATED VALVE (BEVEL GEAR)PLAN				
GEAR OPERATED VALVE (SPUR GEAR)PLAN				
MOTOR OPERATING VALVE				
STEAM TRAP				
Y-STRAINER				

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
SLIP ON FLANGE		STUB - IN (WITH OR WITHOUT RENIF)	
WELDNECK FLANGE			
SCREWED FLANGE		STUB - IN (SADDLE RENIF)	
SOCKET WELD FLANGE			
SPACER		STUB - IN WITH RENIF (IN PLAN)	
SPACER BLIND			
SPECTALE FIG. 8 (BLIND)		INSULATED (LINES 12" AND BELOW)	
SPECTALE FIG. 8 (OPEN)			

0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

DESCRIPTION	FLANGED	SCREWED	WELDED (NOTE-1)	SOCKET WELD
BUTTERFLY VALVE (PLAN OR ELEVATION)				
DIAPHRAGM VALVE (PLAN OR ELEVATION)				
3-WAY PLUG VALVE (PLAN OR ELEVATION)				
4-WAY PLUG VALVE (PLAN OR ELEVATION)				
EXPANSION JOINT				
ANGLE CONTROL VALVE				
CHAIN OPERATING VALVE				
GEAR OPERATED VALVE (BEVEL GEAR)PLAN				
GEAR OPERATED VALVE (SPUR GEAR)PLAN				
MOTOR OPERATING VALVE				
STEAM TRAP				
Y-STRAINER				

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
SLIP ON FLANGE		STUB - IN (WITH OR WITHOUT RENIF)	
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SOCKET WELD FLANGE			
SPACER		STUB - IN WITH RENIF (IN PLAN)	
SPACER BLIND			
SPECTALE FIG. 8 (BLIND)		INSULATED (LINES 12" AND BELOW)	
SPECTALE FIG. 8 (OPEN)			

			GASKET THICKNESS		DRAWING NO.						
					SD-PI-024						
						SHEET NO.		1 OF 1			
TYPICAL CROSS SECTION		DESCRIPTION			THICKNESS OF GASKET		COMPRESSED THICKNESS (NOTE -1)				
		FLAT RING FOR RAISED FACE FLANGE	COMPRESSED ASBESTOS FOR SYNTHETIC RUBBER		2.0		2.0				
		FULL FACE FOR FLAT FACE FLANGES									
		SPIRAL WOUND METAL FLAT RING GASKET, NON METALLIC FILTER, AND A STEEL SOLID RING TYPE CENTERING DEVICE- FOR RAISED FACE FLANGES.			4.4		3.0				
		FLAT METAL JACKETED GASKET, NON METALLIC FILTER COMPLETELY ENCLOSED WITHIN A FULLY ANNEALED DOUBLE METAL JACKET-FORRAISED FACE FLANGES			3.0		2.0				
		CORRUGATED METAL JACKETED GASKET, NON METALLIC FILTER, COMPLETELY ENCLOSED WITHIN A FULLY ANNEALED DOUBLE METAL CORRUGATED JACKET- FOR RAISED FACE FLANGES.			3.2		1.0				
		CORRUGATED METAL GASKET-FULLY ANNEALED CORRUGATED METAL WITH FILTER MATERIAL CEMENTED TO THE CORRUGATIONS ON BOTH FACES -FOR RAISED FACE FLANGES			3.2		1.0				
		SOLID METAL FLAT RING FOR SMALL TONGUE AND GROOVE FLANGES.			AS SPECIFIED						
		SOLID METAL FLAT RING FOR LARGE TONGUE AND GROOVE FLANGES.			AS SPECIFIED						
		SOLID METAL OCTAGONAL RING FOR R.T.J FLANGES			DIMENSIONS SHALL BE AS PER ASME B 16.20(NOTE-2)						
		SOLID METAL OVAL RING FOR R.T.J FLANGES			DIMENSIONS SHALL BE AS PER ASME B 16.20(NOTE-2)						
		FULLY ANEALED CORRUGATED METAL FOR RAISED FACE FLANGES.			3.2		1.0				
0	10.05.17	ISSUED WITH TENDER				US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION				PREP		CHKD		APPD	

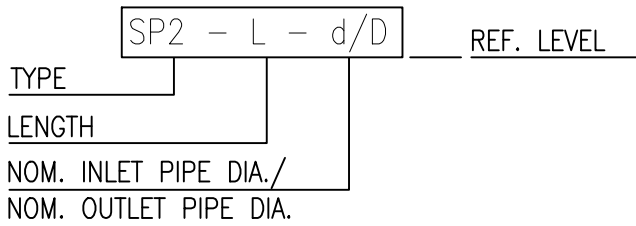
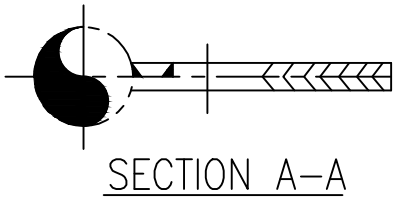
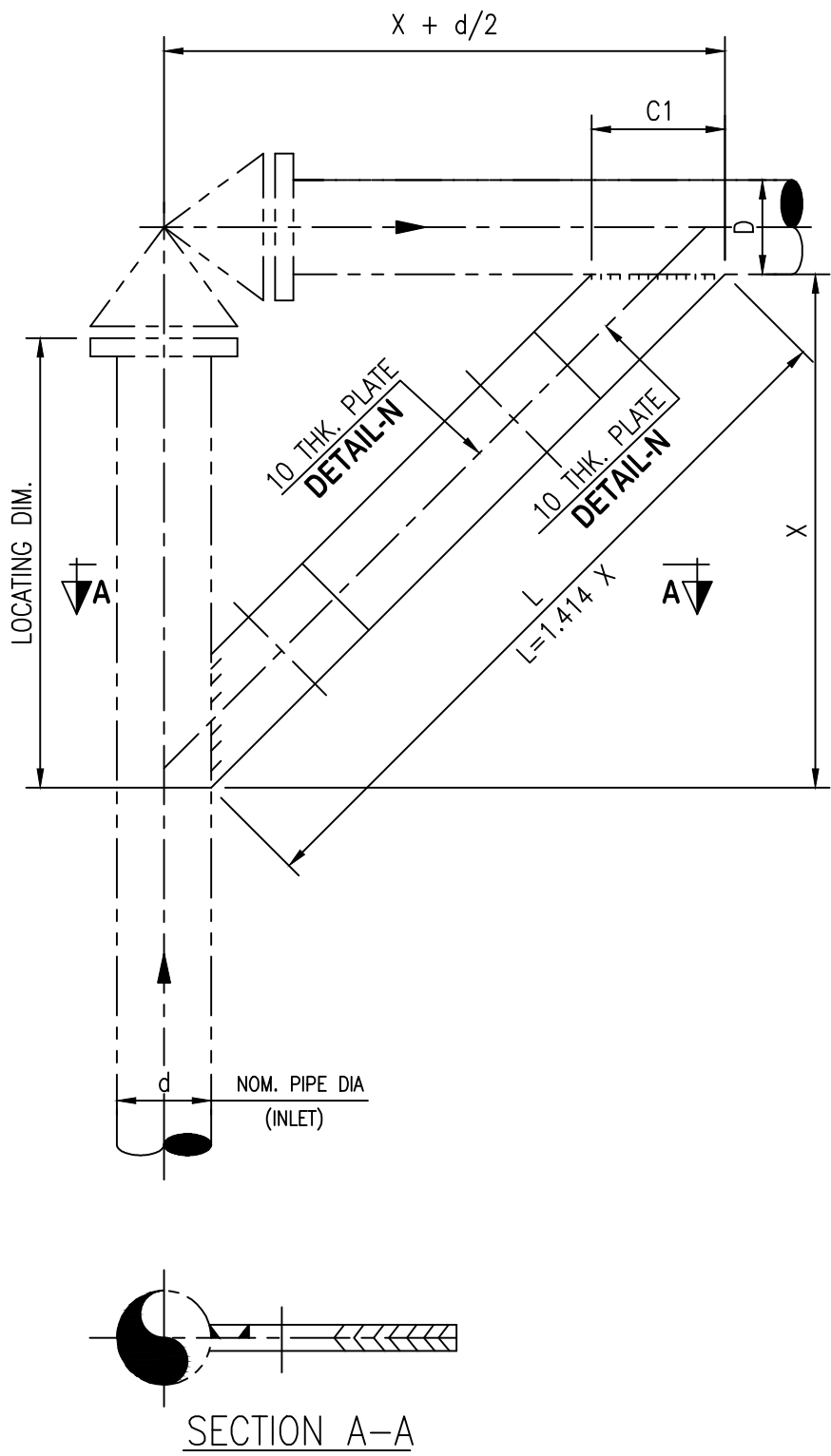
SUPPORTING ARRANGEMENT
FOR ANGLE AND RELIEF VALVES
TYPE-SP2

DRAWING NO.

SD-PI-025

SHEET NO.

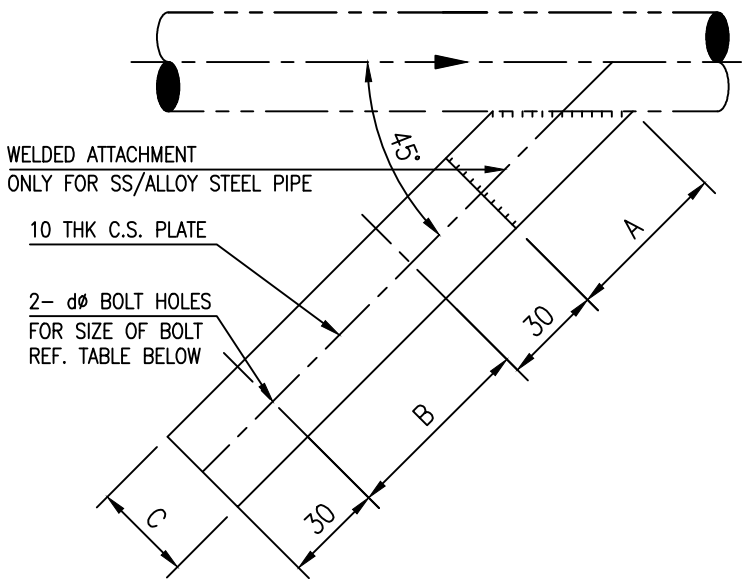
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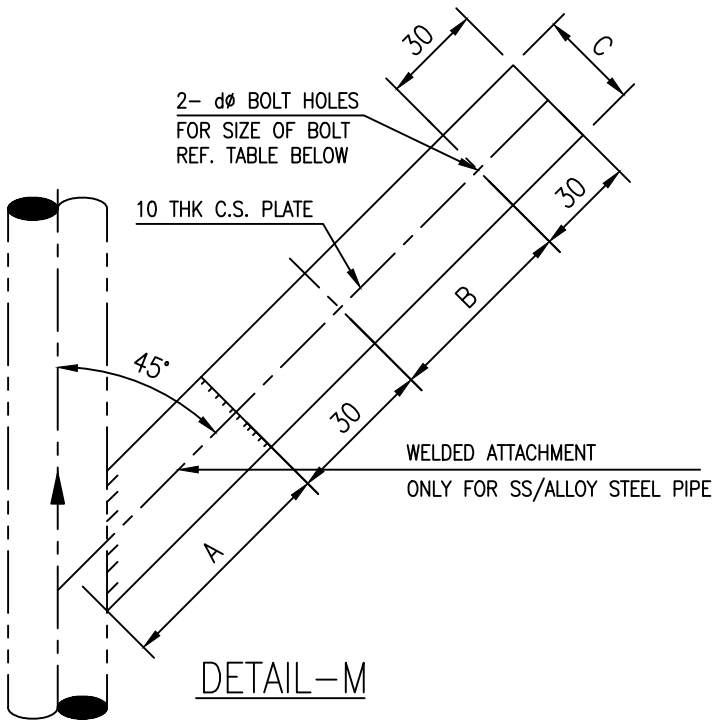
SYMBOL

D	BOLT SIZE dø	A	C	B MIN.	C1	D1
1" TO 4"	M12 X 50	75	50	150	71	14
6" TO 12"	M16 X 50	100	75	200	106	18

FOR TEMP. UP TO 400 °C ONLY



DETAIL-N



DETAIL-M

NOTES:-

1. MATERIAL FOR WELDED ATTACHMENT SHALL BE EQUIVALENT TO PIPE MATERIAL.

0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

0	10.05.17	ISSUED WITH TENDER	US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

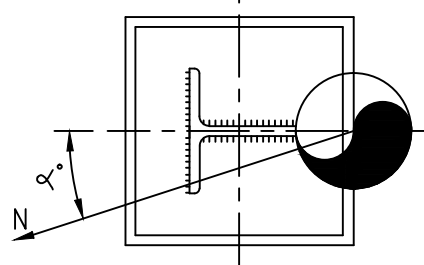
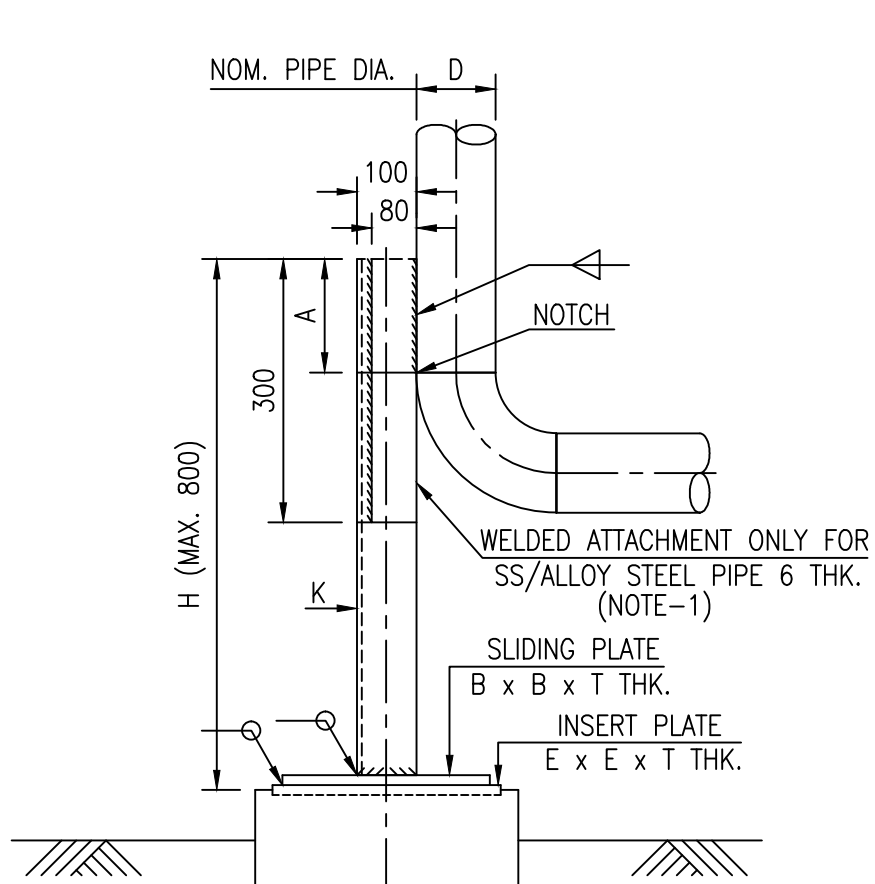
LOW SUPPORT FIXED FOR BARE
& INSULATED PIPE SIZE 2"
THRU 24"TYPE-L6

DRAWING NO.

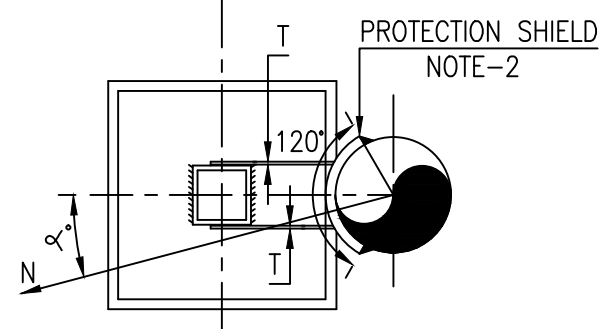
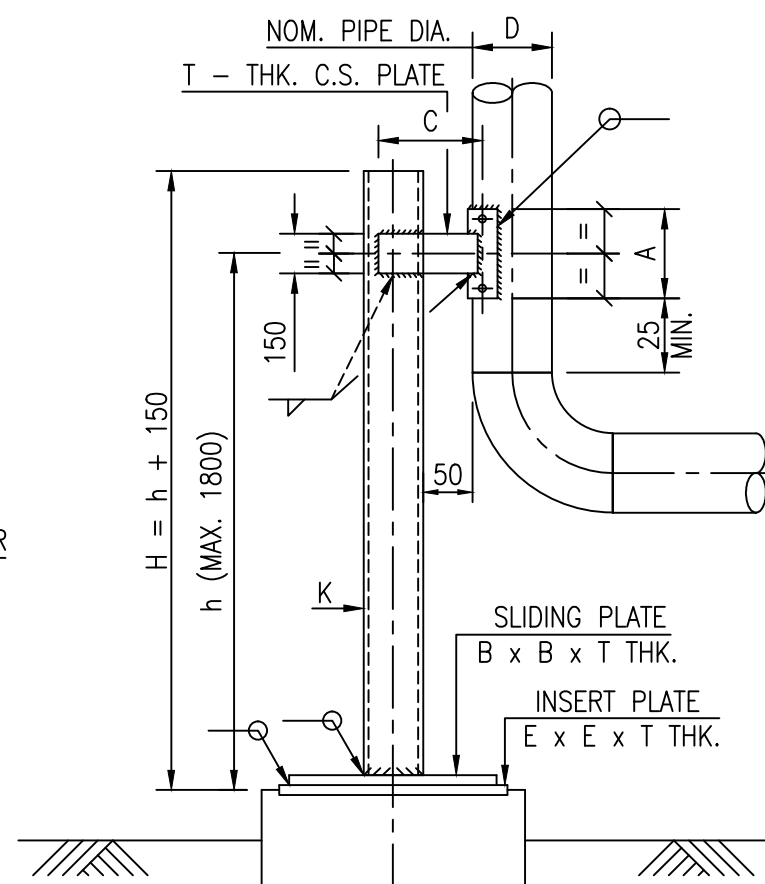
SD-PI-027

SHEET NO.

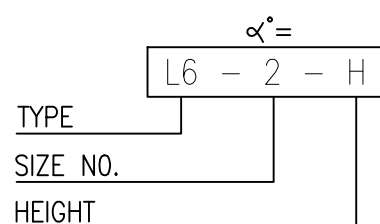
1 OF 1



FOR PIPE SIZES 2" THRU 4"



FOR PIPE SIZES 6" THRU 24"



SYMBOL

NOTES:-

1. MATERIAL FOR WELDED ATTACHMENT SHALL BE EQUIVALENT TO PIPE MATERIAL.
2. PROTECTION SHIELD IS TO BE CUT FROM LINE PIPE.

SIZE NO.	D	K	A	T	C	E	B
1	2" TO 4"	CUT FROM ISMB 200	200	10	-	250	150
2	6" TO 10"	ISMC-125 2 NOS.	200	12	150	300	200
3	12" TO 24"	ISMC-225 2 NOS.	300	12	230	400	300

FOR TEMP. UP TO 400 °C ONLY

0	10.05.17	ISSUED WITH TENDER	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

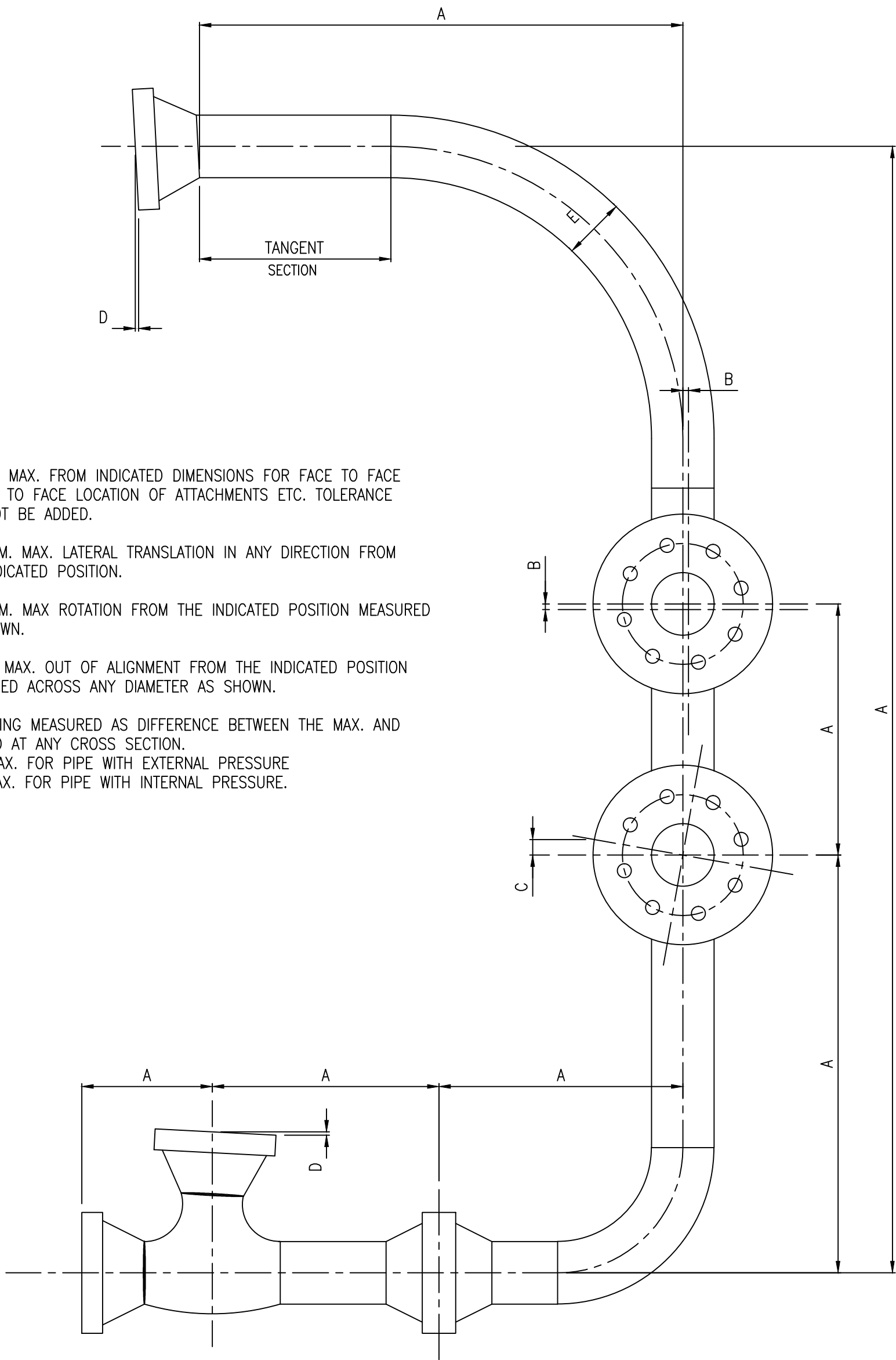
TOLERANCES
FOR FABRICATION

DRAWING NO.

SD-PI-028

SHEET NO.

1 OF 1

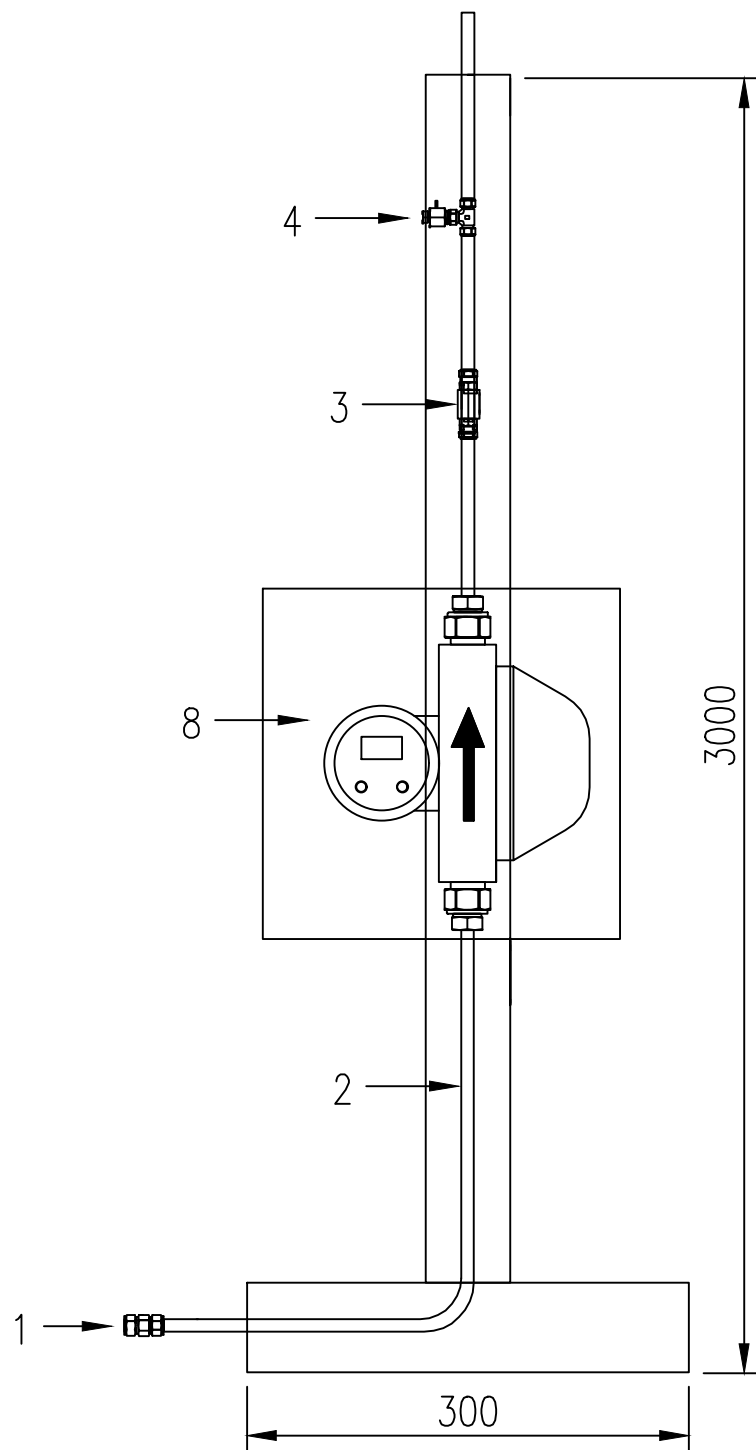


- A ± 3 MM. MAX. FROM INDICATED DIMENSIONS FOR FACE TO FACE CENTRE TO FACE LOCATION OF ATTACHMENTS ETC. TOLERANCE CAN NOT BE ADDED.
- B ± 1.5 MM. MAX. LATERAL TRANSLATION IN ANY DIRECTION FROM THE INDICATED POSITION.
- C ± 1.5 MM. MAX ROTATION FROM THE INDICATED POSITION MEASURED AS SHOWN.
- D ± 1 MM MAX. OUT OF ALIGNMENT FROM THE INDICATED POSITION MEASURED ACROSS ANY DIAMETER AS SHOWN.
- E FLATTENING MEASURED AS DIFFERENCE BETWEEN THE MAX. AND MIN. OD AT ANY CROSS SECTION.
-3% MAX. FOR PIPE WITH EXTERNAL PRESSURE
8% MAX. FOR PIPE WITH INTERNAL PRESSURE.

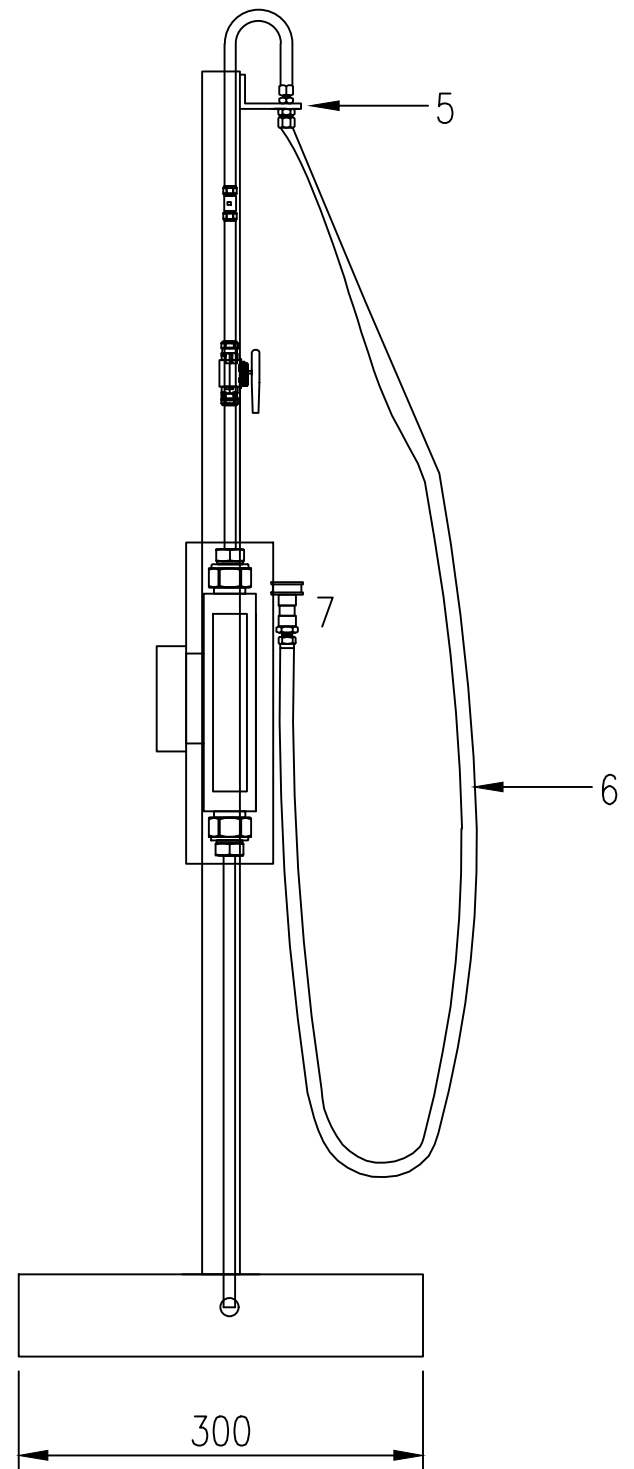
0	10.05.17	ISSUED FOR STANDARD	US	DK	AD
REV. NO.	DATE	SUBJECT OF REVISION	PREP	CHKD	APPD

ABBREVIATIONS				DRAWING NO.					
				SD-PI-029					
				SHEET NO.		1 OF 1			
M&F	MALE & FEMALE	SO	SLIP ON						
MI	MALLEABLE IRON	SOL	SOCKOLET						
MOLY OR MO	MOLYBDENUM	SP. GR	SPECIFIC GRAVITY						
MR	MATERIAL REQUISITION	SR	SHORT RADIUS						
MTO	MATERIAL TAKE OFF	SS	STAINLESS STEEL						
MS	MILD STEEL	ST	STEAM TRAP						
MSS	MANUFACTURER’S STANDARD SOCIETY	STN	STATION						
MH	MAN HLOE	STM	STEAM						
NPT	NATIONAL PIPE THREAD	STD	STANDARD						
NPSH	NET POSITIVE SUCTION HEAD	SW	SOCKET WELD						
NIP	NIPPLE	SWG	SWAGE NIPPLE / STD WIRE GAGE						
OD	OUTSIDE DIAMETER	STA	STEAM TRAP ASSEMBLY						
PC.MK	PIECE MARK	TOG	TOP OF GRATING						
PE	PLAIN END	TEMP.	TEMPERATURE						
PL	PLATE	TOL	THREADOLET						
PLTF	PLATFORM	T&C	THREADED & COUPLED						
P.S	PIPE SUPPORT	THRD	THREADED						
PSE	PLAIN SMALL END	T&G	TONGUE & GROOVE						
PRESS.	PRESSURE	TBE	THREADED BOTH ENDS						
PSI	POUNDS PER SQUARE INCH	TLE	THREADED LARGE END						
POE	PLAIN ONE END	TSE	THREADED SMALL END						
PSIG	POUNDS PER SQUARE INCH GAUGE	TOS	TOP OF STEEL						
RAD OR R	RADIUS	TOE	THREADED ONE END						
RED.	REDUCER	TYP	TYPICAL						
RF	RAISED FACE	VC	VENT CONNECTION						
R/L	RANDOM LENGTH	VERT.	VERTICAL						
REF.	REFERENCE	WP	WORKING PRESSURE, WORKING POINT						
RPM	REVOLUTIONS PER MINUTE		INVERT LEVEL OF PIPE						
RTJ	RING TYPE JOINT		BOTTOM LEVEL OF THE PIPE						
SH	SPRING HANGER		CENTRELINE ELEVATION OF PIPE						
SHT	SHEET	WN	WELD NECK						
SCH	SCHEDULE	WT	WEIGHT						
SCRD	SCREWED	WOL	WELDOLET						
S	SAMPLE CONNECTION	WLD	WELD						
SG	SIGHT GLASS	XS	EXTRA STRONG						
SC	SAMPLE COOLER	XXS	DOUBLE EXTRA STRONG						
SMLS	SEAMLESS								
NOTE: 1. FOR ABBREVIATIONS RELATED TO CIVIL ENGINEERING/UNDERGROUND PIPING WORK, REFER CIVIL ENGINEERING STANDARD.									
0	10.05.17	ISSUED WITH TENDER		US		DK		AD	
REV. NO.	DATE	SUBJECT OF REVISION		PREP		CHKD		APPD	

	LCV LOADING POST WITH FLOW METER	DRAWING NO.	
		SD-ME-001	
		SHEET NO.	1 OF 1



FRONT VIEW



SIDE VIEW

S.NO.	PART NAME	MATERIAL	MAKE/MODEL
1	UNION 3/4" OD	SS 316	SWAGELOK/PARKER/ DK LOK
2	TUBE 3/4" OD	A 269/213 TP316	SANDVIK/TUBACEX
3	TWO WAY BALL VALVE 3/4" OD	SS 316	SWAGELOK/PARKER/ DK LOK
4	BLEED VALVE 1/4" NPTM	SS 316	SWAGELOK/PARKER/ DK LOK
5	BULKHEAD UNION 3/4" OD	SS 316	SWAGELOK/PARKER/ DK LOK
6	FILL HOSE 1/2" ID, LENGTH-4Mtr. (SS BRAIDED STAINLESS STEEL)	5000 PSIG	SWAGELOK/TUBACEX/ETON
7	QRC 1/2" NPTF	SS 316	SWAGELOK/PARKER/ DK LOK
8	FLOW METER WITH INTEGRATED DISPLAY (COROLIS TYPE) 0-100 Kg/min.	-	MICRO MOTION / E&H

NOTES :

1. ALL DIMENSIONS IN MM.
2. THIS DWG. IS INDICATIVE ONLY, VENDOR TO FURNISH FINAL DWG. BASED ON ARRANGEMENT FOR CNG FILLING FOR APPROVAL POST ORDER.
3. HOSE SHOULD CONFIRM TO NFPA52/CSA NGV 4.2-2014/CSA12.52-2014.

0	24.09.19	ISSUED FOR REVIEW	DK		RR		AD	
REV. NO.	DATE	SUBJECT OF REVISION	PREP		CHKD		APPD	

**LIST OF ATTACHMENT
CIVIL-STRUCTURAL AND ARCHITECTURAL**

CONTENTS

1.0 LIST OF ATTACHMENTS.....3

2.0 STANDARD DRAWINGS3

3.0 SPECIFICATIONS.....6

4.0 PROJECT SPECIFIC DRAWINGS.....4

1.0 LIST OF ATTACHMENTS

Contractor shall carry out all works strictly in accordance with the drawings/documents/specifications indicated in subsequent paragraphs.

2.0 STANDARD DRAWINGS

Sr. No	Standard Drawings Number	Description	Sheet	Rev No
1		Detail of Road Curves and Crossing	1	3
2		Chain Link Fencing	2	3
3		Detail Of Soak Pit	1	3
4		Detail Of Septic Tank	1	3
5		Standard section of storm water drains	1	3
6		Trench Sand Bedding	1	3
7		Concrete Bedding & Encasement for Pipes	1	3
8		Pipe Culvert for Storm Water Drainage	1	3
9		Rain Water Harvesting Pit	1	3
10		Cross Section of Road	3	3
11		Sand trap (for tank farm)	1	3
12		Man Holes (SWS) type-1 for depth < 1M($\phi < 300$)	1	3
13		Man Holes type-2 sanitary waste system for depth < 2M($\phi \leq 500$)	1	3
14		Details of masonry dyke and fire wall (tank farm)	1	3
15		Brick masonry compound wall	1	3
16		Tank pad details with stone ring wall (for tank height up to 10.0m)	1	3
17		Brick footpath	1	3
18		RCC pavement details	1	3
19		Concrete trapezoidal storm water drain (height (h) < 3.0m)	1	3
20		Steps on earthen dykes and road	1	3

Sr. No	Standard Drawings Number	Description	Sheet	Rev No
		embankments		
21		Area plan for Topo survey	1	3
22		Standard Typ. Details of Cable Trench	1	3
23		R.C.C Flooring Details(Type I & II)	2	3
24		Handrail On Steel Platform	1	3
25		Sliding T- Support	2	3
26		Small operating platforms on grade/ RCC elevation structure	3	3
27		Standard Grating Details	3	3
28		Pipe sleeper Crossover	3	3
29		Miscellaneous Details	1	3
30		Details of Steel Ladder	3	3
31		Metal Insert Plates	7	3
32		Cantilever Pipe Support	1	3
33		Standard for Ring wall foundation for storage tanks (liquid temp. up to 190° c)	4	3
34		Standard for detail of Pedestal for stair / ladder	1	3
35		Details of Block foundation for transformers (up to 2000 KVA rating)	1	3
36		Details for M.S. rungs for conc. structures	1	3
37		Steel stairs	6	3
38		Reinforcement details at circular cut-out in slab	1	3
39		Reinforcement details at sq. / rect. cut-out in slab	1	3
40		Standard lugs	1	3
41		Box culvert Type I,II,III & IV	1	3
42		Typical grating support.	1	3
43		Typical Chequered Plate Support	1	3

Sr. No	Standard Drawings Number	Description	Sheet	Rev No
44		M.S. anchor bolt assemblies	4	3
45		RCC pipe support	1	3
46		Standard for Detail of False Flooring	3	3
47		Wash Basin Fixing Detail	1	3
48		European Type W.C. Fixing Detail	1	3
49		Urinal Fixing Detail	1	3
50		Standard for Detail of Glazed Aluminum Doors	2	3
51		Wooden Flush Door	1	3
52		Glazed Aluminum Window	1	3
53		False Ceiling	1	3
54		Standard for Detail of Hung Gate	4	3
55		Standard for Detail of Steel Door (Pressed Steel Single Shutter)	2	3
56		Typ. Plinth protection	1	3
57		Aluminum sliding window	1	3
58		Aluminum ventilator	1	3
59		Standard for Detail of Barbed wire fencing(With angle Iron post)	1	3

3.0 SPECIFICATIONS

Sr. No	Specification Number	Description	Sheet	Rev no
1		Topographic survey of stations	09	3
2		Earthwork in site grading	09	3
3		Earthwork for underground piping	08	3
4		Roads and flexible pavements (up to WBM layer)	12	3
5		Concrete pavement	11	3
6		Flexible pavement with bitumen premix carpet	09	3
7		RCC pipe culverts & ERC crossing etc.	06	3
8		Tank pads	08	3
9		Gravel filling	06	3
10		Misc. civil & structural works for underground services	07	3
11		Plumbing & drainage	09	3
12		Chain link fencing	08	3
13		General scope	05	3
14		Materials	17	3
15		Earth work in foundations	13	3
16		Plain and reinforced cement concrete	35	3
17		Structural steel works	26	3
18		Steel works (tubular hollow sections)	14	3
19		Miscellaneous steel works	13	3
20		Brick masonry	09	3
21		Stone masonry	10	3
22		Demolition & dismantling	08	3
23		Miscellaneous items	09	3

Sr. No	Specification Number	Description	Sheet	Rev no
24		Soil investigations	35	3
25		Driven cast-in-situ piles	09	3
26		Construction and installation of RCC bored cast-in-situ piles	09	3
27		Testing of concrete piles	13	3
28		Floor finishing	19	3
29		Wood work	08	3
30		Steel aluminum doors, windows and ventilators	09	3
31		Plastering & Pointing	10	3
32		Roof Treatment	05	3
33		White washing, Colour washing, distempering, painting and polishing	15	3
34		Roofing	10	3
35		False ceiling, false flooring, under deck insulation & partitioning	12	3
36		Acid proof tile lining	06	3
37		Inspection and Test Plan (ITP) for Civil Structural & Architectural Works	31	3

**STANDARD DRAWING FOR
OF ROAD CURVES
AND CROSSINGS**

STANDARD DRAWING NO.

REV.

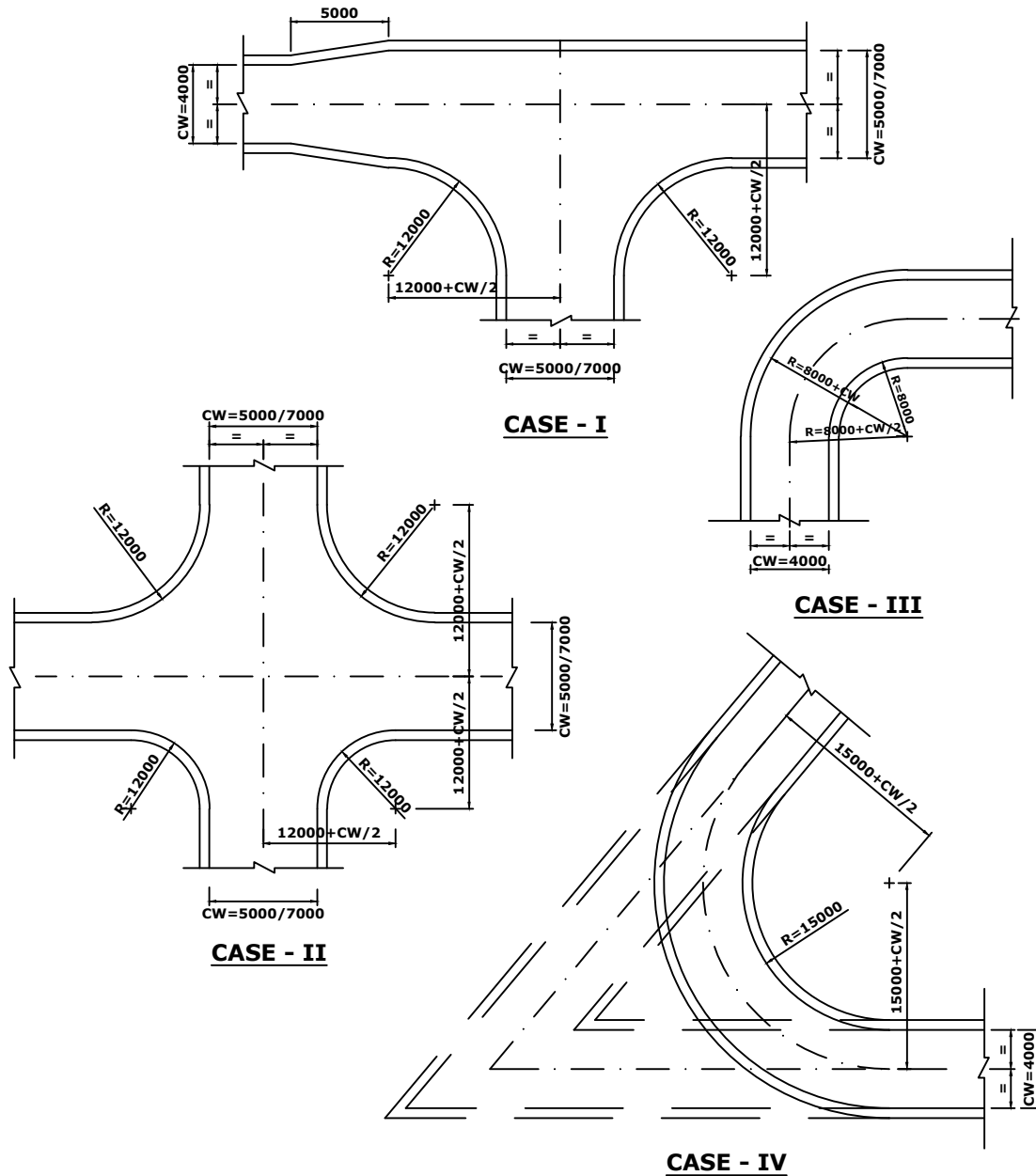
SIZE

03

A4

SHEET NO.

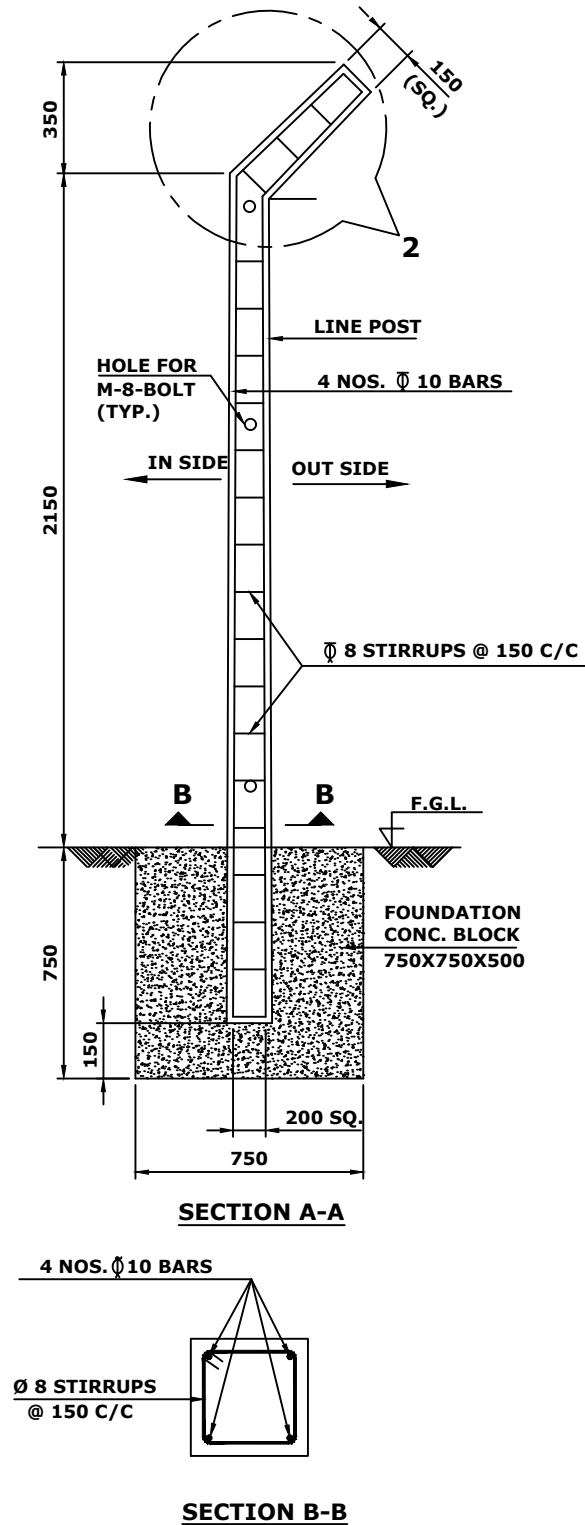
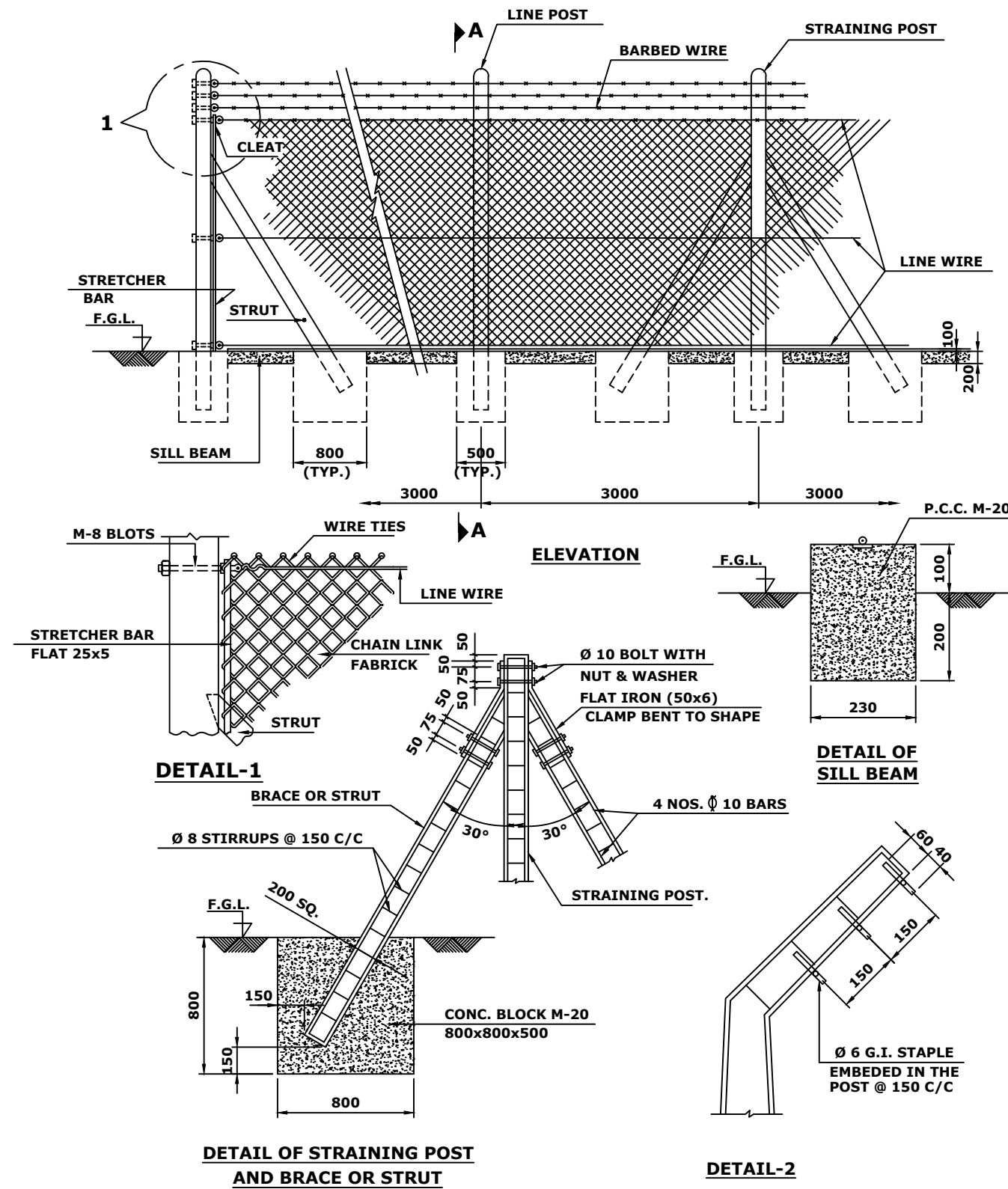
1 OF 1



NOTES:-

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE MENTIONED.
2. MINIMUM RADIUS OF CURVES FOR ROADS WITH $CW=4.0m$
3. MINIMUM RADIUS OF CURVES FOR ROADS WITH $CW>4.0m$ SHALL BE 12m.
4. RADIUS OF CURVES FOR APPROACH ROADS TO BUILDINGS AND OTHERS AREAS MAY BE REDUCED AS PER SERVICES REQUIRMENTS.
5. FOR ROAD CURVES WITH ACUTE ANGLE TURNING. THE MINIMUM RADIUS SHALL BE 15m AND ANGLE NOT LESS THAN 50° .

6. RADIUS OF CURVES AND CROSSING WHEN DIFFERENT FROM THOSE GIVEN IN THIS STANDARD TO MEET ANY SPECIAL REQUIRMENT SHALL BE SO MARKED IN THE AREA DRAWINGS.

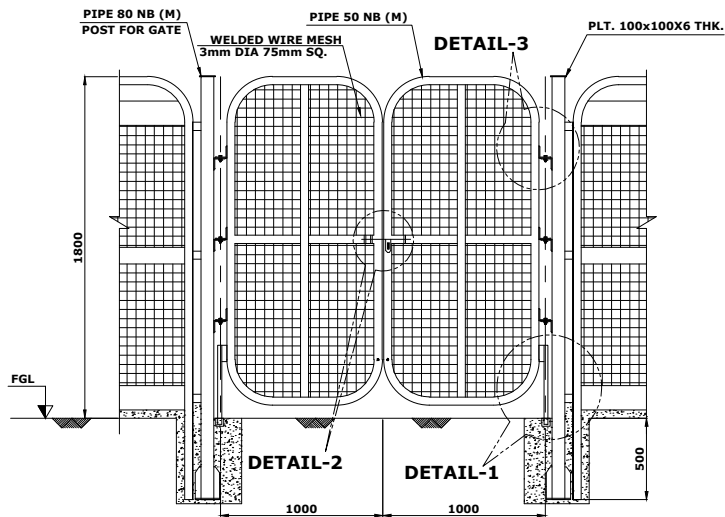


NOTES:-

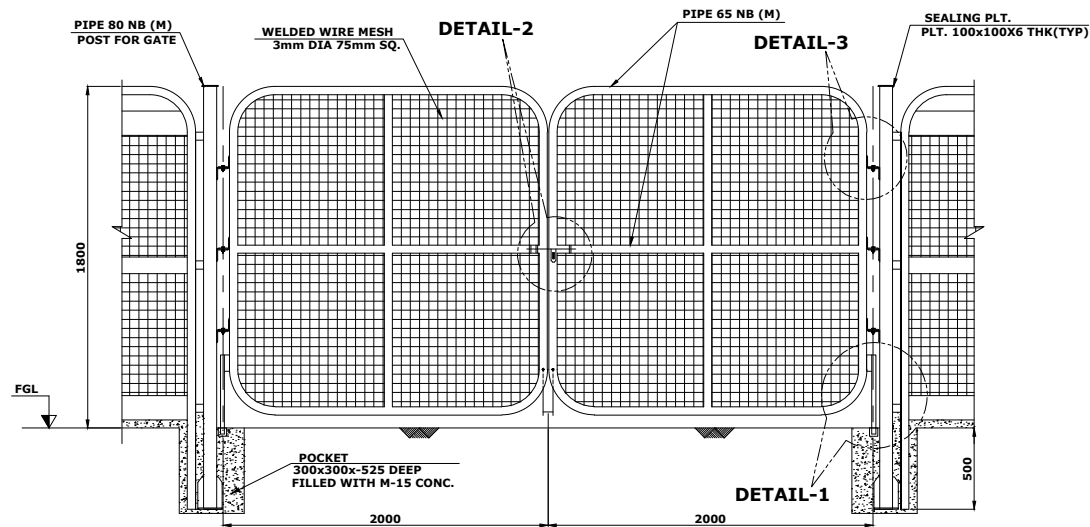
- ALL DIMENSIONS ARE IN MILLIMETERS.
- THE GALVANISED STEEL BARBED WIRE A1 TO IS:278 SHALL HAVE LINE WIRE OF ϕ 2.5 MM POINT WIRE OF ϕ 2.0 MM & MINIMUM WEIGHT OF COMPLETE BARBED WIRE SHALL BE 108gm/m WITH 75 MM DISTANCE BETWEEN TWO BARS.
- LINE POST SHALL BE PLACED AT 3.0 M C/C.
- STRUT SHALL BE PROVIDED AT EVERY 15 TH. POST LAST BUT ONE END POST & CORNER POST ON BOTH SIDE & END POST ON ONE SIDE ONLY.
- REINF. STEEL SHOWN THUS ϕ SHALL CONFORM TO IS:1786 LATEST & REINF. STEEL SHOWN THUS ϕ SHALL CONFORM TO GRADE Fe 415 (MIN.) LATEST.
- STRAINING BOLTS SHALL BE PROVIDED AT THE END POST & AT PLACES AS DIRECTED BY ENGINEER INCHARGE.
- SIZE OF STRAINING POST SHALL BE SAME AS THAT OF LINE POST.
- GRADE OF CONC. SHALL BE AS FOLLOWS:
MODERATE SOIL SEVRE/
AGGRASSIVE SOIL
- MANUFACTURE OF CONC. POSTS SHALL CONFORM TO IS:4996.
- THE CHIAN LINK FABRIC SHALL CONFORM TO IS:2721.
- STRETCHER BAR SHALL BE HOT DIP GALVANISED.
- SUITABLE INSERTS SHALL BE PROVIDED ON THE TOP OF THE SILL BEAM TO TIE THE BOTTOM LINE WIRE WITH THE SILL BEAM.

TYPE-I

DETAIL OF CHAIN LINK FENCING (WITH CONC. POST)



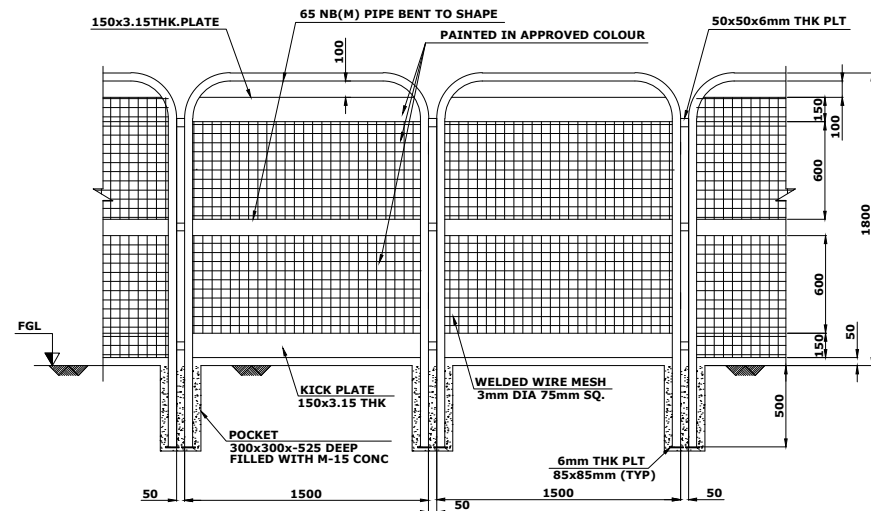
**2.0 WIDE GATE DETAIL
2100 HIGH**



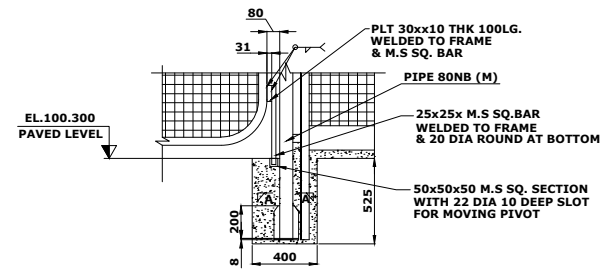
4.0 WIDE GATE DETAIL

NOTES:-

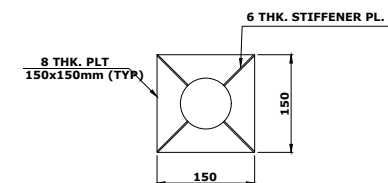
1. ALL DIMENSIONS AND LEVELS ARE IN mm. (UNLESS MENTIONED OTHERWISE)
2. ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED.
3. ALL STRUCTURAL STEEL SHALL CONFORM TO I.S :2062-2011 GRADE-A.
4. FABRICATION SHALL BE DONE IN ACCORDANCE TO I.S :800-2007
5. ALL WELD SHALL BE 6MM FILLET WELD UNLESS OTHERWISE STATED.
6. ALL SHOP JOINTS SHALL BE COMPLETELY WELDED WITH CONTINUOUS FILLET WELD FOR CONTACT LENGTH.
7. FABRICATION OF ALL MEMBERS TO BE DONE AFTER FULL SCALE SHOP LAYOUT BEFORE CUTTING MEMBERS.
8. FOR ACTUAL LAYOUT AND LOCATION OF CHAIN LINK FENCING AND GATE REFER PLOT PLAN.



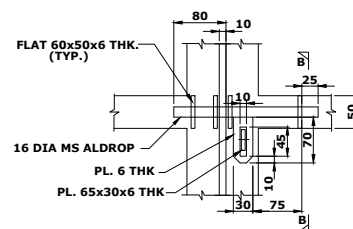
TYPICAL FENCING DETAIL



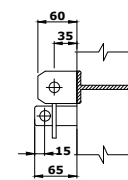
DETAIL - 1



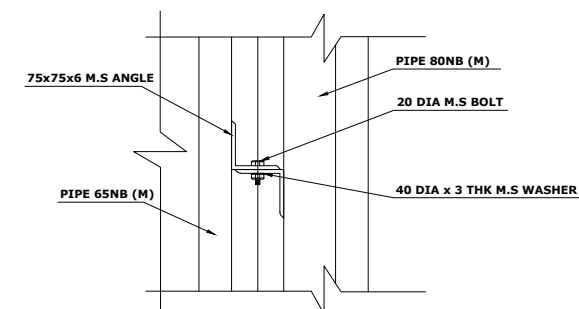
SECTION A-A



DETAIL - 2



SECTION B-B



DETAIL - 3

TYPE-II

**DETAIL OF CHAIN LINK
NCING & GATE (WITH STEEL POST)**

**STANDARD DRAWING FOR
DETAIL OF SOAKPIT**

STANDARD DRAWING NO.

REV.

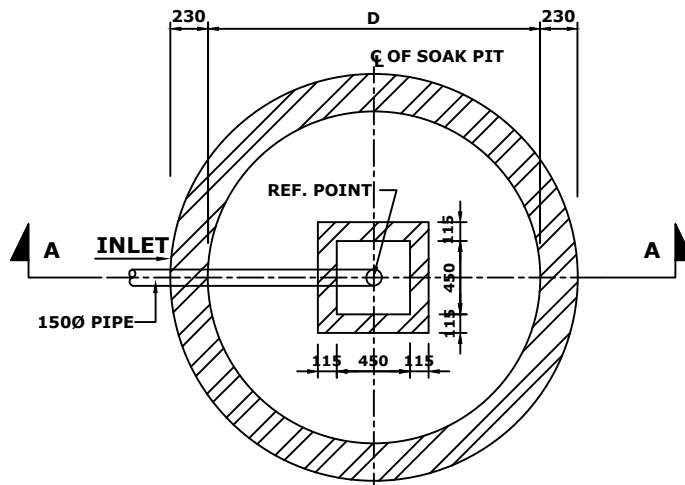
SIZE

03

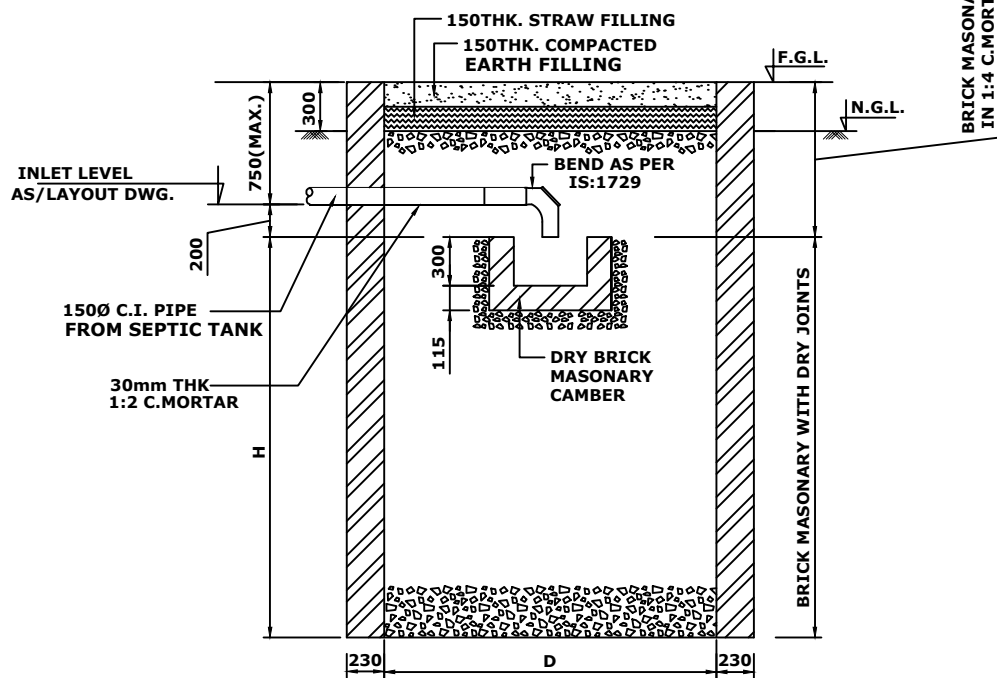
A4

SHEET NO.

1 OF 1



PLAN OF SOAK PIT



SECTION A-A

TABLE

TYPE	NO. OF USERS	DEPTH IN METERS	DIA IN METERS	AREA OF ABSORPTION
1	10	2.5	2.5	24.53
2	25	5.0	3.25	59.35
3	50	7.0	3.6	89.30
4	100	10.0	5.0	196.25

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT LEVELS AND CO-ORDINATES WHICH ARE IN METERS.
2. THE FILLING OF BRICK BATS IN SOAKPIT SHALL BE DONE SIMULTANEOUSLY WITH CONST. OF BRICK WALLS AS WORK PROGRESS.
3. C.I. PIPE SHALL CONFORM TO IS: 3486.
4. DEPTH AND DIA CAN BE SUITABLY ADJUSTED TO GIVE THE ABSORPTIVE AREA DEPENDING UPON THE SUB SOIL WATER TABLE.
5. BOTTOM OF THE SOAKPIT SHOULD NOT BE LESS THAN 600mm ABOVE THE SUB SOIL WATER.

**STANDARD DRAWING FOR
DETAIL OF SEPTIC TANK**

STANDARD DRAWING NO.

REV.

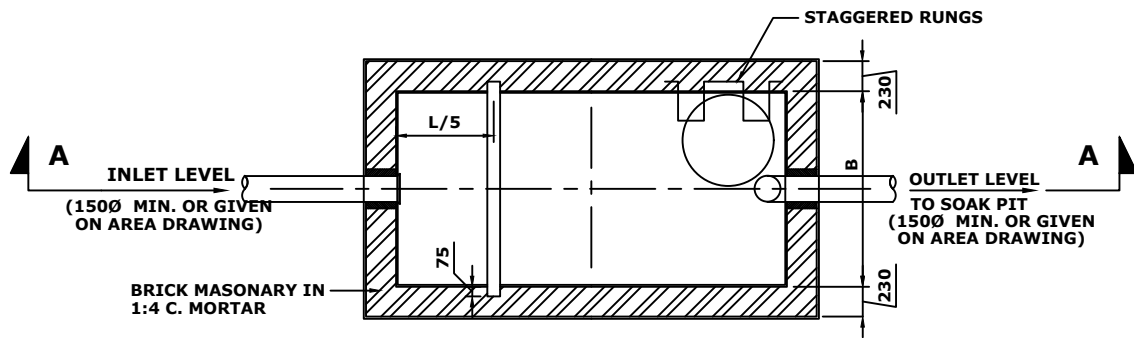
SIZE

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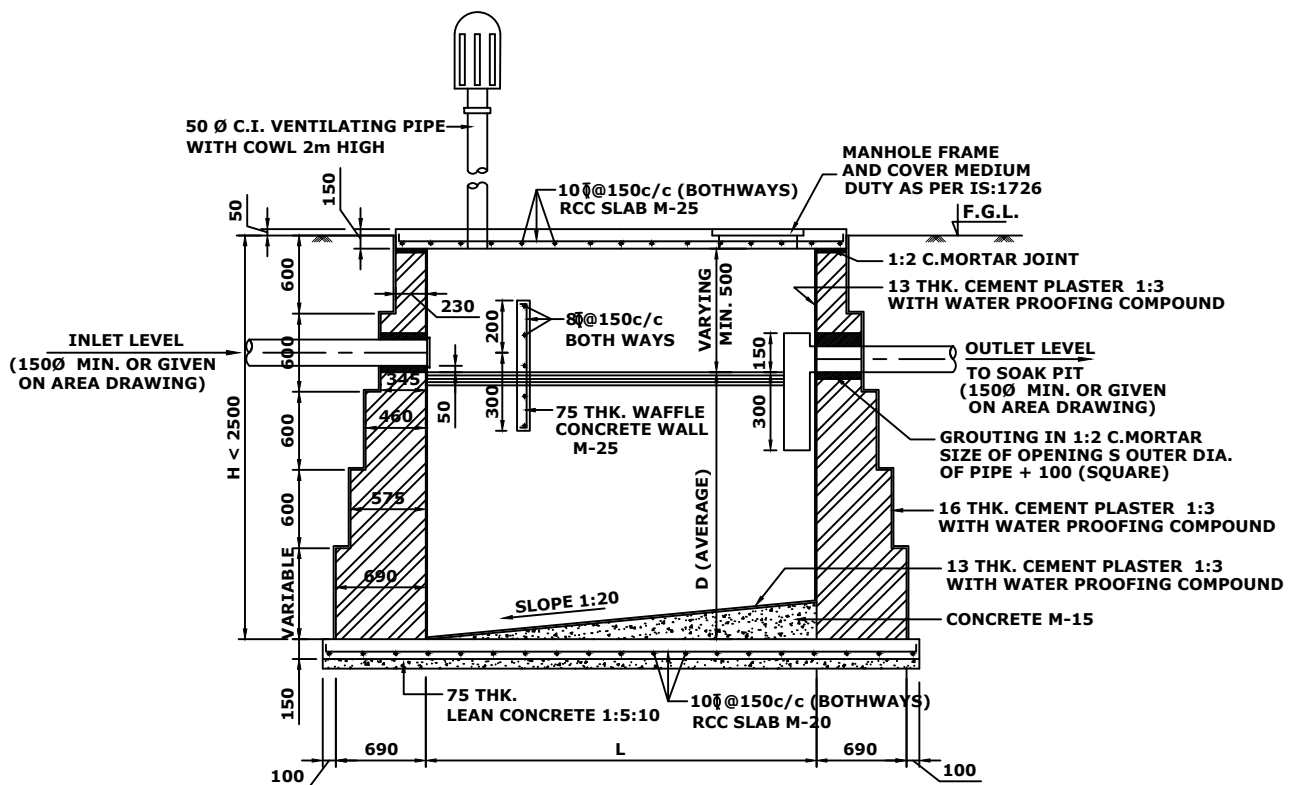
A4

SHEET NO.

1 OF 1



PLAN OF SEPTIC TANK



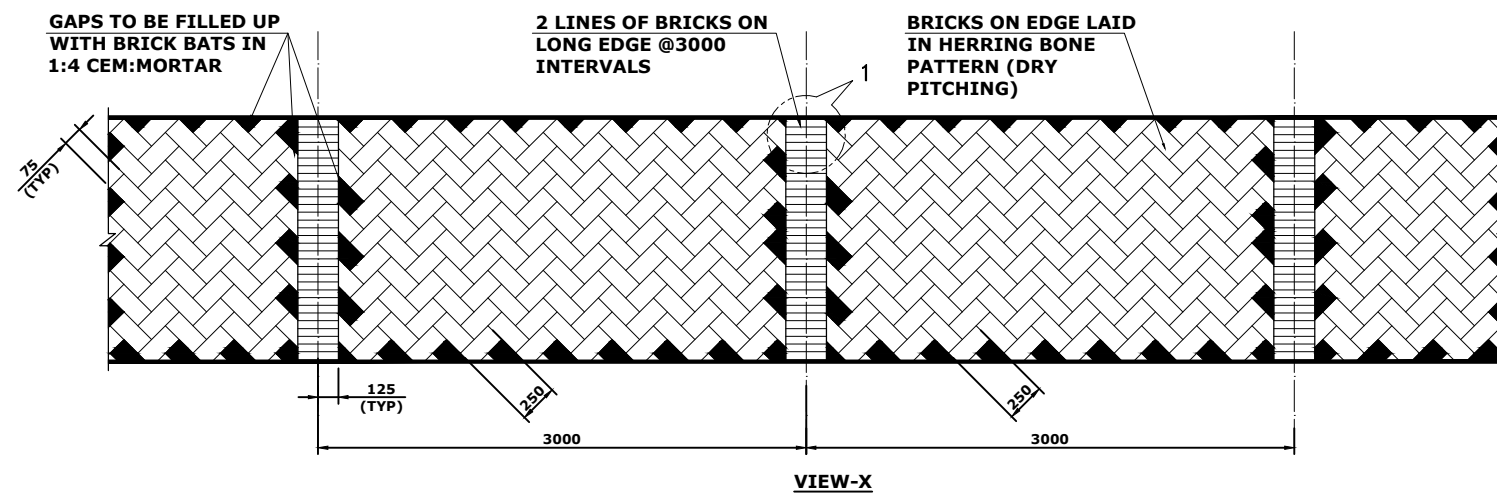
SECTION A-A

RECOMMENDED DIMENSIONS OF SEPTIC TANK

TYPE	NO. OF USERS	LENGTH (L)	BREADTH (B)	LIQUID DEPTH (D)
1	10	2000	900	1000
2	20	2300	1100	1300
3	30	4000	1400	1300
4	50	4750	1700	1500

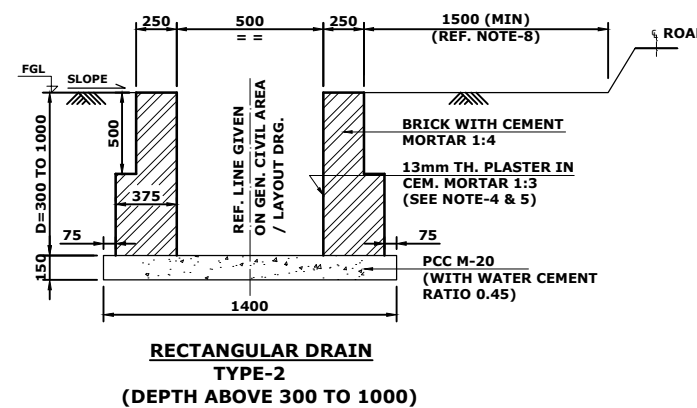
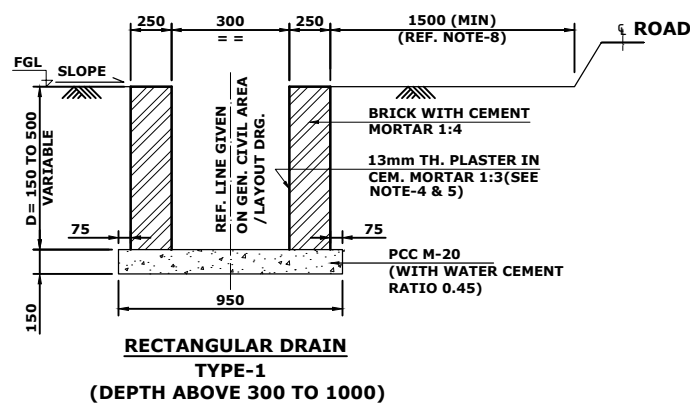
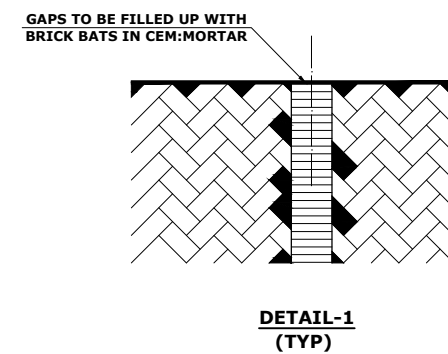
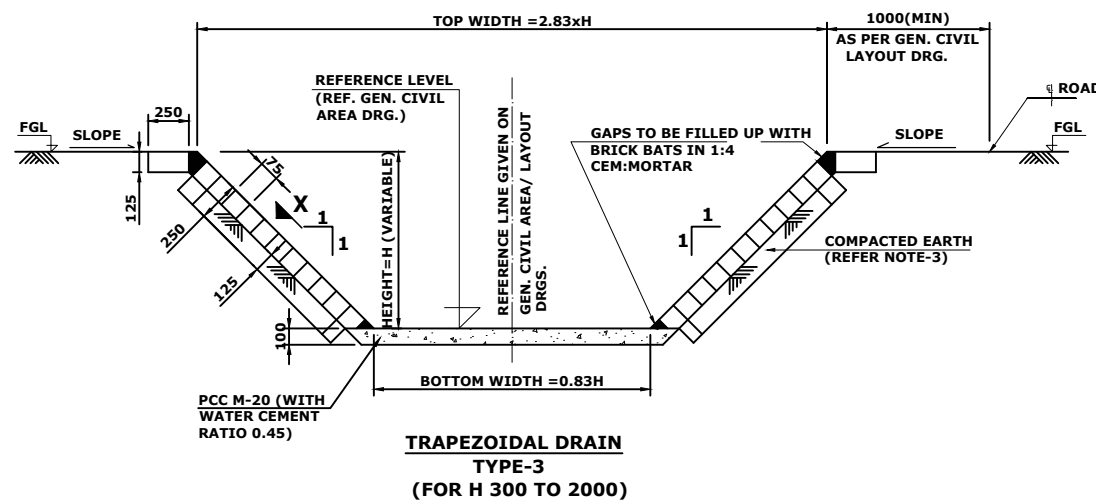
NOTES:-

1. ALL DIMENSIONS ARE IN MM. & LEVEL IN METRES.
2. FOLLOW WRITTEN DIMENSIONS ONLY. DO NOT SCALE.
3. CLEAR COVER TO MAIN REINF. SHALL BE: (a) SLAB = 30 mm
4. Ø DENOTES HIGH YIELD STRENGTH DEFORMED BARS OF GRADE Fe 415 (MIN.) CONFORMING TO IS -1786 .
5. DESLUDGING SHALL BE DONE PERIODICALLY EVERY YEAR PREFERABLY BY A PORTABLE NON CLDG. PUMP.



NOTES:-

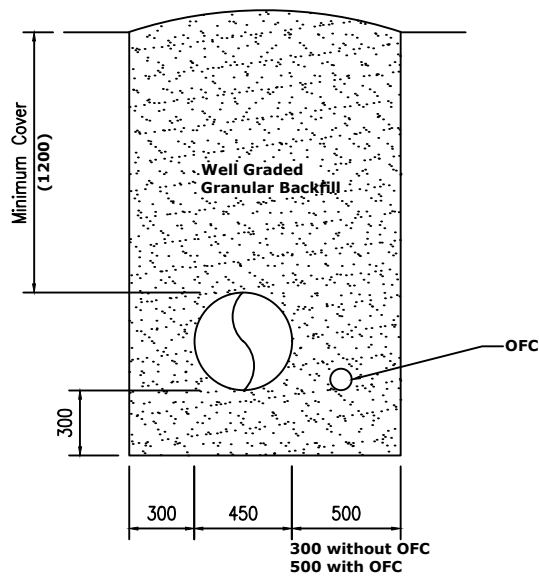
1. ALL DIMENSIONS ARE IN MM. UNLESS NOTED OTHERWISE.
2. (a) THIS STD. IS APPLICABLE FOR OFFSITE AREAS ONLY.
(b) WHEREVER TYPE 1 & 2 DRAINS ARE LAID IN EXPANSIVE SOIL. A LAYER OF MINIMUM 250mm THICK SAND SHALL BE PROVIDED BELOW AND AROUND THE SIDES OF DRAIN.
(c) TRAPEZOIDAL DRAIN (TYPE-3) IS NOT SUITABLE FOR AREAS WITH EXPANSIVE SOIL AND SANDY SOIL.
3. BRICK PITCHING SHALL BE DONE ONLY AFTER THE SIDES OF DRAIN ARE CUT, COMPACTED TO 90% OF MAX. LABORATORY DRY DENSITY AND DRESSED TO THE REQUIRED SLOPE.
4. 13mm THK. PLASTER IN CEM. MORTAR 1:3 SHALL BE PROVIDED ON BENDS UP TO A DISTANCE OF 1.5M ON EITHER SIDE OF THE BEND FOR ALL DRAINS. FLUSH CEMENT POINTING IN CEMENT MORTAR 1:3 SHALL BE DONE AT OTHER PLACES.
5. INTERNAL PLASTER OF SAME SPECIFICATION AS SHOWN IN NOTE-4 IN RECTANGULAR DRAIN TYPE-1 & 2 SHALL BE DONE ONLY FOR THE PORTION OF DRAIN LOCATED NEAR BUILDING.
6. EXACT THICKNESS OF BRICK MASONRY WORK SHALL BE ACCORDING TO THE SIZE OF LOCALLY AVAILABLE BRICK HERE BRICK SIZE IS CONSIDERED AS 250x125x75.
7. THIS STANDARD DRG. SHALL BE VALID WHERE WATER TABLE IS UP TO FGL.
8. 1500 mm (MIN) HAS BEEN KEPT TO AVOID THE IMPACT OF SURCHARGE PRESSURE OF ROAD EMBANKMENT OF THE WALL OF THE DRAIN.



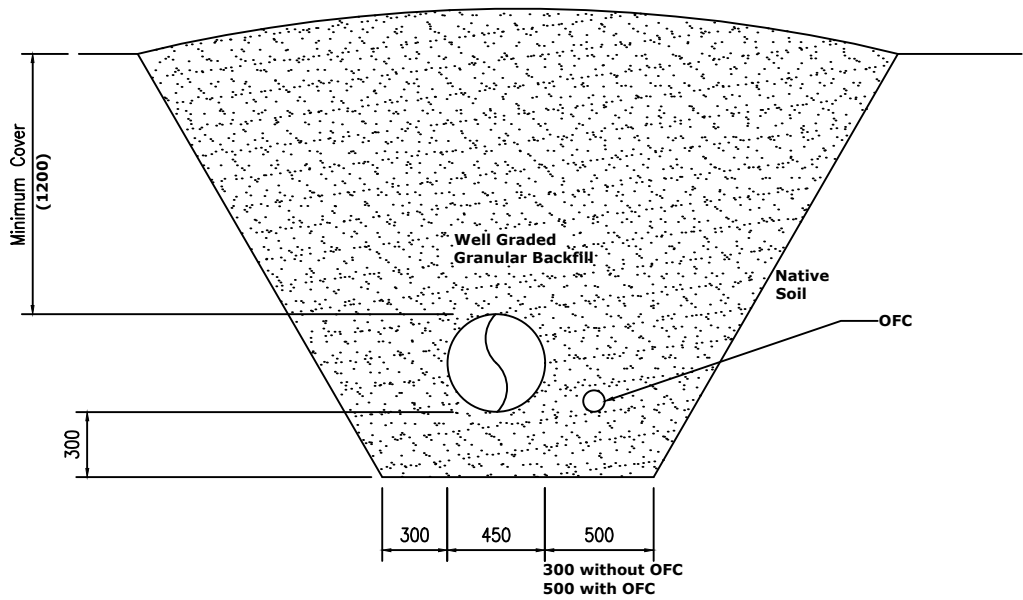
STANDARD SECTION OF STORM WATER DRAINS

STANDARD FOR TRENCH SAND BEDDING		STANDARD DRAWING NO.	REV.	SIZE
		-----	03	A4
		SHEET NO.	1 OF 1	

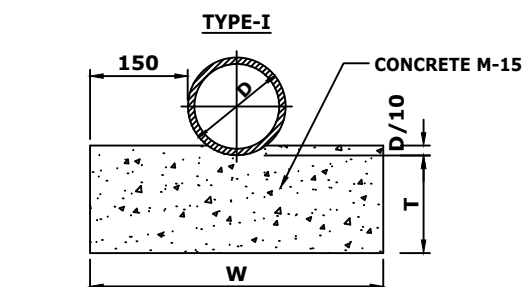
For Rocky Strata / Gravel Area :



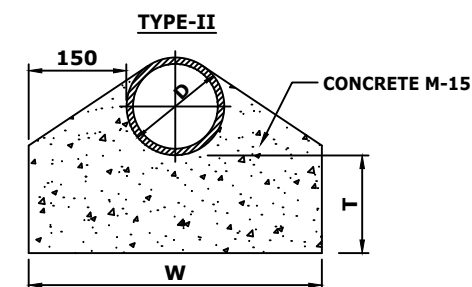
For Clay Soil :



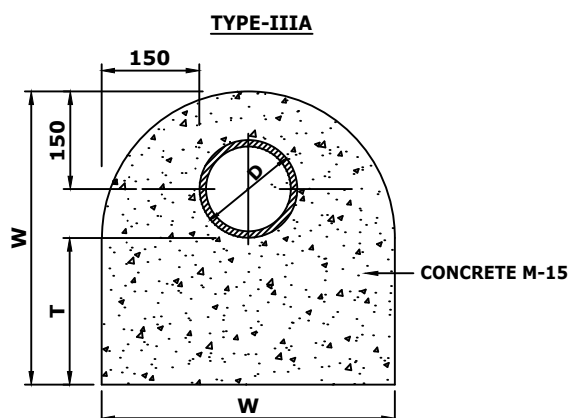
STANDARD DRAWING FOR CONCRETE BEDDING AND ENCASEMENT FOR PIPES		STANDARD DRAWING NO.	REV.	SIZE
			03	A4
		SHEET NO.	1 OF 1	



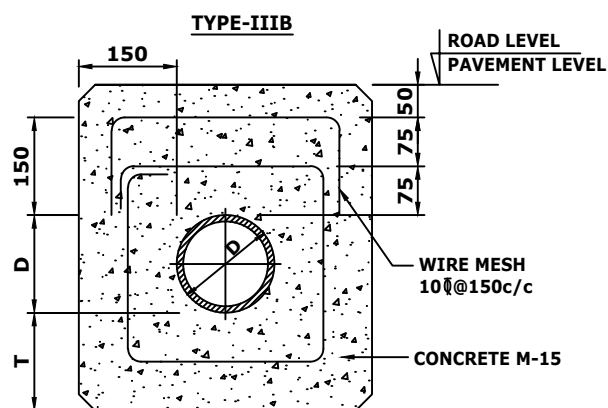
SECTION ELEVATION OF BEDDING
(FOR C.S PIPE SEWER WHERE SUPPORT IS REQUIRED)



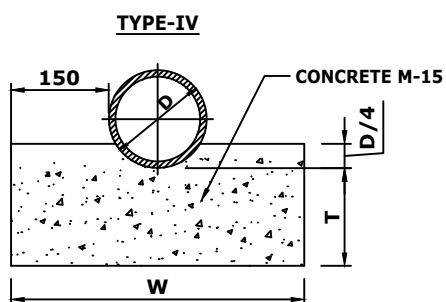
SECTION ELEVATION OF HAUNCHING
(FOR HDPE, SW PIPE SEWERS)



SECTION ELEVATION SURROUND OR ENCASING
(FOR SEWERS UNDER ROADS COVER > 600mm)



SECTION ELEVATION SURROUND OR ENCASING
(FOR SLEEVES/PIPES CULVERTS UNDER ROADS FOR COVER < 600mm)



SECTION ELEVATION CONCRETE GRADE BEDDING
(FOR SEWERS - CONCRETE PIPE)

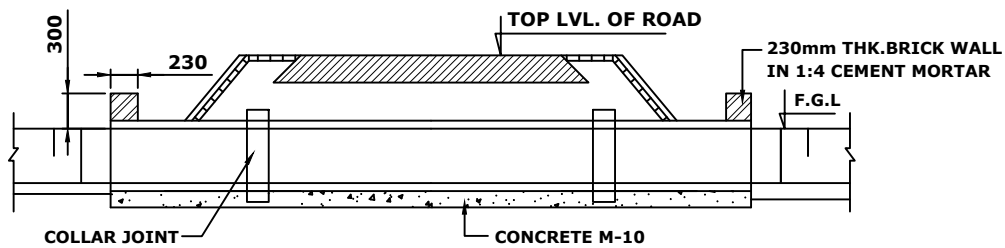
LEGEND

D = EXTERNAL DIA OF PIPE
W = D+300
T = 100 FOR PIPES UNDER 150 NOMINAL DIA.
T = 150 FOR PIPES OF 150 NOMINAL DIA AND ABOVE.

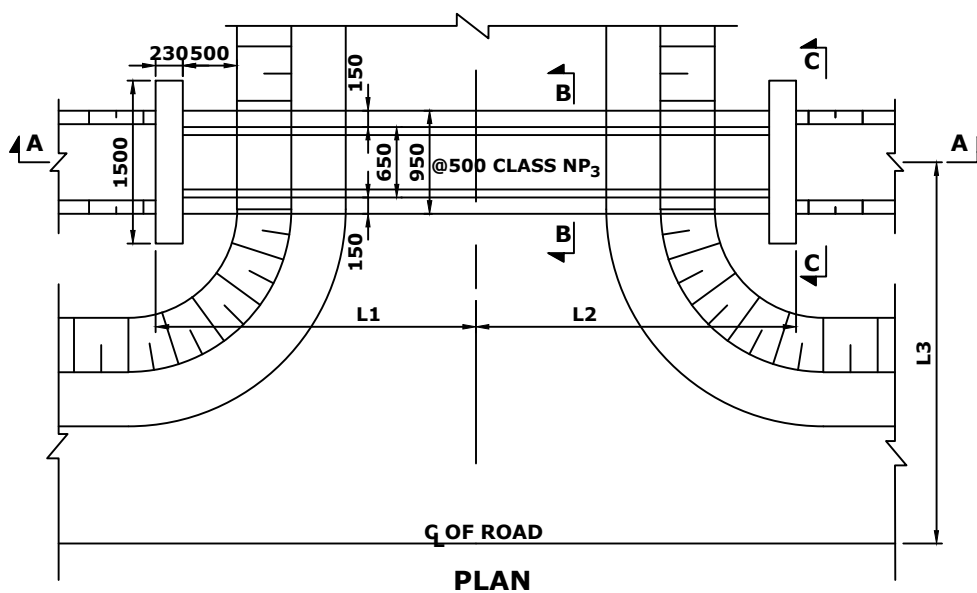
NOTES:-

- BEDDING:-** WHERE BEDDING IS USED, THE CONCRETE SHALL BE BROUGHT UP TO ATLEAST TO THE INVERT LEVEL OF THE PIPE TO FORM A CRADLE & TO AVOID LINE CONTACT BETWEEN THE PIPE AND BED.
- HAUNCHING:-** THE FULL WIDTH OF THE BED SHALL BE CARRIED TO THE LEVEL OF THE HORIZONTAL DIAMETER OF THE PIPE AND SPLAYS FROM THIS LEVEL CARRIED ON BOTH SIDES OF THE PIPE TO MEET THE PIPE BARREL TANGENTIALLY.
- SURROUNDED OR ENCASING TYPE-IIIA:-** THE SURROUND OR ENCASING SHALL BE SIMILAR TO HAUNCHING UP TO THE HORIZONTAL, DIA OF THE PIPE & THE PORTION OVER THIS SHALL BE FINISHED IN A SEMI-CIRCULAR FORM TO GIVE A UNIFORM ENCASING FOR THE TOP HALF OF THE PIPE.
TYPE-IIIB:- IT IS SIMILAR TO TYPE-IIIA ABOVE EXCEPT THAT THE TOP PORTION OVER THIS SHALL BE FINISHED RECTANGULAR AS SHOWN AND THE SECTION PROVIDED WITH REINFORCEMENT AS PER REQUIREMENTS.
- CONCRETE CRADLE BEDDING:-** IS THE METHOD OF BEDDING PIPES IN WHICH THE LOWER PART OF THE PIPE EXTERIOR IS BEDDED IN CRADLE CONSTRUCTION OF CONCRETE WITH DIMENSION AS SHOWN.
- CONCRETE WORK SHALL BE CONFORM TO IS: 456.

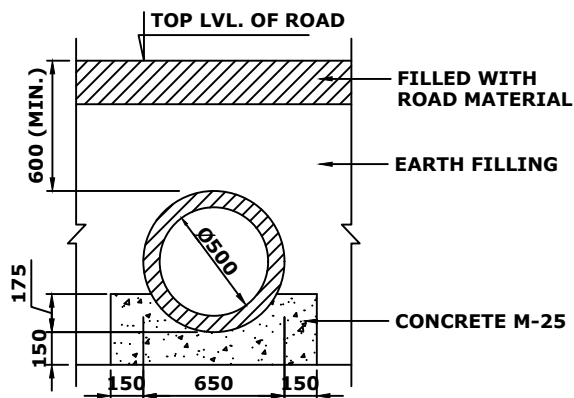
	STANDARD DRAWING FOR PIPE CULVERT FOR STORM WATER DRAINAGE	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 2		



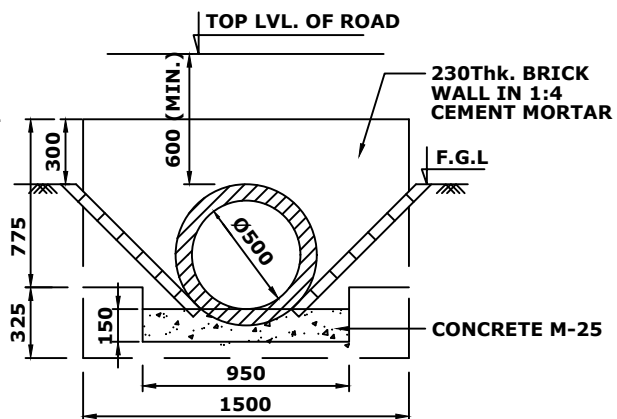
SECTION A-A



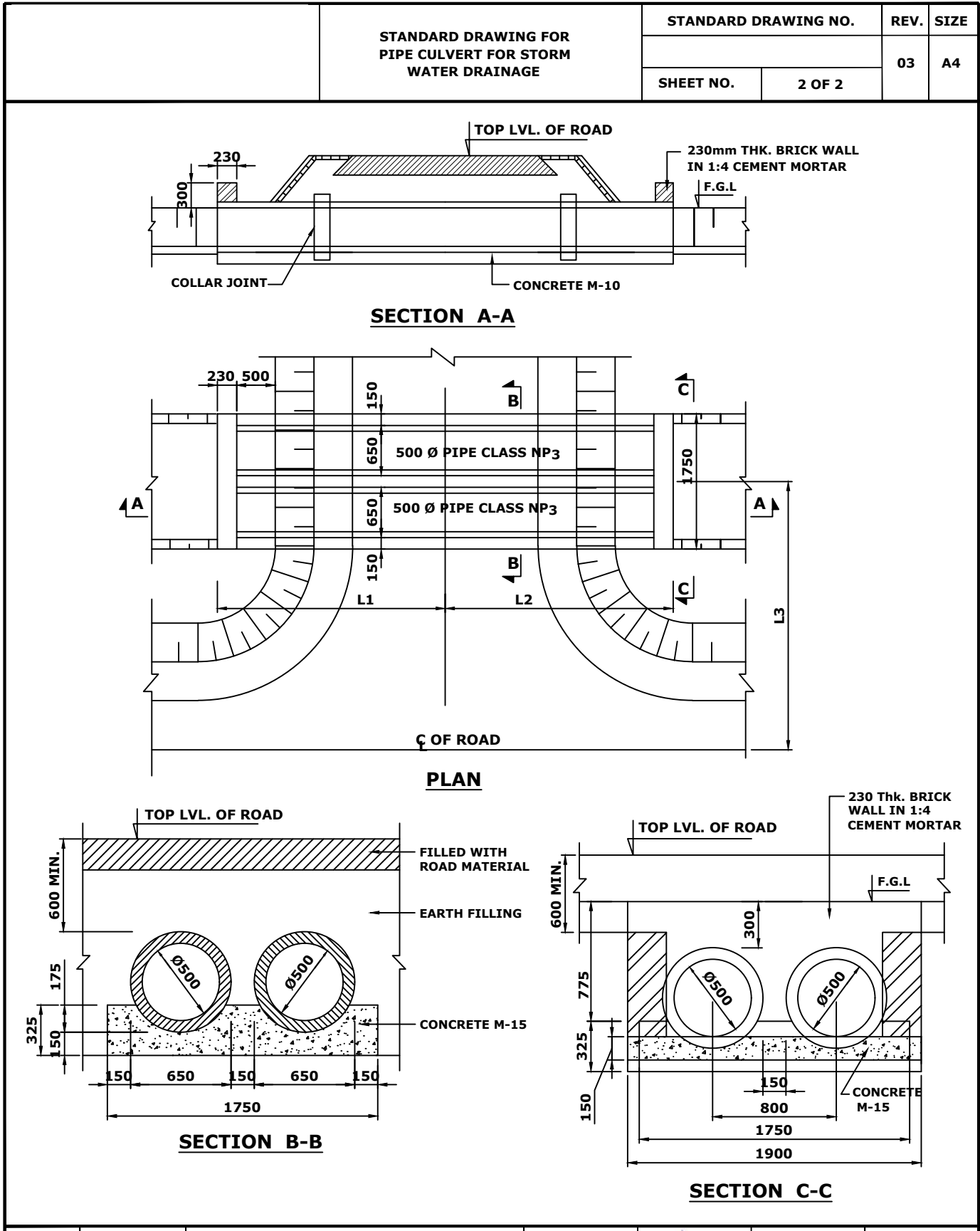
PLAN

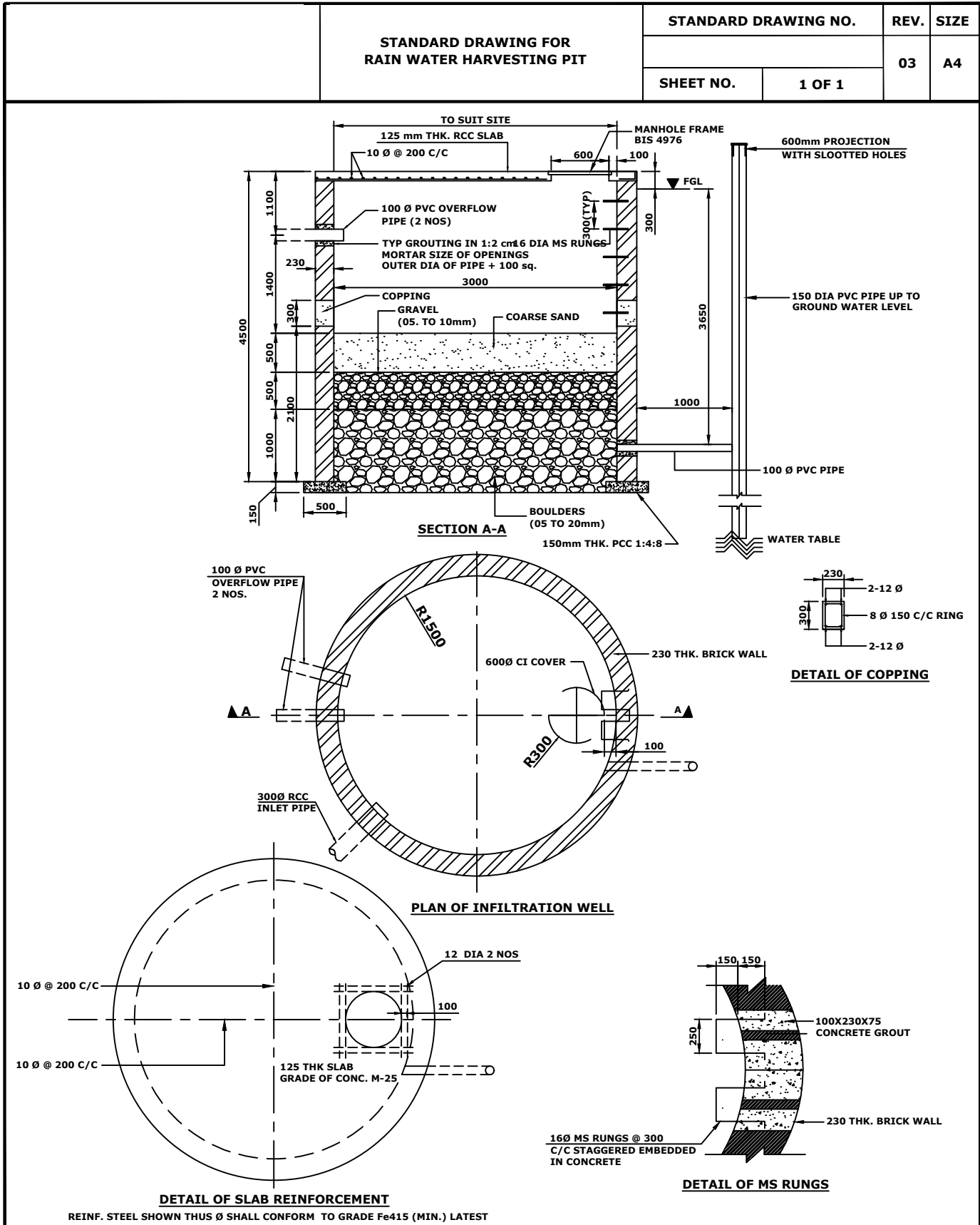


SECTION B-B

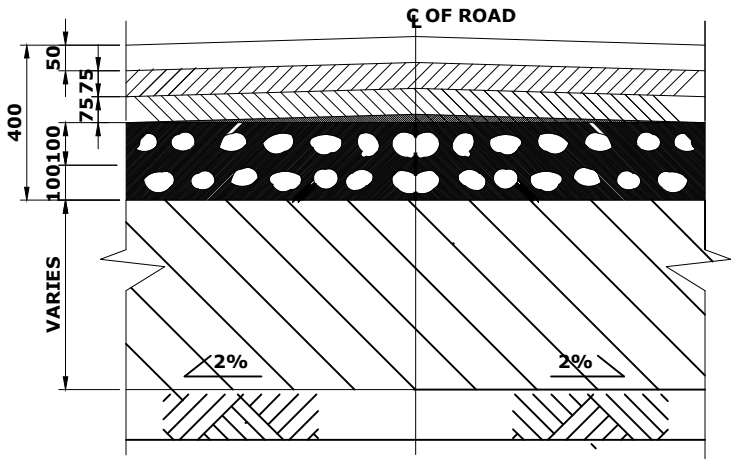
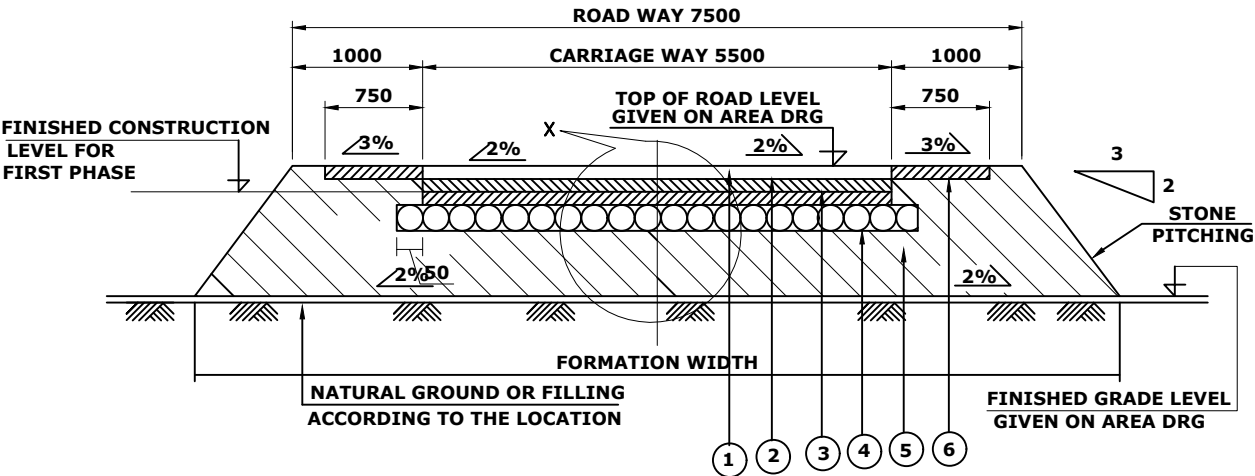


SECTION C-C



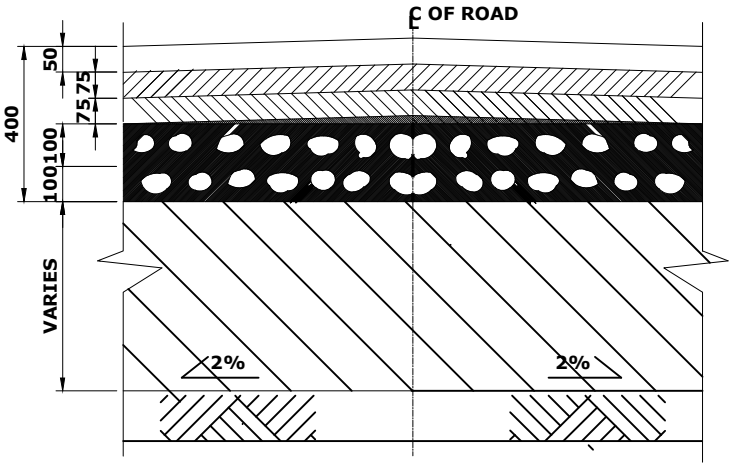
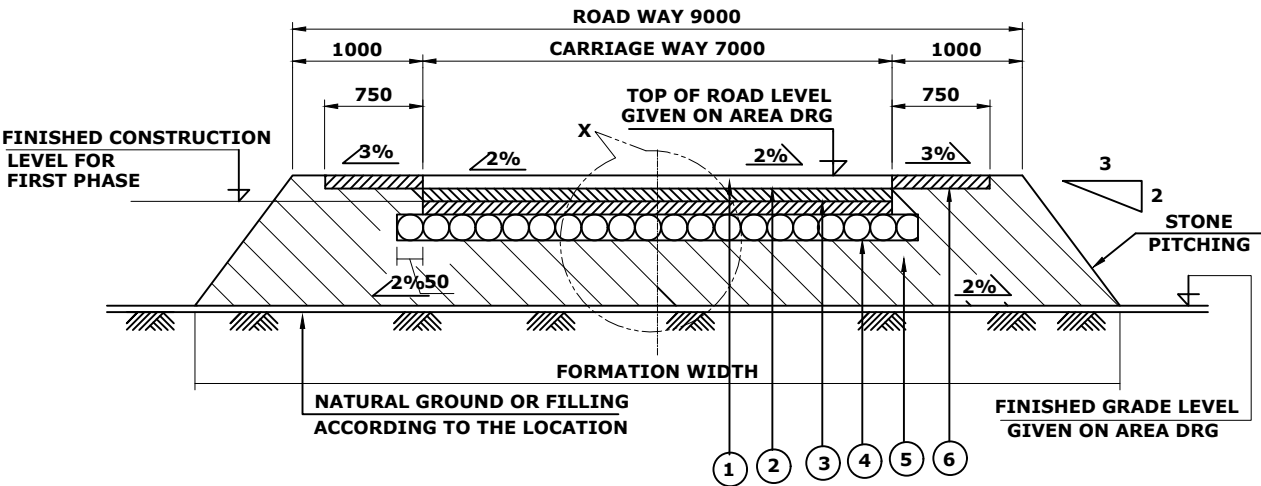


	STANDARD DRAWING FOR CROSS SECTION OF ROAD (7.5 M WIDE)	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	2 OF 3		



DETAIL - X

	STANDARD DRAWING FOR CROSS SECTION OF ROAD (9.0 M WIDE)	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	3 OF 3		



STANDARD DRAWING FOR
SAND TRAP
(FOR TANK FARM)

STANDARD DRAWING NO.

REV.

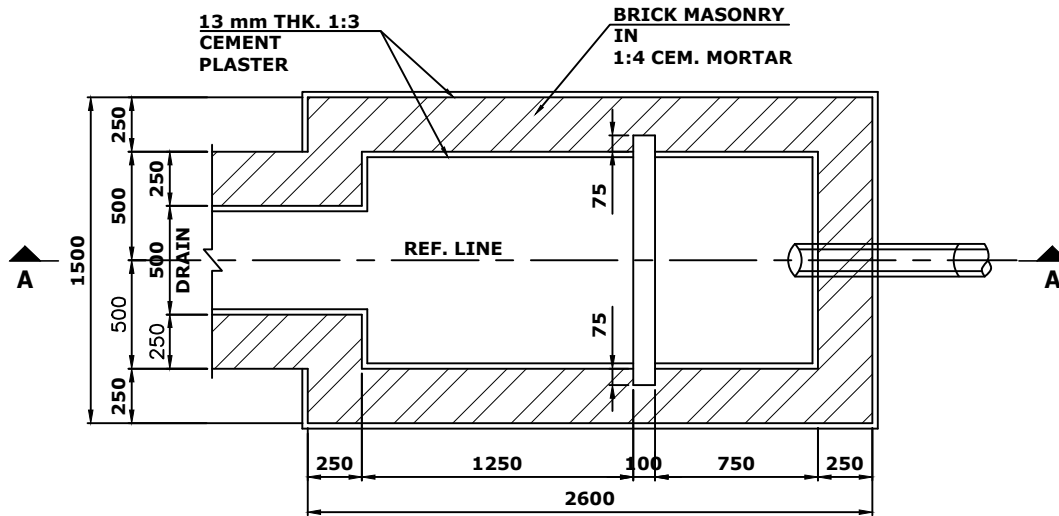
SIZE

03

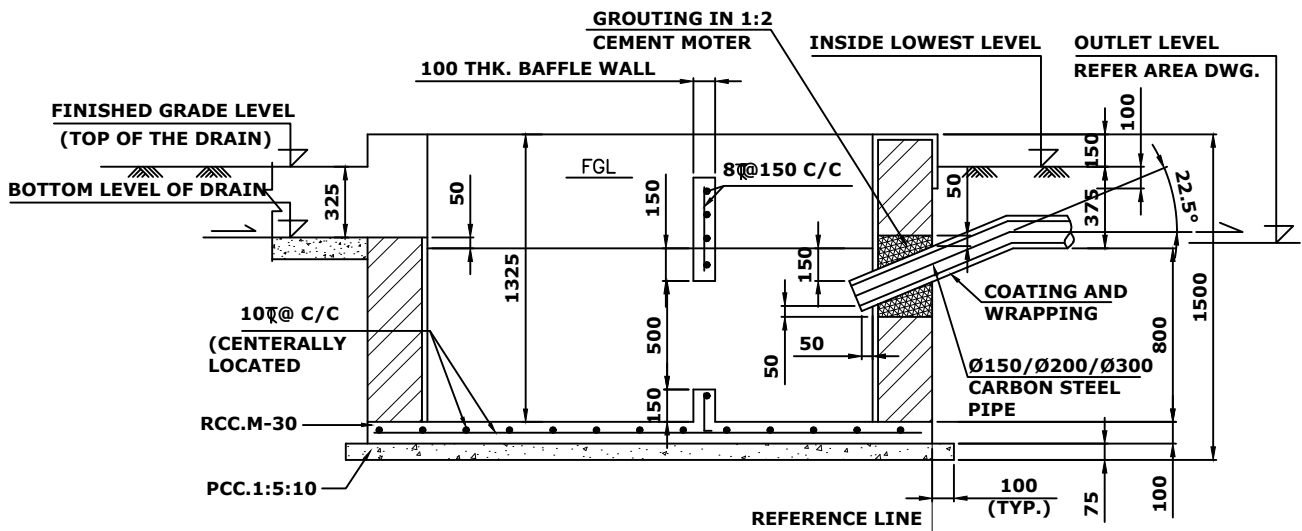
A4

SHEET NO.

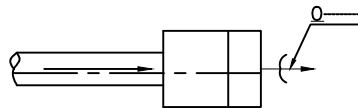
1 OF 1



PLAN



SECTION A-A

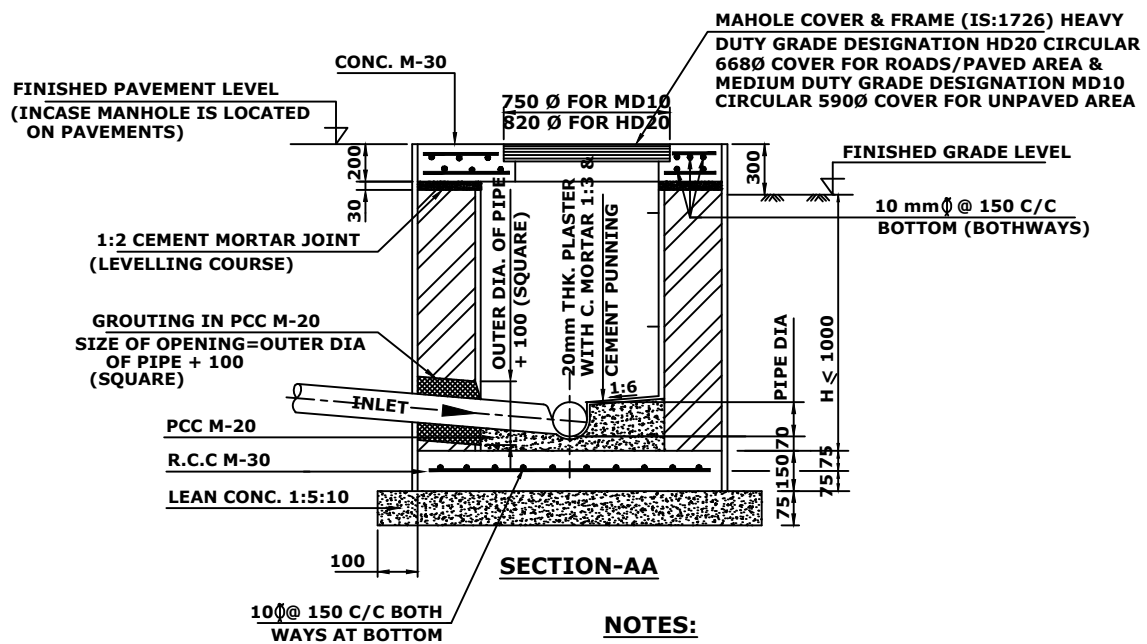
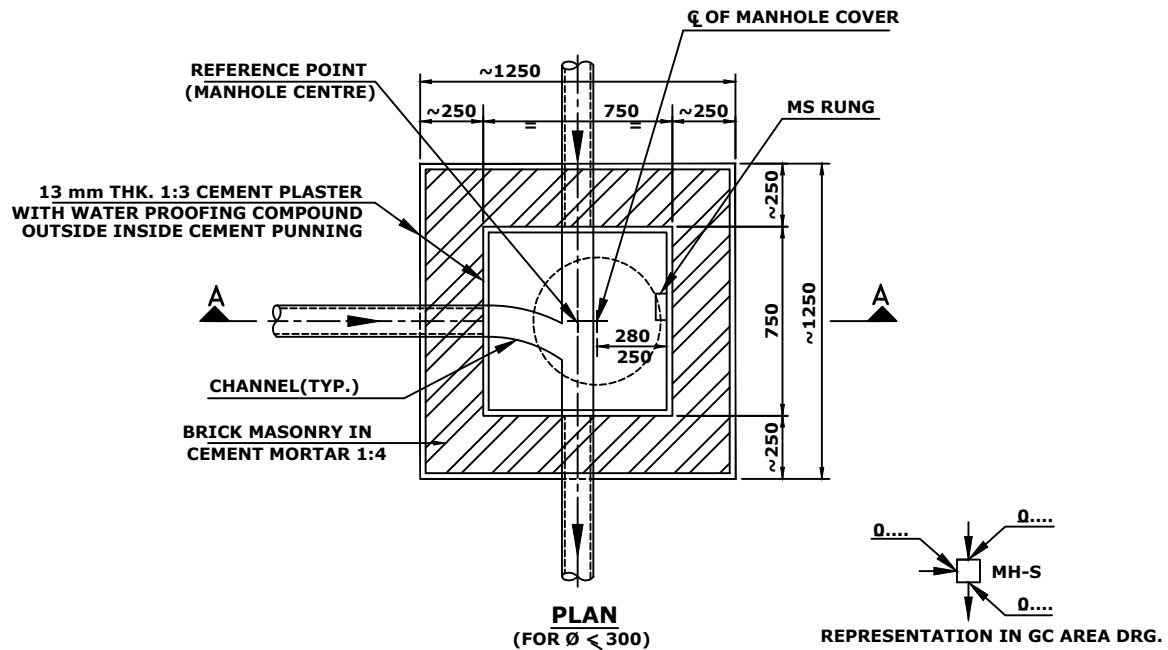


REPRESENTATION IN AREA DRG.

NOTES :-

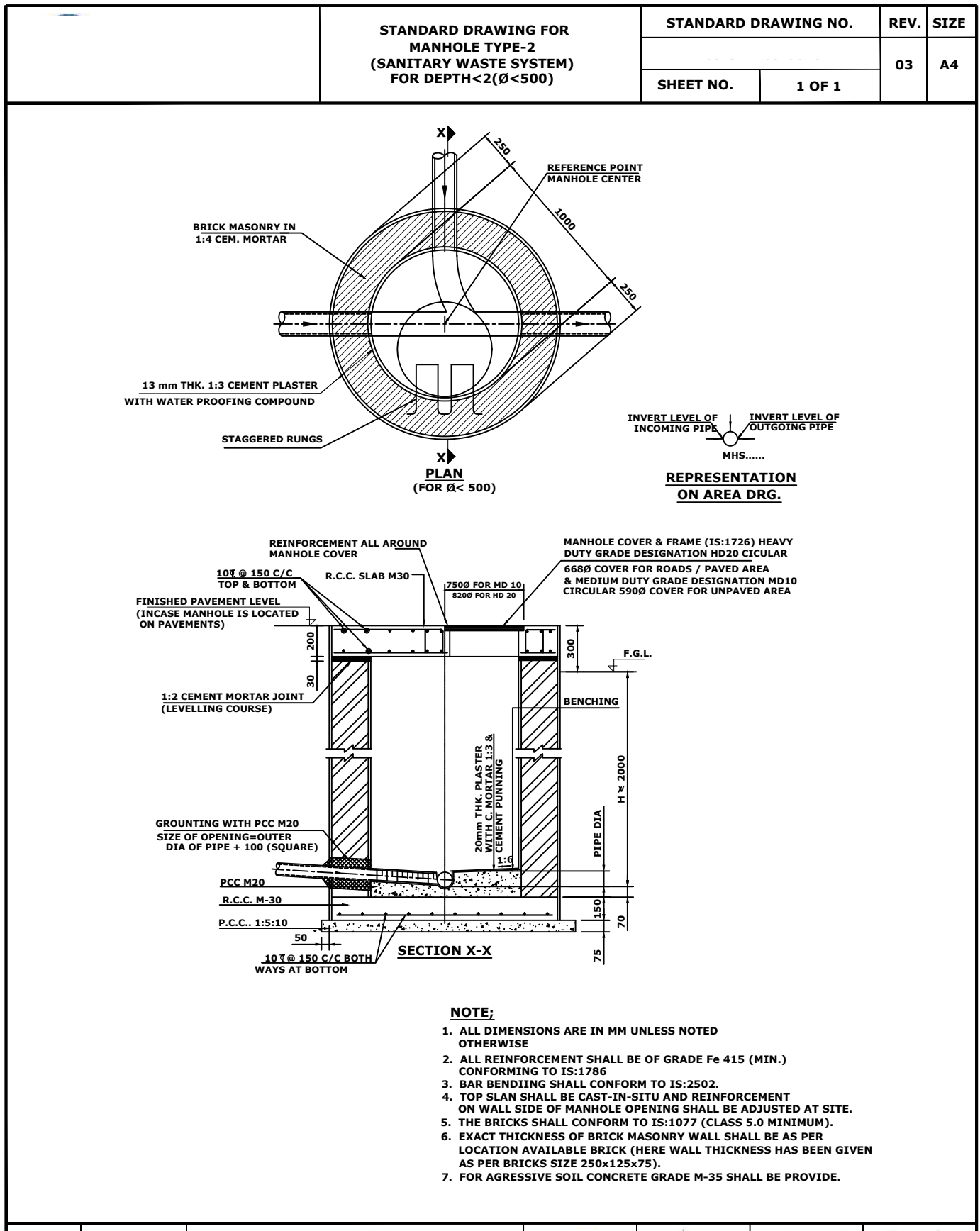
1. ALL DIMENSION ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. EXACT THICKNESS OF BRICK MASONRY SHALL BE ACCORDING TO THE SIZE OF LOCALLY AVAILABLE BRICK. HERE BRICK SIZE IS CONSIDERED AS 250x125x75.

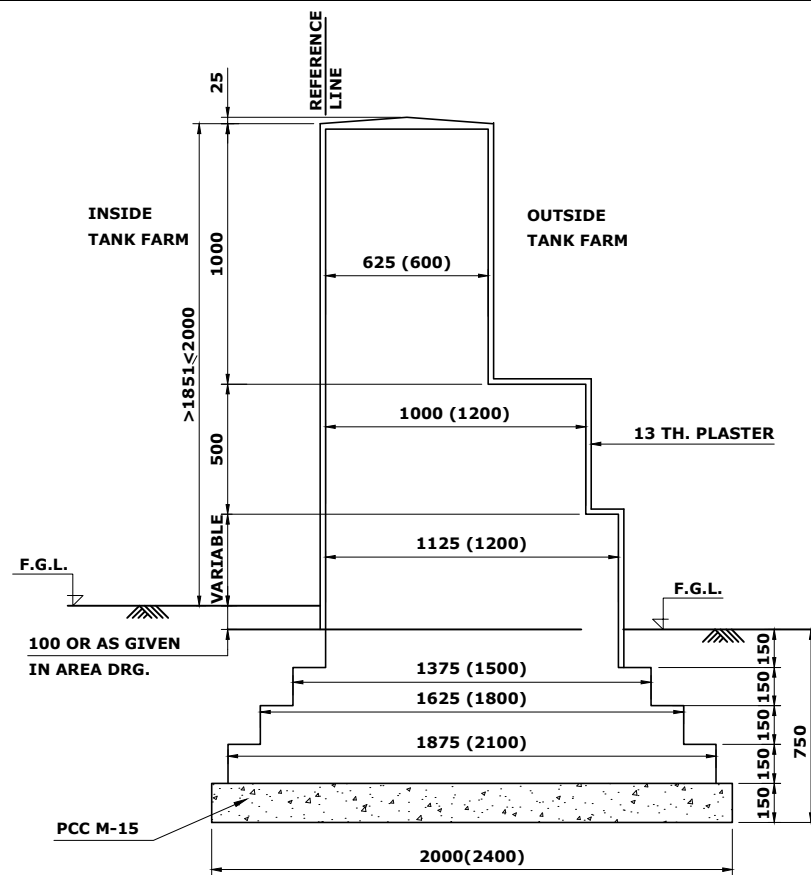
	STANDARD DRAWING FOR MANHOLE(SWS) TYPE-1 FOR DEPTH <1M.(Ø<300)	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



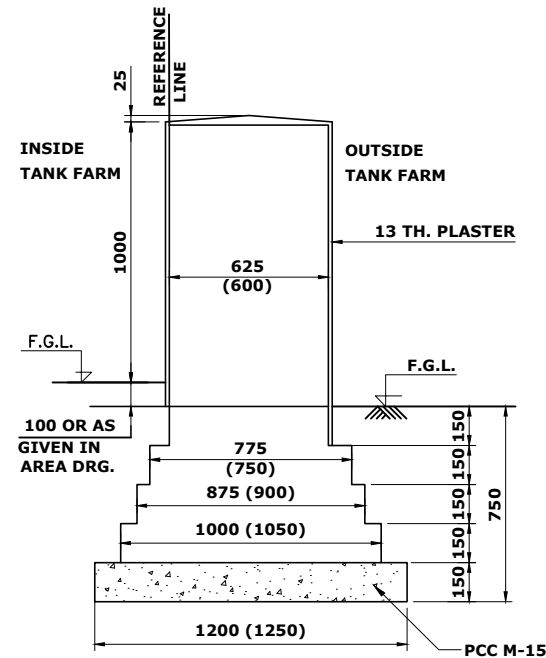
NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. ALL REINFORCEMENT SHALL BE OF GRADE Fe415 CONFORMING TO IS:1786.
3. EXACT THICKNESS OF BRICK MASONRY SHALL BE ACCORDING TO SIZE OF LOCALLY AVAILABLE BRICKS.
4. FOR AGGRESSIVE SOIL CONCRETE GRADE M-35 SHALL BE PROVIDED

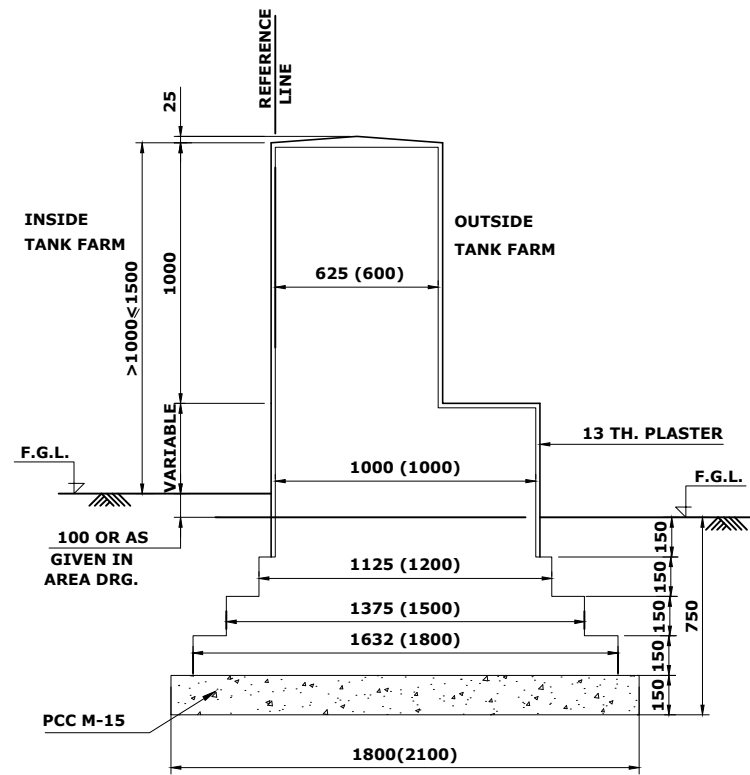




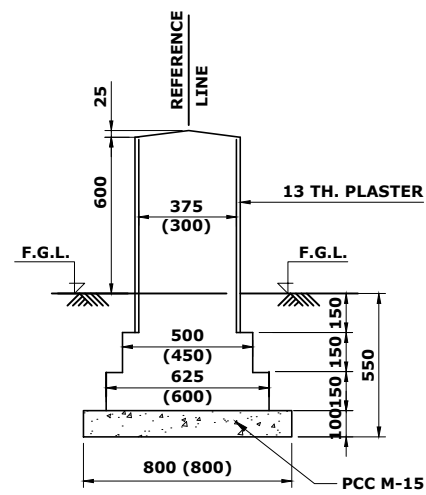
**STONE / BRICK MASONRY DYKE WALL
TYPE-I**



**STONE / BRICK MASONRY DYKE WALL
TYPE-III**



**STONE / BRICK MASONRY DYKE WALL
TYPE-II**



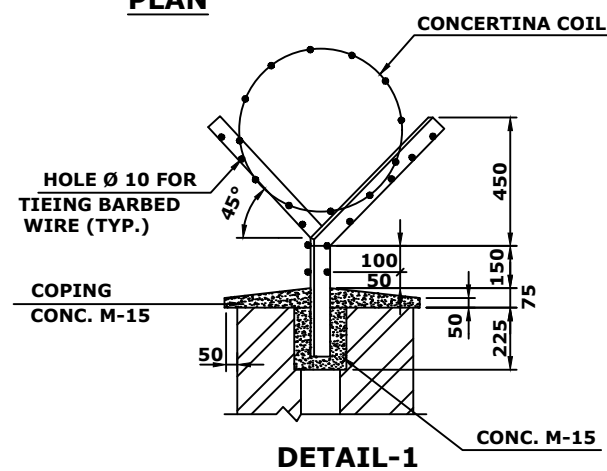
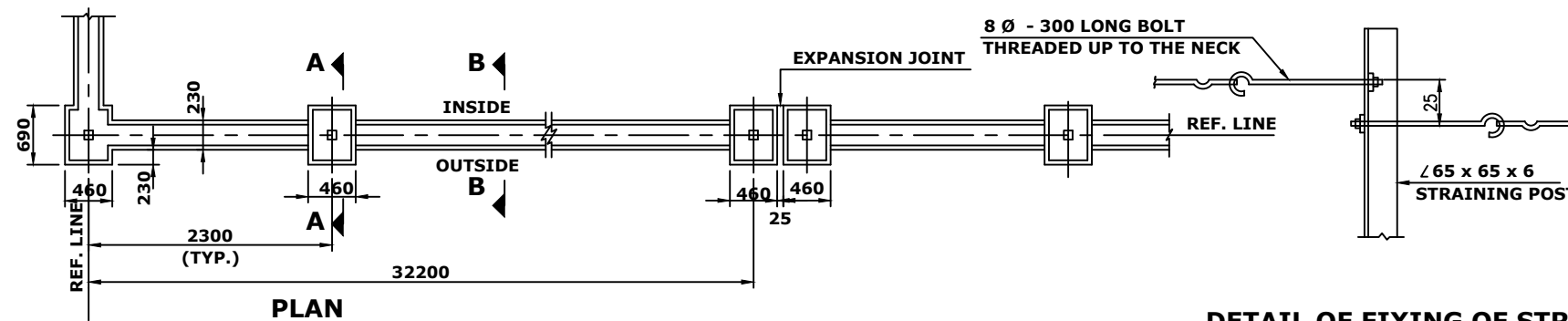
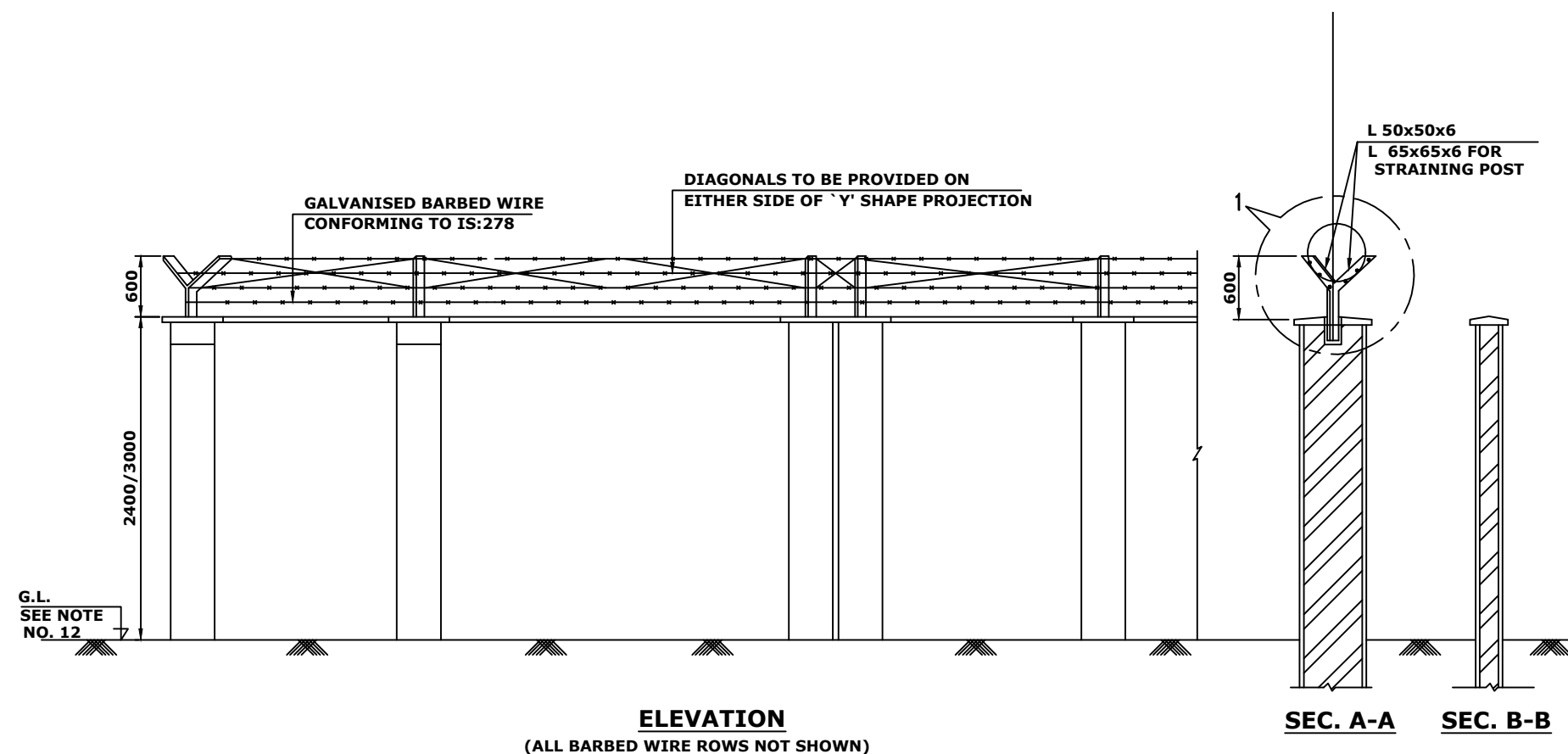
STONE / BRICK MASONRY FIRE WALL

NOTES :-

DESIGN CONDITIONS:

1. ALL DIMENSIONS ARE IN MILLIMETER.
2. DYKE AND FIRE WALL IS DESIGNED TO RETAIN LIQUID ON ONE SIDE OF WALL, IT SHALL BE ENSURED THAT EARTH IS TO BE RETAINED ON EITHER SIDE OF WALL BELOW F.G.L FOR STABILITY.
3. WALL FOOTINGS ARE DESIGNED FOR A MINIMUM SAFE BEARING CAPACITY OF 7.5T/m² (NET) FOR DYKE WALLS AND 5.0 T/m² (NET) FOR FIRE WALLS.
4. DIMENSIONS GIVEN WITHIN BRACKETS ARE FOR STONE MASONRY DYKE WALLS AND FIRE WALLS
5. BRICK MASONRY WALLS SHALL BE PLASTERED WITH 13MM THICK 1:3 CEMENT MORTAR ON SIDES & TOP AND STONE MASONRY WALLS SHALL BE FLUSH POINTED IN 1:3 CEMENT MORTAR.
6. BRICK MASONRY AND STONE MASONRY SHALL BE DONE IN 1:4 CEMENT MORTAR
7. EXACT THICKNESS OF BRICK MASONRY WALL SHALL BE AS PER LOCALLY AVAILABLE BRICKS. (HERE WALL THICKNESS HAS BEEN GIVEN AS PER BRICK SIZE OF 250X125X75).
8. THE BRICKS OF CLASS 5.0 (MINIMUM) SHALL BE USED.

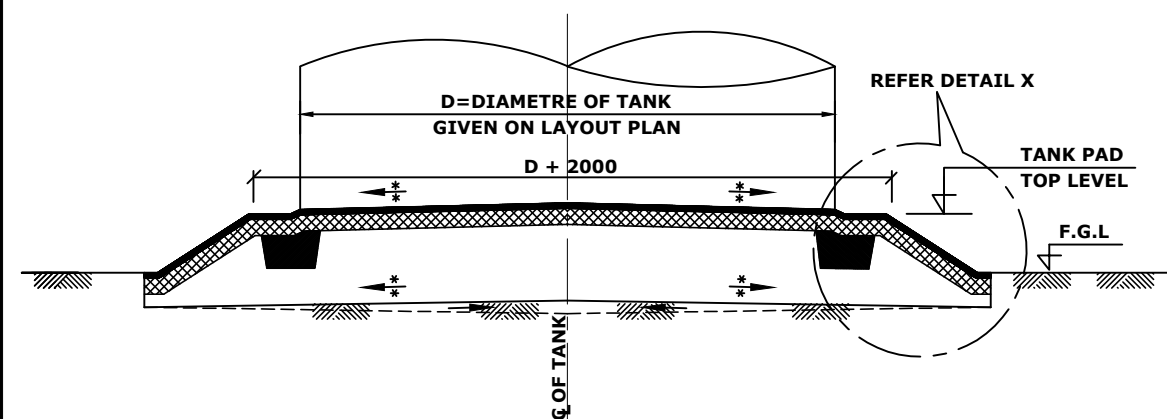
DETAILS OF MASONRY DYKE AND
FIRE WALL (TANK FARM)



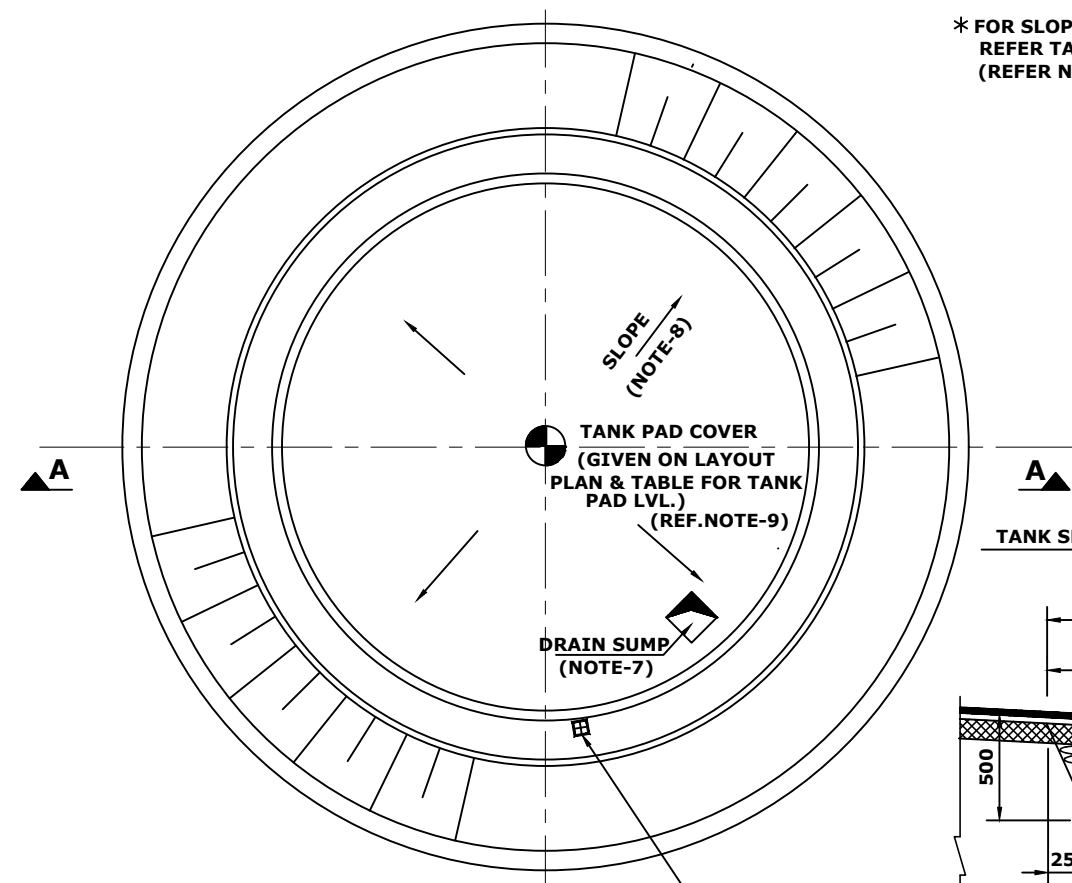
BRICK MASONRY
COMPOUND WALL

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CEMENT MORTAR FOR BRICK MASONRY AND PLASTER SHALL BE 1:6 (1 CEMENT : 6 SAND)
3. PLASTER SHALL BE 13 mm THK. ON EVEN SURFACE AND 16 THK. ON UNEVEN SURFACE.
4. POCKETS FOR ANGLE IRON MEMBERS SHALL BE 150x150 IN PLAN AND OF 3 BRICK COURSE IN DEPTH AND SHALL BE GROUTED WITH CONC. M-15
5. GALVANISED BARBED WIRE SHALL CONFORM TO IS:278.
6. STRAINING BOLT SHALL BE PROVIDED AT EVERY 90M APPX.
7. EXPANSION JOINTS SHALL PROVIDE A CONTINUOUS VERTICAL SEPERATION THROUGH THE FULL THICKNESS OF MASONRY WALL EXTENDING FROM TOP OF WALL TO BASE CONCRETE.
8. NECESSARY STEPS SHALL BE GIVEN IN THE HEIGHT OF THE WALL SO THAT THE HEIGHT OF WALL IS NOT LESS THAN 3050 MM ABOVE G.L. AT ANY POINT.
9. EARTH AVAILABLE FROM THE EXCAVATION OF FOUNDATION SHALL BE FILLED 2.5 M ON EITHER SIDE TO THE FINISHED GRADE LEVEL AND COMPACTED WITH PROPER SLOPE FOR DRAINAGE OF WATER AWAY FROM THE WALL.
10. WEEP HOLES SHALL BE PROVIDED IN THE COMPOUND WALL WHEREVER REQUIRED AT SUITABLE LOCATION DIRECTED BY ENGINEER-IN CHARGE.
11. FOR FOUNDATION DETAILS REFER RELEVANT STRL. DRG.
12. (G.L.) GRADE LEVEL MEANS F.G.L. OR N.G.L. ADJACENT TO THE COMPOUND WALL ON EITHER SIDE AS APPLICABLE. THE HEIGHT OF COMPOUND WALL (2400 / 3000) SHALL BE GOVERNED FROM THE HIGHER GRADE LEVEL AT INSIDE OR OUTSIDE THE COMPOUND WALL.

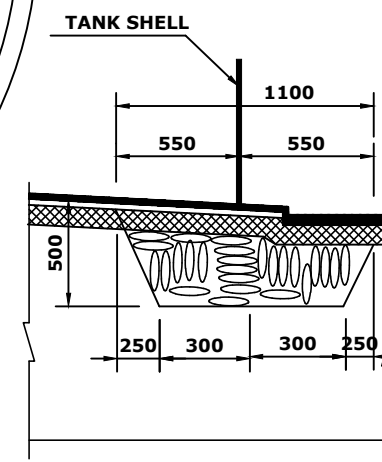


SECTION A-A

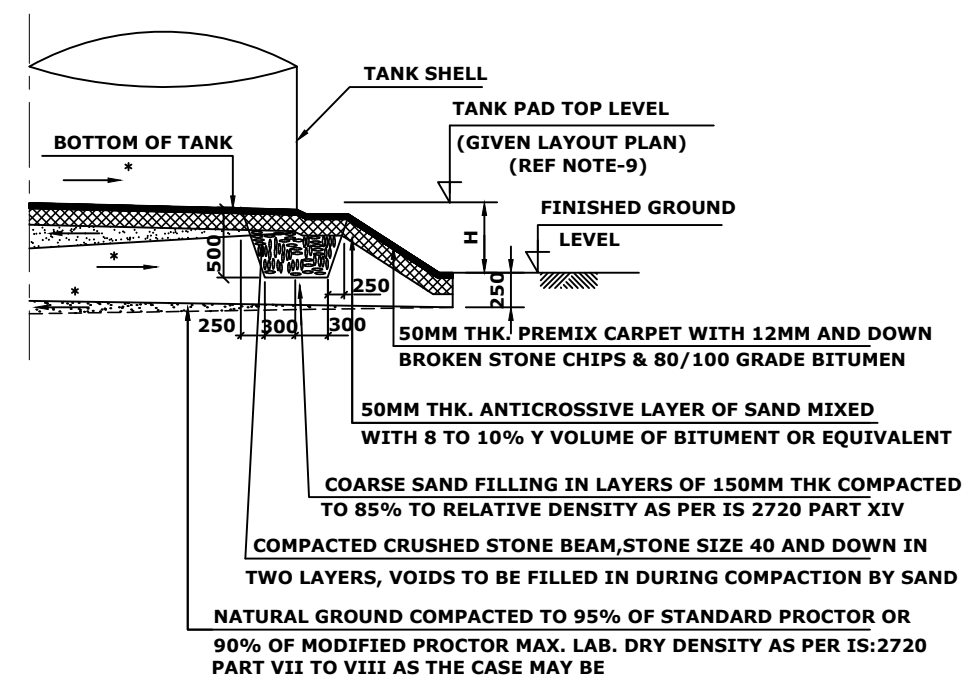


PLAN

* FOR SLOPE AND DIRECTION
REFER TANK DATA SHEET
(REFER NOTE NO.8)



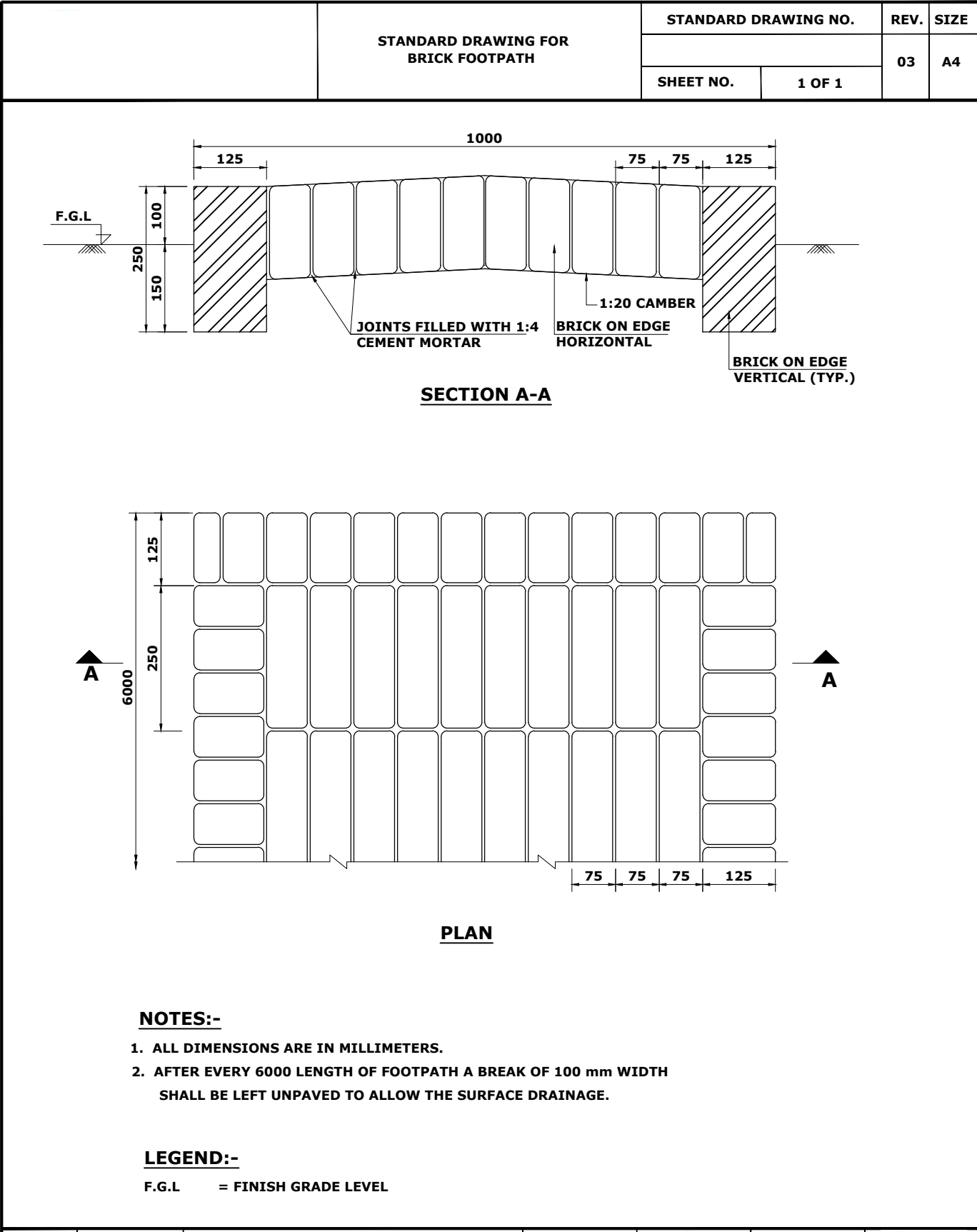
PART ENLARGED DETAIL -X

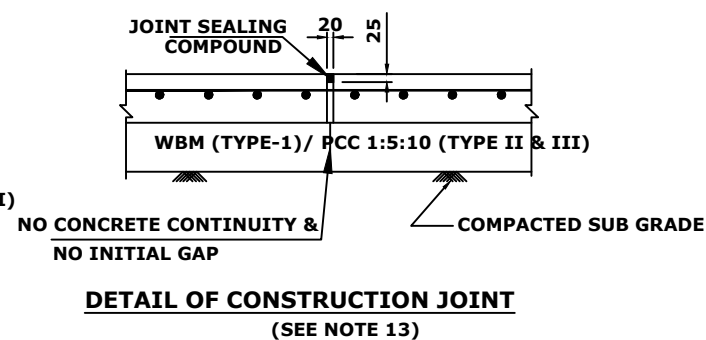
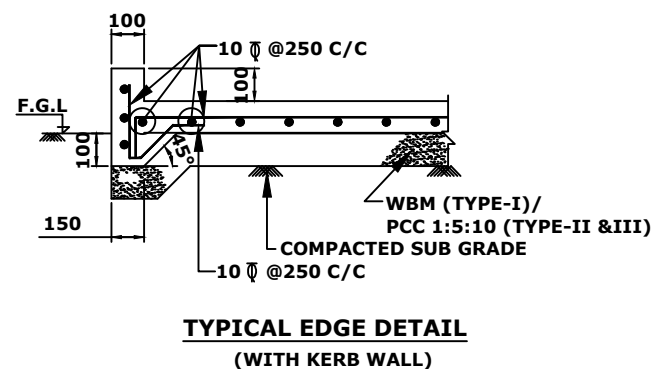
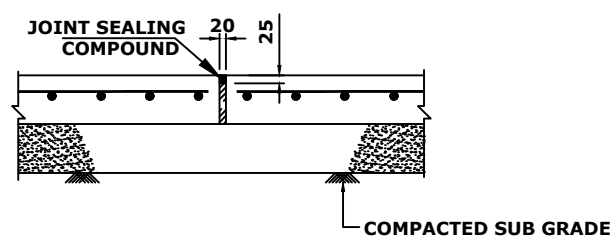
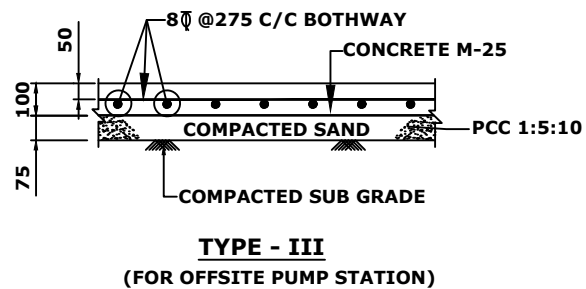
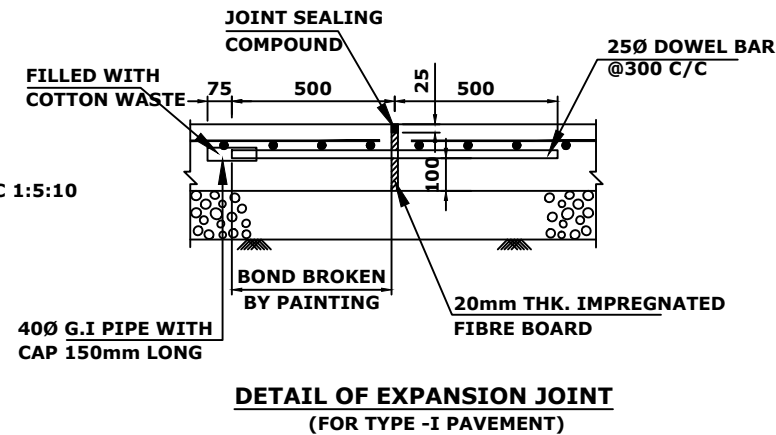
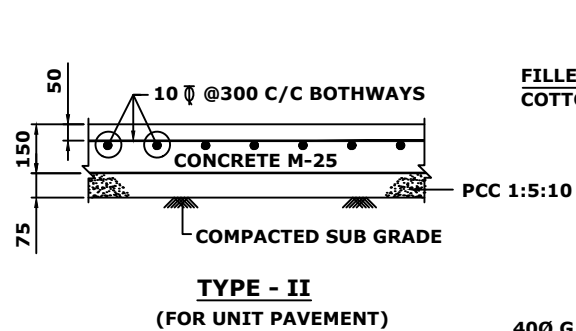
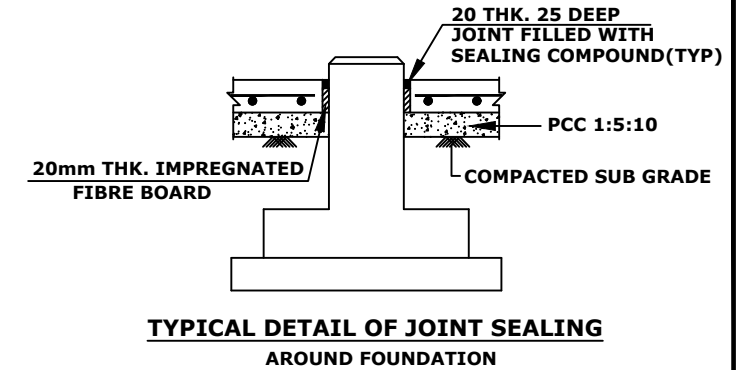
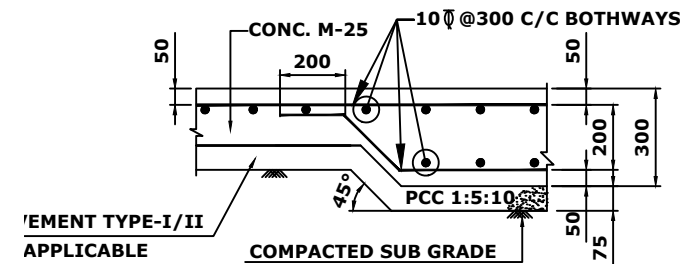
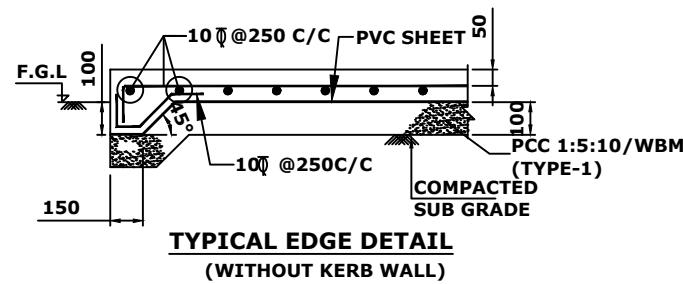
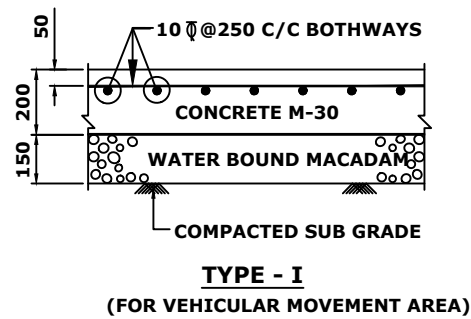


NOTES:-

1. ALL DIMENSIONS ARE IN MM & ALL LEVELS ARE IN METRES UNLESS OTHERWISE SPECIFIED
2. THIS FOUNDATION IS VALID FOR TANK HEIGHT UPTO 10.0M
3. SOIL STRATUM AT EXCAVATION LEVELS FOR TANKS PADS SHALL BE THOROUGHLY EXAMINED BEFORE STARTING THE FILLING FOR TANK PADS. INCASE LOOSE SOILS ARE MET WITH OR DRY DENSITY OF SOIL POOR, IT SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR OR 90% OF MODIFIED PROCTOR DENSITY AS PER IS:2720 PART VII OR VIII AS THE CASE MAY BE & TESTED TO THE SATISFACTION OF ENGINEER IN CHARGE
4. SAND USED FOR FILLING SHALL BE APPROVED BY ENGINEER IN CHARGE. USE OF DUST LIKE SAND IS PROHIBITED. SAND FILLING SHALL BE IN 150 THK. LAYERS. EACH SHALL BE THOROUGHLY COMPACTED TO 85% RELATIVE DENSITY AS PER IS:2720 PART XIV
5. ANTICORROSIVE LAYER OVER SAND FILLING CONSISTS OF SIFTED DRY SAND HAVING 1.5 EFFECTIVE SIZE MIXED WITH BINDING MATERIAL 8 TO 10% BY VOLUME OF BITUMEN OR EQUIVALENT
6. PREMIX CARPET SHALL BE LAID AFTER INSULATION OF TANK AND AS PER INSTRUCTIONS OF THE ENGINEER IN CHARGE
7. FOR SIZE AND LOCATION OF ANCHOR BOLTS AND DRAIN SUMP REFER RELEVANT TANK DATA SHEET
8. INWARD/OUTWARD SLOPE OF TANK PAD TOP SHALL BE VARIFIED WITH RELEVANT TANK DATA SHEET.
9. THE TANK PAD LEVEL SHALL BE GIVEN AS "TO BE CONSTRUCTED" AND ALSO AS " FINAL TANK PAD LEVEL AFTER SETTLEMENT DURING HYDROTEST. THE DIFFERENCE BETWEEN TWO LEVELS BEING THE EXPECTED SETTLEMENT

TANK PAD DETAILS WITH
STONE RING WALL
(FOR TANK HEIGHT UPTO 10.0M)



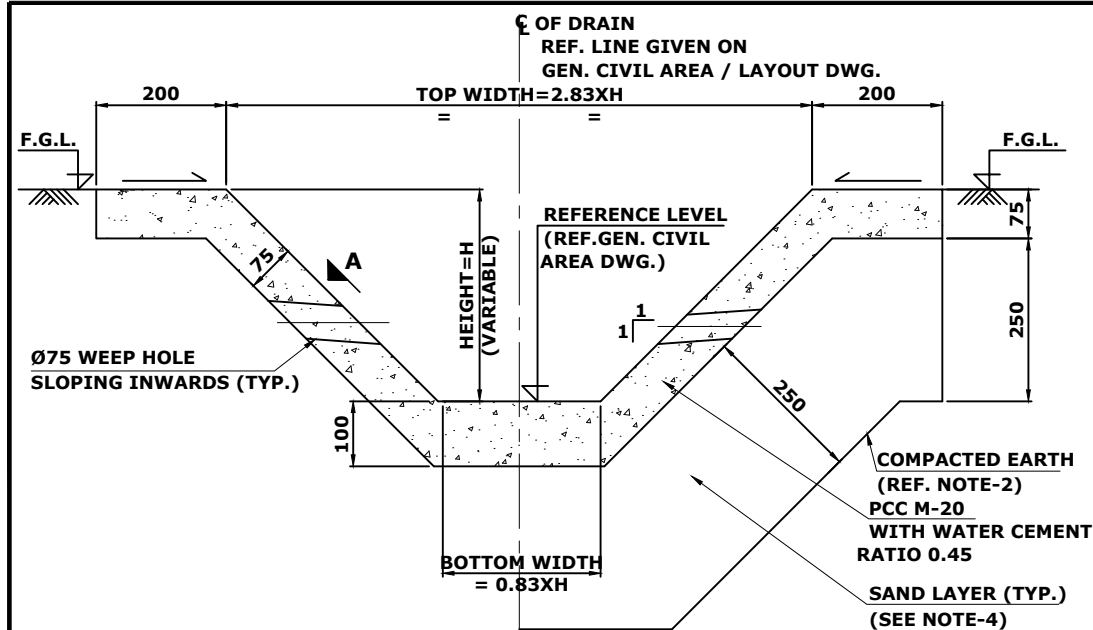


NOTES:-

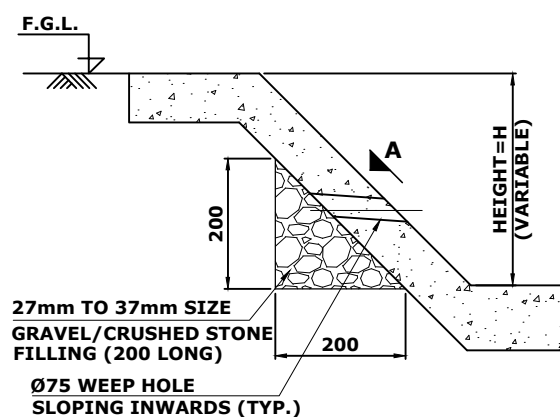
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- CONCRETE SHALL BE CONFIRM TO IS:456.
- Ø DENOTED HIGH YIELD DEFORMED BARS OF GRADE Fe415 (MIN.) CONFIRMING TO IS:1786. UNLESS OTHERWISE SPECIFIED.
- JOINT SEALING COMPOUND IN PAVING AND AROUND EQUIPMENT FOUNDATIONS SHALL CONFIRM TO IS:1834 TYPE-B.
- EXPANSION AND SEALING JOINT FILLER MATERIAL SHALL BE FILLERS OF BITUMEN PREFORMED FIBRES IMPREGNATED FIBRE, CONFIRMING TO IS:1838, PART-1.
- CONCRETE PAVING SHALL BE SLOPED STEEPEST TO 1:100 UNLESS OTHERWISE SHOWN IN DETAIL ENGINEERING DRAWING. SLOPE OF THE SUB GRADE SHALL BE PREPARED TO MATCH WITH SLOPE OF PAVEMENT.
- SUB GRADE BELOW PAVEMENT SHALL BE THOROUGHLY COMPACTED TO 95% OF LAB DRY DENSITY AS PER IS:2720, PART VIII.
- CAST IN-SITU CONCRETE FOR PAVEMENT SHALL BE LAID IN ALTERNATE PANELS OF SIZES AS DEFINED IN THIS STANDARD DRAWING HOWEVER, THE PANEL SIZE SHALL BE ADJUSTED AROUND COLUMNS & FOUNDATION
- EXPANSION JOINTS SHALL BE SPACED AT 14.0M (MAX.) FOR TYPE-I PAVEMENT & 13M C/C (MAX.) FOR TYPE-II PAVEMENTS.
- EXPANSION JOINTS SHALL BE SPACED AT 15 M C/C & CONSTRUCTION JOINS SHALL BE SPACED AT 7.5M C/C (MAXIMUM) FOR TYPE-III PAVEMENTS.
- THIS STANDARD NOT VALID FOR CAUSTIC HANDLING AREAS.
- LIMITATION OF SINGLE AXLE LOAD ON RCC PAVEMENT:
FOR TYPE-I PAVEMENT : MAX. UPTO 12.0 TONNE
FOR TYPE-II PAVEMENT : MAX. UPTO 6.0 TONNE
(FOR SMALL VEHICLES LIKE FORK LIFT)
- CONSTRUCTION JOINTS MAY BE PROVIDED IN CASE PANEL SIZE IS LESS THAN THE REQUIRMENT OF EXPANSION SUIT SITE REQUIREMENTS.
- FOR PIPE SUPPORT DETAILS COMING IN THICKENED PAVEMENT AREA REFER RELEVANT PIPING GAD / PIPING STANDARDS.

GEOTECHNICAL RECOMMENDATION SHALL BE FOLLOWED FOR SUBGRADE TREATMENT FOR PAVEMENTS IN BLACK COTTON SOIL AREAS/JOB SPECIFIC REQUIREMENT

RCC PAVEMENT DETAILS



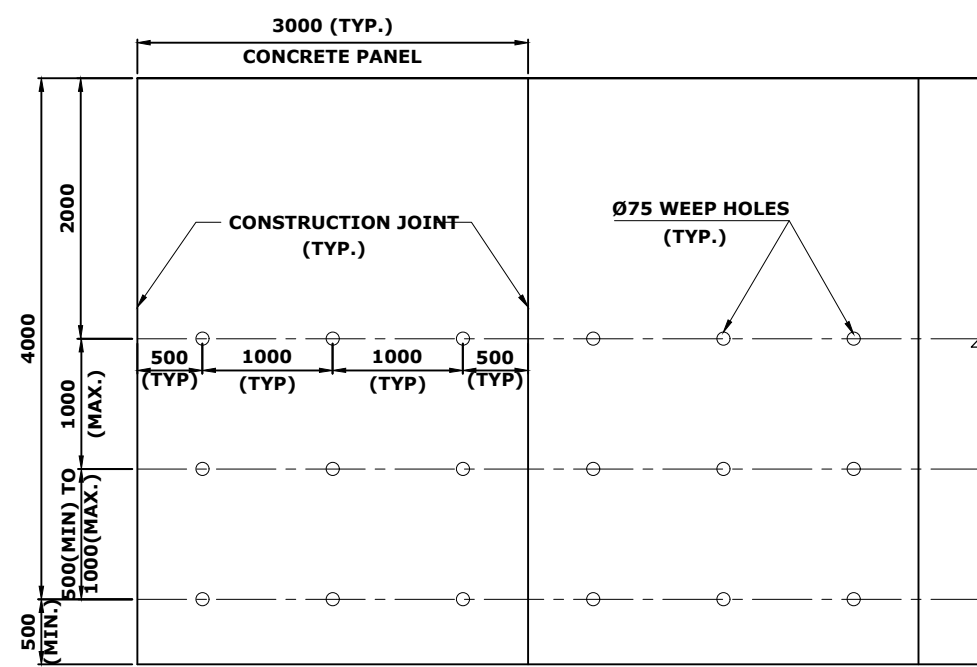
TRAPEZOIDAL DRAIN



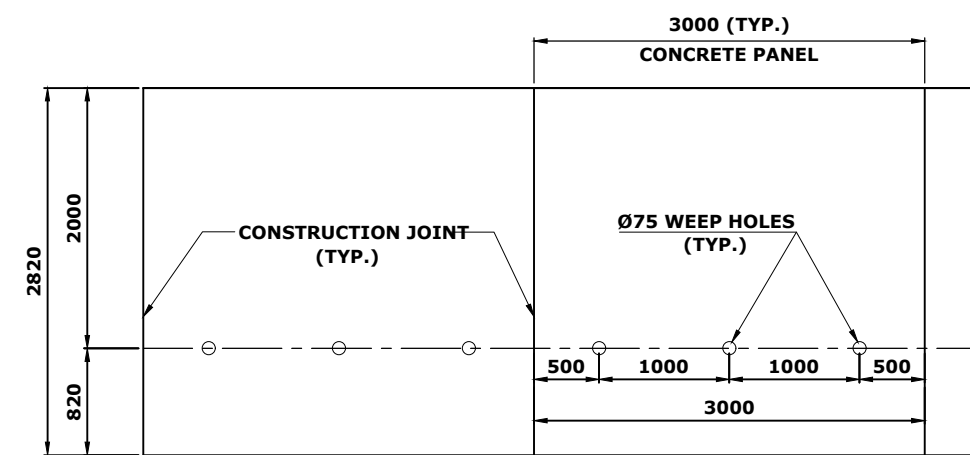
DETAIL OF WEEP HOLE

NOTES:

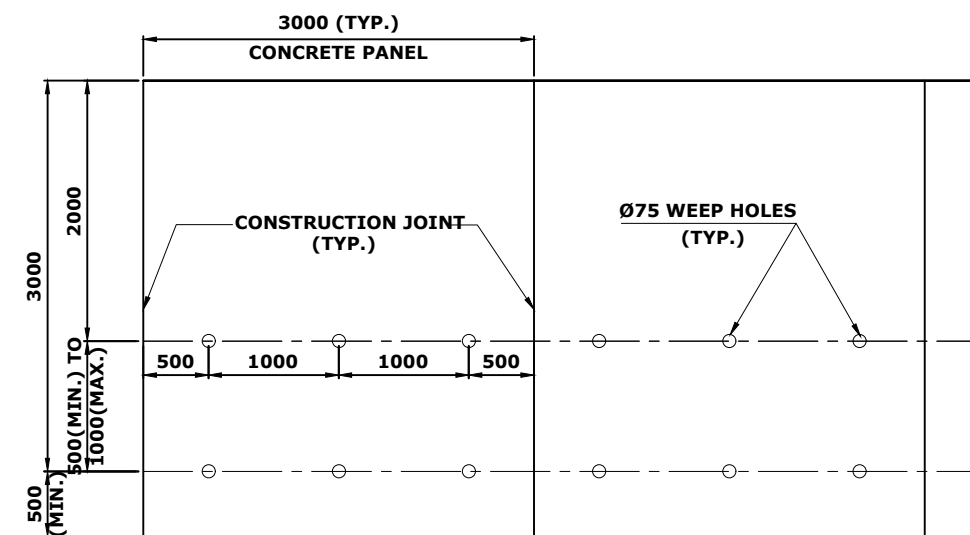
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. CONCRETE LINING SHALL BE DONE AFTER THE SIDES OF DRAIN ARE CUT, COMPACTED TO 90% OF MAX. LABORATORY DRY DENSITY AND DRESSED TO THE REQUIRED SLOPE.
3. CONCRETING ON THE SIDE SLOPES SHALL BE DONE IN PANELS OF 3.0 METER LENGTH.
4. WHEREVER CONCRETE TRAPEZOIDAL DRAIN IS LAID IN EXPANSIVE/ BLACK COTTON SOIL, A LAYER OF 250 mm THICK SAND SHALL BE PROVIDED BELOW AND AROUND THE SIDE OF DRAIN.
5. NO WEEP HOLES SHALL BE PROVIDED UPTO 1.5M HEIGHT (H) i.e. 2.0 (APPROX.) INCLINED PART OF THE DRAIN FROM FGL TO ELIMINATE POLLUTION IN THE DRAIN DUE TO CONTAMINATED SUB-SURFACE FLOW.
6. THE VIEW OF INCLINED PART OF DRAIN ARE SHOWN HERE AS A GUIDELINE FOR THE LOCATION OF WEEP HOLES AND FOR THE PANELS OF CONCRETING. HOWEVER, FOR DEPTHS OTHER THAN SHOWN HERE, THE GUIDELINE SHALL REMAIN SAME.



VIEW-A (H=>2.5M TO 3.0M)
(INCLINED PART OF THE DRAIN)



VIEW-A (H=2.0M)
(INCLINED PART OF THE DRAIN)



VIEW-A (H=>2.0M TO 2.50M)
(INCLINED PART OF THE DRAIN)

CONCRETE TRAPEZOIDAL
STORM WATER DRAIN
(HEIGHT (H)<3.0M)

STEPS ON EARTHEN DYKES
AND ROAD EMBANKMENTS

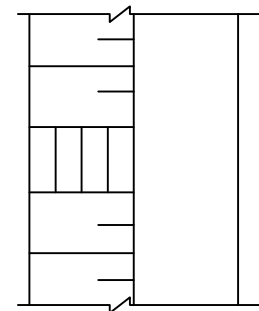
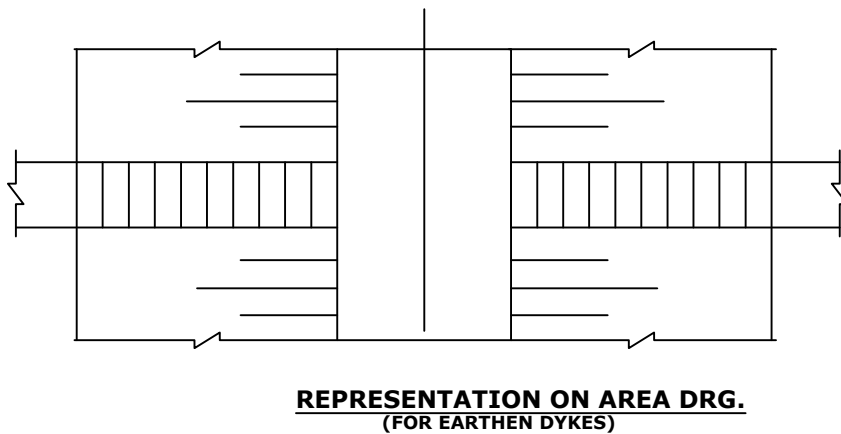
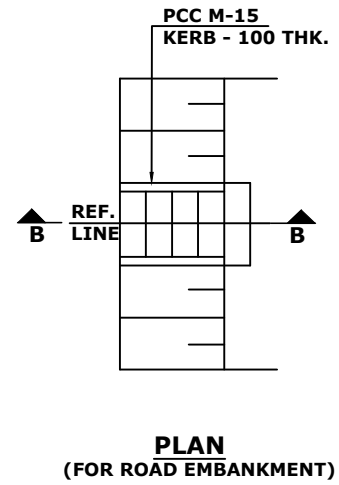
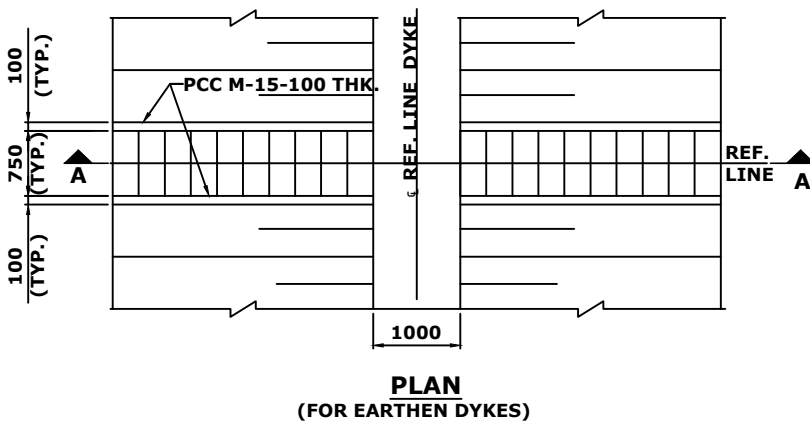
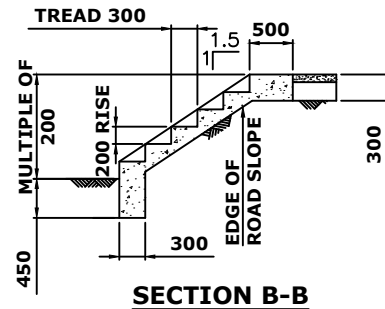
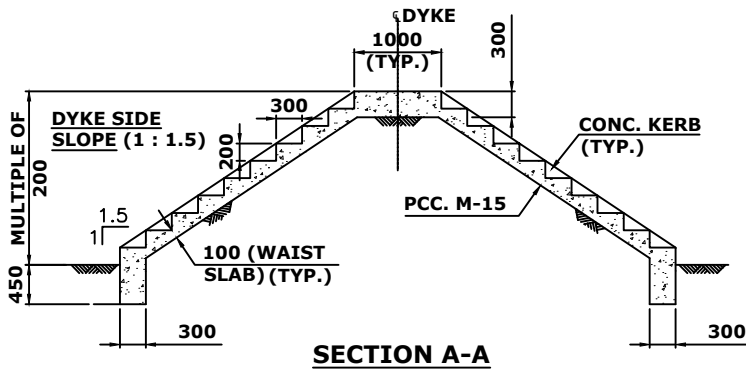
STANDARD DRAWING NO.

REV. SIZE

03 A4

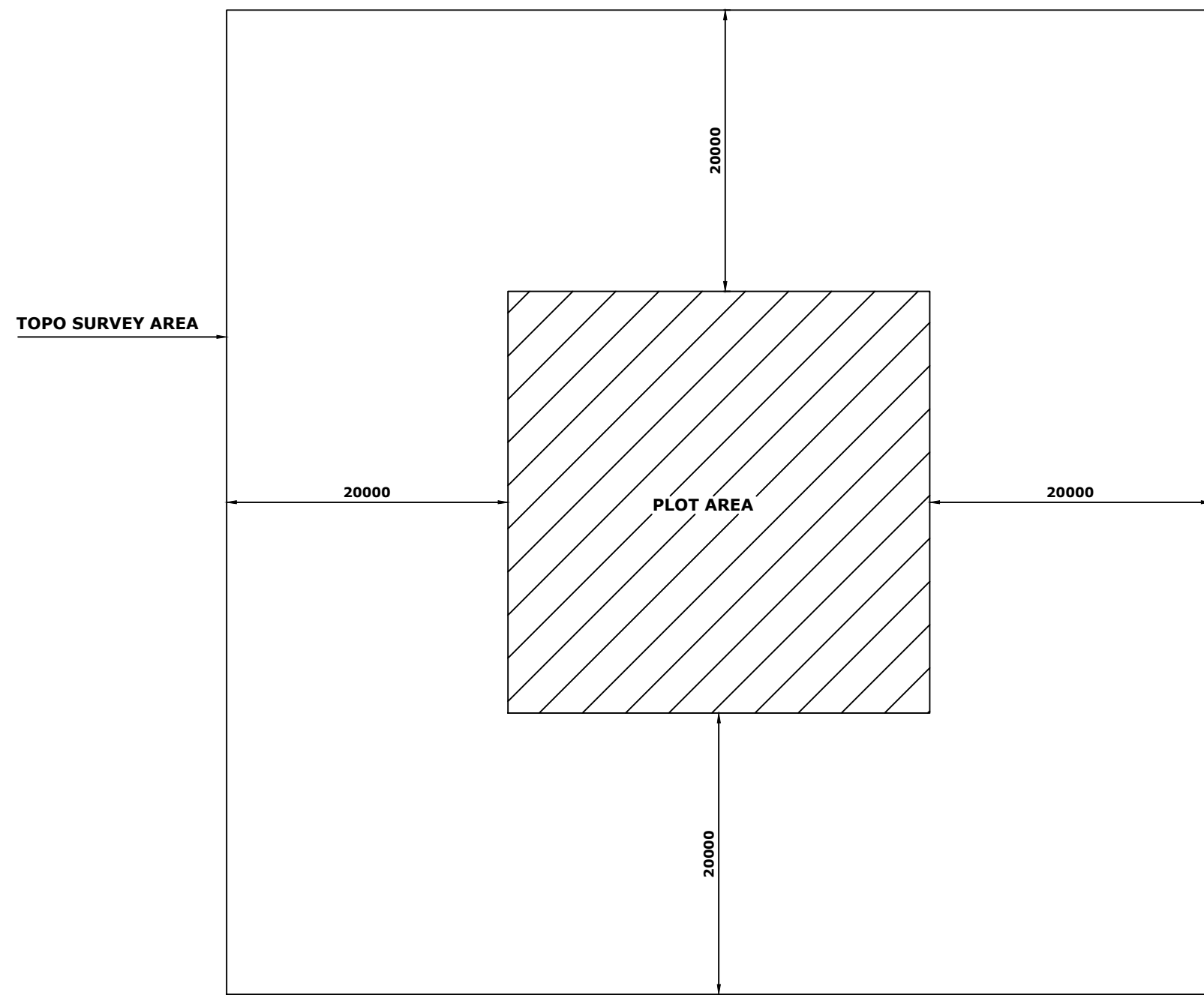
SHEET NO.

1 OF 1



NOTES :-

1. ALL HANDRAIL AND UPRIGHT SHALL BE AS PER RESPECTIVE TYPE.



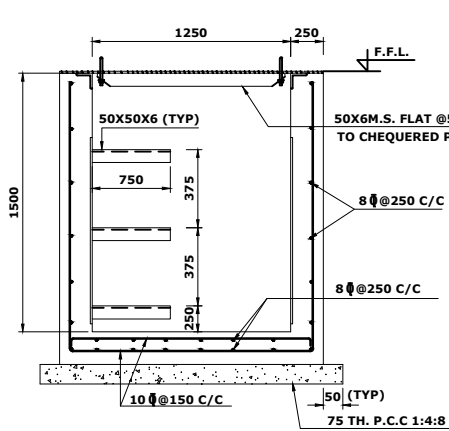
NOTES:-

- 1. ALL DIMENSION ARE IN MM AND CO-ORDINATES AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.

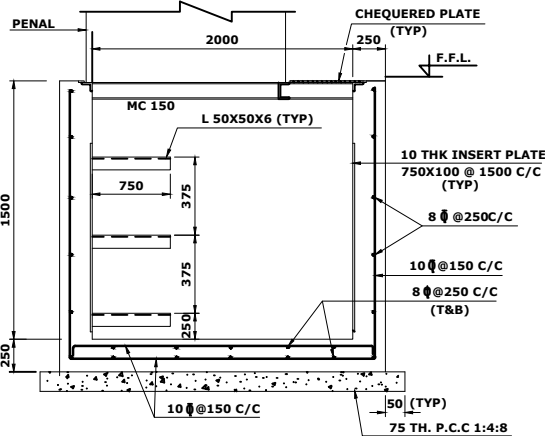
AREA PLAN FOR TOPO SURVEY

AREA PLAN FOR TOPO SURVEY

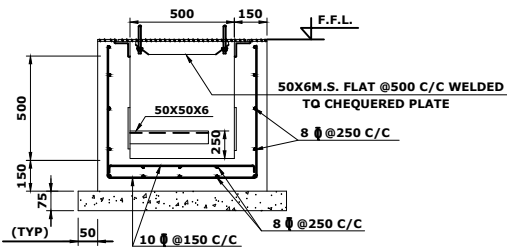
STANDARD TYP.DETAILS OF CABLE TRENCH	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	1 OF 1		



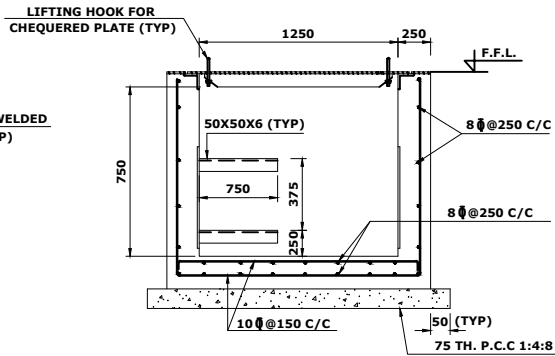
R/F DETAIL OF CABLE TRENCH SECTION



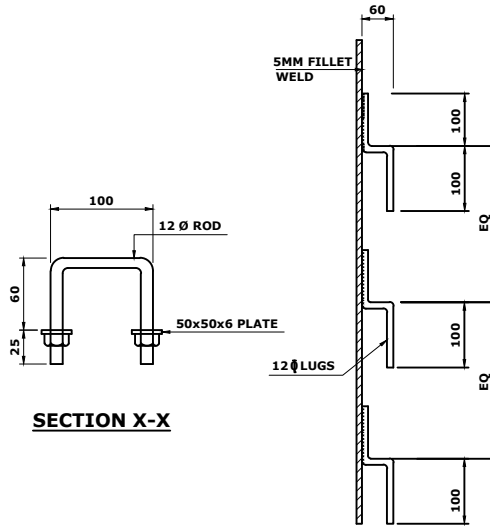
SUPPORTING PANELS



R/F DETAIL OF CABLE TRENCH SECTION

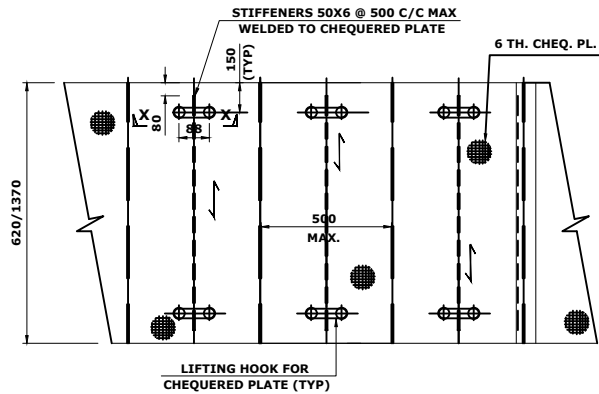


R/F DETAIL OF CABLE TRENCH SECTION



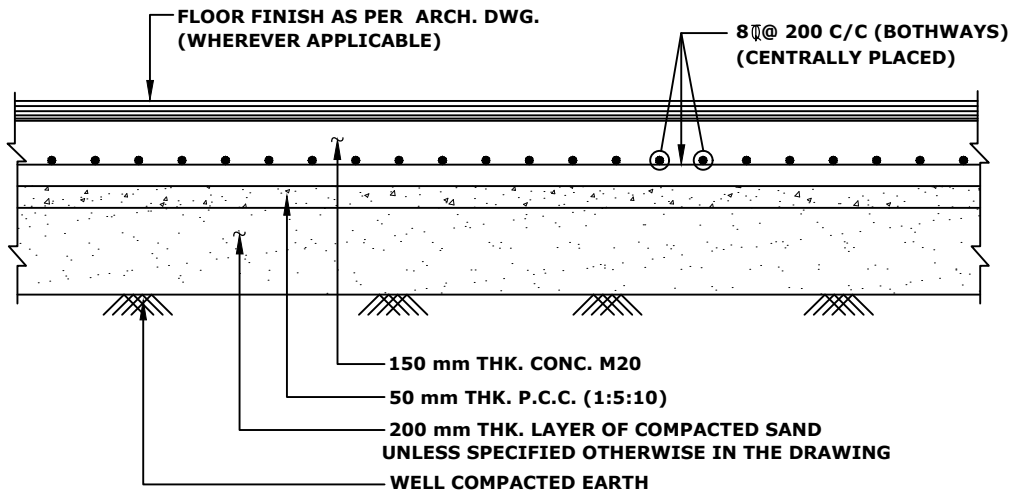
SECTION X-X

TYP. DETAIL OF INSERT PLATE

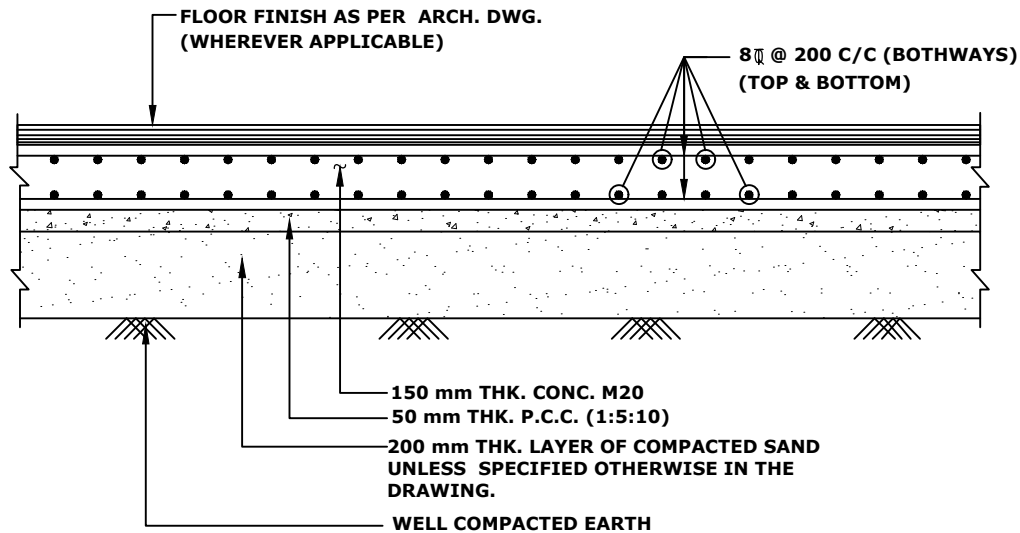


DETAIL OF CHEQUERED PLATE

	R.C.C FLOORING DETAILS	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 2		

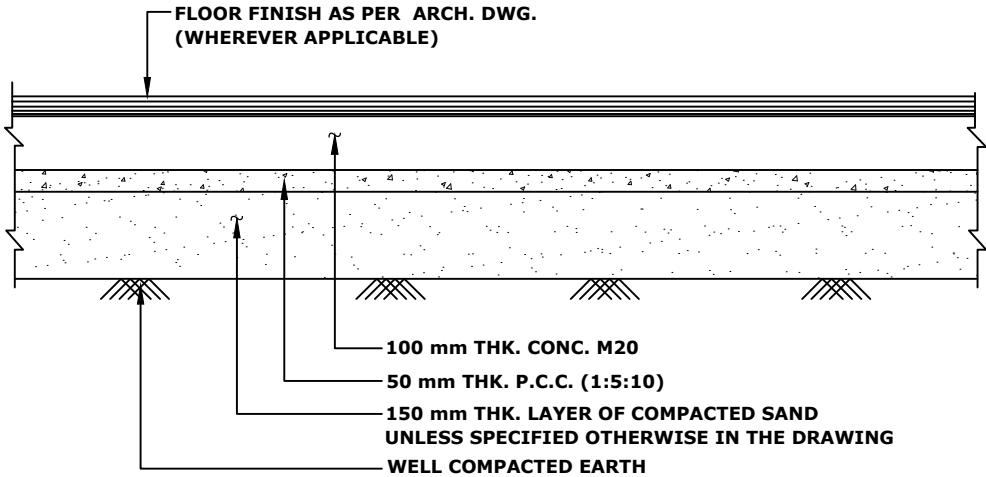


TYPE-I
(FOR PLANT BUILDINGS, SUB-STATION, CONTROL ROOM, PUMP HOUSE,
UTILITY COMPRESSOR HOUSE, PARKING AREA, STORE &
PORCH)



TYPE-II
(FOR WAREHOUSE, WORKSHOP, CEMENT GODOWN, FIRE STATION
& PROCESS COMPRESSOR HOUSE)

	R.C.C FLOORING DETAILS	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	2 OF 2		

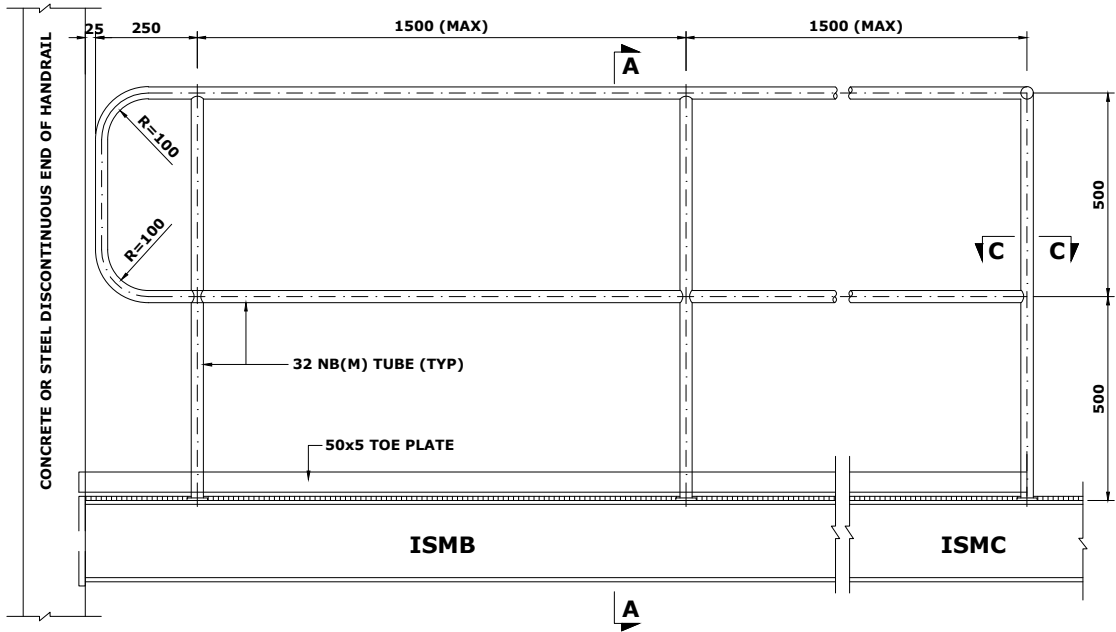


TYPE-III
 (FOR NON-PLANT BUILDINGS, ADMINISTRATION,
 LABORATORY, CANTEEN, TIME OFFICE, SITE OFFICE ETC.,)

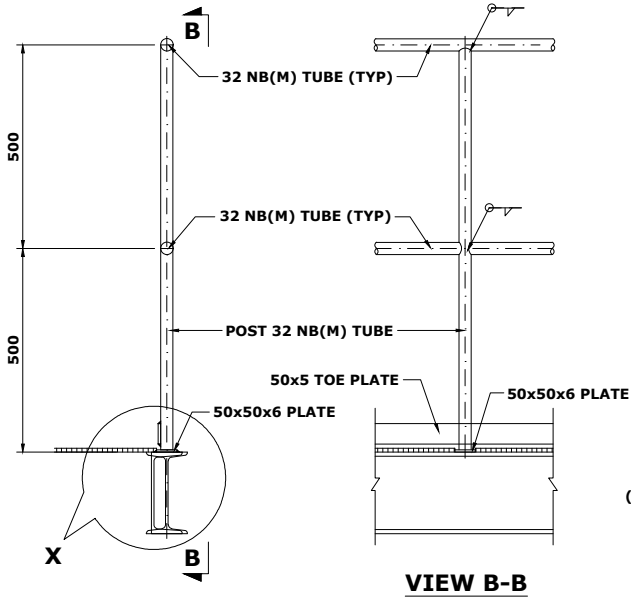
NOTES:-

- ALL DIMENSIONS ARE IN mm
- STRUCTURAL CONCRETE SLAB SHALL BE CAST IN ALTERNATE PANELS AND NO DIMENSION OF THE PANEL SHALL EXCEED 4.5 m

	STANDARD FOR HANDRAIL ON STEEL PLATFORM	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		

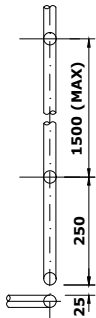


HORIZONTAL HANDRAIL ON STEEL PLATFORM

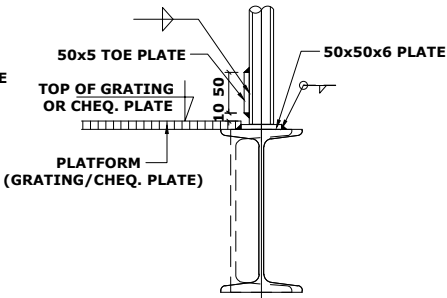


SECTION A-A

VIEW B-B

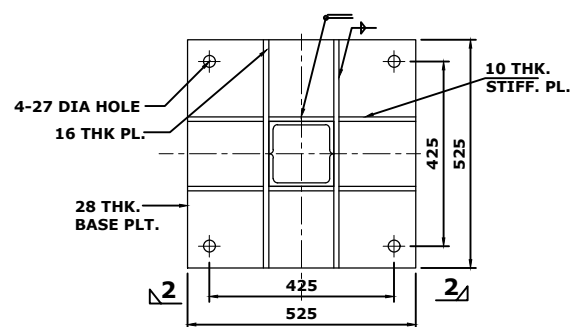
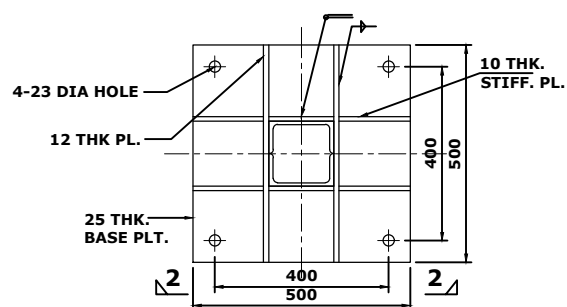
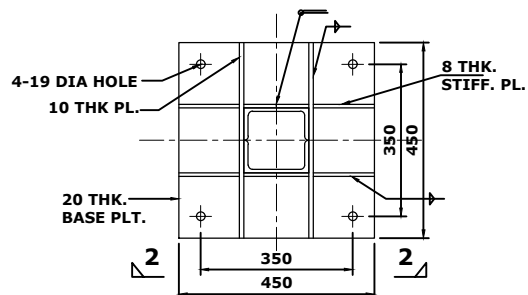
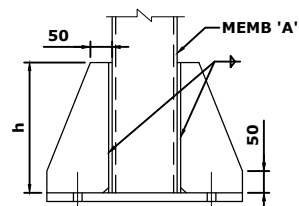
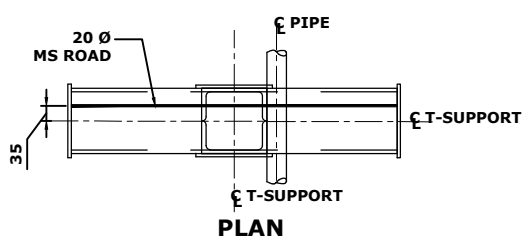
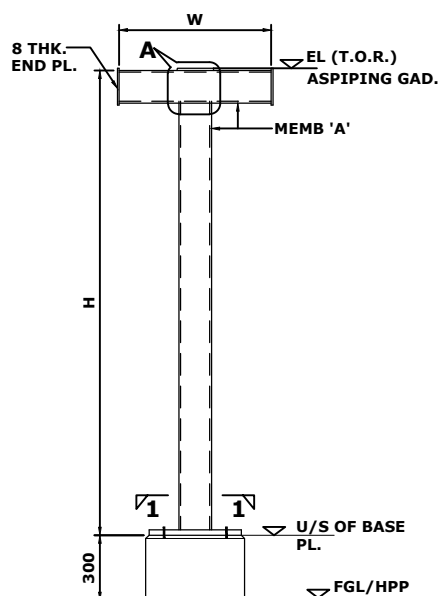
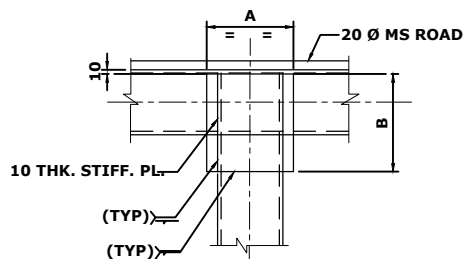


**VIEW C-C
(AT CORNER)**



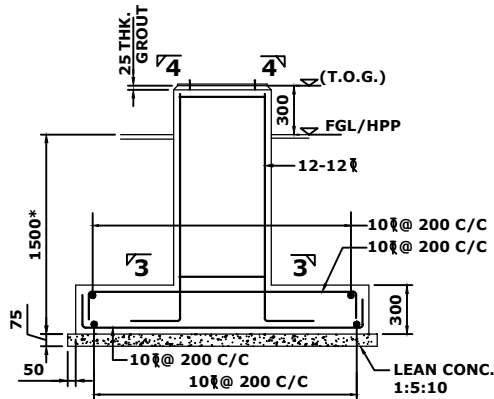
DETAIL X

Er	STANDARD FOR SLIDING T- SUPPORT	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 2		

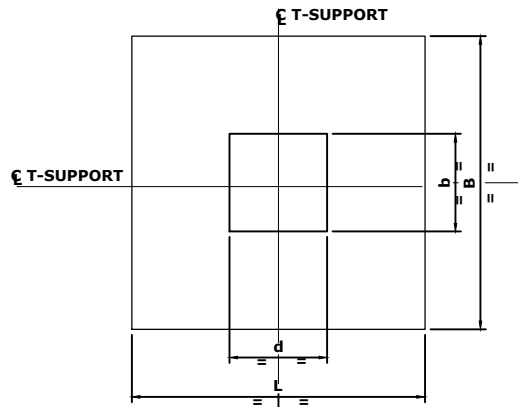


S. NO.	T-SUPPT. MKD.	WIDTH 'W'	HEIGHT 'H'	MEMB 'A'	BASE PLATE TYPE	h	CONN. PLATE		APPX. TY IN KG
							A	B	
1	TS1	UP TO 750	UP TO 2000	ISMC 150	I	200	200	225	150
2	TS2	UP TO 750	2000<H<3000	ISMC 200	II	275	250	300	260
3	TS3	UP TO 750	3000<H<4000	ISMC 250	III	325	300	350	410
4	TS4	750<W<1500	UP TO 1500	ISMC 150	I	200	200	225	160
5	TS5	750<W<1500	1500<H<2300	ISMC 200	II	275	250	300	260
6	TS6	750<W<1500	2300<H<3000	ISMC 250	III	325	300	350	400

	STANDARD FOR SLIDING T- SUPPORT	STANDARD DRAWING NO.	REV.	SIZE
		SHEET NO.	2 OF 2	03 A4



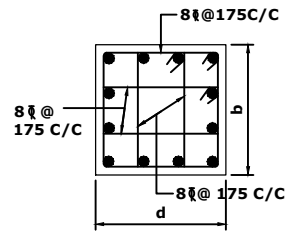
ELEVATION



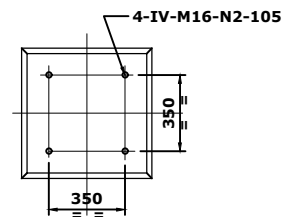
FDN. PLAN

NOTES :-

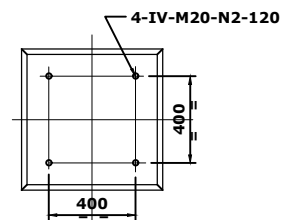
1. FOLLOWING LOADS HAVE BEEN CONSIDERED IN DESIGNEN:
 - a) VERTICAL LOAD =1.0 MT FOR 750 WIDTH
=2.0 MT FOR 1500 WIDTH
 - b) WIND INTENSITY =150 Kg/sqm
 - c) WIND ON 18" PIPE HAS BEEN CONSIDERED
 - d) PIPE FRICTION COEFFICIENT IN BOTH DIRECTION = 0.30



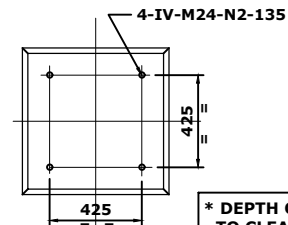
SECTION 3-3



VIEW -4-4
(FOR SUPPORT TS1 & TS4)



VIEW -4-4
(FOR SUPPORT TS2 & TS5)



VIEW -4-4
(FOR SUPPORT TS3 & TS6)

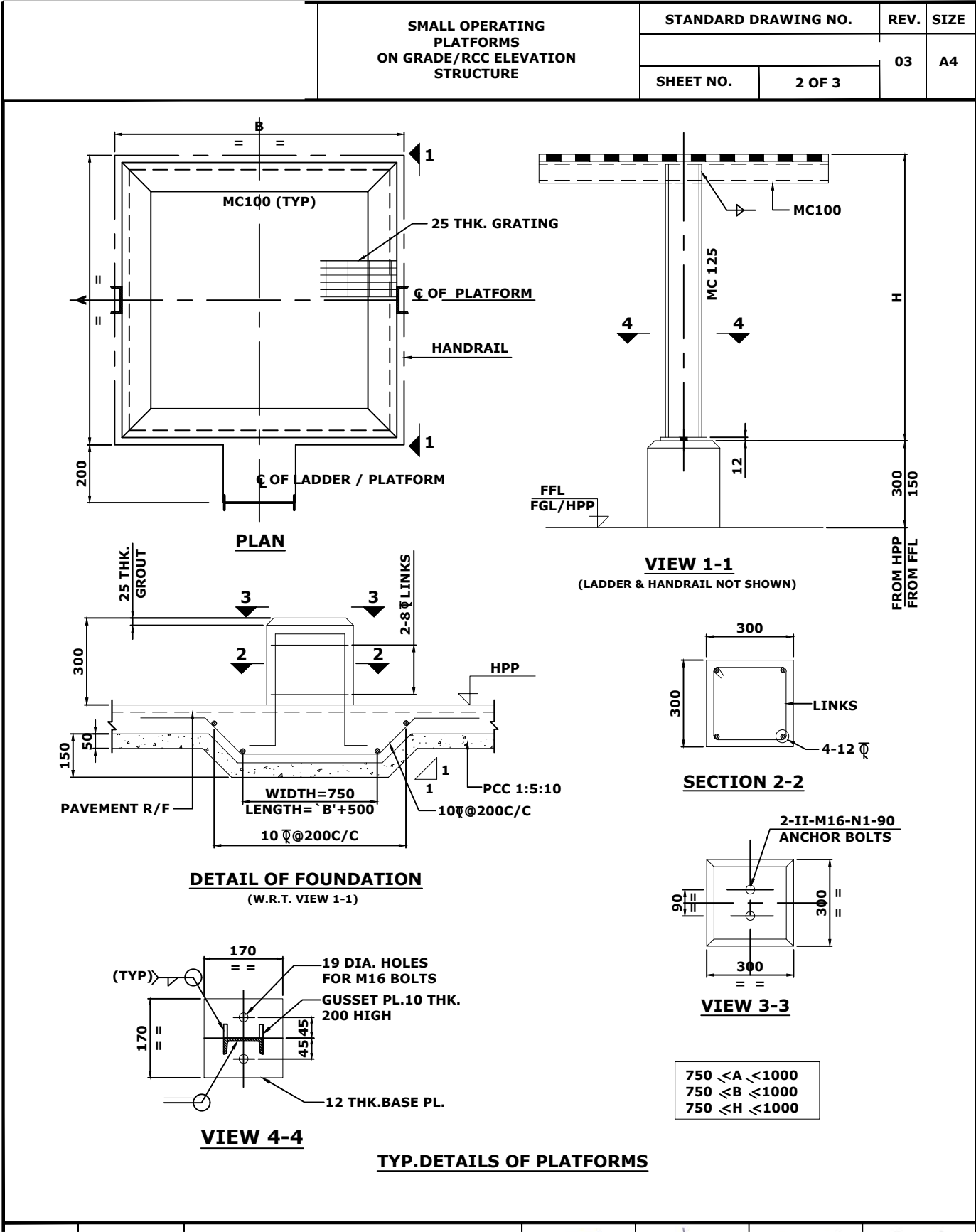
* DEPTH OF FDN. CAN BE INCREASED TO CLEAR U/G PIPING IF ANY.

				5.0<S.B.C<10.0 T/sqm			10.0<S.B.C<15.0 T/sqm			S.B.C>15.0 T/sqm		
S. NO.	T-SUPPT. MKD.	PED SIZE		FDN SIZE		QTY IN m 3	FDN. SIZE		QTY IN m 3	FDN. SIZE		QTY IN m 3
		d	b	L	B		L	B		L	B	
1	TS1	600	600	1800	1800	1.51	1600	1600	1.31	1500	1500	1.22
2	TS2	650	650	2000	2000	1.83	1750	1750	1.55	1600	1600	1.40
3	TS3	675	675	2250	2250	2.20	1800	1800	1.66	1800	1800	1.66
4	TS4	600	600	2000	2000	1.74	1750	1750	1.46	1600	1600	1.31
5	TS5	650	650	2250	2250	2.15	1800	1800	1.60	1700	1700	1.50
6	TS6	675	675	2250	2250	2.20	1900	1900	1.77	1900	1900	1.77

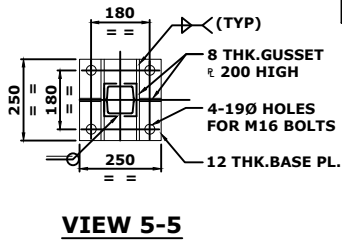
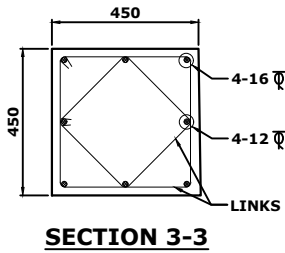
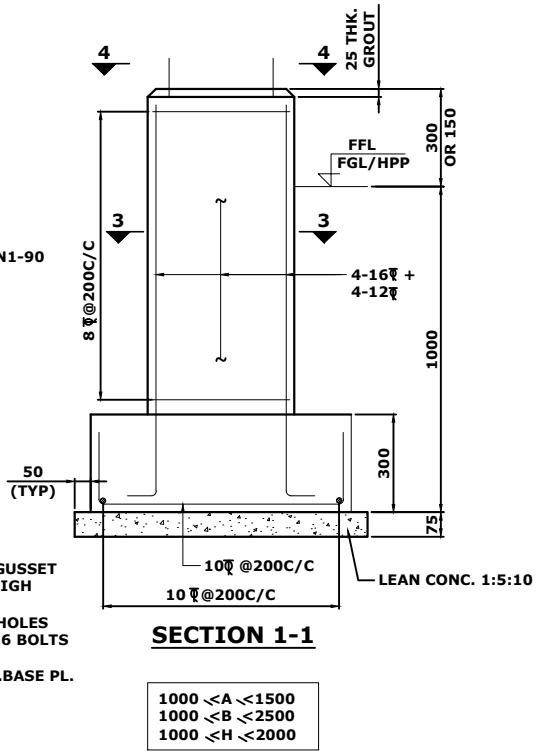
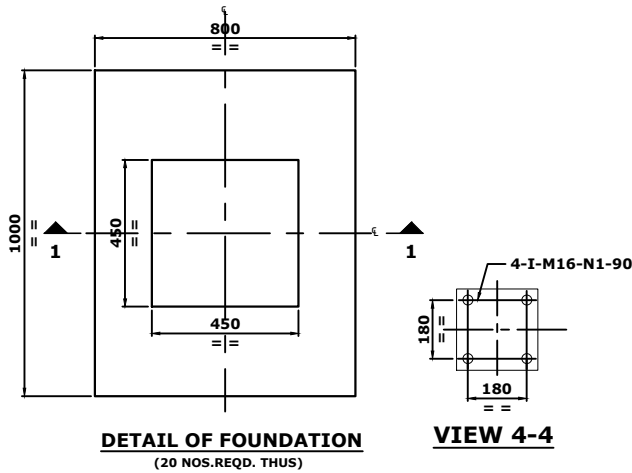
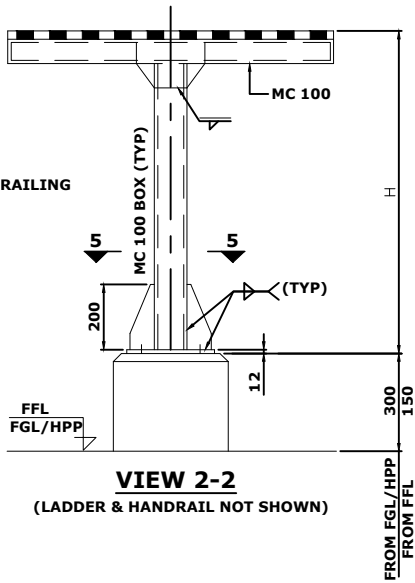
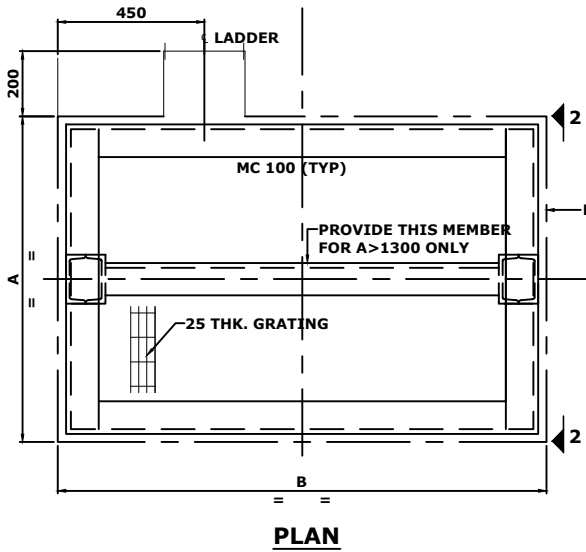
	SMALL OPERATING PLATFORMS ON GRADE/RCC ELEVATION STRUCTURE	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 3		

NOTES:-

1. THIS STANDARD COVERS DETAILS OF OPERATING PLATFORM ON GRADE, OR ON ELEVATED R.C.C. STRUCTURE FOR A MAXIMUM HEIGHT OF 2300mm ABOVE FGL AND/OR 2150mm ABOVE FFL.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. STRUCTURAL STEEL SHALL CONFORM TO IS:2062 GRADE-A.
4. GRADE OF CONCRETE SHALL BE AS MENTIONED IN GENERAL NOTES FOR CONCRETE WORKS FOR THE PROJECT.
5. R/F BARS SHALL BE COLD WORKED STEEL HIGH STRENGTH DEFORMED BARS OF GRADE Fe415 CONFORMING TO IS:1786.
6. CONCRETE & STEEL WORKS SHALL BE AS PER GENERAL NOTES OF THE PROJECT.
7. THE LOCATION AND ORIENTATION OF PLATFORMS SHALL BE AS PER PIPING GAD.
8. IF NOT GALVANIZED GRATING SHALL BE WELDED ALONG THE LINE OF SUPPORT. GALVANIZED GRATING SHALL BE CLAMPED.
9. UP TO H> 2000 HANDRAIL SHALL BE TYPE-IV HANDRAIL FOR OTHER PLATFORMS SHALL BE TYPE-VII. TOP RAIL OF HANDRAIL SHALL BE 32 NB (M) PIPE.
10. ALL GUSSET PLATES SHALL BE 8mm THICK, UNLESS NOTED OTHERWISE.
11. ALL CONNECTIONS SHALL BE WELDED USING 6mm THICK FILLET WELDS. CONNECTIONS AT CORNER LOCATIONS SHALL BE WITH SUITABLE CLEAT ANGLE.
12. FOUNDATIONS SHOWN IN THIS STANDARD ARE VALID UP TO S.B.C. OF 5.00 T/M² AT FOUNDATION LEVEL.
13. CONSTRUCTION JOINTS IN PAVEMENT SHALL BE SUITABLY LOCATED AT SITE IN CASE THICKNESS PAVEMENT IS ADOPTED FOR PLATFORM FOUNDATIONS.
14. GROUT SHALL BE 1:2 CEMENT SAND MORTAR TYPE.

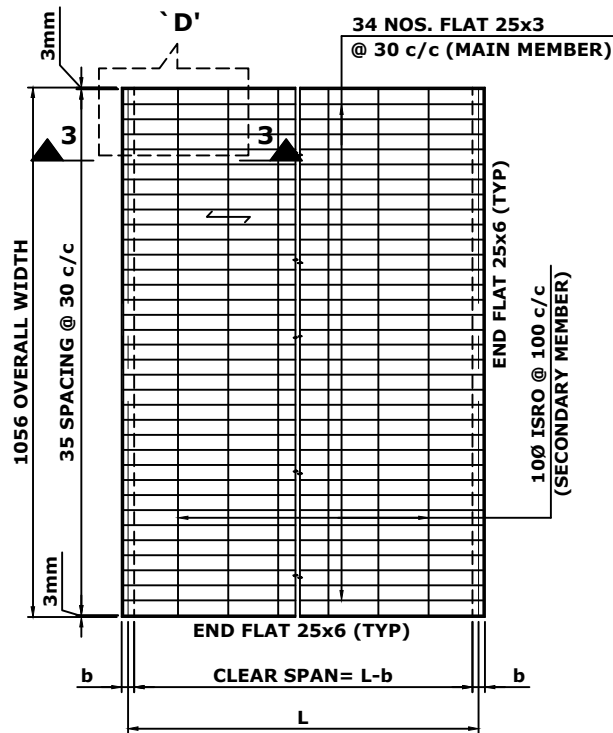


	SMALL OPERATING PLATFORMS ON GRADE/RCC ELEVATION STRUCTURE	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	3 OF 3		

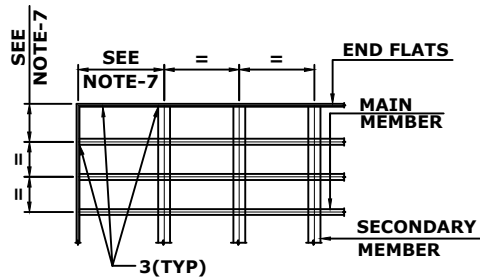


TYP.DETAILS OF PLATFORMS FOR

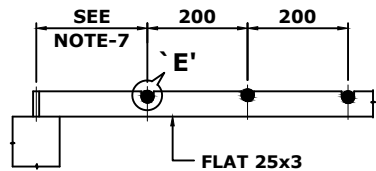
STANDARD GRATING DETAILS		STANDARD DRAWING NO.	REV.	SIZE
			03	A4
		SHEET NO.	2 OF 3	



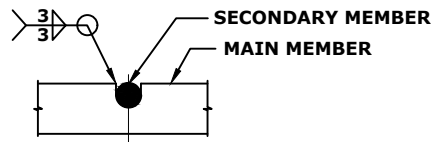
PLAN



DETAIL - 'D'



SECTION 3-3

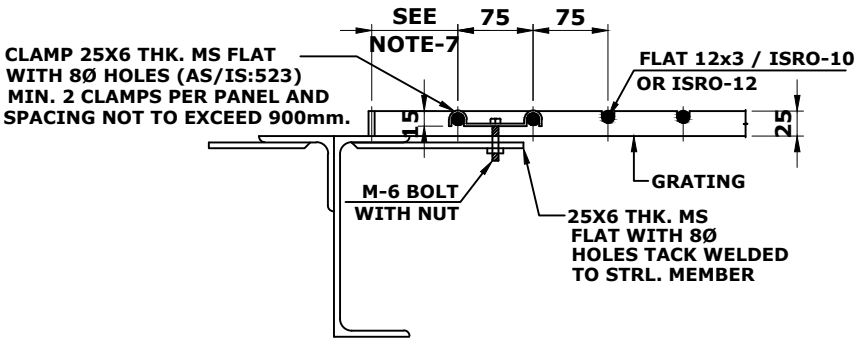
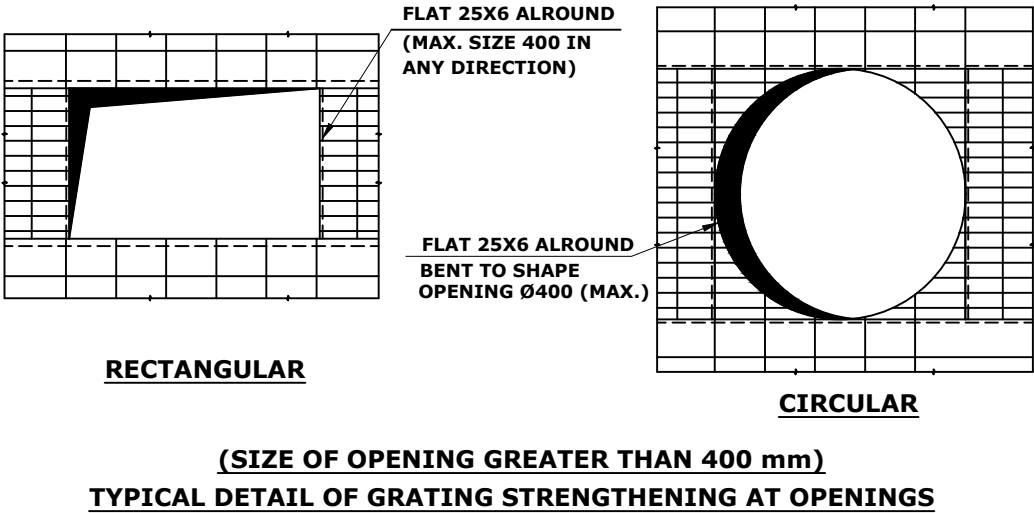
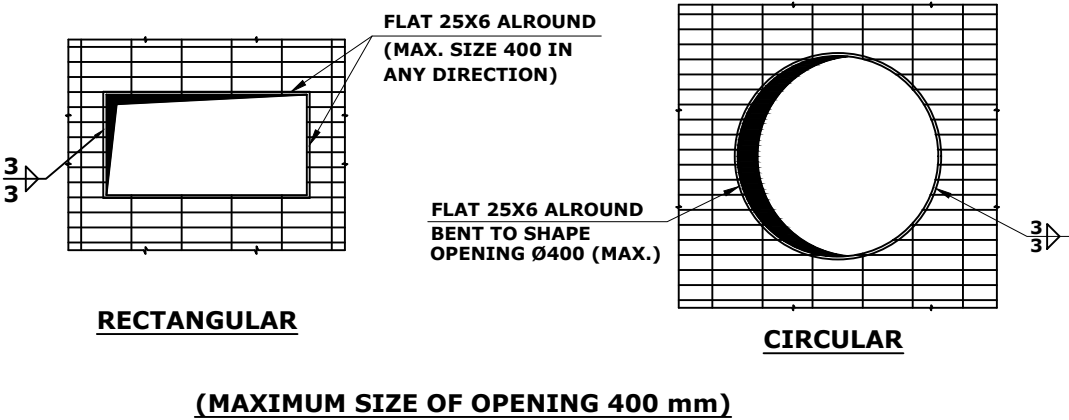


DETAIL - 'E'

GRATING

WEIGHT OF GRATING IN kg/m2				PROPERTIES WIDTH - 1056			APPLICATION	NOTES
25X6	25X3	100 ISRO	TOTAL	Lxx cm4	Zxx cm3	MR kgm	EQUIPMENT PLATFORM STAIRCASE PUMP HOUSE CROSS OVER	REFER SHT. 1 OF 3
4.6	18.8	5.4	28.8	14.84	11.87	195.94		

STANDARD GRATING DETAILS	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	3 OF 3		



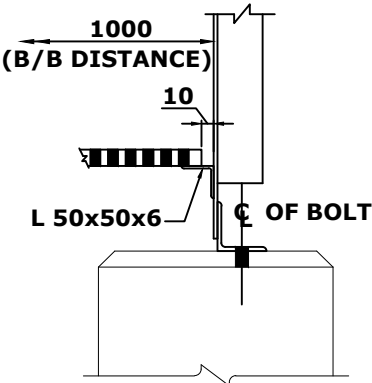
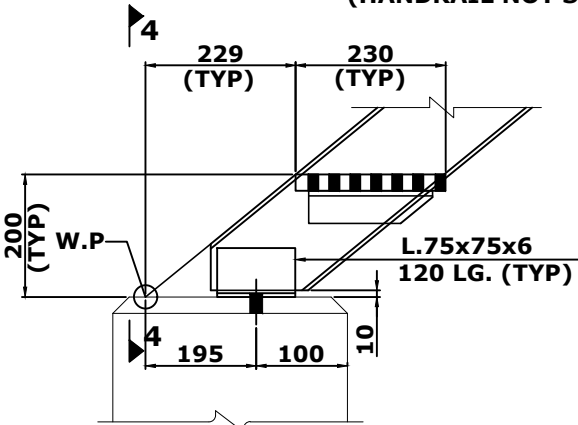
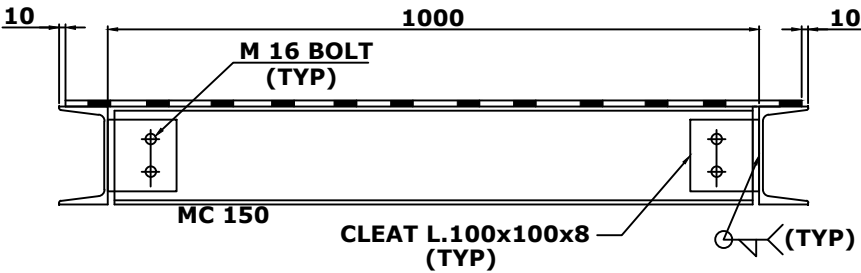
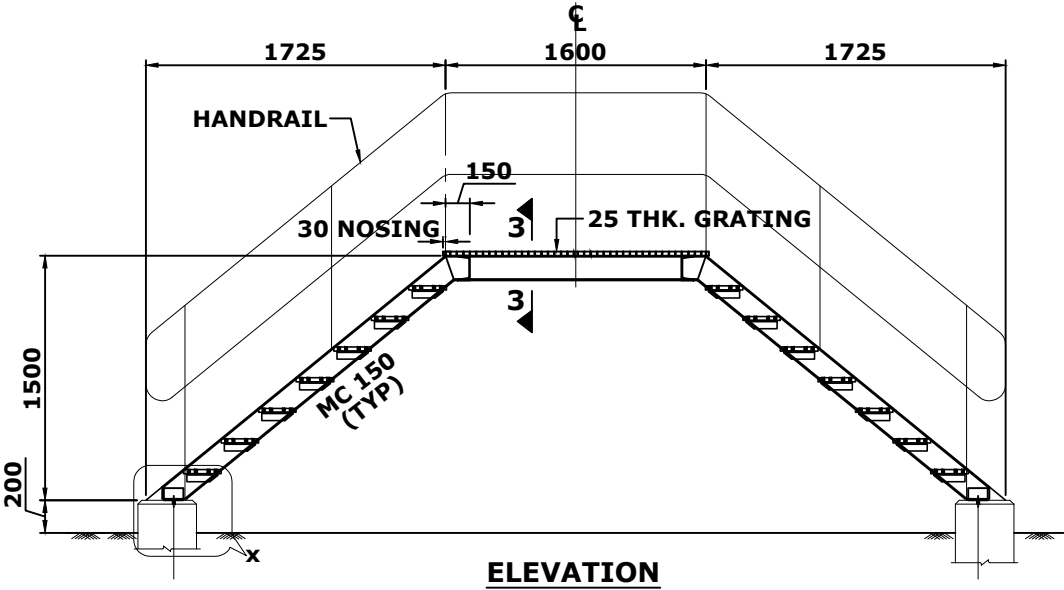
FIXING DETAIL FOR REMOVABLE GRATING PANELS WITH CLAMPS
(SEE NOTE - 9)

	PIPE SLEEPER CROSSOVER	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 3		

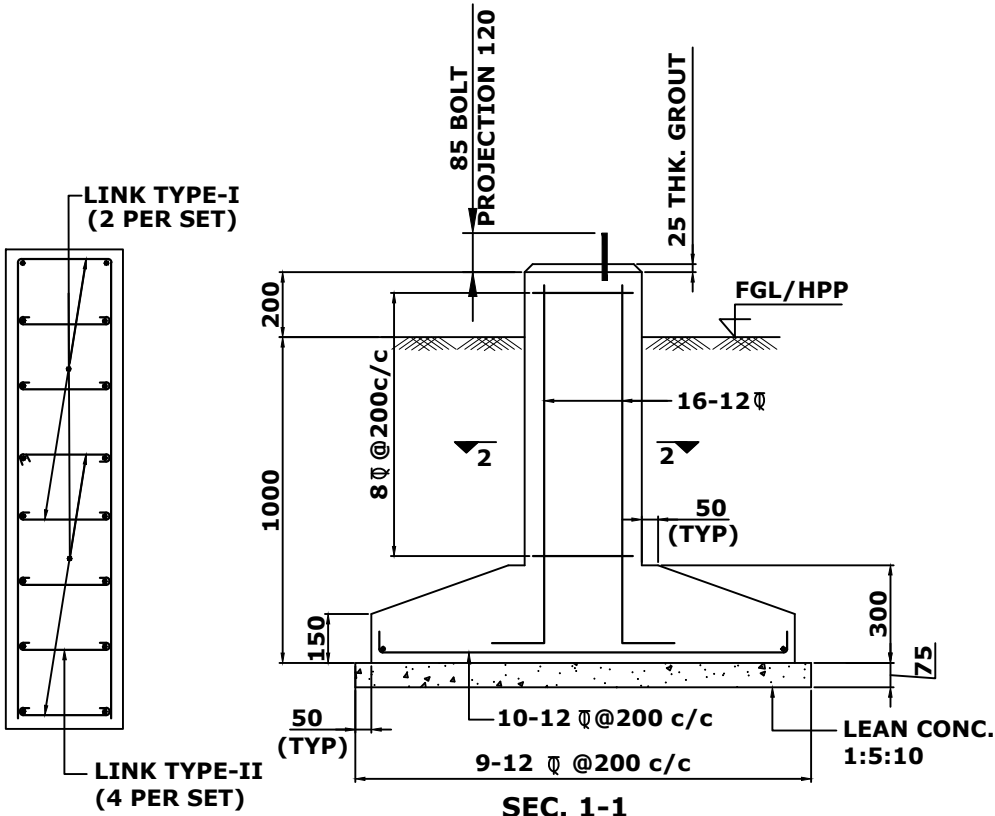
NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. THE LOADING CONSIDER ARE :-
 - a) LIVE LOAD = 2.0 KN/m^2 ON CROSSOVER
 - b) SELF WEIGHT OF MEMBER INCLUDING GRATINGS
3. ALL STRUCTURE STEEL SHALL CONFORM TO IS: 2062 GRADE-A
4. GRADE OF CONCRETE SHELL BE AS MENTIONED IN GENERAL NOTES FOR CONCRETE WORKS, FOR THE PROJECT
5. R/F BARS SHELL BE COLD WORKED STEEL HIGH STRENGTH DEFORMED BARS OF GRADE Fe 415 (MIN.) CONFORMING TO IS: 1786
6. CONCRETE AND STEEL WORK SHALL BE AS PER GENERAL NOTES FOR THE PROJECT.
7. LOCATION AND ORIENTATION OF PLATFORMS SHALL BE AS PER PIPING GAD.
8. STAIRCASE DETAIL AS PER VPC-STD-CS-6047.
9. STAIRCASE ON EACH SIDE OF CROSSOVER SHALL HAVE INCLINATION OF 41° TO HORIZONTAL, WITH RISERS NOT EXCEEDING 200mm.
10. GRATING SHALL BE AS PER VPC-STD-CS-6036.
11. UPTO> 2000 HANDRAIL SHALL BE AS PER VPC-STD-CS-6033.
12. GUSSET PLATES SHALL BE 8mm. THICK UNLESS NOTED OTHERWISE.
13. ANCHOR BOLTS SHALL BE AS PER VPC-STD-CS-6054.
14. PIPE SLEEPERS HAVE BEEN ASSUMED TO BE 500mm. (MAXIMUM) ABOVE GRADE AND WITH A MAXIMUM LENGTH OF 5000mm SYMMETRICALLY LOCATED WITH RESPECT TO CENTRE LINE THUS REQUIRING SINGLE SPAN CROSSOVERS.

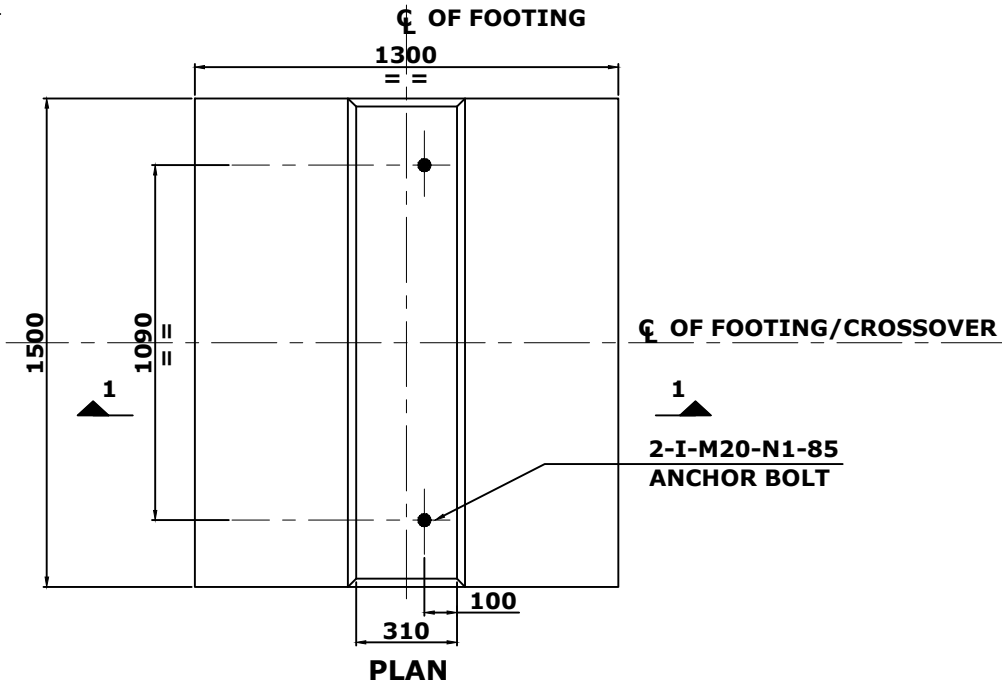
	PIPE SLEEPER CROSSOVER	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	2 OF 3		



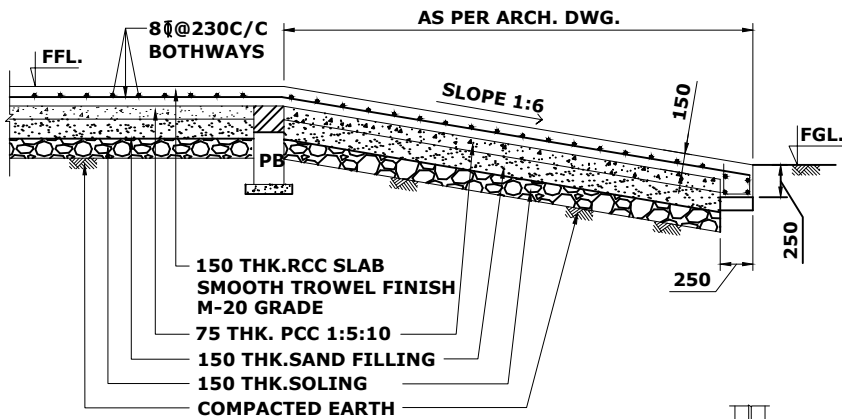
PIPE SLEEPER CROSSOVER		STANDARD DRAWING NO.	REV.	SIZE
		1	03	A4
		SHEET NO.	3 OF 3	



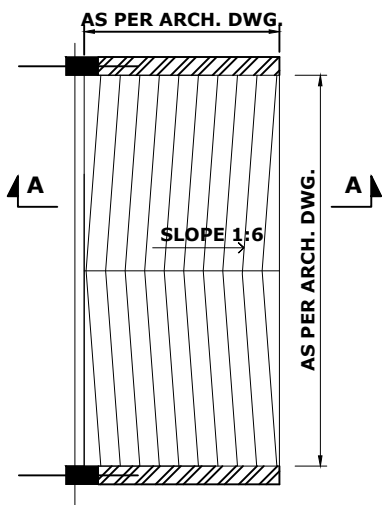
SEC. 2-2



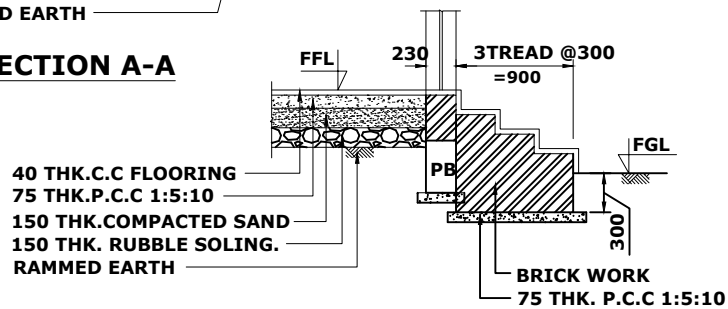
E	STANDARD FOR MISCELLANEOUS DETAILS	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



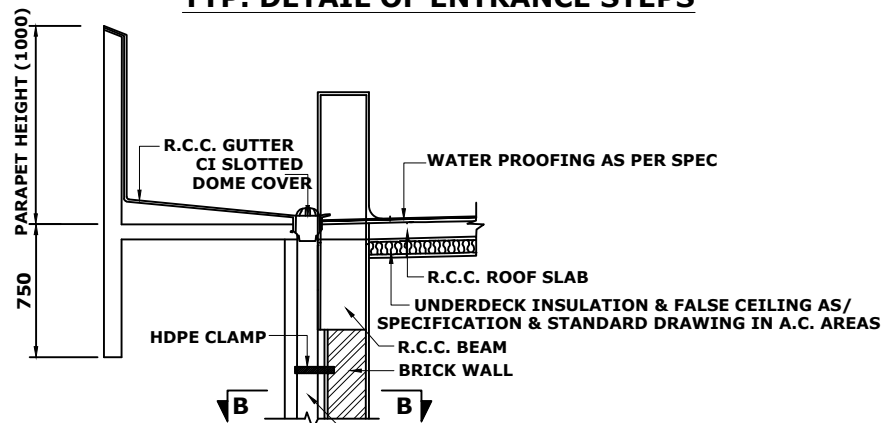
SECTION A-A



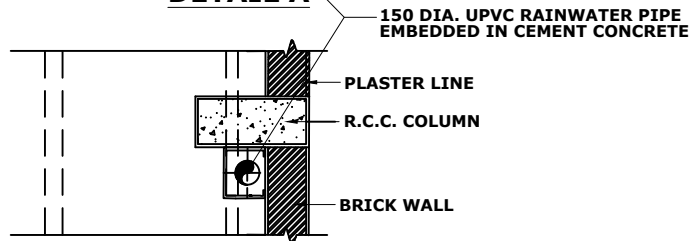
PLAN OF RAMP



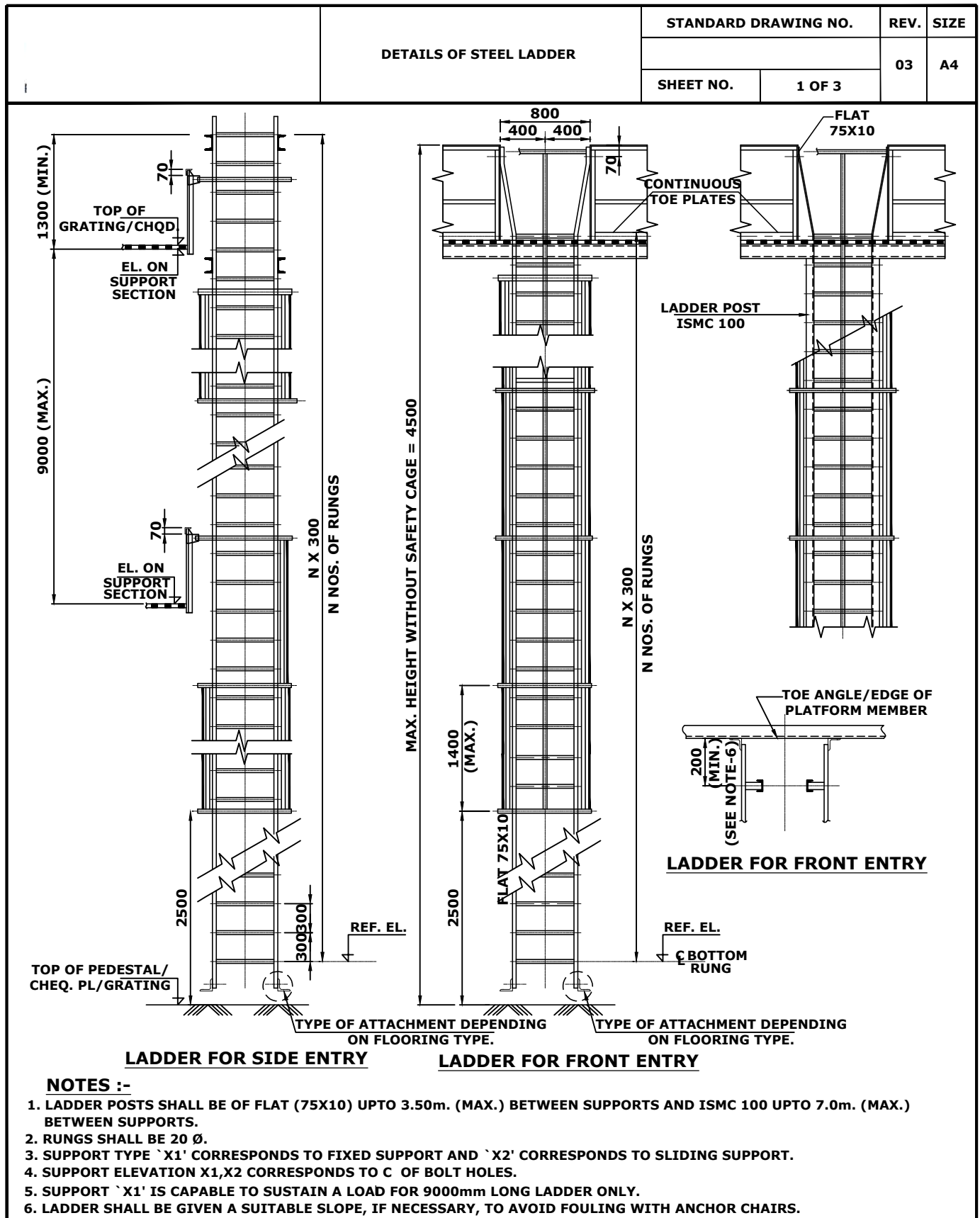
TYP. DETAIL OF ENTRANCE STEPS

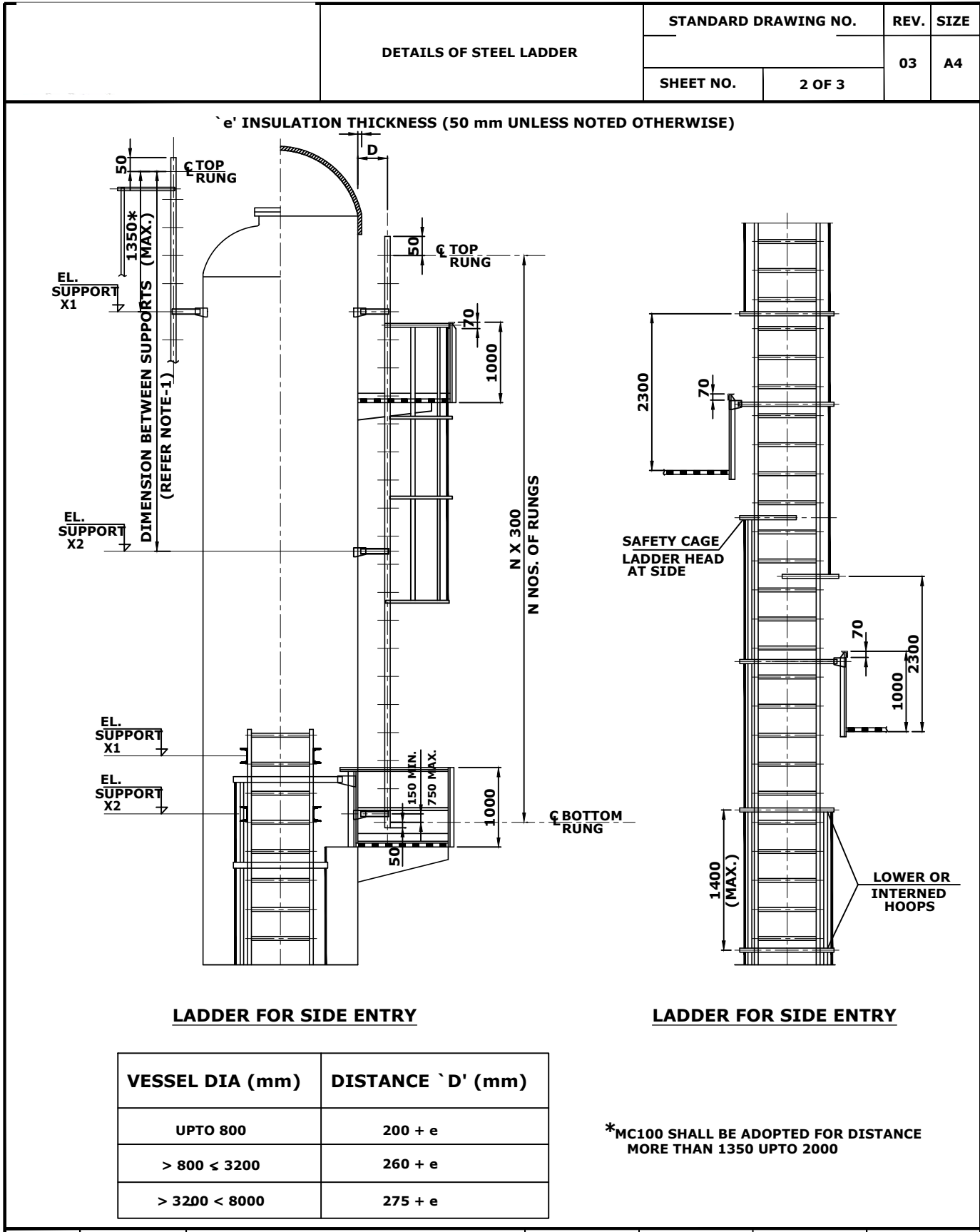


DETAIL A



SECTION B-B
TYP. DETAIL OF RAIN DOWNTAKE





DETAILS OF STEEL LADDER		STANDARD DRAWING NO.	REV.	SIZE
		SHEET NO.	3 OF 3	A4

TYPE OF ATTACHMENT	NATURE OF SUPPORT SECTION	REMARKS
A1, A2	SITE WITHOUT PAVING	
B1, B2	CONCRETE FLOOR	A1, B1, C1, D1 : FIXED TYPE
C1, C2, D1, D2	CHEQUERED PLATE / GRATING FLOORING	A2, B2, C2, D2 : SLIDING TYPE

TYPE - A1

TYPE - B1

TYPE - C1

TYPE - A2

TYPE - B2

TYPE - C2

TYPE - D1

TYPE - D2

TYPE - E
(FREE)

NOTE :-
IN CASE OF TOWERS BOTTOM RUNG SHALL BE 300 mm FROM FGL /HPP

TYPE OF ATTACHMENT AT BASE

LADDER BOTTOM DETAILS

	METAL INSERT PLATES	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 7		

GENERAL NOTES:-

- ALL LUGS SHALL BE OF HIGH STRENGTH DEFORMED BARS OF
GRADE Fe415 CONFORMING TO IS:1786 (WITH GUARANTEED WELDABILITY)
AND SHALL BE CONNECTED TO METAL INSERT PLATES BY 6 mm FILLET
WELDS AS SHOWN IN SKETCHES.
- METAL INSERT PLATES SHALL BE CONFORMING TO IS:2062 (GR-A).
- METAL INSERT PLATES MARKED ON DRAWING REFER AS UNDER

IP -(A) @ (C)

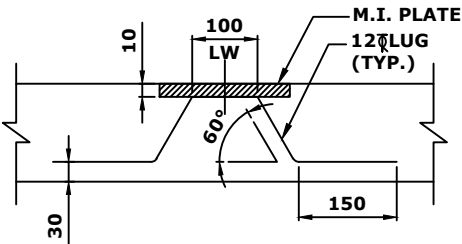
IP = INSERT PLATE

A = TYPE OF INSERT PLATE

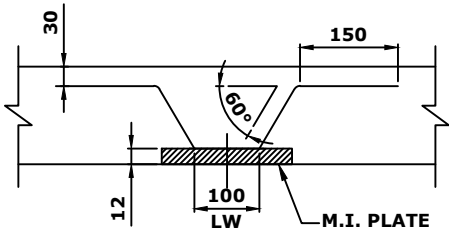
C = ELEVATION OF INSERT PLATE (TOP EDGE)

e.g IP-R9a @ EL.110.300 MEANS INSERT TYPE R9a AT EL.110.300.
- METAL INSERT PLATES SHALL BE KEPT FLUSH WITH CONCRETE SURFACE.
- THE LONGER SIDE OF METAL INSERT PLATE SHALL BE KEPT VERTICAL
UNLESS SHOWN OTHERWISE.
- METAL INSERT PLATE ON COLUMN OR BEAM SHALL BE KEPT SYMMETRICAL
ABOUT C_G OF COLUMN OR BEAM, UNLESS SHOWN OTHERWISE.

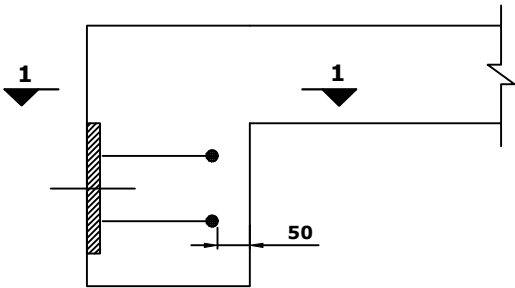
	METAL INSERT PLATES (LUG BENDING DETAILS)	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	2 OF 7		



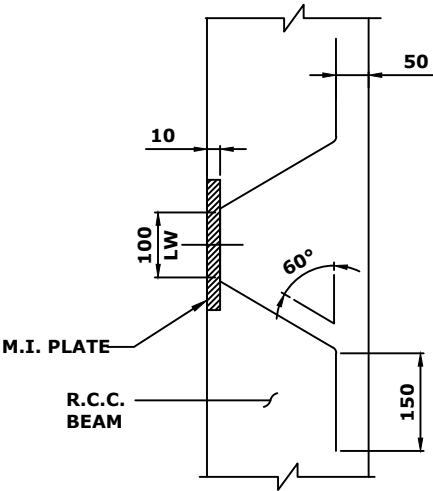
**METAL INSERT DETAIL
ON TOP OF SLAB**



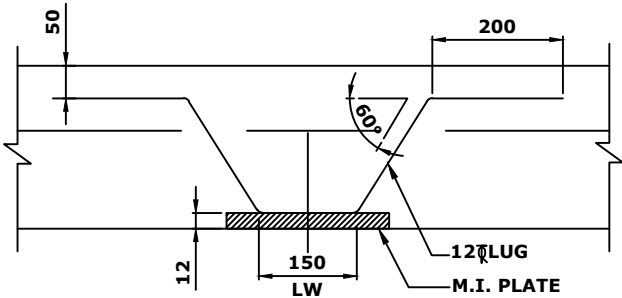
**METAL INSERT DETAIL
ON BOTTOM OF SLAB**



**METAL INSERT DETAIL
ON SIDE OF BEAM**

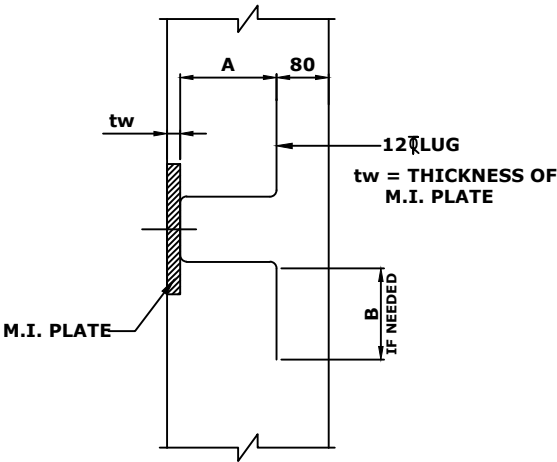


VIEW 1-1



**METAL INSERT DETAIL
ON BOTTOM OF BEAM**

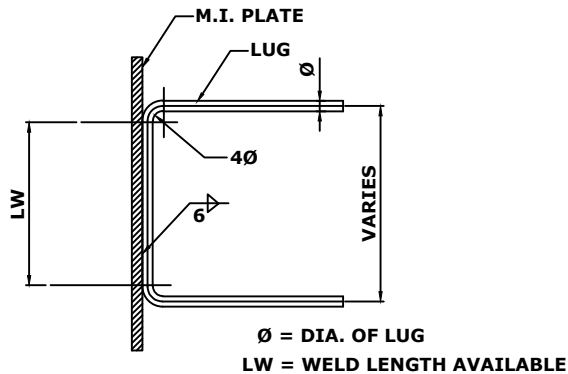
(FOR ALTERNATE DETAIL REF. SHT. 7 OF 7)



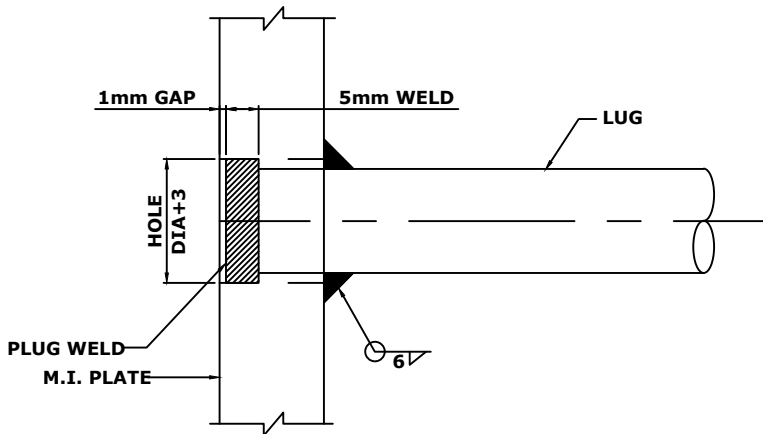
**METAL INSERT DETAIL
ON COLUMNS**

A+B = LUG EMBEDMENT REQUIRED
AS PER SHT. 4,5,6 OF 7

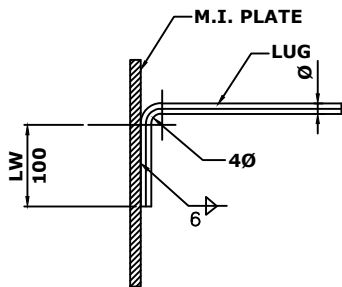
	METAL INSERT PLATES	STANDARD DRAWING NO.		REV.	SIZE
		-----		03	A4
		SHEET NO.	3 OF 7		



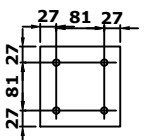
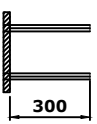
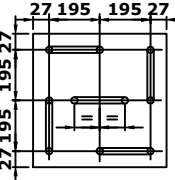
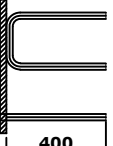
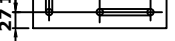
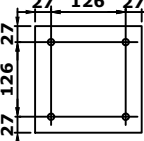
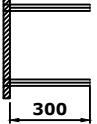
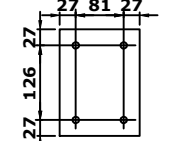
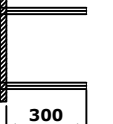
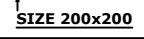
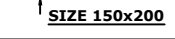
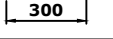
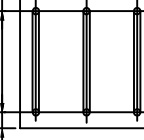
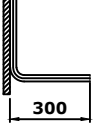
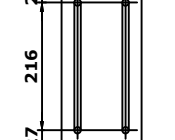
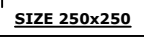
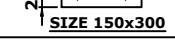
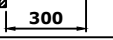
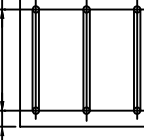
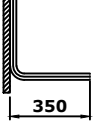
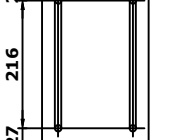
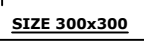
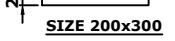
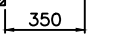
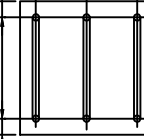
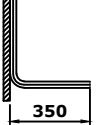
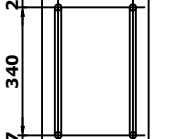
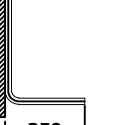
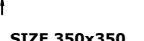
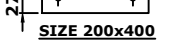
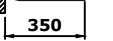
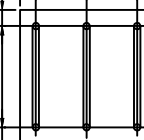
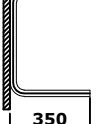
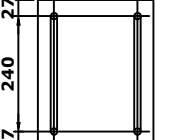
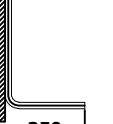
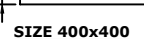
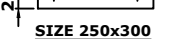
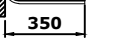
BENDING DIMENSIONS FOR 12mm & 16mm LUGS
 (FOR SPACING OF LUGS ≥ 190)
 (NOT APPLICABLE FOR S1, S2 & R1)



WELD DETAIL OF 12mm & 16mm LUGS WITH M.I. PLATE
 (FOR SPACING OF LUGS < 190)
 (VALID FOR S1, S2 & R1)

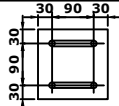
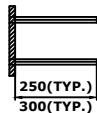
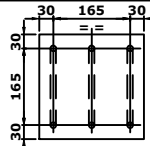
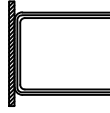
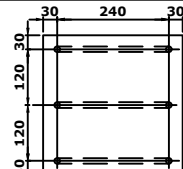
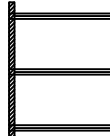
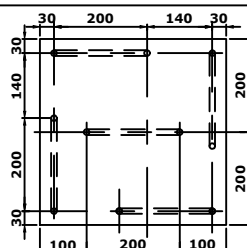
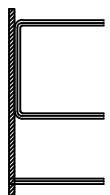
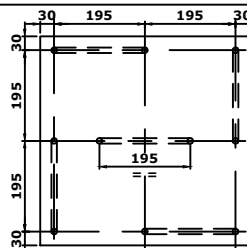
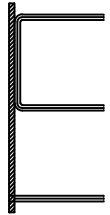
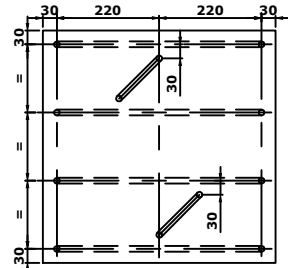
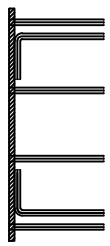


BENDING DIMENSIONS FOR 12mm & 16mm LUGS
 (VALID FOR R9, R10, R12, R13, R14, PS11 & PS12)

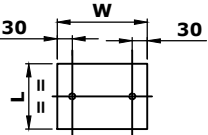
				METAL INSERT PLATES (S/R DESIGNATES)				STANDARD DRAWING NO.		REV.	SIZE
										03	A4
								SHEET NO.		4 OF 7	
S. NO.	TYPE OF INSERT	DIA OF LUGS	THK. OF INSERT	DETAILS OF INSERT PLATE		S. NO.	TYPE OF INSERT	DIA OF LUGS	THK. OF INSERT	DETAILS OF INSERT PLATE	
				PLAN	CROSS SECTION					PLAN	CROSS SECTION
1.	S1a	12	12			7.	S7a	12	12		
	S1b	16	16				S7b	16	16		
2.	S2a	12	12			8.	R1a	12	12		
	S2b	16	16				R1b	16	16		
3.	S3a	12	12			9.	R2a	12	12		
	S3b	16	16				R2b	16	16		
4.	S4a	12	12			10.	R3a	12	12		
	S4b	16	16				R3b	16	16		
5.	S5a	12	12			11.	R4a	12	12		
	S5b	16	16				R4b	16	16		
6.	S6a	12	12			12.	R5a	12	12		
	S6b	16	16				R5b	16	16		

E	METAL INSERT PLATES (R DESIGNATES)	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	5 OF 7		

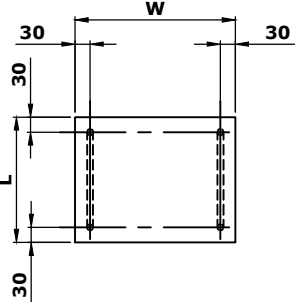
S. NO.	TYPE OF INSERT	DIA OF LUGS	THK. OF INSERT	DETAILS OF INSERT PLATE		S. NO.	TYPE OF INSERT	DIA OF LUGS	THK. OF INSERT	DETAILS OF INSERT PLATE	
				PLAN	CROSS SECTION					PLAN	CROSS SECTION
13.	R6a	12	12			18.	R11a	12	12		
	R6b	16	16				R11b	16	16		
14.	R7a	12	12			19.	R12a	12	12		
	R7b	16	16				R12b	16	16		
15.	R8a	12	12			20.	R13a	12	12		
	R8b	16	16				R13b	16	16		
16.	R9a	12	12			21.	R14a	12	12		
	R9b	16	16				R14b	16	16		
17.	R10a	12	12								
	R10b	16	16								

				METAL INSERT PLATES (PS DESIGNATES)		STANDARD DRAWING NO.		REV.	SIZE
								03	A4
						SHEET NO.			
S. NO.	TYPE OF INSERT	DIA OF LUGS	THK. OF INSERT	DETAILS OF INSERT PLATE					
				PLAN	CROSS SECTION				
1.	PS1	12	12	 SIZE 150x150		 250(TYP.) FOR 12 LUGS 300(TYP.) FOR 16 LUGS			
	PS2	16	16						
2.	PS3	12	12	 SIZE 225x225					
	PS4	16	16						
3.	PS5	12	12	 SIZE 300x300					
	PS6	16	16						
4.	PS7	12	12	 SIZE 400x400					
	PS8	16	16						
5.	PS9	12	12	 SIZE 450x450					
	PS10	16	16						
6.	PS11	12	12	 SIZE 500x500					
	PS12	16	16						

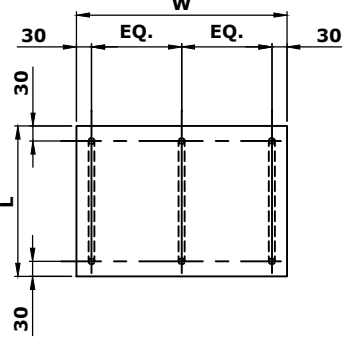
E	STANDARD FOR DETAIL OF METAL INSERT PLATES (PS DESIGNATES)		STANDARD DRAWING NO.	REV.	SIZE
				03	A4
			SHEET NO.	7 OF 7	



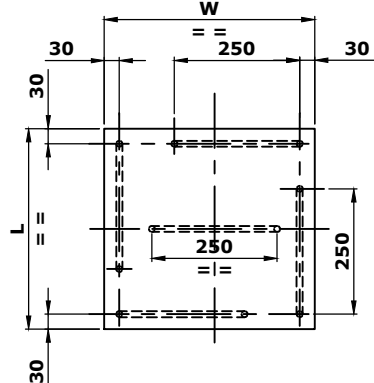
TYPE T1



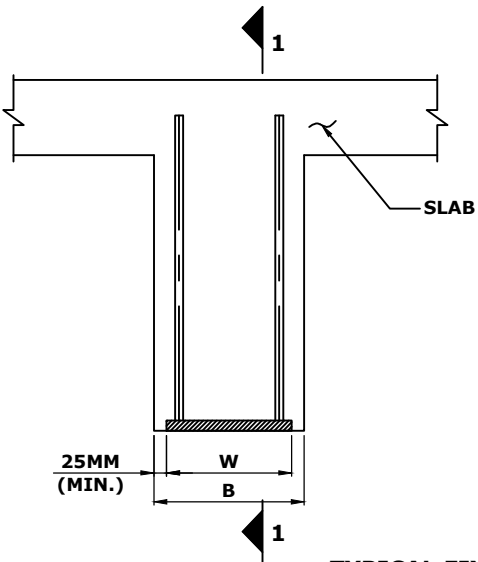
TYPE T2, T3 & T4



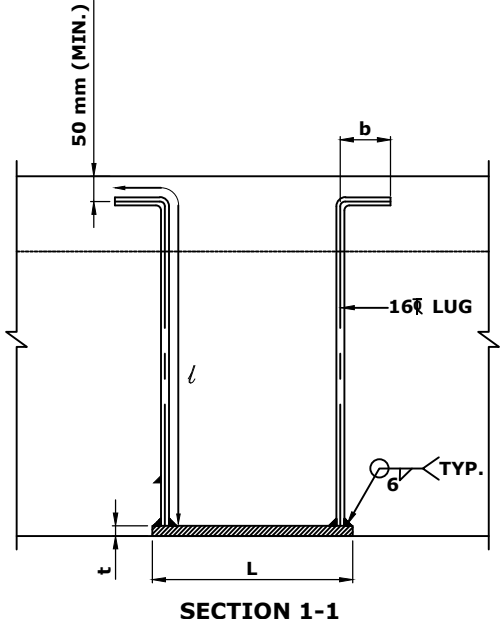
TYPE T5 & T6



TYPE T7

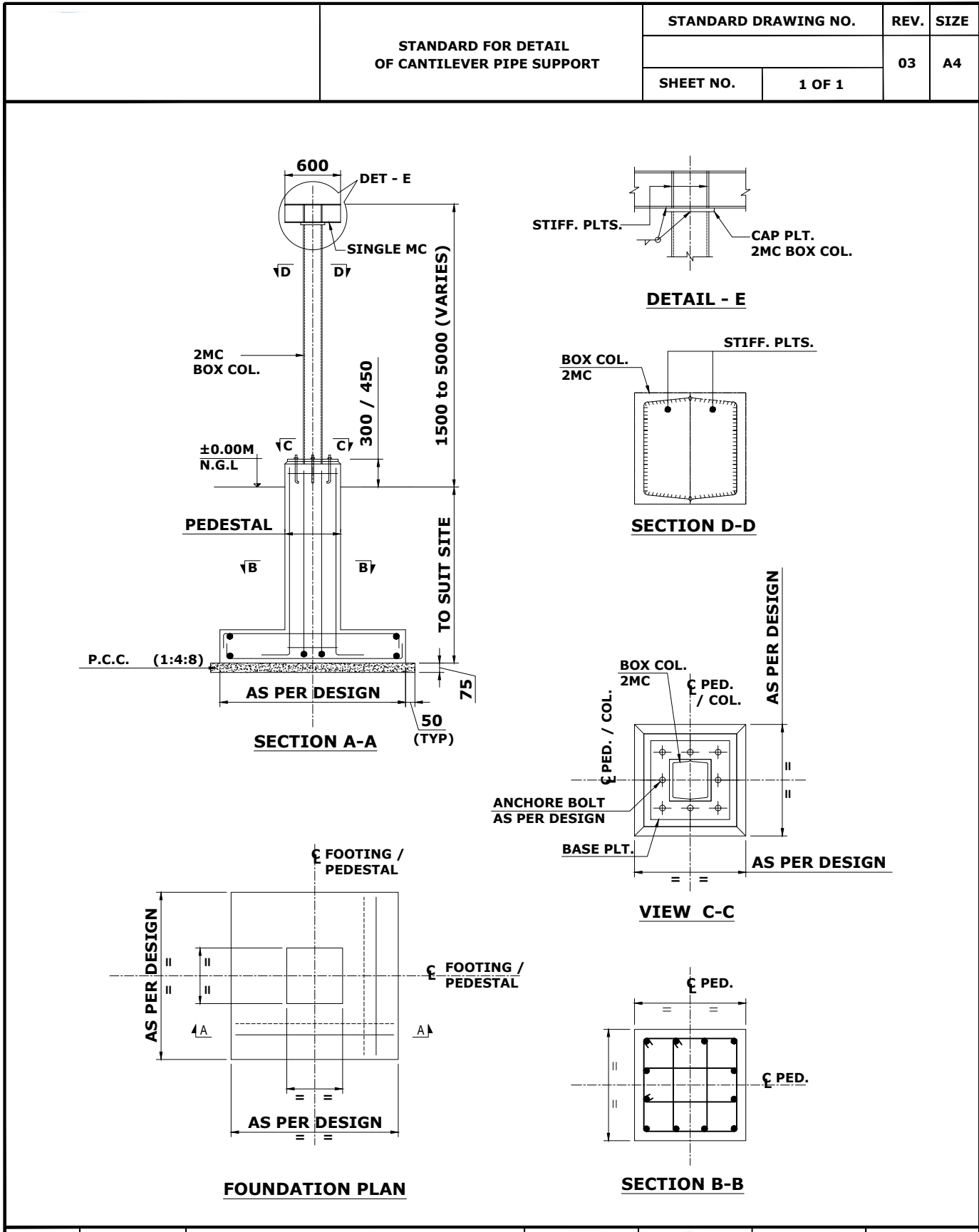


TYPICAL FIXING DETAIL



SECTION 1-1

S.NO.	TYPE OF INSERT	WIDTH OF BEAM 'B' (mm)	MAXIMUM WIDTH OF PLATE 'W' (mm)	LENGTH OF PLATE 'L' (mm)	MAXIMUM 'b' (mm)	THICKNESS OF PLATE 't' (mm)	TOTAL ANCHORAGE LENGTH 'l' (mm)
1.	T1	230	180	180	110	16	350
2.	T2	300	220	250	110	20	350
3.	T3	350	270	250	110	20	350
4.	T4	400	320	250	110	20	350
5.	T5	450	370	300	110	32	350
6.	T6	500	420	300	110	32	350
7.	T7	500	420	400	110	32	350

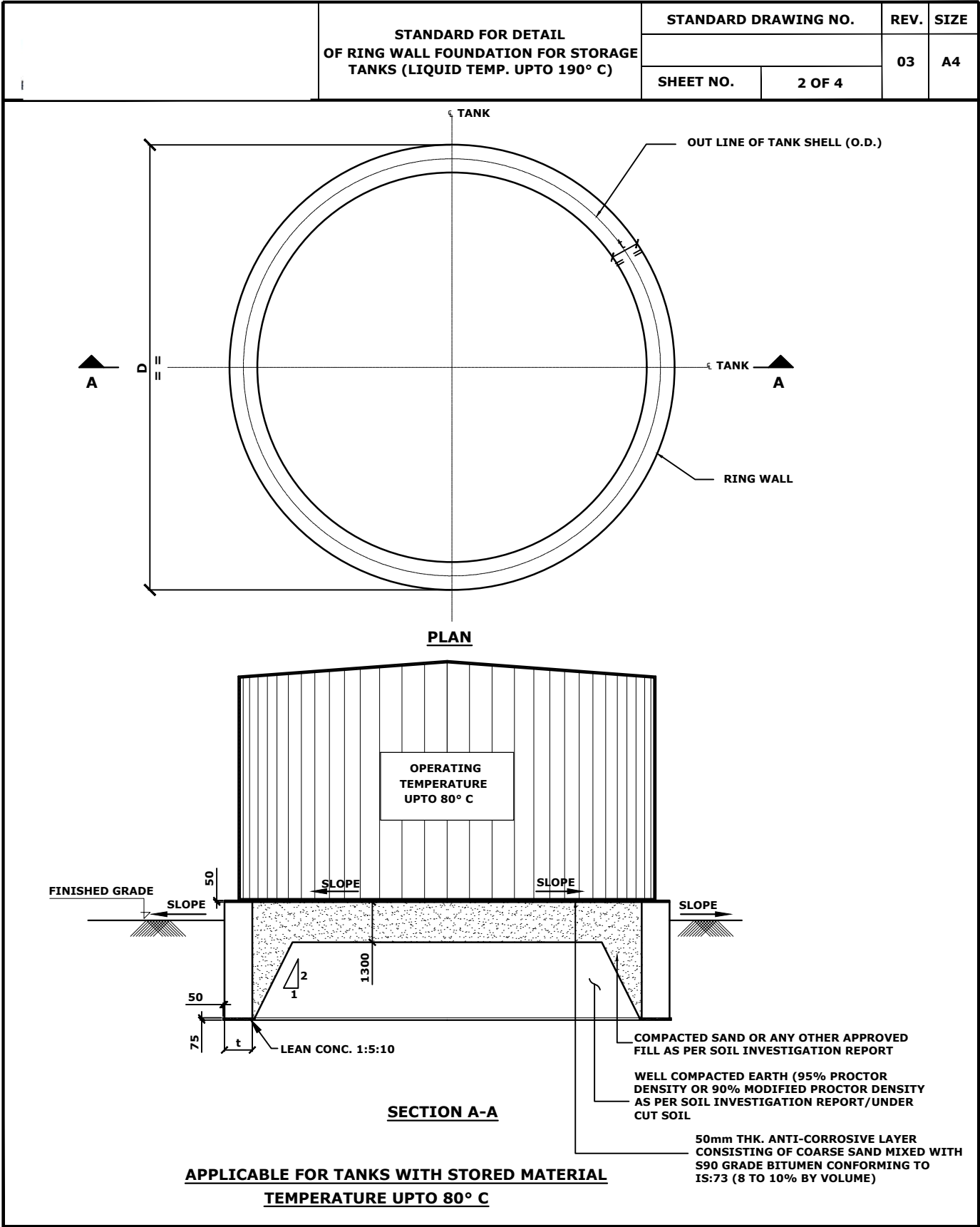


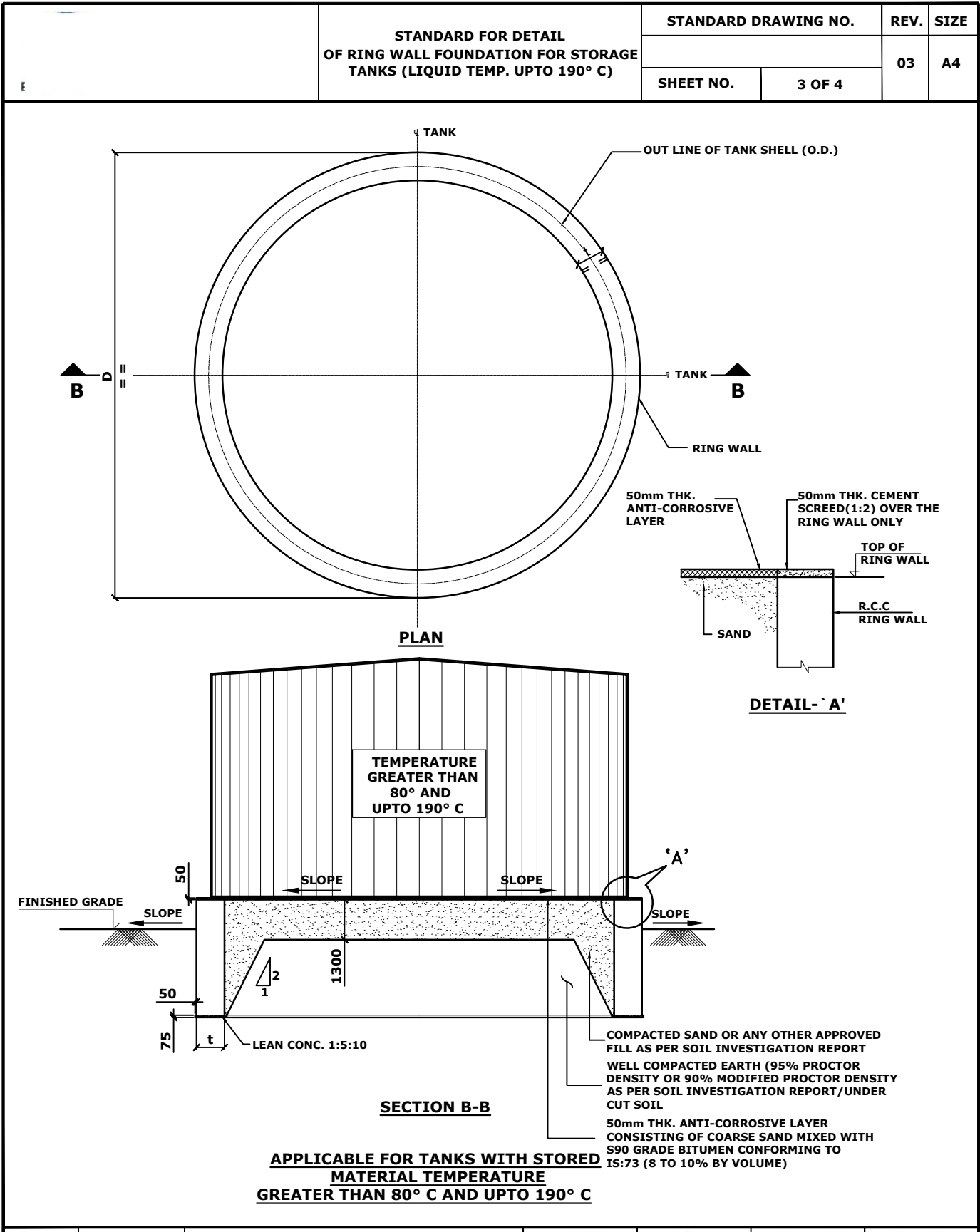
E	STANDARD FOR DETAIL OF RING WALL FOUNDATION FOR STORAGE TANKS (LIQUID TEMP. UPTO 190° C)	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 4		

NOTES:-

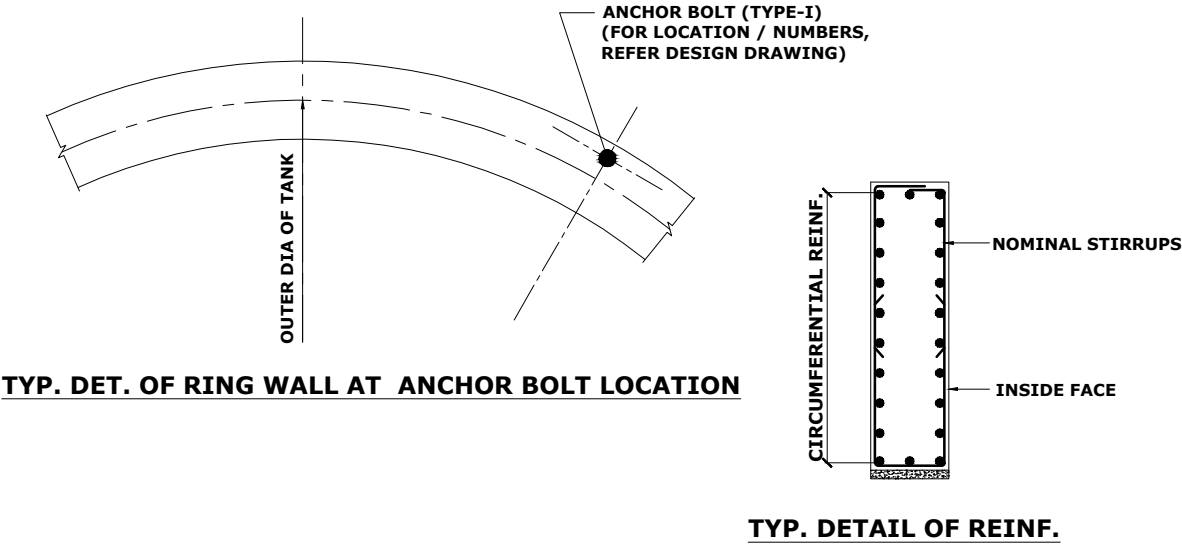
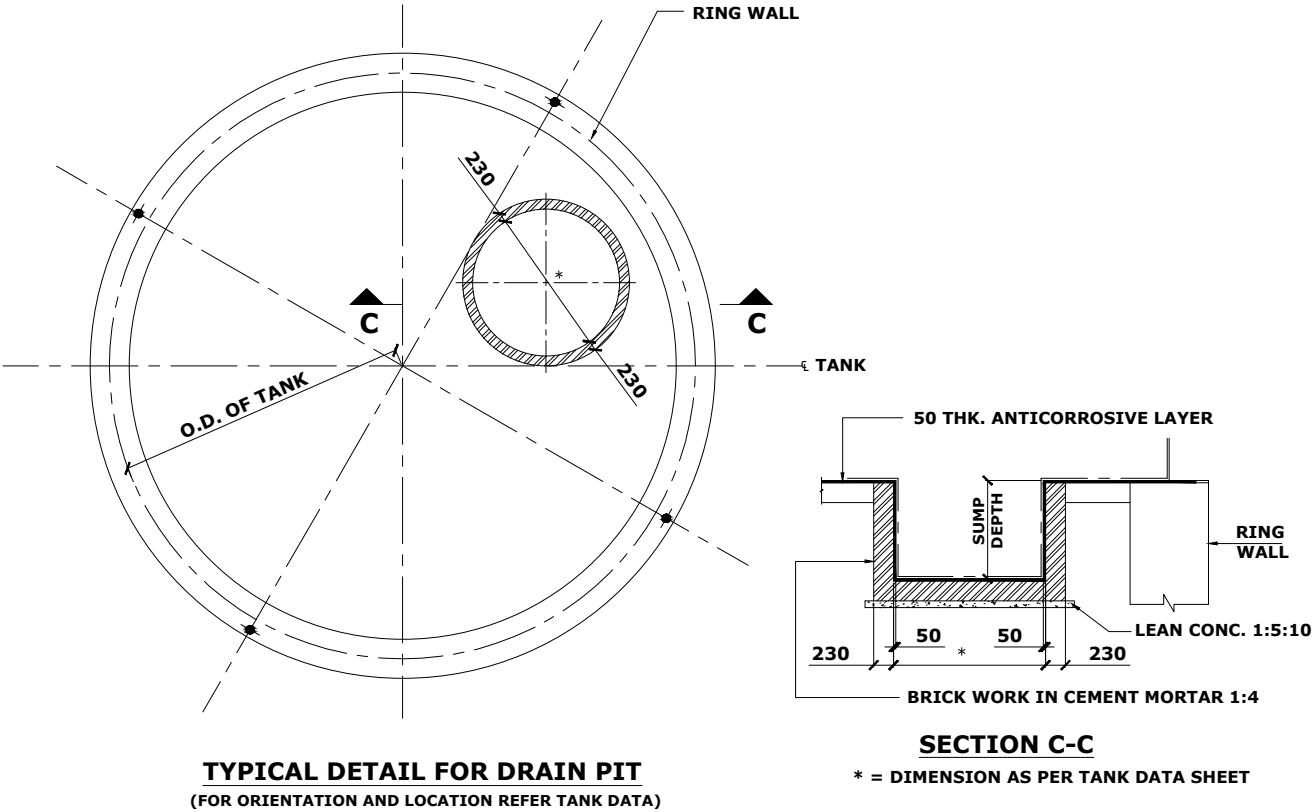
1. ALL DIMENSIONS ARE IN mm.
2. JOB SPECIFIC DRAWING SHALL BE REFERRED FOR THE FOLLOWING :-
 - RING BEAM DETAILS INCLUDING TOP & BOTTOM LEVEL.
 - ANCHOR BOLT LOCATION AND DETAILS.
 - DRAIN LOCATION AND OTHER DETAILS.
 - SPECIFIC REQUIREMENT ON GROUND TREATMENT.
3. SLOPE OF TOP OF SAND FILL AND ANTI-CORROSIVE LAYER SHALL MATCH WITH TANK BOTTOM.

THIS STANDARD IS NOT APPLICABLE FOR ACID / CAUSTIC / PRESSURISED TANKS AS WELL AS FOR TANKS WHERE STRESS RELIEVING IN POSITION IS ENVISAGED.

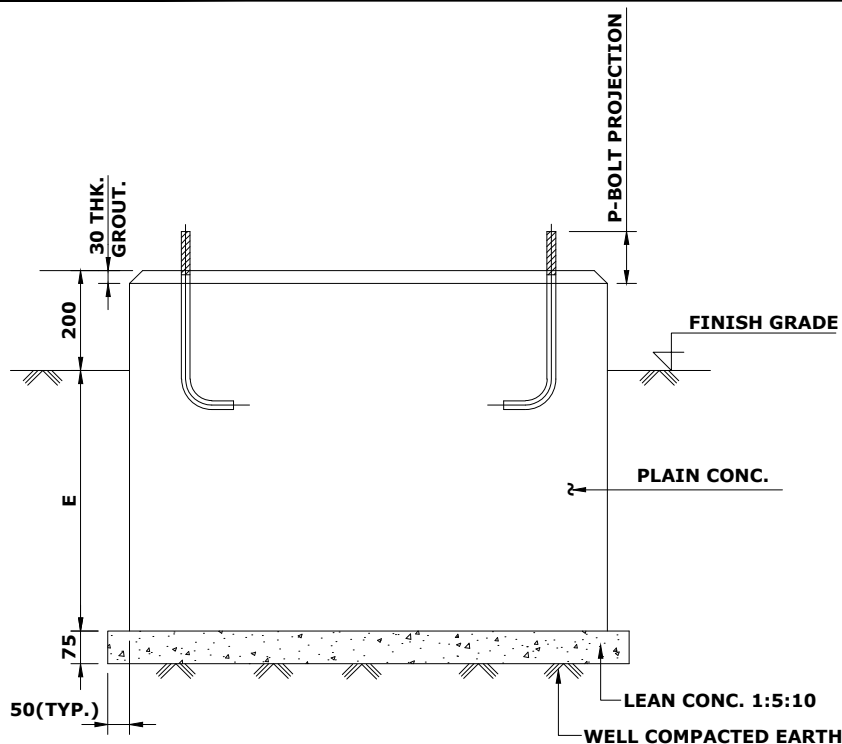




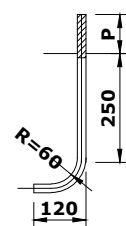
E	STANDARD FOR DETAIL OF RING WALL FOUNDATION FOR STORAGE TANKS (LIQUID TEMP. UPTO 190° C)	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	4 OF 4		



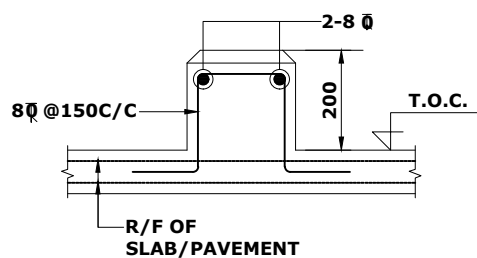
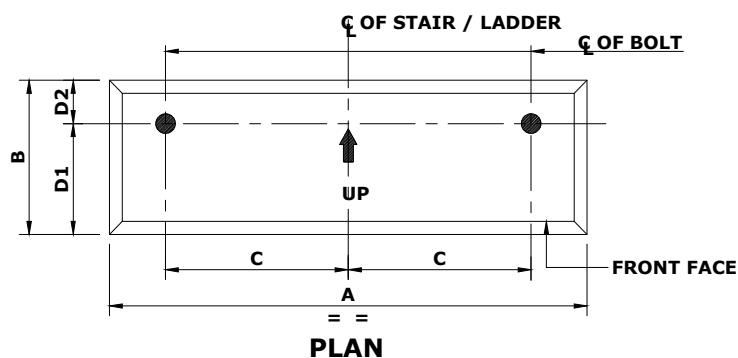
	STANDARD FOR DETAIL OF PEDESTAL FOR STAIR / LADDER	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



PEDESTAL FOR UNPAVED AREA



DETAIL OF L-BOLT

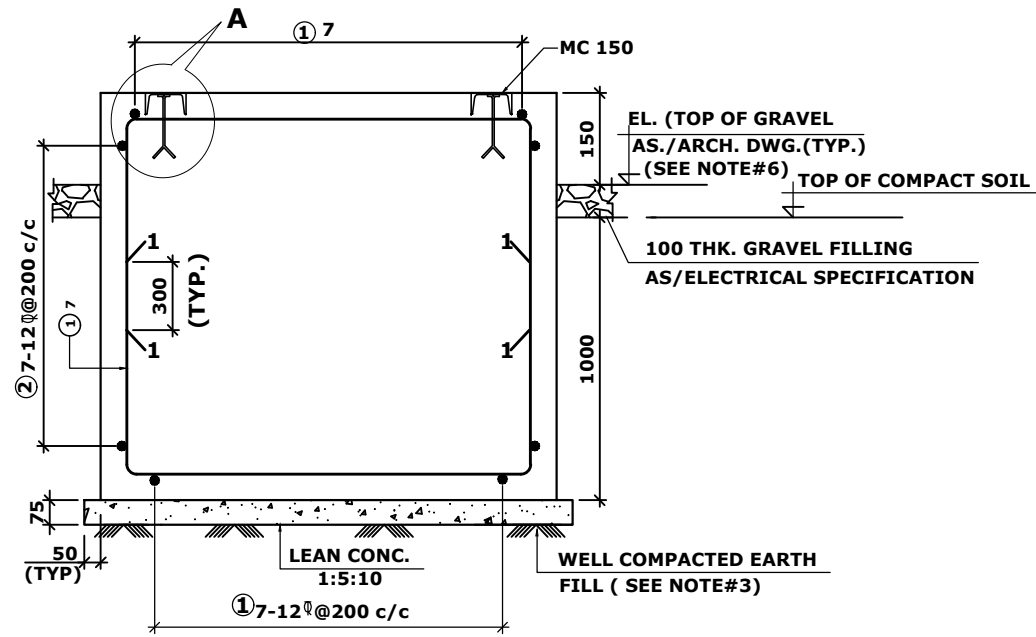


**PEDESTAL ON CONC.
PAVEMENT/R.C.C.SLAB**

S.NO.	ITEM	WIDTH	A	B	C	D1	D2	P	E	NUT	REMARKS
1	LADDER	450	750	300	280	200	100	90	500	SINGLE	
2	STAIR	750	1100	310	421	160	150	90	600	SINGLE	FOR STRINGER BEAM MC150
3	STAIR	750	1100	355	421	255	100	90	600	SINGLE	FOR STRINGER BEAM MC200

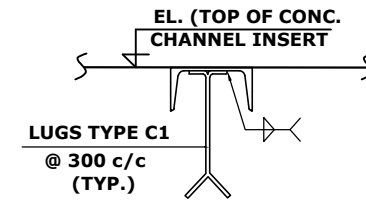
NOTES :-

1. IN CASE OF PEDESTAL OVER PILE CAP/RCC FOUNDATION, DIMENSION E TO SUIT ACCORDINGLY BUT NOT TO EXCEED VALUES GIVEN IN ABOVE TABLE.
2. CONCRETE GRADE SHALL BE AS PER GENERAL NOTES OF THE PROJECT BUT NOT LOWER THEN M25.
3. M20 L-BOLT AS PER DETAIL GIVEN ABOVE SHALL BE PROVIDED.
4. BOLTS SHALL BE TURNED FROM MILD STEEL BARS CONFORMING TO IS:2062 GRADE-A.
5. HEXAGONAL NUTS AND WASHERS SHALL CONFORM TO IS:1363 AND IS:3138.
6. THREADING SHALL BE COARSE AND CONFORM TO IS:1367 AND IS 4218.

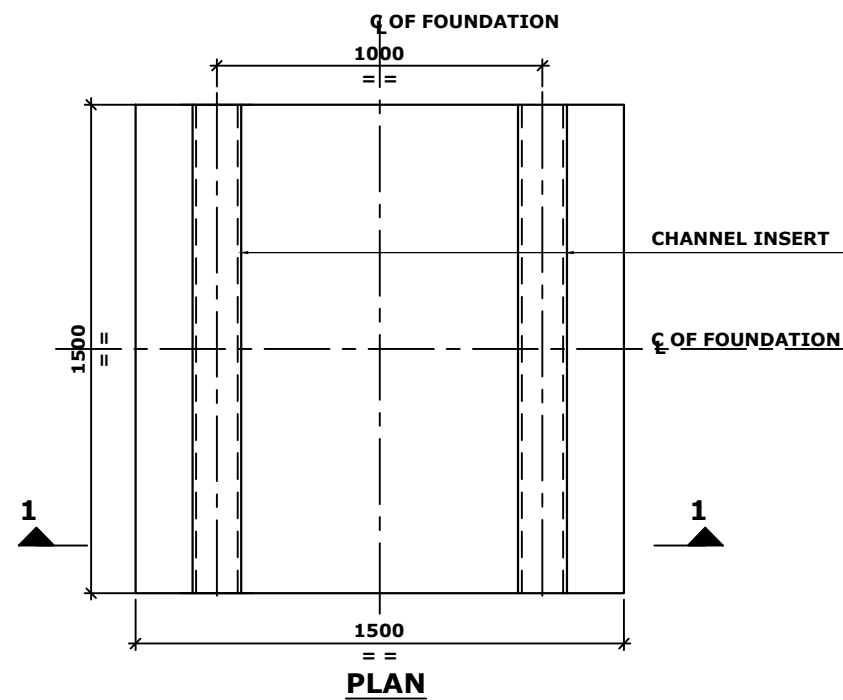


SECTION 1-1

FOR LOCATION & LAYOUT OF
TRANSFORMER FDN. REFER
RELEVANT ELECTRICAL DRGS.



DETAIL A



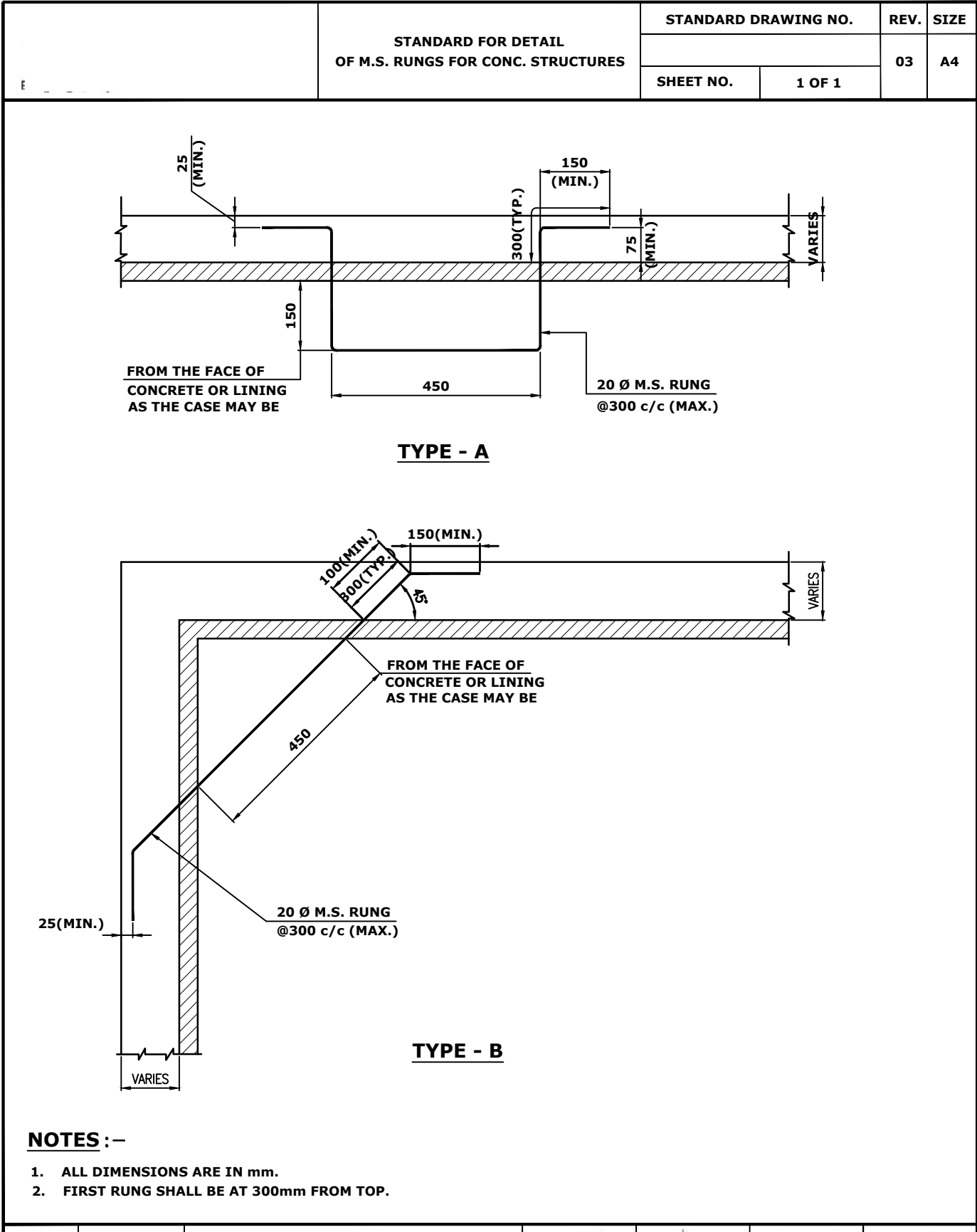
PLAN

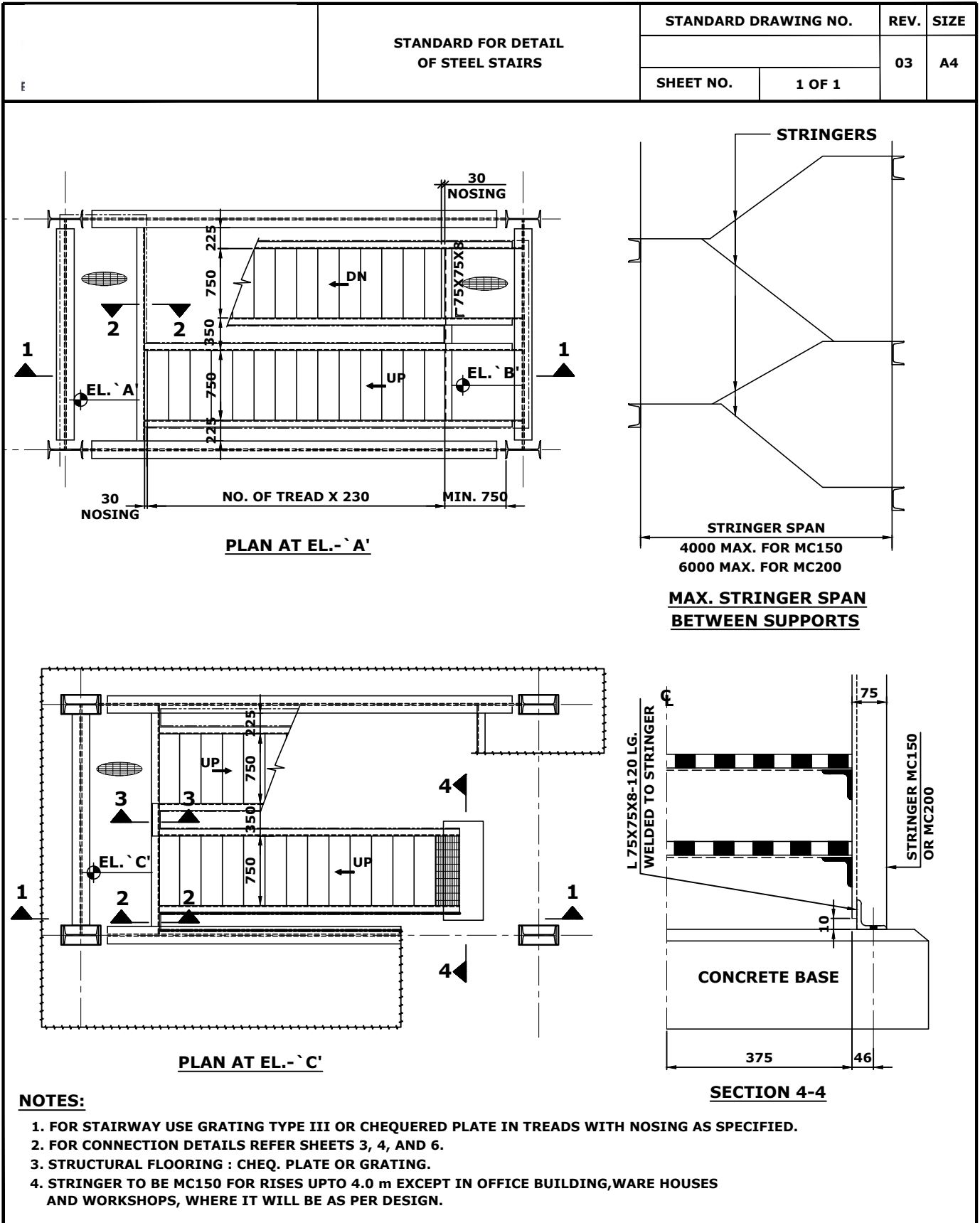
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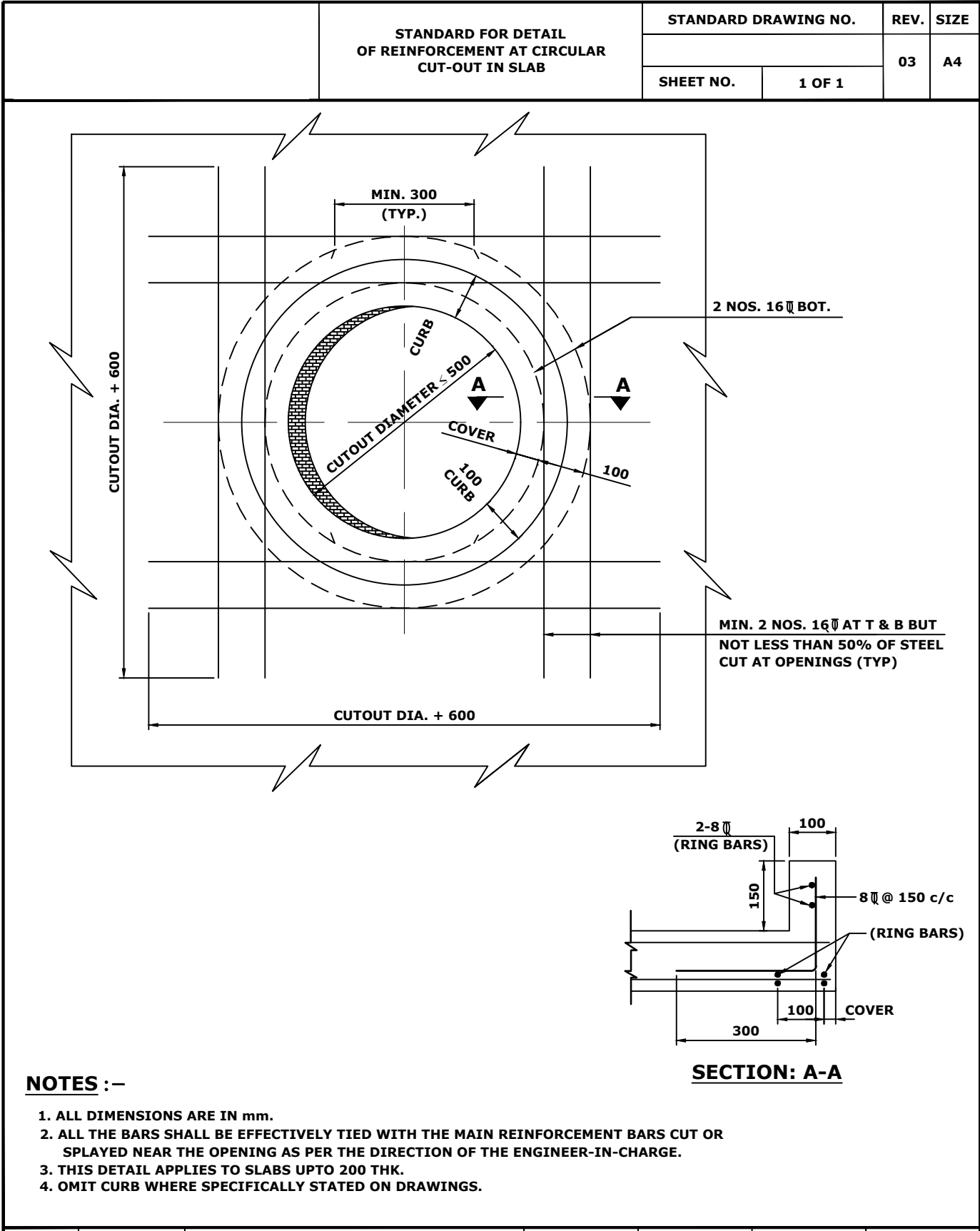
1. CONCRETE GRADE SHALL BE AS PER GENERAL NOTES OF THE PROJECT BUT NOT LOWER THAN M25.
2. R/F SHALL BE HIGH YIELD STRENGTH DEFORMED BARS CONFORMING TO IS:1786 GRADE Fe 415 (MIN.)
3. FOUNDATION SHALL REST ON WELL COMPACTED EARTH FILL AS/ SPECIFICATIONS.
4. SUITABLE END STOPPERS SHALL BE PROVIDED (BY OTHERS) AT CHANNEL ENDS AFTER THE INSTALLATION OF TRANSFORMER.
5. SBC OF SOIL CONSIDERED IS 5 MT/m² AND A MAXIMUM EQUIPMENT WEIGHT OF 6.5 MT.
6. TOP OF COMPACTED SOIL FILL SHALL BE 50mm ABOVE THE TOP OF APPROACH ROAD LEVEL.

TYPE	BAR MARK	Ø	A	B	C	CUT LENGTH (mm)	NOS. REQD.	TOTAL LENGTH (mm)	UNIT WT. IN kg./m	QUANTITIES FOR ONE SET				REMARKS
										HYD. BARS (kg.)	CONC. 1:5:10 (m ³)	STRL. CONC. (m ³)	STRL. STEEL (kg.)	
	①	12	1400	750	750	2825	28	79100	0.89	108.00	0.34	3.00	50.00	
	②	12	1400	850	850	3025	14	42350	0.89					

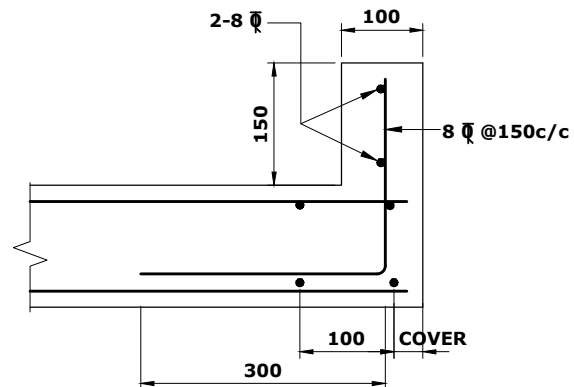
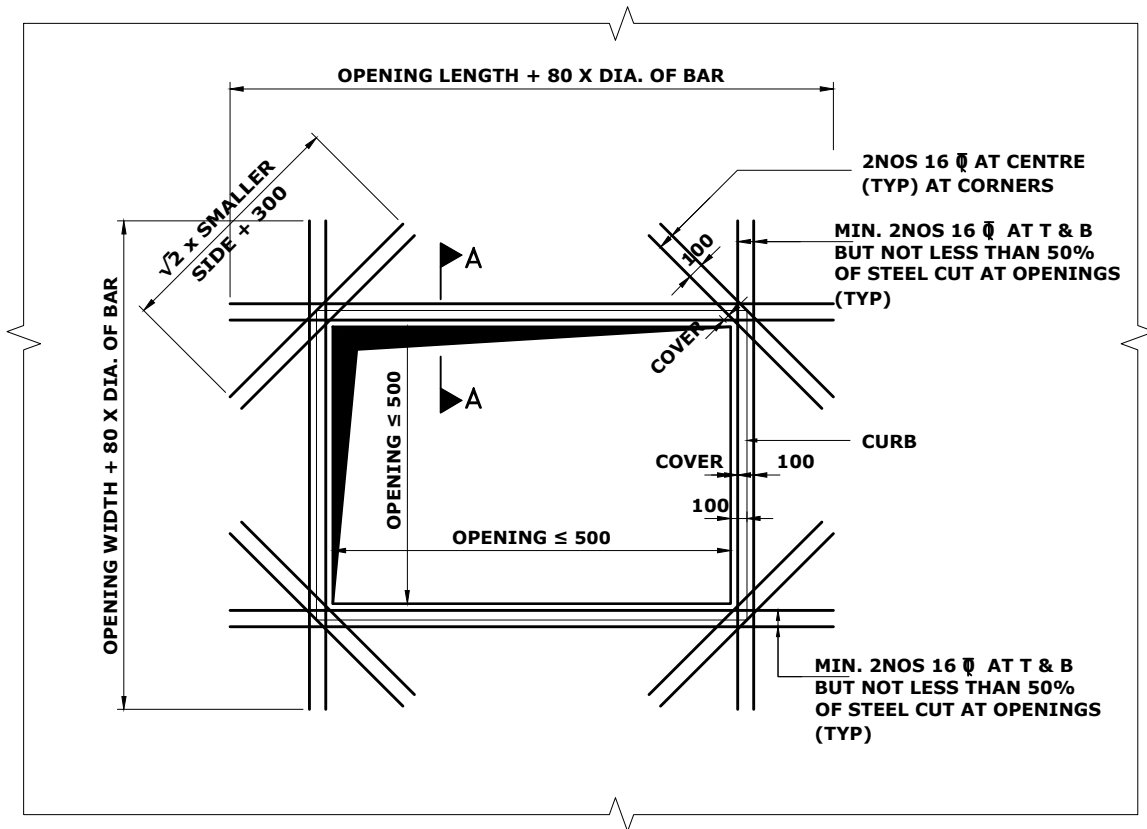
STANDARD FOR DETAIL
OF BLOCK FOUNDATION FOR
TRANSFORMERS (UPTO 2000KVA RATING)







STANDARD FOR DETAIL OF REINFORCEMENT AT SQ. / RECT. CUT-OUT IN SLAB	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	1 OF 1		



SECTION: A-A

NOTES:-

1. ALL DIMENSIONS ARE IN mm.
2. EXTRA BARS MAY BE OMITTED IF A BEAM IS PROVIDED AT THE RELEVANT EDGE.
3. CORNER BAR MAY BE OMITTED IF TWO BEAMS MEET AT THE RELEVANT CORNER.
4. ALL THE BARS MENTIONED ABOVE SHALL BE EFFECTIVELY TIED WITH THE MAIN REINFORCEMENT BARS CUT OR SPLAYED NEAR OPENING AS DIRECTED BY ENGINEER-IN-CHARGE.
5. OMIT CURB WHERE SPECIFICALLY STATED ON DRAWING.
6. THIS DETAIL APPLIES TO SLABS UPTO 200 THK.

	STANDARD FOR DETAIL OF LUGS	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		

TYPE-`A1'

TYPE-`B'

TYPE-`A2'

TYPE-`C1'

TYPE-`C2'

TYPE-`C3'

TYPE-`C4'

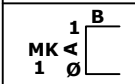
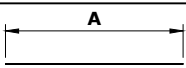
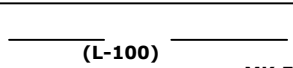


1. ALL DIMENSIONS ARE IN MM EXCEPT LEVELS WHICH ARE IN METRES.
2. BOX CULVERT ARE DESIGNED FOR I.R.C CLASS `A' & CLASS `AA' LOADING.
3. ALL REINFORCEMENT SHOWN THUS SHALL BE OF COLD TWISTED. DEFORMED BARS CONFORMING TO IS 1786-LATEST.
4. BARS BENDING SHALL CONOIRM TO IS:2502
5. REINFORCEMENT CONCRETE SHALL BE M:25 CONFORMING TO IS : 456 LATEST
6. ALL BRICK WORK SHALL BE IN 1:4 CEMENT MORTAR AS PER IS : 2212
7. OVERLAP FOR BARS SHALL BE 50D AND SHALL BE STAGGERED.
8. FOR AGGRESSIVE SOIL PCC M20 AND RCC M35 SHALL BE USED.



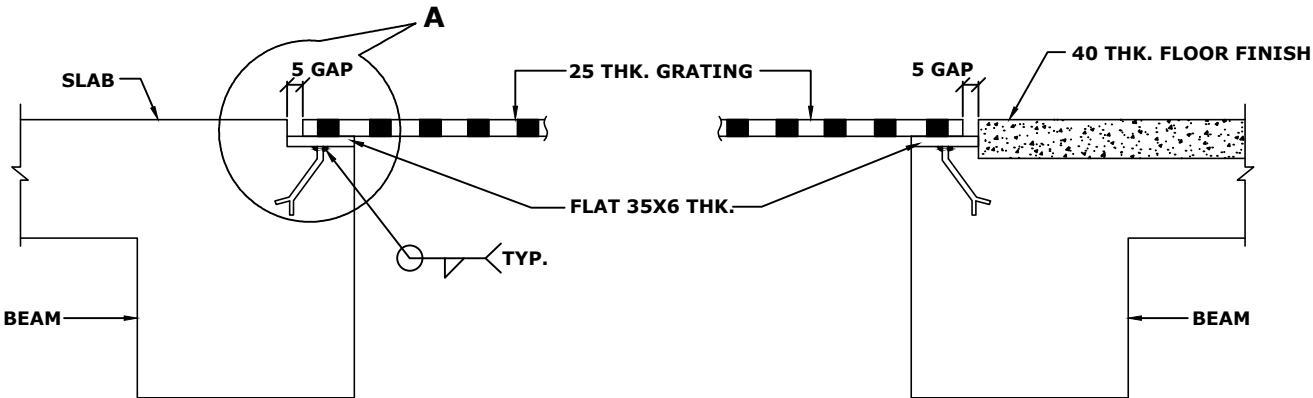
NOTES:-
BARS OF VARYING DIMENSIONS FOR DIFFERENT CULVERTS DEPENDING UPON THE LENGTH OF CULVERT.

STANDARD DIMENSIONS OF BOX CULVERT WITH BILLS OF MATERIAL							
SCHEDULE OF CULVERT		PER METRE LENGTH OF CULVERT			WING WALL & PARAPET PER CULVERT		
TYPE	WIDTH DEPTH (BXH)	WEIGHT OF REINFORCEMENT	CONC. 1:5:10	CONC. M-25	CONC. 1:4:8	BK.WALL IN 1:4 MORTAR	1:3 CEM PLASTER -TER 13mm THK.
I	1700X850	$\overline{\text{Q}}$ 16 0.1T $\overline{\text{Q}}$ 10 0.066T	0.21M ³	1.53M ³	0.25M ³	2.44M ³	10.70M ³
II	2000X1000	$\overline{\text{Q}}$ 16 0.16T $\overline{\text{Q}}$ 15 0.071T	0.27M ³	1.75M ³	0.25M ³	2.77M ³	14.22M ³
III	2200X1100	$\overline{\text{Q}}$ 16 0.129T $\overline{\text{Q}}$ 10 0.078T	0.291M ³	1.90M ³	0.25M ³	3.0M ³	15.18M ³
IV	2600X1300	$\overline{\text{Q}}$ 16 0.144T $\overline{\text{Q}}$ 10 0.089T	0.33M ³	2.20M ³	0.25M ³	3.44M ³	17.10M ³

REINFORCEMENT BENDING SCHEDULE					
					
MK 1		MARK 2 3 4		MK.5,6,7&8	
MARK	TYPE OF CULVERT	STEEL DIA & SPACING	BENDING SCHEDULE		CUT LENGTH
			A	B	
MK-1	I	Ø16 150C/C	1250	725	2704
	II	Ø16 125C/C	1400	850	3004
	III	Ø16 100C/C	1500	930	3264
	IV	Ø16 100C/C	1700	1070	3744
MK-2	I	Ø16 150C/C	2100		2100
	II	Ø16 125C/C	2400		2400
	III	Ø16 100C/C	2600		2600
	IV	Ø16 100C/C	3000		3000
MK-3	I	Ø10 200C/C	1250		1250
	II	Ø10 200C/C	1400		1400
	III	Ø10 200C/C	1500		1500
	IV	Ø10 200C/C	1700		1700
MK-4	I	Ø10 200C/C	2100		2100
	II	Ø10 200C/C	2400		2400
	III	Ø10 200C/C	2600		2600
	IV	Ø10 200C/C	3000		3000
MK-5	I	Ø10 200C/C	BARS OF VARYING LENGTH		
MK-6	II	Ø10 100C/C			
MK-7	III	Ø10 100C/C			
MK-8	IV	Ø10 200C/C			

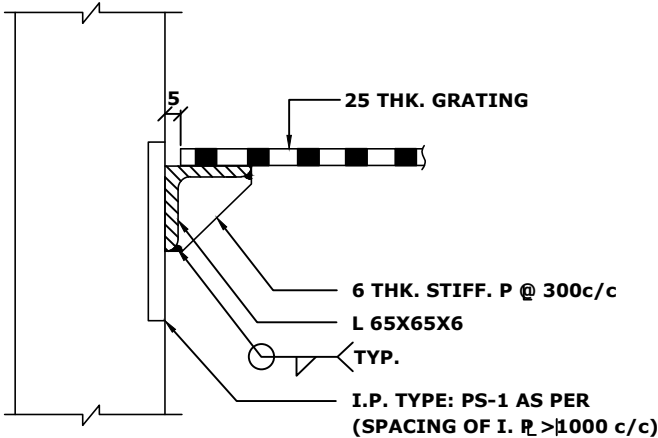
STANDARD FOR DETAIL OF BOX CULVERT TYPE- I,II,III & IV

	STANDARD FOR DETAIL OF TYPICAL GRATING SPORT.	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		

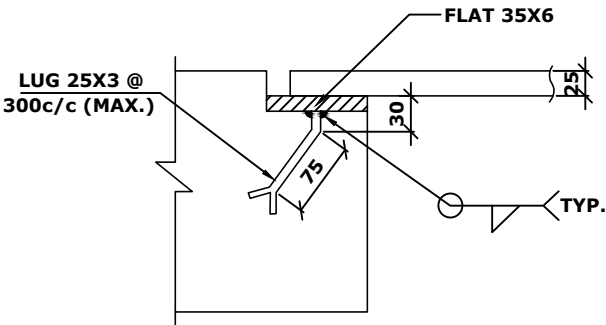


**GRATING SUPPORT OVER BEAM
WITHOUT FLOOR FINISH**

**GRATING SUPPORT OVER BEAM
WITH FLOOR FINISH**



GRATING SUPPORT ON WALL/COLUMN

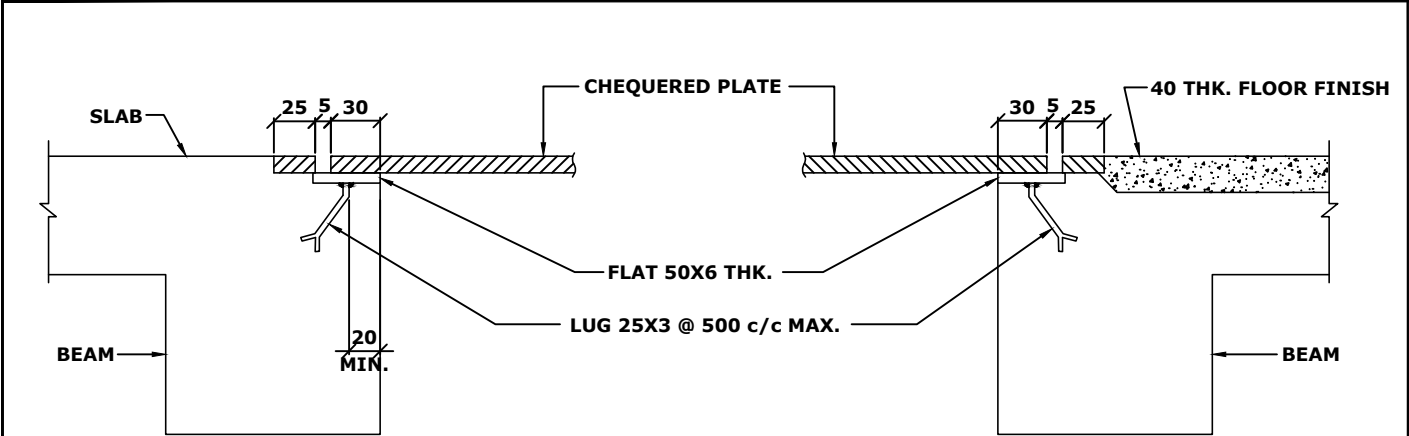


DETAIL `A`

NOTES:

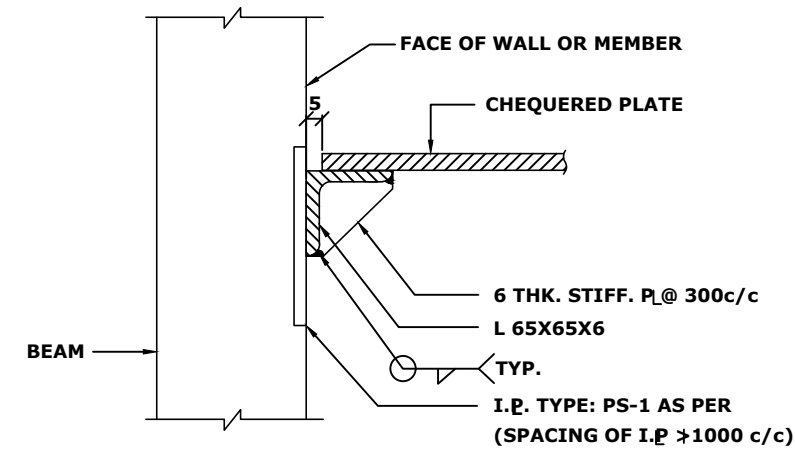
1. M.S. LUGS SHALL BE SUITABLY BENT IF CONCRETE THICKNESS IS LESS THAN THE LENGTH OF LUGS OR LUGS INTERFERE WITH R/F BARS.
2. ALL DIMENSIONS ARE IN mm.

	STANDARD FOR DETAIL TYPICAL CHEQUERED PLATE SUPPORT.	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



**CHQD. PL SUPPORT OVER BEAM
WITHOUT FLOOR FINISH**

**CHQD. PL SUPPORT OVER BEAM
WITH FLOOR FINISH**



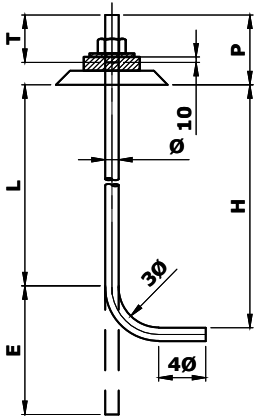
GRATING SUPPORT ON WALL/COLUMN

NOTES:

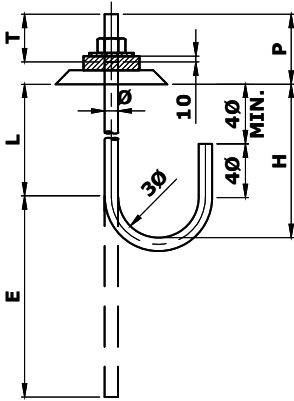
1. M.S. LUGS SHALL BE SUITABLY BENT IF CONCRETE THICKNESS IS LESS THAN THE LENGTH OF LUGS OR LUGS INTERFERE WITH R/F BARS.
2. ALL DIMENSIONS ARE IN mm.

	M.S. ANCHOR BOLT ASSEMBLIES	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 4		

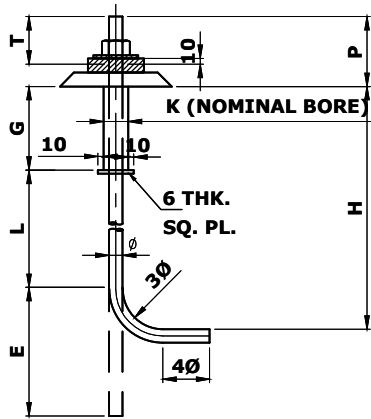
GRADE OF CONC.	BOLT TYPE	DIMENSIONS MM	BOLT DIA (Ø) IN MM											
			10	12	16	18	20	22	24	27	30	33	36	39
M25	I & III	L	200	250	400	400	450	550	550	650	700	800	850	950
		E	95	115	155	170	190	210	230	255	285	315	345	370
		H	TYPE-I	230	286	448	454	510	616	622	731	790	899	1067
			TYPE-III	380	436	598	604	810	916	922	1181	1240	1349	1408
	II & IV	L	150	150	250	250	300	350	350	450	500	550	600	650
		E	150	180	240	270	300	330	360	405	450	495	540	585
		H	TYPE-II	180	186	298	304	360	416	422	531	590	649	708
			TYPE-IV	330	336	440	454	660	716	722	981	1040	1099	1158
M30	I & III	L	180	220	315	335	390	445	470	550	600	680	735	815
		E	95	115	155	170	190	210	230	255	285	315	345	370
		H	TYPE-I	210	260	365	390	450	515	545	635	690	780	845
			TYPE-III	360	410	515	540	750	815	845	1085	1140	1230	1295
	II & IV	L	150	150	200	200	250	275	300	350	375	425	450	500
		E	150	180	240	270	300	330	360	405	450	495	540	585
		H	TYPE-II	180	190	250	255	310	345	375	435	465	525	560
			TYPE-IV	330	340	400	405	610	645	675	885	915	975	1010



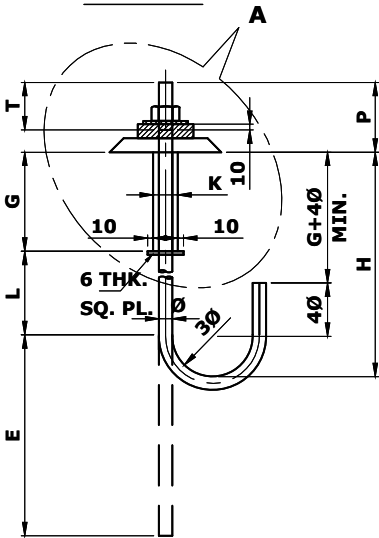
TYPE-I



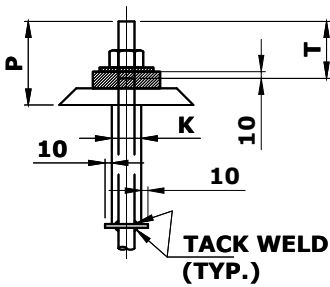
TYPE-II



TYPE-III



TYPE-IV



DETAIL-A
(TYP.)

[illegible]

GRADE OF CONC.	BOLT TYPE	DIMENSIONS MM		BOLT DIA (Ø) IN MM																						
				10	12	16	18	20	22	24	27	30	33	36	39	42	45	48	52	56	60	64	68	72		
M25&M30	V & VI	E		50	60	70	75	80	90	95	105	110	120	130	140	150	155	165	180	190	200	215	225	240		
	V , VI ,	K		50	50	50	50	80	80	80	80	80	80	100	100	100	100	125	125	125	150	150	150			
		THREADED (T)		40	45	55	60	60	65	70	75	80	90	95	100	105	110	120	125	135	140	150	160	165		
		LENGTH		50	60	70	75	80	90	95	105	110	120	130	140	150	155	165	180	190	200	215	225	240		
	VII	t3						16	16	16	16	16	16	16	16	16	16	20	20	20	20	20	20			
	VIII	t3													16	20	20	25	25	28	32	32	32			
	VII & VIII	G		150	150	150	150	300	300	300	450	450	450	450	450	450	450	450	450	450	600	600	600			
	IX	L		80	100	150	170	200																		
	M25		L		185	220	310	335	385	435	460	535	590	660	720											
M30		L		150	150	200	225	250	275	300	350	375	425	450												

- NOTES : -
1. BOLTS SHALL BE MARKED ON THE DRAWING AS UNDER :

A

B

C

D

P

PROJECTION ABOVE CONCRETE

SINGLE NUT (N1) OR DOUBLE NUT (N2)

DIAMETER OF BOLT

TYPE OF BOLT

NO OF BOLTS

e.g. 6-IV-M27-N1-200

GR-A.

2. BOLTS SHALL BE TURNED FROM M.S. ROUNDS CONFORMING TO IS:2062

3. NUTS AND WASHERS SHALL CONFORM TO IS:1363 AND IS:3138.

4. THREADED SHALL BE COARSE CONFORMING TO IS:1367 AND IS:4218

5. ANCHOR BOLTS SHALL BE SET ACCURATELY AND HELD IN POSITION BY TEMPLATE BEFORE CONCRETING.

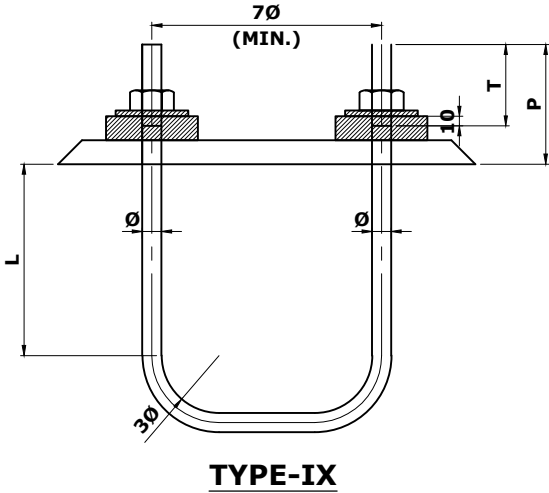
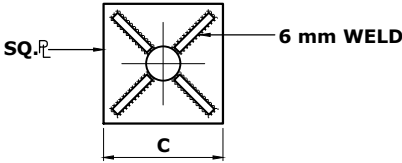
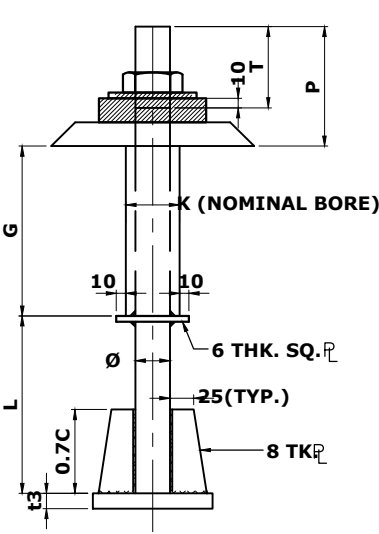
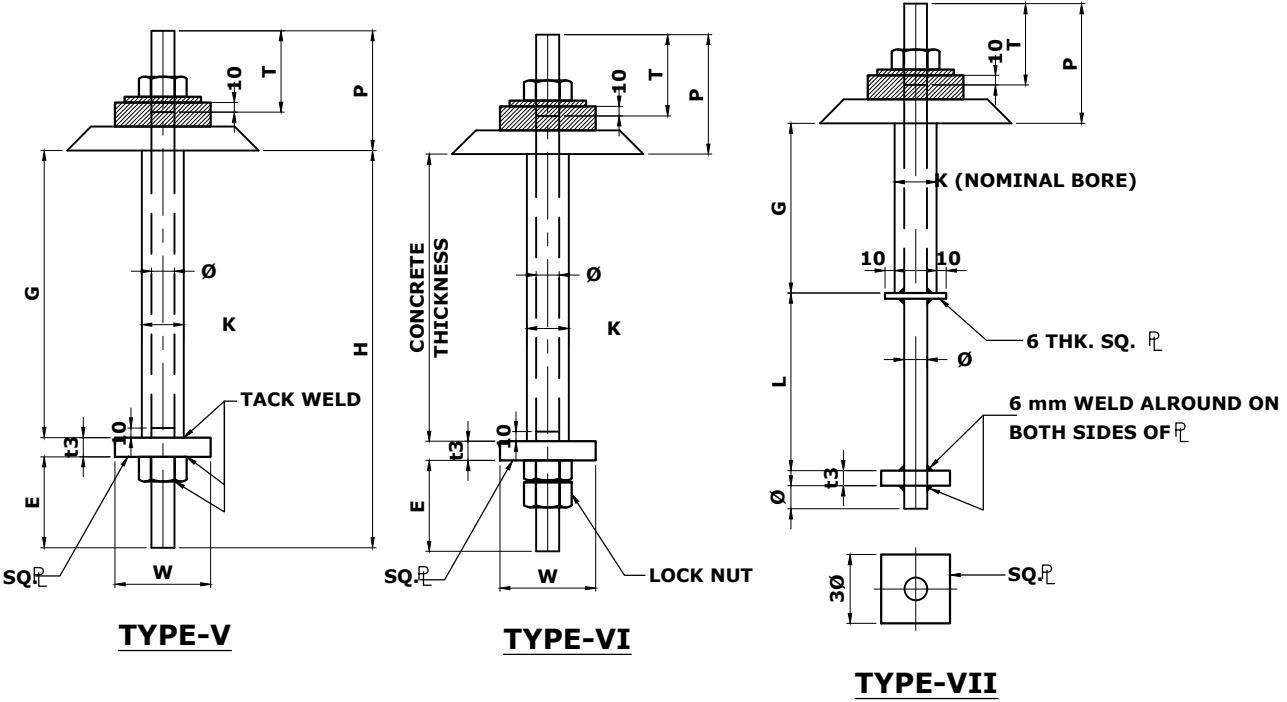
6. 6 THK. SQ. PLATE AT THE BOTTOM OF SLEEVE SHALL BE TACK WELDED WITH BOLTS AND SLEEVE FOR BOLT TYPE III, IV, VII AND VIII.

7. SLEEVE SHALL BE M.S. TUBES (MEDIUM) AS PER IS:1239.

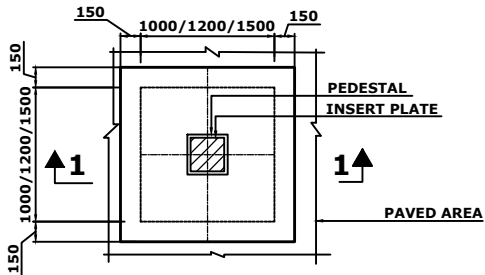
8. REFER DESIGN DRAWINGS FOR PROJECTION (P) OF BOLT ABOVE TOP OF ROUGH CONCRETE AND NUMBER (A) OF BOLTS.

9. ANCHOR BOLTS SHALL BE TEMPERED BEFORE MACHINING IF MADE BY FORGING. THE FORGING TEMPERATURE SHALL BE ABOVE 900° C BUT LOWER THAN SUPER HEATING TEMPERATURE.

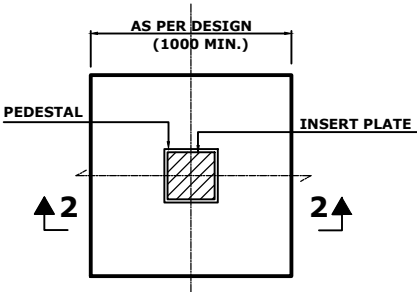
	M.S. ANCHOR BOLT ASSEMBLIES	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	4 OF 4		



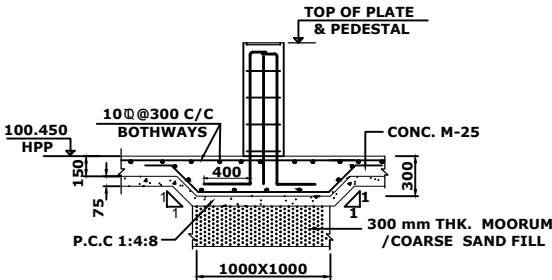
	STANDARD FOR DETAIL OF RCC PIPE SUPPORT	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



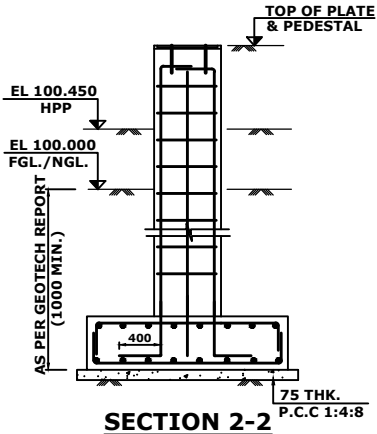
FOUNDATION PLAN
(FOUNDATION LOAD LESS THAN 8 KN)



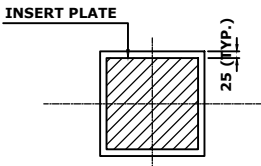
FOUNDATION PLAN
(FOUNDATION LOAD > 8 KN AND < 15 KN)



SECTION 1-1

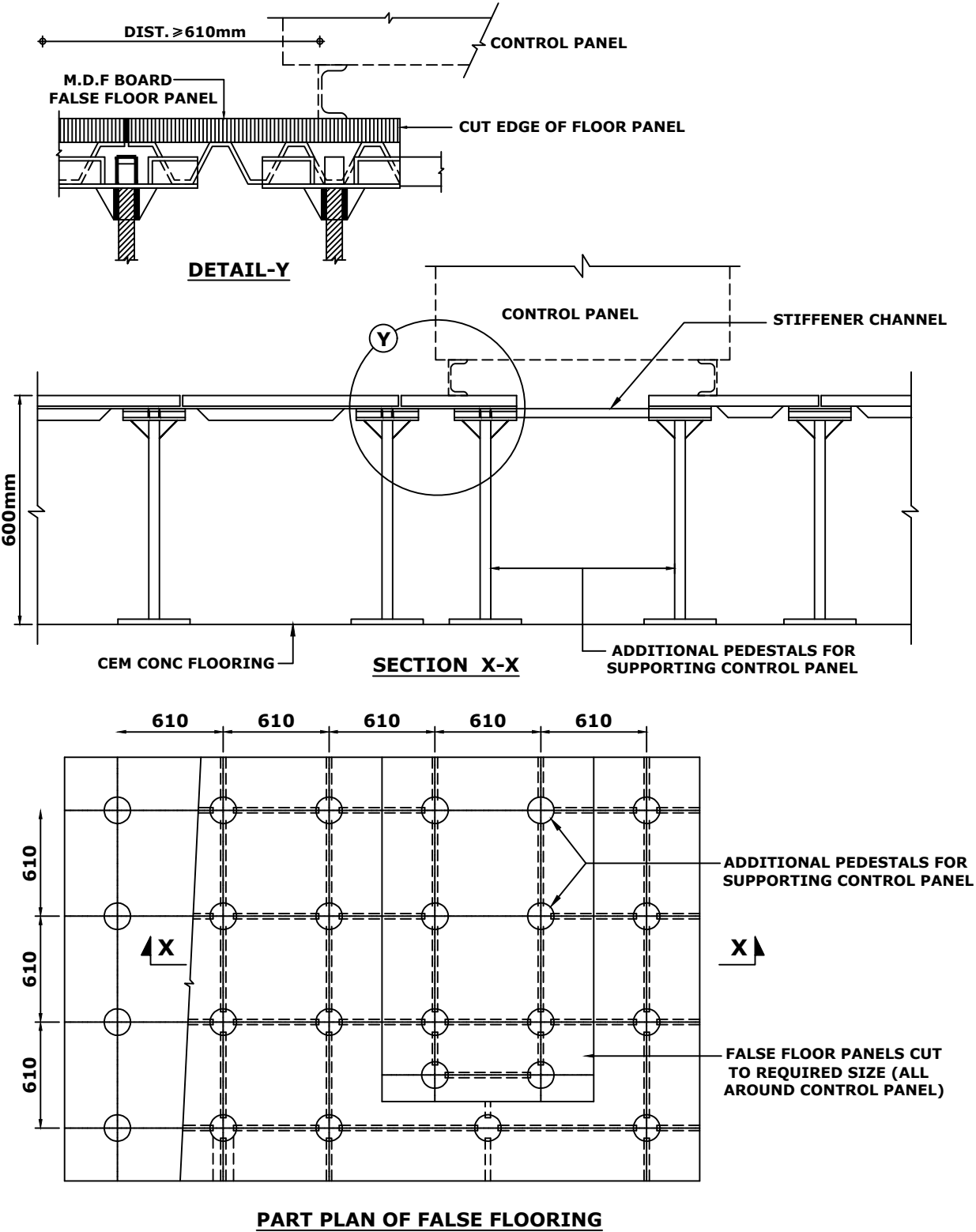


SECTION 2-2

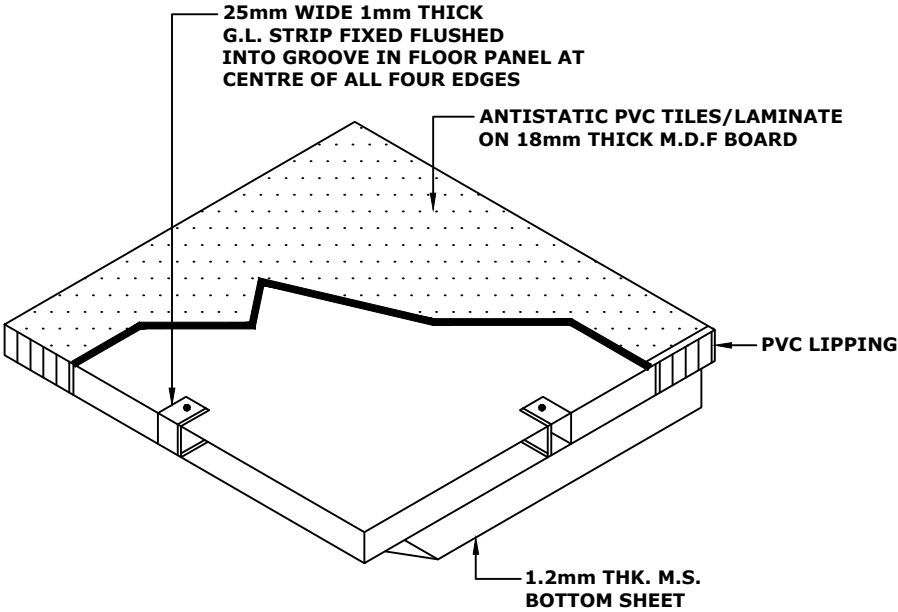


PEDESTAL PLAN

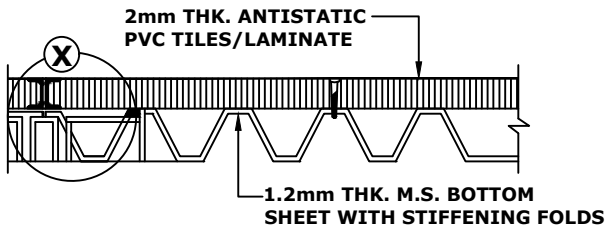
	STANDARD FOR DETAIL OF FALSE FLOORING	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 3		



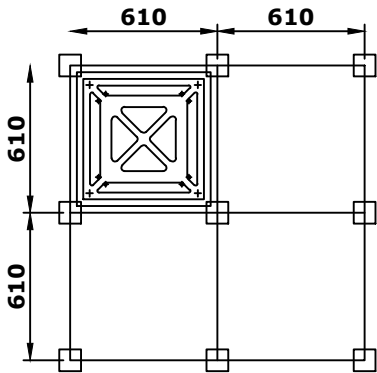
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		SHEET NO.	2 OF 3		



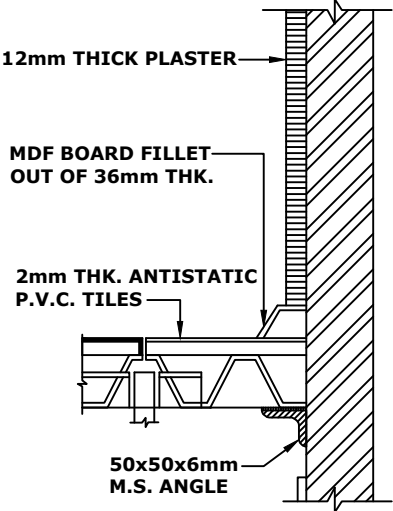
ISOMETRIC VIEW OF A PANEL



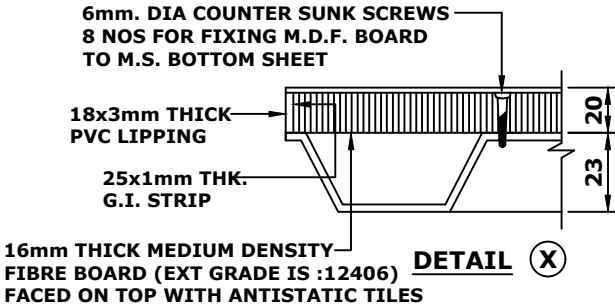
SECTION D-D



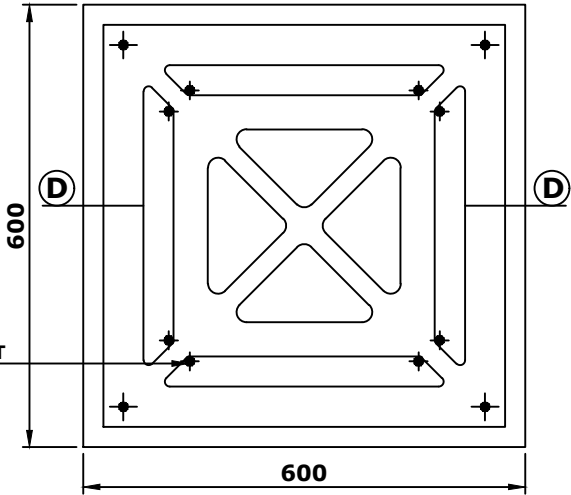
PART OF GRID PLAN



DET. OF JUNCTION WITH THE WALL

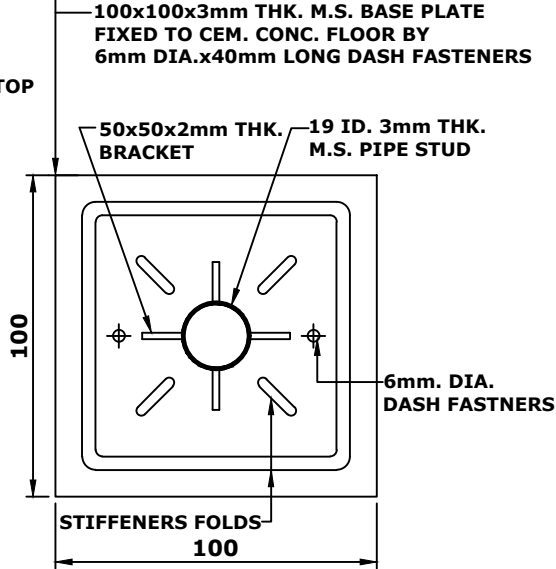
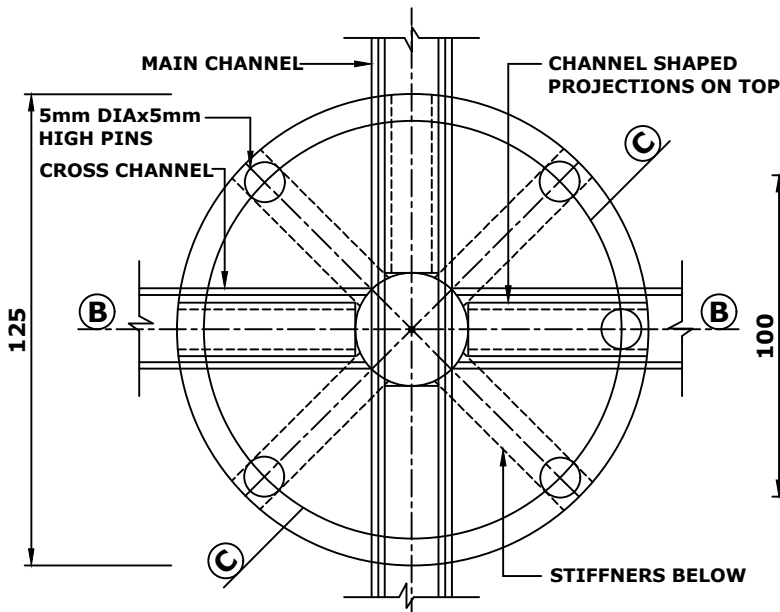
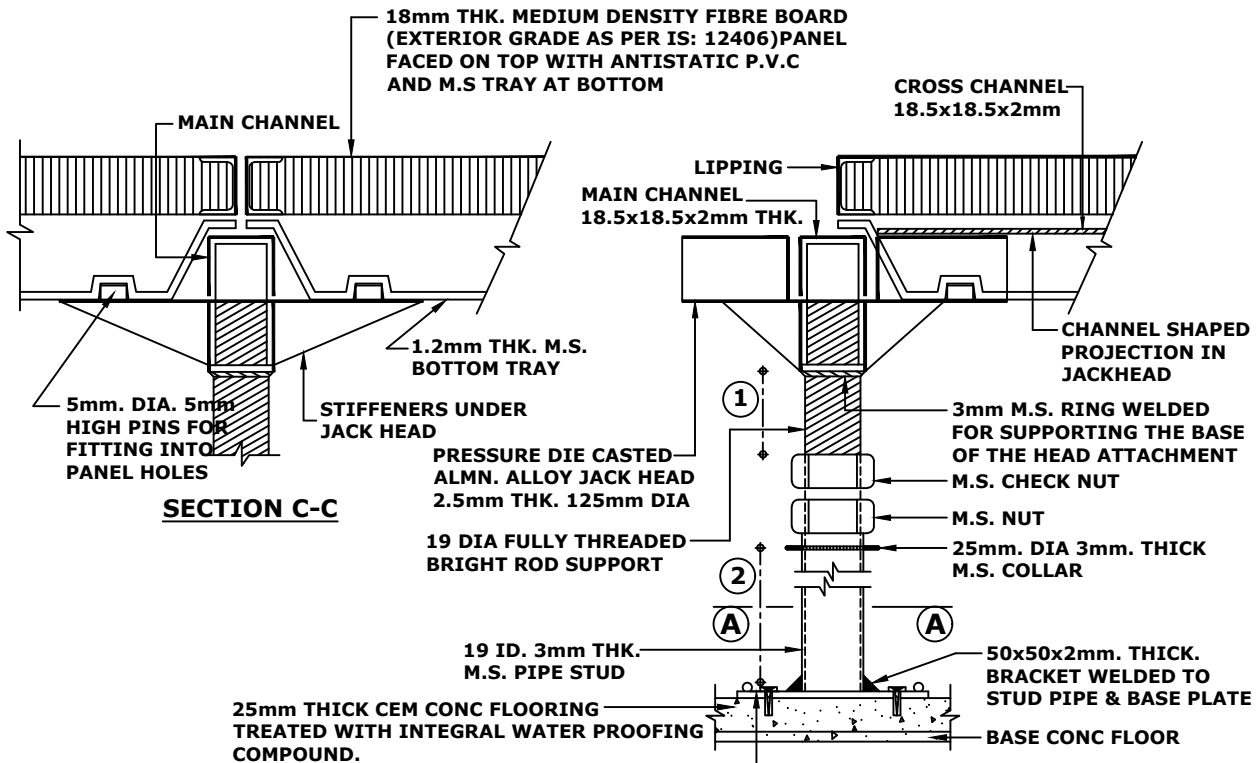


6mm DIA HOLES IN M.S. BOTTOM SHEET FOR FITTING INTO JACKHEAD PINS



PLAN OF FLOOR PANEL

STANDARD FOR DETAIL OF FALSE FLOORING	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	3 OF 3		

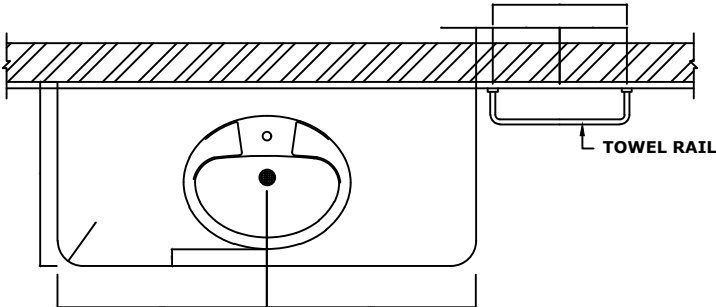


- LEGEND:-**
- ① 25mm. MAX ADJUSTMENT
 - ② 150mm. MIN TO 175mm MAX. SECURE IN M.S. PIPE STUD

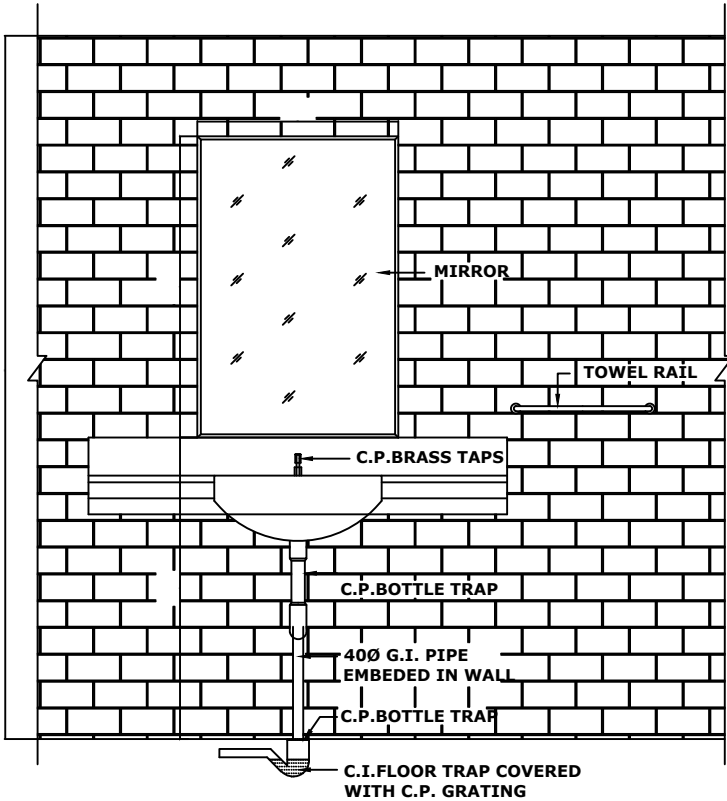
PLAN OF JACK HEAD

SECTION PLAN A-A

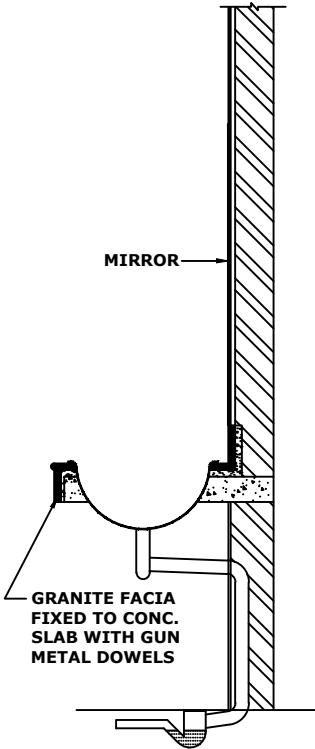
E	STANDARD FOR DETAIL OF WASH BASIN FIXING DETAIL	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



PLAN

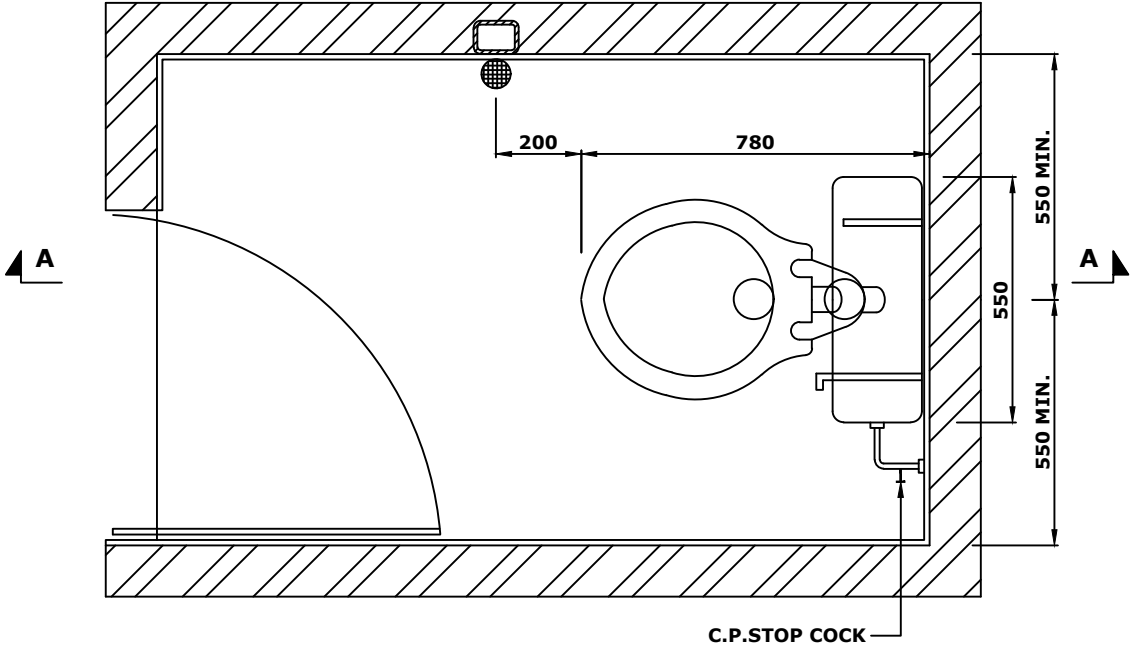


ELEVATION

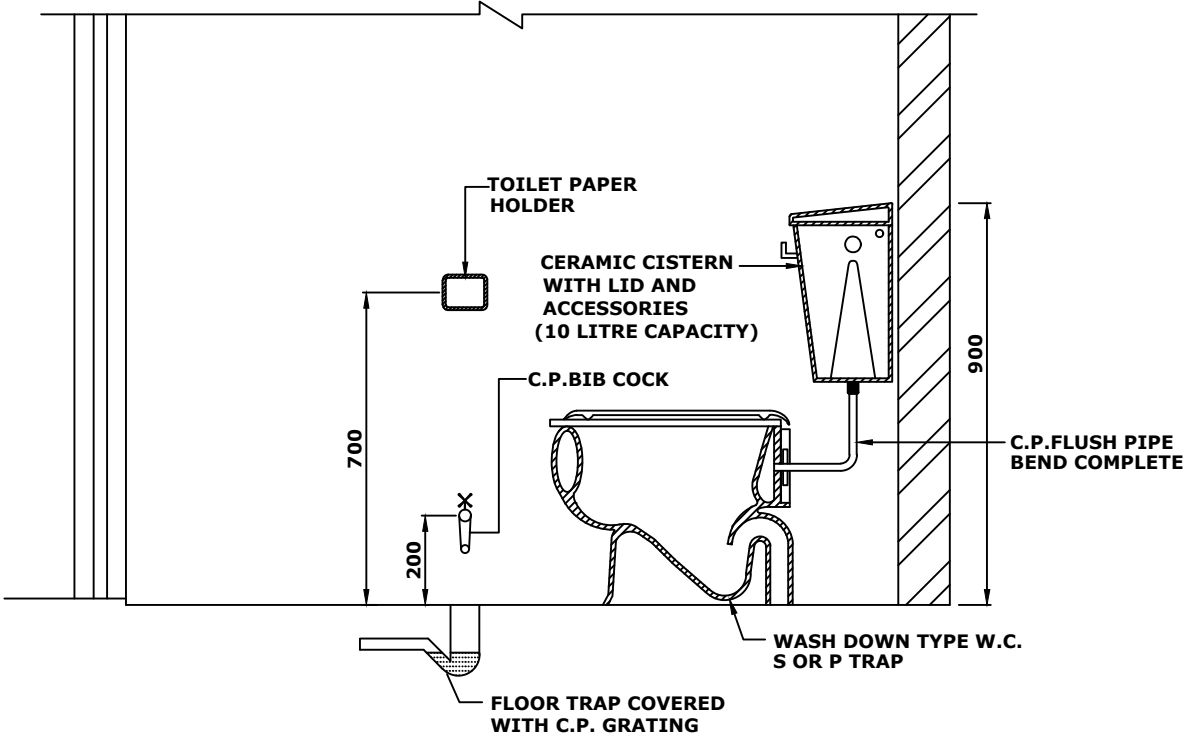


SECTION

Ei	STANDARD FOR DETAIL OF EUROPEAN TYPE W.C. FIXING DETAIL	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		

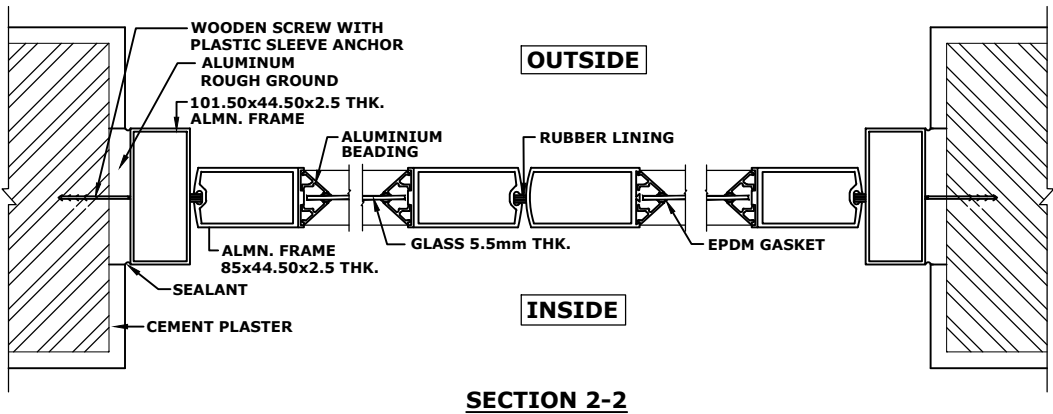
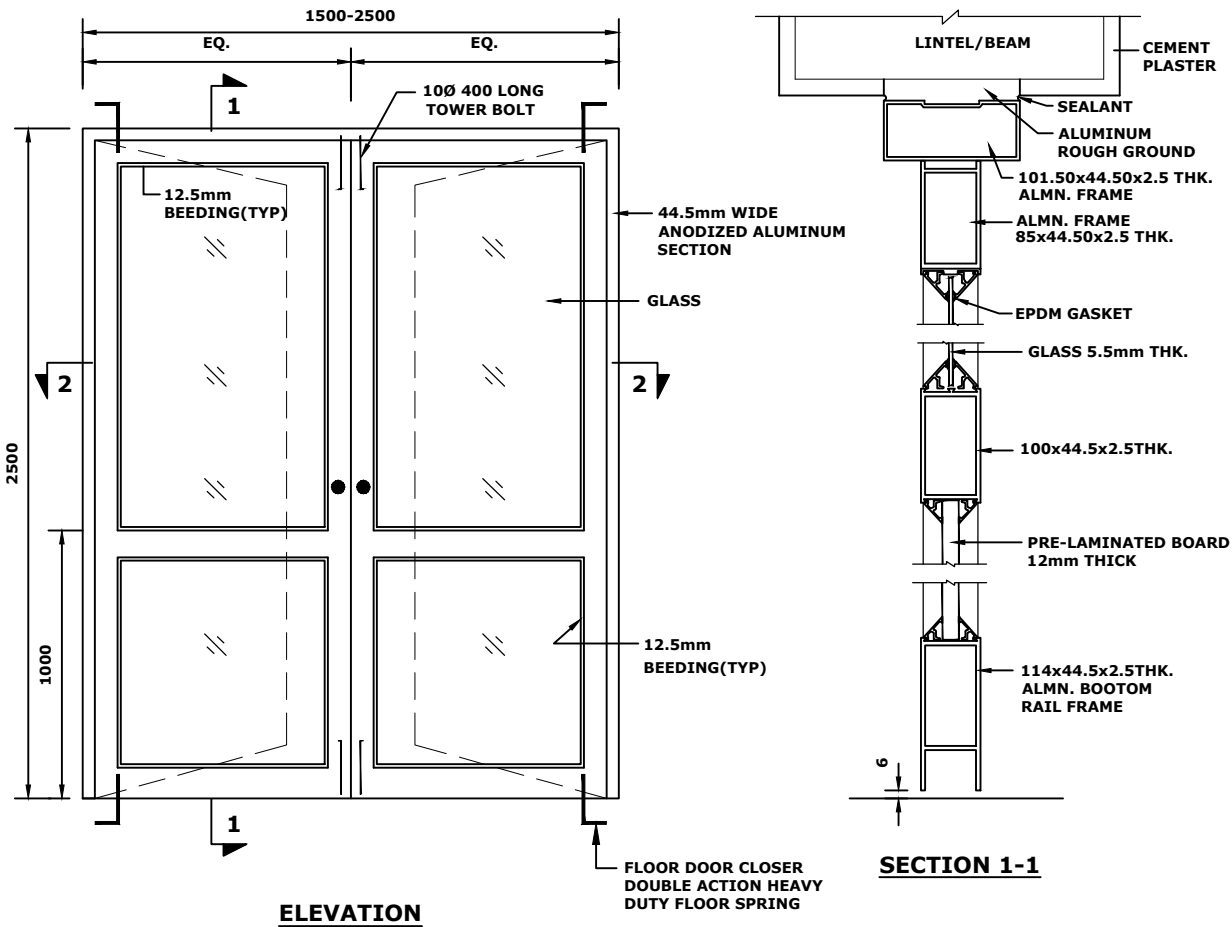


PLAN

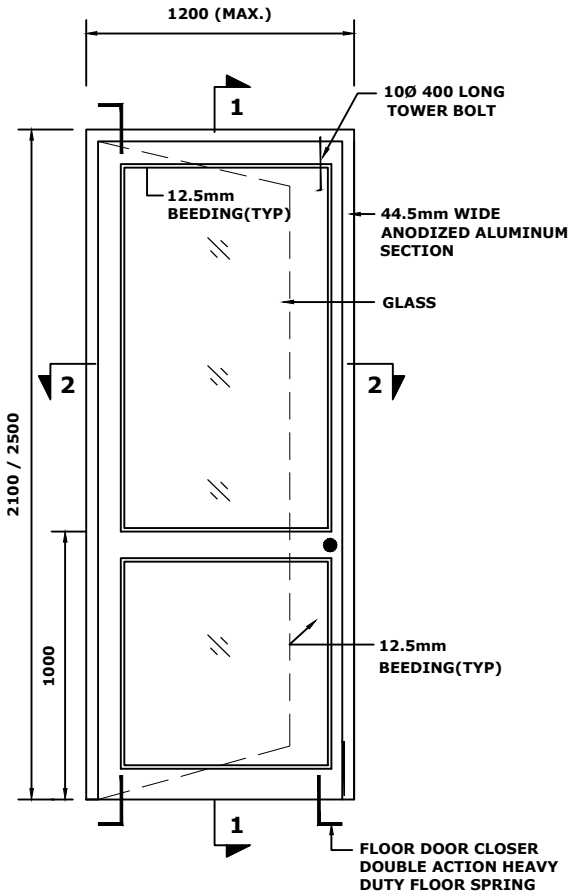


SECTION A-A

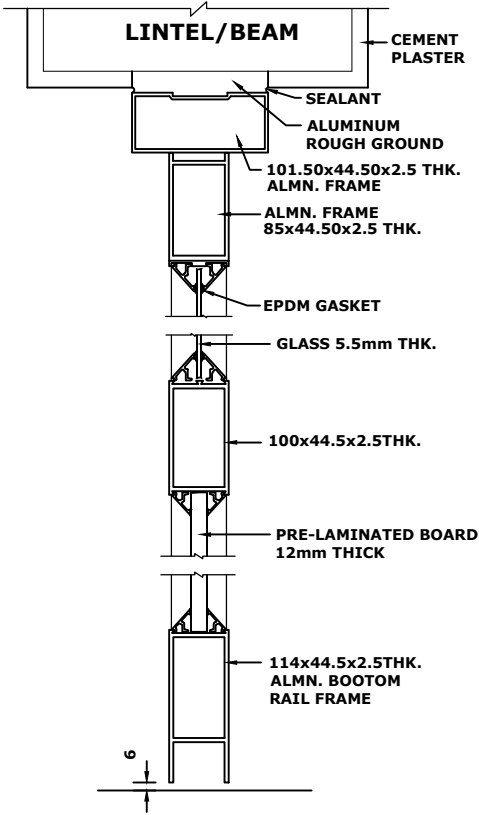
E	STANDARD FOR DETAIL OF GLAZED ALUMINUM DOOR	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 2		



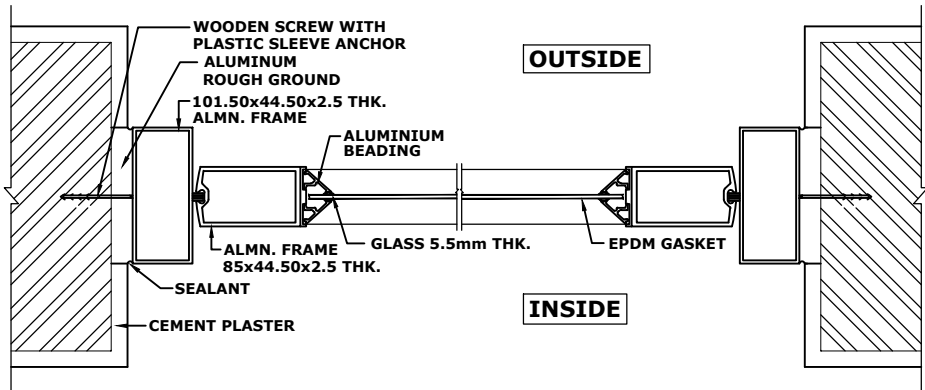
STANDARD FOR DETAIL OF GLAZED ALUMINUM DOOR	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	2 OF 2		



ELEVATION

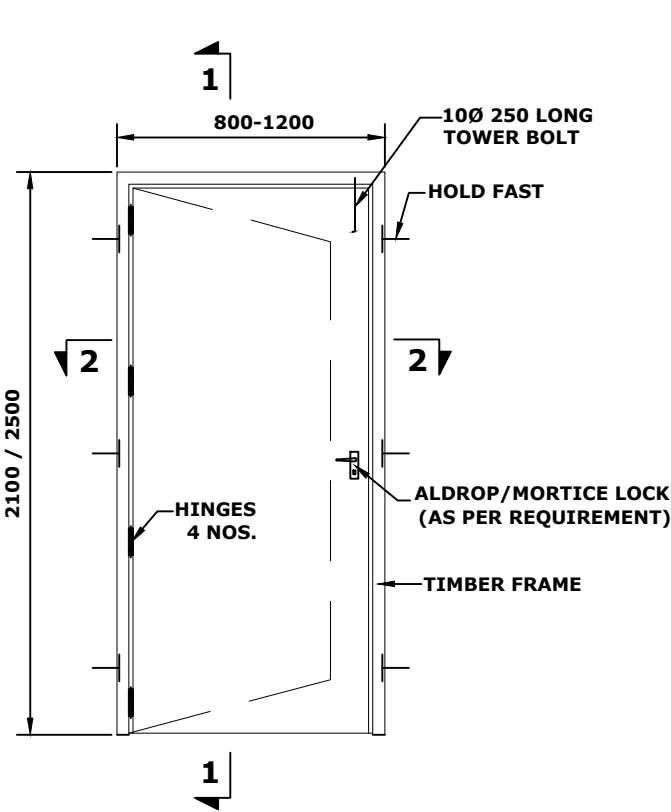


SECTION 1-1

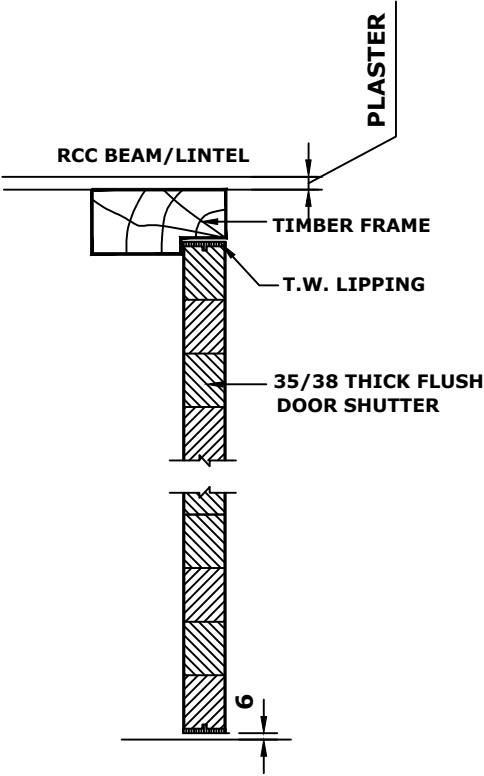


SECTION 2-2

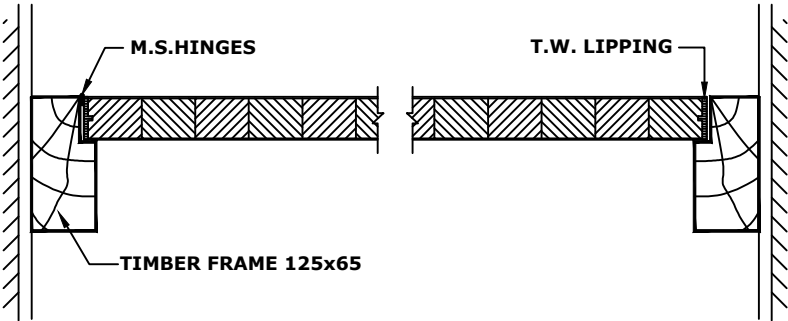
	STANDARD FOR DETAIL OF WOODEN FLUSH DOOR	STANDARD DRAWING NO.		REV.	SIZE
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		SHEET NO.	1 OF 1		



ELEVATION

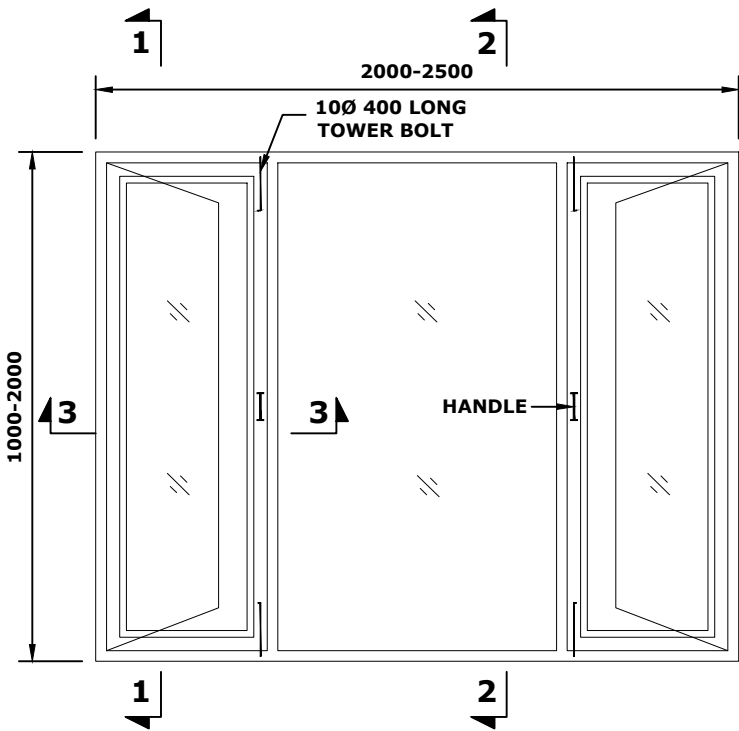


SECTION 1-1

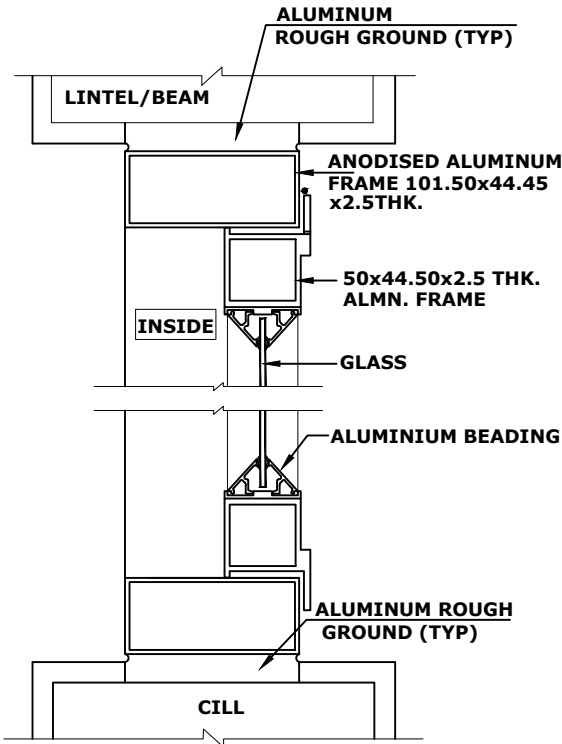


SECTION 2-2

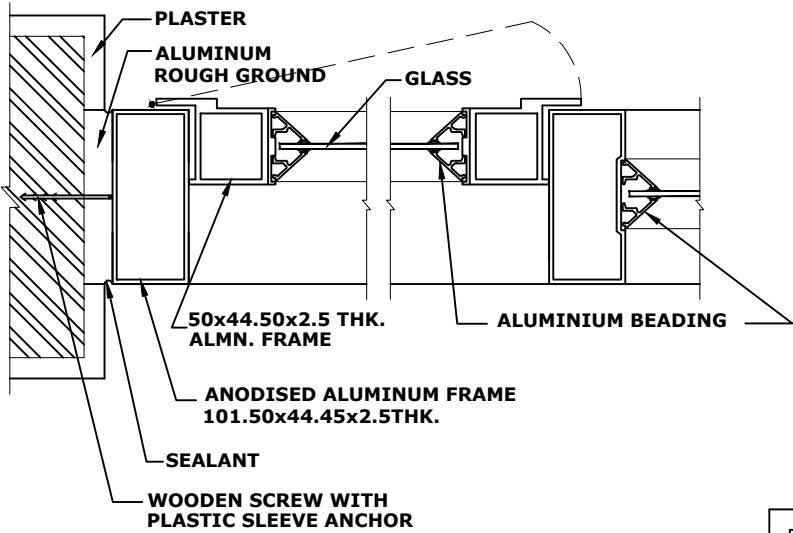
	STANDARD FOR DETAIL OF GLAZED ALUMINUM WINDOW	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



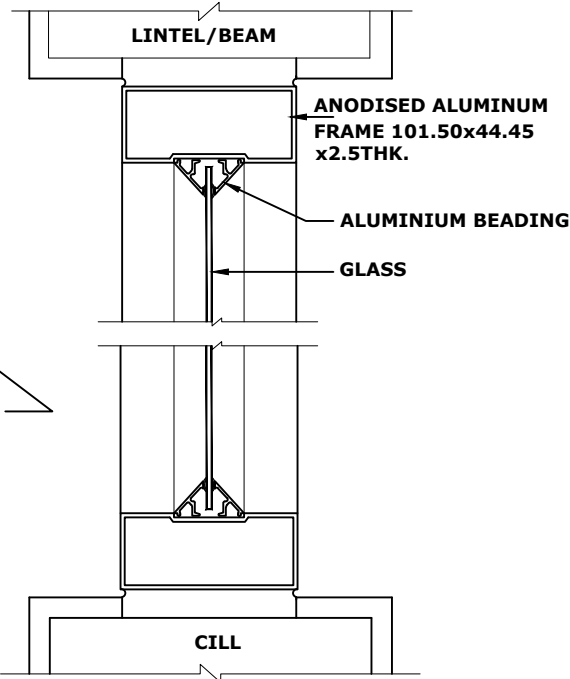
ELEVATION



SECTION 1-1

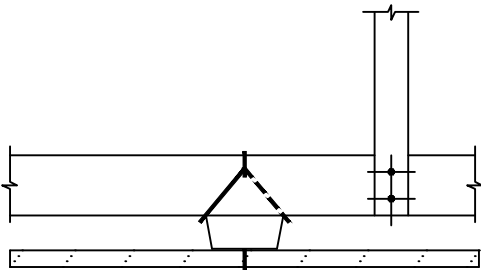
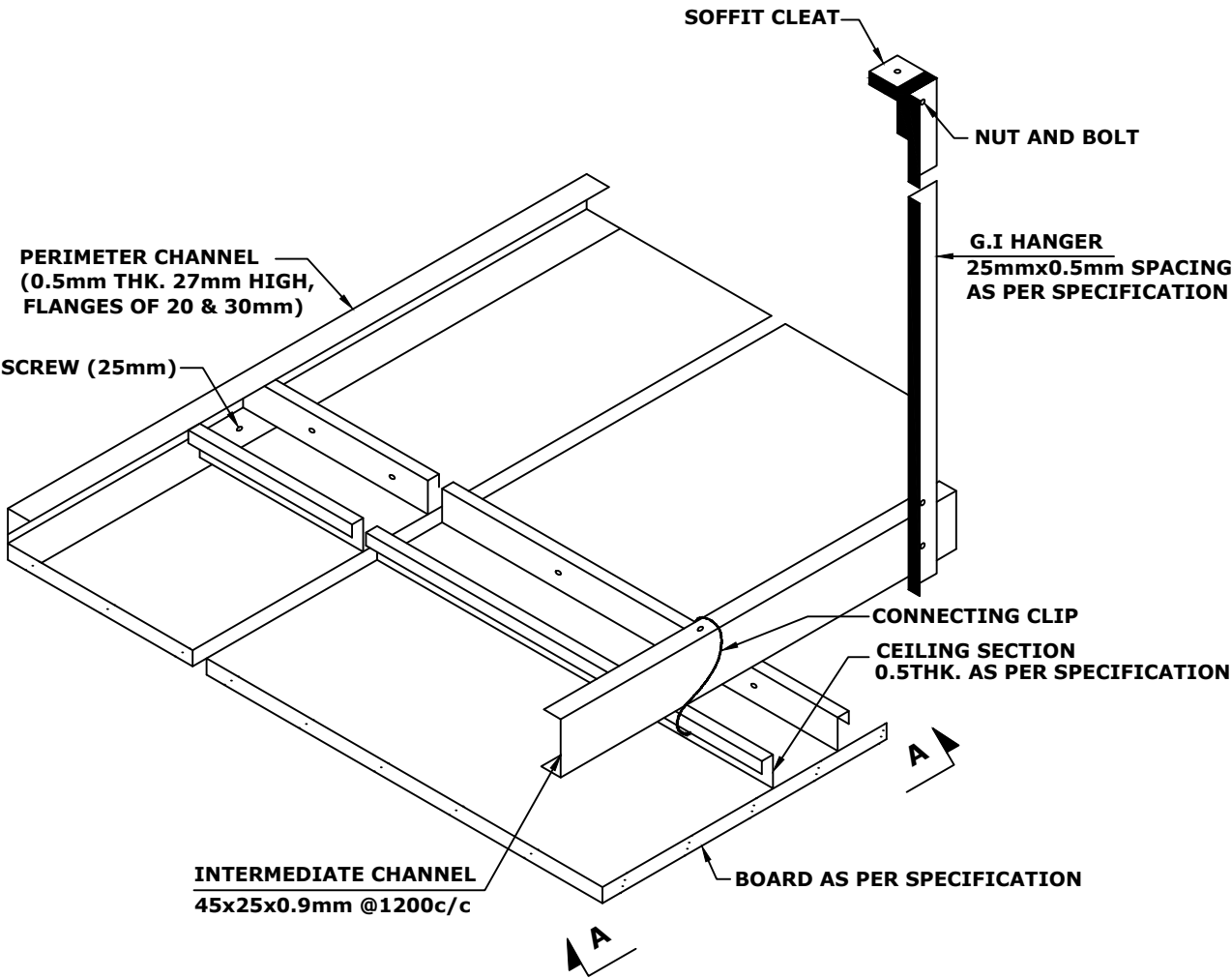


SECTION 3-3

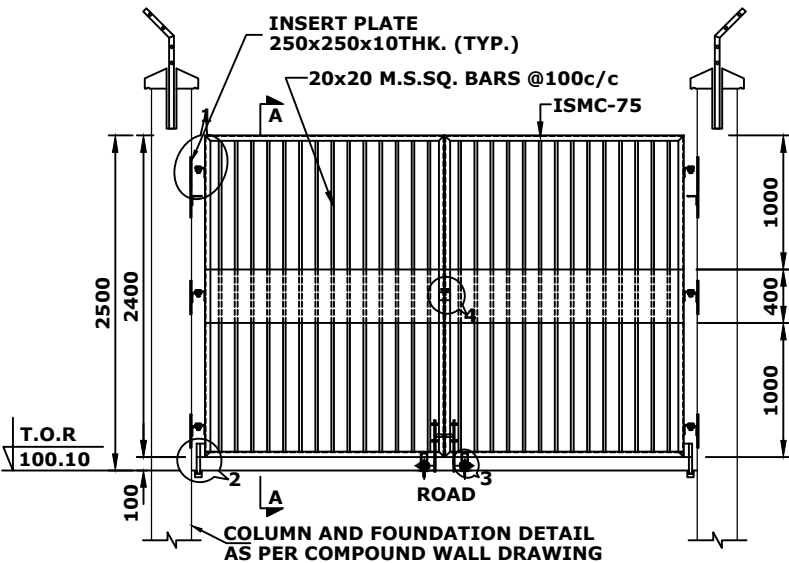


SECTION 2-2

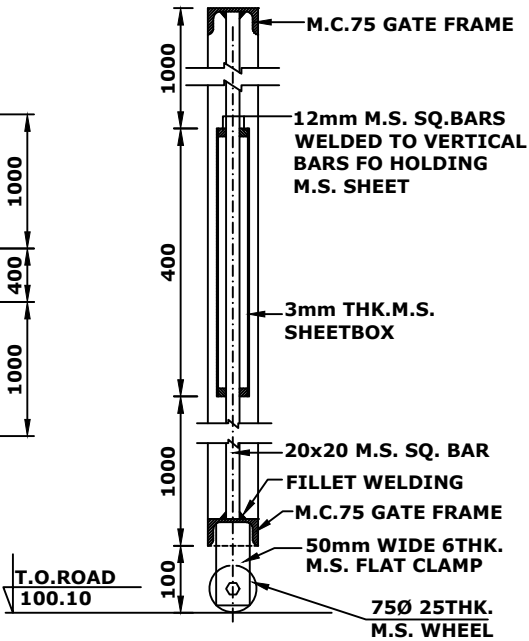
E	STANDARD FOR DETAIL OF FALSE CEILING	STANDARD DRAWING NO.		REV.	SIZE
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		SHEET NO.	1 OF 1		



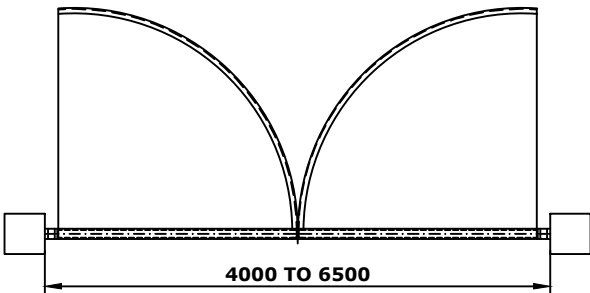
STANDARD FOR DETAIL OF HUNG GATE	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	1 OF 4		



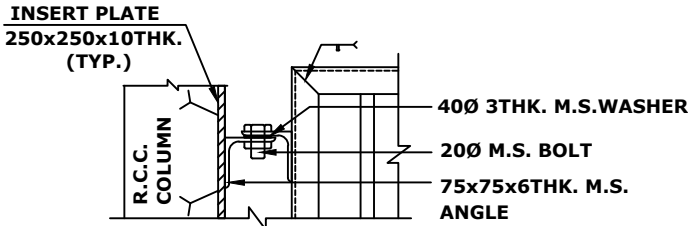
ELEVATION



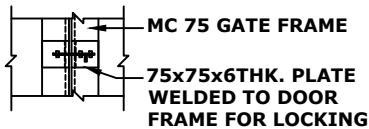
SECTION A-A



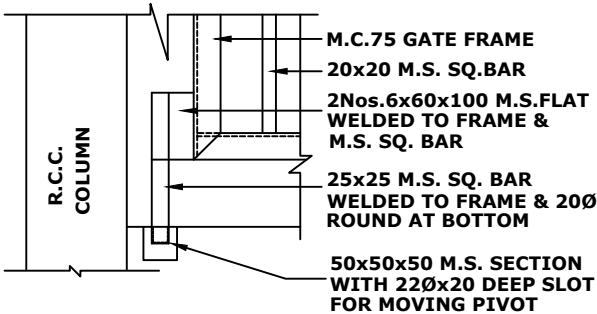
PLAN



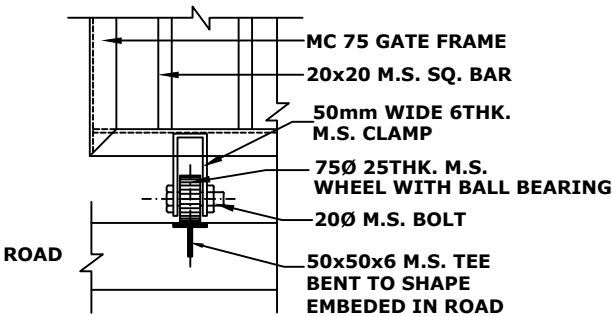
DETAIL AT 1



DETAIL AT 4

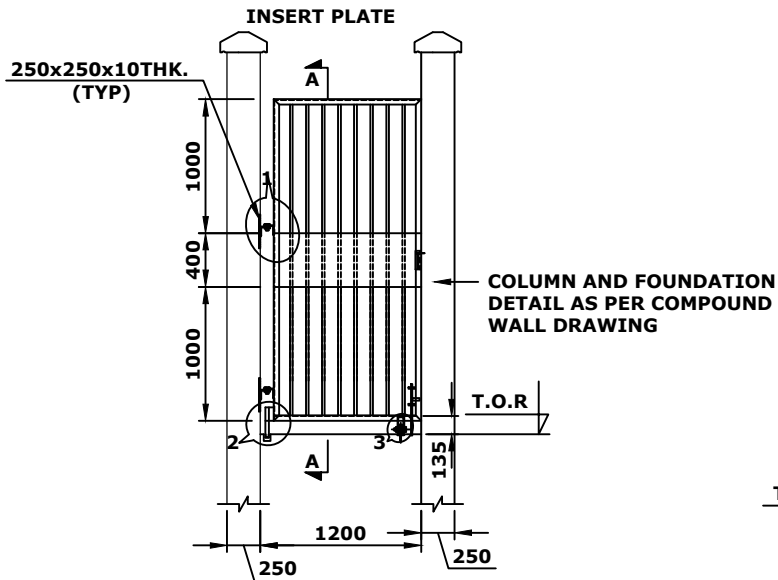


DETAIL AT 2

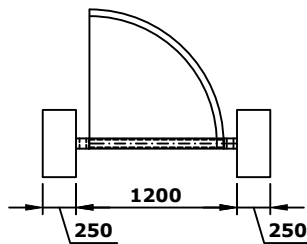


DETAIL AT 3

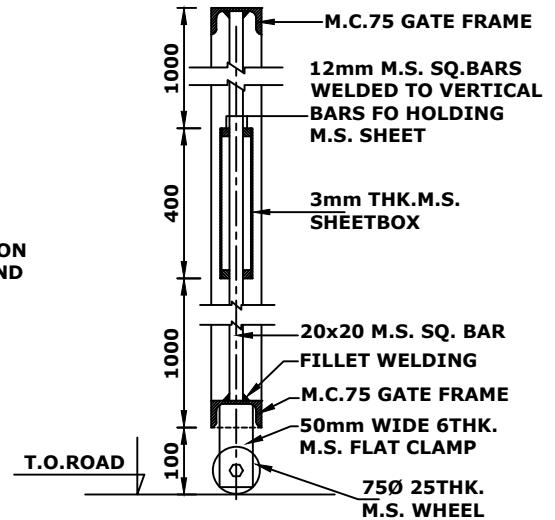
STANDARD FOR DETAIL OF HUNG GATE	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	2 OF 4		



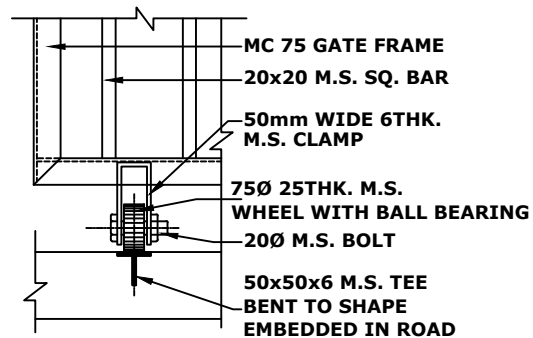
ELEVATION



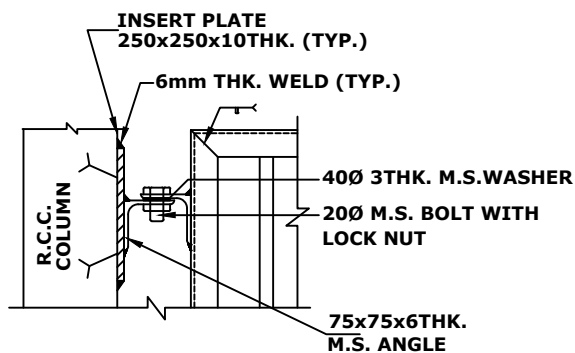
PLAN



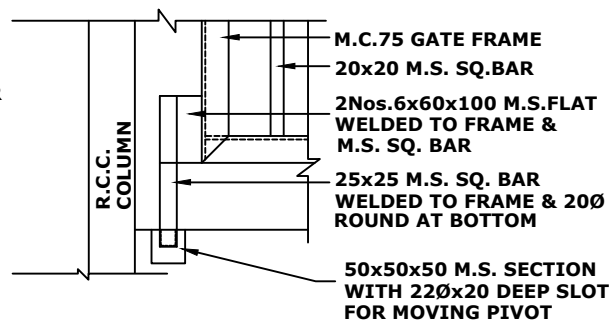
SECTION A-A



DETAIL AT 3

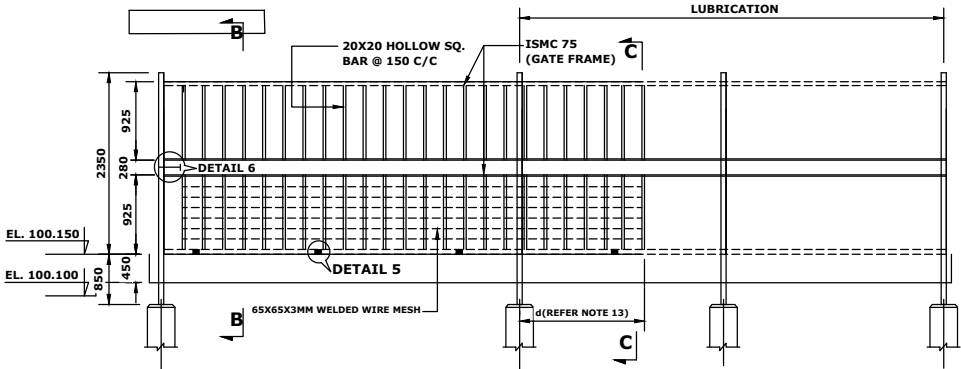


DETAIL AT 1

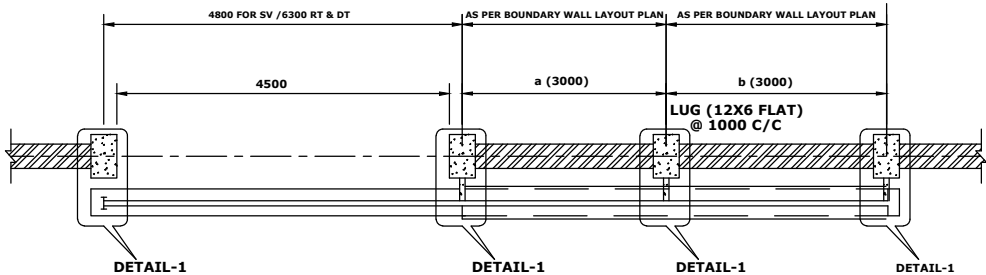


DETAIL AT 2

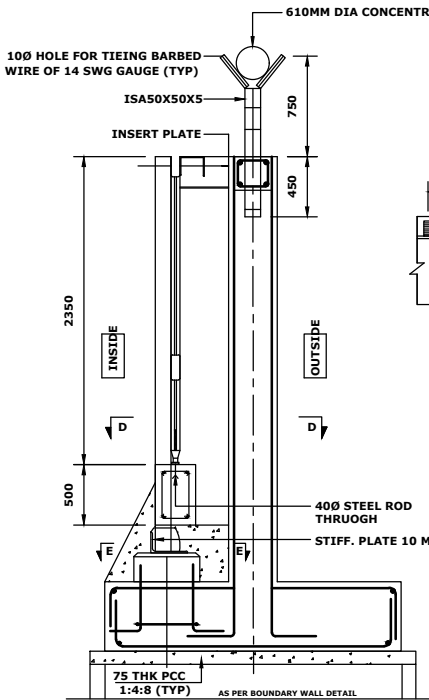
E	STANDARD FOR DETAIL OF HUNG GATE	STANDARD DRAWING NO.		REV.	SIZE
		-----		03	A4
		SHEET NO.	3 OF 4		



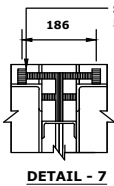
ELEVATION OF SLIDING GATE



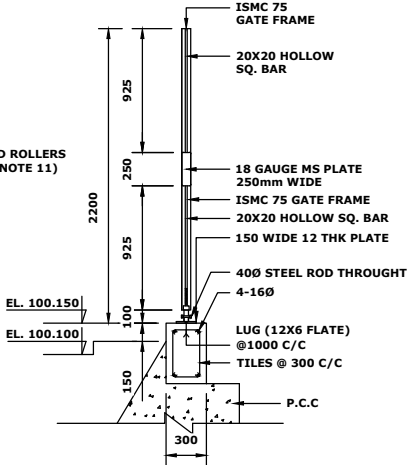
PLAN OF SLIDING GATE



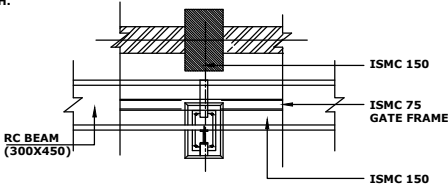
SECTION A-A



DETAIL - 7



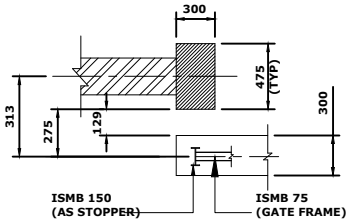
SECTION B-B



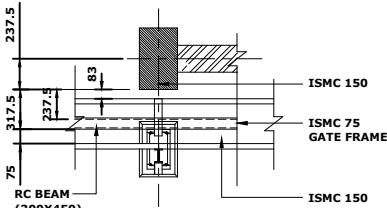
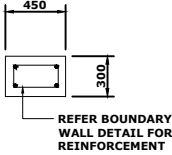
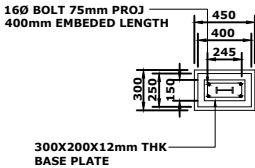
DETAIL 3

CONTINUED ON SHEET 4

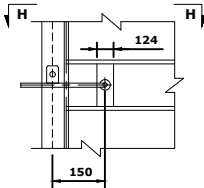
STANDARD FOR DETAIL OF HUNG GATE	STANDARD DRAWING NO.		REV.	SIZE
			03	A4
	SHEET NO.	4 OF 4		



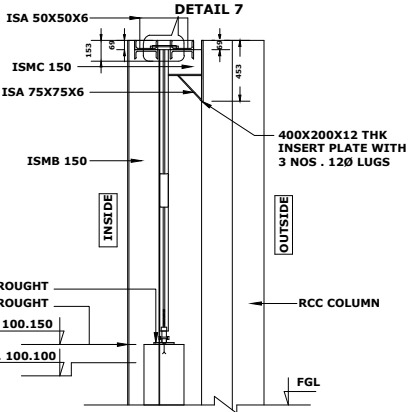
DETAIL 1



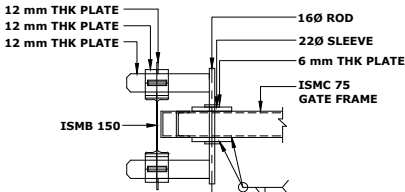
DETAIL 2



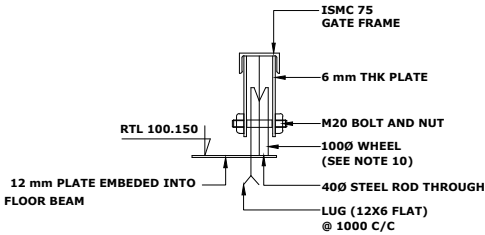
DETAIL-6



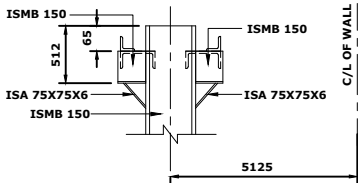
SECTION C-C



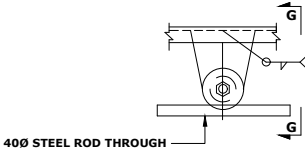
VIEW H-H



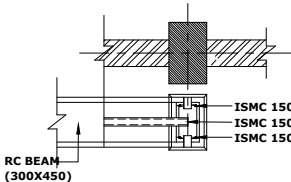
VIEW G-G



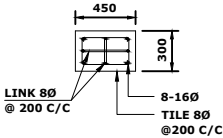
VIEW F-F



DETAIL - 5

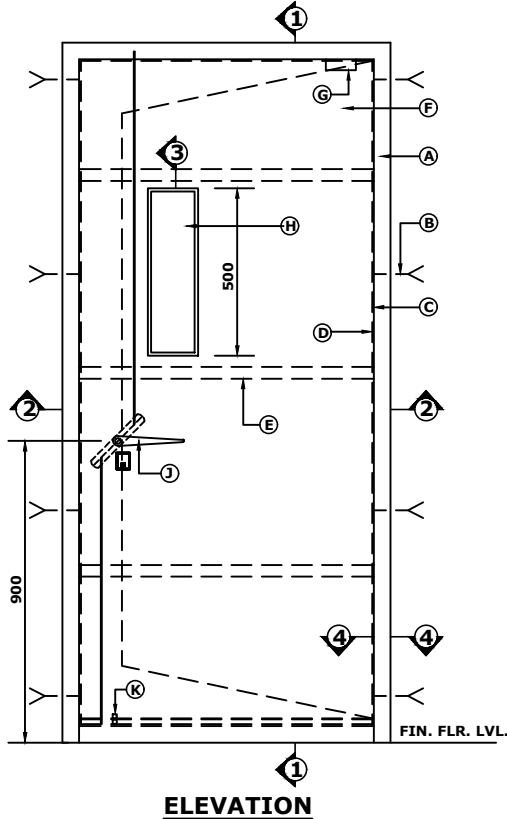


DETAIL 4

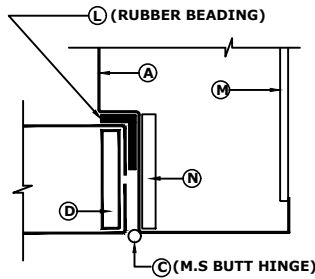


SECTION E-E

	STANDARD FOR DETAIL OF STEEL DOOR (PRESSED STEEL) SINGLE SHUTTER	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 2		



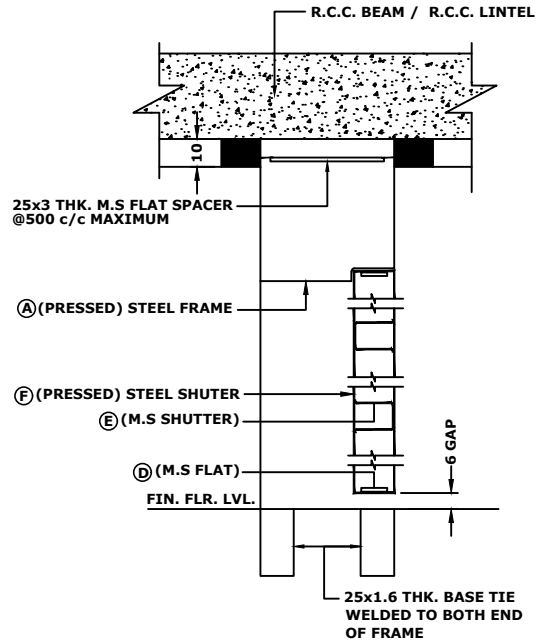
ELEVATION



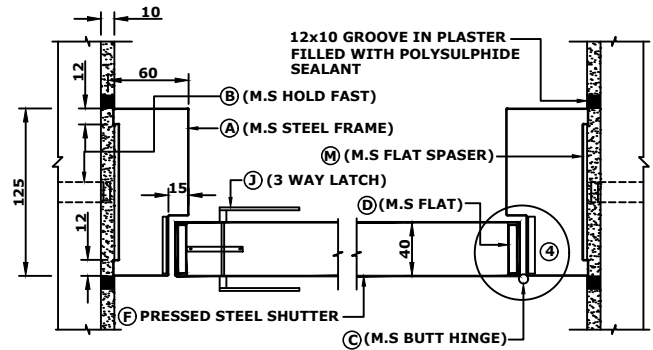
SECTION 4-4

LEGEND:-

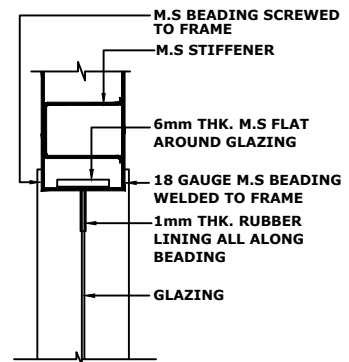
- (A) 18 GAUGE PRESSED STEEL FRAME FINISHED WITH SYNTHETIC ENAMEL PAINT / ELECTROSTATIC. POWER COATING OVER RED-OXIDE ZINC CHROMATE PRIMER AS PER TENDER ITEMS
- (B) M.S. HOLDFAST 300x25x6 THK. @MAXIMUM 600 C/C WELDED TO FRAME SPACER (M.)
- (C) 150 LONG M.S. BUTT HINGE @MAXIMUM 600C/C SCREWED TO FRAME AND SHUTTER.
- (D) 6 THK. M.S. FLAT CONTINUOUS ALONG PERIMETER OF SHUTTER.
- (E) 35 WIDE 16 GAUGE M.S. HORIZONTAL STIFFNER @500 C/C MAXIMUM.
- (F) 22 GAUGE PRESSED STEEL SHUTTER (OVERALL 40 THK.)
- (G) OVER HEAD HYDRAULIC DOOR CLOSER 9HEAVY DUTY)
- (H) VISION PANEL AS PER SPECIFICATION (OPTIONAL)
- (J) 3 WAY SPRING LOADED LATCH AND LOCKING SYSTEM.
- (K) SPRING LOADED PRESSURE DIE CAST ZINC ALLOY DOOR STOPPER.
- (L) NEOPRENE RUBBER BEADING FIXED WITH NEOPRENE RUBBER ADHESIVE (DUNLOP S-758 OR EQUIVALENT ALONG FRAME REBATE.
- (M) 50x5 THK. M.S. FLAT SPACER WELDED TO FRAME AT HOLD FAST LOCATION.
- (N) 40x150x5 THK. M.S. PAD WELDED TO FRAME AT ALL HINGE & LOCK LOCATION.



SECTION 1-1

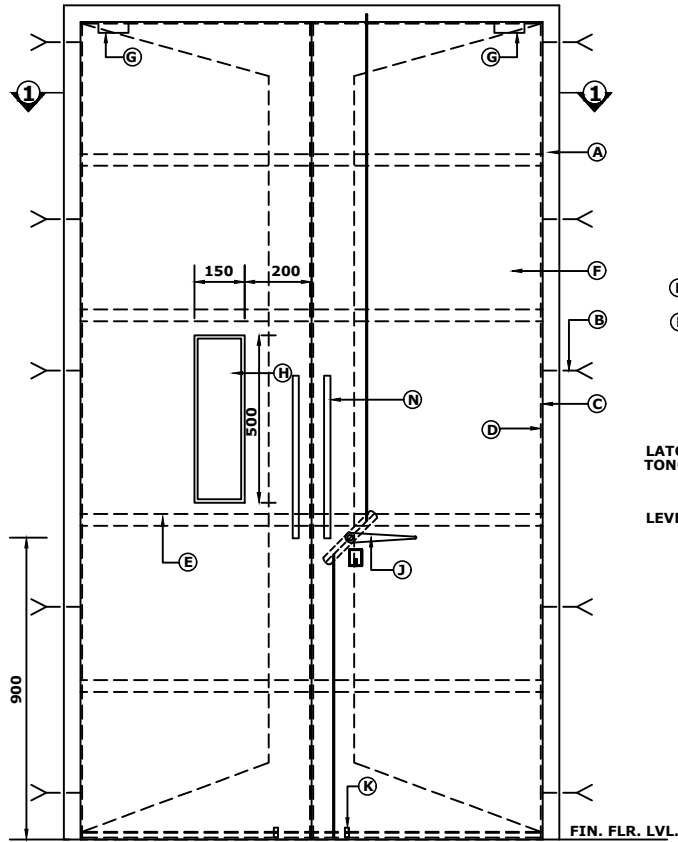


SECTIONAL PLAN 2-2

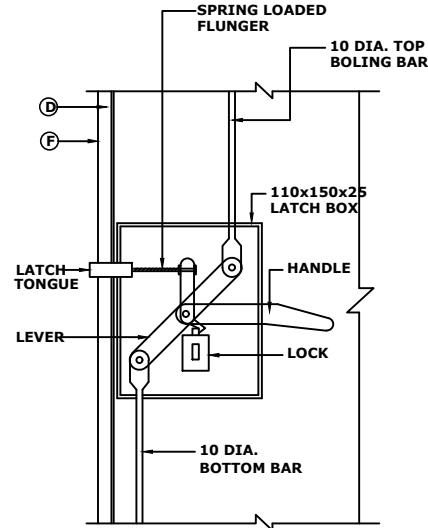


SECTION 3-3

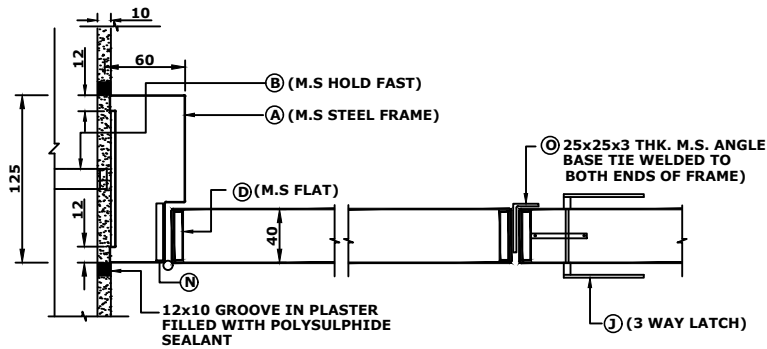
	STANDARD FOR DETAIL OF STEEL DOOR (PRESSED STEEL) SINGLE SHUTTER	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	2 OF 2		



ELEVATION



DETAIL OF 3 - WAY LATCH

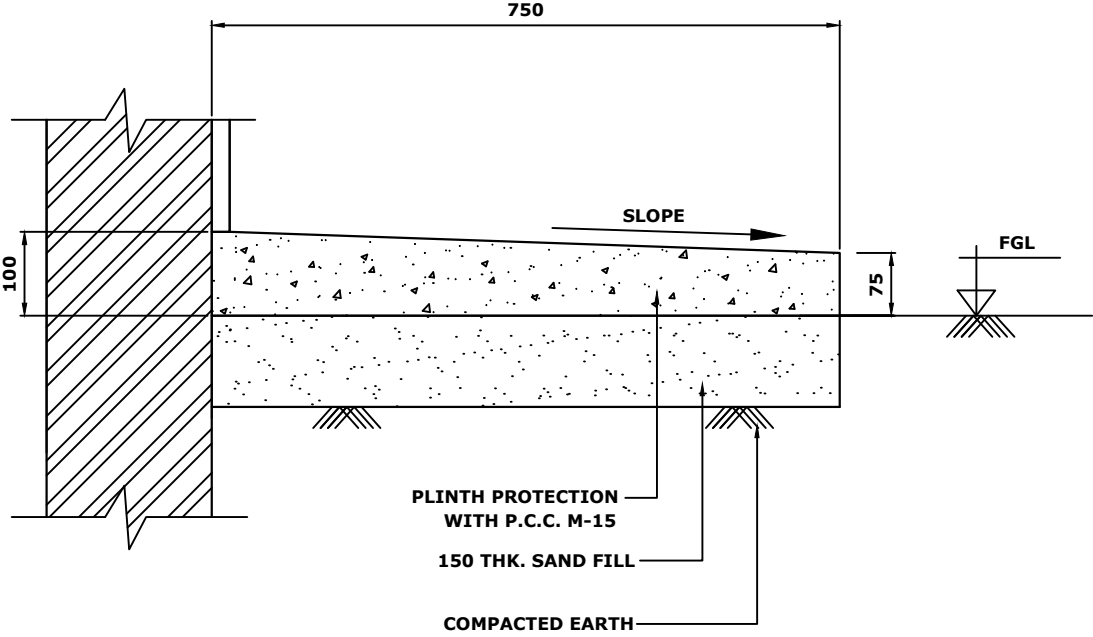


SECTIONAL PLAN 1-1

LEGEND:-

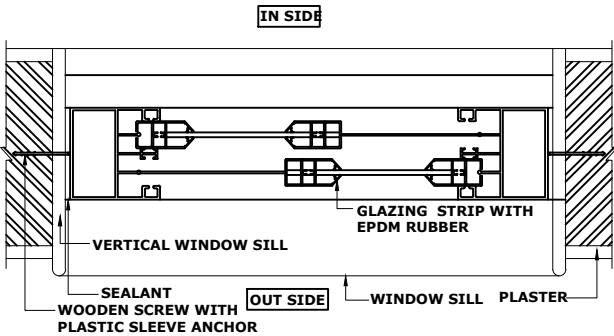
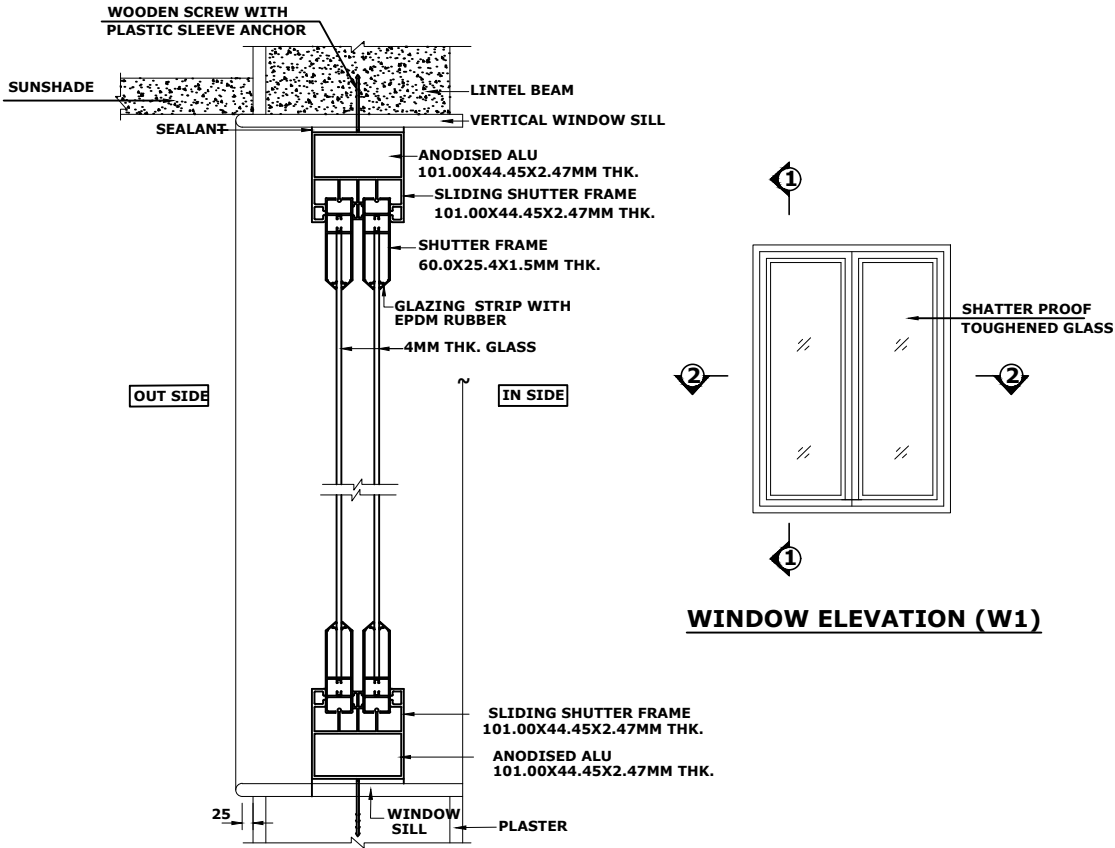
- | | |
|---|---|
| <p>(A) 18 GAUGE PRESSED STEEL FRAME FINISHED WITH SYNTHETIC ENAMEL PAINT / ELECTROSTATIC. POWER COATING OVER RED-OXIDE ZINC CHROMATE PRIMER AS PER TENDER ITEMS</p> <p>(B) M.S. HOLDFAST 300x25x6 THK. @MAXIMUM 600 C/C WELDED TO FRAME SPACER (M.)</p> <p>(C) 150 LONG M.S. BUTT HINGE @MAXIMUM 600C/C SCREWED TO FRAME AND SHUTTER.</p> <p>(D) 6 THK. M.S. FLAT CONTINUOUS ALONG PERIMETER OF SHUTTER.</p> <p>(E) 35 WIDE 16 GAUGE M.S. HORIZONTAL STIFFNER @500 C/C MAXIMUM.</p> <p>(F) 22 GAUGE PRESSED STEEL SHUTTER (OVERALL 40 THK.)</p> <p>(G) OVER HEAD HYDRAULIC DOOR CLOSER 9HEAVY DUTY)</p> <p>(H) VISION PANEL AS PER SPECIFICATION (OPTIONAL)</p> | <p>(J) 3 WAY SPRING LOADED LATCH AND LOCKING SYSTEM.</p> <p>(K) SPRING LOADED PRESSURE DIE CAST ZINC ALLOY DOOR STOPPER.</p> <p>(L) NEOPRENE RUBBER BEADING FIXED WITH NEOPRENE RUBBER ADHESIVE (DUNLOP S-758 OR EQUIVALENT ALONG FRAME REBATE.</p> <p>(M) 50x5 THK. M.S. FLAT SPACER WELDED TO FRAME AT HOLD FAST LOCATION.</p> <p>(N) PRESSURE DIE CAST ZINC ALLOY DOOR HANDLE 12 DIA. 300mm LONG.</p> <p>(O) 25x45x3 THK. M.S. ANGLE (VERTICAL) WELDED TO ONE SHUTTER FOR BEADING AT MEETING POINT.</p> <p>(P) 40x150x5 THK. M.S. PAD PLATE WELDED AT ALL HINGES AND LOCK LOCATIONS.</p> |
|---|---|

	STANDARD FOR DETAIL OF TYPICAL PLINTH PROTECTION DETAIL	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



TYP. PLINTH PROTECTION DETAIL

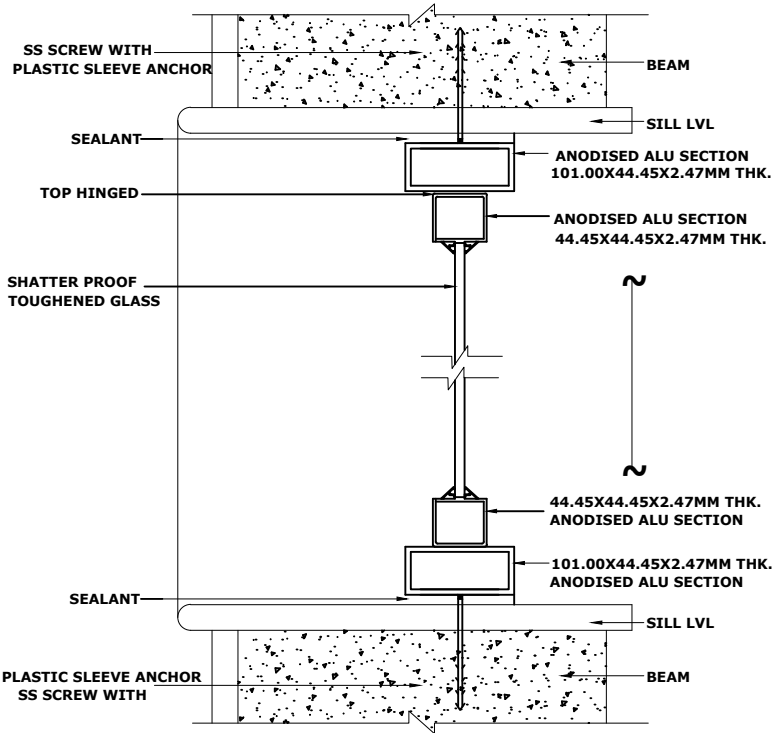
	STANDARD FOR DETAIL OF ALUMINUM SLIDING WINDOW	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



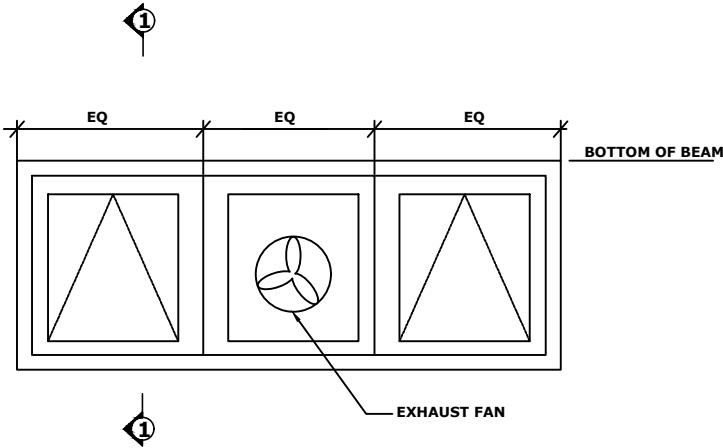
SECTION 2-2

DOUBLE PANEL ALUMINIUM WINDOW

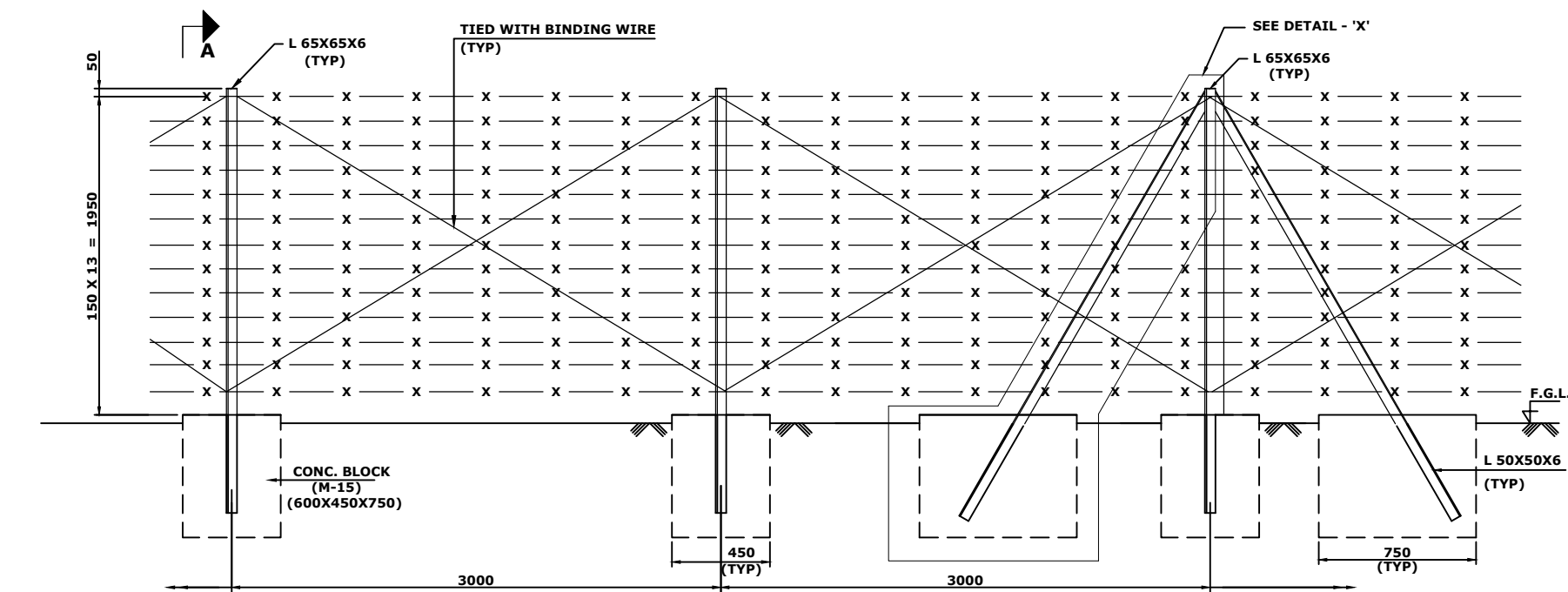
	STANDARD FOR DETAIL OF ALUMINUM VENTILATOR	STANDARD DRAWING NO.		REV.	SIZE
				03	A4
		SHEET NO.	1 OF 1		



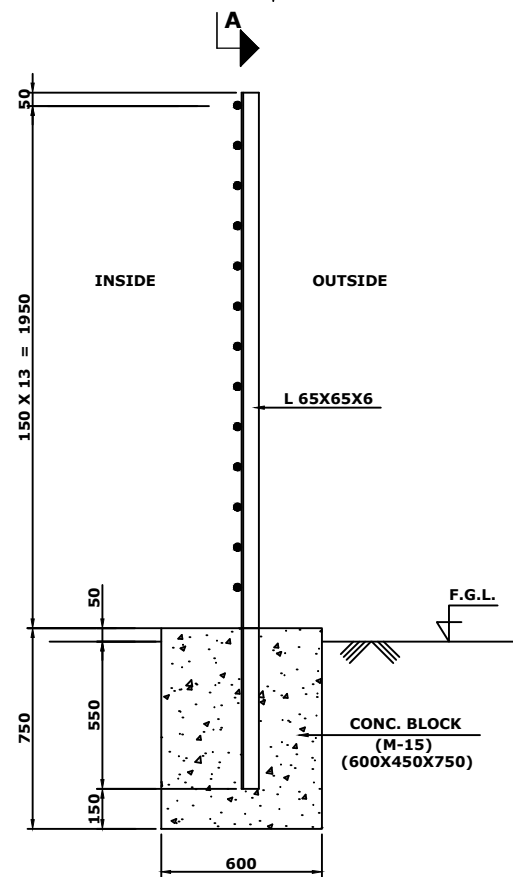
SECTION 1-1



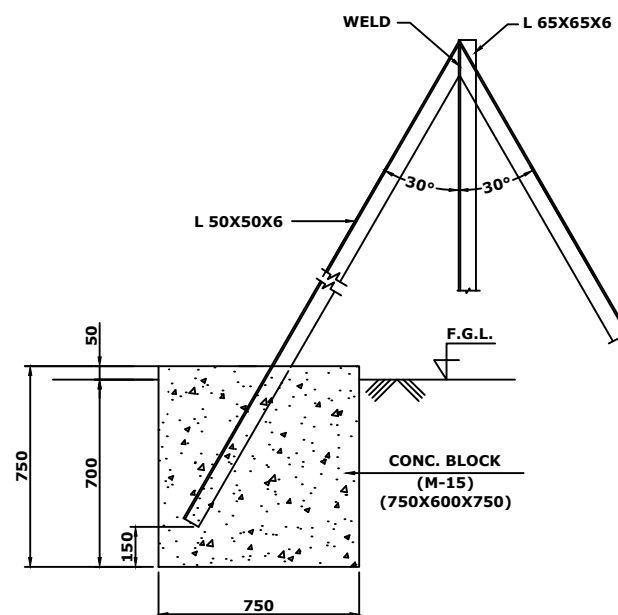
VENTILATOR ELEVATION



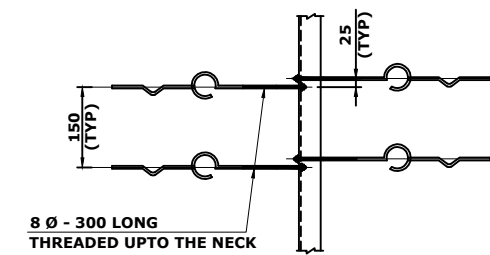
BARBED WIRE FENCE
(OUTSIDE)



SECTION ELEVATION A - A



DETAIL - X



**FIXING DETAIL OF
STRAINING BOLT
WITH POST**

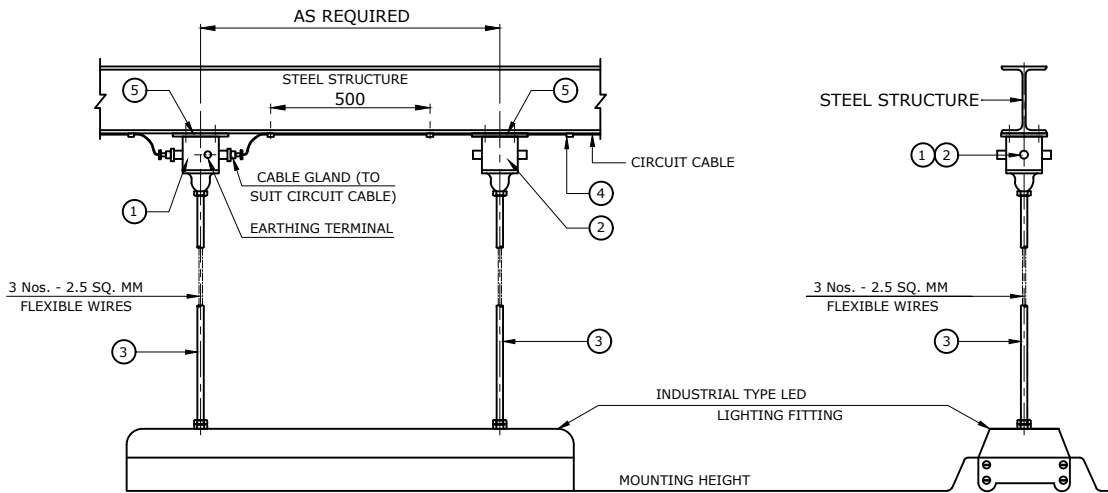
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THE GALVANIZED STEEL BARBED WIRE DESIGNATED AS STEEL BARBED WIRE A-1 TO IS:278 SHALL HAVE LINE WIRE OF Ø2.5MM, POINT WIRE OF Ø 20MM & MINIMUM WEIGHT OF COMPLETE BARBED WIRE SHALL BE 108gm/m WITH 75mm DISTANCE BETWEEN TWO BARBED WIRES.
3. LINE POST SHALL BE PLACED AT 3.0M C/C.
4. STRUT SHALL BE PROVIDED AT EVERY 15TH. POST OF BOTH SIDE & END POST ON ONE SIDE.
5. STRAINING BOLTS SHALL BE PROVIDED AT THE END POST & AT PLACES AS DIRECTED BY ENGINEER INCHARGE.
6. EXPOSED FOUNDATION BLOCK AT GROUT LEVEL SHALL BE FINISHED SMOOTH IN CEMENT MORTAR 1:6.
7. GALVANIZED BARBED WIRE SHALL BE TIED TO THE ANGLE IRON POST EITHER WITH WELDED M.S NIBS OR WITH G.I WIRE THROUGH HOLES IN THE POST.

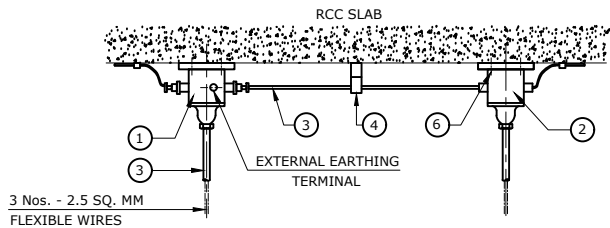
STANDARD FOR DETAIL
OF BARBED WIRE FENCING
(WITH ANGLE IRON POST)

STANDARD DRAWINGS

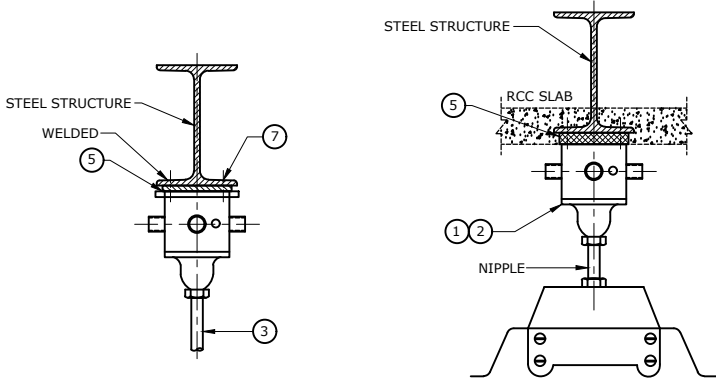
	TYPICAL SUSPENSIONMOUNTING DETAIL OF INDUSTRIAL LED LIGHTING FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



TYPICAL MOUNTING ARRANGEMENT OF LED
LIGHTING FITTING ON STRUCTURE STEEL & WIRING
WITH PVC INSULATED CABLE MOUNTING TYPE : SM1

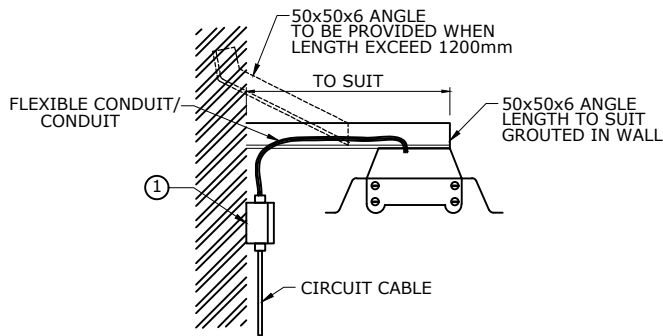


TYPICAL MOUNTING ARRANGEMENT OF LED
LIGHTING FITTING ON R.C.C. SLAB & CONDUIT WIRING



TYPICAL MOUNTING DETAILS OF
J.B. ON STRUCTURAL STEEL

MOUNTING TYPE : CM1



BRACKET MOUNTING ON
WALL/COLUMN MTG. TYPE : BM1

MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	JUNCTION BOX WITH COME COVEER, BALL & SOCKET WITH TERMINAL BLOCK.	1 NO.	
2	DUMMY JUCTION BOX WITH DOME COVER, BALL & SOCKET WITHOUT TERMINAL BLOCK.	1 NO.	
3	19mm Ø HEAVY GAUGE CONDUIT WITH BOTH END CHECK NUTS LENGTH TO SUIT MOUNTING HEIGHT (MAXIMUM LENGTH 2 Mtrs.)	2 NOS.	
4	G.I. SADDLE/CLEAT ALONG WITH SUITABLE SIZE OF FIXING SCREW TO SUIT FOR CIRCUIT CABLE/CONDUIT.	AS REQUIRED	
5	25 x 6 THK. M.S. FLAT 200mm LONG FOR JUNCTION BOX MOUNTING ON STEEL STRUCTURE.	2 NOS.	
6	COUNTER SUNK SCREW WITH RAWAL PLUG FOR RCC SLAB OR SELF TAPPING COUNTER SUNK SCREW FOR STEEL STRUCTURE.	4 NOS.	
7	SELF TAPPING SCREW WITH WASHER FOR FIXING OF JUNCTION BOX ON 25 x 6mm MS FLAT.	AS REQUIRED	

TYPICAL SUSPENSION MOUNTING DETAILS
OF INDUSTRIAL LED LIGHTING FITTING
WITH SUSPENSION MORE THAN 2 Mtrs.

STANDARD DRAWING NO.

REV.

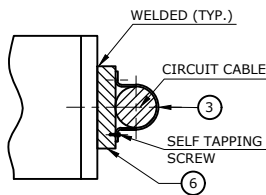
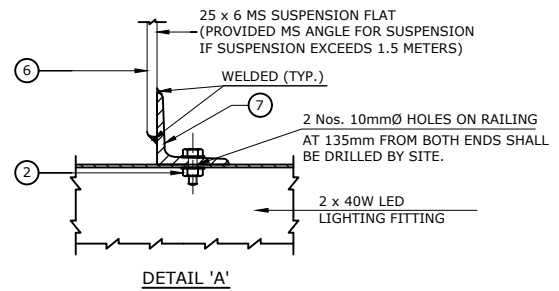
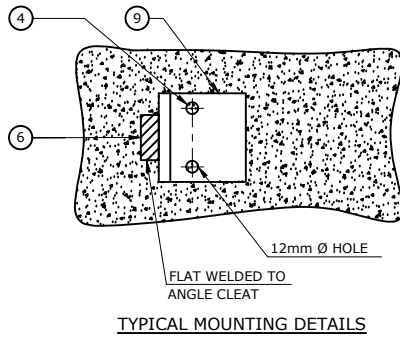
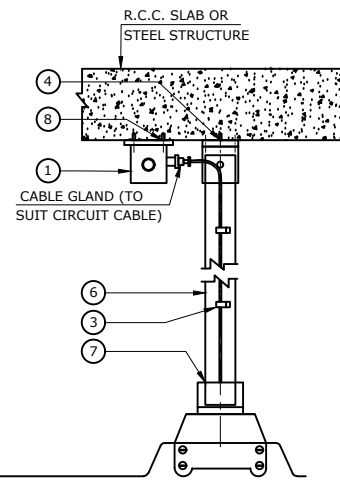
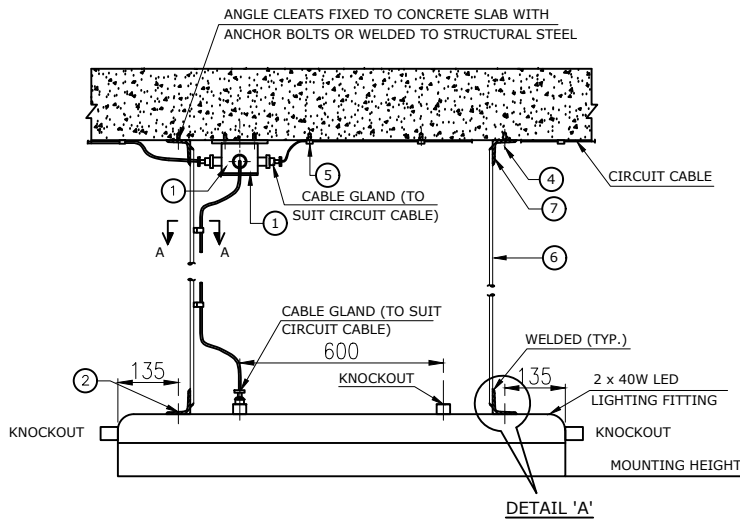
SIZE

02

A4

SHEET NO.

1 OF 1



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	4WAY-100mm DIA ROUND JUNCTION BOX WITH TERMINAL BLOCK.	1 NO.	
2	M8-40mm LONG BOLT WITH NUT AND PLAIN WASHER	2 NOS.	
3	G.I. SADDLE/CLEAT ALONG WITH SUITABLE SIZE OF FIXING SCREW & NUT TO SUIT FOR CIRCUIT CABLE.	AS REQUIRED	
4	M10-68mm LONG ANCHOR STUD WITH BOLT & PLAIN WASHER	4 NOS.	
5	SADDLE/CLEAT WITH FIXING SCREW OR M8-68mm LONG STUD, NUTS & LOCK WASHERS FOR CIRCUIT CABLE	AS REQUIRED	
6	25 x 6mm THK. M.S. FLAT (LENGTH TO SUIT)	2 NOS.	
7	ISA 50 x 50 x 6 THK.-75mm LONG ANGLE CLEAT WITH 10 Ø HOLES	4 NOS.	
8	10mm Ø 35 LONG COUNTER SUNK SCREWS WITH RAWAL PLUG	2 NOS.	
9	ISA 50 x 50 x 6 THK.-150mm LONG ANGLE CLEAT WITH 2 NOS. 12 Ø HOLES	2 NOS.	

**TYPICAL DETAILS OF DECORATIVE
LIGHTING FIXTURE MOUNTING RECESSED
OR BELOW FALSE CEILING**

STANDARD DRAWING NO.

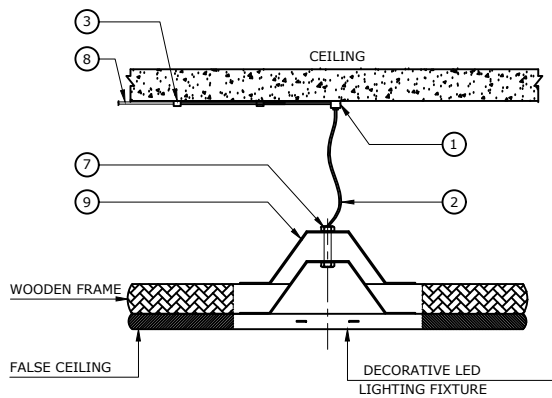
REV. SIZE

SHEET NO.

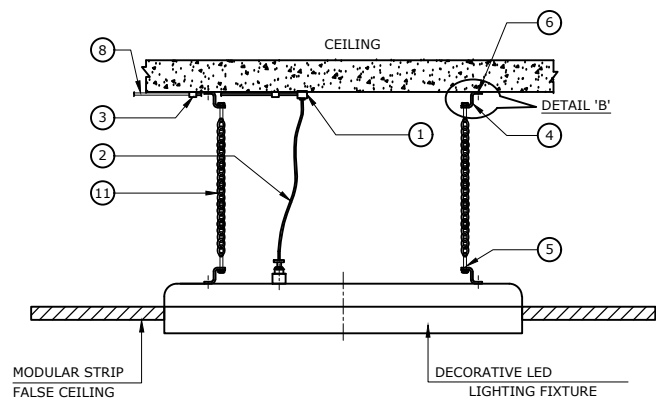
1 OF 1

02

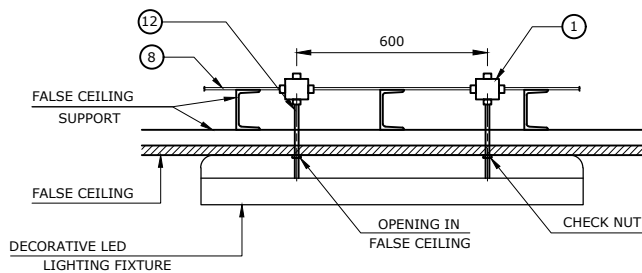
A4



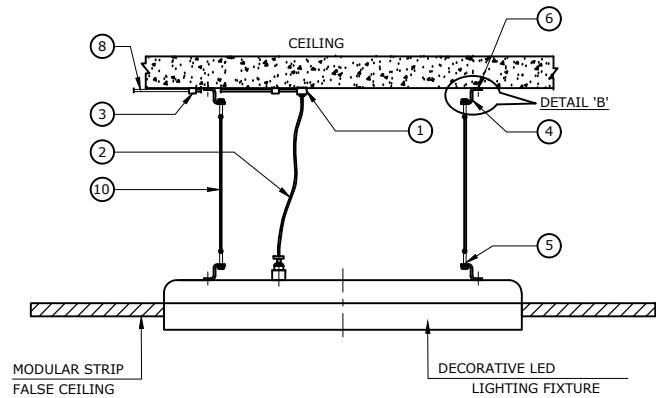
**RECESSED MOUNTING FIXTURE
SUPPORTED ON WOODEN FRAME
TYPE : RM1**



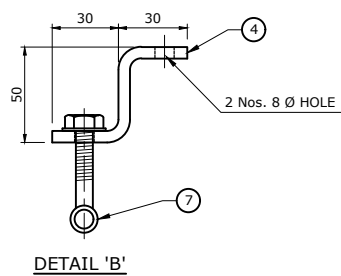
**RECESSED MOUNTING FIXTURE
SUPPORTED ON CHAIN
TYPE : RM1**



**FIXTURE MOUNTED BELOW
FALSE CEILING
TYPE : RM2**



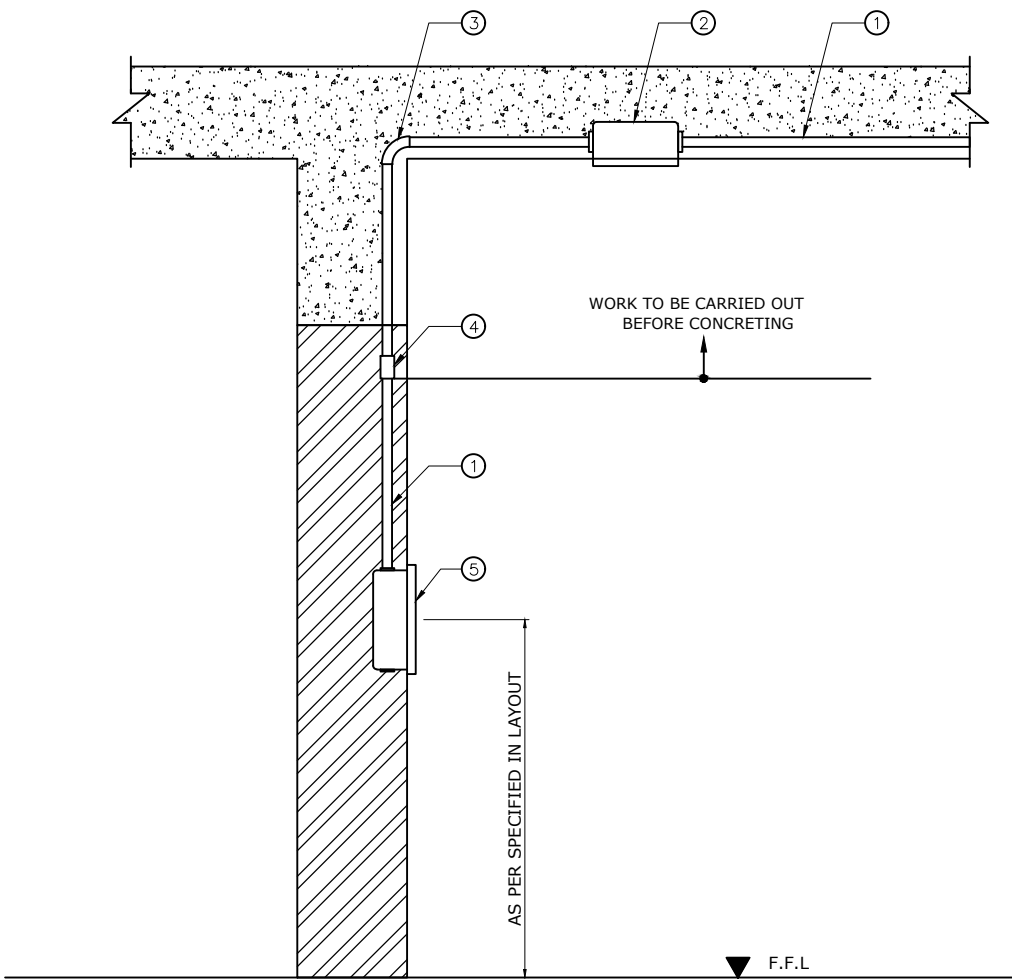
**RECESSED MOUNTING FIXTURE
SUPPORTED WITH G.I. WIRE
TYPE : RM1**



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	JUNCTION BOX WITH DOME COVER	1 NO.	
2	19 mm DIA PVC FLEXIBLE PIPE WITH 2 Nos. PVC STRAIGHT ADAPTOR	AS REQUIRED	
3	G.I./PVC SADDLE CLEAT WITH SUITABLE SCREWS	AS REQUIRED	
4	32 x 6mm THK. 110 mm LONG M.S. FLAT BEND 'Z' SHAPE	4 NOS.	
5	M6-30mm LONG G.I. EYE BOLT & NUT WITH WASHER	4 NOS.	
6	M6-35mm LONG ANCHOR STUD WITH NUT AND WASHER	2 NOS.	
7	M6-30mm LONG BOLT WITH SWING NUT AND 2 Nos. PLAIN WASHER	2 NOS.	
8	19mm DIA CONDUIT (AS SPECIFIED)	AS REQUIRED	
9	BRACKET MADE OUT OF 25 x 3mm THK. M.S. FLAT	2 NOS.	
10	10 SWG. G.I. WIRE (LENGTH TO SUIT)	2 NOS.	
11	SUPPORTING CHAIN (LENGTH TO SUIT)	2 NOS.	
12	19mm Ø CONDUIT EITH THREAD AT BOTH END AND NUT	2 NOS.	

	TYPICAL DETAIL OF CONCEALED CONDUIT WIRING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



TYPICAL INSTALLATION DETAIL OF CONDUIT ENTRY
FROM R.C.C SLAB INTO THE BRICK WALL

MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	PVC/G.I. CONDUIT SIZE AS REQUIRED	AS REQUIRED	
2	WIRE PULL BOX WITH FLAT COVER	AS REQUIRED	
3	PVC/G.I. 90° BEND SIZE AS REQUIRED	AS REQUIRED	
4	PVC/G.I. COUPLING SIZE AS REQUIRED	AS REQUIRED	
5	SWITCH BOARD, SOCKET OUTLET ETC.	AS REQUIRED	

**TYPICAL CEILING MOUNTING DETAILS OF
INDUSTRIAL TYPE FIBERGLASS REINFORCED
LED LIGHTING FITTING**

STANDARD DRAWING NO.

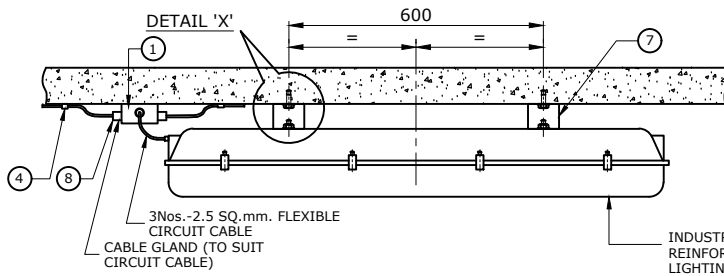
REV. SIZE

SHEET NO.

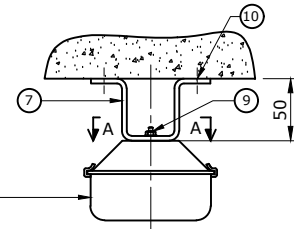
1 OF 1

02

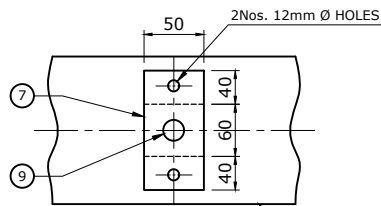
A4



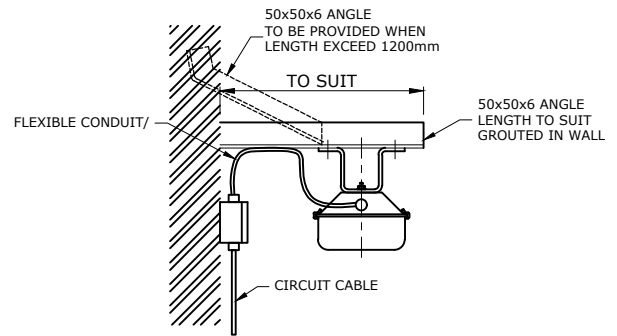
**FRONT VIEW
MOUNTING TYPE : CM3**



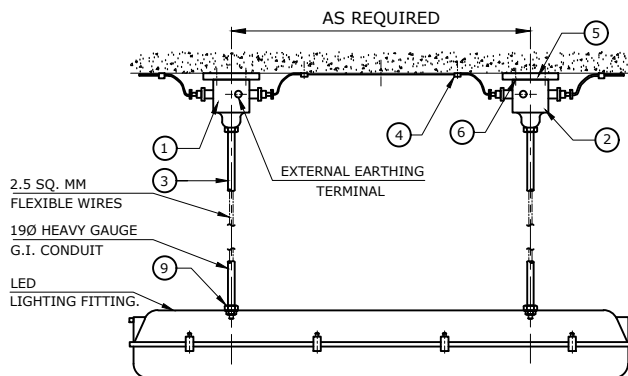
END VIEW



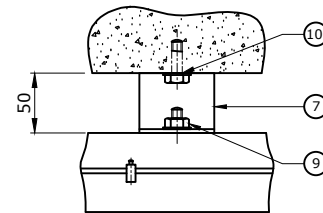
SECTION 'A-A'



**BRACKET MOUNTING ON
WALL/COLUMN MTG. TYPE : BM3**



**FRONT VIEW
MOUNTING TYPE : SM3**



DETAIL 'X'

MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	4WAY-100mm DIA ROUND JUNCTION BOX WITH TERMINAL BLOCK.	1 NO.	
2	DUMMY JUNCTION BOX WITH DOME COVER, BALL & SOCKET WITHOUT TERMINAL BLOCK.	1 NO.	
3	19mm Ø HEAVY GAUGE CONDUIT WITH BOTH END CHECK NUTS LENGTH TO SUIT MOUNTING HEIGHT (MAXIMUM LENGTH 2 Mtrs.)	2 NOS.	
4	G.I. SADDLE/CLEAT ALONG WITH SUITABLE SIZE OF FIXING SCREW TO SUIT FOR CIRCUIT CABLE/CONDUIT.	AS REQUIRED	
5	25 x 6 THK. M.S. FLAT 200mm LONG FOR JUNCTION BOX MOUNTING ON SLAB/STEEL STRUCTURE.	2 NOS.	
6	COUNTER SUNK SCREW WITH RAWAL PLUG FOR RCC SLAB OR SELF TAPPING COUNTER SUNK SCREW FOR STEEL STRUCTURE.	4 NOS.	
7	240 x 50 x 6 THK. M.S. BRACKET FOR MOUNTING OF LIGHTING FITTING	2 NOS.	
8	M10-40mm LONG SCREW WITH RAWAL PLUG FOR MOUNTING OF M.S. BRACKET TO CEILING	4 NOS.	
9	M6-40mm LONG BOLT WITH NUT & WASHER	2 NOS.	
10	M10-68mm ANCHOR BOLT FOR MOUNTING OF JUNCTION BOX TO CEILING	2 NOS.	
11	M8-25mm G.I. BOLT WITH 2 Nos. PLAIN AND 1 No. SPRING WASHER TO ANGLE	2 NOS.	

TYPICAL MOUNTING DETAILS OF INDTL./
RECESS MTG. LED LIGHTING FITTING BELOW
PERFORATED LIGHTING CABLE TRAY

STANDARD DRAWING NO.

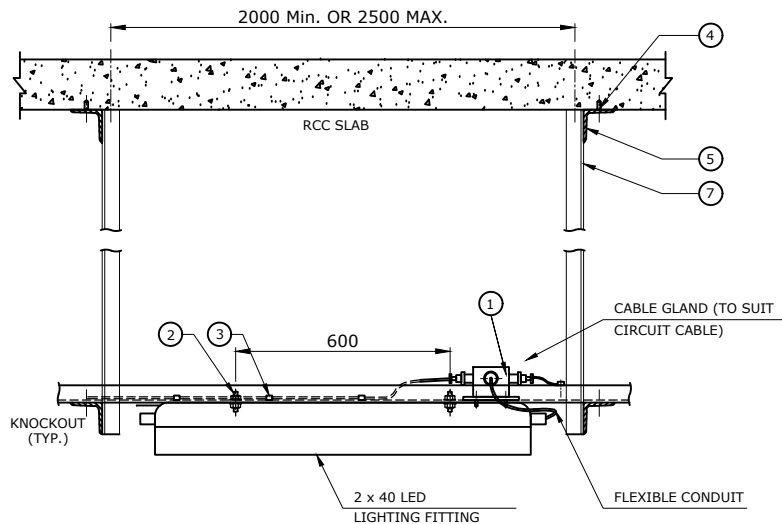
REV. SIZE

SHEET NO.

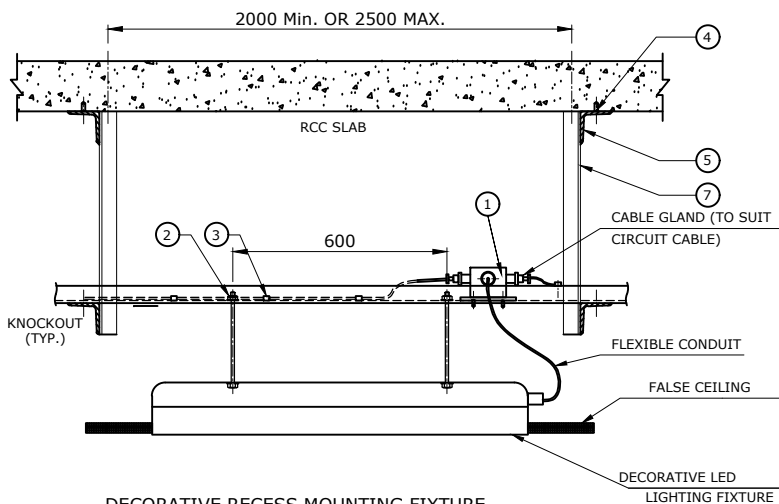
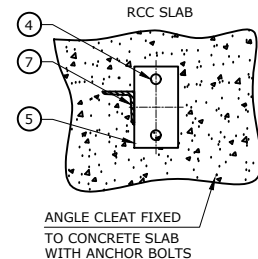
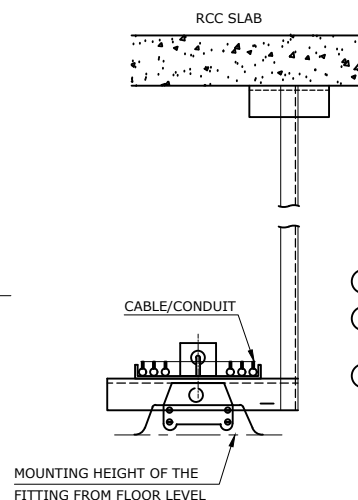
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02

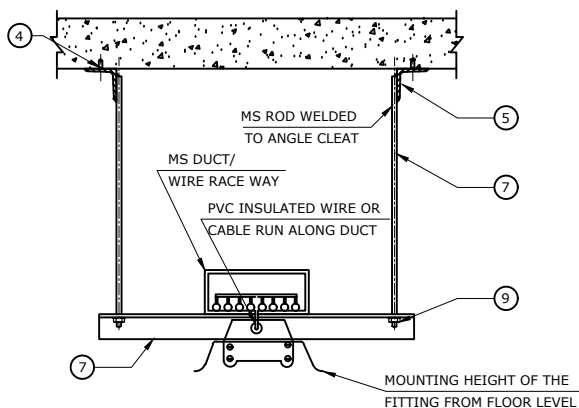
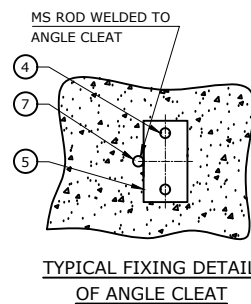
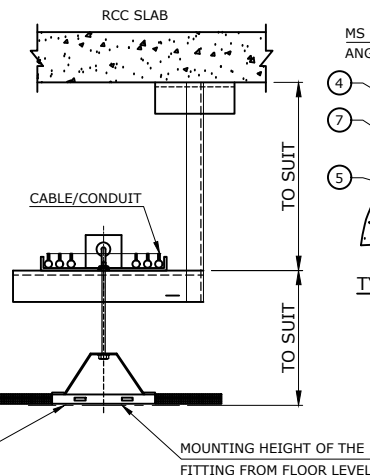
A4



INDUSTRIAL SUSPENSION MOUNTING FIXTURE
MOUNTING TYPE : SM4



DECORATIVE RECESS MOUNTING FIXTURE
MOUNTING TYPE : RM4



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	4WAY-100mm DIA ROUND JUNCTION BOX WITH TERMINAL BLOCK.	1 NO.	
2	19mm DIA CHECK NUT	4 NOS.	
3	G.I. SADDLE ALONG WITH SUITABLE SIZE OF FIXING SCREW & NUT TO SUIT FOR CIRCUIT CABLE/CONDUIT.	AS REQUIRED	
4	M10x68mm LONG ANCHOR STUD WITH BOLT & PLAIN WASHER	AS REQUIRED	
5	ISA 50x6mm THK. 100mm LONG ANGLE CLEAT.	AS REQUIRED	
6	150mm OR 300mm WIDE PERFORATED CABLE TRAY OR DUCT/ WIRE RACE WAY CHANNEL.	AS REQUIRED	
7	ISA 25 x 25 x 6mm THK. ANGLE WELDED TO ANGLE OR 8mm DIA MS ROD WITH THREAD AT BOTTOM END	AS REQUIRED	
8	19mm DIA G.I. PIPE/CONDUIT	AS REQUIRED	
9	NUT SUITABLE FOR M8 BOLT WITH PLAIN WASHER	AS REQUIRED	

NOTES:

- ALL FABRICATED STEEL STRUCTURE SHALL BE PAINTED WITH TWO COATS OF ANTI CORROSIVE PAINT AND TWO COATS OF EPOXY PAINT OF APPROVED SHED.
- ALL HARDWARE SHALL BE STAINLESS STEEL.

**TYPICAL HANDRAIL PIPE MOUNTING DETAILS
OF LED HPMV/HPSV LIGHTING
FITTING ON PLATFORM**

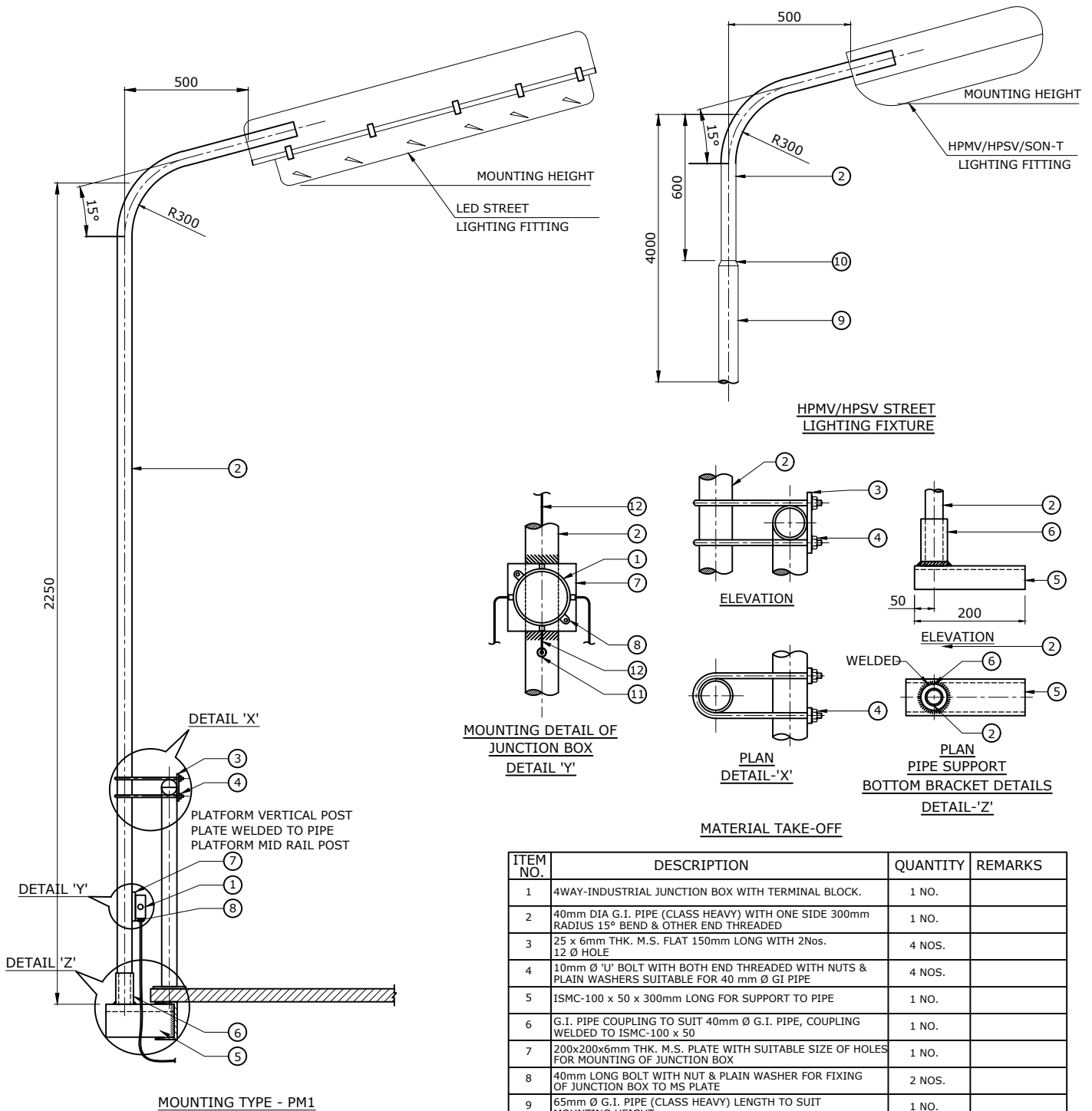
STANDARD DRAWING NO.

REV. SIZE

02 A4

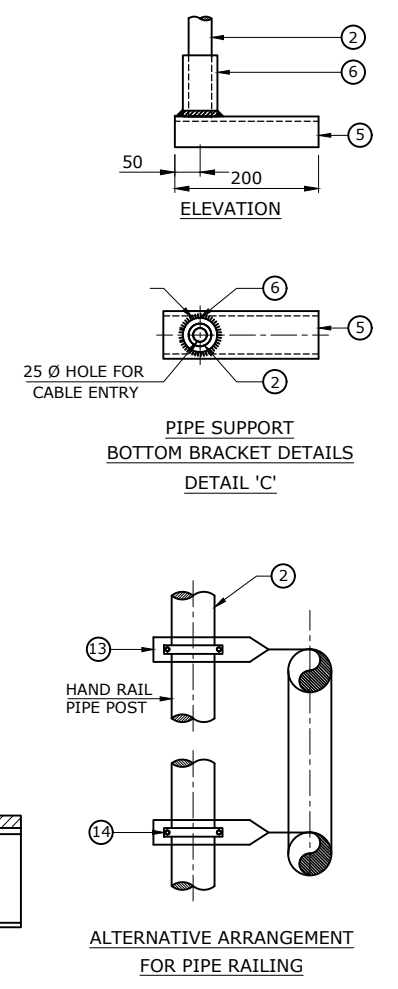
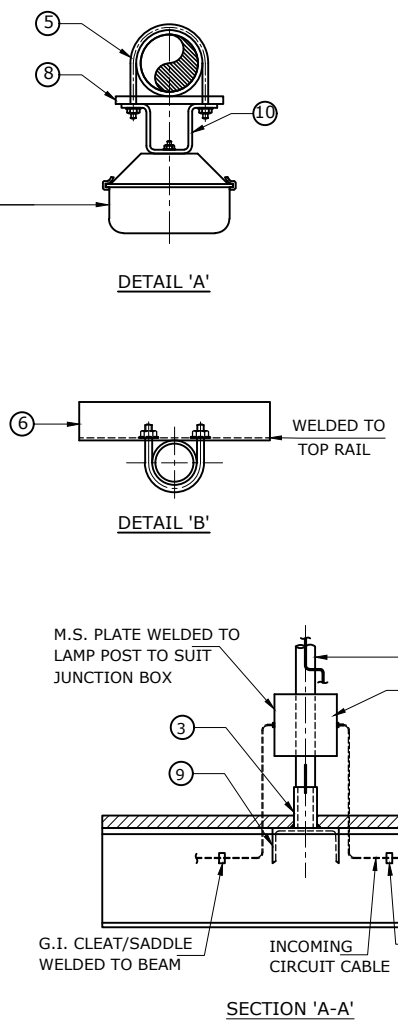
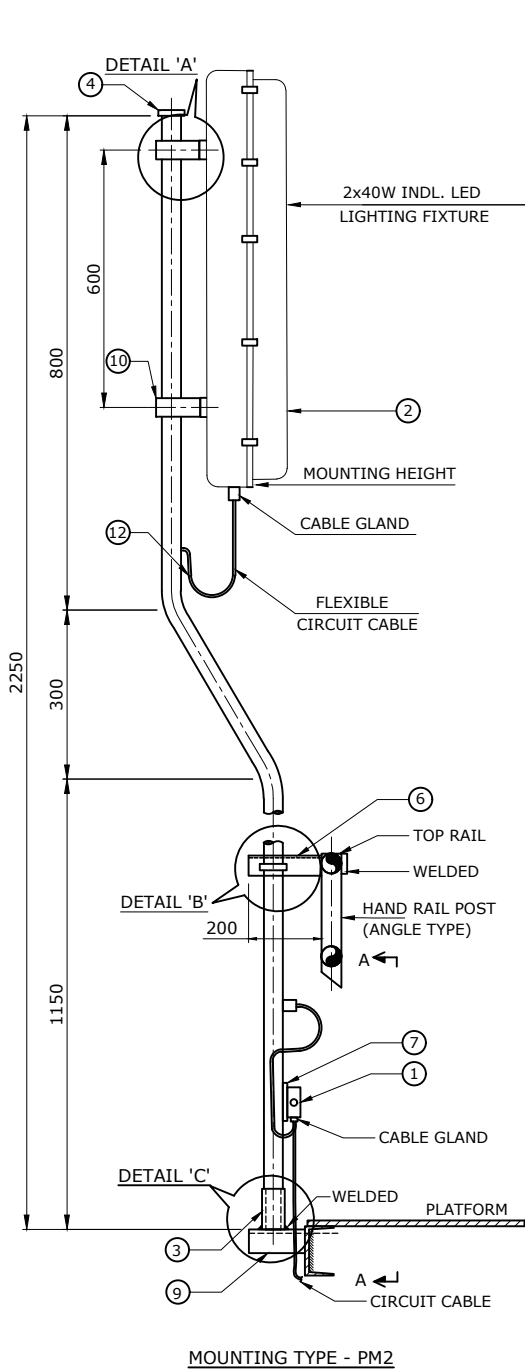
SHEET NO.

1 OF 1



NOTES:

1. MOUNTING HEIGHT SHALL NOT EXCEED 4 MTRS. FROM THE TOP OF PLATFORM.
2. LIGHT FITTING SHALL BE WITH ONE EXTERNAL EARTH CONNECTION AND USE THIRD CORE OR PVC FLEXIBLE CABLE FOR INTERNAL EARTHING. EARTH JUNCTION BOX WITH TWO EXTERNAL EARTH CONDUCTORS.
3. CABLE GLANDS USED FOR TERMINATION OF FLEXIBLE CABLE SHALL BE DOUBLE SEAL WITH CONE GRIP TYPE.
4. PLUG ALL UNUSED ENTRIES OF LIGHTING FITTING AND JUNCTION BOX WITH THREADED STOPPING PLUGS.
5. WHEN MOUNTING HEIGHT IS MORE THEN 2.25M THEN 65 Ø G.I. PIPE WITH REDUCER SHALL BE USED.



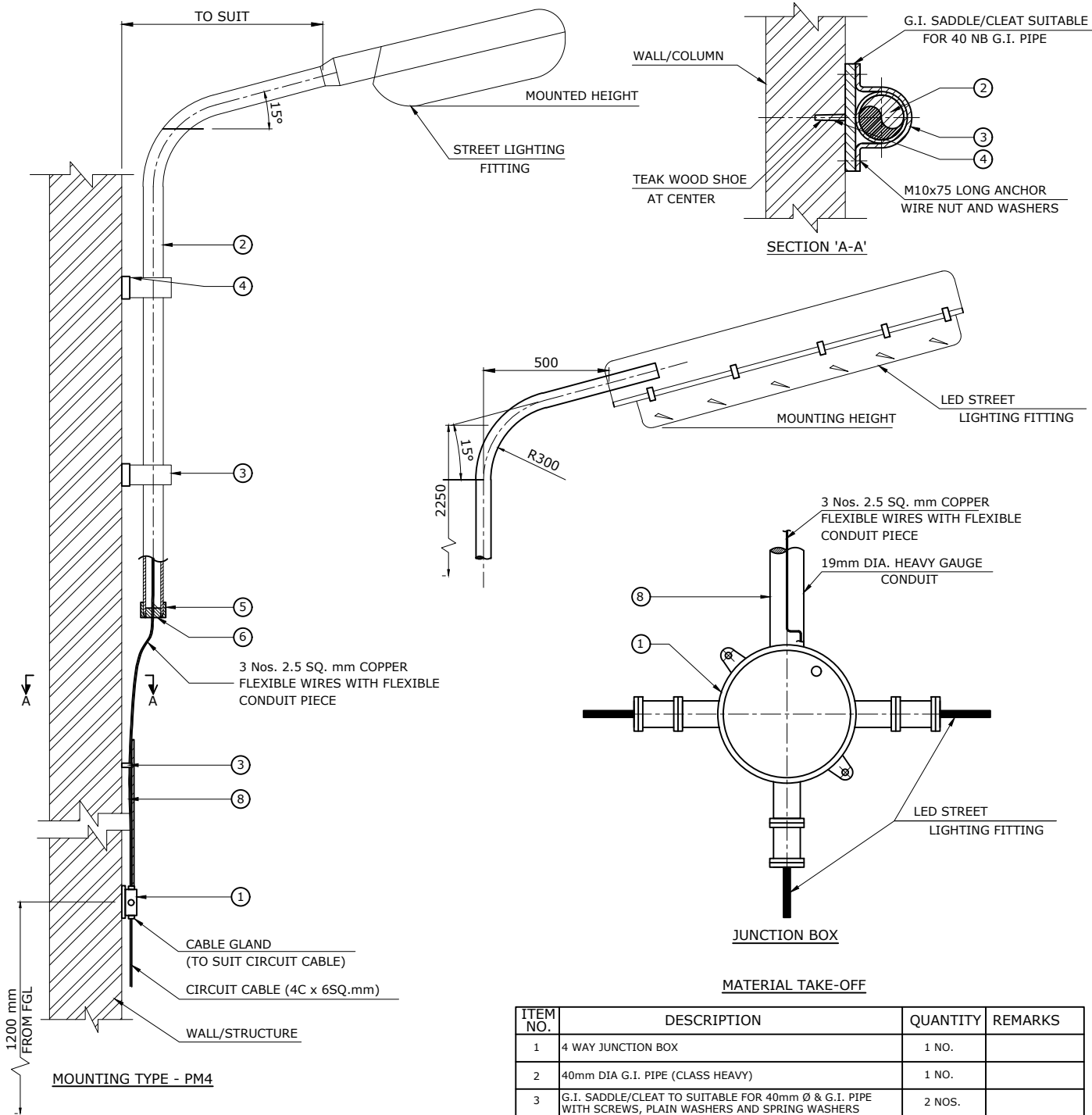
MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	JUNCTION BOX	1 NO.	
2	40mm DIA G.I. PIPE 2500mm LONG	1 NO.	
3	G.I. PIPE COUPLING TO SUIT 40mm Ø PIPE	1 NO.	
4	G.I. PIPE CAP TO SUIT 40mm Ø G.I. PIPE	1 NO.	
5	M10 'U' BOLT TO SUIT 40NB G.I. PIPE THREADED AT BOTH THE ENDS WITH NUTS AND WASHERS	2 EACH	
6	50 x 50 x 300mm GALVANIZED MILD STEEL ANGLE	1 NO.	
7	150 Sq. x 6mm THK. M.S. PLATE	1 EACH	
8	50 x 6mm M.S. FLAT - 100mm LONG	1 NO.	
9	ISMC-100 x 50 x 6mm THK. -200mm LONG	AS REQUIRED	
10	BRACKET TO BE MADE OUT OF 25 x 6mm M.S. FLAT	2 NOS.	
11	G.I. CLEAT, SADDLE WITH SUITABLE SIZE SCREW	AS REQUIRED	
12	RURDER GROMMET	2 NOS.	
13	75 x 10mm THK. G.I. FLAT - 300mm LONG	2 NOS.	
14	G.I. SADDLE/CLEAT TO SUIT 40mm Ø G.I. PIPE WITH G.I. SCREWS AND WASHERS	AS REQUIRED	

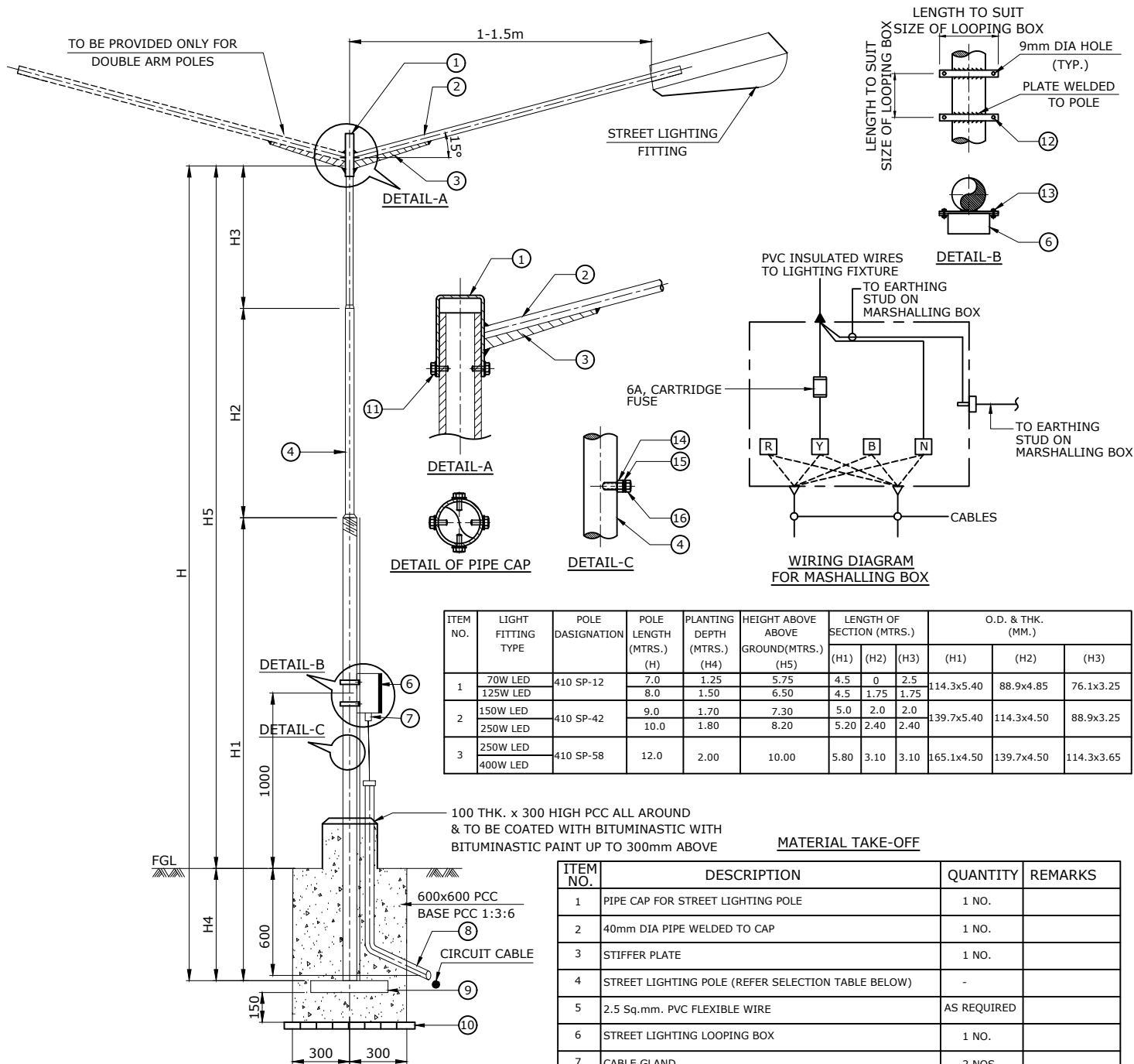
NOTES:

1. ALL NUTS, BOLTS & WASHERS SHALL BE GALVANISED OR ZINK PASSIVATED.
2. ALL SHARP EDGES AND BURR SHALL BE REMOVED.
3. SITE FABRICATION STEEL SHALL BE PAINTED IN ACCORDANCE WITH THE CONTRACT SPECIFICATION.
4. ALL DUMMIES TO GALVANISED FINISHED SHALL BE CLEANED AND APPLIED WITH 2 COATS OF ANTI-CORROSIVE PAINT AND ZINC RICH PAINT.
5. WHERE POSSIBLE LOCATE LAMP POST ADJACENT TO HANDRAIL POST.

	TYPICAL MOUNTING DETAILS OF STREET LIGHTING FITTING (WALL/COLUMN MOUNTED)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	4 WAY JUNCTION BOX	1 NO.	
2	40mm DIA G.I. PIPE (CLASS HEAVY)	1 NO.	
3	G.I. SADDLE/CLEAT TO SUITABLE FOR 40mm Ø & G.I. PIPE WITH SCREWS, PLAIN WASHERS AND SPRING WASHERS	2 NOS.	
4	15mm THK. TEAK WOOD SHOE WITH BITUMINOUS PAINT	1 BLOCK	
5	G.I. PIPE COUPLING (TO SUIT 40mm Ø G.I. PIPE)	1 NO.	
6	RURDER GROMMET (TO SUIT 40mm Ø G.I. PIPE)	1 NO.	
7	50mm DIA G.I. PIPE SLEAVE	1 NO.	
8	19mm DIA G.I. HEAVY GAUGE CONDUIT	AS REQUIRED	
9	10A, 250V D.P WEATHER PROOF LIGHTING SWITCH WITH BOTTOM ENTRY	1 NO.	
10	SCREW WITH PLAIN WASHER AND RAWAL PLUG FOR FIXING JB & LIGHTING SWITCH	8 NOS.	

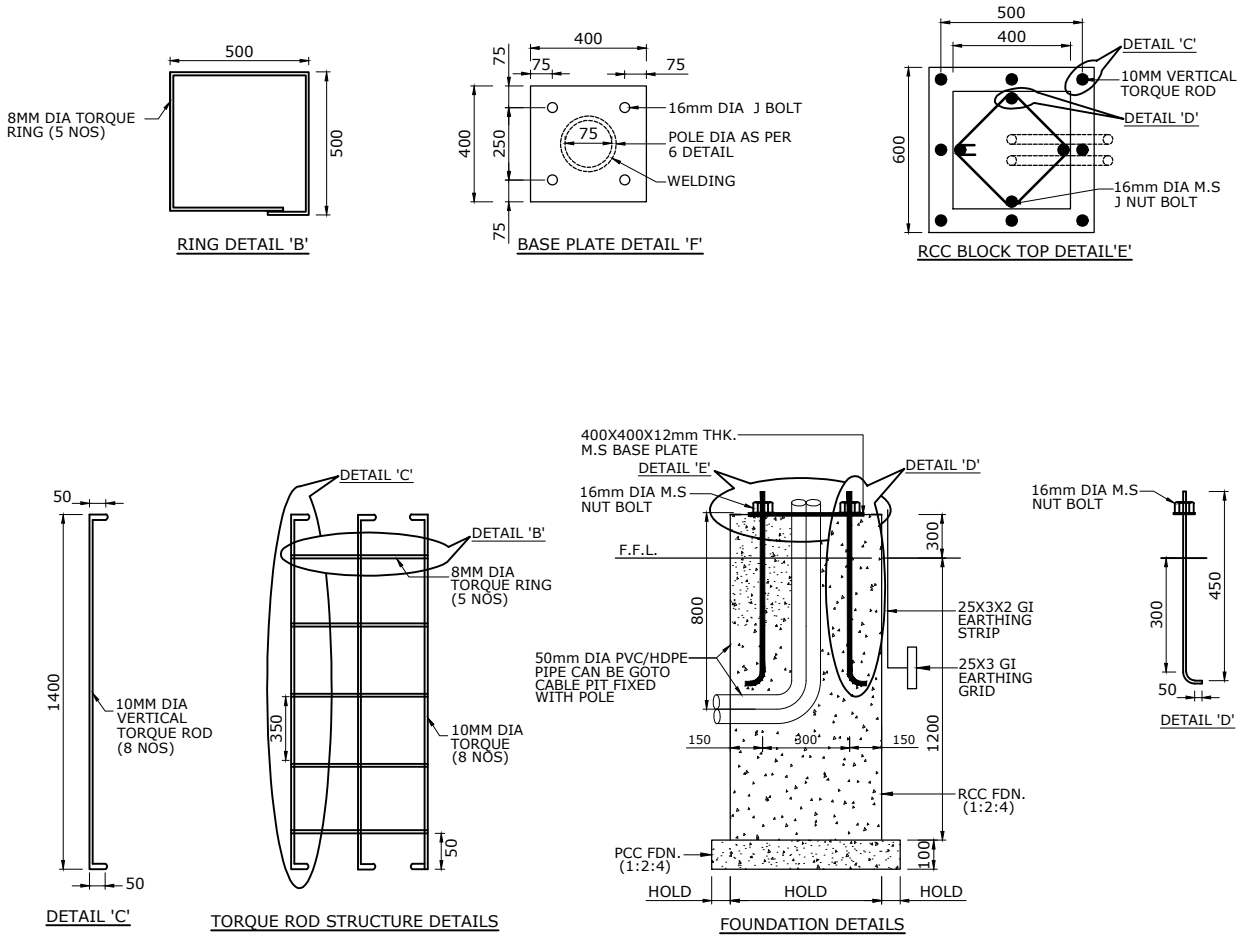


NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. POLE MATERIAL SHALL BE G.I. OR M.S AS PER PROJECT CONTRACT REQUIREMENTS .
3. AFTER INSTALLATION THE ASSEMBLY IS TO BE PREPARED, PRIMED AND PAINTED IN ACCORDANCE WITH THE PROJECT PAINTING SPECIFICATION IF MATERIAL IS M.S.
4. LIGHT FITTING FIXING DETAILS TO BE FURNISHED BY SITE.
5. EARTHING TERMINAL ARE LOCATED DIAMETRICALLY OPPOSITE.
6. ALL NUTS, BOLTS AND WASHERS SHALL BE GALVANISED AND ZINC PASSIVATED.
7. MOUNTING DETAILS OF CONTROL GEAR BOX AND LOOPING BOX REFER INSTALLATION DETAILS.
8. ALL SHARP EDGES AND BURRS SHALL BE REMOVED.
9. POLE SHALL BE MADE FROM TUBULAR STEEL PIPES SWAGED AND WELDED CONFORMING TO DESIGNATION AS MENTIONED IN ABOVE TABLE- AS IS-2713 (PART III) - 1980.
10. DOUBLE ARM SHALL BE EITHER AT 180° OR 30° AS PER THE LOCATION OF THE LIGHTING FITTING & SITE REQUIREMENT.

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	PIPE CAP FOR STREET LIGHTING POLE	1 NO.	
2	40mm DIA PIPE WELDED TO CAP	1 NO.	
3	STIFFER PLATE	1 NO.	
4	STREET LIGHTING POLE (REFER SELECTION TABLE BELOW)	-	
5	2.5 Sq.mm. PVC FLEXIBLE WIRE	AS REQUIRED	
6	STREET LIGHTING LOOPING BOX	1 NO.	
7	CABLE GLAND	2 NOS.	
8	80 NB G.I. PIPE FOR CABLES	AS REQUIRED	
9	250 x 250 x 6mm THK. BASE PLATE	1 NO.	
10	BRICK SOLING (SIZE 230x115x75mm)	15 NOS.	
11	M10 x 30mm LONG FULL THREADED BOLT	8 NOS.	
12	50x8mm THICK G.I. STRIP WELDED TO POLE	2 NOS.	
13	M8 x 30mm LONG THREADED BOLT, NUT & WASHER	4 NOS. EACH	
14	M10, NUT WELDED TO LIGHTING POLE	2 NOS.	
15	PLAIN AND SPRING WASHER SUITABLE FOR M10 BOLT	2 NOS. EACH	
16	M10 FULL THREADED BOLT 40mm LONG	2 NOS.	

	TYPICAL MOUNTING DETAILS OF STREET LIGHTING FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	3 OF 3		



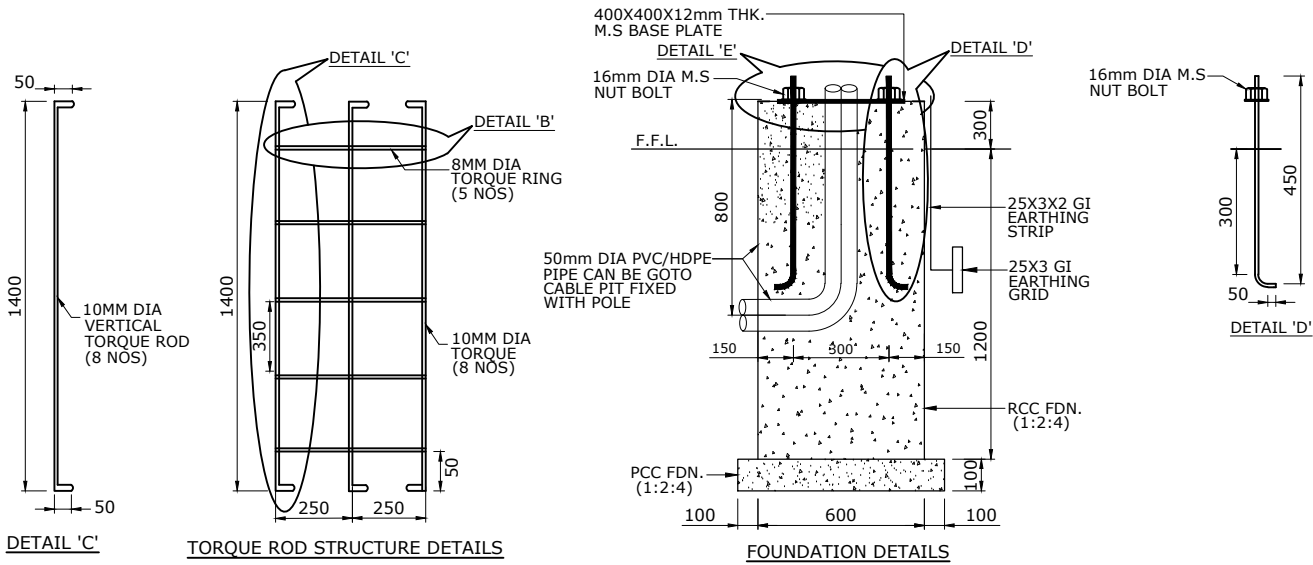
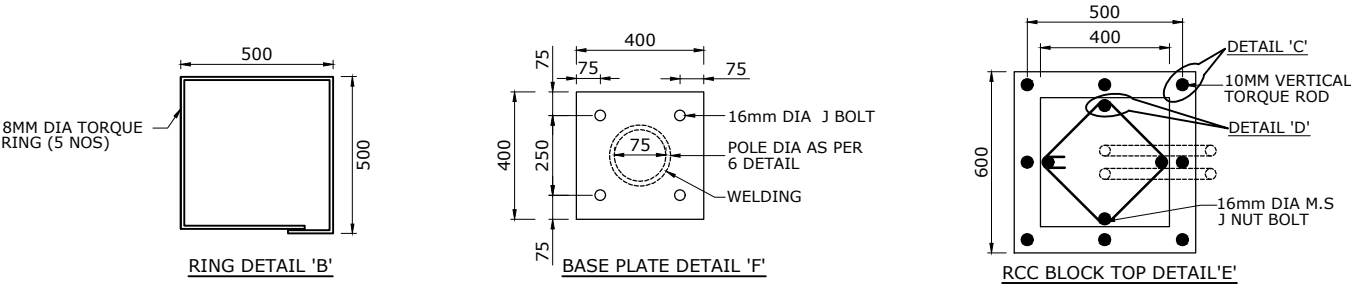
Standard Octagonal Poles (Technical Datasheet)						
Pole Height (M)	Base Plate			Anch Bolt		
	Length (mm)	Width (mm)	Thickness (mm)	Anch Bolt (No. x Dia)	PCD (mm)	Anch Bolt C to C
3	200	200	12	4 X 16	200	100
4	200	200	12	4 X 16	200	100
5	200	200	12	4 X 16	200	100
6	200	200	12	4X 20	200	100
7	200	200	12	4X 20	200	100
8	200	200	12	4X 20	200	100
9	250	250	16	4X 24	250	125
9	200	200	16	4X 20	200	100
10	275	275	16	4X 24	275	137.5
10	250	250	16	4X 24	250	125
11	300	300	16	4X 24	300	150
12	320	320	16	4X 24	320	160
12	300	300	16	4X 24	300	150

Standard Conical Poles (Technical Datasheet)						
Pole Height (M)	Base Plate			Anch Bolt		
	Length (mm)	Width (mm)	Thickness (mm)	Anch Bolt (No. x Dia)	PCD (mm)	Anch Bolt C to C
3	200	200	12	4 X 16	200	100
4	200	200	12	4 X 16	200	100
5	200	200	12	4 X 16	200	100
6	200	200	16	4X 20	210	105
7	250	250	16	4X 20	235	117.5
8	250	250	16	4X 20	235	117.5
9	275	275	16	4X 24	270	135
10	275	275	16	4X 24	270	135
11	300	300	16	4X 24	300	150
12	320	320	16	4X 24	320	160
12	300	300	16	4X 24	320	160

$$D = (\sin 90/2) * PCD$$

VERIFY BASE PLATE DIMENSION AND PCD BEFORE CASTING FOUNDATION

	TYPICAL MOUNTING DETAILS OF STREET LIGHTING FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	3 OF 3		



TYPICAL FOUNDATION MOUNTED
LIGHTING POLE DETAILS INDUSTRIAL
TYPE/WITH BUILT-IN CONTROL GEAR TYPE
LIGHTING FIXTURE

STANDARD DRAWING NO.

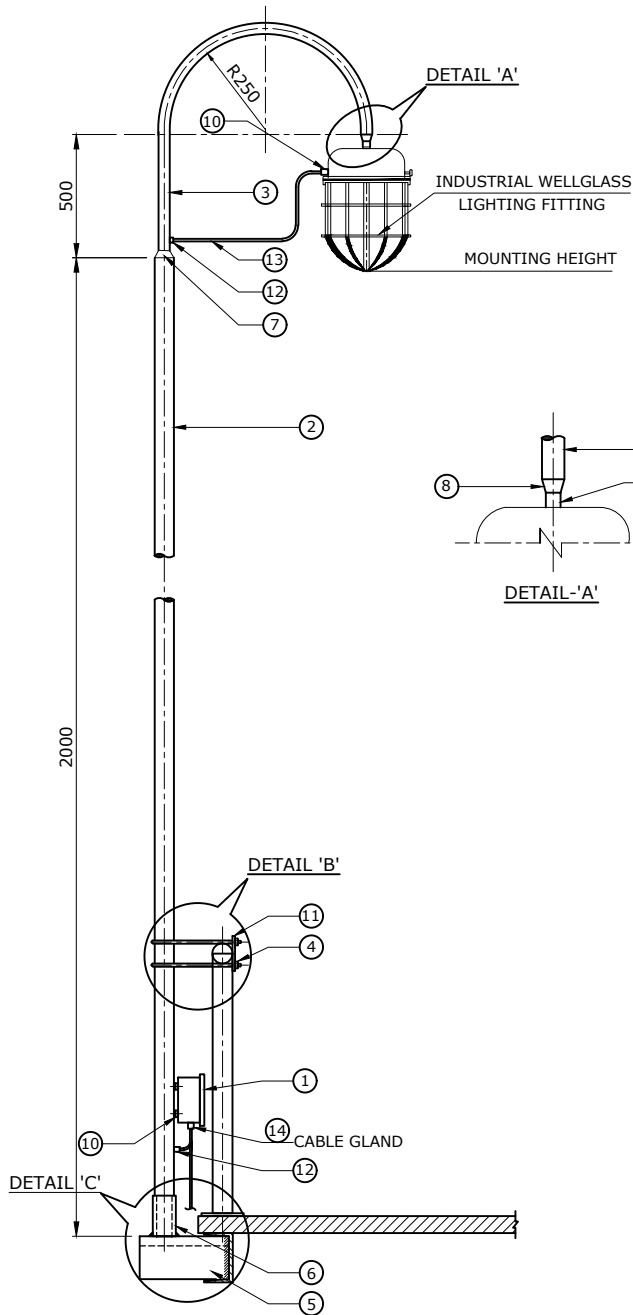
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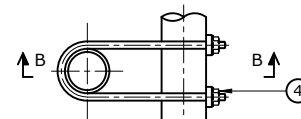
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02

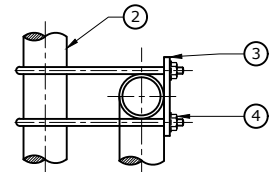
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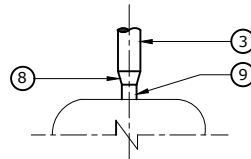
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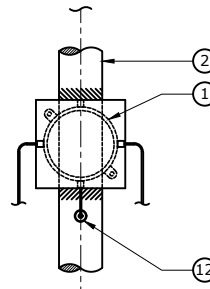
PLAN
DETAIL-'B'



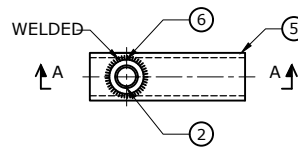
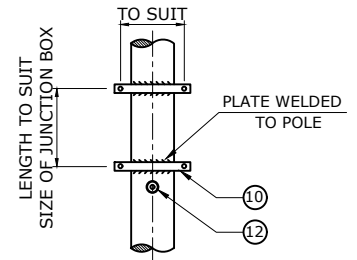
SECTION 'B-B'



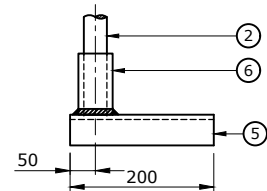
DETAIL-'A'



MOUNTING DETAIL OF
JUNCTION BOX



PLAN
PIPE SUPPORT
BOTTOM BRACKET DETAILS
DETAIL-'C'



SECTION 'A-A'

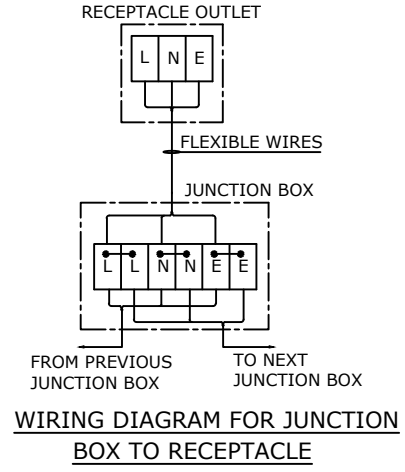
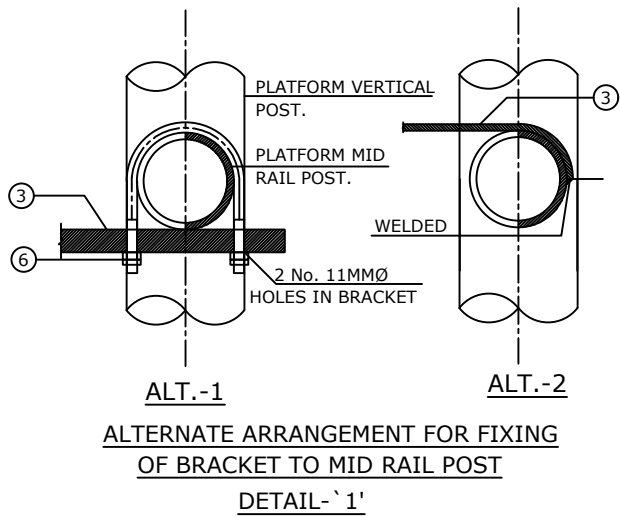
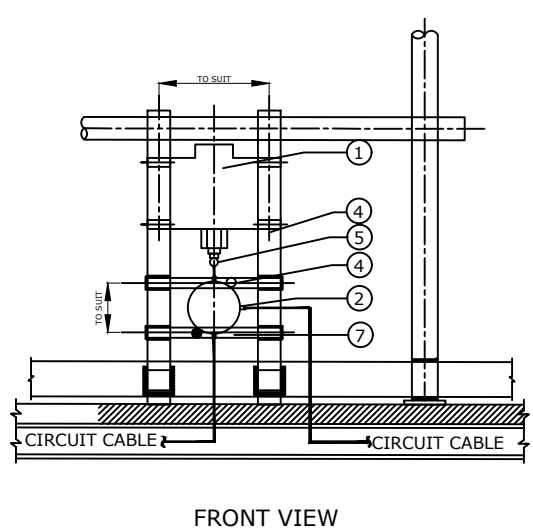
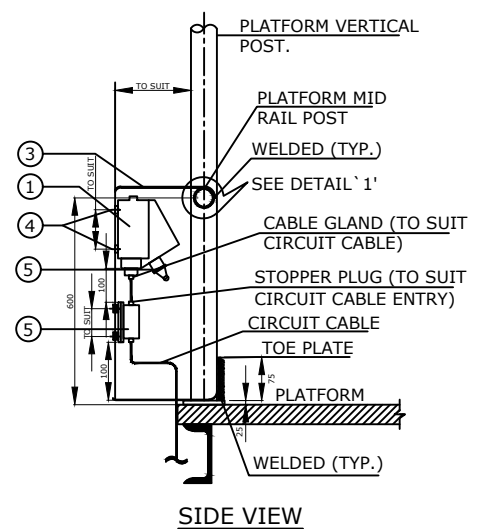
MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	JUNCTION BOX OR CONTROL GEAR BOX	1 NO.	
2	65mm Ø G.I. PIPE (CLASS HEAVY) WITH BOTH SIDE THREADING MAX. LENGTH 3.0 Mtrs.	1 NO.	
3	40mm Ø G.I. PIPE (CLASS HEAVY) WITH ONE END SWAN NECK 250mm RADIUS 180° BEND & BOTH END THREADED. MAX. 1Mtr.	1 NO.	
4	10mm Ø 'U' BOLT SUITABLE FOR 65mm Ø PIPE WITH BOTH END THREADED WITH NUTS 2Nos. PLAIN & 1NO. SPRING WASHER SUITABLE	4 NOS.	
5	ISMC-100 x 50 x 350mm LONG	1 NO.	
6	G.I. COUPLING SUITABLE FOR 65mm Ø G.I. PIPE	1 NO.	
7	G.I. REDUCER - 60 x 40	1 NO.	
8	G.I. REDUCER - 40 x 19	1 NO.	
9	G.I. NIPPLE THREADED AT BOTH END	1 NO.	
10	150x150x6mm THK. M.S. PLATE WITH 2 Nos. 12mm Ø HOLES OR 50x6x300 LONG G.I. FLATE WITH 2 Nos. 12mm Ø HOLES.	1 NO./2 Nos.	REFER VIEW -'A'
11	50 x 6 x 150mm LONG G.I. FLAT WITH 2 Nos. 12mm Ø HOLES.	4 NOS.	
12	RURDER GROMMET TO SUIT FLEXIBLE WIRE	2 NOS.	
13	2.5 Sq. mm SQ. FLEXIBLE CABLE	3.5Mtrs. MAX.	
14	CABLE GLAND SUITABLE FOR ITEM NO. 13	2 NOS.	

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS.
- MOUNTING HEIGHT SHALL NOT EXCEED 2.5M FROM THE PLATFORM.
- CABLE GLAND USED FOR TERMINATION OF FLEXIBLE CABLE SHALL BE DOUBLE SEAL WITH CONE GRIP FOR BRADING.
- PLUG ALL UNUSED ENTRIES OF LIGHTING FITTING AND JUNCTION BOX WITH THREADED STOPPING PLUGS.
- ALL NUTS, BOLTS AND WASHERS SHALL BE GALVANISED.
- ALL SHARP EDGES AND BURRS SHALL BE REMOVED. SITE FABRICATED STEEL SHALL BE PAINTED WITH TWO COATS OF ANTI-CORROSIVE PAINT AND TWO COATS OF EPOXY PAINTS.
- ALL DAMAGE TO GALVANISED FINISHED SHALL BE MADE GOOD WITH ZINC RICH PAINT.
- WHERE POSSIBLE LOCATE LAMP POST ADJACENT TO HANDRAIL POST.

TYPICAL MOUNTING DETAILS OF SINGLE PHASE SOCKET OUTLET ON HANDRAIL	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	1 OF 1		



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1.	SMALL POWER SOCKET OUTLET	AS REQUIRED	
2.	JUNCTION BOX WITH TERMINAL BLOCK	AS REQUIRED	
3.	50 x 6mm THK. (LENGTH AS REQUIRED) MS FLAT FOR FIXING FOR POWER SOCKET OUTLET	3 MTRS.	
4.	M6 x 40mm LONG MS BOLT WITH NUT & WASHER FOR FIXING OF JUNCTION BOX ON BRACKET	8 NOS.	
5.	PLUG TO SUIT SMALL POWER SOCKET OUTLET	AS REQUIRED	
6.	M10 'U' BOLT OF SUITABLE TO MD HANDRAIL POST WITH THREADED BOTH THE SIDE WITH NUT, LOCK NUT & WASHER	2 NOS.	
7.	50 x 6mm THK. (LENGTH AS REQUIRED) MS FLAT FOR FIXING JUNCTION BOX	2 NOS.	

NOTES:

- ALL DIMENSION ARE IN MM.
- DRILLING OF ITEM 3 AND 7 TO BE DETERMINED BY FABRICATOR TO THE SOCKET OUTLET AND JUNCTION BOX.
- JUNCTION BOX, RECEPTACLES AND ACCESSORIES SHALL BE CALLED UP ON THE RELEVANT LAYOUT DRAWING MATERIAL LIST AS REQUIRED.
- ALL CABLE AND GLANDS SHALL CALLED UP ON DISTRIBUTION BOARD SCHEDULE.
- AFTER FABRICATION THE ASSEMBLY IS TO BE PAINTED WITH TWO COATS OF ANTI-CORROSIVE PAINT AND TWO COATS OF EPOXY PAINT.
- ALL NUTS, BOLTS, WASHERS SHALL BE GALVANISED OR ZINC PASSIVATED.
- RECEPTACLES AND JUNCTION BOX SHALL BE CERTIFIED FOR THE HAZARDOUS AREA IN WHICH THEY ARE TO BE LOCATED.

**TYPICAL MOUNTING DETAILS OF
INDUSTRIAL WELLGLASS LIGHTING FITTING
WITH BUILT-IN CONTROL GEAR BOX**

STANDARD DRAWING NO.

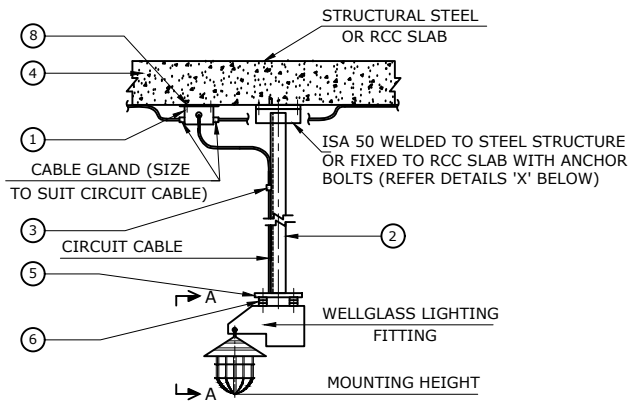
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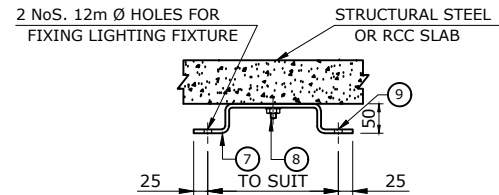
1 OF 1

02

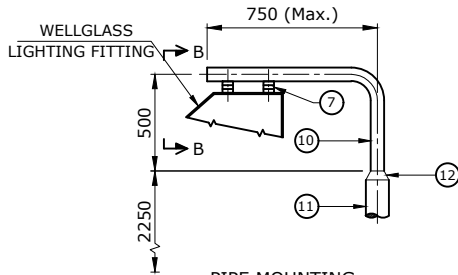
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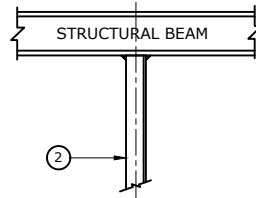
**SUSPENSION MOUNTING
MOUNTING TYPE-SM5**



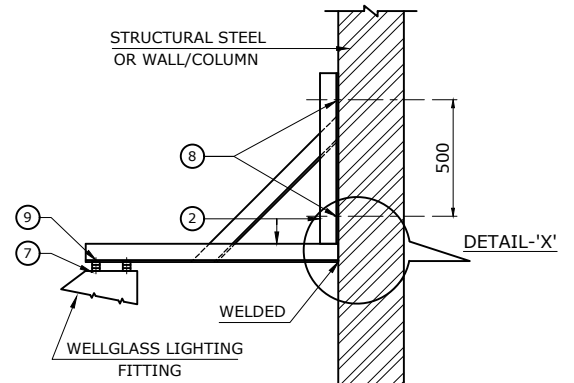
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MOUNTING TYPE-CM5**



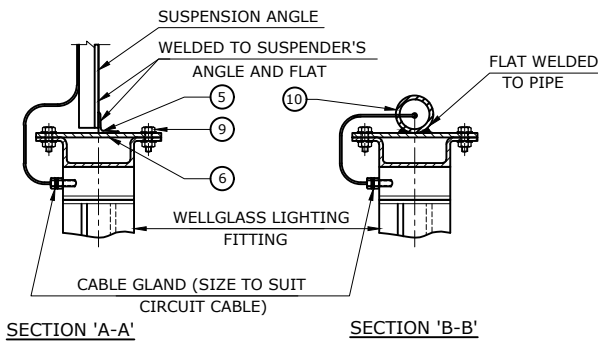
**PIPE MOUNTING
MOUNTING TYPE-PM3**



**MOUNTING ON STRUCTURE OR BEAM
MOUNTING TYPE-SM5**

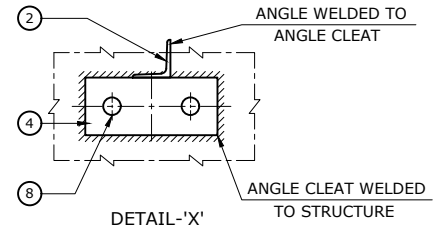


**BRACKET MOUNTING
MOUNTING TYPE-BM5**



SECTION 'A-A'

SECTION 'B-B'



DETAIL-'X'

MATERIAL TAKE-OFF

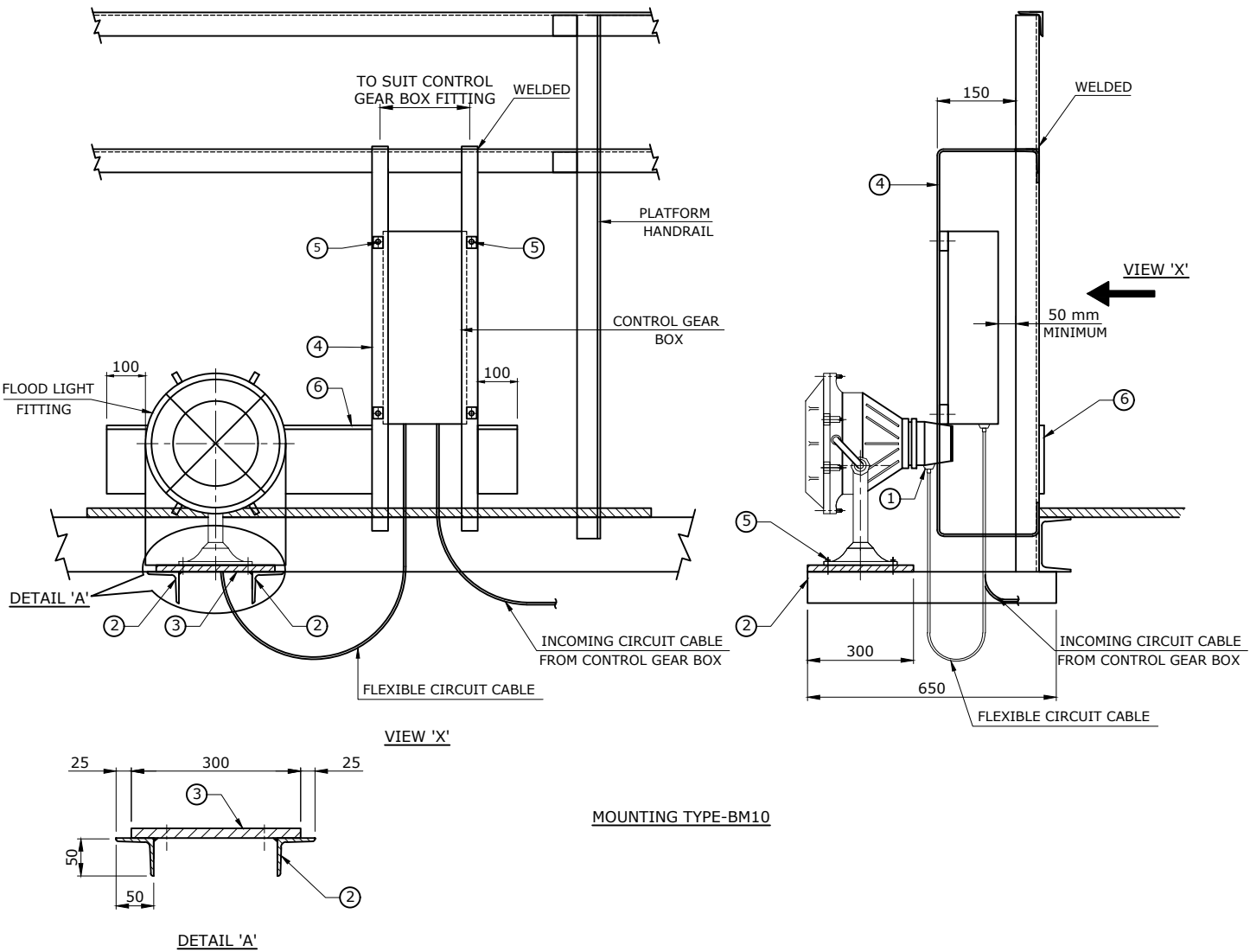
ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	4WAY ROUND JUNCTION BOX	1 NO.	
2	ISA 50 x 50 x 6mm THK. -MAX. LENGTH 3500mm	1 NO.	
3	G.I. SADDLE/CLEAT LONG WITH SCREWS TO SUIT CIRCUIT CABLE	AS REQUIRED	
4	50 x 50 x 6 x 150 LONG ANGLE CLEAT WITH 2 Nos. 12 Ø HOLES (REFER DETAIL - 'X')	1 NO.	
5	25 x 25 x 6 x 300 LONG ANGLE CLEAT	1 NO.	
6	32 x 6 x 200 LONG G.I. FLAT WITH 3 Nos. 12 Ø HOLES	2 NOS.	
7	50 x 6 x 200 LONG G.I. FLAT WITH 2 Nos. 12 Ø HOLES	1 NO.	
8	M10 x 40mm LONG ANCHOR STUD WITH PLAIN AND SPRING WASHERS	1 NO.	
9	M10 x 30mm LONG G.I. BOLT WITH NUT, 2 PLAIN AND SPRING WASHERS	4 NOS.	
10	40mm Ø G.I. PIPE - CLASS HEAVY WITH MAX. LENGTH OF 1.5 Mtrs. WITH THREADED AT BOTH SIDES.	1 NO.	
11	65mm Ø G.I. PIPE - CLASS HEAVY WITH MAX. LENGTH OF 13.0 Mtrs. WITH THREADED AT BOTH SIDES.	1 NO.	

NOTES:

- ALL WELDED POINT SHALL CLEANED AND APPLY TWO COAT OF ANTI-CORROSIVE PAINT AND TWO COATS OF ZINC RICH PAINT.

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	4WAY ROUND JUNCTION BOX	1 NO.	
2	ISA 50 x 50 x 6mm THK. 160mm LONG ANGLE CLEAT WITH 2 Nos. 12mm Ø HOLES	1 NO.	
3	ISA 50 x 50 x 6mm THK. LENGTH TO SUIT MTG. HEIGHT OR BRACKET SUSPENSION MOUNTING TYPE TO SUIT HEIGHT	1 NO.	
4	M10-68mm LONG ANCHOR STUD WITH LOCK WASHERS AND NUTS FOR FIXING OF ISA IN RCC SLAB	2 NOS.	
5	M25-40mm LONG BOLT WITH NUT AND PLAIN WASHERS	1 NO.	
6	M10-40mm LONG BOLT WITH NUT AND PLAIN WASHERS FOR MOUNTING OF LIGHTING FITTING	2 NOS.	
7	SADDLE/CLEAT ALONG WITH SUITABLE SIZE OF ANCHORING FIXING SCREWS TO SUIT FOR CIRCUIT CABLE SADDLE.	AS REQUIRED	

	TYPICAL DETAIL OF ARRANGEMENT OF FLOOD LIGHT MOUNTED ON PLATFORM/WALKWAY	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

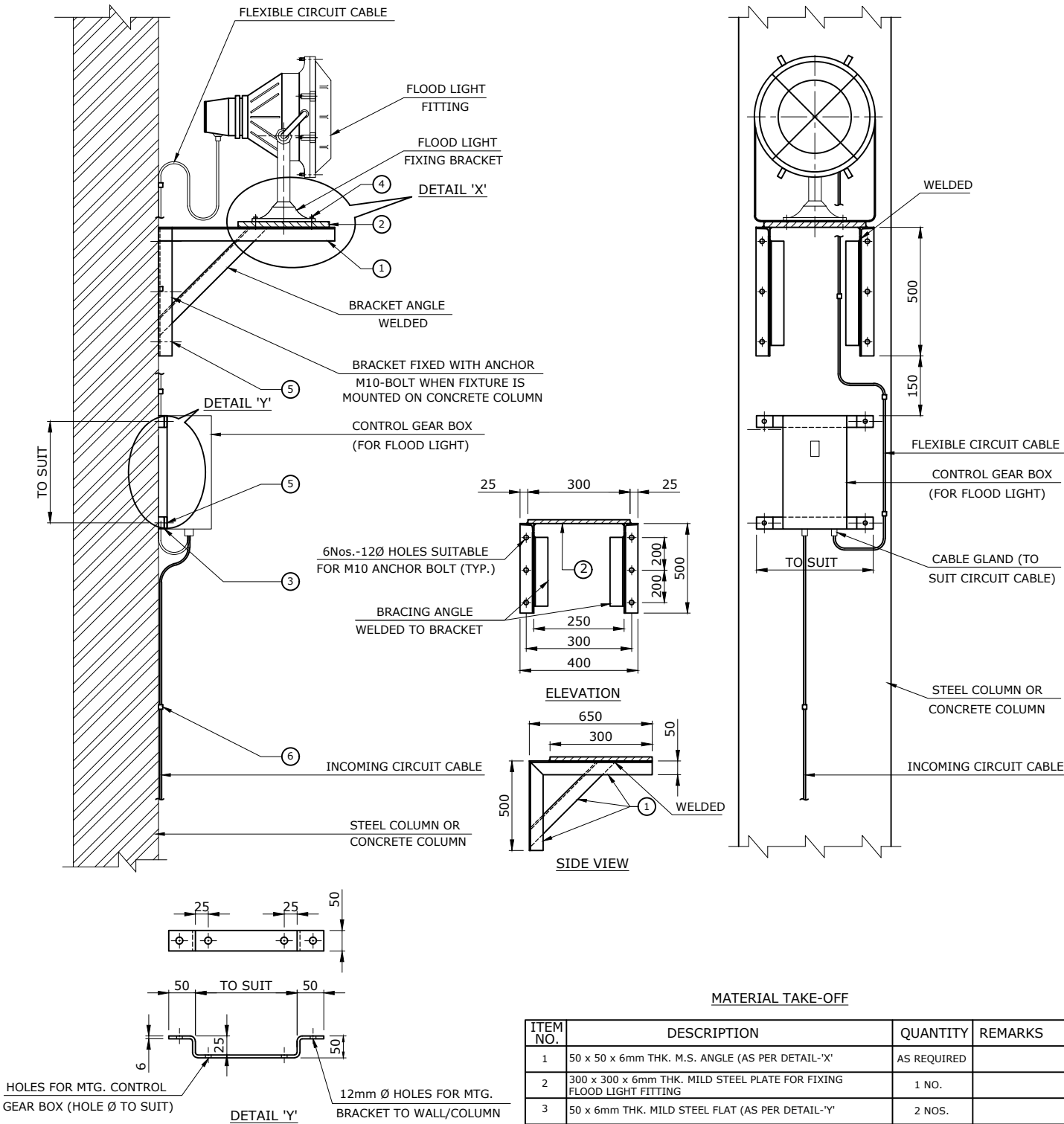


MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	CABLE GLAND (SIZE TO SUIT CIRCUIT CABLE)	AS REQUIRED	
2	50 x 50 x 6mm THK. 650mm LONG M.S. ANGLE	2 NOS.	
3	300 x 300 x 6mm THK. MILD STEEL FLAT	AS REQUIRED	
4	50 x 6mm THK. MILD STEEL FLAT (LENGTH TO SUIT)	AS REQUIRED	
5	M10 x 50 LONG M.S. BOLT WITH NUT & WASHER	AS REQUIRED	
6	3 mm THK. KICK PLATE (SIZE TO SUIT AT SITE)	AS REQUIRED	

- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS.
 2. AFTER INSTALLATION THE ASSEMBLY IS TO BE PREPARED, PRIMED AND PAINTED.

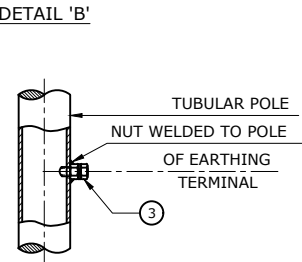
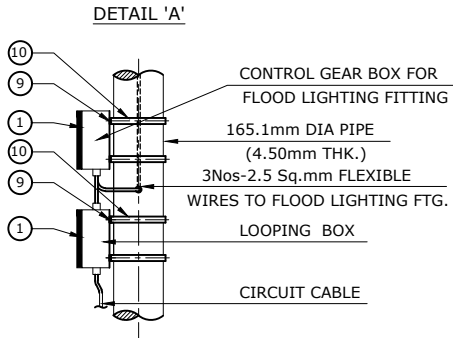
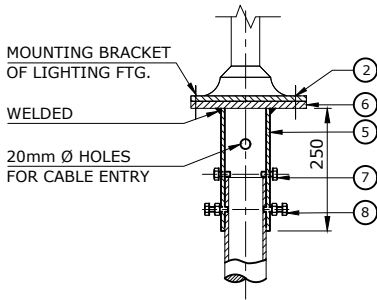
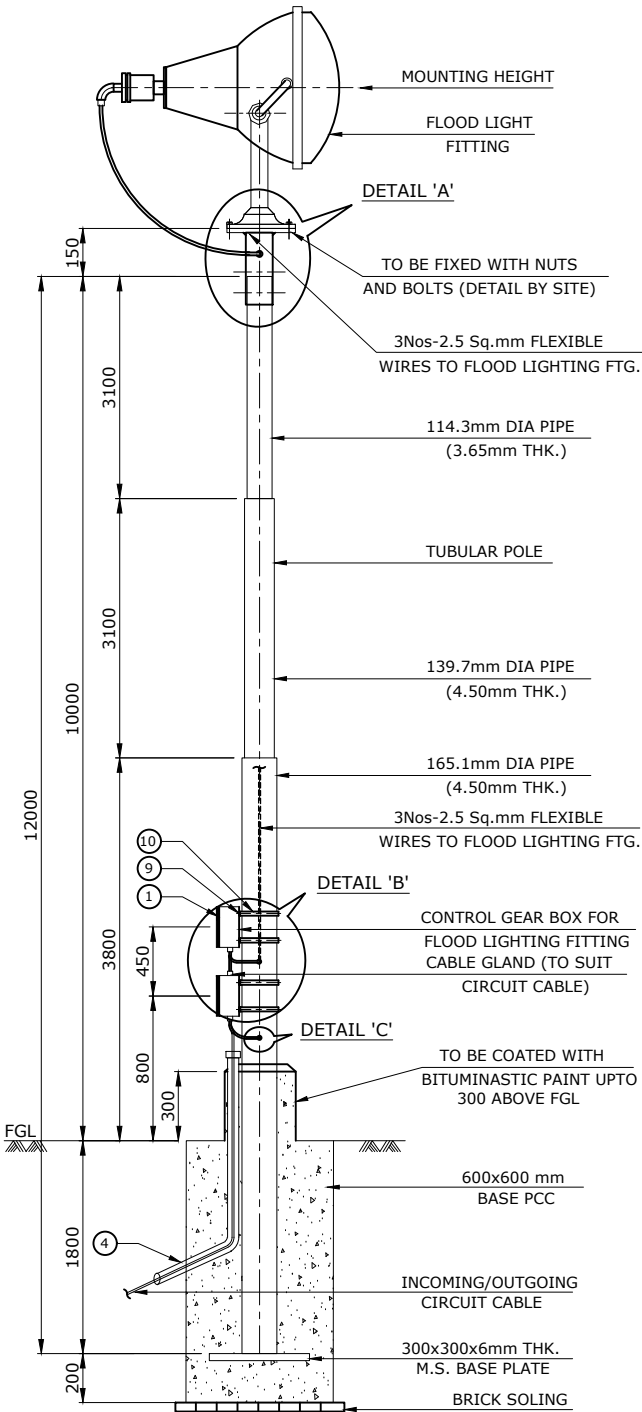
	TYPICAL MOUNTING ARRANGEMENT OF FLOOD LIGHT MOUNTED ON STEEL/CONCRETE COLUMN	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS.
- AFTER INSTALLATION THE ASSEMBLY IS TO BE PAINTED WITH TWO COATS OF ANTI-CORROSIVE PAINT AND TWO COATS OF EPOXY PAINTS.

	TYPICAL MOUNTING DETAIL OF 1 NO. FLOOD LIGHT FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	STREET LIGHTING LOOPING BOX	1 NO.	
2	M8 x 40mm LONG BOLT WITH NUTS & PLAIN WASHER FOR FIXING FLOOD LIGHT	AS REQUIRED	
3	EARTHING TERMINAL M10-40mm LONG BOLT WITH NUTS, 2Nos. SPRING WASHERS & 2Nos. PLAIN WASHERS	1 NO.	
4	75mm NB G.I. PIPE SLEAVE	2 NOS.	
5	M.S PIPE CAP TO SUIT 1114.30mm DIA PIPE	1 NO.	
6	300 x 300 x 10mm THICK M.S. PLATE	1 NO.	
7	M10-40mm LONG BOLT TO BE USED AS STOPPER	3 NOS.	
8	M10 x 40mm LONG BOLT WITH LOCK NUT TO BE USED AS HOLDER	3 NOS.	
9	M8-40mm LONG BOLT WITH NUTS & PLAIN WASHER FOR FIXING OF CONTROL GEAR BOX & LOOPING BOX	8 NOS.	
10	BRACKET/CLAMP MADE OUT FROM 25x6mm THK. M.S. FLAT FOR FIXING OF CONTROL GEAR BOX & LOOPING BOX	4 NOS.	

NOTES:

- LIGHTING FITTING FIXING DETAILS TO BE FURNISHED BY SITE.
- EARTHING TERMINALS ARE LOCATED DIAMETRICALLY OPPOSITE.
- ALL NUTS, BOLTS AND WASHER SHALL BE GALVANISED OR ZINC PASSIVATED.
- MOUNTING DETAILS OF CONTROL GEAR BOX & LOOPING BOX REFER INSTALLATION DETAILS.
- ALL SHARP EDGES AND BURRS SHALL BE REMOVED.
- POLE SHALL BE MADE FROM TUBULAR STEEL PIPES SWAGED AND WELDED CONFORMING TO DESIGNATION 410TP-60 AS PER IS-2713 (PART II) - 1980.

TYPICAL MOUNTING DETAIL OF 8 NOS.
FLOOD LIGHT FITTING ON LATTICE
TYPE TOWER

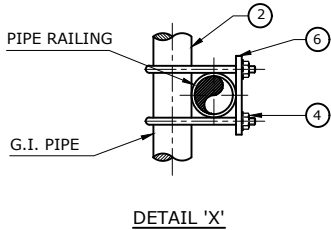
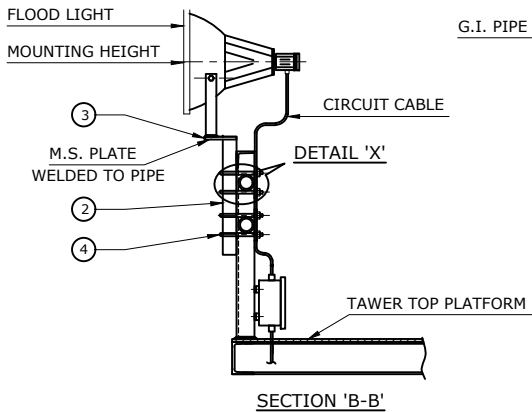
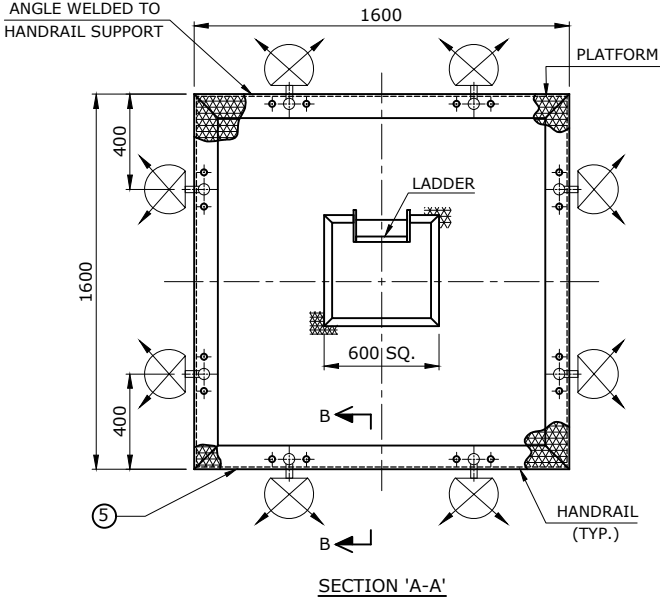
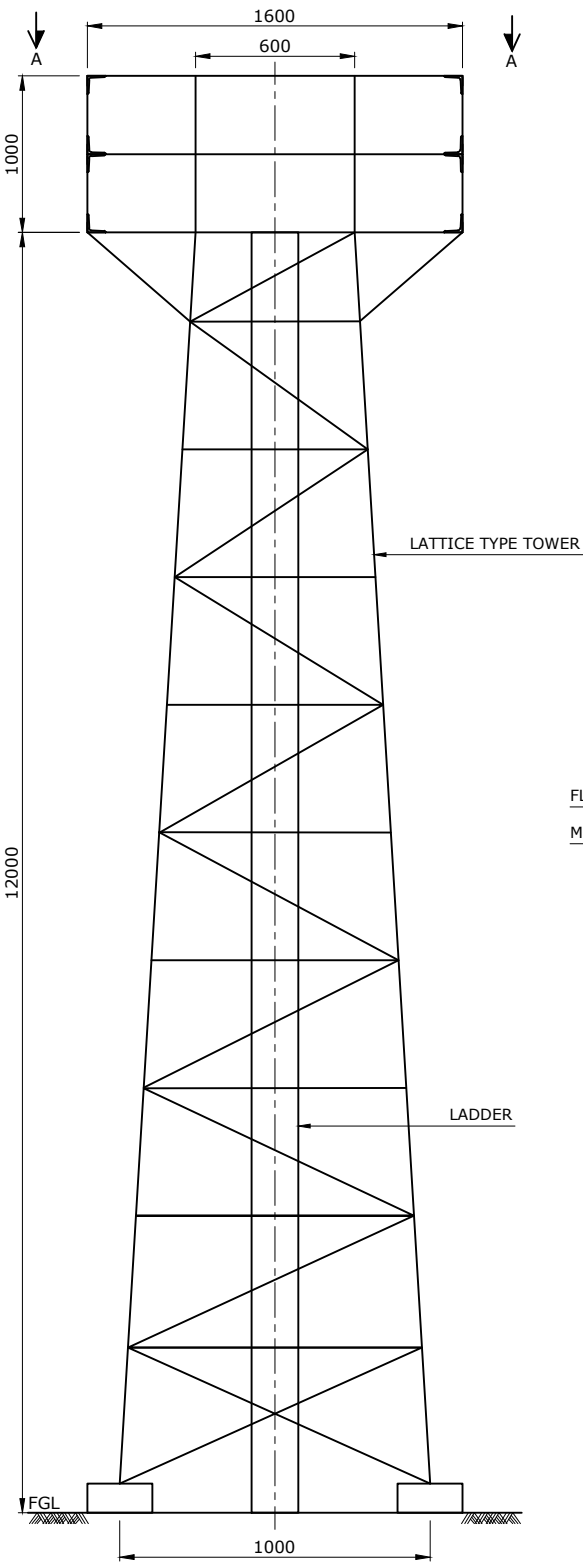
STANDARD DRAWING NO.

REV. SIZE

02 A4

SHEET NO.

1 OF 1



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	CONTROL GEAR BOX	AS REQUIRED	
2	40mm Ø G.I. PIPE (CLASS HEAVY) LENGTH TO SUIT	AS REQUIRED	
3	150 x 250 x 6mm THK. M.S. PLATE	AS REQUIRED	
4	M10 'U' BOLT OF SUITABLE SIZE (THREADED AT BOTH ENDS) WITH NUT AND WASHER	4 NOS.	
5	75 x 75 x 6mm THK. M.S. ANGLE (LENGTH TO SUIT)	AS REQUIRED	
6	25 x 6mm THICK M.S. FLAT (LENGTH TO SUIT)	AS REQUIRED	

NOTES:

TYPICAL MOUNTING DETAIL OF 8 NOS.
FLOOD LIGHTING FITTING ON LATTICE
TYPE TOWER

STANDARD DRAWING NO.

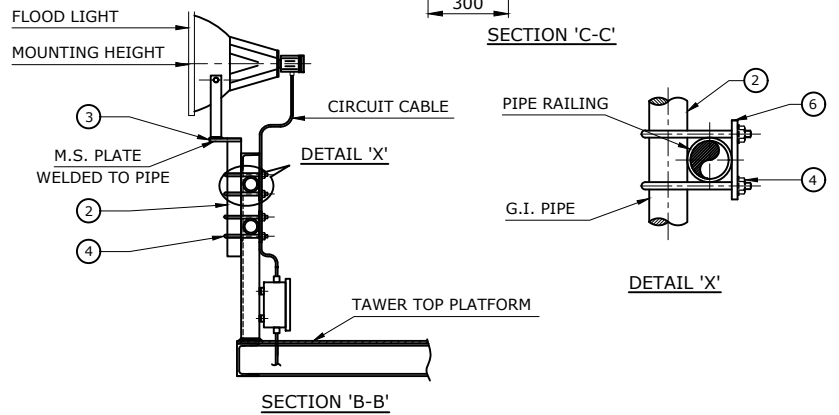
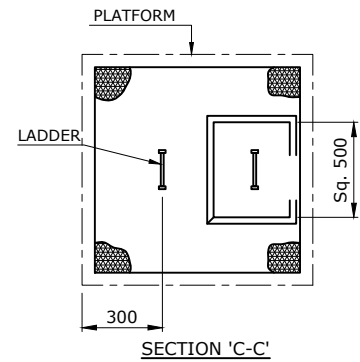
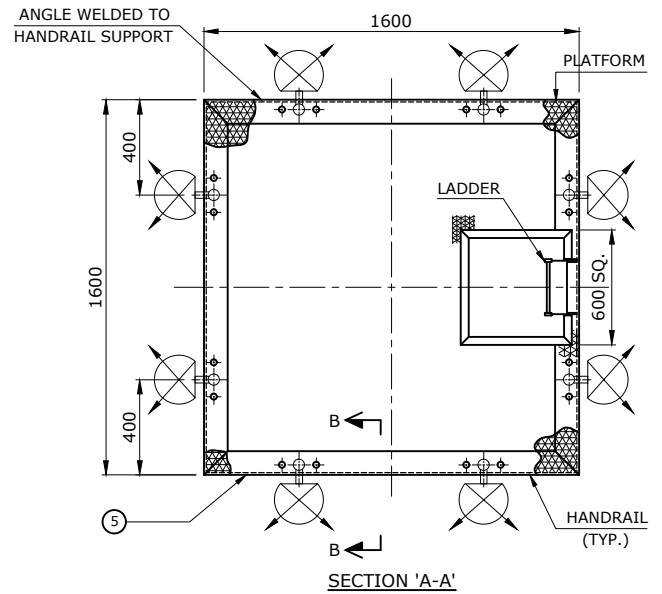
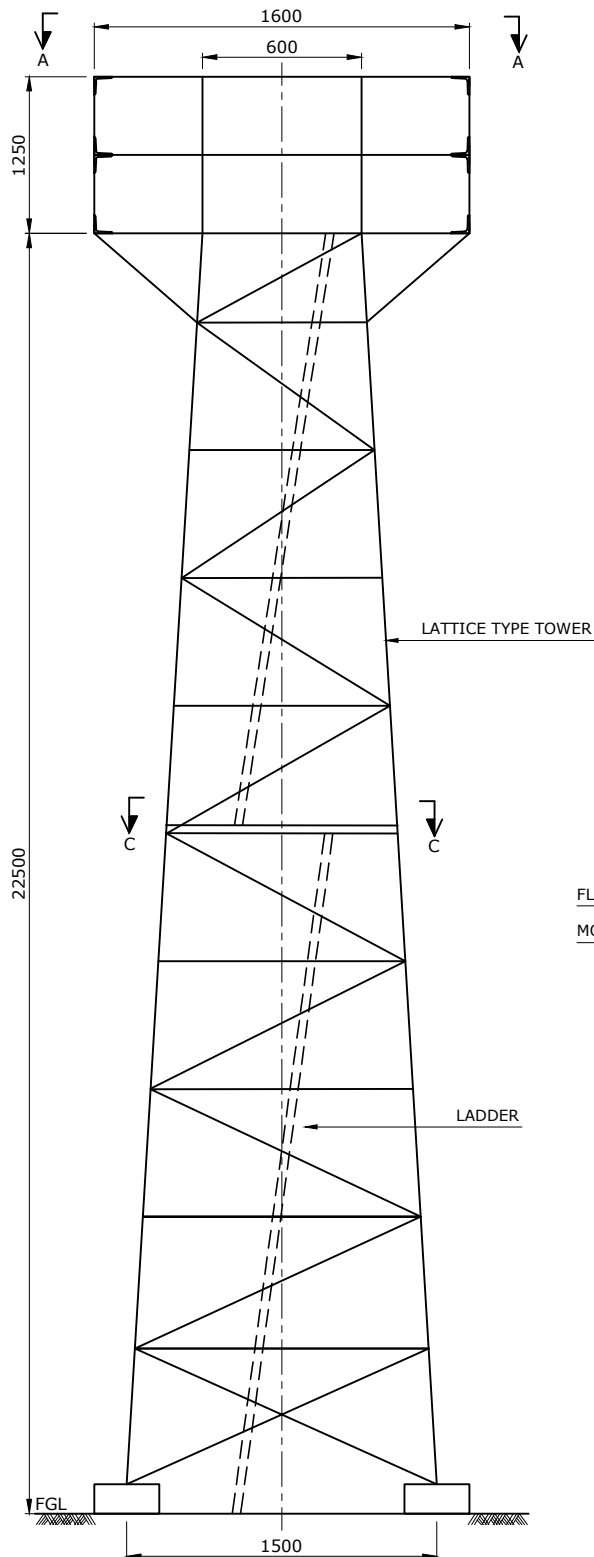
REV. SIZE

02

A4

SHEET NO.

1 OF 1



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	CONTROL GEAR BOX	AS REQUIRED	
2	40mm Ø G.I. PIPE (CLASS HEAVY) LENGTH TO SUIT	AS REQUIRED	
3	150 x 250 x 6mm THK. M.S. PLATE	AS REQUIRED	
4	M10 'U' BOLT OF SUITABLE SIZE (THREADED AT BOTH ENDS) WITH NUT AND WASHER	2 NOS.	
5	75 x 75 x 6mm THK. M.S. ANGLE (LENGTH TO SUIT)	AS REQUIRED	
6	25 x 6mm THICK M.S. FLAT (LENGTH TO SUIT)	AS REQUIRED	

NOTES:

TYPICAL MOUNTING DETAILS OF FLAMEPROOF LED LIGHTING FITTING

STANDARD DRAWING NO.

REV.

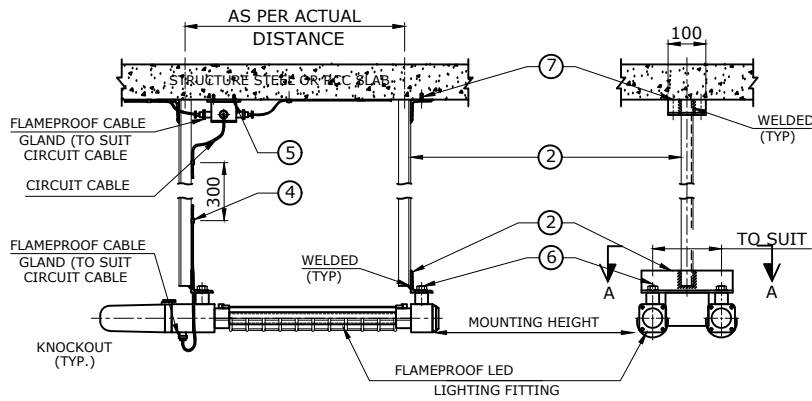
SIZE

02

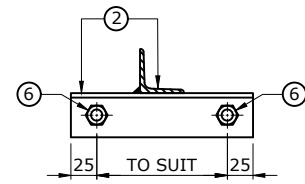
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SHEET NO.

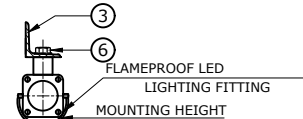
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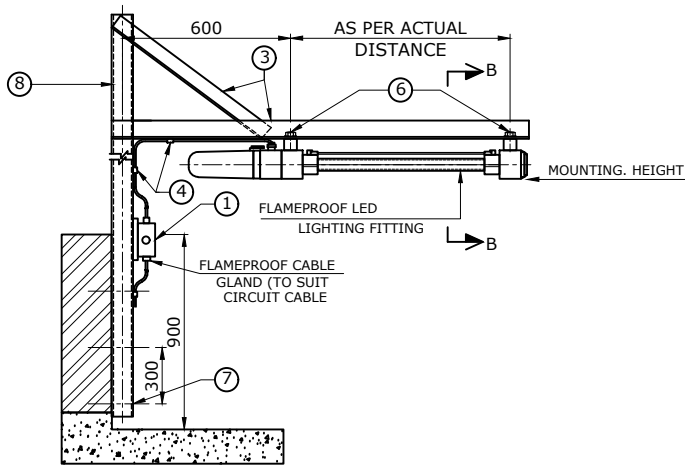
DETAIL FOR SUSPENSION MOUNTING
MOUNTING TYPE : SM9



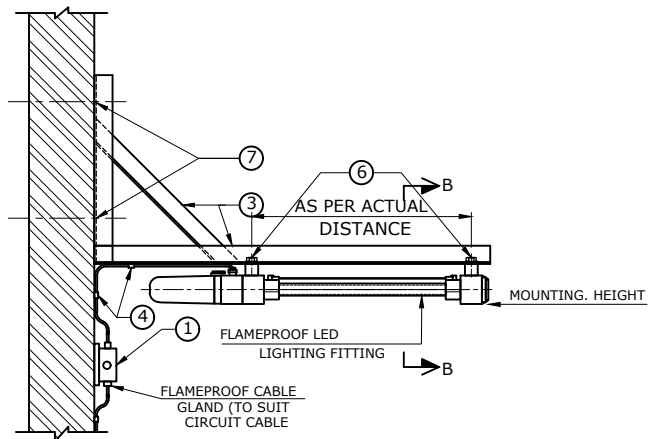
SECTION 'A-A'



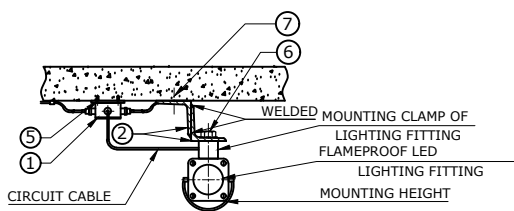
SECTION 'B-B'



DETAIL FOR ROOF/TERRACE MOUNTING
MOUNTING TYPE : BM9



DETAIL FOR BRACKET MOUNTING
MOUNTING TYPE : BM9



DETAIL FOR CEILING MOUNTING
MOUNTING TYPE : CM9

MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY			REMARKS
		CM	SM	BM	
1	FLAMEPROOF JUNCTION BOX WITH TERMINAL BLOCK.	1 NO.	1 NO.	1 NO.	
2	ISA 50 x 50 x 6mm THK. (LENGTH TO SUIT)	AS REQD.	AS REQD.	-	
3	BRACKET MADE OUT FROM ISA 75 x 75 x 6mm THK. (LENGTH TO SUIT).	-	-	AS REQD.	
4	SADDLE/CLEAT ALONG WITH SUITABLE SIZE OF FIXING SCREWS TO SUIT FOR CIRCUIT CABLE.	AS REQD.	AS REQD.	AS REQD.	
5	M8-68mm LONG STUD ANCHOR WITH NUT & LOCK WASHER FOR JUNCTION BOX FIXING TO CEILING/WALL.	2 NOS.	2 NOS.	2 NOS.	
6	M10x40mm LONG BOLT NUT & PLAIN WASHER.	2 NOS.	4 NOS.	4 NOS.	
7	M10-68mm LONG STUD ANCHOR WITH NUT & LOCK WASHER FOR FIXING OF ISA TO CEILING/WALL.	2 NOS.	4 NOS.	4 NOS.	
8	ISMC -150 (LENGTH TO SUIT)	-	-	AS REQD.	

NOTES:

TYPICAL SUSPENSION/CEILING/PIPE/BACKET
MOUNTING DETAILS OF FLAMEPROOF
WELLGLASS LIGHTING FITTING

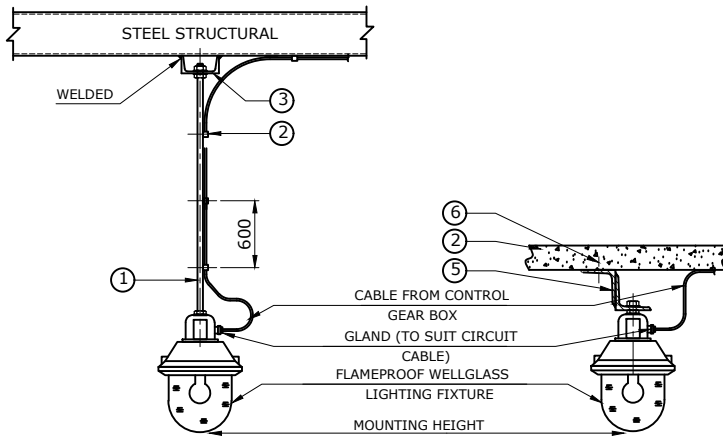
STANDARD DRAWING NO.

REV. SIZE

02 A4

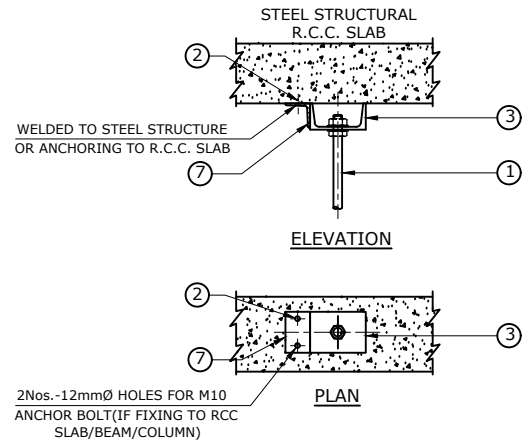
SHEET NO.

1 OF 1

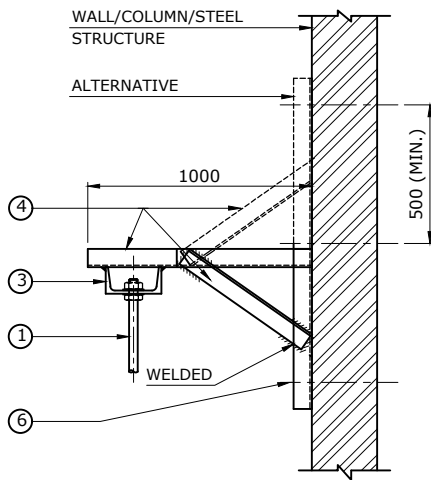


SUSPENSION MOUNTING
MOUNTING TYPE : SM8

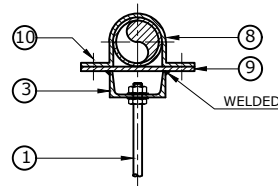
CEILING MOUNTING
MOUNTING TYPE : CM8



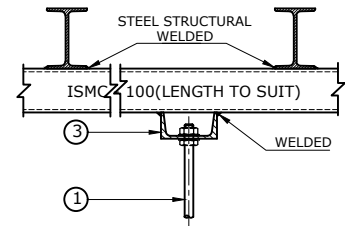
MOUNTING DETAIL ON
R.C.C. SLAB



WALL/COLUMN BRACKET
MOUNTING TYPE : BM8



TUBULAR TRUSS
MOUNTING TYPE : PM8



SUSPENSION FROM STEEL
STRUCTURE
MOUNTING TYPE-SM8

MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	19mm Ø M.S. ROD (LONG AS REQUIRED) THREADED WITH BOTH ENDS WITH 2 Nos. NUTS, 2Nos. PLAIN/SPRING WASHERS	2 NOS.	
2	SADDLE/CLEAT ALONG WITH SUITABLE SIZE OF FIXING SCREWS. TO SUIT FOR CIRCUIT CABLE.	AS REQUIRED	
3	ISMC 100 x 50 - 75mm LONG (OR MORE LONG AS REQUIRED)	1 NO.	
4	BRACKET MADE OUT FROM ISA 50 x 50 x 6mm THK.	AS REQUIRED	
5	ISMC 75 x 40 - 50mm LONG (OR MORE LONG AS REQUIRED)	1 NO.	
6	M10-40mm LONG ANCHOR BOLT FOR MOUNTING OF PLATE/ BRACKET/ISMC TO WALL/COLUMN/CEILING	AS REQUIRED	
7	ISA 50 x 50 x 6mm THK. WITH 2 Nos.-Ø12mm HOLES	AS REQUIRED	
8	CLAMP/SADDLE (TO BE MADE OUT OF 50 x 6mm M.S. FLAT) WITH FIXING SCREWS. (CLAMP TO SUIT SIZE OF TRUSS/PIPE)	1 NO.	
9	50 x 6mm THK. M.S. FLAT (FOR SADDLE/CLAMP FIXING) LENGTH TO SUIT SIZE OF TRUSS/PIPE	1 NO.	
10	M10-40mm LONG BOLT WITH NUT & WASHER FOR CLAMP/ SADDLE BOLTED	2 NOS.	

NOTES:

TYPICAL HANDRAIL MOUNTED PIPE
DETAILS OF FLAMEPROOF WELLGLASS
LIGHTING FIXTURE

STANDARD DRAWING NO.

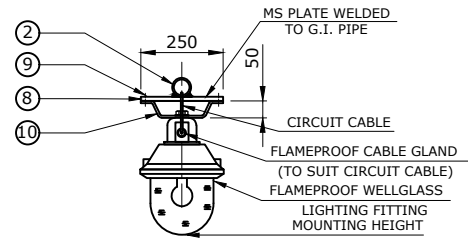
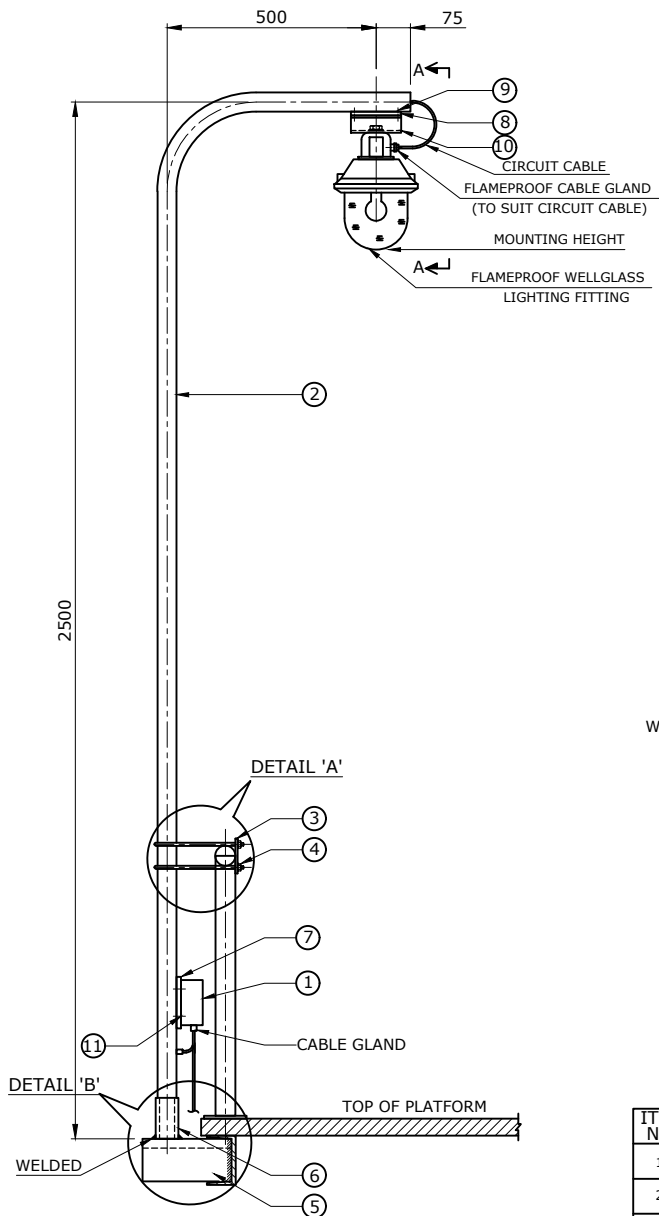
REV. SIZE

SHEET NO.

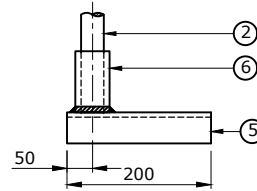
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02

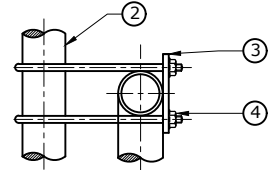
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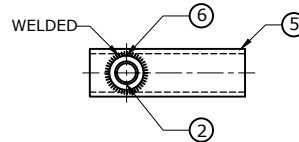
SECTION 'A-A'



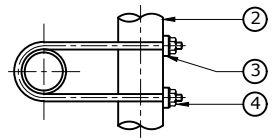
ELEVATION



ELEVATION



PLAN
PIPE SUPPORT
BOTTOM BRACKET DETAILS
DETAIL-'B'



PLAN
DETAIL-'A'

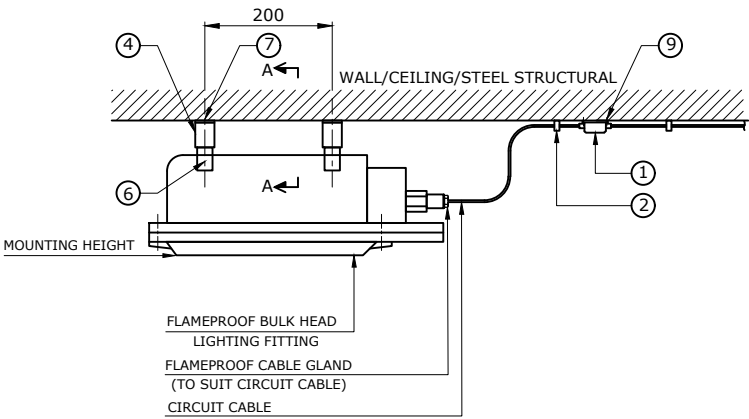
MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	FLAMEPROOF CONTROL GEAR BOX	1 NO.	
2	40mm Ø G.I. PIPE (CLASS HEAVY) WITH ONE SIDE 300mm RADIUS 90° BEND & OTHER END THREADED	1 NO.	
3	CLAMP MADE OUT FROM 25x6mm THK. M.S. FLAT 150mm LONG FOR FIXING WITH 'U' BOLT	4 NOS.	
4	10mm Ø 'U' BOLT SUITABLE WITH BOTH END THREADED WITH NUTS & PLAIN WASHER SUITABLE FOR 40mm Ø G.I. PIPE	4 NOS.	
5	ISMC-100 x 50 x 200mm LONG FOR SUPPORT TO PIPE	1 NO.	
6	G.I. PIPE COUPLING TO SUIT 40mm Ø G.I. PIPE, COUPLING WELDED TO ISMC-100 x 50	1 NO.	
7	150 x 150 x 3mm THK. M.S. PLATE WITH SUITABLE SIZE OF HOLES FOR MOUNTING OF JUNCTION BOX	1 NO.	
8	25 x 6mm THK.-250 LONG M.S. FLAT WELDED TO G.I. PIPE	1 NO.	
9	M10-40mm LONG BOLT WITH NUT & PLAIN WASHER FOR FIXING OF BRACKET TO FLAT	2 NOS.	
10	BRACKET/CLAMP MADE OUT FROM 25 x 6mm THK. M.S. FLAT 325mm LONG FOR LIGHTING FITTING FIXING	1 NO.	
11	M6-40mm LONG BOLT WITH NUT & PLAIN WASHER FOR FIXING OF JUNCTION BOX TO MS PLATE.	2 NOS.	

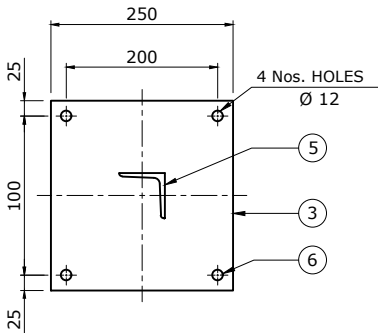
NOTES:

1. MOUNTING HEIGHT SHALL NOT BE EXCEED 4M FROM THE PLATFORM.
2. CABLE GLAND USED FOR TERMINATION OF FLEXIBLE CABLE SHALL BE DOUBLE SEAL WITH CONE GRIP FOR BRADING.
3. PLUG ALL UNUSED ENTRIES OF LIGHTING FITTING AND JUNCTION BOX WITH THREADED STOPPING PLUGS.

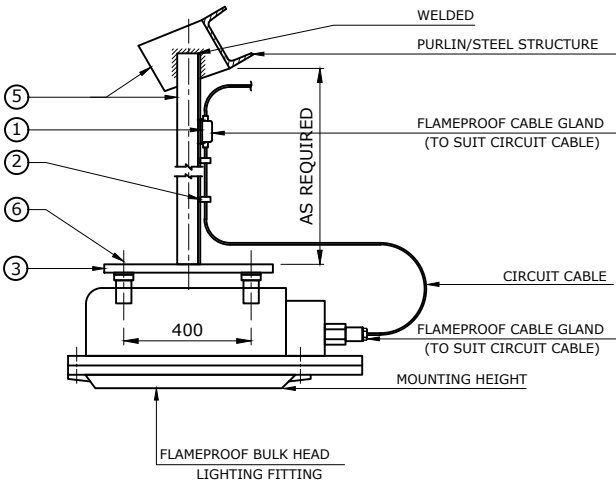
	TYPICAL CEILING/SUSPENSION MOUNTING DETAILS OF FLAMEPROOF BULK HEAD LIGHTING FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



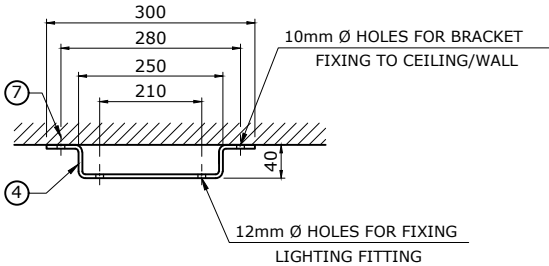
CEILING/WALL MOUNTED BULK HEAD LIGHTING
FITTING MOUNTING TYPE : CM7



MOUNTING DETAILS OF PLATE



PENDENT (SUSPENSION) MOUNTING BULK HEAD
LIGHTING FITTING (ON PURLIN)
MOUNTING TYPE : SM7



SECTION 'A-A'

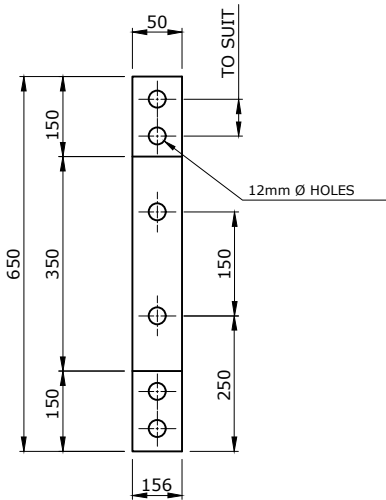
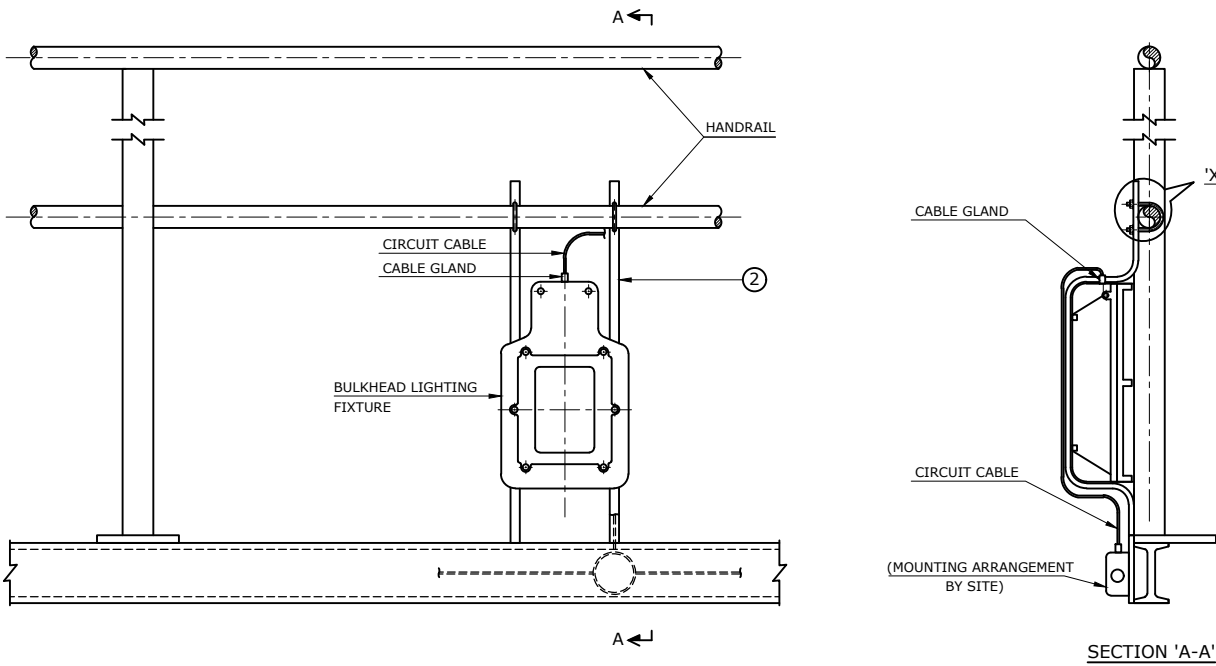
MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY		REMARKS
		CM7	SM7	
1	FLAMEPROOF CONTROL GEAR BOX	1 NO.	1 NO.	
2	SADDLE/CLEAT WITH FIXING SCREWS/ANCHOR STUD, NUTS & LOCK WASHERS FOR CIRCUIT CABLE.	AS REQD.	AS REQD.	
3	250 x 250 x 8mm THK. M.S. PLATE	-	1 NO.	
4	MOUNTING BRACKET/CLAMP (TO MADE OUT FROM 25 x 6mm THK. FLAT) FOR LIGHTING FITTING.	2 NOS.	-	
5	ISA 50 x 50 x 6mm THK. (LENGTH TO SUIT)	-	AS REQD.	
6	M10-40mm LONG BOLT WITH NUT & WASHER FOR BOLTING FITTING TO BRACKET	4 NOS.	4 NOS.	
7	M10-68mm LONG STUD WITH NUT & LOCK WASHER FOR BRACKET MOUNTING TO CEILING	4 NOS.	-	
8	M8-40mm LONG BOLT WITH NUT & WASHER FOR BOLTING JUNCTION BOX TO ANGLE	-	2 NOS.	
9	M8-68mm LONG ANCHOR STUD WITH NUT & LOCK WASHER FOR JUNCTION BOX MOUNTING TO CEILING	2 NOS.	-	

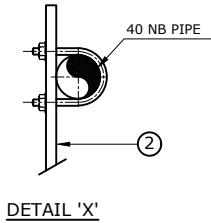
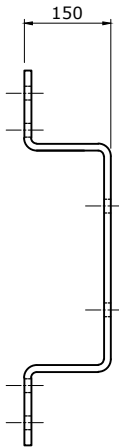
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ALL SHARP EDGES AND BURRS SHALL BE REMOVED.
3. ALL NUTS, BOLTS AND WASHERS SHALL BE GALVANISED OR ZINC PASSIVATED.

	TYPICAL DETAILS OF BULKHEAD LIGHTING FITTING MOUNTED ON HANDRAILS	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL OF FIXING BRACKET

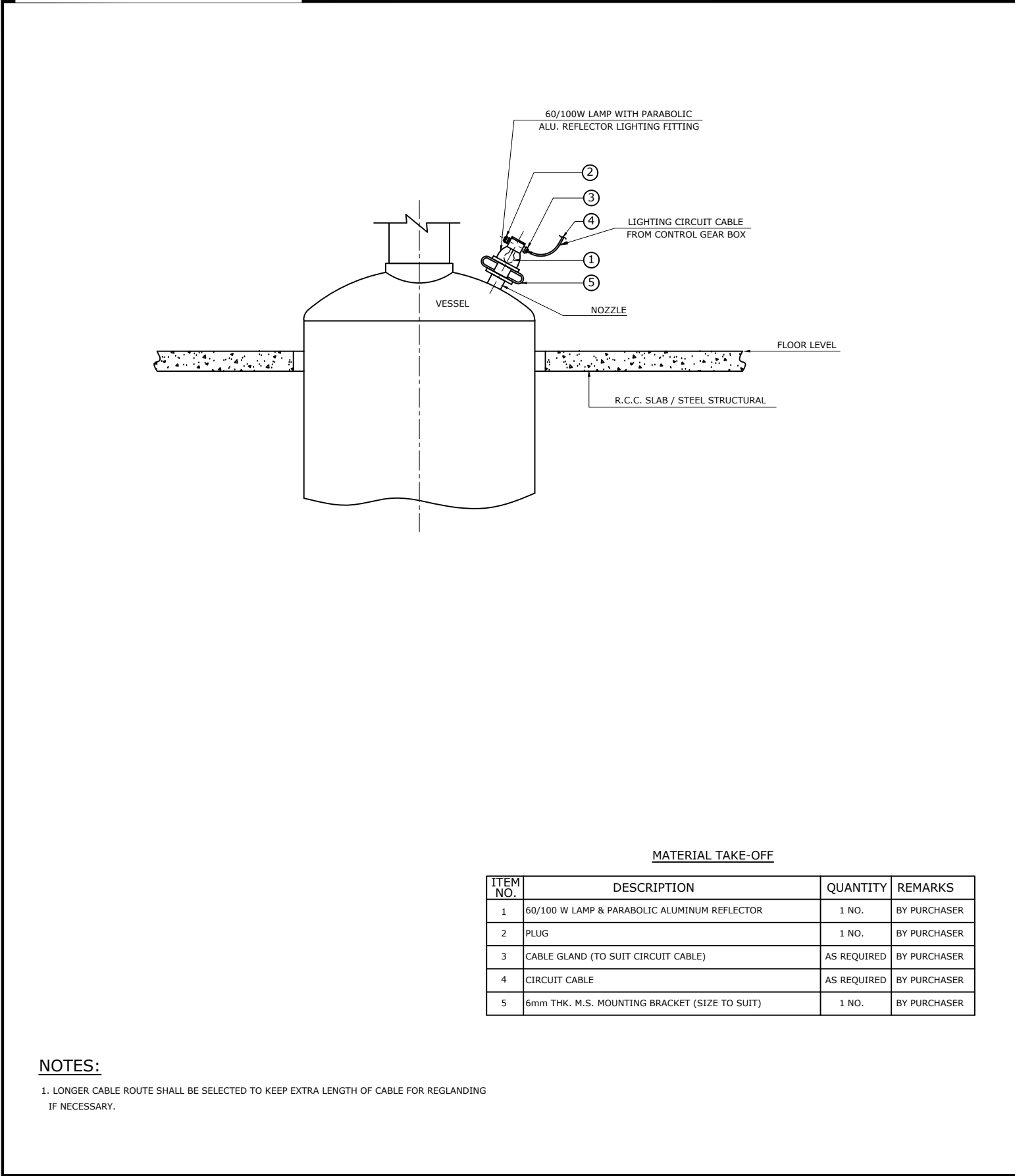


MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	JUNCTION BOX	1 NO.	
2	FIXING BRACKET MADE OUT OF 32 x 6mm M.S. FLAT	2 NOS.	
3	10mm 'U' BOLT SUITABLE SIZE (BOTH END THREADED) WITH NUTS WASHERS.	AS REQUIRED	

NOTES:

	TYPICAL MOUNTING DETAILS OF VESSEL LIGHT GLASS LIGHTING FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1	60/100 W LAMP & PARABOLIC ALUMINUM REFLECTOR	1 NO.	BY PURCHASER
2	PLUG	1 NO.	BY PURCHASER
3	CABLE GLAND (TO SUIT CIRCUIT CABLE)	AS REQUIRED	BY PURCHASER
4	CIRCUIT CABLE	AS REQUIRED	BY PURCHASER
5	6mm THK. M.S. MOUNTING BRACKET (SIZE TO SUIT)	1 NO.	BY PURCHASER

NOTES:

- LONGER CABLE ROUTE SHALL BE SELECTED TO KEEP EXTRA LENGTH OF CABLE FOR REGLANDING IF NECESSARY.

	TYPICAL MOUNTING DETAILS OF DOUBLE OBSTRUCTION LIGHT FOR AVIATION LIGHTING FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

AVIATION LIGHTING FITTING (AXIS OF LIGHTING FITTING TO BE TURNED BY 90° TO SUIT)

MOUNTING HEIGHT

TO SUIT

STRUCTURE WALL

1000 AS REQUIRED

3 NOS. 2.5SQ. MM FLEXIBLE CABLE

1 CABLE GLAND (TO TO SUIT CABLE)

100

300

CIRCUIT CABLE

FITTING MOUNTED ON SIDE SUPPORT TO STRUCTURE/ WALL
MOUNTING TYPE-PM11

MOUNTING HEIGHT

5

9

8

10

1 CABLE GLAND

11

CIRCUIT CABLE

300

TOP OF PLATFORM

6

7

WELDED

ANGLE CLEAT WELDED TO STRUCTURE

VIEW-'A'

FITTING MOUNTED ON PLATFORM
MOUNTING TYPE-PM11

AVIATION LIGHTING FITTING

HEIGHT MOUNTING

CHECK NUT

5

2

100

CIRCUIT CABLE

STRUCTURE/CEILING

CABLE GLAND (TO SUIT CIRCUIT CABLE)

3

FITTING DIRECTLY MOUNTED ON STRUCTURE/ CEILING MOUNTING TYPE PM-11

MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1.	JUNCTION BOX WEATHER PROOF TYPE	1 No.	
2.	JUNCTION BOX WEATHER PROOF WITH DOME COVER TO SUIT 40 MM DIA G.I. PIPE.	1 No.	
3.	SADDLE/CLEAT WITH FIXING M.S. 66MM LONG SCREWS/ STUCS, NUTS & LOCK WASHER FOR CIRCUIT CABLE.	AS REQUIRED	
4.	SADDLE/CLEAT WITH FIXING M.S. 66MM LONG SCREWS/ STUCS, NUTS & LOCK WASHER FOR 40 MM DIA PIPE.	AS REQUIRED	
5.	40 MM DIA G.I. PIPE (LENGTH AS REQUIRED) WITH BOTH ENDS THREADED & CHECK NUTS.	1 No.	
6.	G.I. COUPLING SUITABLE FOR 40 MM DIA G.I. PIPE.	1 No.	
7.	ISMC-100x50x350 MM LONG.	1 No.	
8.	10 MM DIA "U" BOLT SUITABLE FOR 40 MM PIPE WITH BOTH ENDS THREADED WITH NUTS 2NO. PLAIN AND 1NO. SPRING WASHERS WITH SUITABLE LENGTH.	4 No.	
9.	50x6x150MM LONG G.I. FLAT WITH 2NO. 12 MM DIA HOLES.	4 No.	
10.	150X150x6 THICK M.S. PLATE WITH 2NO. 12MM DIA HOLES OR 50x6x300 LONG G.I. FLAT WITH 2NO. 12MM DIA HOLES	1 No.	
11.	RURDER GROUMENT TO SUIT FLEXIBLE WIRE.	2 No.	

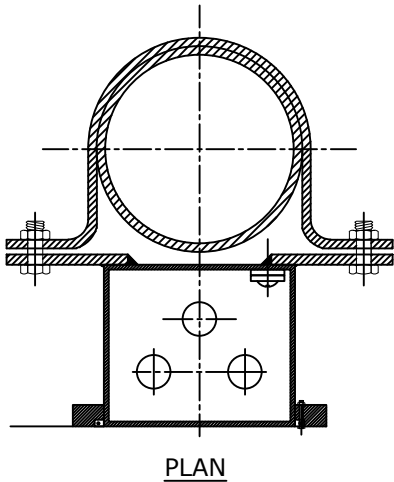
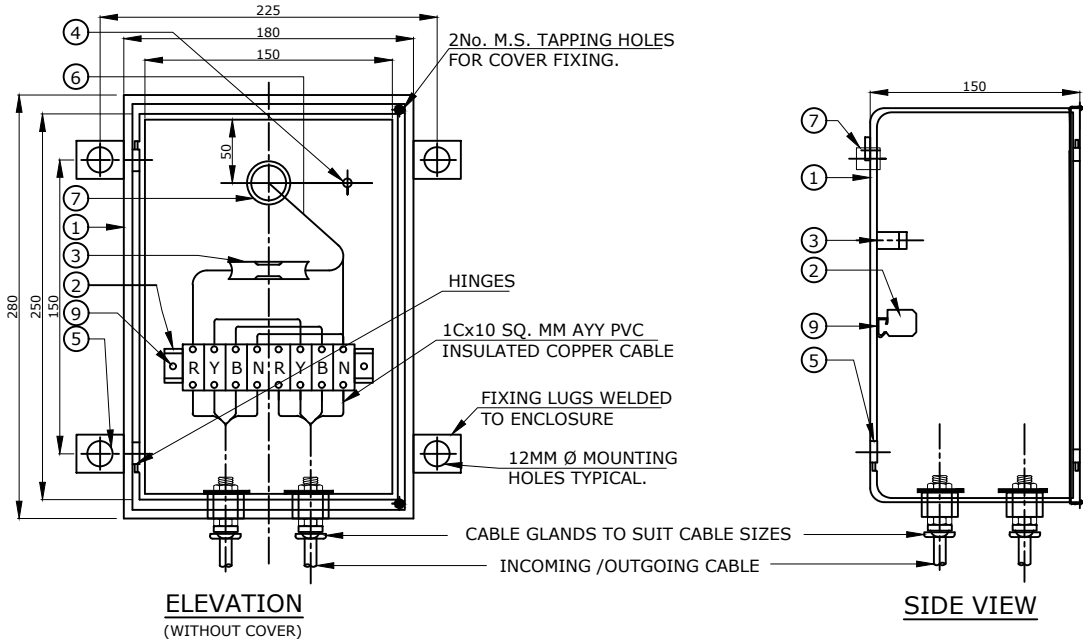
NOTES:

1. WEIGHT OF FITTING 5.5 KG.

2. USE FLEXIBLE WIRE FOR CONNECTION TO LIGHTING FROM JUNCTION BOX.

3. MOUNTING HEIGHT OF THE AVIATION LIGHTING FITTING SHALL BE AT HIGHER ELEVATION THAN THE STRUCTURE ON WHICH FITTING IS TO BE MOUNTED.

	TYPICAL DETAILS OF LOOPING BOX FOR STREET LIGHTING FITTING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

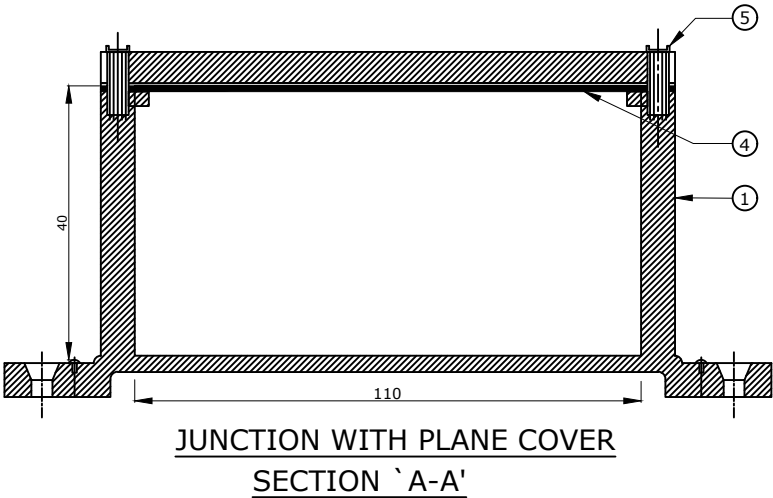
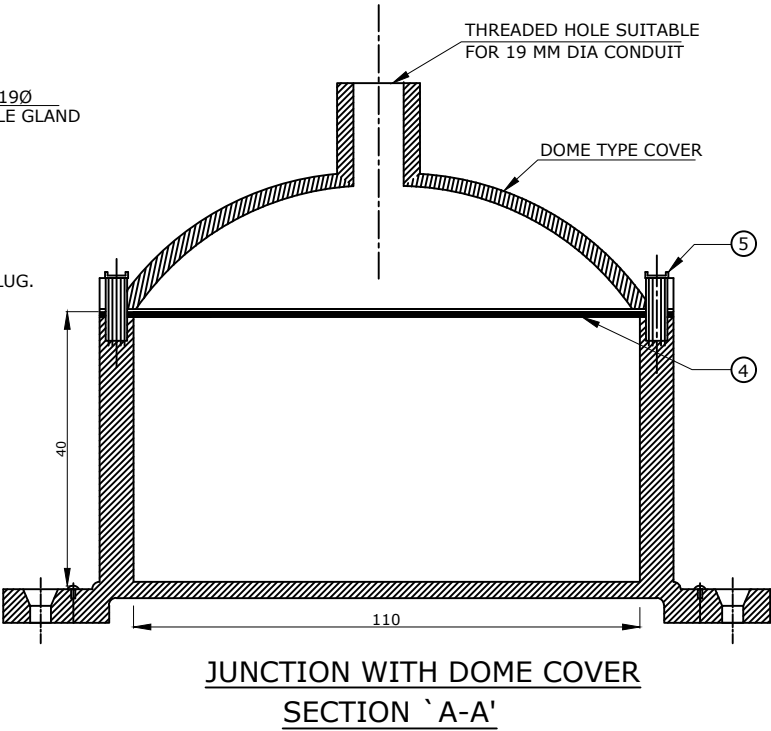
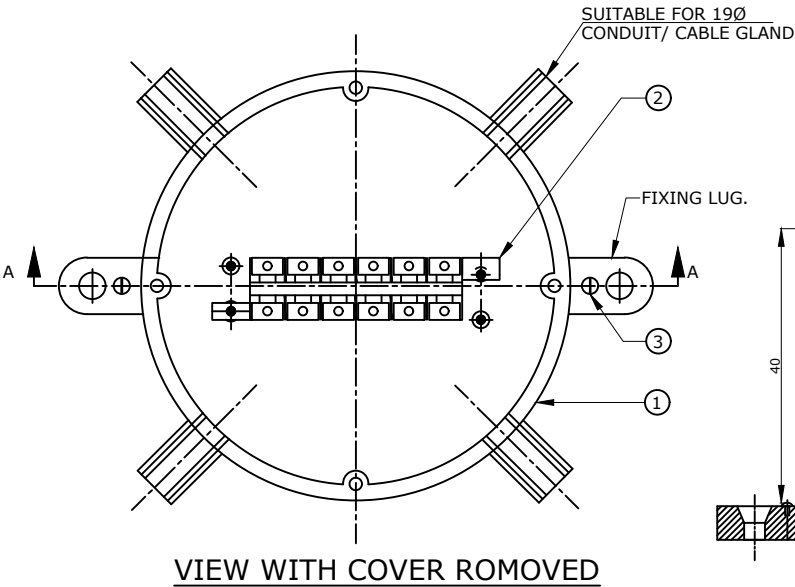


MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1.	2 MM THICK SHEET STEEL ENCLOSURE WITH COVER	1 No.	
2.	6 No. 30A, TERMINAL CONNECTOR SUITABLE FOR TERMINATING OF 4Cx16 SQ. MM CABLE (CHANNEL MFG.)	1 No.	
3.	4A, HRC FUSE	1 No.	
4.	M4x20 MM LONG ROUND HEAD EARTHING SCREW WITH 2 No. PLAIN WASHER & 1 No. SPRING WASHER.	2 No.	
5.	25x3 MMx70 MM LONG MS FLAT WITH 12 MM Ø HOLE WELDED TO ENCLOSURE LOGS FOR MOUNTING	4 No.	
6.	3Cx2.5 SQ. MM PVC FLEXIBLE WIRES.	AS REQUIRED	
7.	20 MM Ø -25 MM LONG G.I. PIPE WELDED TO ENCLOSURE	1 No.	
8.	M10x40 MM LONG BOLTS WITH NUT , LOCK NUT & PLAIN WASHERS FOR ENCLOSURE FIXING.	4 No.	
	MOUNTING CHANNEL SUITABLE FOR 6 No. 30A, TERMINAL CONNECTOR (LENGTH AS REQUIRED)	1 No.	

NOTES:

TYPICAL DETAILS OF DUST/WEATHERPROOF ROUND JUNCTION BOX	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	1 OF 1		

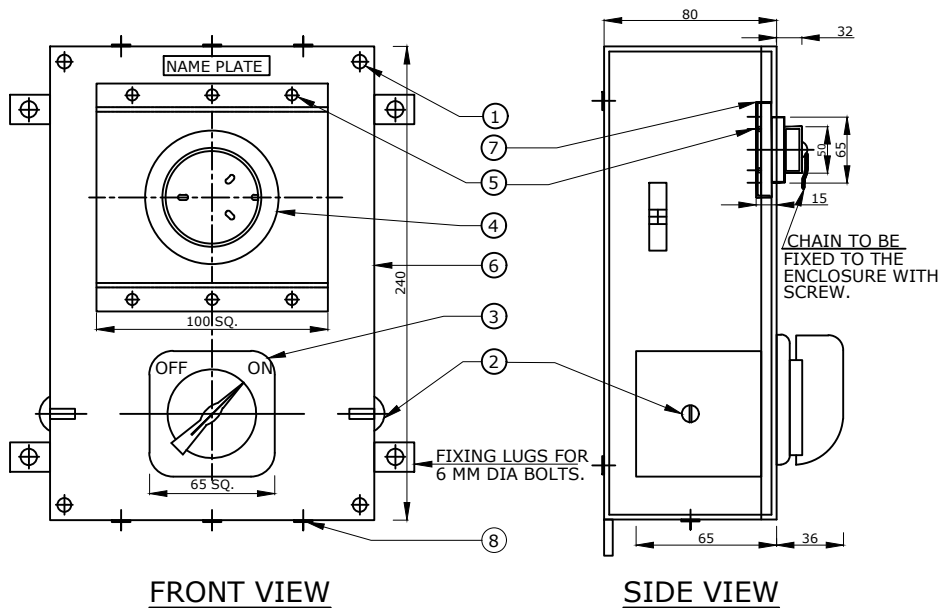


MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1.	JUNCTION BOX (CAST ALUMINIUM)	AS REQUIRED	
2.	30A, 4 WAY, TERMINAL BLOCK	1 No.	
3.	8 MM LONG BRASS SCREW WITH 2 No. PLAIN AND SPRING WASHER FOR INTERNAL AND EXTERNAL EARTHING TERMINAL.	2 No.	
4.	DISC TYPE NEOPRENE GASKET.	1 No.	
5.	COVER FIXING G.I. SCREWS WITH WASHER	4 No.	

NOTES:

1	TYPICAL MOUNTING DETAILS OF SINGLE PHASE SOCKET OUTLET ON HANDRAIL	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



NOTES:

- SIMILER ARRANGEMENT CAN BE EMPLOYED FOR 20A, SP & E, 30A, TP & E, SD WITH 30A, DP & 63A, TP SWITCH RESPECTIVELY.
- EPOXY BASED PAINT OF SPECIFIED SHADE SHALL BE APPLIED.
- REAR ENGRAVED PERSPEX OF LAMINATED PLASTIC NAME PALTE WITH APPROPRIATE INSCRIPTION SHALL BE FIXED ON COVER WITH OR SUITABLE ADHESIVE.

MATERIAL TAKE-OFF

ITEM NO.	DESCRIPTION	QUANTITY	REMARKS
1.	5 MM DIA M/C SCREWS.	4 No.	
2.	5 MM DIA EARTHING SCREW WITH 2 No. PLAIN 1 No. SPRING WASHER.	2 No.	
3.	16A, 2 POLE, ON-OFF ROTARY SWITCH.	1 No.	
4.	10A, 1Ø AND EARTH METAL CLAD SOCKET OUTLET	1 No.	
5.	3 MM ,DIA M/C SCREWS	6 No.	
6.	14 SWG M.S. BOX WITH COVER FOR MOUNTING OF SWITCH AND SOCKET OUTLET	1 No.	
7.	14 SWG M.S. SHEET FIXED TO COVER PLATE FROM INSIDE FOR MOUNTING OF SOCKET	1 No.	
8.	19 MM DIA KNOCKOUT	6 No.	

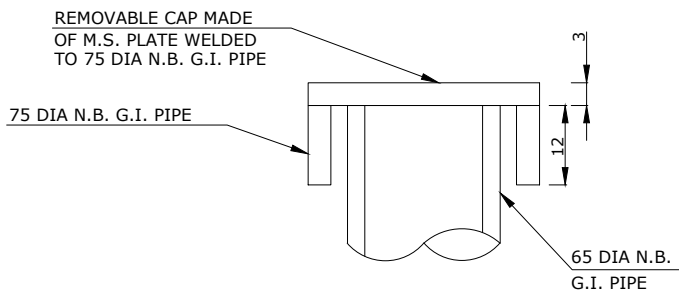
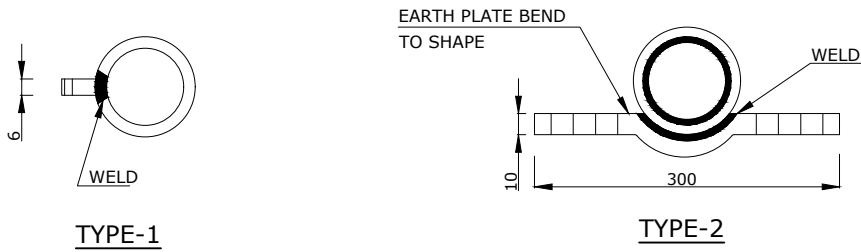
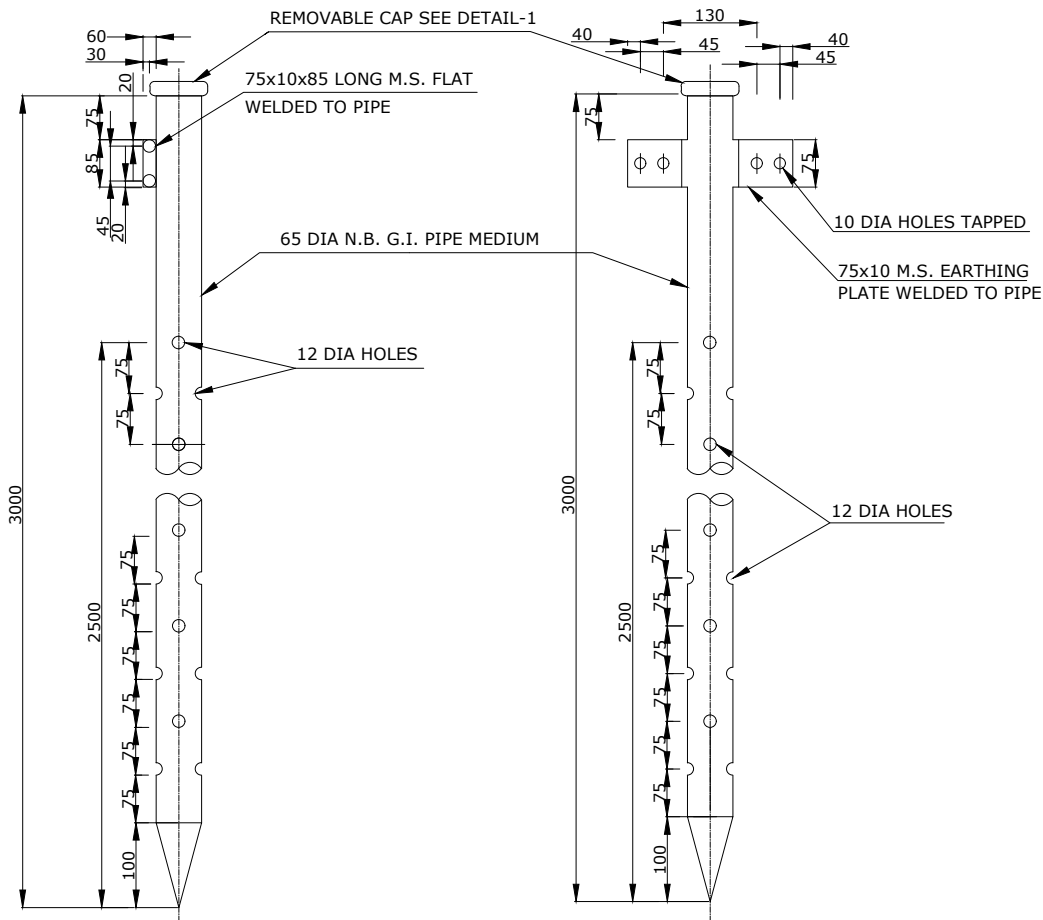
	GENERAL NOTES-EARTHING	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 2		

GENERAL NOTES:

1. ENTIRE EARTHING INSTALLATION SHALL COMPLY WITH THE REQUIREMENT OF IS-3043 INDIAN ELECTRICITY RULES OISD REGULATION AND OTHER APPLICABLE STATUTORY REGULATIONS AND SAFETY CODES IN THE LOCALITY OF THE INSTALLATION.
2. PIPE ELECTRODE SHALL BE USED FOR EARTH ELECTRODES. THE EARTH ELECTRODES SHALL BE KEPT SUFFICIENTLY AWAY FROM STRUCTURE TO CLEAR FOUNDATIONS, FOOTING ETC. SPACING OF MINIMUM 6 METERS SHALL BE KEPT BETWEEN ADJACENT EARTH ELECTRODES.
3. RESISTANCE OF EARTHING STATION SHALL BE MEASURED AT EACH EARTH ELECTRODE AFTER ITS INSTALLATION BY MEANS OF AN EARTH MEGGER. RESISTANCE OF EARTHING GRID SHALL BE MAINTAINED WITHIN 1 OHM (BY ADDITION OF EARTH ELECTRODE IN PARALLEL, IF NECESSARY).
4. THE MAIN EARTH LOOP (MEL) IN PLANT AREAS SHALL BE GENERALLY ROUTED UNDERGROUND. EARTH CONDUCTORS TO INDIVIDUAL EQUIPMENT SHALL BE RUN ALONG WITH POWER AND CONTROL / LIGHTING CABLES. WHEN EQUIPMENT ARE LOCATED AWAY FROM M.E.L. , SUITABLE SUB LOOPS MAY BE RUN UP TO THEM FOR DERIVING CONNECTIONS FOR INDIVIDUAL EQUIPMENT.
5. ALL ELECTRICAL EQUIPMENT SHALL BE EARTHED AT TWO DISTINCT POINTS WITH EARTH CONDUCTOR.
6. PROCESS/ UTILITY PIPE RACK COLUMN SHALL BE EARTHED AT EVERY 25 mtr. AT NEAREST AVAILABLE EARTHING NETWORK AS PER IS : 3043.
7. ALL STRUCTURE STEEL WORK TO BE CONNECTED TO EARTHING SYSTEM.
8. FOR CONDUIT WIRING OF LIGHTING CIRCUITS, FOR EARTHING OF LIGHTING FITTINGS, JUNCTION BOXES 14 SWG
9. THE LIGHTNING PROTECTION SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH IS :62305` CODE OF PRACTICE FOR PROTECTION OF BUILDING AND ALLIED STRUCTURES AGAINST LIGHTNING'.
10. EARTH SYSTEM AND LIGHTNING PROTECTION SHALL BE BONDED TO EACH OTHER TO PREVENT SIDE FLASH OVER, IF ADEQUATE CLEARANCE BETWEEN THE TWO SYSTEM CAN NOT BE MAINTAINED.
11. WHEN EQUIPMENT DO NOT HAVE EXTERNAL EARTHING TERMINAL ELECTRICAL CONTRACTOR SHALL PROVIDE THE SAME ON EQUIPMENT. SIZES OF EARTH CONDUCTORS SHALL GENERALLY AS PER REQUIREMENTS.

	GENERAL NOTES-EARTHING	STANDARD DRAWING NO.		REV.	SIZE																																				
				02	A4																																				
		SHEET NO.	2 OF 2																																						
EQUIPMENT EARTHING SCHEDULE <table><tr><td>TYPE OF EQUIPMENT</td><td>EARTHING CONDUCTOR SIZE (SEE NOTE-1)</td></tr><tr><td>MOTORS UPTO & 3.7 kW</td><td>8 SWG SOLID G.I. WIRE</td></tr><tr><td>MOTORS FROM 5.5kW TO 30kW & WELDING RECEPTACLES</td><td>10mm (3/8*) DIA G.I. WIRE ROPE</td></tr><tr><td>MOTORS ABOVE 30kW INCLUDING HV MOTORS</td><td>16mm (5/8*) DIA G.I. WIRE ROPE/ 40x5 mm G.I. STRIP</td></tr><tr><td>BUILDING COLUMNS</td><td>40x5 mm G.I. STRIP</td></tr><tr><td>STORAGE TANKS (VERTICAL & HORIZONTAL)</td><td>40x5 mm G.I. STRIP</td></tr><tr><td>LOADING RACKS</td><td>40x5 mm G.I. STRIP</td></tr><tr><td>VESSELS & HEAT EXCHANGERS</td><td>40x5 mm G.I. STRIP</td></tr><tr><td>SMALL EQUIPMENT & INSTRUMENTS</td><td>8 SWG SOLID G.I. WIRE</td></tr><tr><td>LIGHTING, POWER & INSTRUMENT PANEL</td><td>10mm (3/8*) DIA G.I. WIRE ROPE</td></tr><tr><td>MAIN EARTH BUS / MV & HT SWITCH GEAR INTERCONNECTIONS / POWER TRANSFORMER</td><td>AS SPECIFIED</td></tr><tr><td>EHV & HV SUB-STATION</td><td>AS SPECIFIED</td></tr><tr><td>PUSH BUTTON STATION</td><td>8 SWG SOLID G.I. WIRE</td></tr><tr><td>STREET LIGHTING POLES</td><td>10mm (3/8*) DIA G.I. WIRE ROPE</td></tr><tr><td>LIGHTING TRANSFORMER</td><td>16mm (5/8*) DIA G.I. WIRE ROPE</td></tr><tr><td>PIPE RACK</td><td>40x5 mm G.I. STRIP</td></tr><tr><td>BONDING OF PIPE</td><td>25 SQ. mm INSULATED FLEXIBLE CU. CABLE</td></tr><tr><td>LIGHTNING PROTECTION</td><td>25x3 mm G.I. EARTH STRIP</td></tr></table>						TYPE OF EQUIPMENT	EARTHING CONDUCTOR SIZE (SEE NOTE-1)	MOTORS UPTO & 3.7 kW	8 SWG SOLID G.I. WIRE	MOTORS FROM 5.5kW TO 30kW & WELDING RECEPTACLES	10mm (3/8*) DIA G.I. WIRE ROPE	MOTORS ABOVE 30kW INCLUDING HV MOTORS	16mm (5/8*) DIA G.I. WIRE ROPE/ 40x5 mm G.I. STRIP	BUILDING COLUMNS	40x5 mm G.I. STRIP	STORAGE TANKS (VERTICAL & HORIZONTAL)	40x5 mm G.I. STRIP	LOADING RACKS	40x5 mm G.I. STRIP	VESSELS & HEAT EXCHANGERS	40x5 mm G.I. STRIP	SMALL EQUIPMENT & INSTRUMENTS	8 SWG SOLID G.I. WIRE	LIGHTING, POWER & INSTRUMENT PANEL	10mm (3/8*) DIA G.I. WIRE ROPE	MAIN EARTH BUS / MV & HT SWITCH GEAR INTERCONNECTIONS / POWER TRANSFORMER	AS SPECIFIED	EHV & HV SUB-STATION	AS SPECIFIED	PUSH BUTTON STATION	8 SWG SOLID G.I. WIRE	STREET LIGHTING POLES	10mm (3/8*) DIA G.I. WIRE ROPE	LIGHTING TRANSFORMER	16mm (5/8*) DIA G.I. WIRE ROPE	PIPE RACK	40x5 mm G.I. STRIP	BONDING OF PIPE	25 SQ. mm INSULATED FLEXIBLE CU. CABLE	LIGHTNING PROTECTION	25x3 mm G.I. EARTH STRIP
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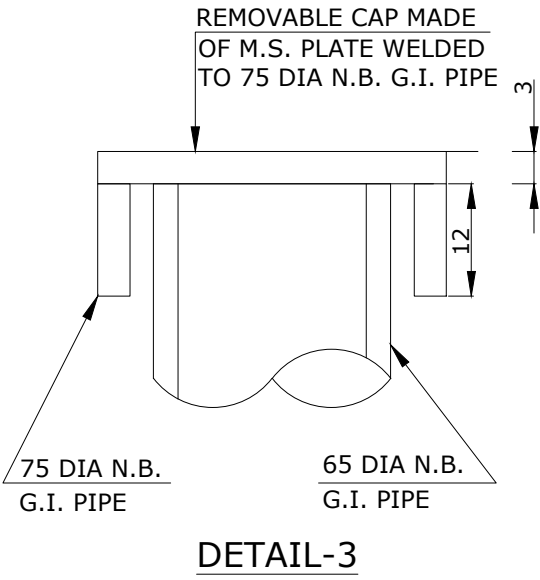
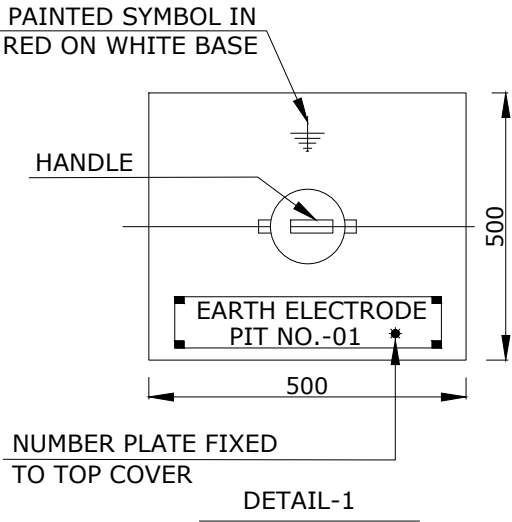
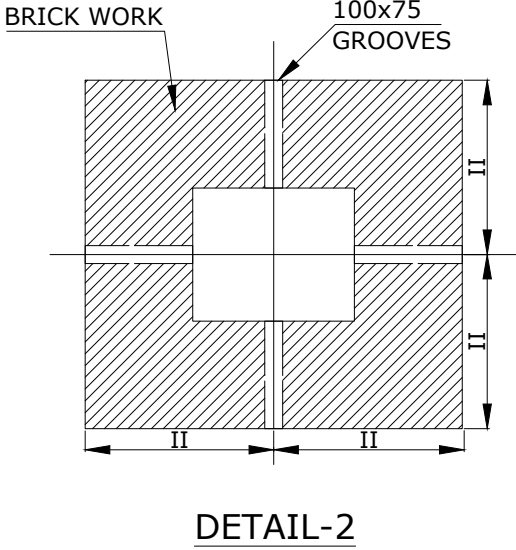
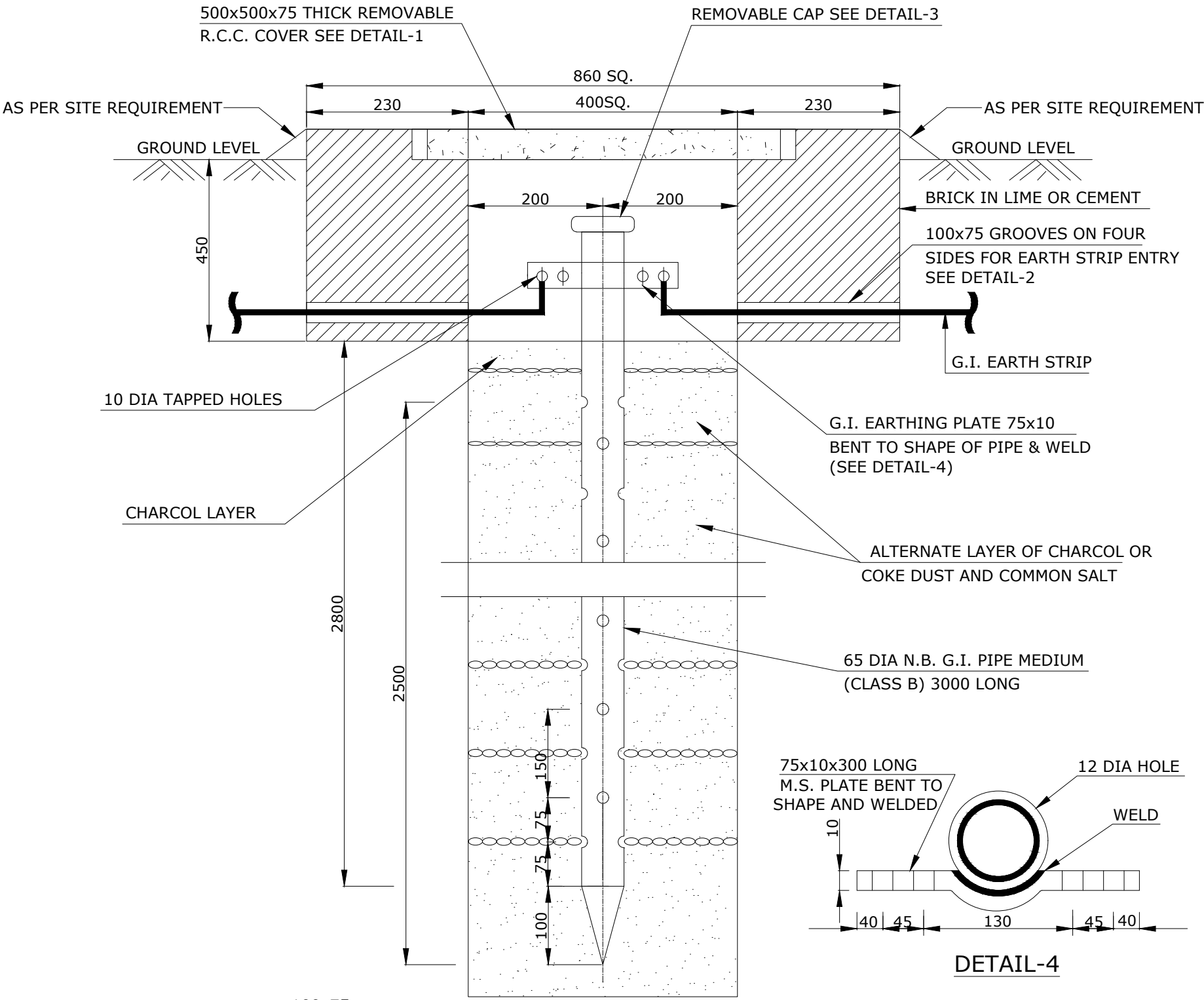
	ELECTRODE FOR EARTHING SYSTEM	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-1

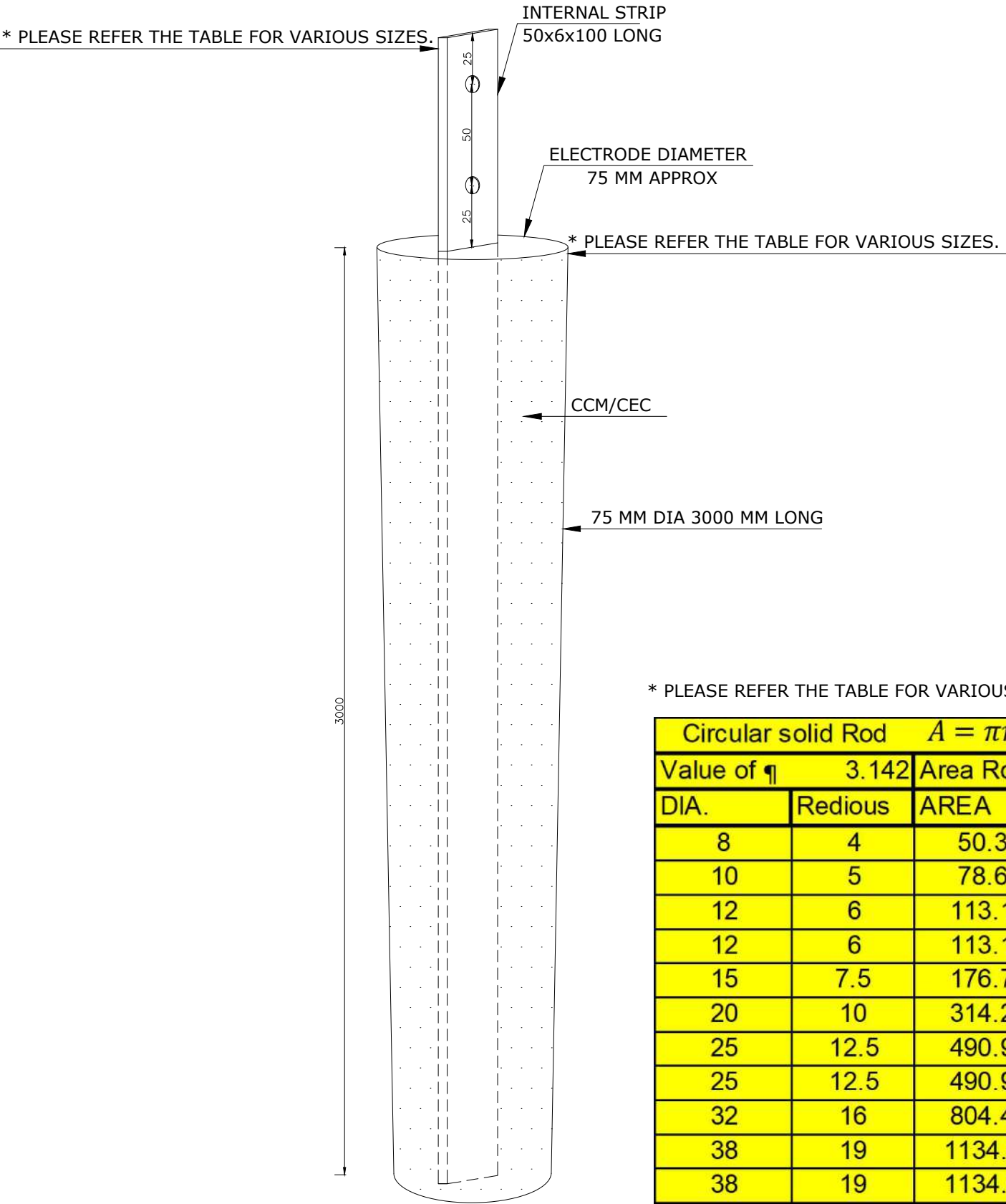
- NOTES:**
1. THE PIPE ASSEMBLY SHALL BE HOT DIP GALVANISED AFTER FABRICATION.
 2. UNLESS STATED OTHERWISE ON PLAN DRAWINGS, ONLY TYPE-2 SHALL BE USED.

	EARTH ELECTRODE IN TEST PIT	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 2		



NOTES:

1. THE PIPE ASSEMBLY SHALL BE HOT DIP GALVANISED AFTER FABRICATION.
2. BRICK WORK SHALL BE DONE AFTER COMPACTING THE SOIL.



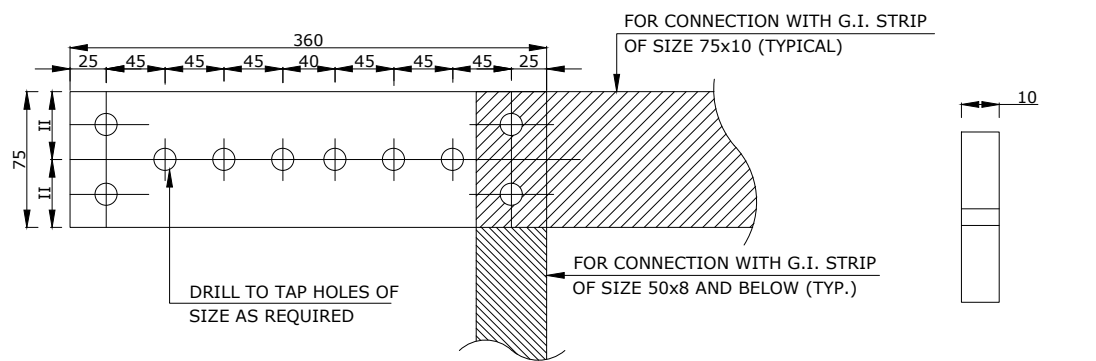
* PLEASE REFER THE TABLE FOR VARIOUS SIZES.

Circular solid Rod		$A = \pi r^2$	A = L X W		Earthing Strip	
Value of η		3.142	Area Rod	Area Strip	Earthing strip	
DIA.	Redious	AREA	AREA	Length	Width	Nos
8	4	50.3	50	20	2.5	1
10	5	78.6	75	25	3	1
12	6	113.1	125	25	5	1
12	6	113.1	128	32	4	1
15	7.5	176.7	192	32	6	1
20	10	314.2	300	50	6	1
25	12.5	490.9	500	50	10	1
25	12.5	490.9	520	65	8	1
32	16	804.4	750	75	10	1
38	19	1134.3	1200	100	12	1
38	19	1134.3	1200	75	8	2

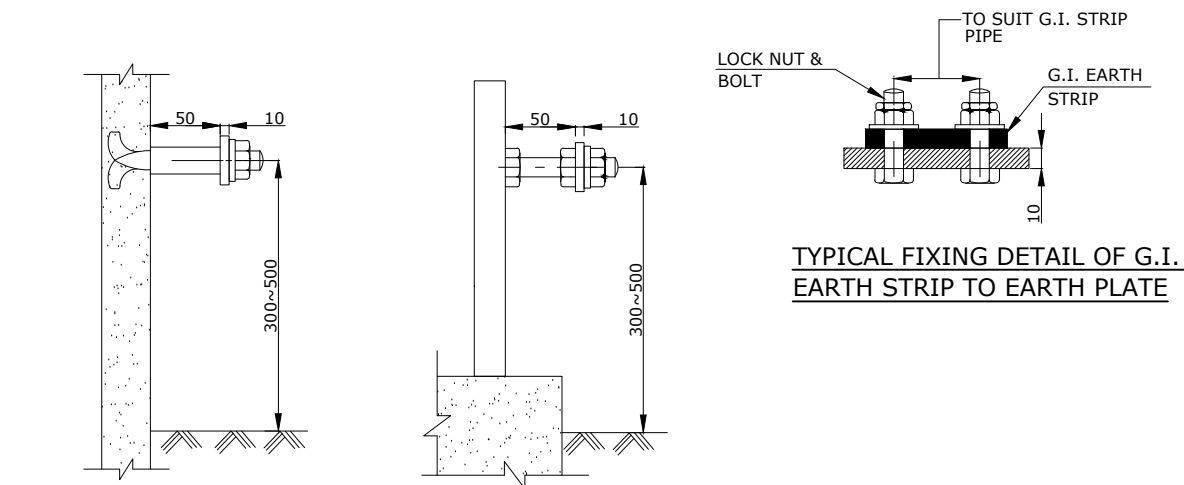
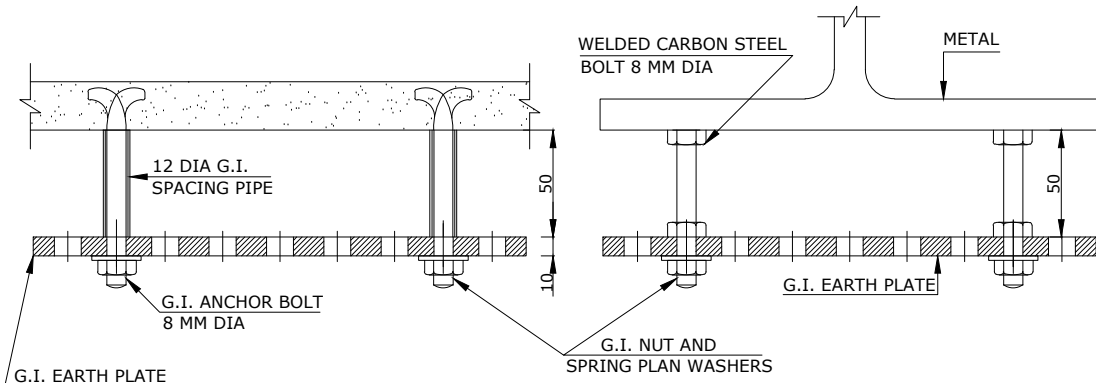
NOTES:

1. CCM-CRYSTALLINE CONDUCTIVE MATERIAL / CEC-CHEMICAL EARTHING COMPOUND.
2. IT'S SUPERIOR CONDUCTIVE MATERIAL THAT SOLVES TOUGHEST GROUNDING PROBLEMS & MAKES CONDUCTIVITY LAYER CONTACTING WITH A ELECTRODE CLOSELY.
3. THE CCM/CEC NATURAL FEATURES OF STRONG ABSORBENT & MOISTURE RETENTION KEEP THE SOIL MOIST FOR A LONG TIME AND REDUCE SURROUNDING SOIL RESISTANCE.
4. CCM/CEC ENHANCING COMPOUND IS ENVIRONMENT FRIENDLY AND DOES NOT HARM GROUND WATER & NO HAZARDOUS CHEMICAL.
5. CCM/CEC CONTAINS CORROSION INHIBITOR TO PROTECT THE ELECTRODES AND PIPES.
6. CCM/CEC IS HIGHLY CONDUCTIVE & HANDLE ANY CLIMATIC CONDITION.
7. GI STRIP SHALL BE HOT DEEP GALVANIZE ZINK OXIDE.
8. CCM/CEC SHALL BE GRAPHITE,ALUMINUM SILICATE,IRON OXIDE,NATURAL EARTH MINERALS.
9. EARTHING SHALL BE COMPLY TO LATEST IS-3043.

	EARTH PLATES FIXING DETAILS	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



G.I. EARTH PLATE



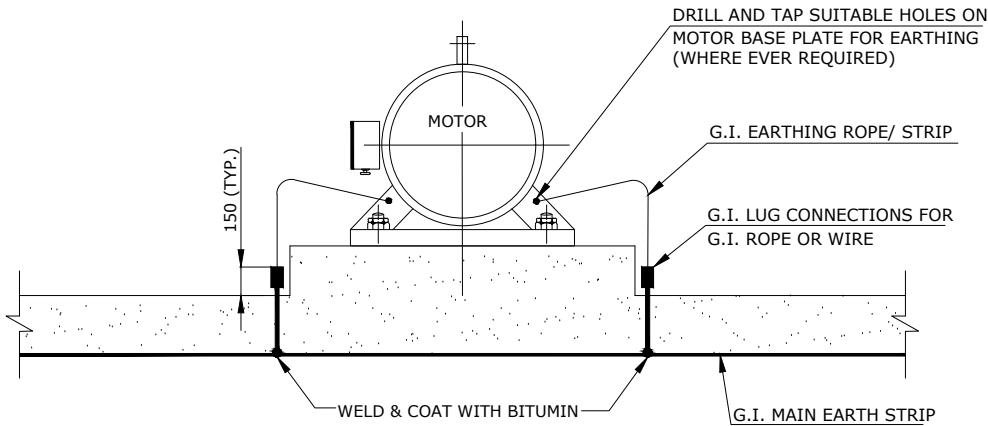
TYPICAL INSTALLATION OF EARTH PLATE ON R.C.C. STRUCTURES

TYPICAL INSTALLATION OF EARTH PLATE ON STEEL STRUCTURES

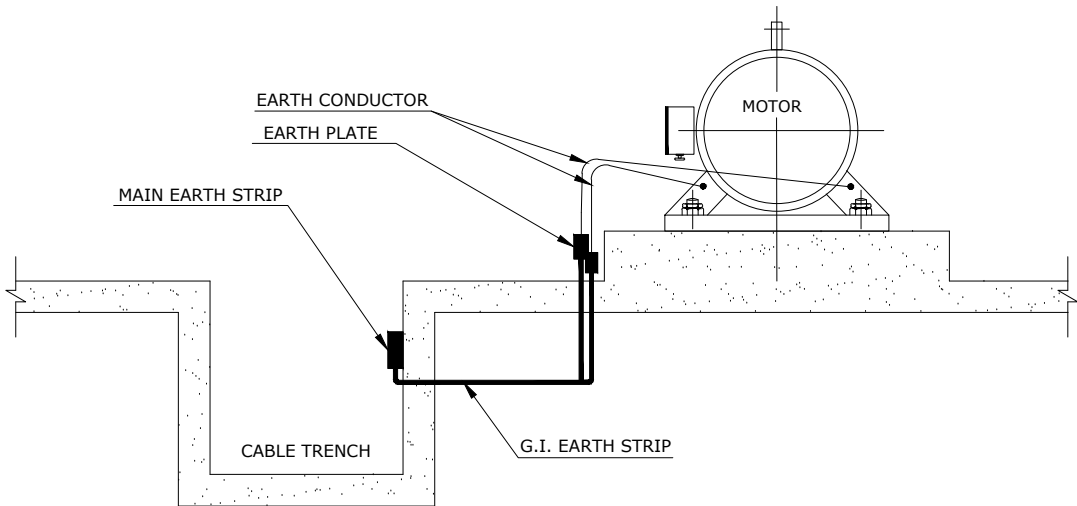
NOTES:

1. WHERE FIRE PROOFING OF STEEL STRUCTURES ARE ENCOUNTERED LENGTH OF CARBON STEEL BOLT SHALL BE INCREASED FOR FIXING OF EARTH PLATE.
2. ALL CONNECTIONS WITH EARTH PLATE SHALL BE MADE WITH G.I. BOLT, NUT, SPRING AND PLAIN WASHERS.

	TYPICAL EARTHING FOR MOTOR	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



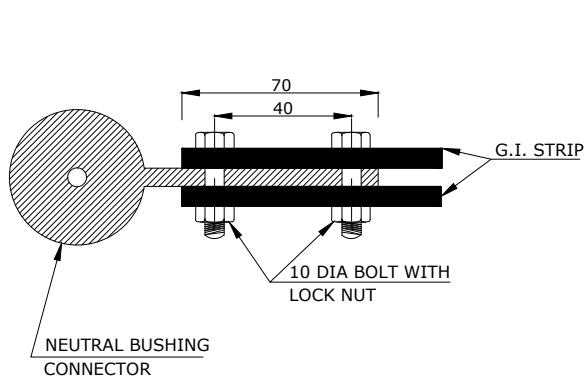
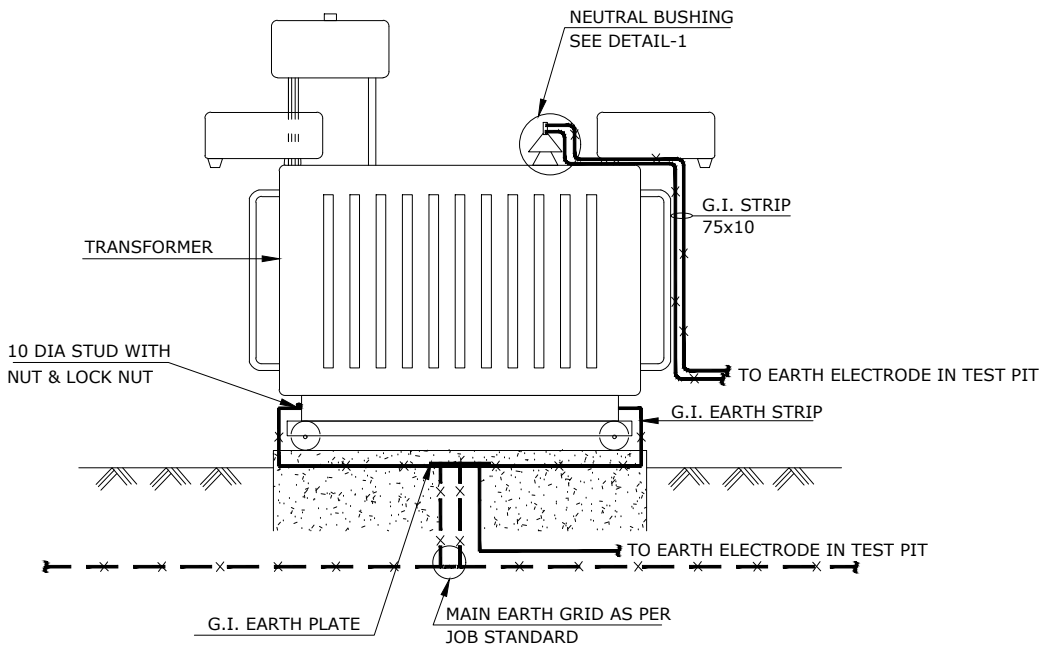
DETAIL-1
REMOTE EARTH PLATE



DETAIL-2
LOCAL EARTH PLATE

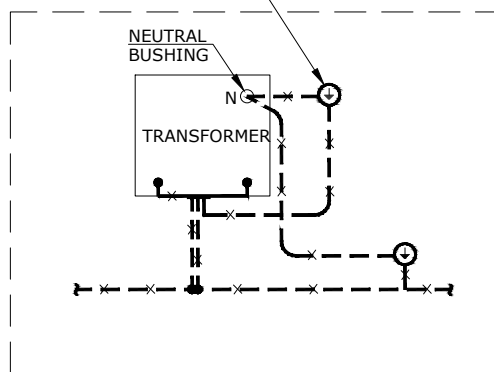
NOTES:
1. MOTOR FOUNDATION BOLT SHALL NOT BE USED FOR EARTHING.

	TYPICAL ARRANGEMENT FOR TRANSFORMER EARTHING (NEUTRAL SOLIDLY EARTHED)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-1

EARTH ELECTRODE IN TEST PIT
(SEE NOTE-3)

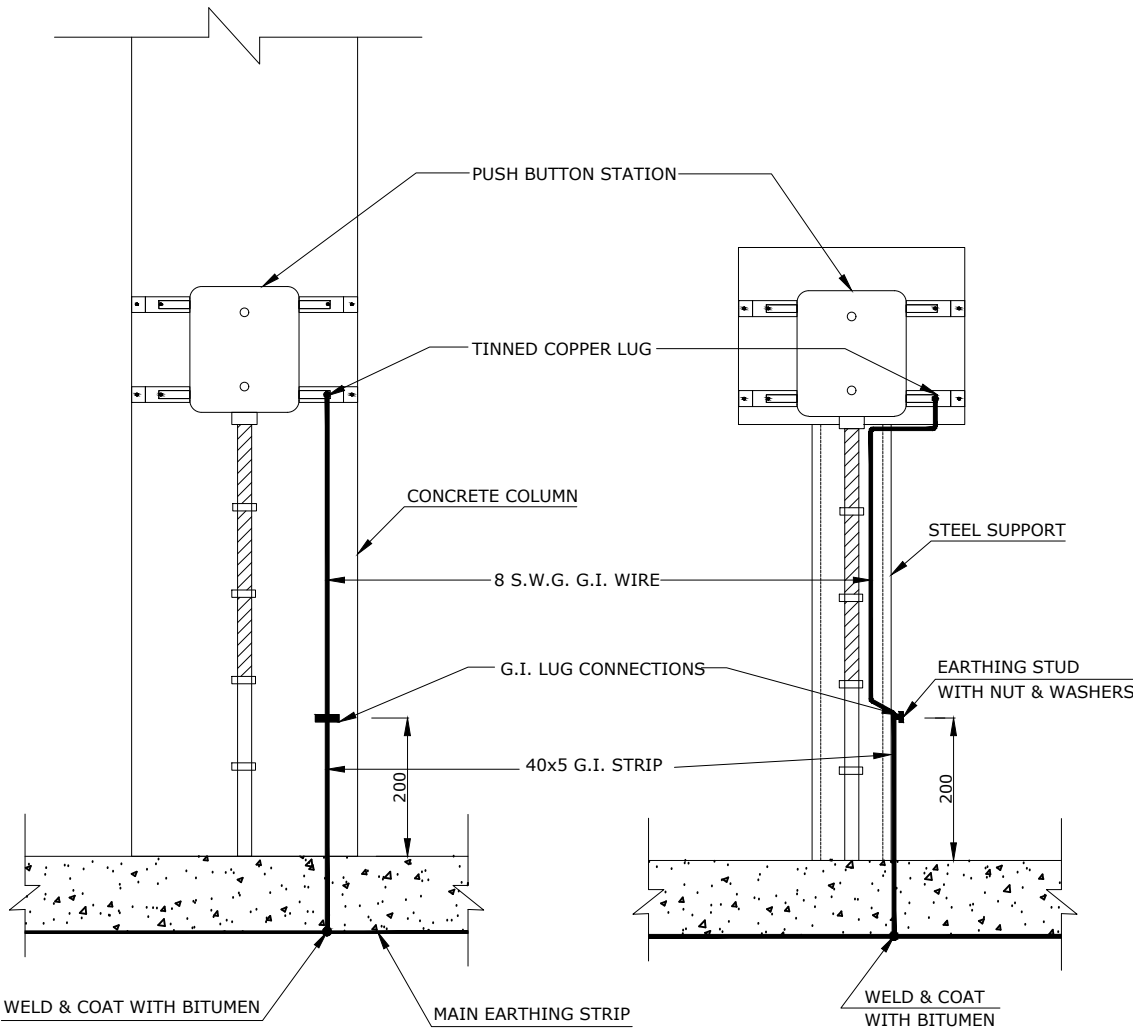


LING DIAGRAM

NOTES:

1. WHEREVER SEPERATE NEUTRAL BUSHING FOR EARTHING IS NOT PROVIDED THE NEUTRAL EARTHING SHALL BE DONE FROM BUS DUCT.
2. EARTH ELECTRODE IN TEST PITS SHALL BE SO LOCATED THAT DISTANCE BETWEEN TWO PITS SHALL BE MINIMUM 6 METER.
3. WHERE TRANSFORMERS NEUTRAL EARTHING IS DONE THROUGH N.G.R. THE CONNECTIONS BETWEEN NEUTRAL AND N.G.R. SHALL BE THROUGH CABLE. THE OTHER END END OF N.G.R. SHALL BE CONNECTED TO EARTH ELECTRODE.

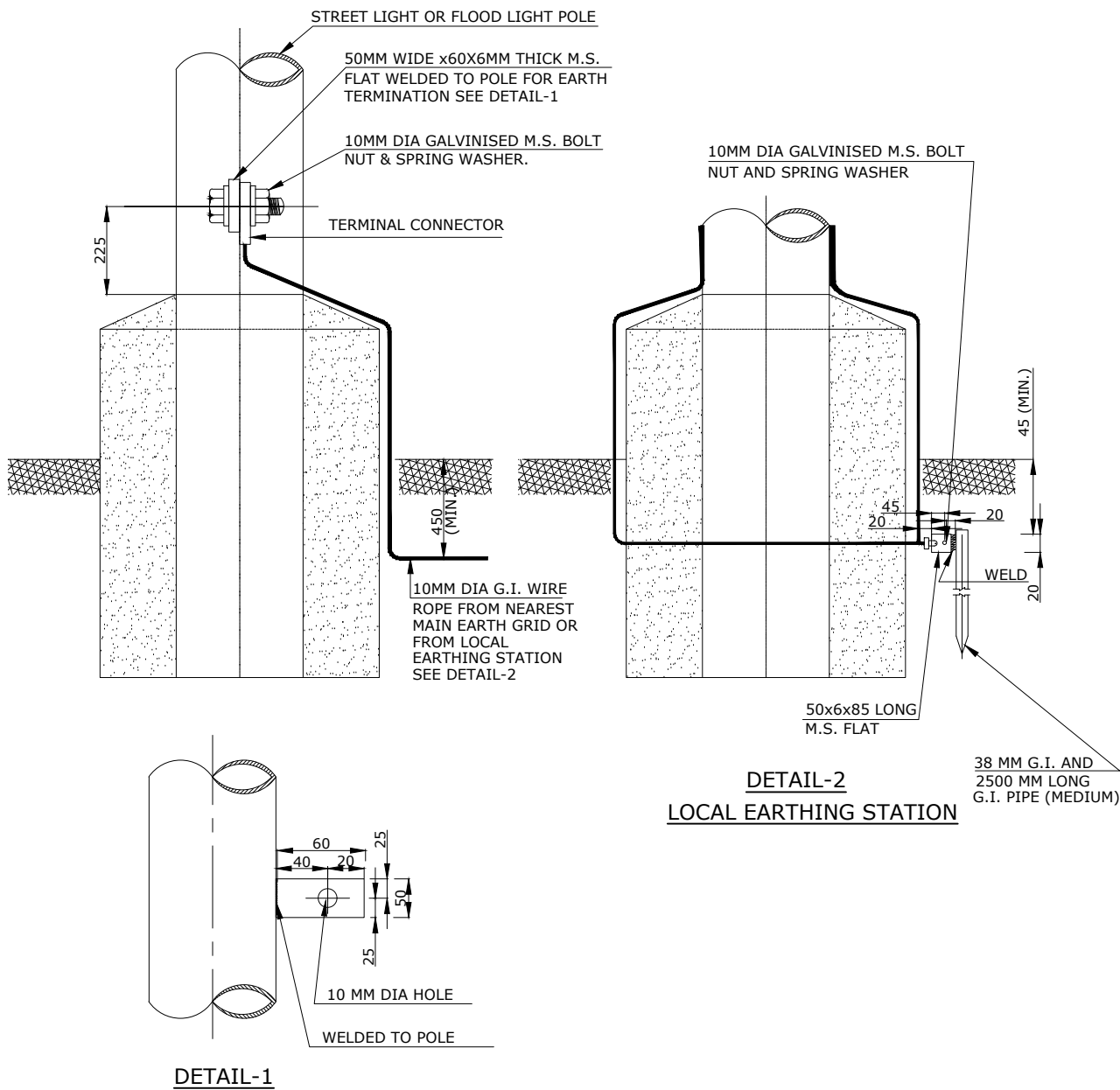
	TYPICAL EARTH CONNECTION FOR PUSH BUTTON STATION	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



NOTES:

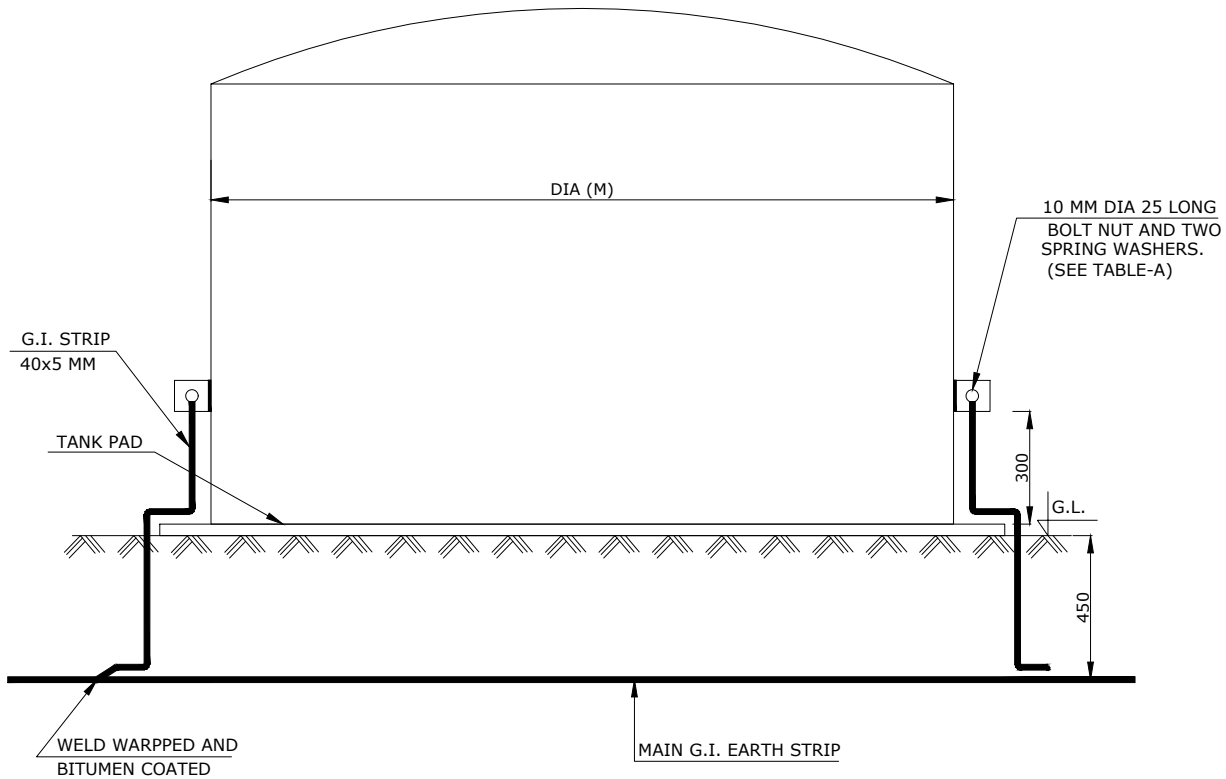
1. ALTERNATIVELY CONNECTION SHALL BE TAKEN FROM THE NEAREST AVAILABLE EARTH PLATE.

	TYPICAL EARTH CONNECTION FOR STREET LIGHT POLE	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



NOTES:

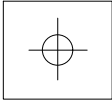
1. USE TWO EARTH WIRES IF VOLTAGE IN THE POLE JUNCTION BOX IS 415 VOLTS.



DETAIL-1 (TANK)

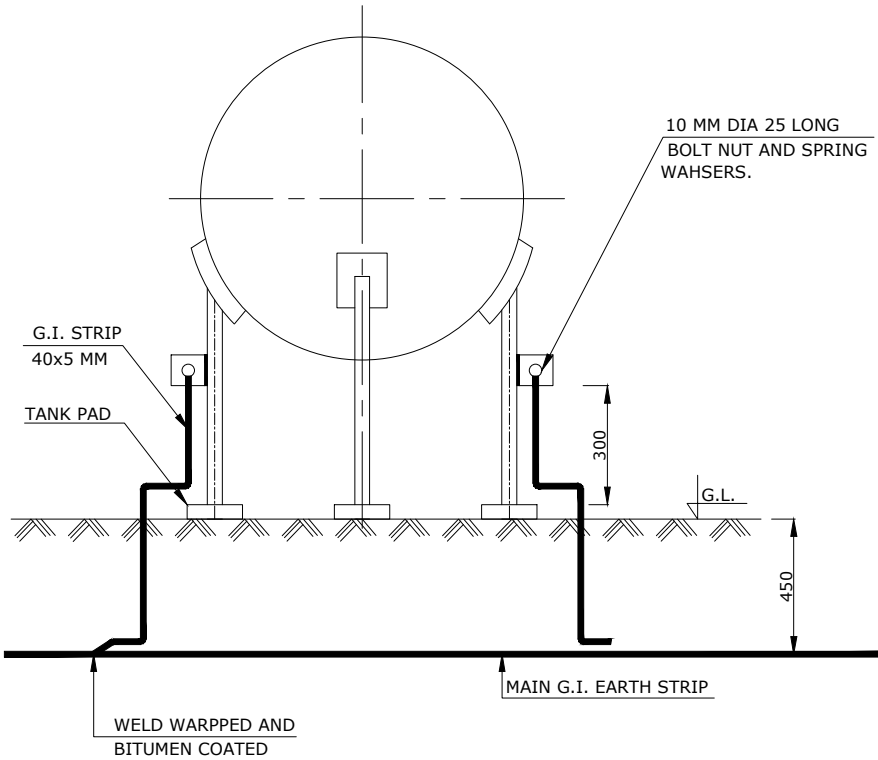
TABLE-A

TANK DIAMETER (M)	EARTHING CONNECTION
<5	1
<20	2 AT 180°
<30	3 AT 120°
>40	4 AT 90°
>50	5 AT 72°
>60	6 AT 60°
>70	7 AT 51.43°
>80	8 AT 45°
>90	9 AT 40°

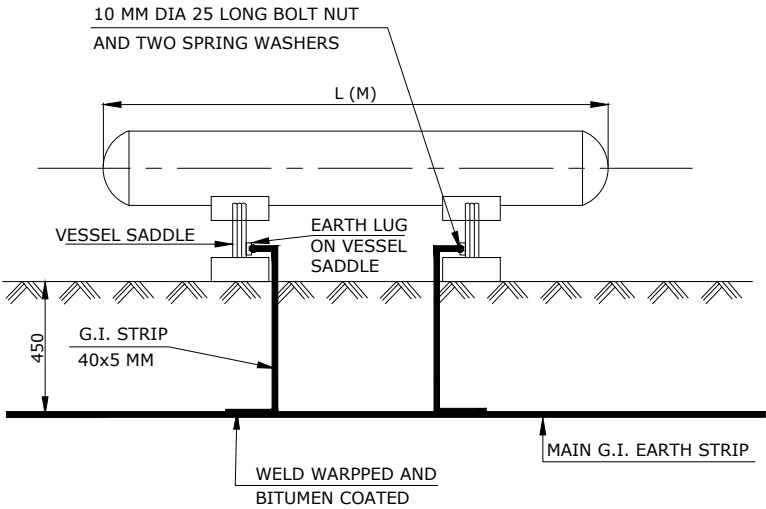


EARTH LUG ON TANK

	EARTHING OF TANKS, VESSELS AND SPHERES	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	2 OF 2		



DETAIL-3 (SPHERE)

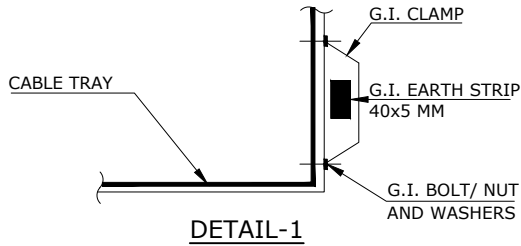
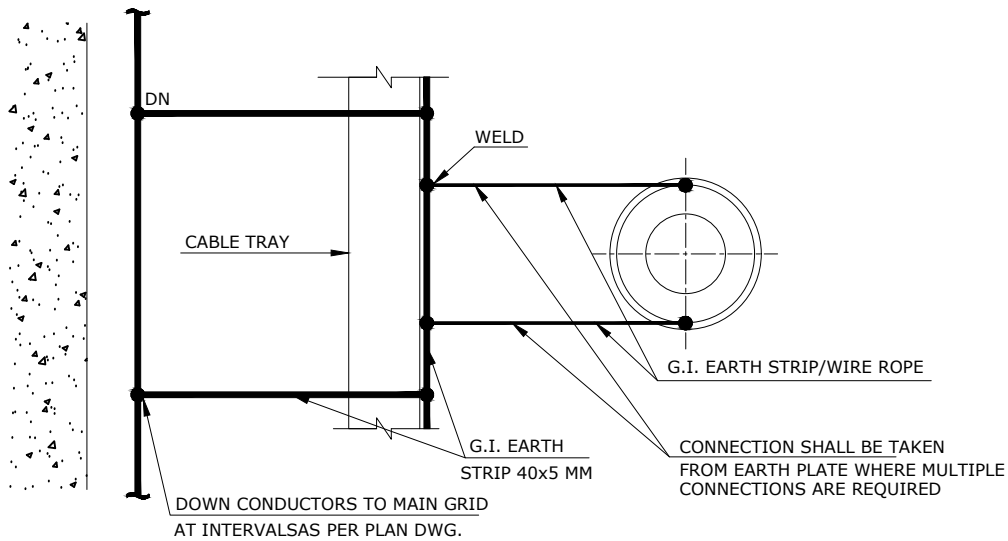
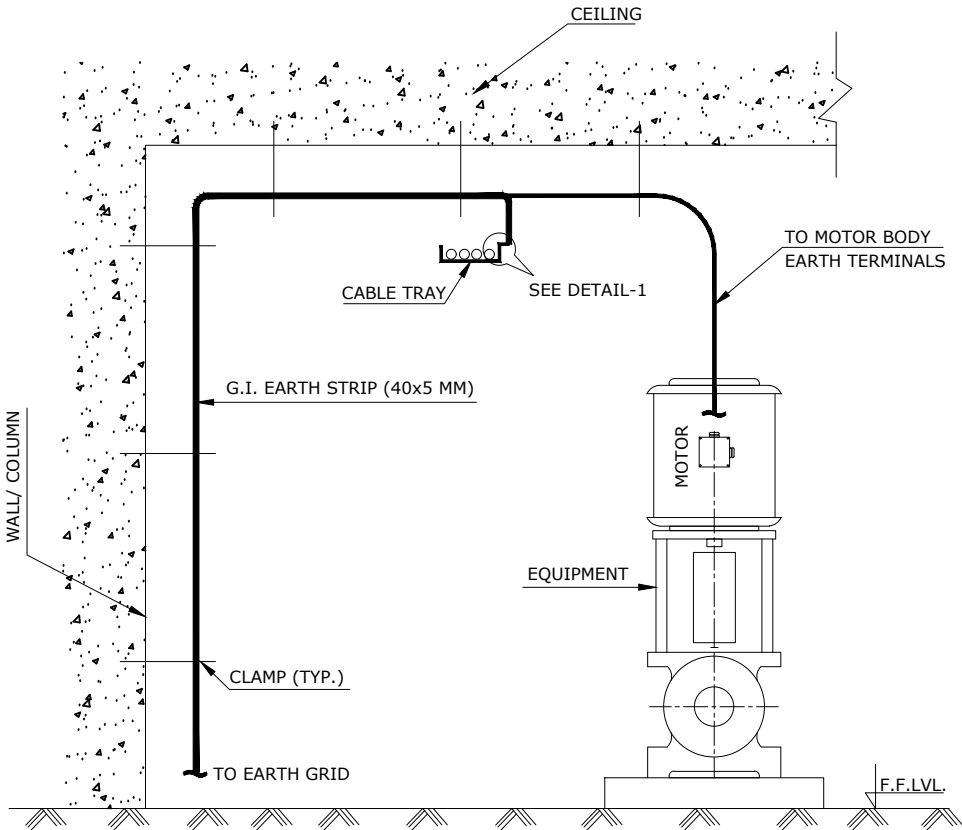


DETAIL-2 (HORIZONTAL VESSEL)

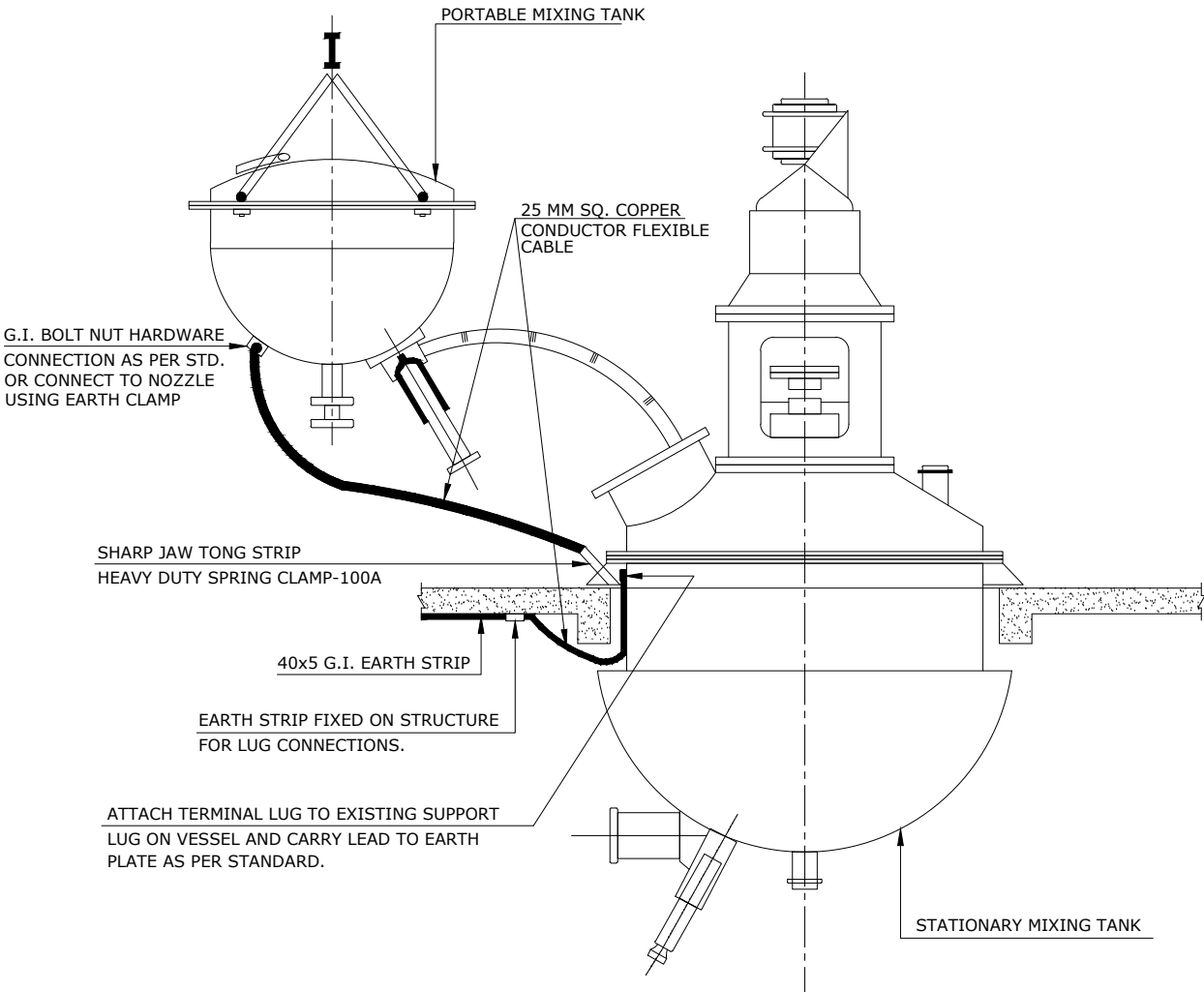
NOTES:

1. TWO NOS. OF EARTHING LUGS WILL BE AVAILABLE ON LEG SUPPORTS (DIAMETRICALLY OPPOSITE) OF EQUIPMENT FOR PROVIDING EARTH CONNECTION.
2. ALL VESSELS, SPHERES AND COLUMNS SHALL HAVE TWO EARTH CONNECTIONS IN GENERAL.
3. HORIZONTAL VESSEL OF LENGTH MORE THAN 20 METERS:-
TWO EARTH LUGS ARE PROVIDED ON EACH SADDLE OF HORIZONTAL VESSELS.
AS SUCH THERE SHALL BE TWO EARTH CONNECTIONS TO THE EARTH GRID FROM EACH SADDLE.

	TYPICAL EARTHING OF CABLE TRAY AND ELECTRIC MOTOR	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



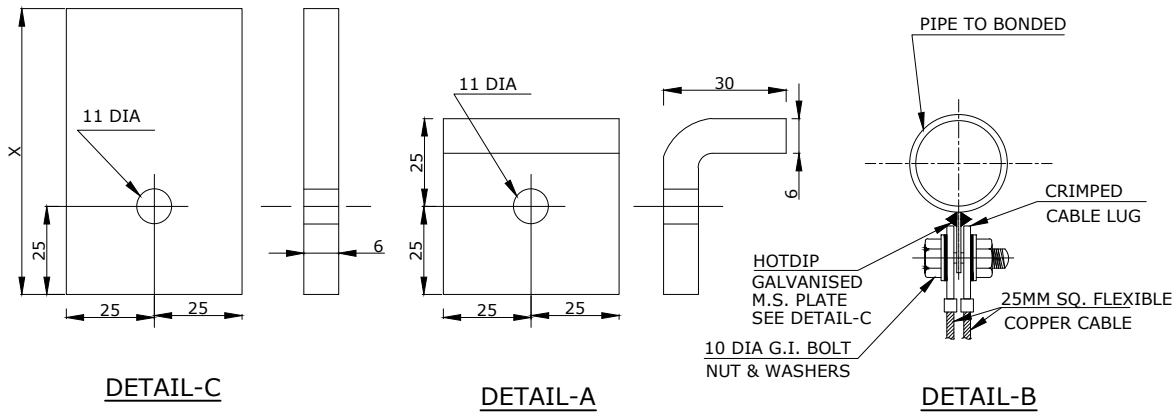
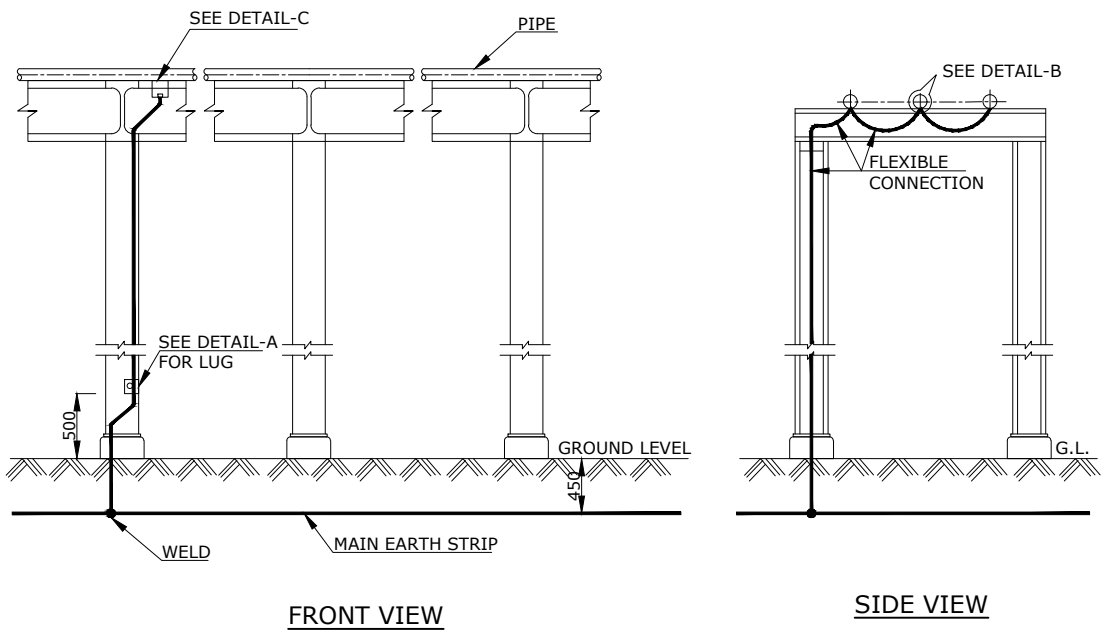
	TYPICAL EARTHING ARRANGEMENT FOR PROCESS EQUIPMENT	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



NOTES:

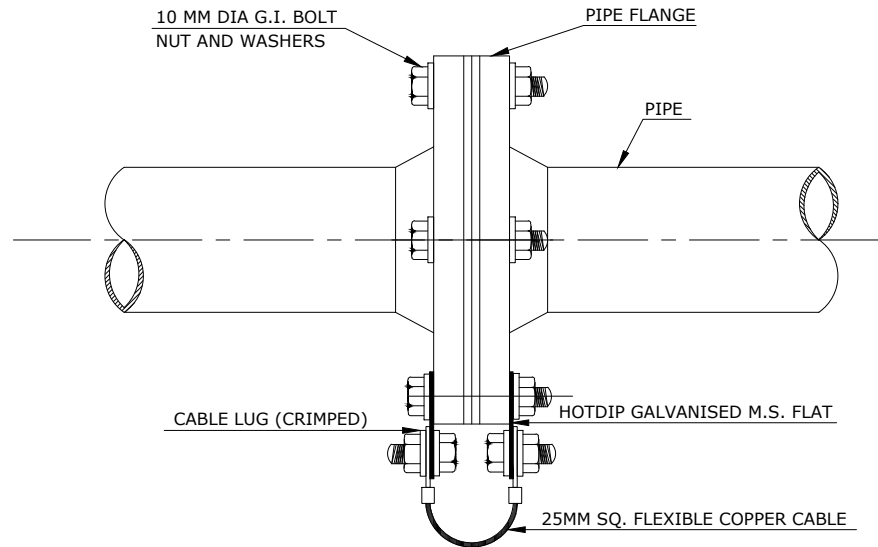
1. ALL PROCESSING EQUIPMENT SUCH AS MIXTURES, CHURNS, AUTOCLAVES, COLUMNS, CENTRIFUGES, FILTER PRESS PUMPS ETC. SHALL BE EARTHED IF NOT INDIRECT CONTACT WITH PROPERLY EARTHED STEEL MEMBERS.
2. ALL TEMPORARY EARTH CONNECTIONS SHALL BE MADE BEFORE OPENING THE VESSEL.

	EARTHING/BONDING OF PIPES AND PIPE RACKS	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 2		

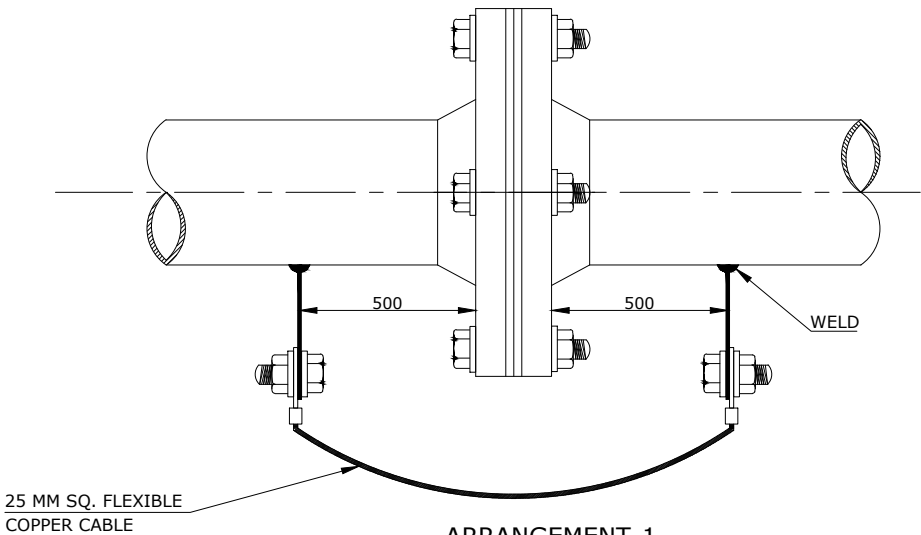


- NOTES:**
1. UNLESS MENTIONED OTHERWISE ON PLANS OR JOB SPECIFICATIONS. THE PIPELINES SHALL BE BONDED AND EARTHED AT THE ENTRY AND EXITS POINTS OF BATTERY LIMIT.
 2. STEEL PIPE RACKS IN THE PROCESS UNIT AND OFFSITE AREA SHALL BE EARTHED AT EVERY 24 METRES.

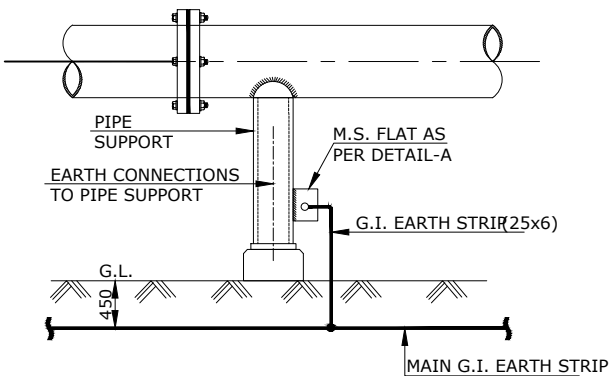
	EARTHING/BONDING OF PIPES AND PIPE RACKS	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	2 OF 2		



ARRANGEMENT-2



ARRANGEMENT-1

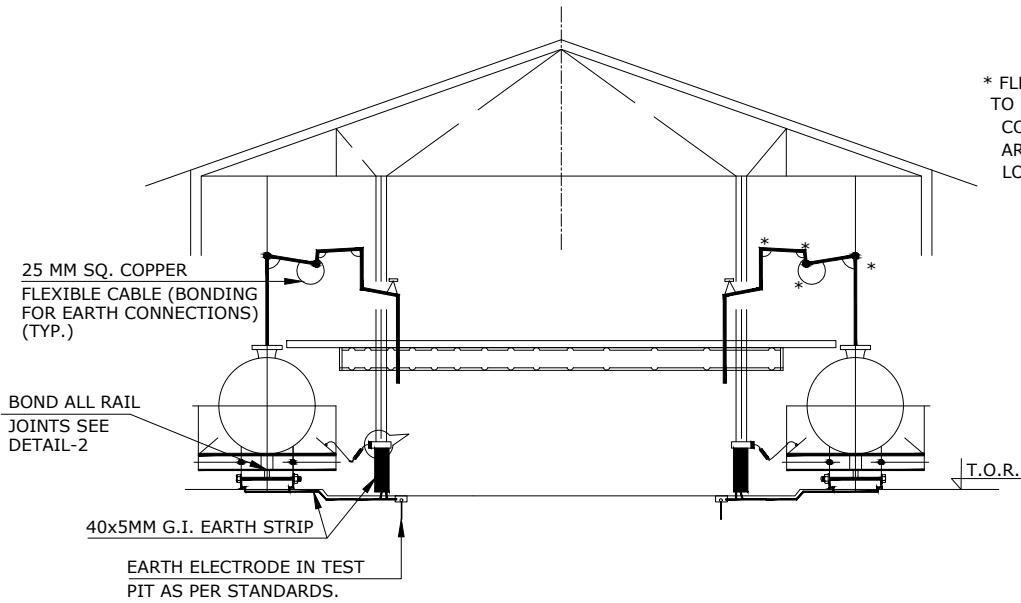


ARRANGEMENT-3

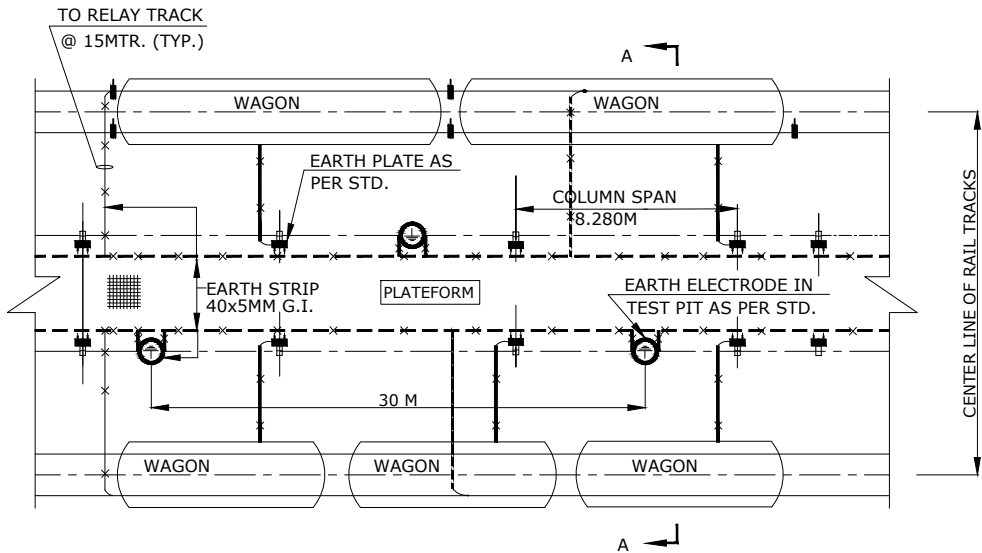
NOTES:

1. HOT DIP GALVANISHED M.S. FLAT (50x 10x (x+50) WHERE x IS THE INSULATION THICKNESS) SHALL BE PROVIDED BY THE PIPING CONTACTOR.
2. SUPPLY OF FLEXIBLE COPPER CABLE, LUGS, BOLTS, NUTS, WASHERS HARDWARE AND MAKING CONNECTIONS, SHALL BE DONE BY ELECTRICAL CONTACTOR.

	TYPICAL EARTHING ARRANGEMENT-WAGON	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 2		



SECTION A-A

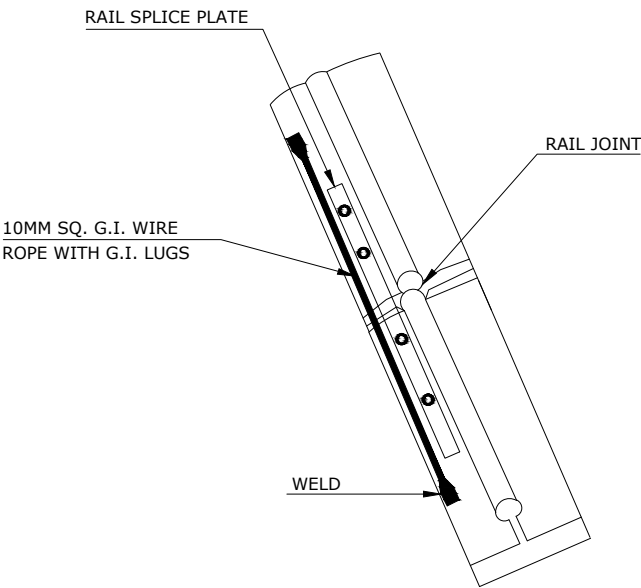


TYPICAL PART PLAN

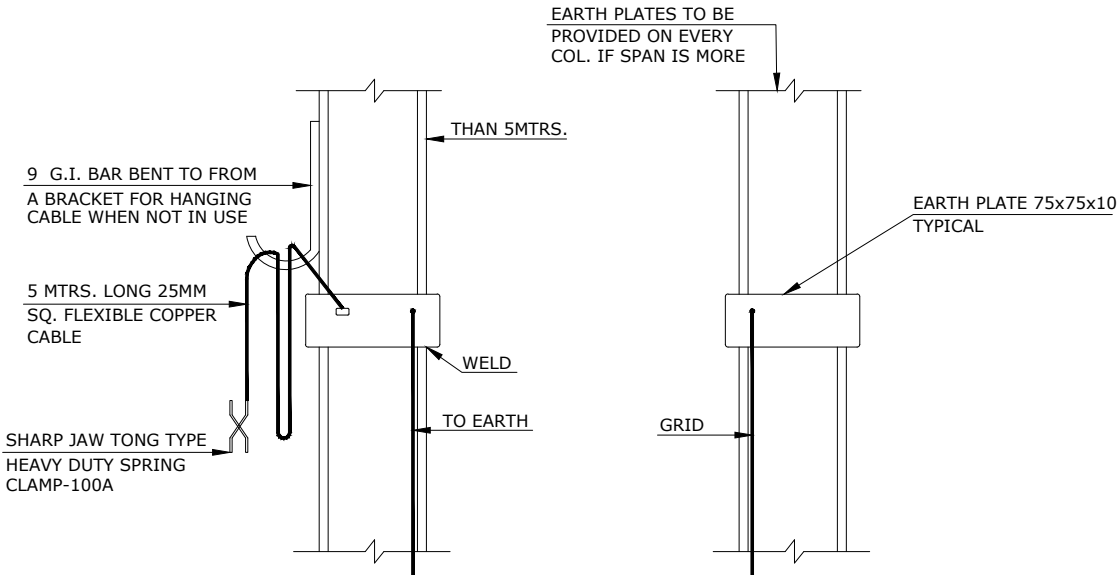
NOTES:

- SUPPLY OF FLEXIBLE CABLE AND SPRING CLAMPS BY ELECTRICAL CONTACTOR ARE NOT REQUIRED WHEN MONITORING OF EARTH SCHEME AND THE ABOVE MATERIAL ARE INCLUDED AS PART OF PLANT AUTOMATION PACKAGE.

	TYPICAL EARTHING ARRANGEMENT-WAGON	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	2 OF 2		

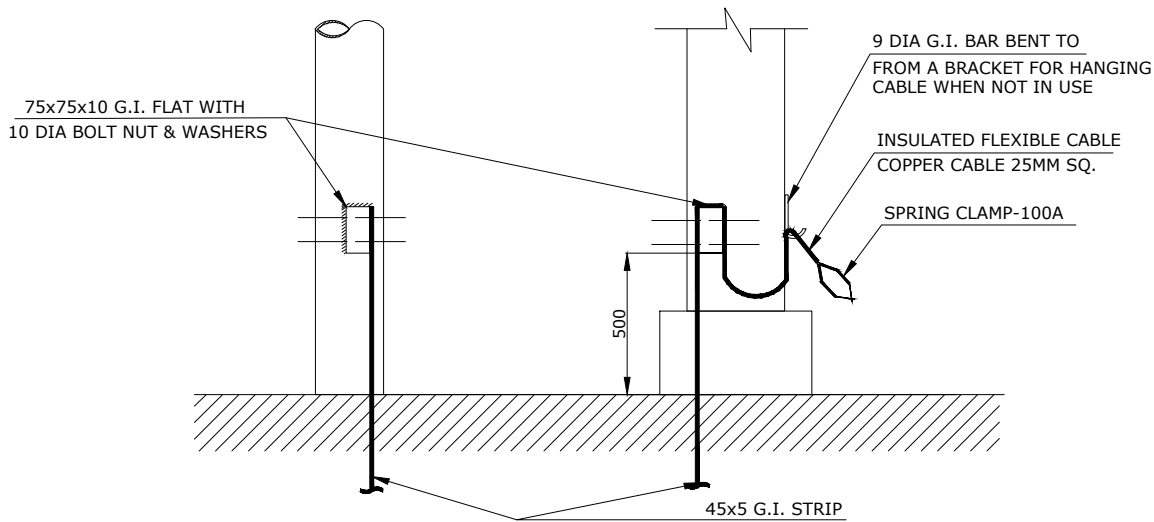
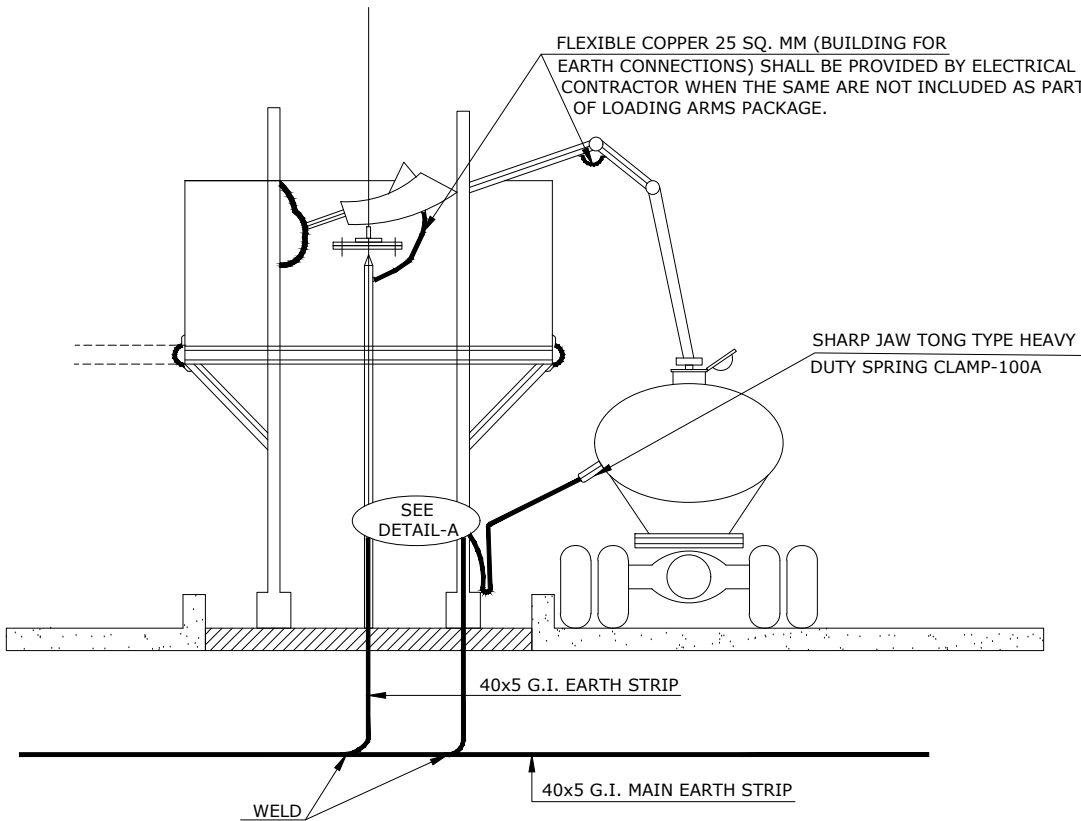


BONDING OF SINGLE RAIL
DETAIL-2



DETAIL-1

	EARTHING-TRUCK LOADING PLATFORM	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

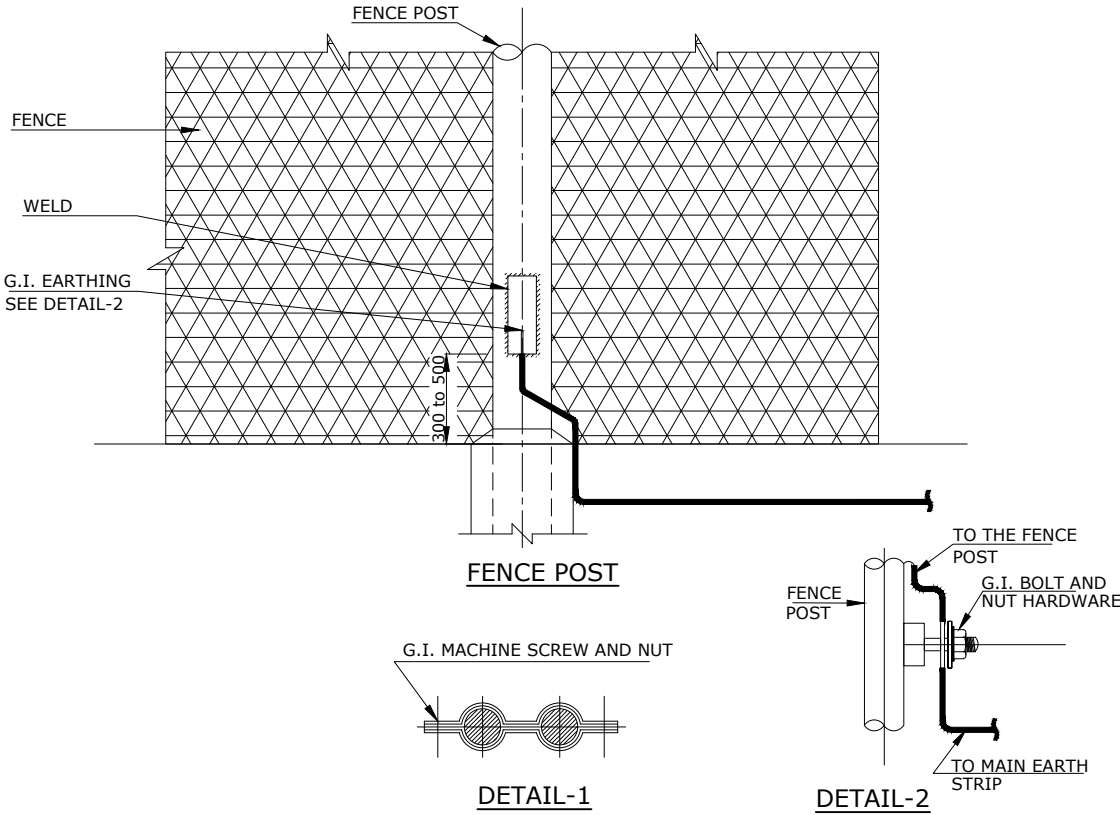
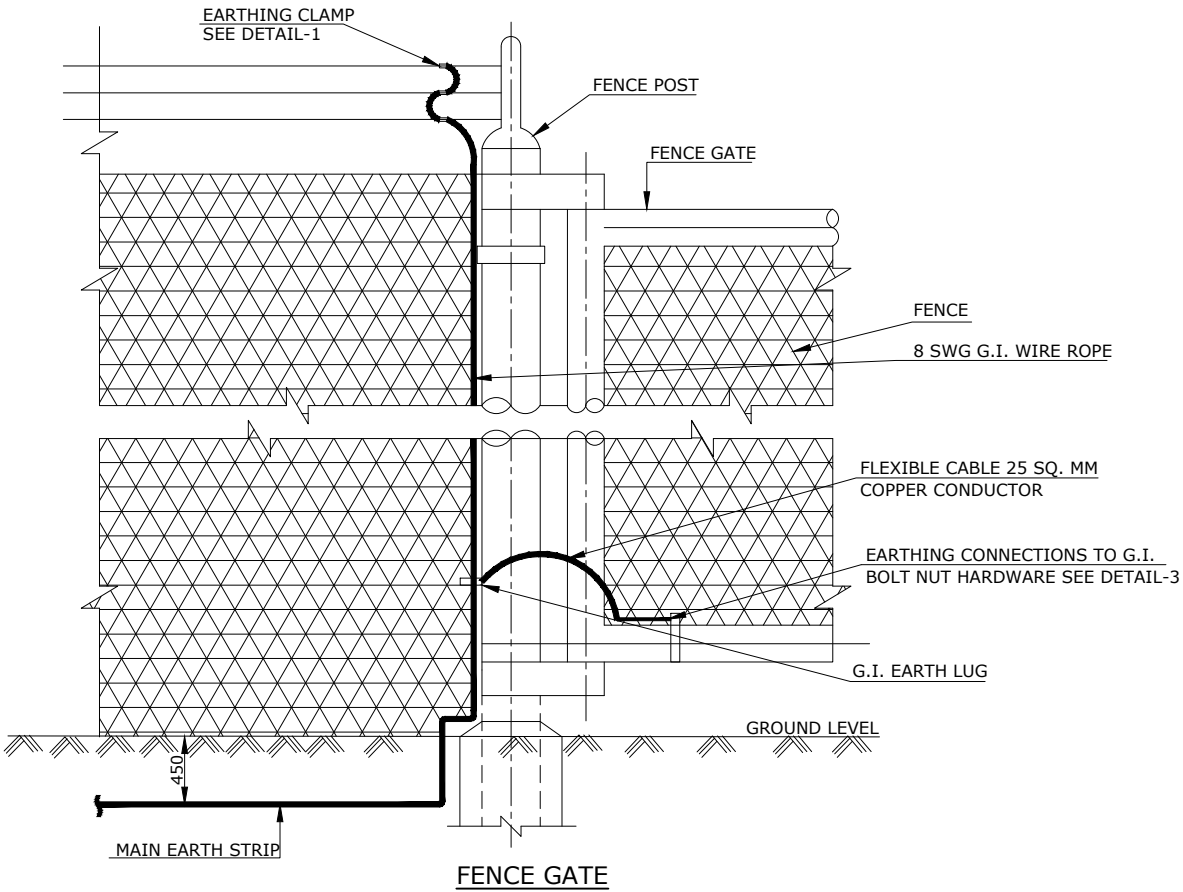


DETAIL-A

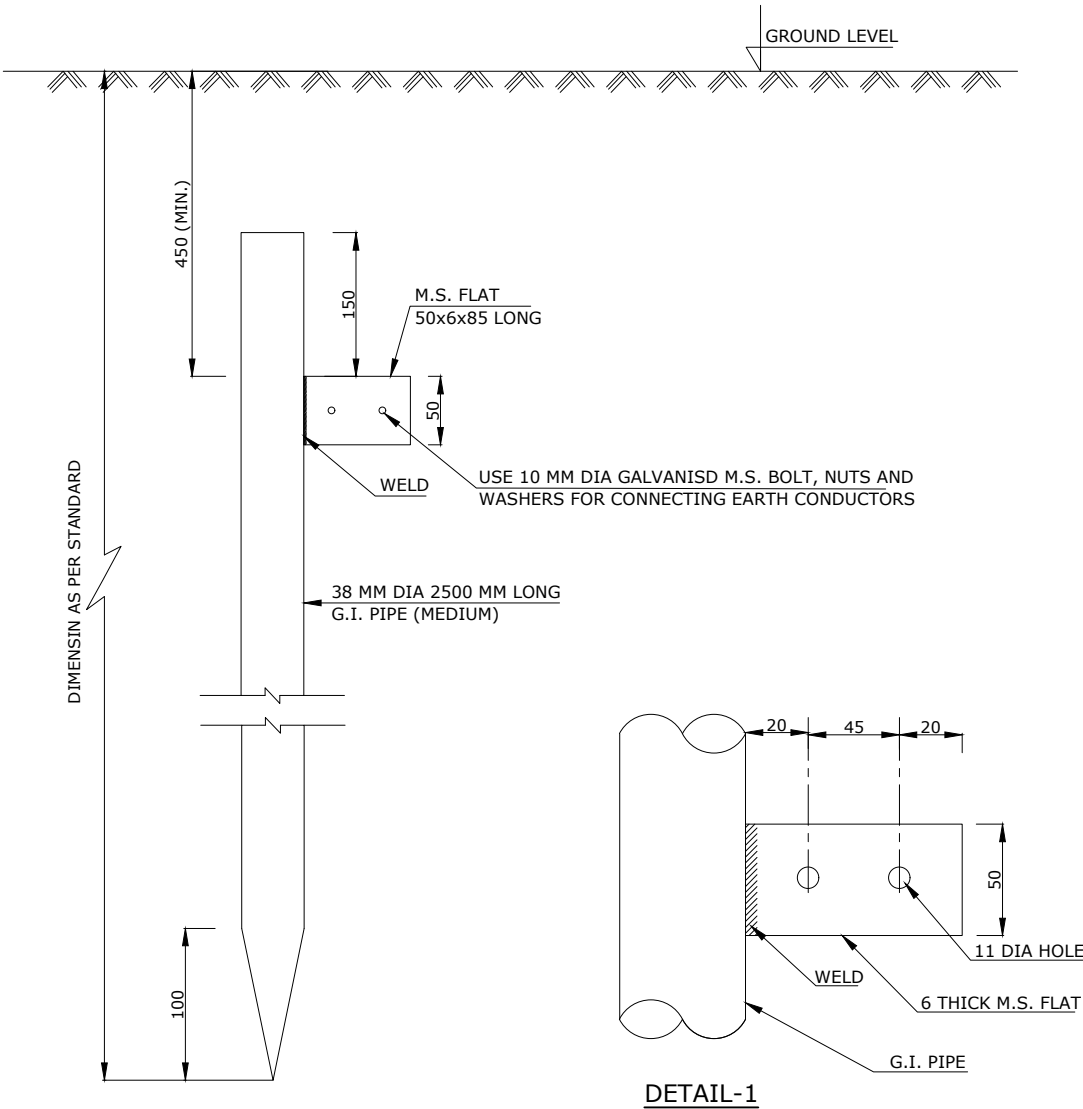
NOTES:

- SUPPLY OF FLEXIBLE CABLE AND SPRING CLAMPS BY ELECTRICAL CONTACTOR ARE NOT REQUIRED WHEN MONITORING OF EARTH SCHEME AND THE ABOVE MATERIAL ARE INCLUDED AS PART OF PLANT AUTOMATION PACKAGE.

	FENCE GATE EARTHING (TRANSFORMER YARD)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

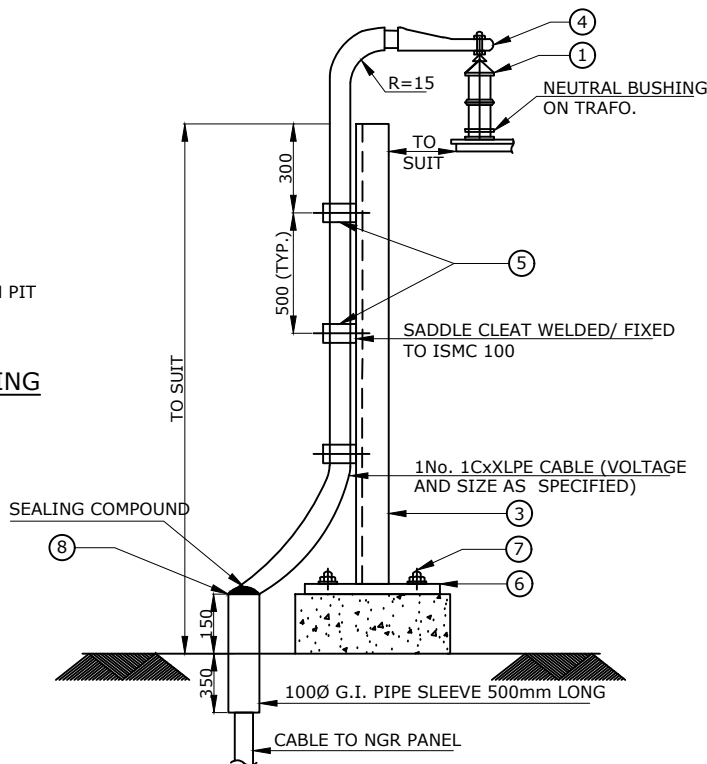
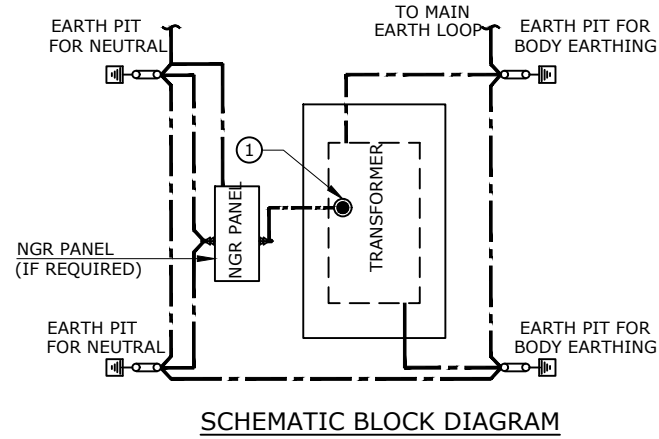
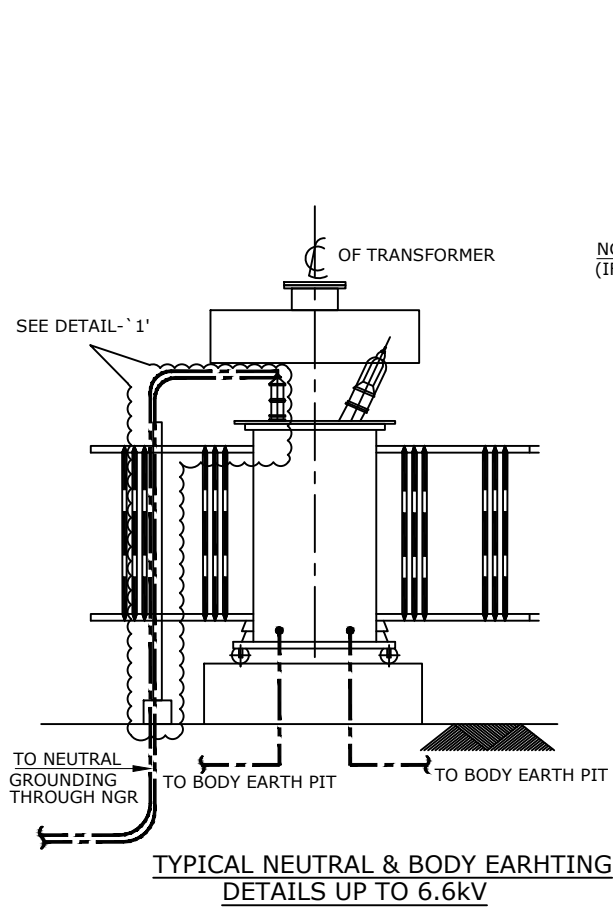


E	TYPICAL DETAILS OF DIRECTLY BURIED EARTH ELECTRODE	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



NOTES:

1. ASSEMBLY SHALL BE HOT DIP GALVANISED AFTER FABRICATION.
2. THE ELECTRODE SHALL BE DRIVEN TO A DEPTH TO REACH PERMANENT MOIST SOIL.

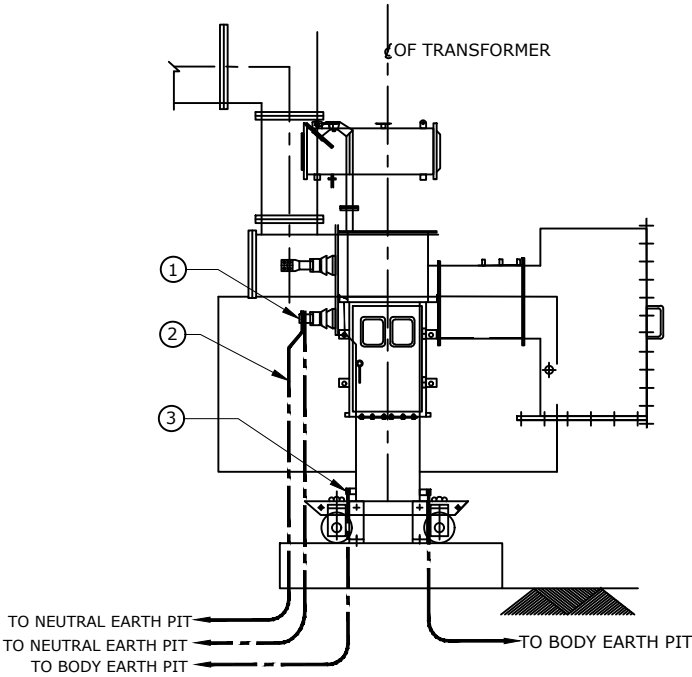


MATERIAL TAKE-OFF

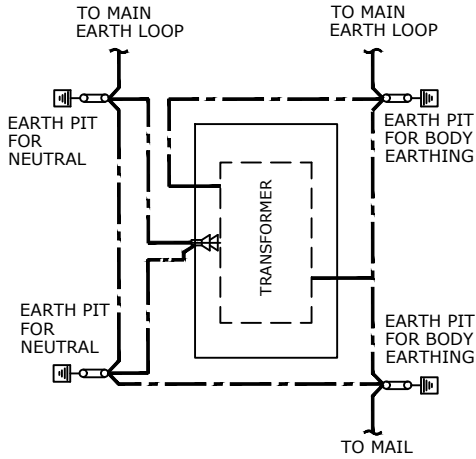
ITEM No.	DESCRIPTION	QUANTITY	REMARKS
1.	NEUTRAL BUSHING	1 No.	
2.	NUT & SPRING WASHERS TO SUIT TRANSFORMER BODY EARTHING	2 No.	
3.	ISMC 100-LENGTH TO SUIT	1 No.	
4.	CABLE LUG SUITABLE FOR CABLE SIZE	1 No.	
5.	MS SADDLE/ CLEAT TO SUIT CABLE DIA.	AS REQUIRED	
6.	150x150x6mm THICK PLATE WITH 4 No. 12Ø HOLES.	1 No.	
7.	M10 ANCHOR STUD WITH PLAIN AND SPRING WASHERS.	4 No.	
8.	SEALING COMPOUND	AS REQUIRED	

NOTES :-

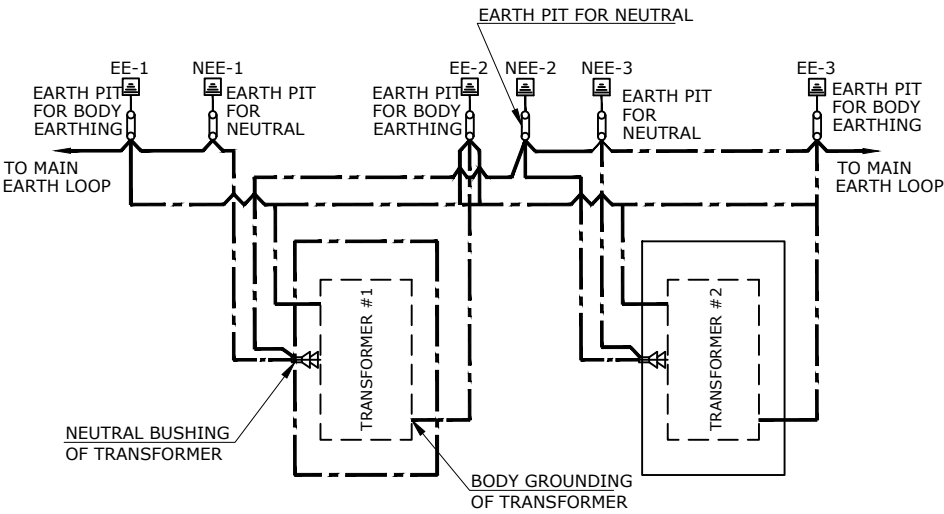
- ALL HARDWARE SHALL BE OF STAINLESS STEEL.
- ALL STEEL STRUCTURE USED FOR ELECTRICAL INSTALLATION SHALL BE APPLIED TWO COATS OF ANTI CORROSIVE PRIMER AND EPOXY PAINT OF APPROVED SHADE.



TYPICAL NEUTRAL & BODY EARTHING
DETAILS UP TO 0.433kV



SCHEMATIC DIAGRAM
FOR SINGLE TRANSFORMER



SCHEMATIC DIAGRAM
FOR TWO TRANSFORMER

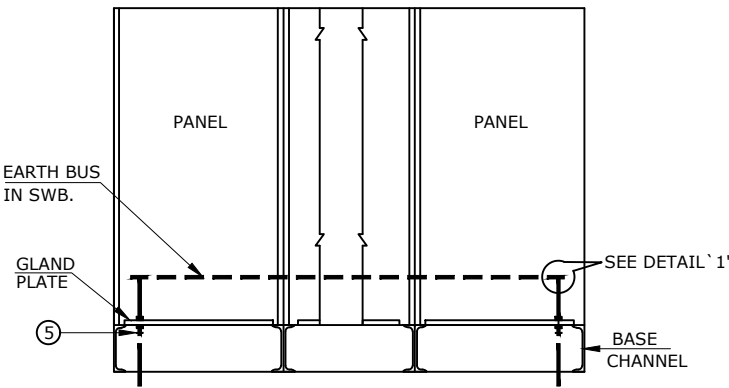
MATERIAL TAKE-OFF

ITEM No.	DESCRIPTION	QUANTITY	REMARKS
1.	NEUTRAL BUSHING BY TRANSFORMER VENDOR	-	
2.	G.I. EARTH STRIP	AS PER DRG.	
3.	EARTHING PAD WITH BOLT NUT & SPRING WASHERS BY TRANSFORMER VENDOR	-	

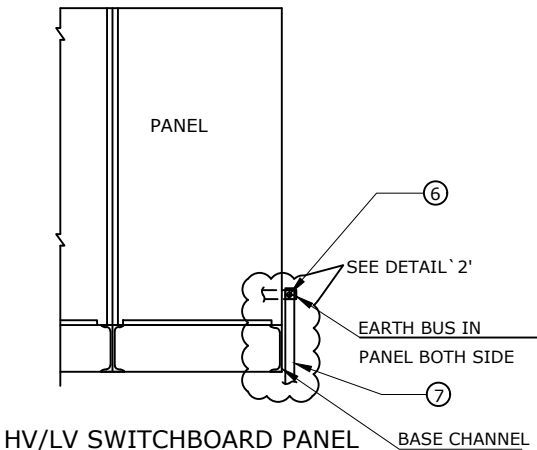
NOTES :-

- ALL HARDWARE SHALL BE OF STAINLESS STEEL.
- ALL DAMAGE TO GALVANISED FINISHES SHALL BE PAINTED WITH ZINC RICH PAINT.
- ALL STEEL STRUCTURE USED FOR ELECTRICAL INSTALLATION SHALL BE APPLIED TWO COATS OF ANTI CORROSIVE PRIMER AND EPOXY PAINT OF APPROVED SHADE.

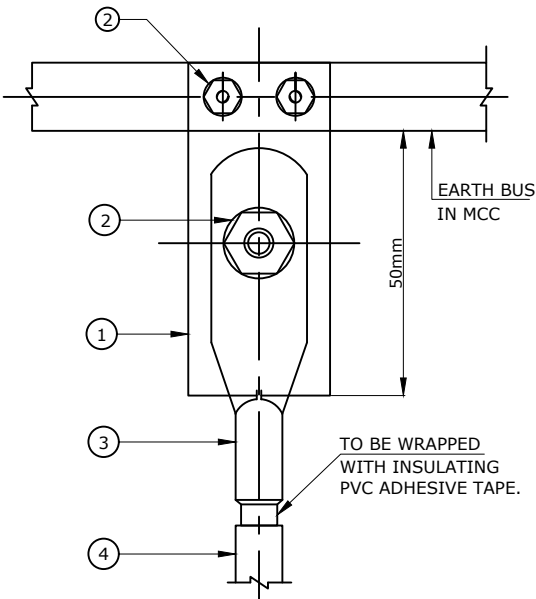
	TYPICAL EARTHING DETAILS OF HV/LV SWITCHBOARD PANEL	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



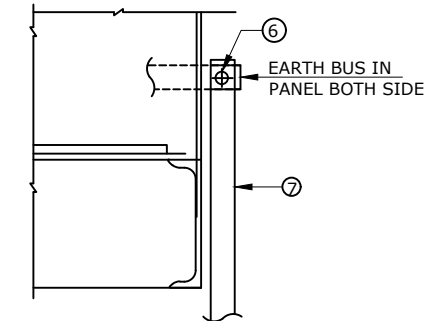
HV/LV SWITCHBOARD PANEL



HV/LV SWITCHBOARD PANEL



DETAIL `1`
EARTHING BY CABLE
ALTERNATIVE-1



DETAIL `2`
EARTHING BY G.I. STRIP
ALTERNATIVE-2

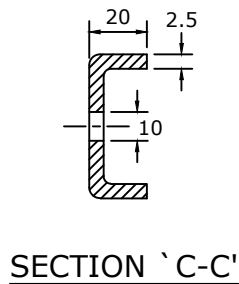
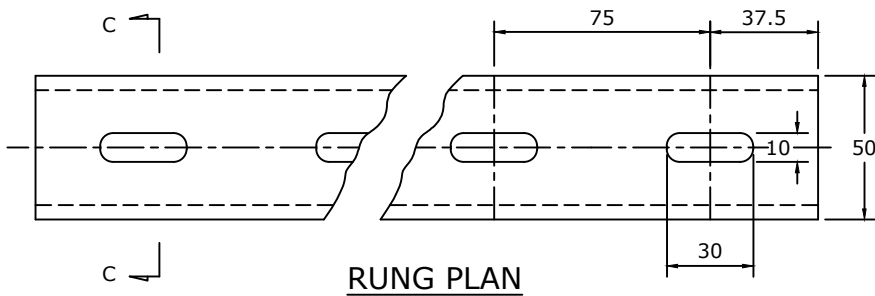
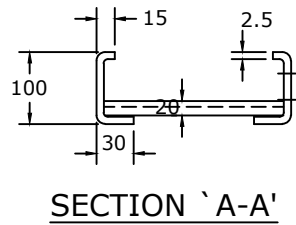
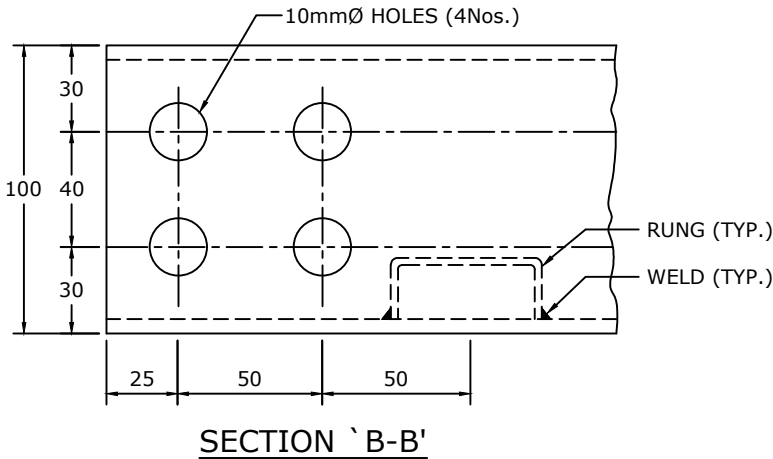
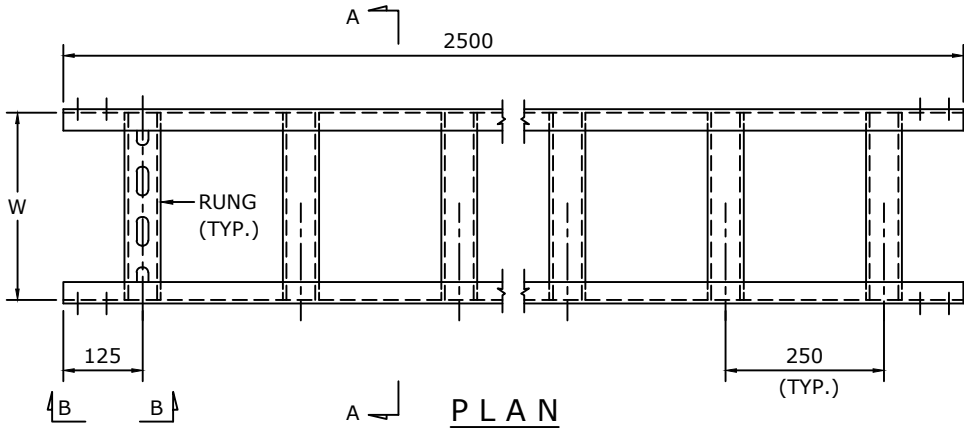
MATERIAL TAKE-OFF

ITEM No.	DESCRIPTION	QUANTITY	REMARKS
1.	COPPER/ALUMINUM ADAPTER PLATE.	2 No.	ALT.-1
2.	M10 STAINLESS STEEL BOLT WITH 2No. PLAIN &1No. SPRING WASHERS.	6 No.	ALT.-1
3.	CABLE LUG AND SOLDER	2 No.	ALT.-1
4.	1C ALUMINUM PVC INSULATED CABLE, CABLE SIZE AS SPECIFIED IN CABLE SCHEDULE	AS REQUIRED	ALT.-1
5.	CABLE GLAND SUITABLE FOR ITEM No. 4	2 No.	ALT.-1
6.	M10 BOLTS WITH 2No. PLAIN & 1No. SPRING WASHERS.	2 No.	ALT.-2
7.	G.I. STRIP.	AS REQUIRED	ALT.-2

NOTES :-

- PETROLEUM CONDUCTING JELLY SHALL BE APPLIED TO ALL SURFACES TO BE JOINED.
- ALL STEEL STRUCTURE USED FOR ELECTRICAL INSTALLATION SHALL BE APPLIED TWO COATS OF ANTI CORROSIVE PRIMER AND EPOXY PAINT OF APPROVED SHADE.
- ALL HARDWARE SHALL BE OF STAINLESS STEEL.

	STANDARD DRAWING LADDER TYPE CABLE TRAY	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

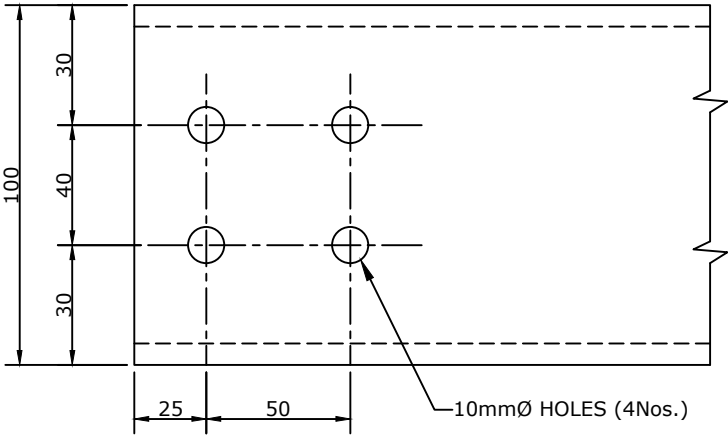
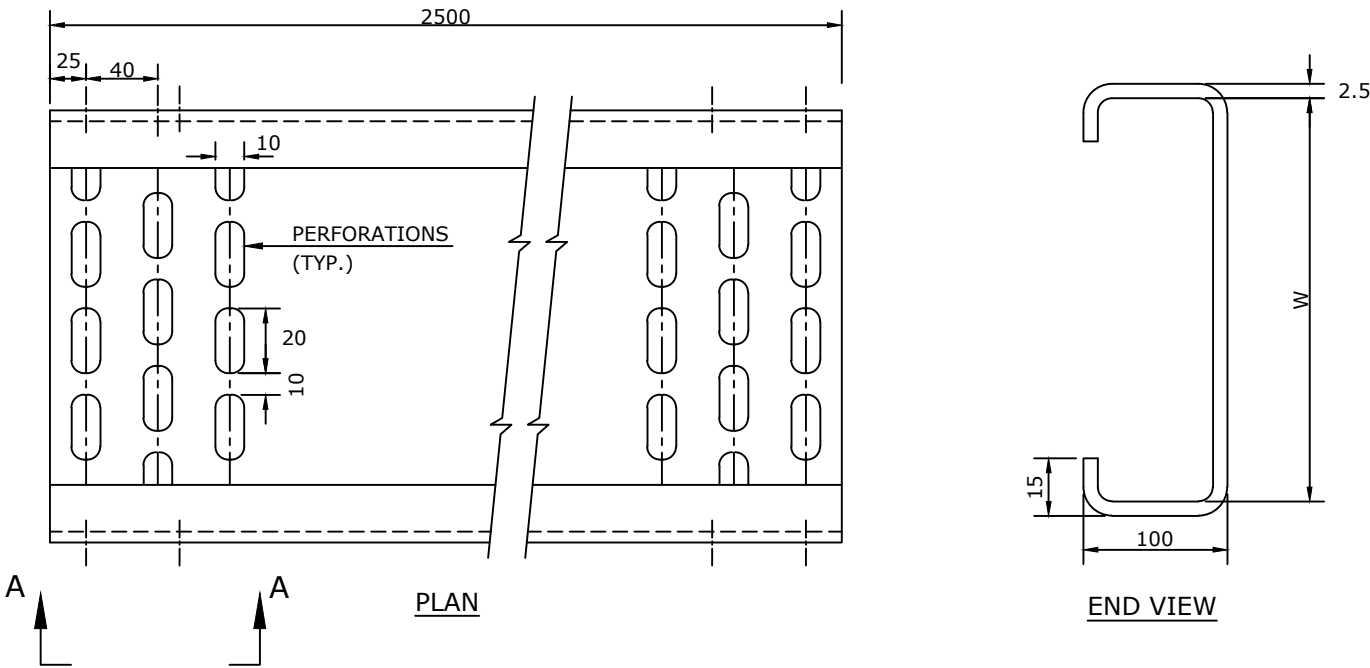


INSIDE TRAY WIDTH (W) - 150,300,450,600,800MM (AS PER MTO)
MATERIAL - 12 GAUGE (2.5MM) M.S.SHEET/G.S/AL/FRP (AS PER MTO)

NOTES:

- ALL DIMENSIONS ARE IN MM.
- M.S. SHEET SHALL CONFORM TO IS2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. CABLE TRAY SUPPLIED WITH OTHER MATERIALS SHALL CONFIRMED TO RELEVANT IS/INTERNATIONAL STANDARDS.
- THE MATERIAL DIMENSIONAL DETAILS SHOWN ARE TYPICAL FOR GS STRESS.
- EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
- CABLE TRAYS SHALL DESIGN FOR 3000mm SUPPORT SPAN UNLESS NOTED OTHERWISE FOR SPECIFIED TRAY LOADING.

	STANDARD DRAWING PERFORATED TYPE CABLE TRAY	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

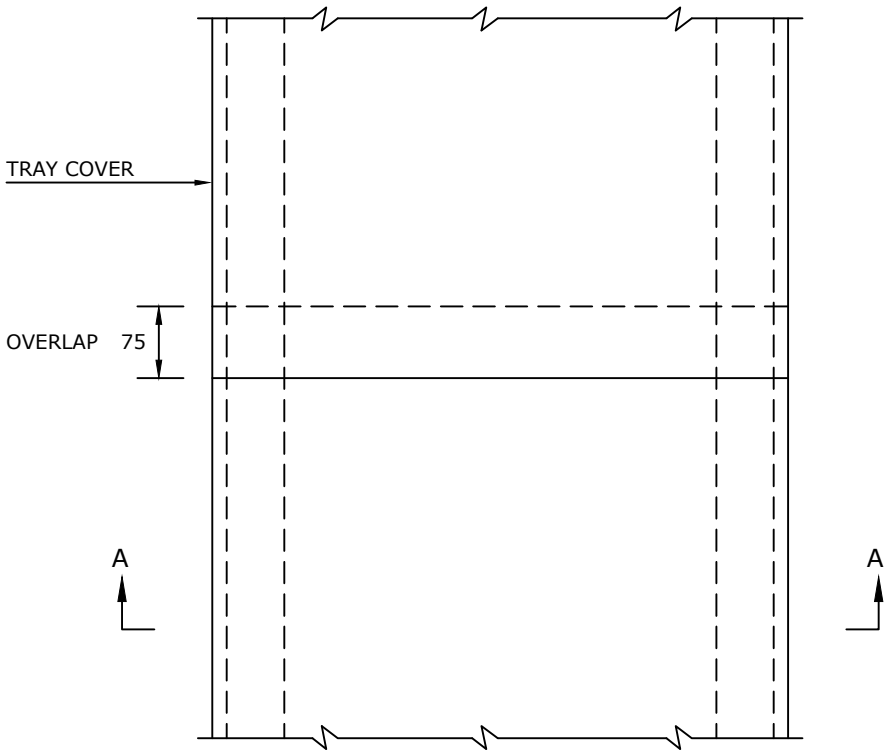


INSIDE WIDTH (W) - 100,150,300,450,600,800MM (AS PER MTO)
MATERIAL - 12 GAUGE (2.5MM) M.S.SHEET/G.S./AL/FRP (AS PER MTO)

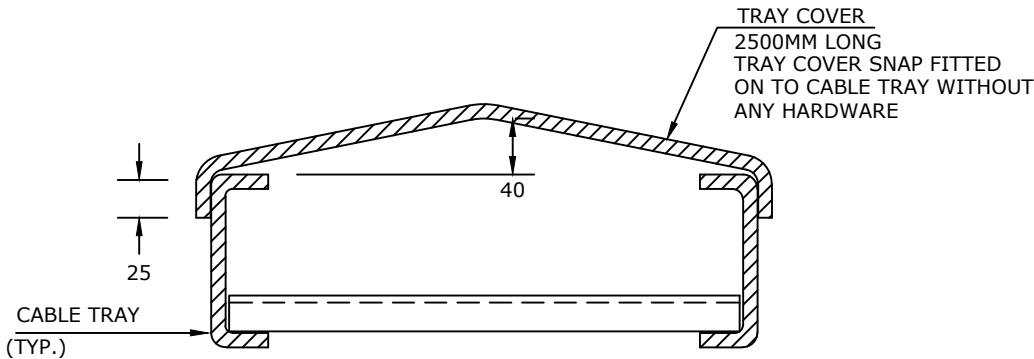
- NOTES:**
- ALL DIMENSIONS ARE IN MM.
 - M.S. SHEET SHALL CONFORM TO IS2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. CABLE TRAY SUPPLIED WITH OTHER MATERIALS SHALL CONFIRMED TO RELEVANT IS/INTERNATIONAL STANDARDS.
 - THE MATERIAL DIMENSIONAL DETAILS SHOWN ARE TYPICAL FOR GS STRESS.
 - EACH CABLE TRAYS SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRED HARDWARE AS PER DRG. No. SD-75-6706.
 - CABLE TRAYS SHALL BE DESIGNED FOR 3000mm SUPPORT SPAN UNLESS NOTED OTHERWISE FOR SPECIFIED TRAY LOADING.

	STANDARD DRAWING CABLE TRAY COVER	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

TYPICAL ARRANGEMENT OF COVERING CABLE TRAY



PLAN



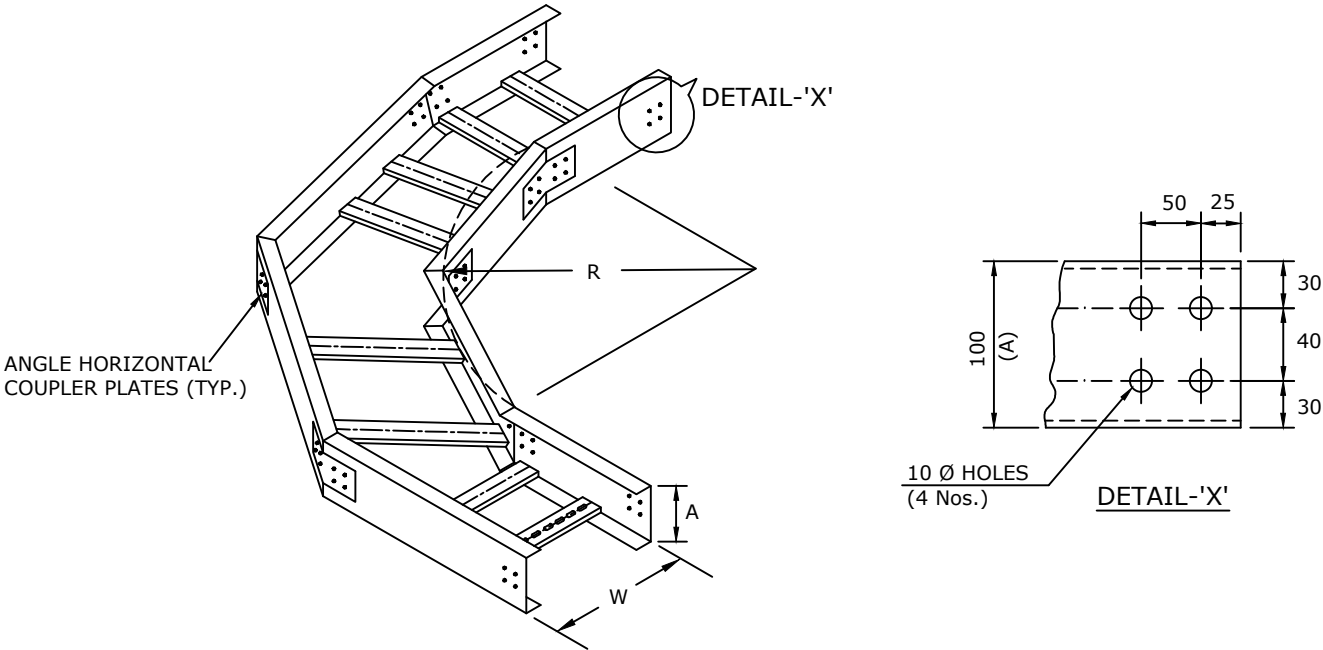
SECTION `A-A`

MATERIAL-16 GAUGE(1.7MM) M.S. SHEET/G.S./AL/FRP (AS PER MTO)
TRAY COVER MATERIAL SAME AS OF TRAY & TRAY WIDTH AS PER MTO

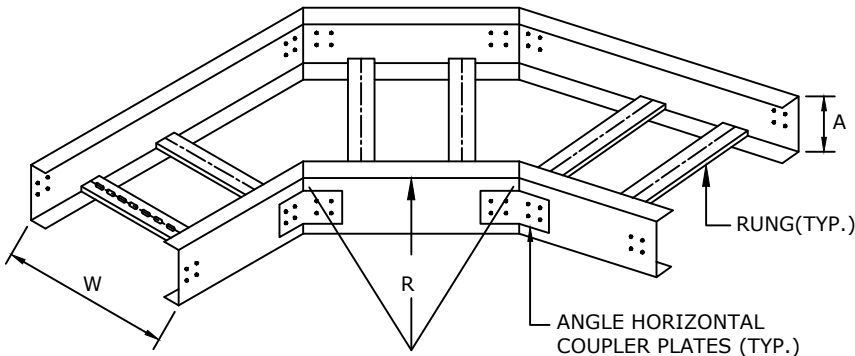
NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. M.S. SHEET SHALL CONFORM TO IS2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. CABLE TRAY SUPPLIED WITH OTHER MATERIALS SHALL CONFORMED TO RELEVANT IS/INTERNATIONAL STANDARDS.

	STANDARD DRAWING CABLE TRAY ACCESSORIES	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 7		



90° HORIZONTAL RADIUS ELBOW



45° HORIZONTAL RADIUS ELBOW

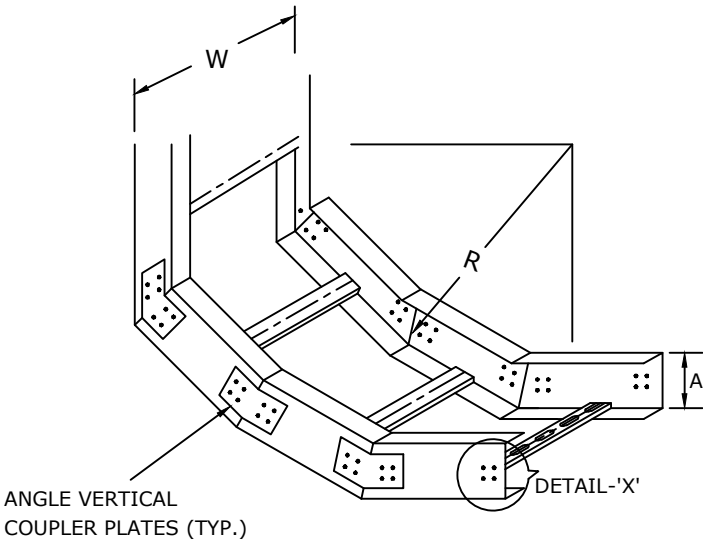
- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER MTO)
- (A) DEPTH OF TRAY - 100MM UNLESS NOTED
- (R) BENDING RADIUS (AS PER MTO)

NOTES:

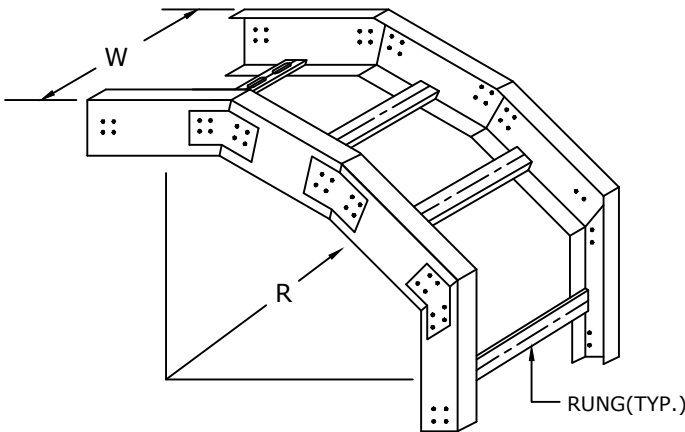
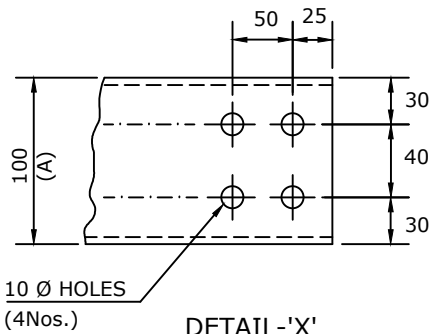
- ALL DIMENSIONS ARE IN MM.
- MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
- M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
- EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
- ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES & HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

	STANDARD DRAWING CABLE TRAY ACCESSORIES	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	2 OF 7		

90° VERTICAL RADIUS ELBOW



INSIDE



OUTSIDE

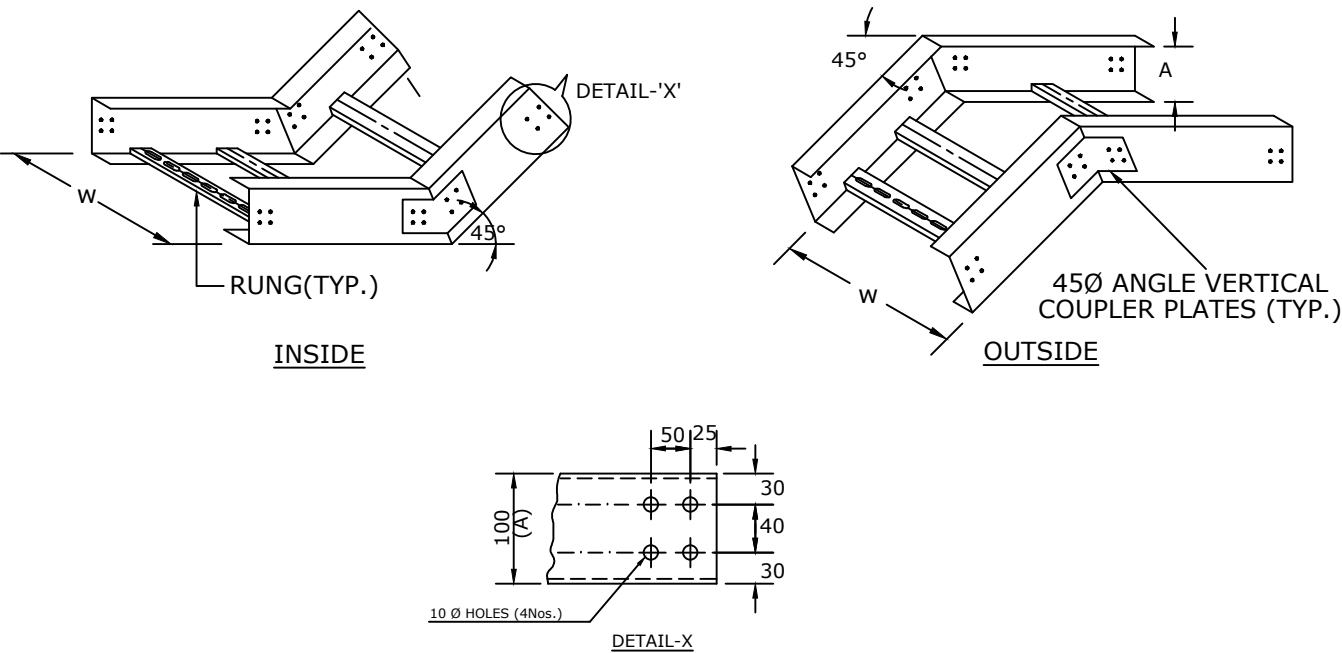
- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER MTO).
 (A) DEPTH OF TRAY - 100MM UNLESS NOTED.
 (R) BENDING RADIUS (AS PER MTO).

NOTES:

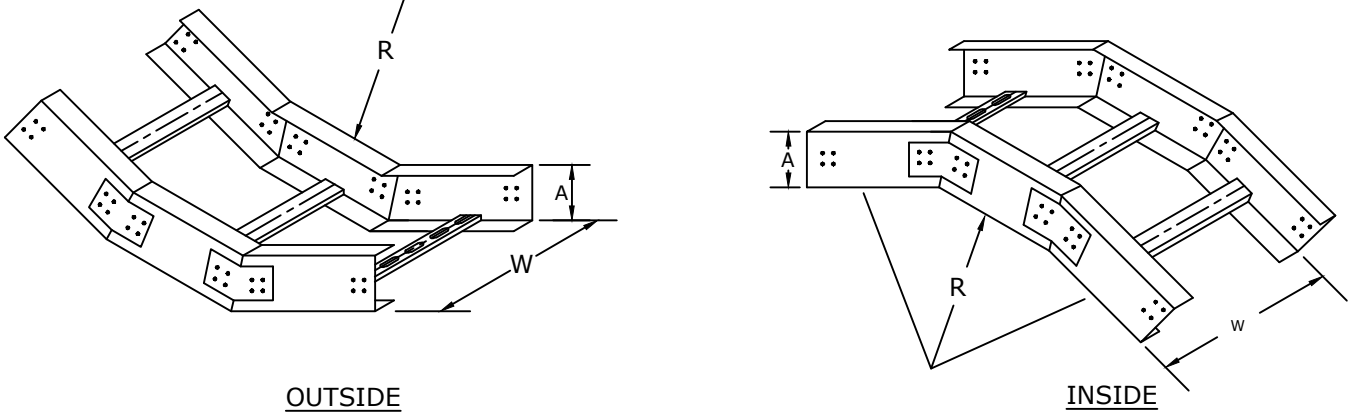
- ALL DIMENSIONS ARE IN MM.
- MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
- M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
- EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
- ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES AND HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

	STANDARD DRAWING CABLE TRAY ACCESSORIES	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	3 OF 7		

45° DIRECT VERTICAL ELBOW



45° VERTICAL RADIUS ELBOW

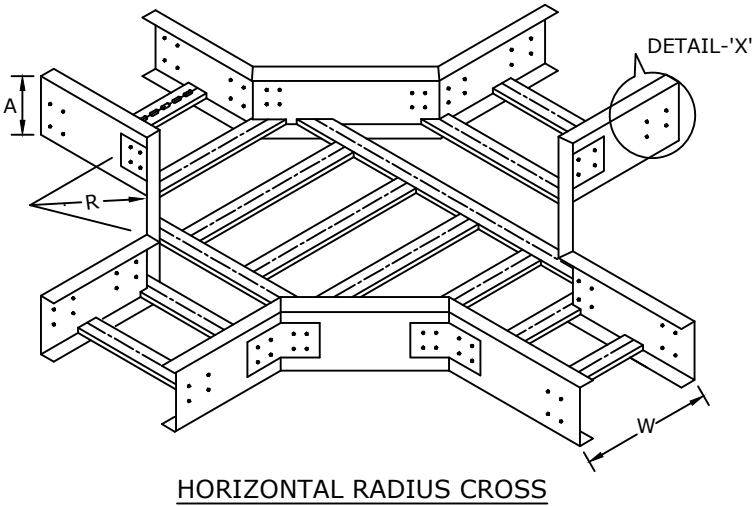
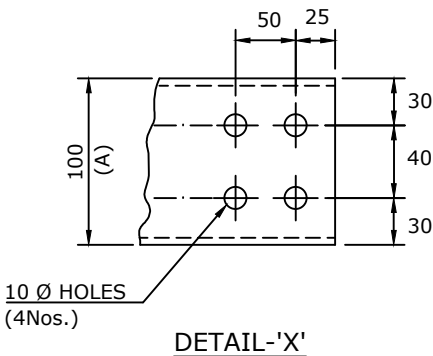
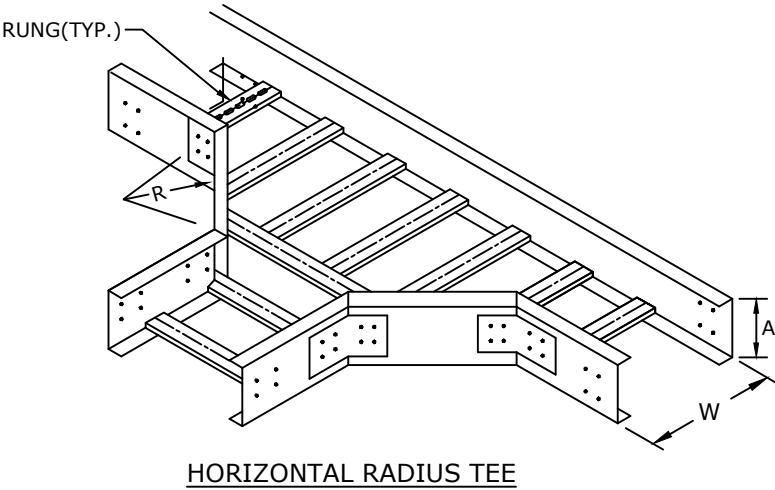


- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER MTO)
 (A) DEPTH OF TRAY - 100MM UNLESS NOTED
 (R) BENDING RADIUS (AS PER MTO)

NOTES:

- ALL DIMENSIONS ARE IN MM.
- MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
- M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
- EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
- ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES & HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

	STANDARD DRAWING CABLE TRAY ACCESSORIES	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	4 OF 7		

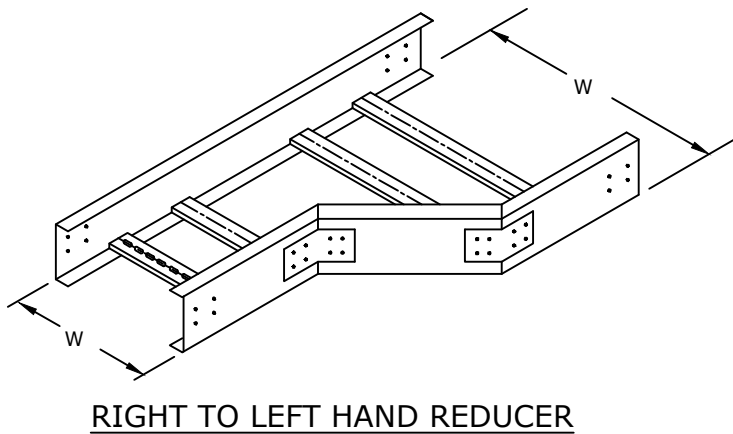
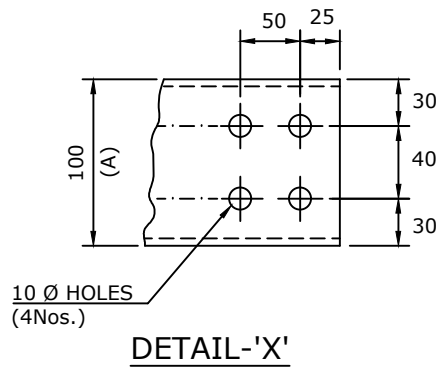
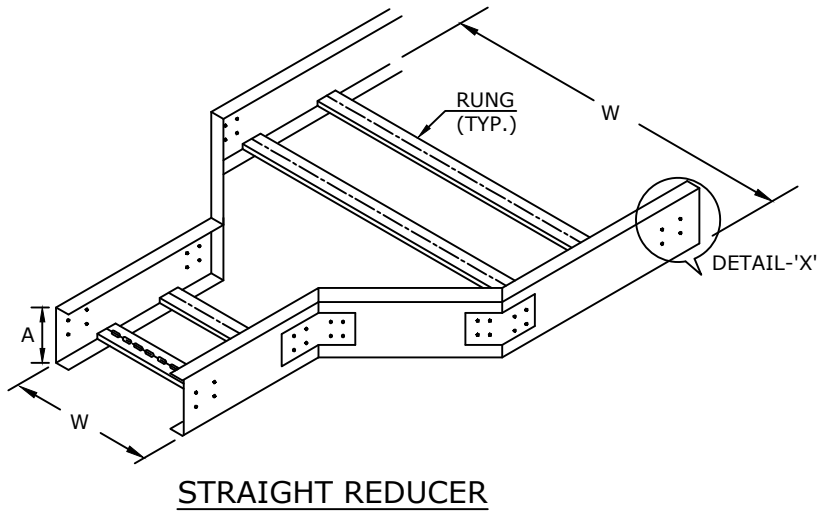


- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER MTO)
- (A) DEPTH OF TRAY - 100MM UNLESS NOTED
- (R) BENDING RADIUS (AS PER MTO)

NOTES:

- ALL DIMENSIONS ARE IN MM.
- MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
- M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
- EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
- ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES AND HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

	STANDARD DRAWING CABLE TRAY ACCESSORIES	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	5 OF 7		



(W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER MTO)

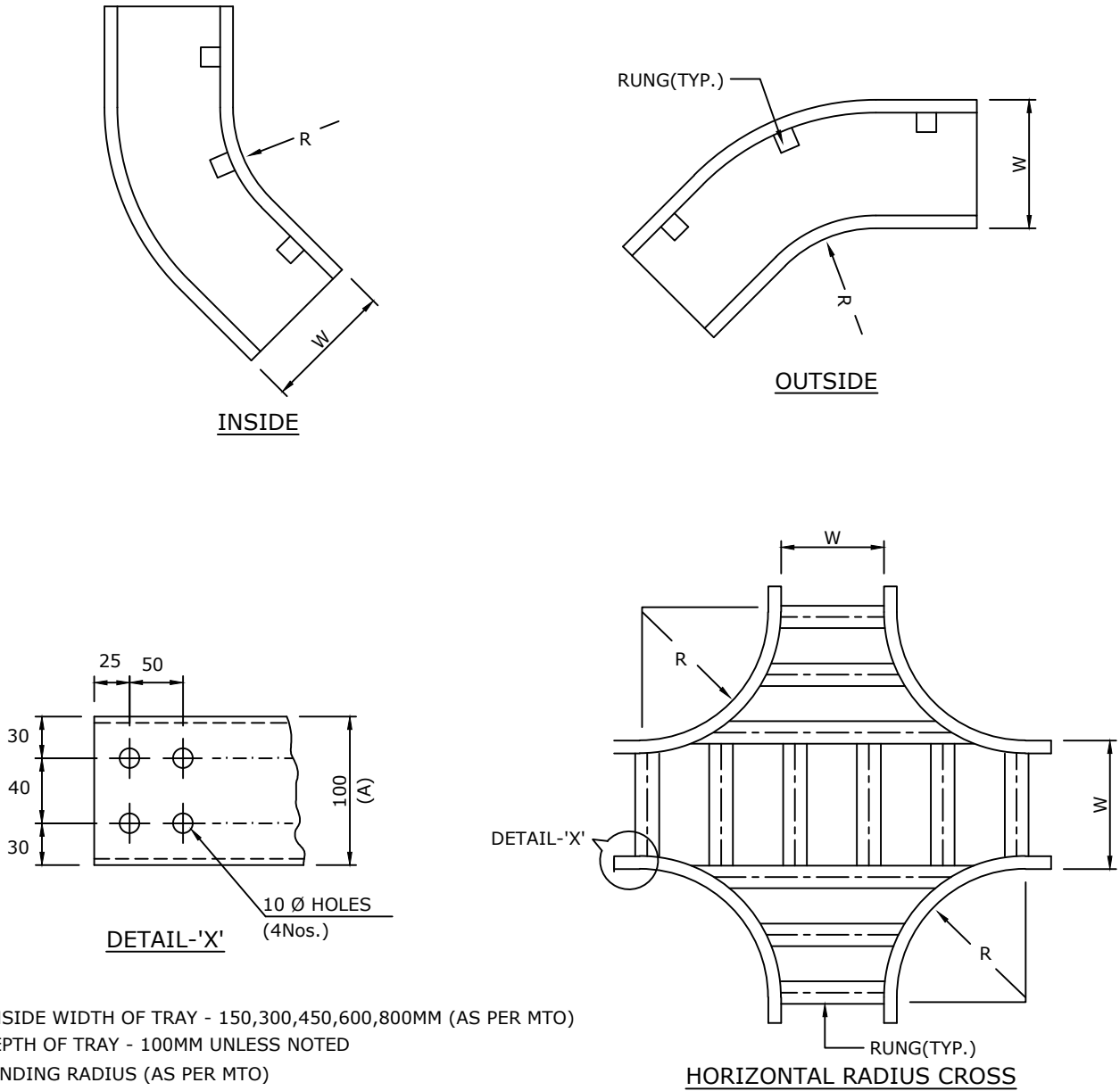
(A) DEPTH OF TRAY - 100MM UNLESS NOTED

NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
3. M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
4. EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
5. ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES AND HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

STANDARD DRAWING CABLE TRAY ACCESSORIES	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	6 OF 7		

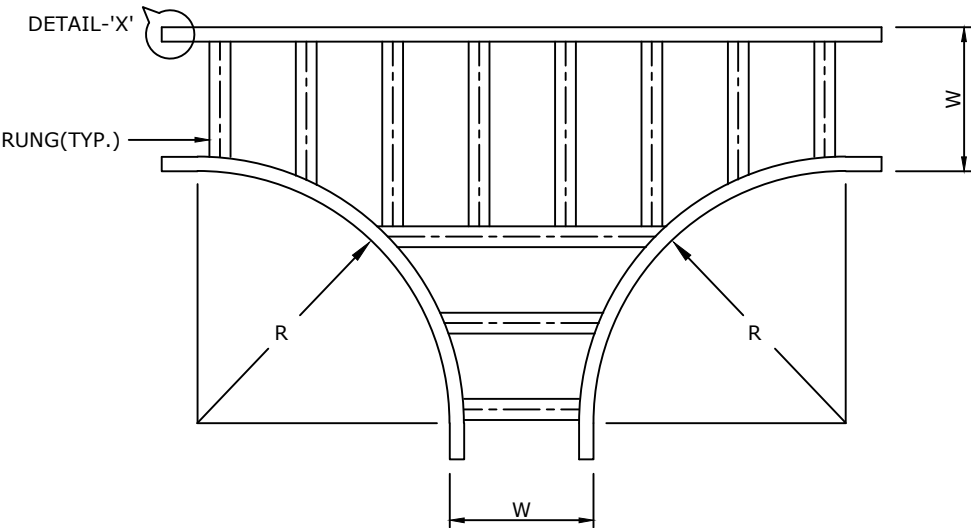
45° VERTICAL RADIUS ELBOW



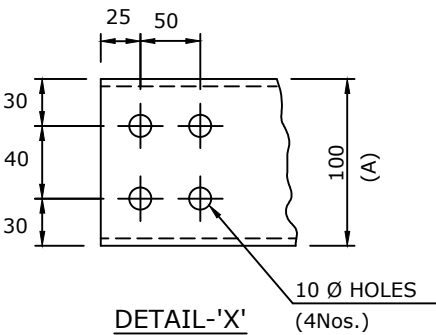
NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
3. M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
4. EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
5. ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES AND HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

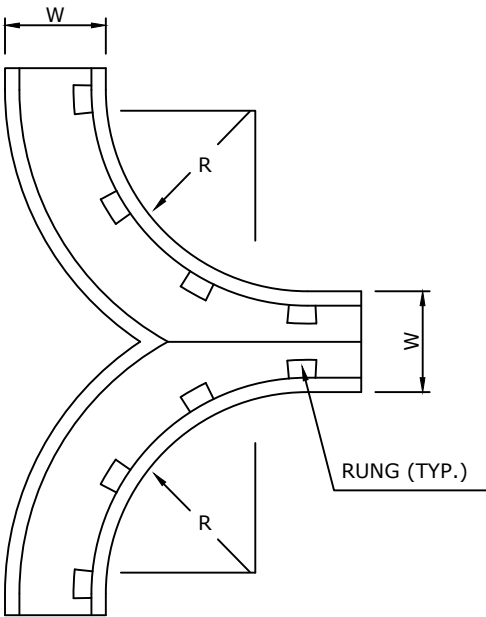
	STANDARD DRAWING CABLE TRAY ACCESSORIES	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	7 OF 7		



HORIZONTAL RADIUS TEE



- (W) - INSIDE WIDTH OF TRAY-150,300,450,600,800MM (AS PER MTO)
 (A) - DEPTH OF TRAY-100MM UNLESS NOTED
 (R) - BENDING RADIUS (AS PER MTO)

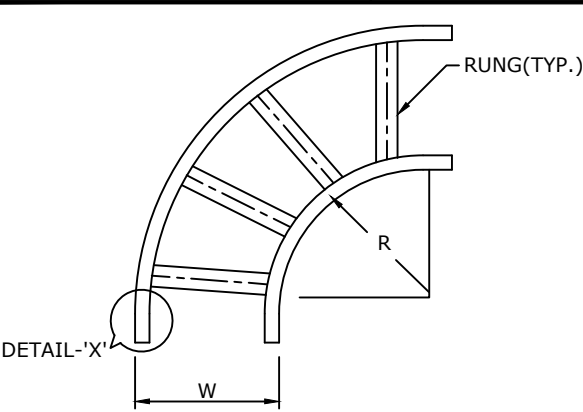


90° VERTICAL RADIUS TEE

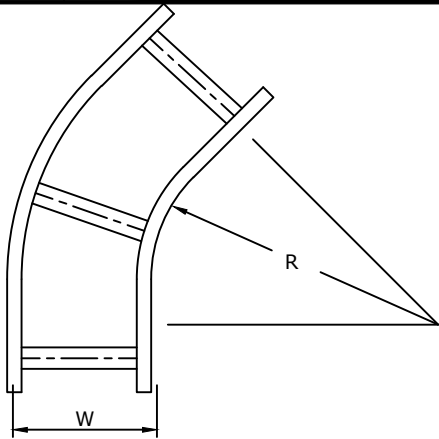
NOTES:

- ALL DIMENSIONS ARE IN MM.
- MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
- M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
- EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
- ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES AND HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

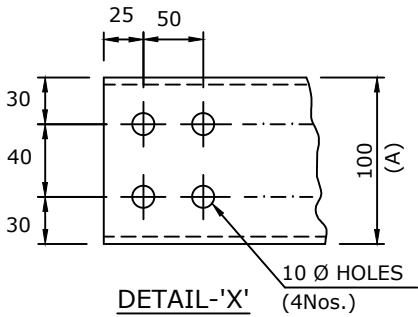
	STANDARD DRAWING CABLE TRAY ACCESSORIES (FRP)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



90° HORIZONTAL RADIUS ELBOW

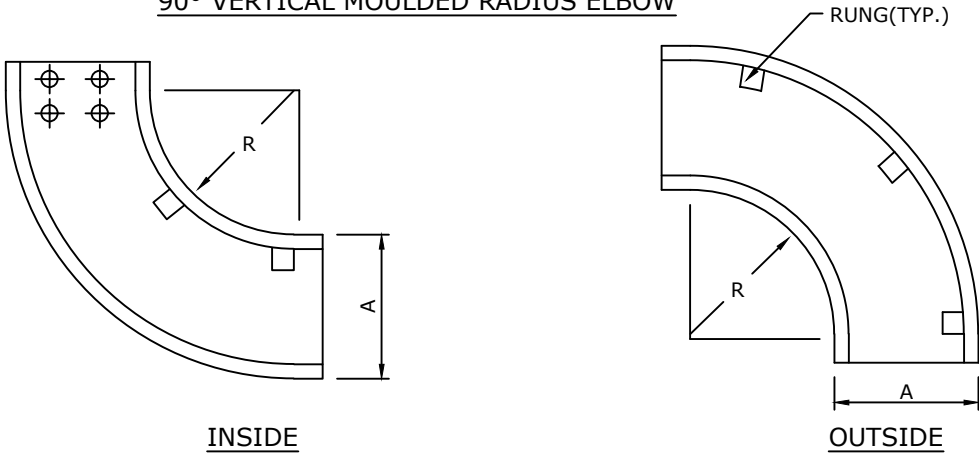


45° HORIZONTAL RADIUS ELBOW



- (W) INSIDE WIDTH OF TRAY - 150,300,450,600,800MM (AS PER MTO)
 (A) DEPTH OF TRAY - 100MM UNLESS NOTED
 (R) BENDING RADIUS (AS PER MTO)

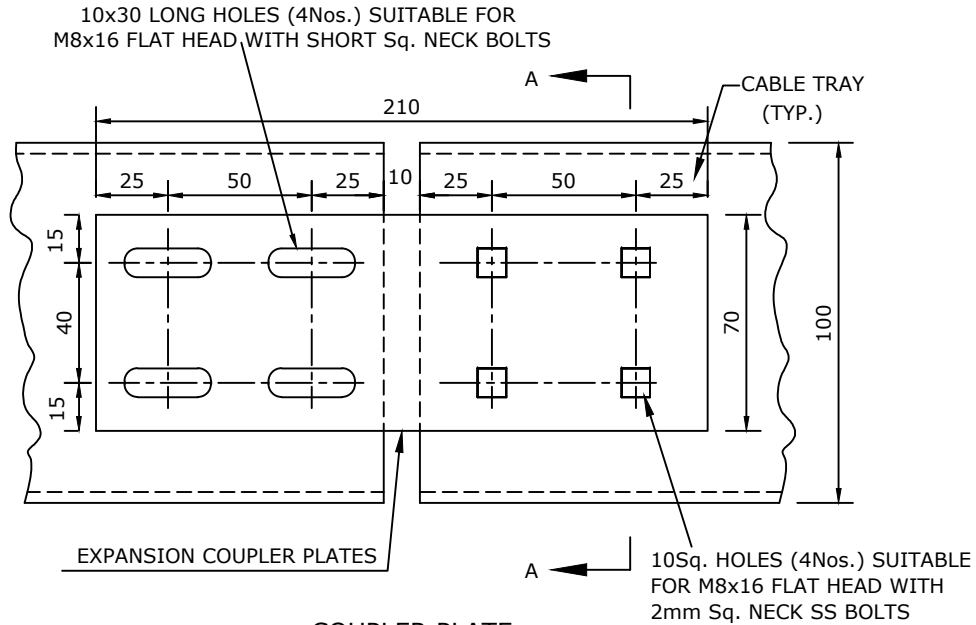
90° VERTICAL MOULDED RADIUS ELBOW



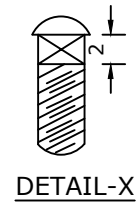
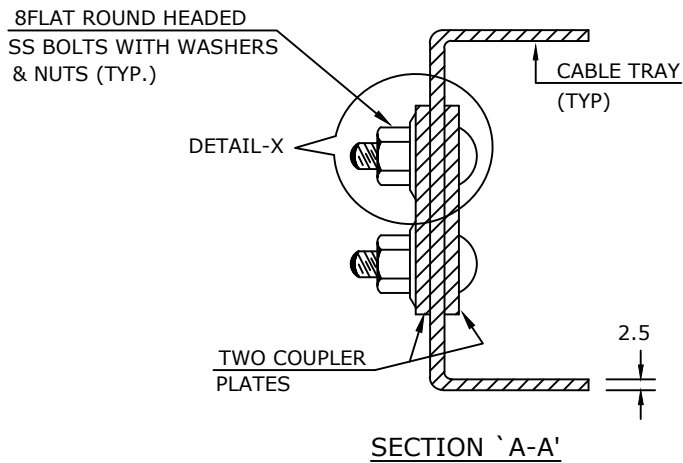
NOTES:

- ALL DIMENSIONS ARE IN MM.
- MATERIAL - 12 GAUGE(2.5MM) M.S. SHEET/G.S/AL/FRP (AS PER MTO).
- M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS SUPPLIED WITH OTHER MATERIAL SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
- EACH CABLE TRAY SHALL BE SUPPLIED COMPLETE WITH MATCHING COUPLER PLATES WITH REQUIRE HARDWARE AS PER DRG. No. SD-75-6706.
- ALL TRAY FITTINGS SHALL BE SUPPLIED COMPLETE WITH MATCHING ANGLE HORIZONTAL COUPLER PLATES AND HARDWARE. ALTERNATIVELY WELDED ASSEMBLY MAY BE SUPPLIED FOR G.S. CABLE TRAY FITTINGS.

	STANDARD DRAWING CABLE TRAY COUPLER PLATE	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



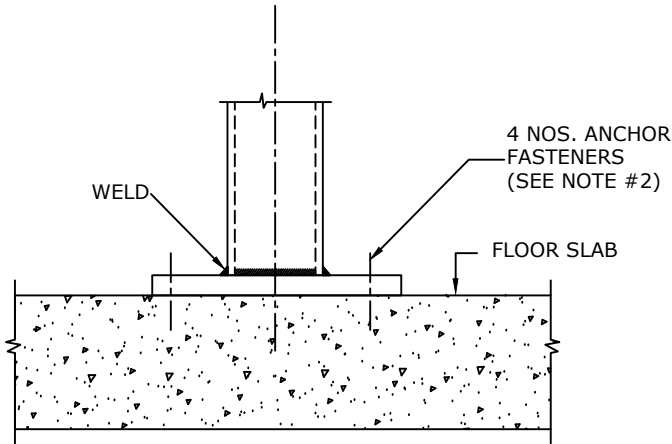
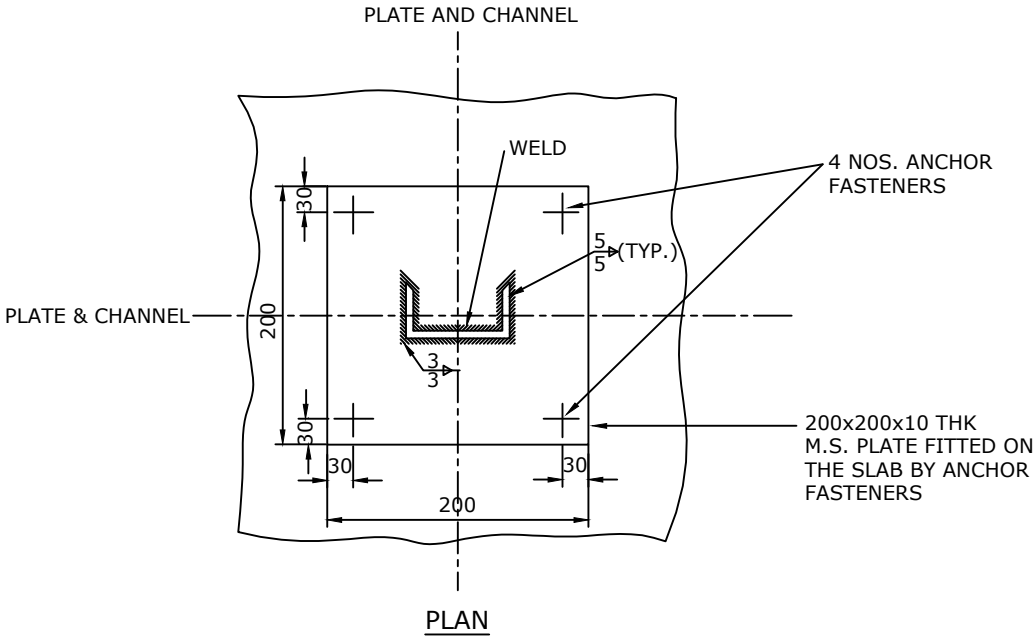
COUPLER PLATE
TYPICAL FOR LADDER TYPE.
AND PERFORATED TYPE TRAYS



NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. MATERIAL - 3MM M.S. SHEET/G.S/AL/FRP (AS PER MTO).
3. M.S. SHEET SHALL CONFORM TO IS 2062: 1992 OR EQUIVALENT INTERNATIONAL STANDARDS AND HOT DIP GALVANIZING SHALL BE DONE AS PER IS 4759: 1996 OR EQUIVALENT INTERNATIONAL STANDARDS. TRAY FITTINGS OF OTHER MATERIALS SHALL CONFORM TO RELEVANT IS/INTERNATIONAL STANDARDS.
4. NUTS/BOLTS/LOCKNUTS SHALL BE AS PER IS 1363(PART-1,2,3) : 1992/IS 1367(PART-5) : 1980 OR EQUIVALENT INTERNATIONAL STANDARDS.
5. WASHERS SHALL BE AS PER IS 2016 : 1967 OR EQUIVALENT INTERNATIONAL STANDARDS.

	STANDARD DRAWING CABLE TRAY MOUNTING PLATE	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

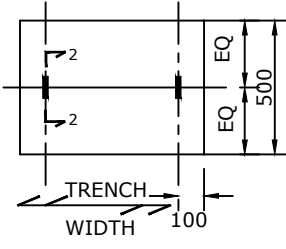
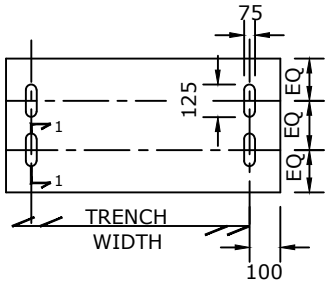
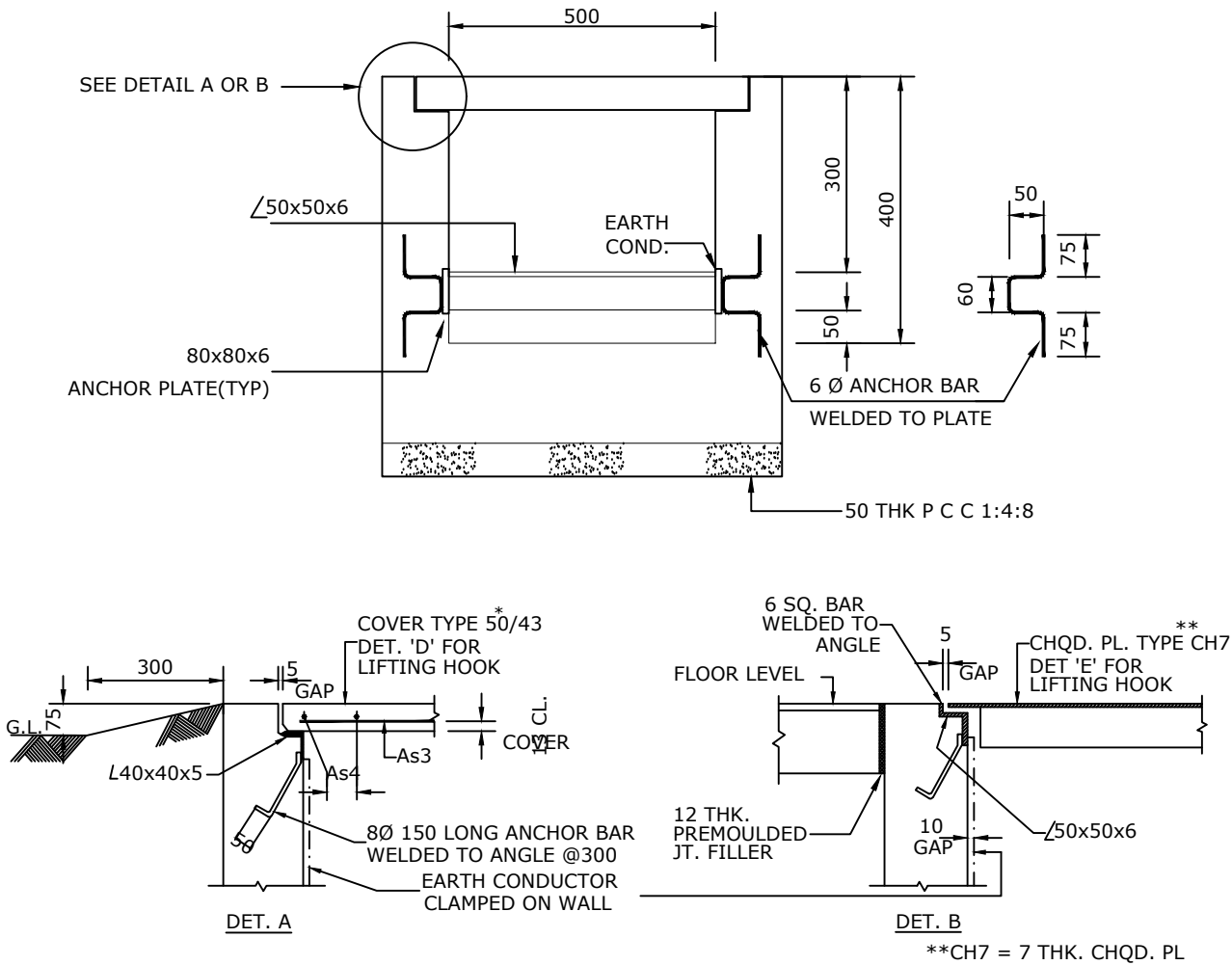


TYPICAL DETAIL OF FIXING M.S. PLATE TO FLOOR BY ANCHOR FASTENER
FOR WELDING TRAY SUPPORT. (WHEREVER EMBEDDED PLATES OR STRUCTURAL
BEAMS ARE NOT AVAILABLE).

NOTES:

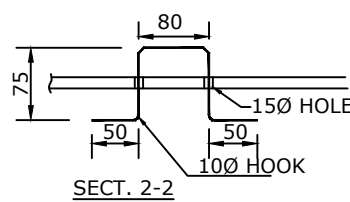
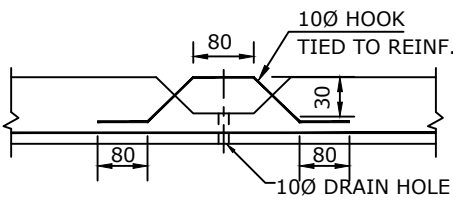
1. ALL DIMENSIONS ARE IN MM.
2. THE ANCHOR FASTENER SHALL BE OF HEAVY DUTY TYPE. THE AXIAL HOLDING STRENGTH SHALL BE AS FOLLOWS
BOLT DIAMETER. 16mm -- 5000Kg
FOR ADEQUATE SAFETY FACTOR 25% OF THE ABOVE VALUE SHALL BE USED.
3. SAME DETAILS HOLD GOOD IF THE PLATE ARE FASTENED TO THE UNDERSIDE OF THE FLOOR SLAB.
4. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992.
5. WELDING SHALL BE DONE AS PER IS 816:1969.

	STANDARD DRAWING CABLE TRENCH TYPE - 0504	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



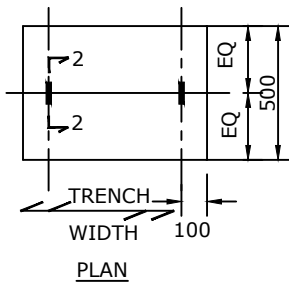
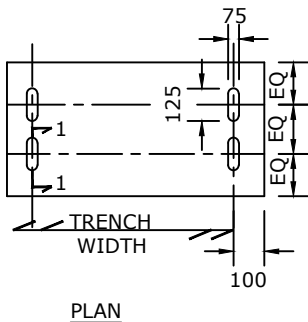
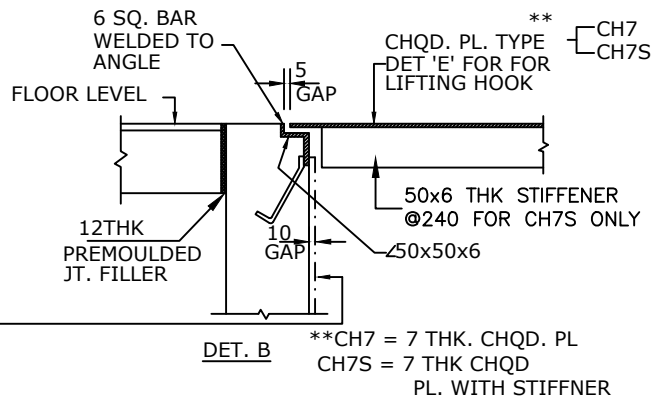
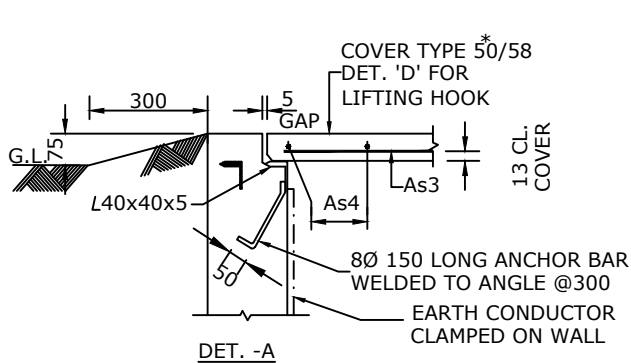
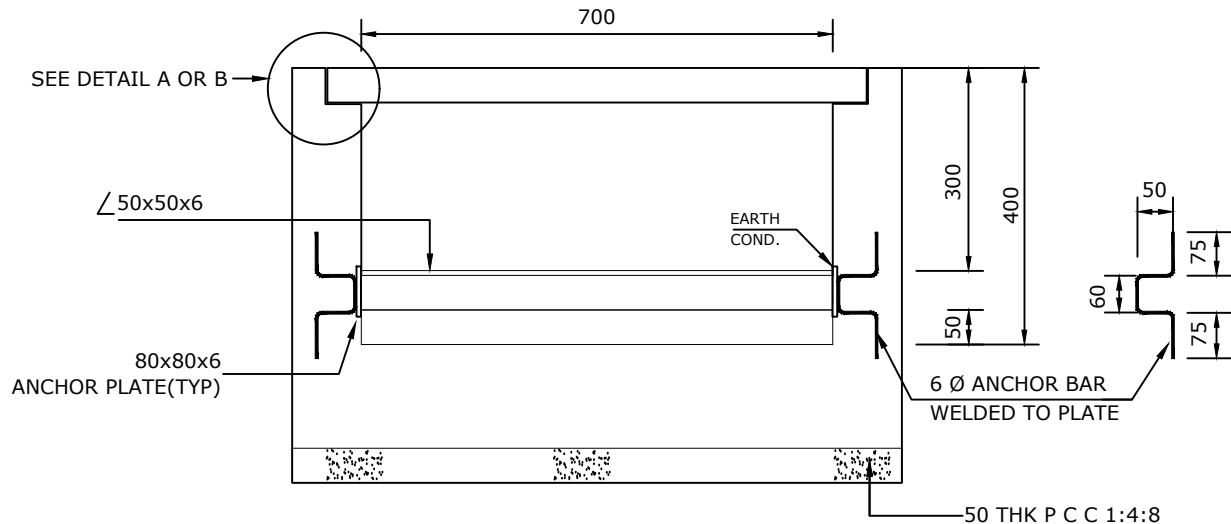
R C COVER TYPE	THICKNESS mm.	As3	As4
50/72	50	7-6Ø	7-6Ø
50/36	50	7-6Ø	4-6Ø

50/36 MEANS 50mm. THK.x36 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



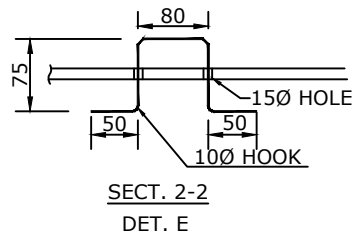
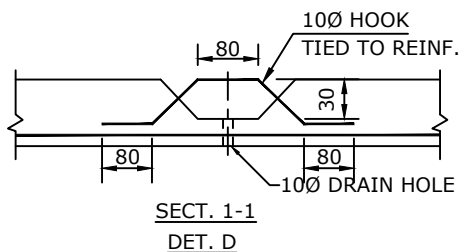
- NOTES:
- ALL DIMENSIONS ARE IN MM
 - STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

	STANDARD DRAWING CABLE TRENCH TYPE - 0704	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



R C COVER TYPE	THICKNESS mm.	As3	As4
50/58	50	7-6Ø	7-6Ø

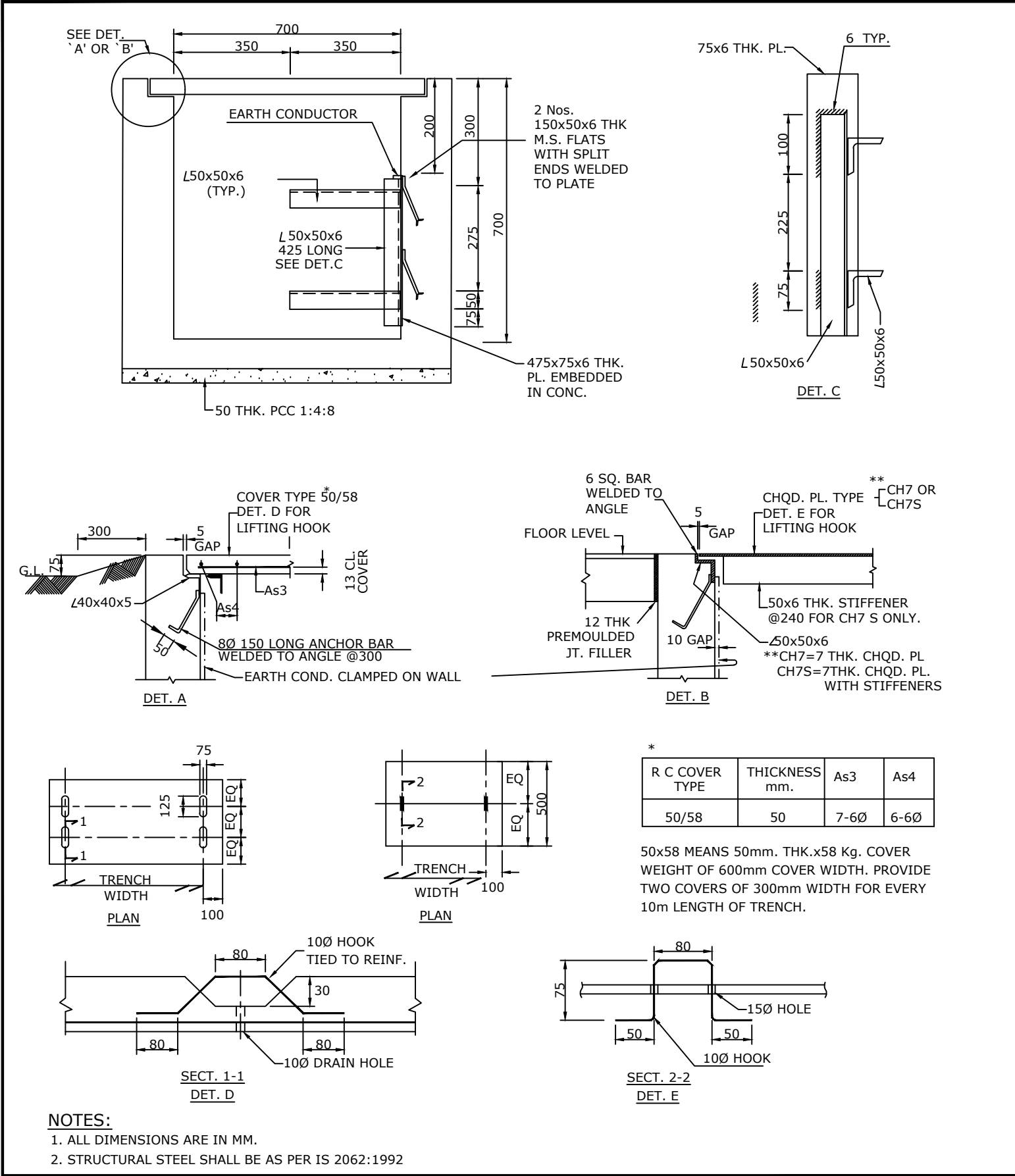
* 50/58 MEANS 50mm. THK.x58 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



NOTES:

- ALL DIMENSIONS ARE IN MM
- STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

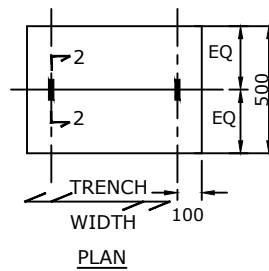
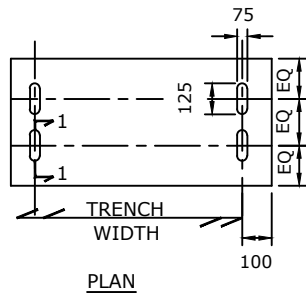
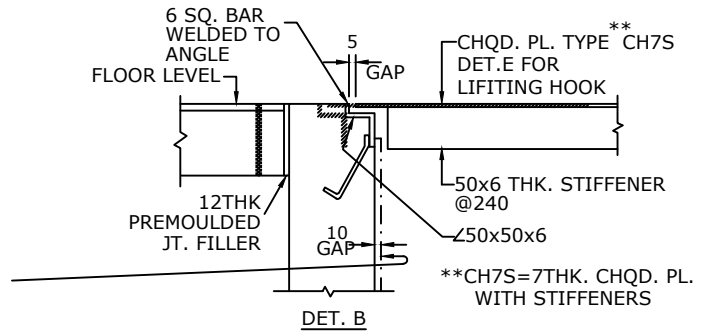
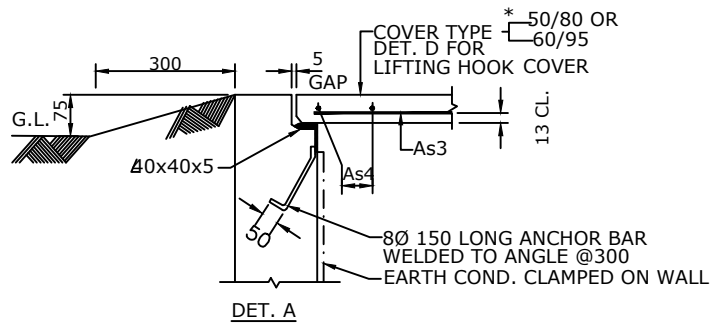
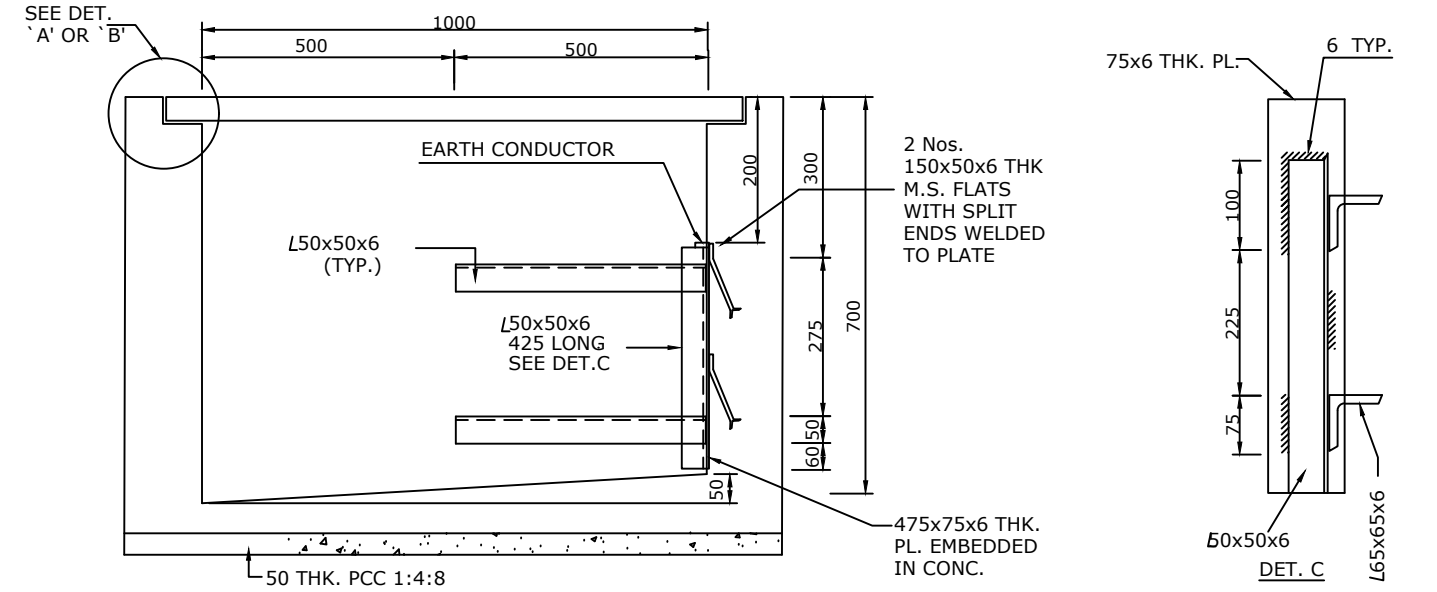
	STANDARD DRAWING CABLE TRENCH TYPE - 0707	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

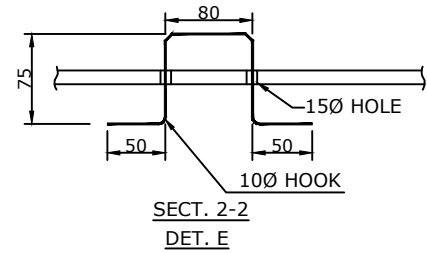
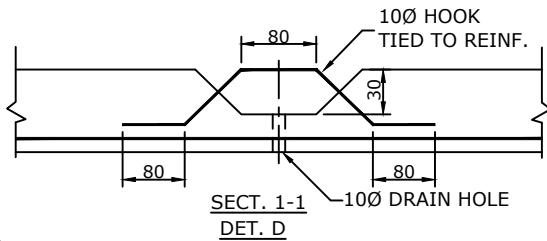
STANDARD DRAWING CABLE TRENCH TYPE - 1007	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	1 OF 1		



*

R C COVER TYPE	THICKNESS mm.	As3	As4
50/80	50	7-6Ø	6-6Ø
60/95	60	7-8Ø	6-8Ø

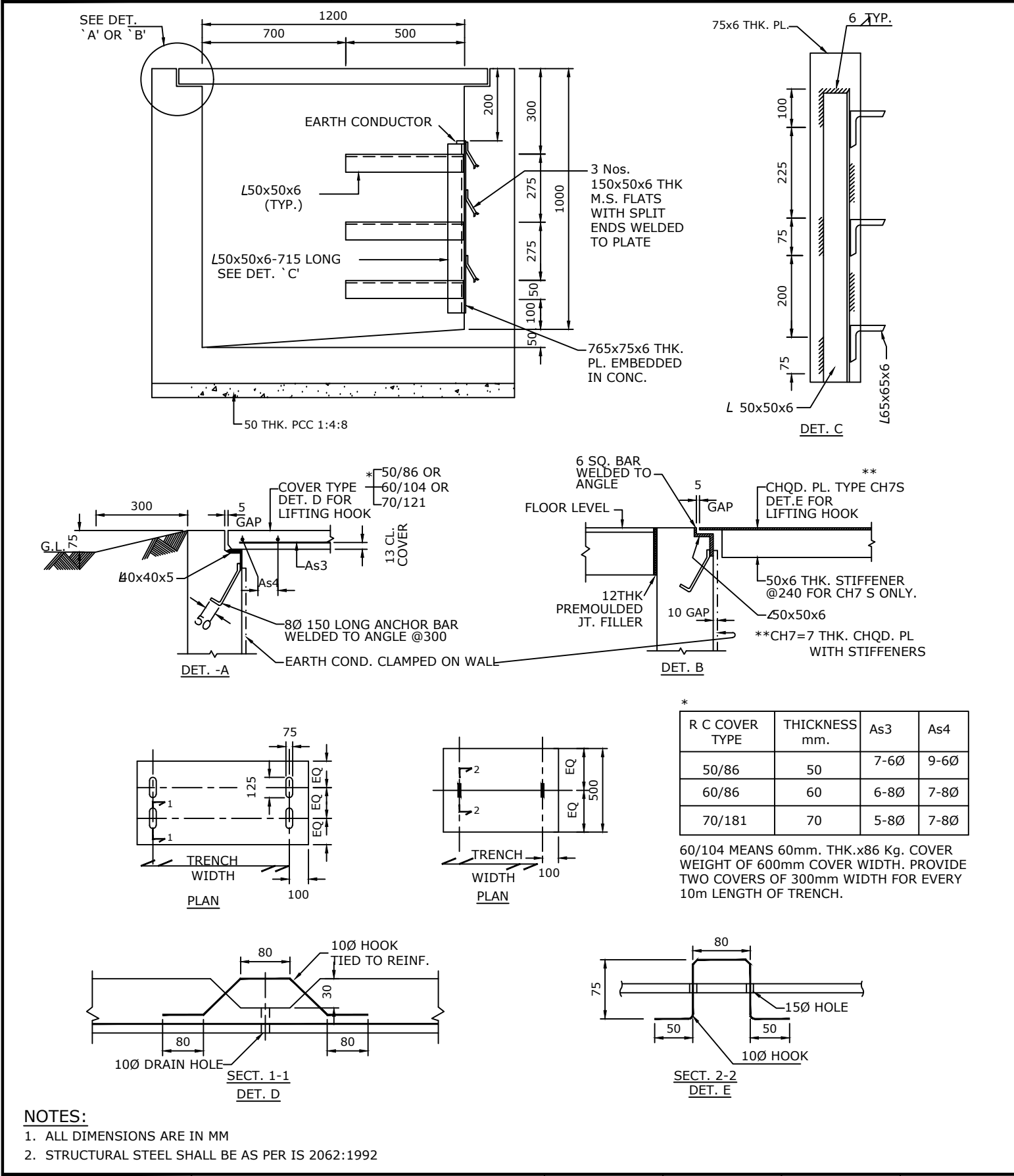
60x95 MEANS 60mm. THK.x95 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



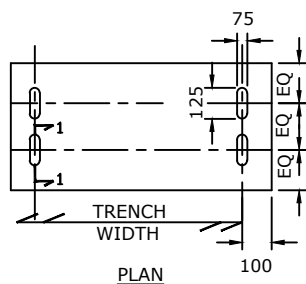
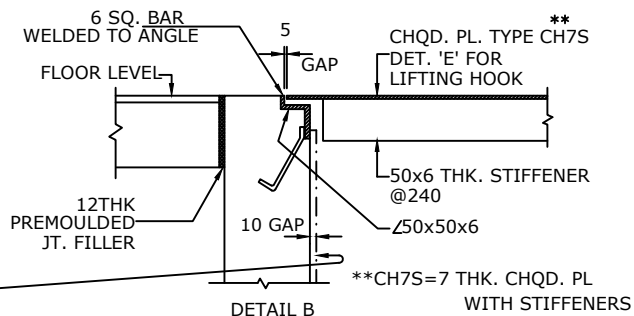
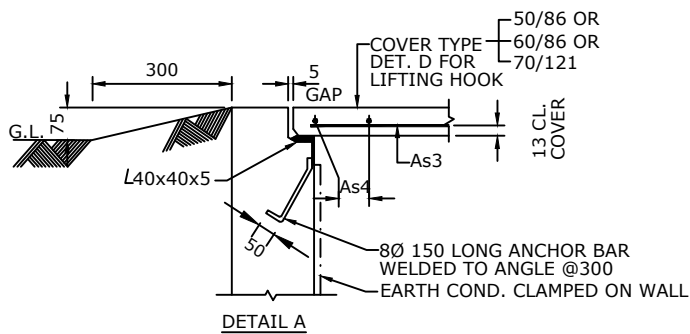
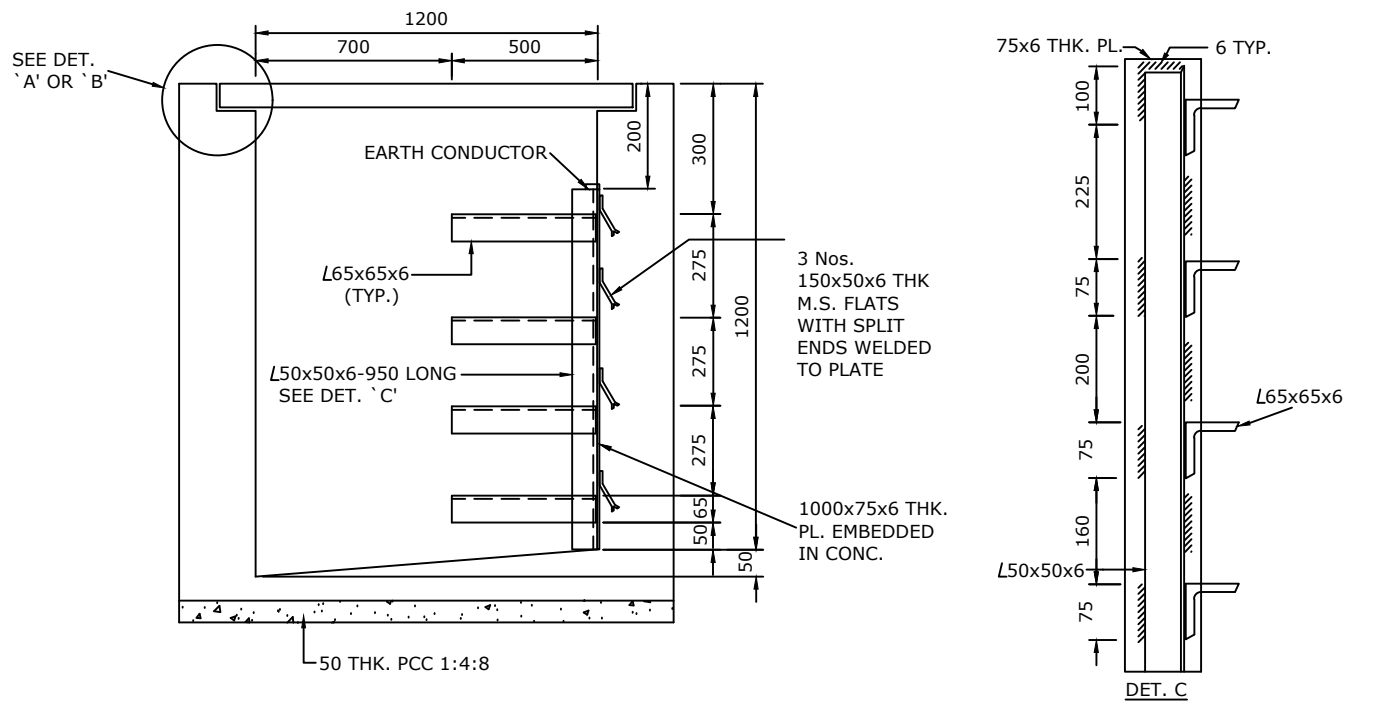
NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

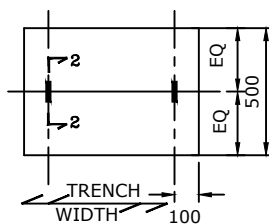
	STANDARD DRAWING CABLE TRENCH TYPE - 1210	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



- NOTES:
- ALL DIMENSIONS ARE IN MM
 - STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992



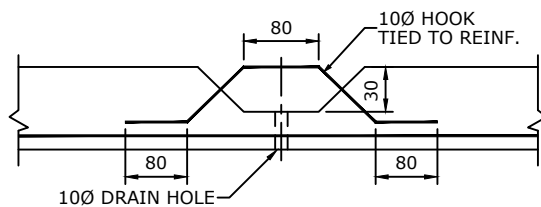
PLAN



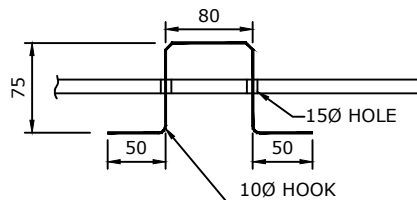
PLAN

R C COVER TYPE	THICKNESS mm.	As3	As4
50/86	50	7-6Ø	9-6Ø
60/104	60	6-8Ø	7-8Ø
70/121	70	5-8Ø	7-8Ø

60x104 MEANS 60mm. THK.x104 Kg. COVER
WEIGHT OF 600mm COVER WIDTH. PROVIDE
TWO COVERS OF 300mm WIDTH FOR EVERY
10m LENGTH OF TRENCH.



SECT. 1-1
DETAIL D

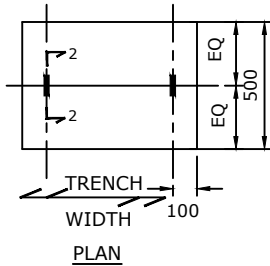
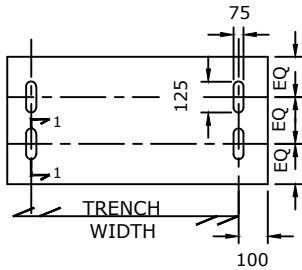
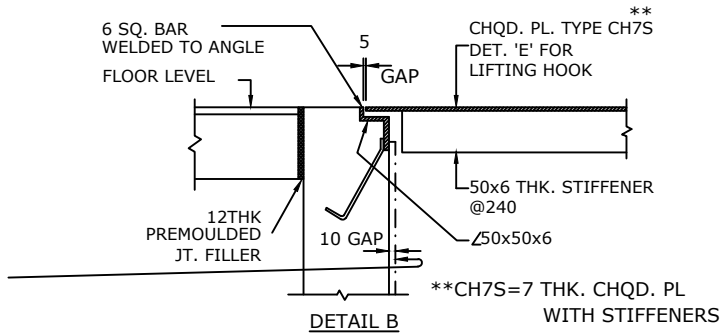
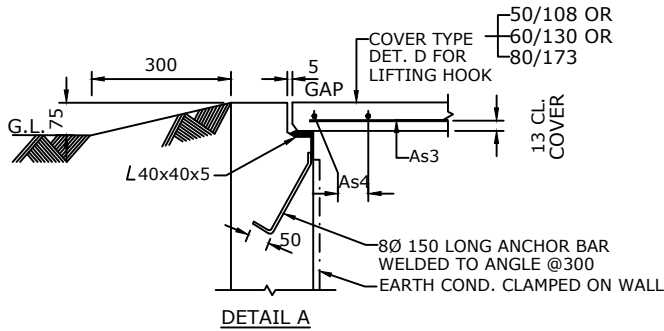
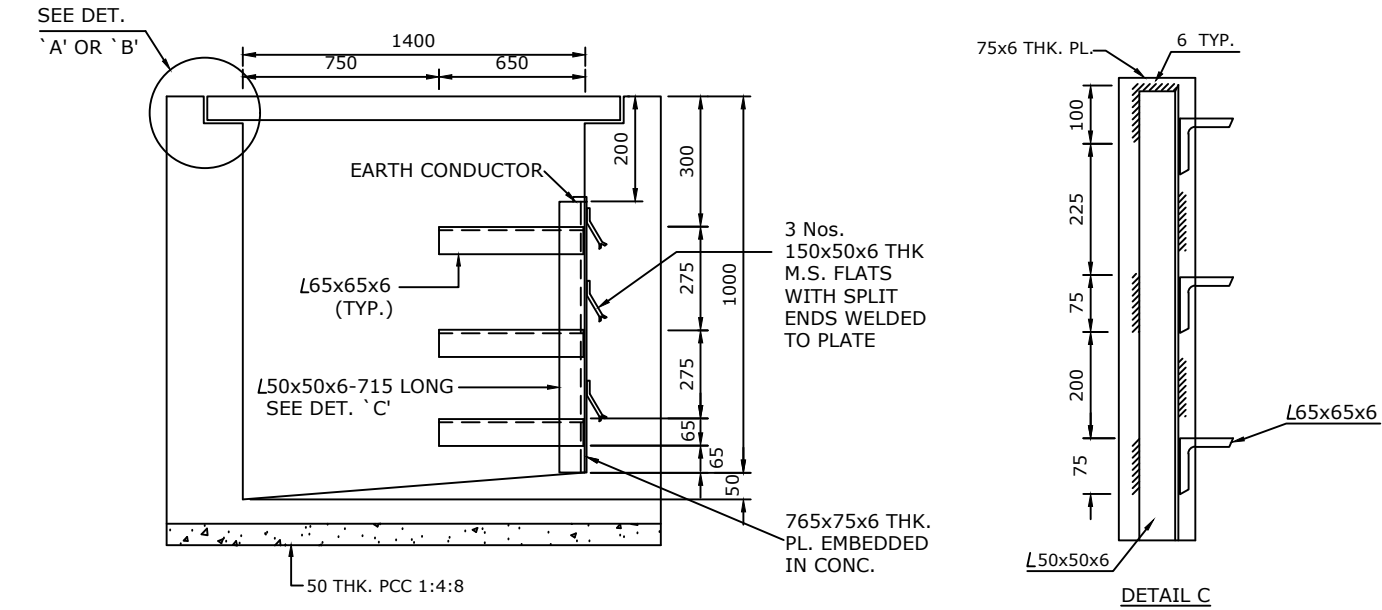


SECT. 2-2
DETAIL E

NOTES:

1. ALL DIMENSIONS ARE IN MM.
2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

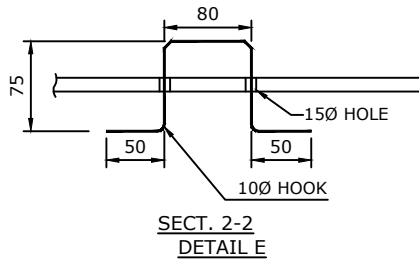
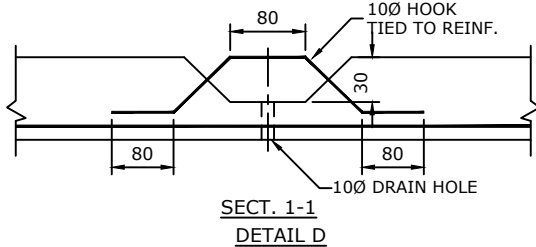
STANDARD DRAWING CABLE TRENCH TYPE - 1410	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	1 OF 1		



*

R C COVER TYPE	THICKNESS mm.	As3	As4
50/108	50	7-6Ø	9-6Ø
60/130	60	6-8Ø	7-8Ø
80/173	80	5-8Ø	7-8Ø

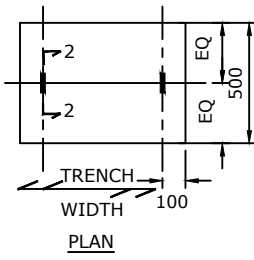
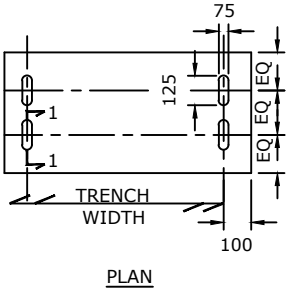
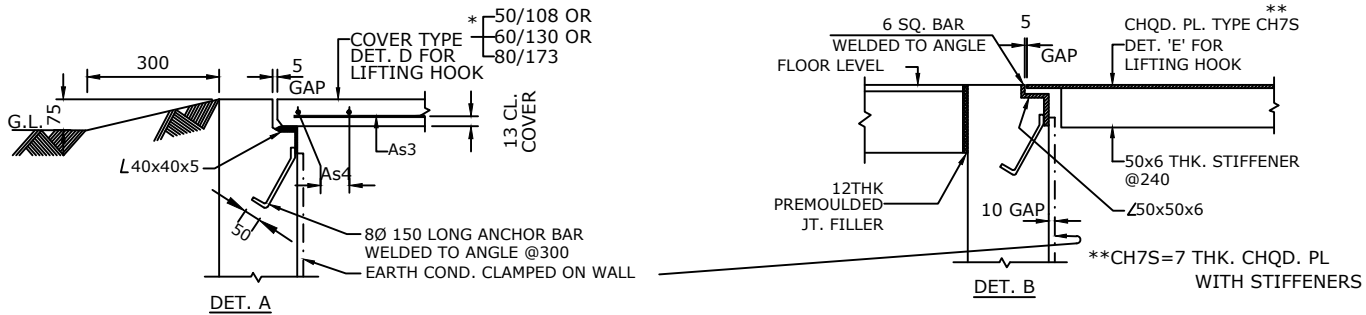
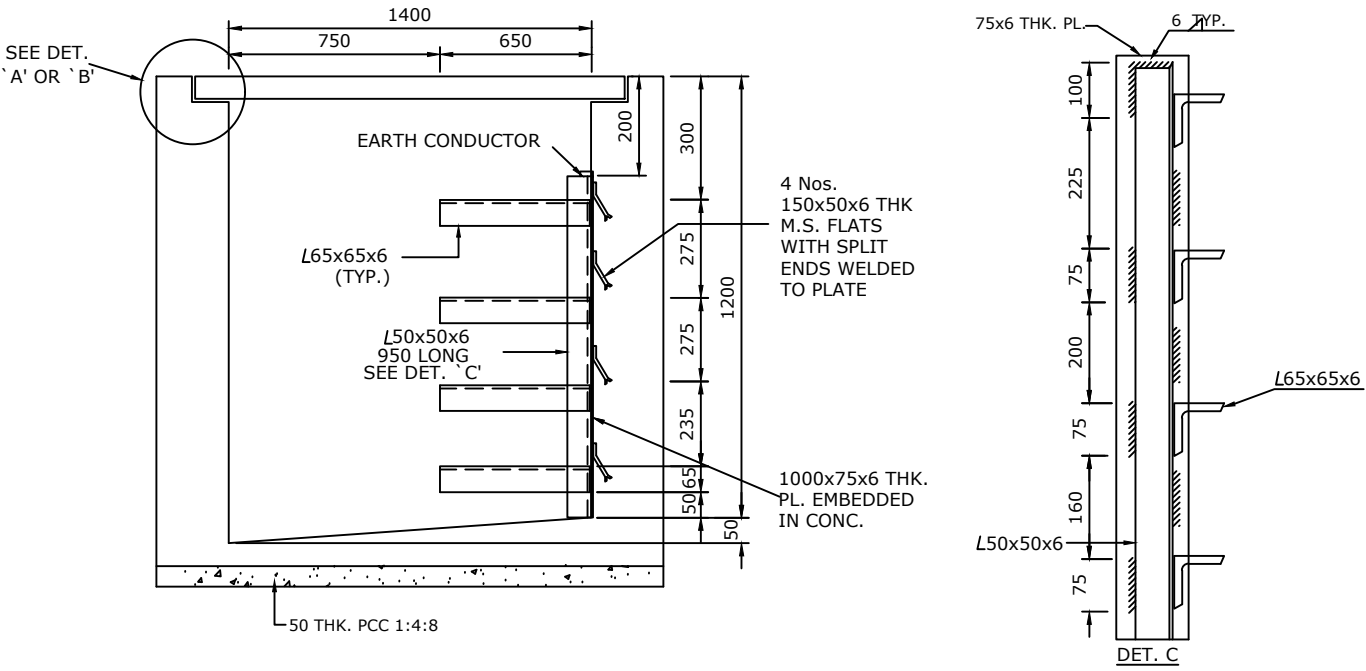
60x130 MEANS 60mm. THK.x130 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



NOTES:

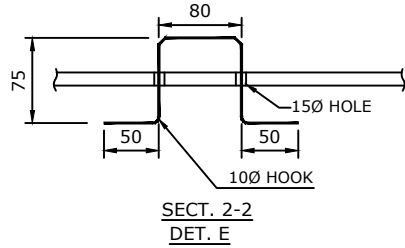
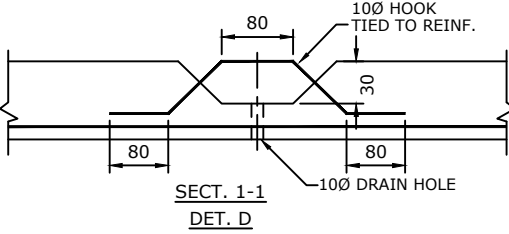
- ALL DIMENSIONS ARE IN MM.
- STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

STANDARD DRAWING CABLE TRENCH TYPE - 1412	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	1 OF 1		



R C COVER TYPE	THICKNESS mm.	As3	As4
50/108	50	7-6Ø	9-6Ø
60/130	60	6-8Ø	8-8Ø
80/173	80	5-8Ø	8-8Ø

60x130 MEANS 60mm. THK.x130 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.



- NOTES:
- ALL DIMENSIONS ARE IN MM.
 - STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

STANDARD DRAWING
CABLE TRENCH TYPE - 1415

STANDARD DRAWING NO.

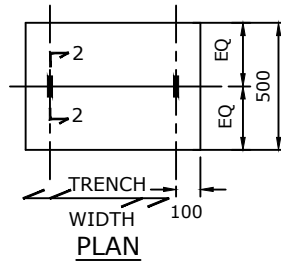
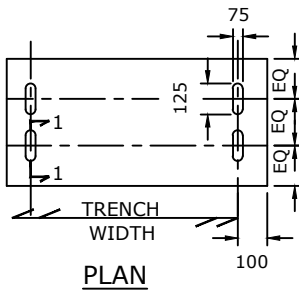
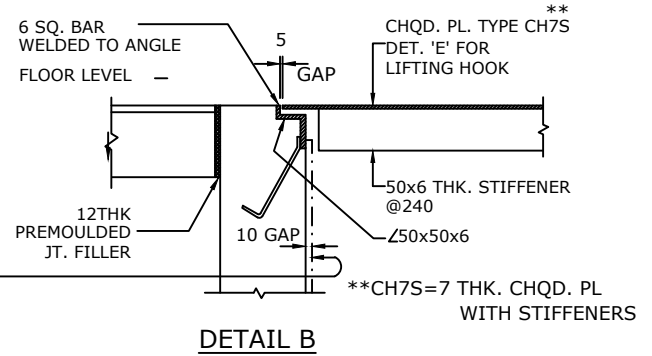
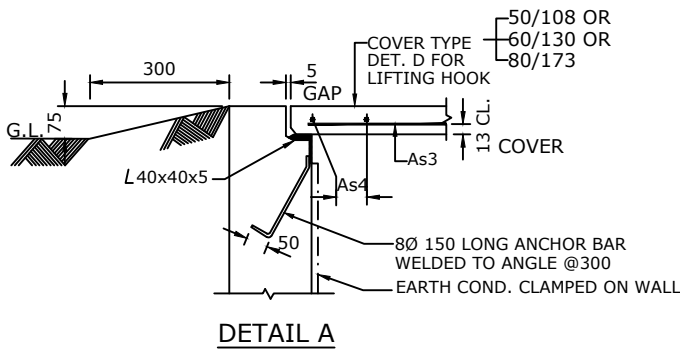
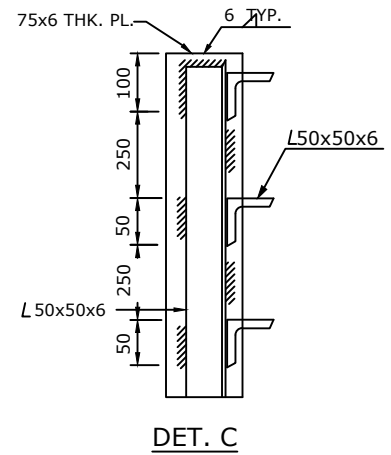
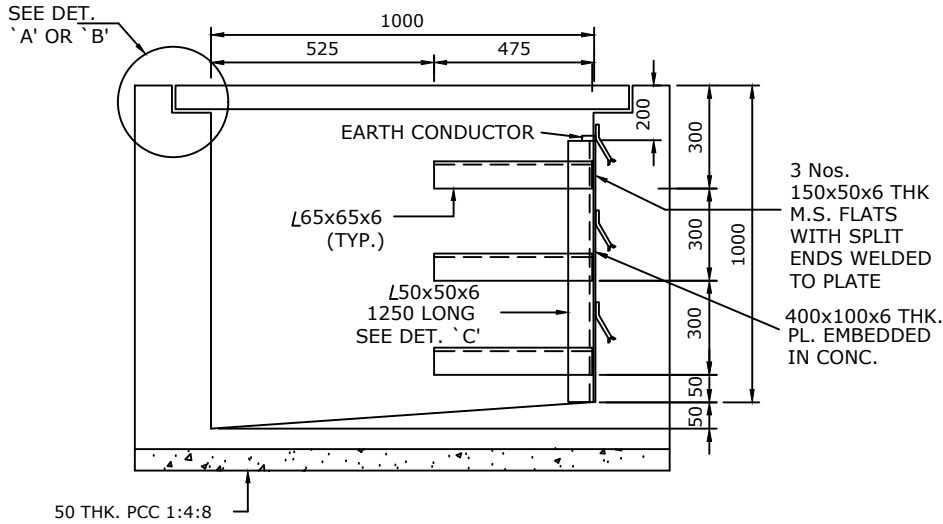
REV. SIZE

SHEET NO.

1 OF 1

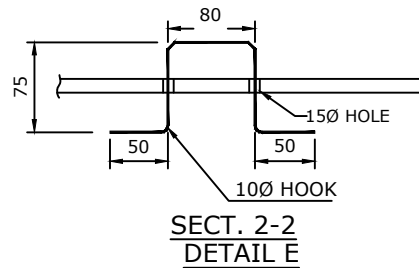
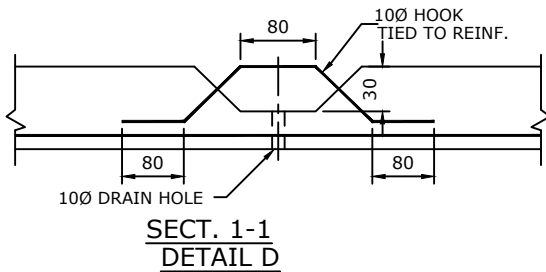
02

A4



R C COVER TYPE	THICKNESS mm.	As3	As4
50/108	50	7-6Ø	10-6Ø
60/130	60	6-8Ø	8-8Ø
80/173	80	5-8Ø	8-8Ø

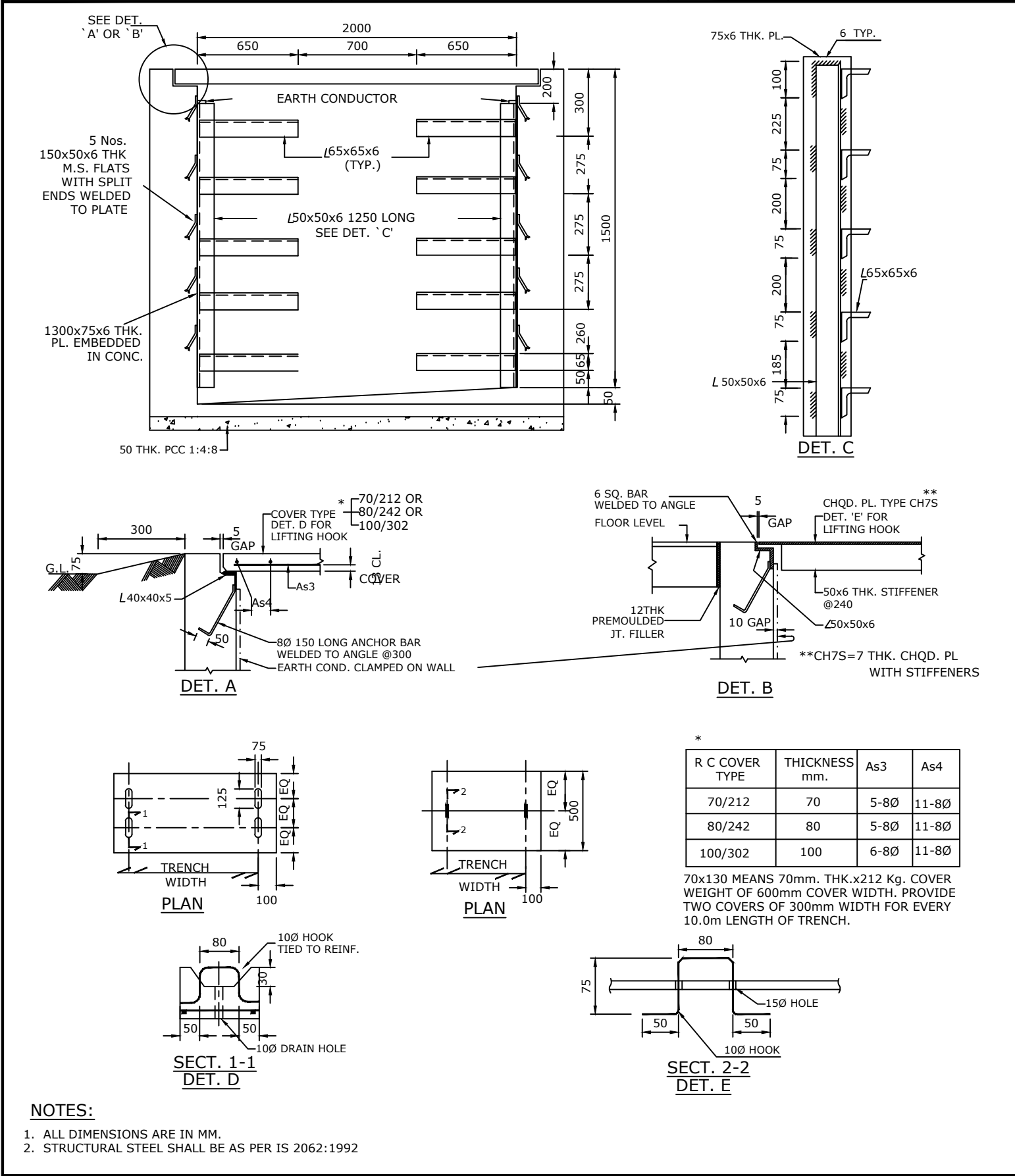
60x130 MEANS 60mm. THK.x130 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

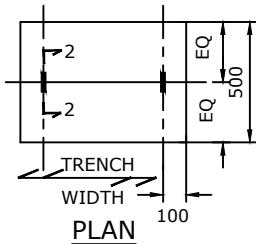
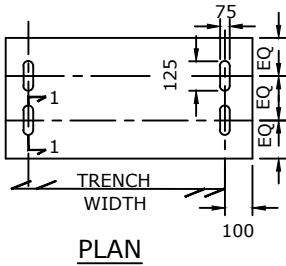
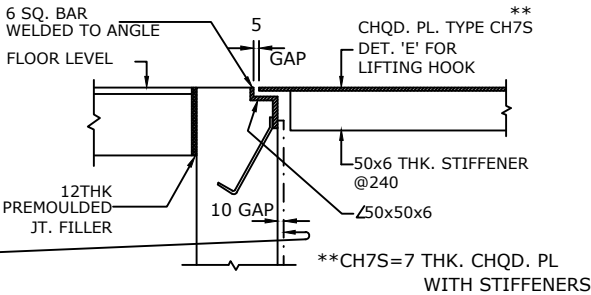
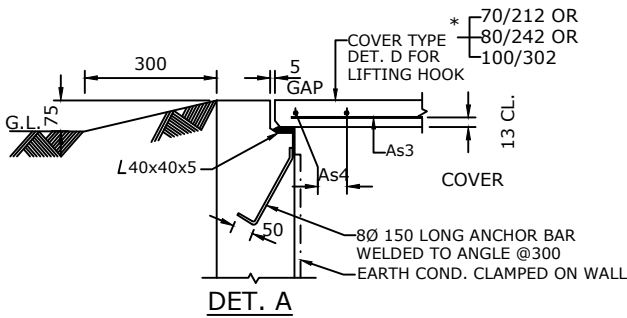
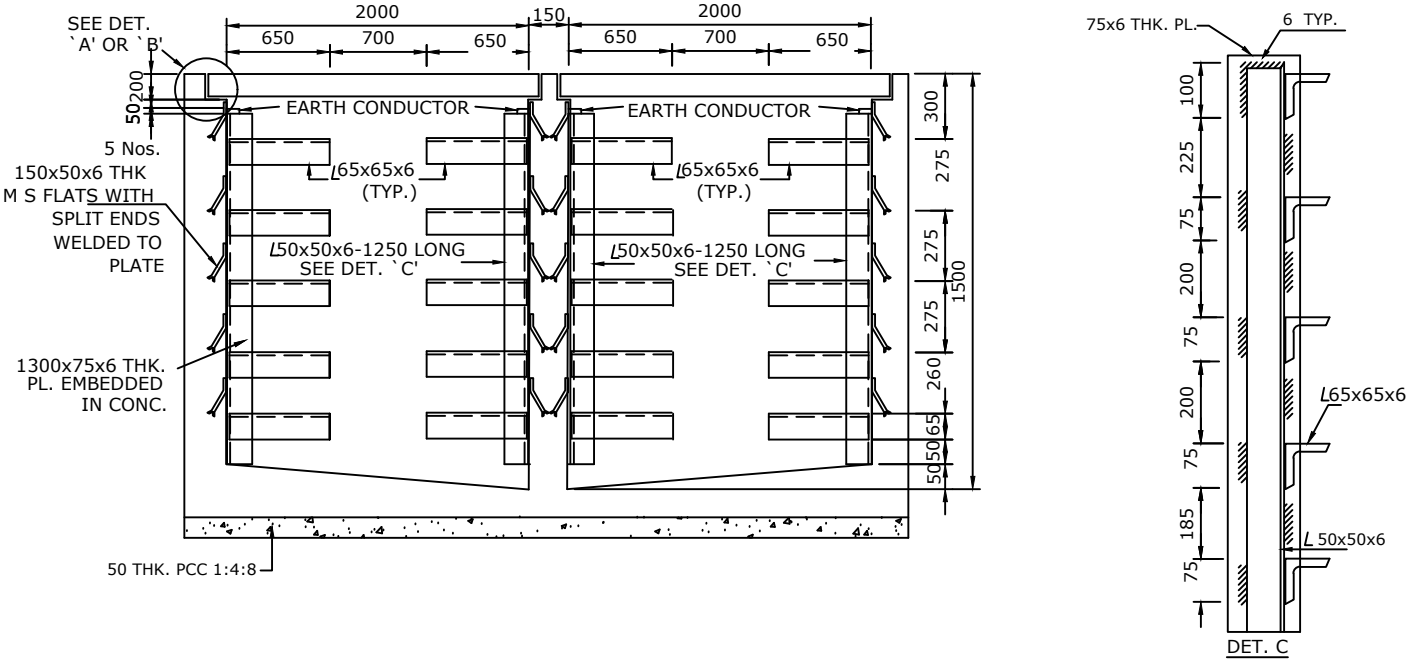


NOTES:

- ALL DIMENSIONS ARE IN MM.
- STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

STANDARD DRAWING CABLE TRENCH TYPE - 2015	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	1 OF 1		

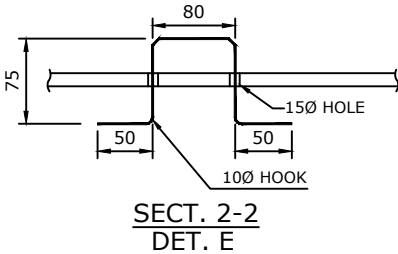
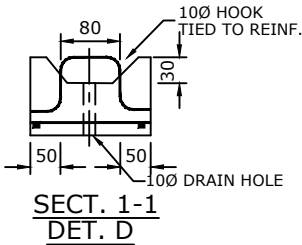




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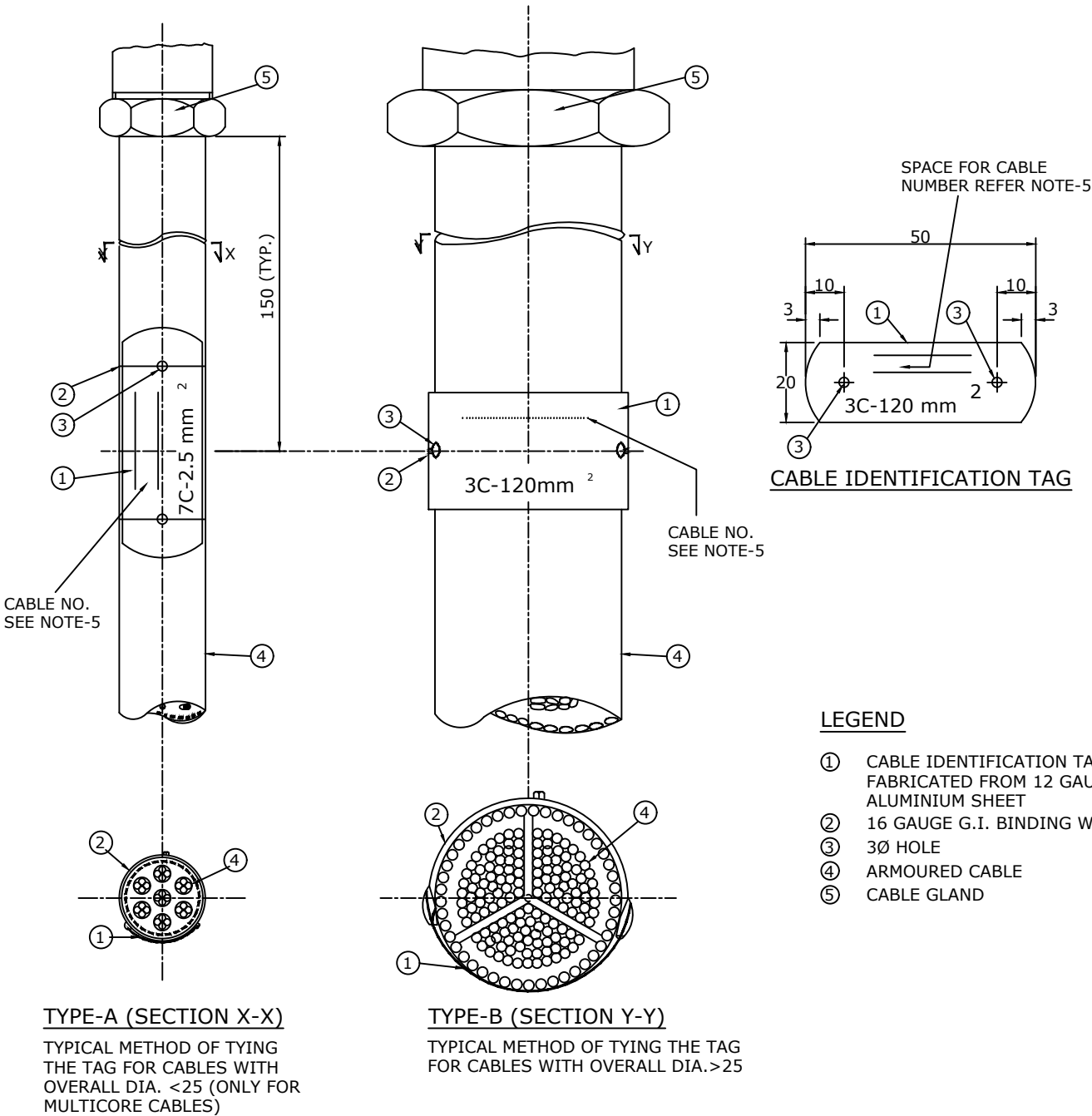
R C COVER TYPE	THICKNESS mm.	As3	As4
70/212	70	5-8Ø	11-8Ø
80/242	80	5-8Ø	11-8Ø
100/302	100	6-8Ø	11-8Ø

70x212 MEANS 70mm. THK.x212 Kg. COVER WEIGHT OF 600mm COVER WIDTH. PROVIDE TWO COVERS OF 300mm WIDTH FOR EVERY 10m LENGTH OF TRENCH.

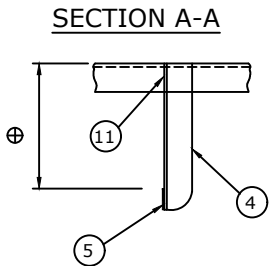
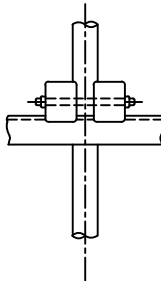
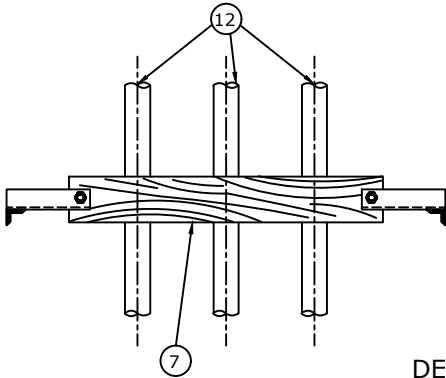
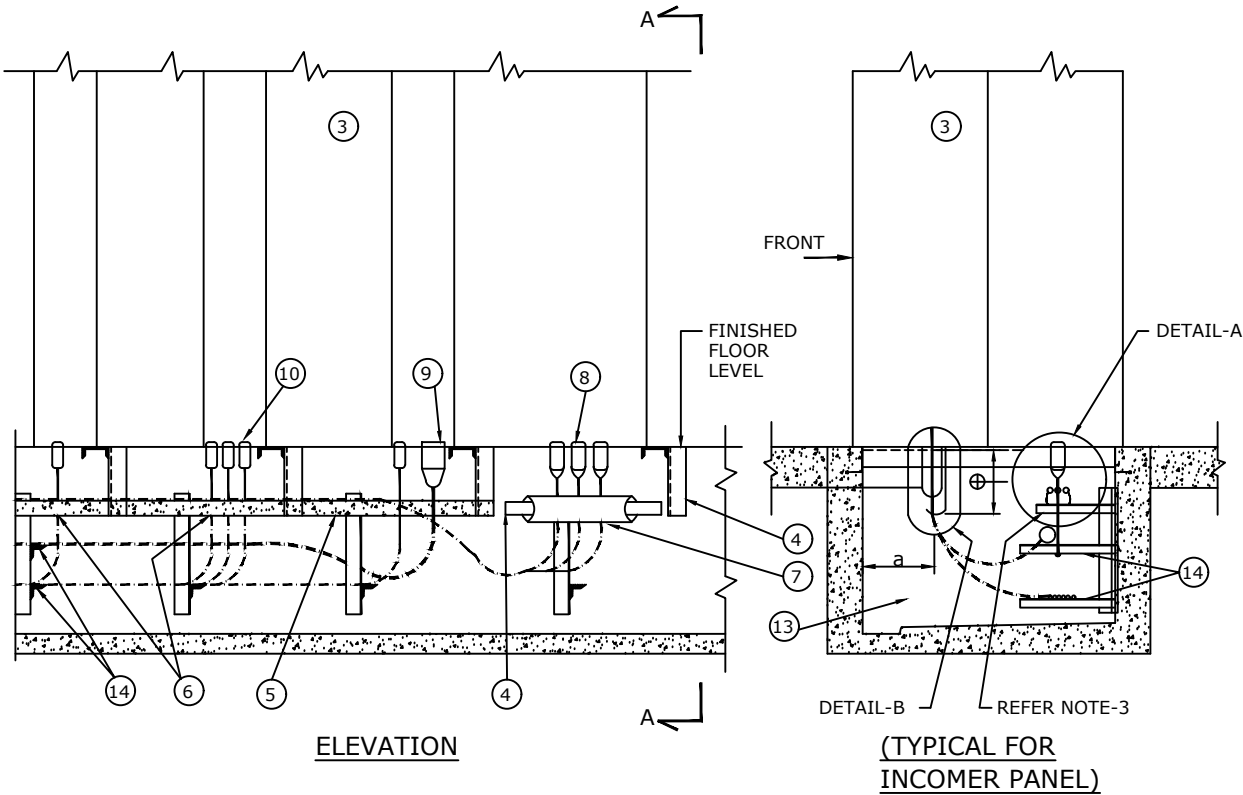


- NOTES:
 1. ALL DIMENSIONS ARE IN MM.
 2. STRUCTURAL STEEL SHALL BE AS PER IS 2062:1992

	STANDARD DRAWING CABLE IDENTIFICATION TAG	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



	STANDARD DRAWING CABLE INSTALLATION PRACTICE FOR BOTTOM ENTRY TO SWITCH BOARDS/CONTROL PANELS	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



LEGEND

- ① TO ⑫ REFER SH. 1 OF 2
- ⑬ CABLE TRENCH
- ⑭ CABLE SUPPORTING ARM

NOTES:

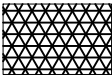
- FOR NOTES REFER SHEET 1 OF 2.
- CONTROL AND POWER CABLES IN TRENCH SHALL BE TIED TO THE SUPPORTING ARM WITH 3Ø NYLON CORD, IF CABLE TRAY IS NOT USED.
- 50x50x6 FOR CLAMPING 1/C CABLES TO BE SUITABLY GROUTED AT SITE.

	GENERAL NOTES & LEGENDS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

NOTES:-

- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE MENTIONED.
- THE AREA CLASSIFICATION CONFORM TO THE LATEST ISSUE OF IS : 5572. INDIAN PETROLEUM RULES OISD-STD-113. OIL MINES REGULATIONS/DGMS GUIDELINES (FOR PROJECTS UNDER DGMS JURISDICTION) & RECOMMENDATIONS OF PROCESS LICENSOR AND PROJECT DESIGN BASIS.
- THE AREA WITHIN 1.5M (EXTENDING IN ALL DIRECTIONS) OF SAFETY VENTS, PRODUCT SAMPLING LOCATIONS,PROCESS WATER DRAINS, ONLY SEWERS VENTS, INSPECTION HATCHES, DISCHARGE ORIFICE OF FIXED LIQUID LEVEL GAUGES, ROTARY OR DIP GAUGES, FILLER OPENINGS SHALL BE CLASSIFIED AS ZONE-1. FURTHER AN AREA FROM 1.5M TO 3.0M (EXTENDING IN ALL DIRECTIONS) FROM VENTS SHALL BE CLASSIFIED AS ZONE-2. HOWEVER THE VENTS OR DRAINS BLANKED DURING NORMAL OPERATION AND USED ONLY WHEN THE PLANTIS DEPRESSURISED OR UNDER SHUTDOWN, SHOULD NOT BE REGARDED AS AN OPERATIONAL VENT OR DRAIN OR SOURCE OF HAZARD.
- OPEN TRENCHES, PITS OR SUMP BELOW GRADE WITHIN ZONE-2 AREA SHALL BE CLASSIFIED AS ZONE-1 AREA.
- IN CASE OF PIPELINE HANDLING FLAMMABLE MATERIAL, WHERE WELL MAINTAINED VALVES, FITTINGS AND METERS ARE INSTALLED IN WELL VENTILATED AREAS OR PIT, THE EXTENT OF ZONE-2 AREA ABOVE THE GROUND SHALL BE CONSIDERED AS 4.0M IN ALL DIRECTIONS FROM THE POSSIBLE SOURCE OF HAZARD, ALTHOUGH THE PIT ITSELF SHALL BE CLASSIFIED AS ZONE-1 AREA.
- GAS GROUPS ARE AS PER IS: 9570.
- ROADS FULLY/PARTLY COVERED UNDER HAZARDOUS AREA CLASSIFICATION SHALL BE BARRICADED FOR VEHICULAR MOVEMENT.

LEGENDS:-



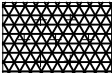
- ZONE-1, GAS GROUP IIA/IIB HAZAROUS AREA



- ZONE-2, GAS GROUP IIA/IIB HAZAROUS AREA



- ADDITIONAL ZONE-2, GAS GROUP IIA/IIB AREA
(AREA SUGGESTED WHERE LARGE RELEASE OF
VOLTAGE PRODUCTS MAY OCCUR)



- ZONE-1, GAS GROUP IIC HAZAROUS AREA

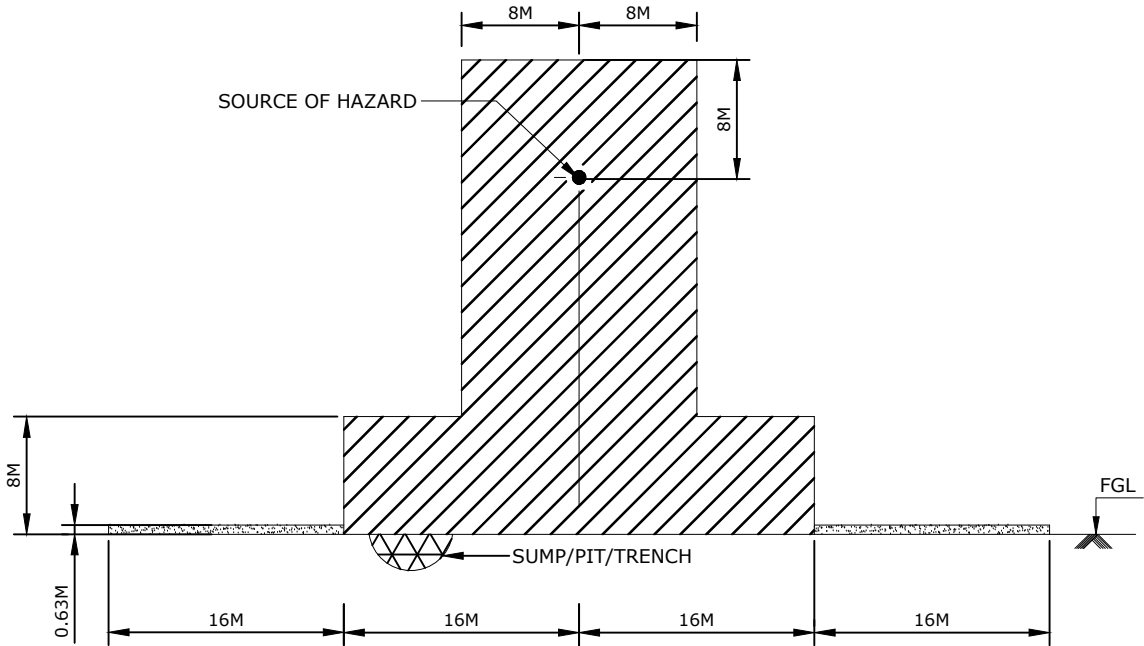


- ZONE-2, GAS GROUP IIC HAZAROUS AREA

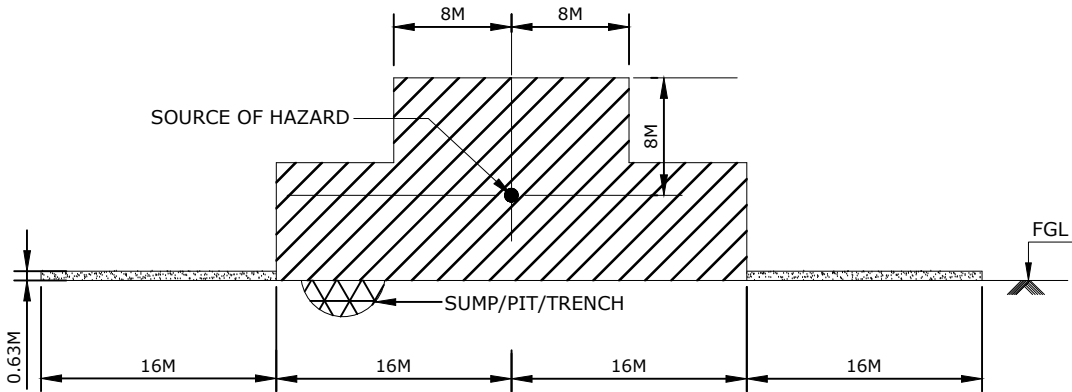


- SAFE AREA (NON HAZARDOUS)

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



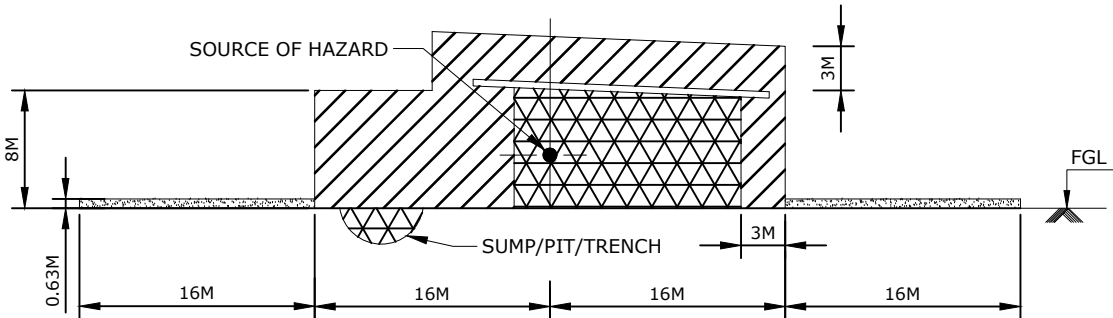
DETAIL-1
 FREELY VENTILATED PROCESS AREA
 (HEAVIER THAN AIR GASES OR VAPOURS)
 (SOURCE OF HAZARD LOCATED ABOVE GROUND LEVEL)



DETAIL-2
 FREELY VENTILATED PROCESS AREA
 (HEAVIER THAN AIR GASES OR VAPOURS)
 (SOURCE OF HAZARD LOCATED NEAR GROUND LEVEL)

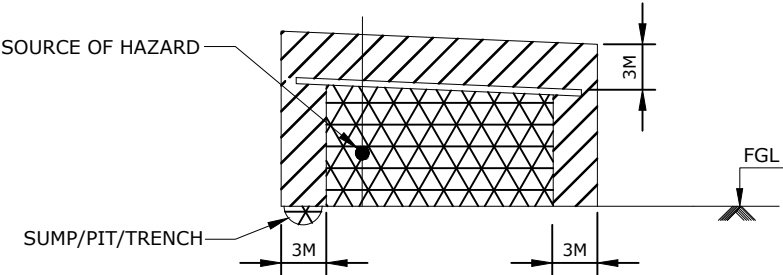
NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-3

PROCESS AREA WITH RESTRICTED VENTILATION
(HEAVIER THAN AIR GASES OR VAPOURS)

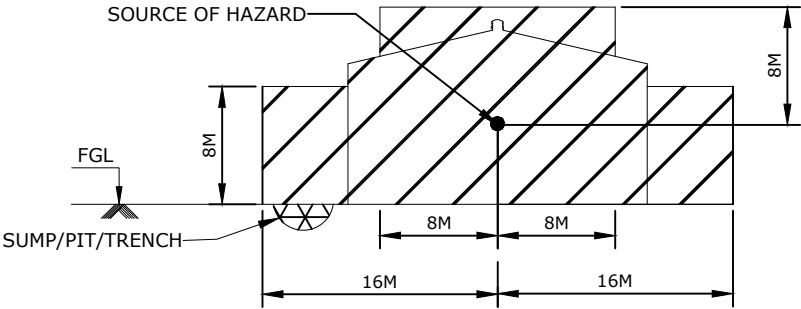


DETAIL-4

PROCESS AREA WITH RESTRICTED VENTILATION
(HEAVIER THAN AIR GASES OR VAPOURS)

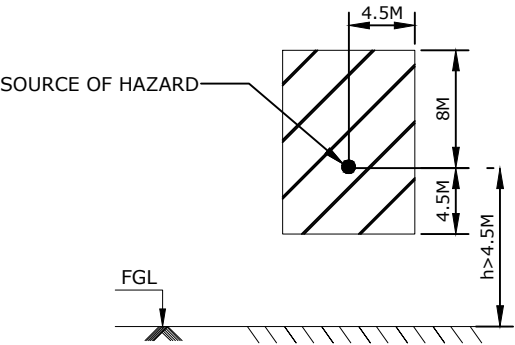
NOTES:

DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
			02	A4
	SHEET NO.	1 OF 1		

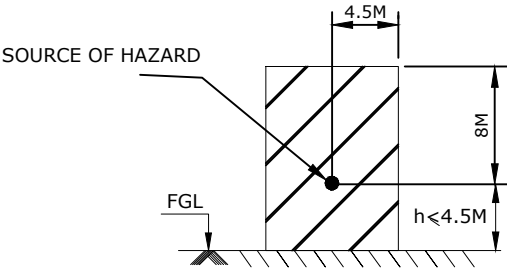


DETAIL-5

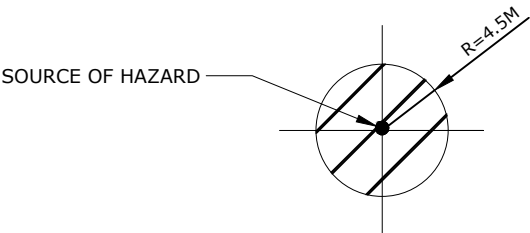
WELL VENTILATED INDOOR AREA
(HEAVIER THAN AIR GASES OR VAPOURS)



ELEVATION



ELEVATION



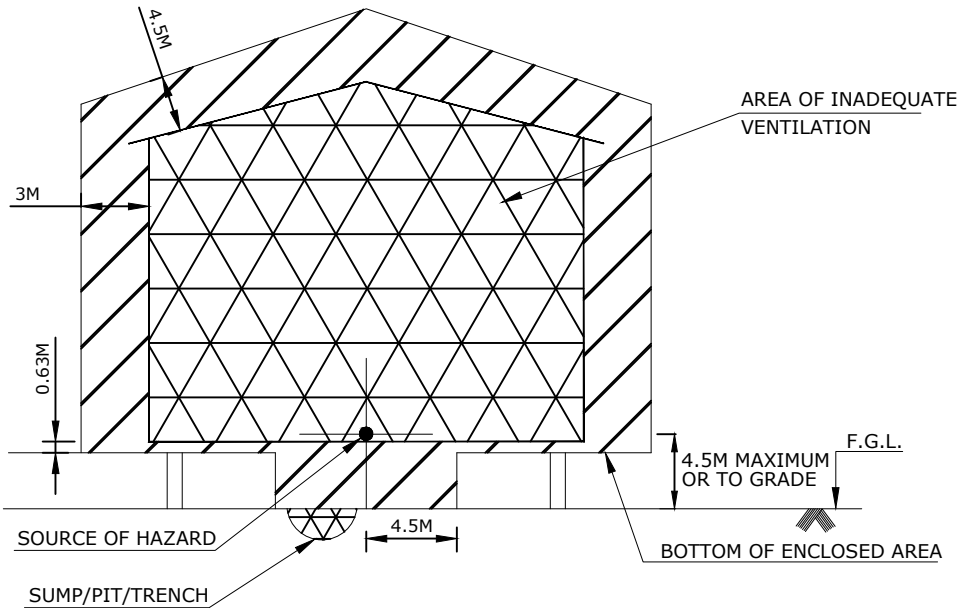
PLAN

DETAIL-6

(FREELY VENTILATED PROCESS AREA)
(FOR LIGHTER THAN AIR GASES OR VAPOURS)

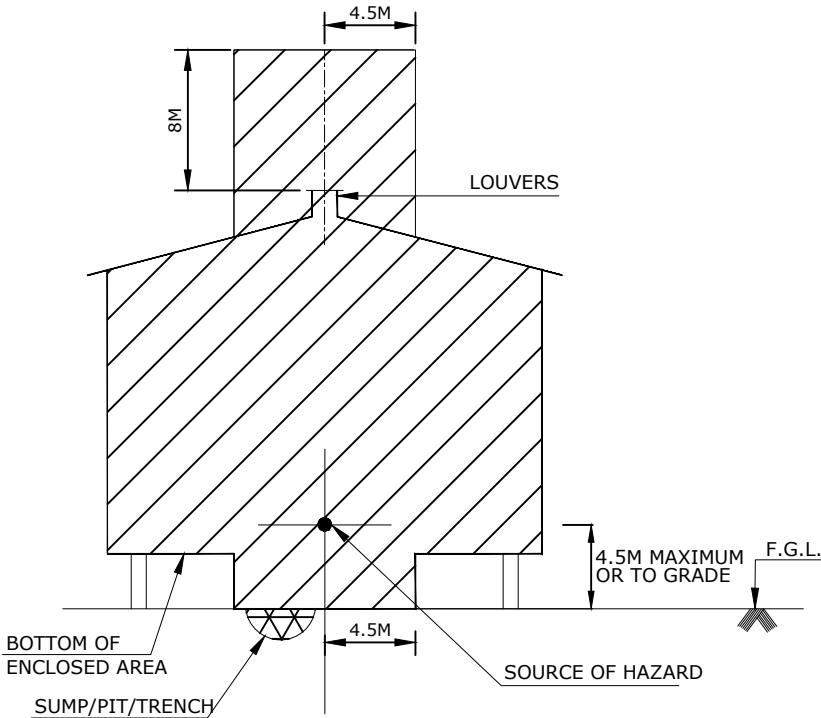
NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-7

INADEQUATELY VENTILATED COMPRESSOR SHELTER
(LIGHTER THAN AIR GASES OR VAPOURS)

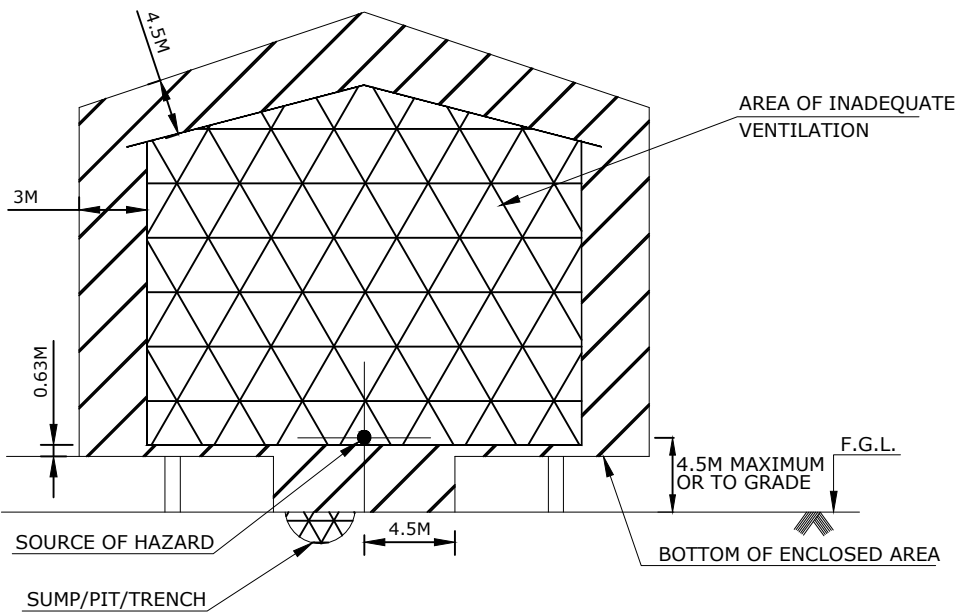


DETAIL-8

ADEQUATELY VENTILATED COMPRESSOR SHELTER
(LIGHTER THAN AIR GASES OR VAPOURS)

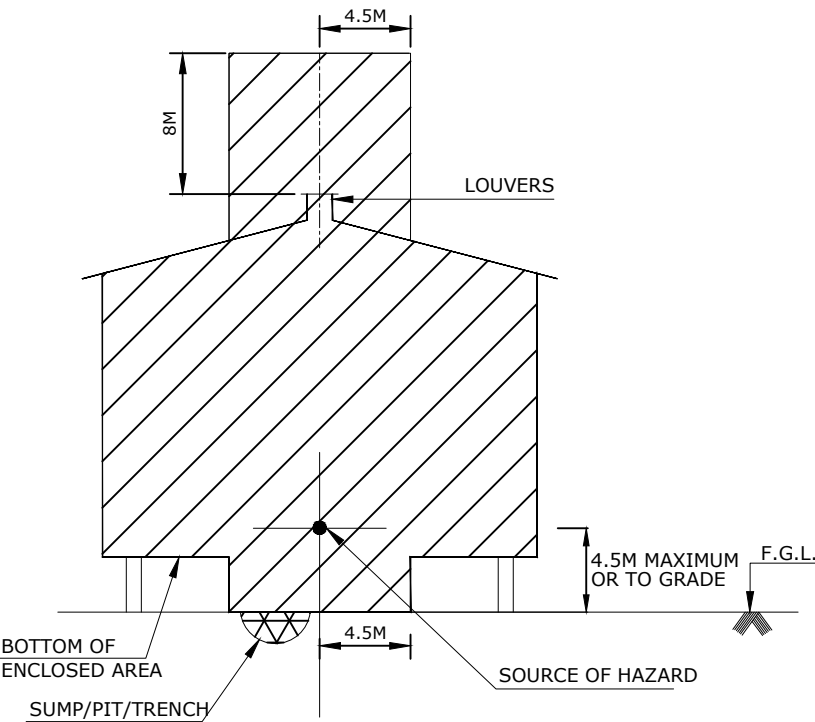
NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-7

INADEQUATELY VENTILATED COMPRESSOR SHELTER
(LIGHTER THAN AIR GASES OR VAPOURS)

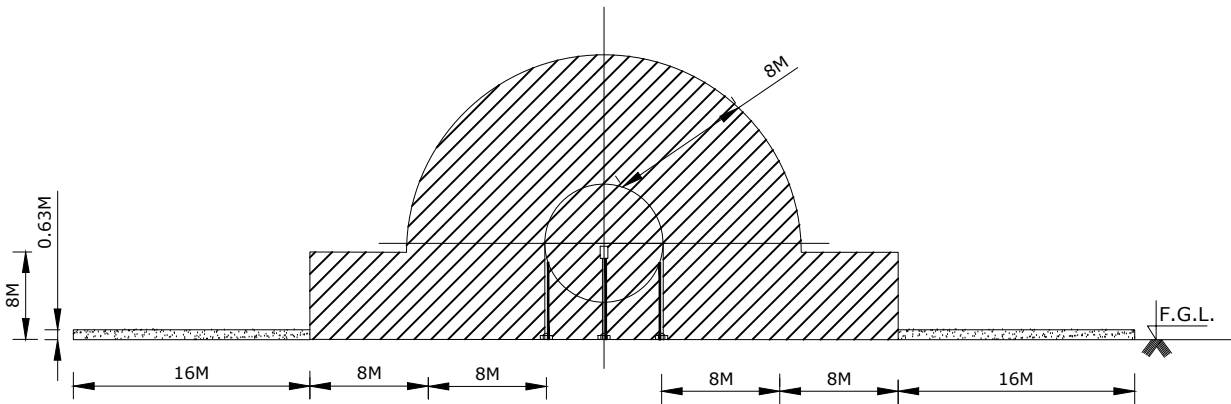


DETAIL-8

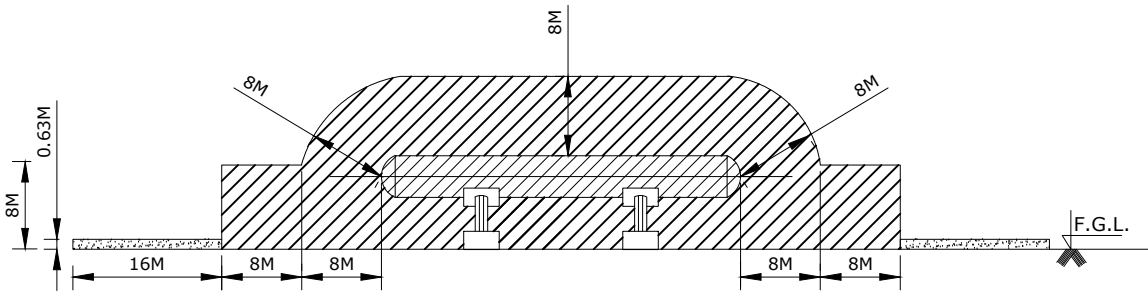
ADEQUATELY VENTILATED COMPRESSOR SHELTER
(LIGHTER THAN AIR GASES OR VAPOURS)

NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



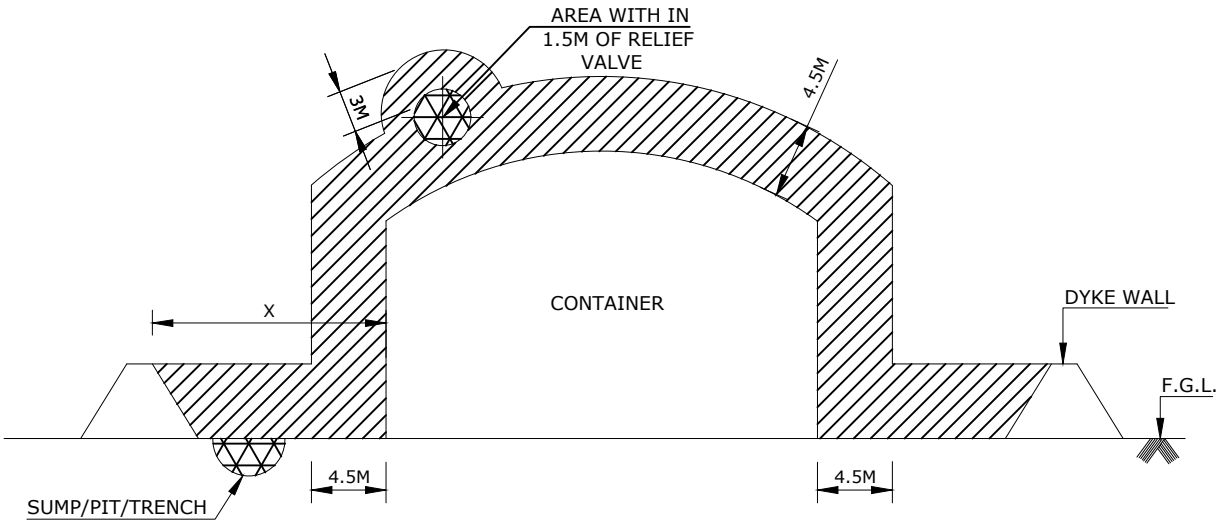
DETAIL-12 (SPHERE)
(HEAVIER THAN AIR GASES OR VAPOUR)



DETAIL-13 (BULLET)
(HEAVIER THAN AIR GASES OR VAPOUR)

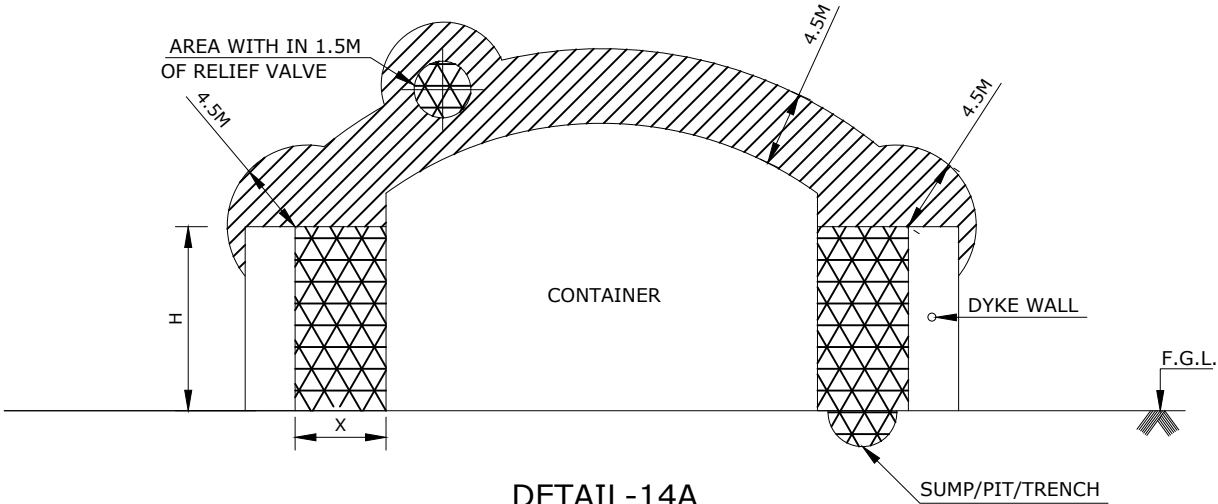
NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



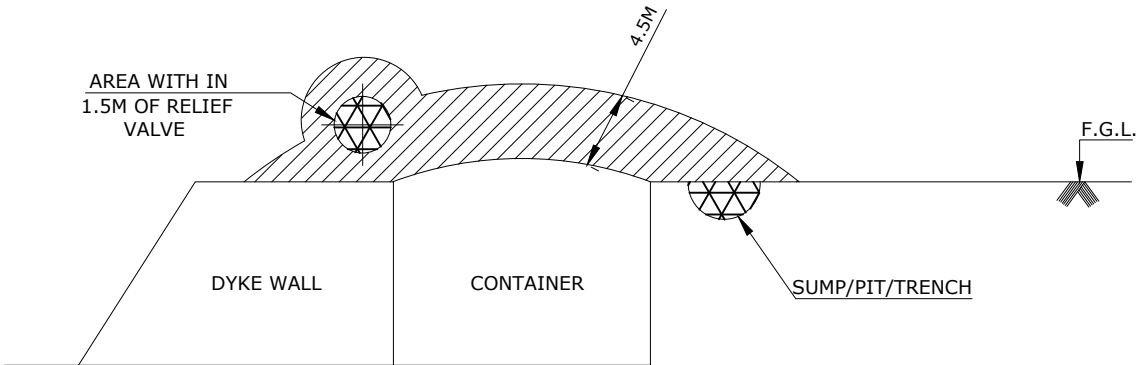
DETAIL-14A

DYKE HEIGHT LESS THAN DISTANCE FROM
CONTAINER TO DYKE (H LESS THAN X)



DETAIL-14A

DYKE HEIGHT LESS THAN DISTANCE FROM
CONTAINER TO DYKE(H GREATER THAN X)

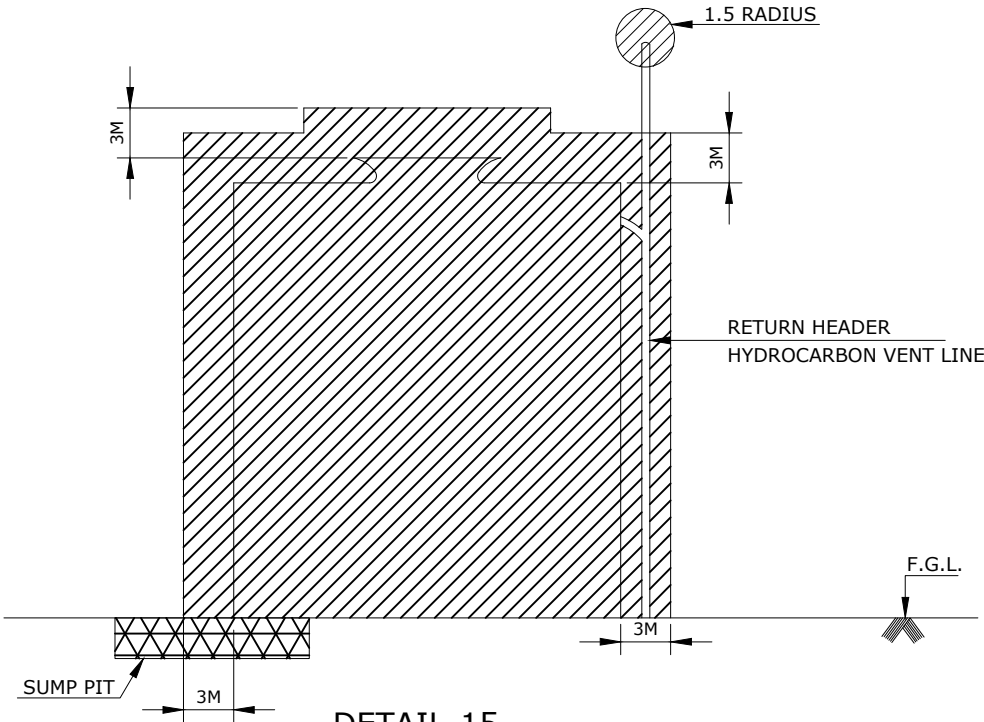


DETAIL-14C (STORAGE BELOW GRADE)

NOTES:

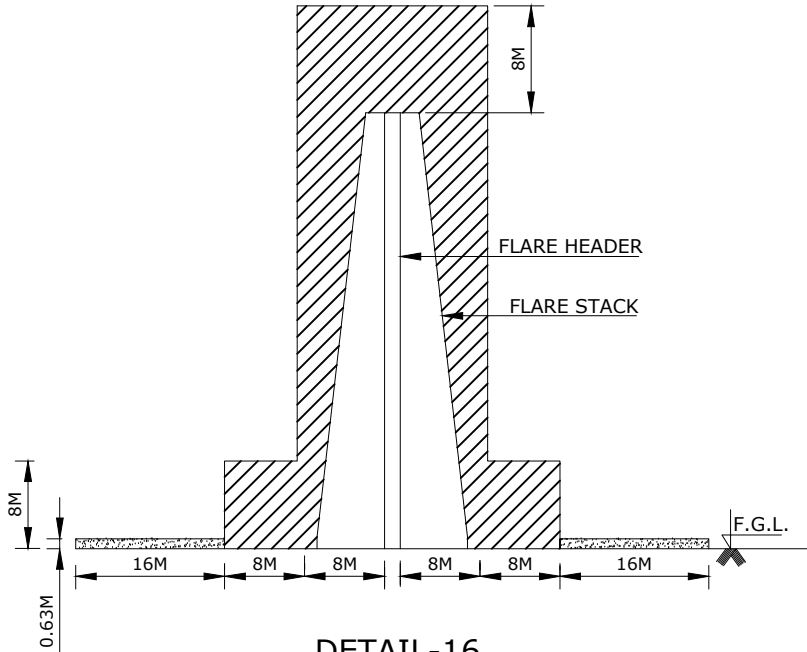
STORAGE TANKS FOR CRYOGENIC LIQUIDS

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-15

(HANDLING HYDROCARBON PROCESS COOLING WATER)

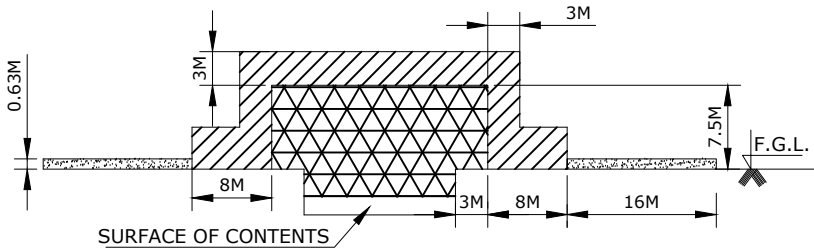


DETAIL-16

FLARE

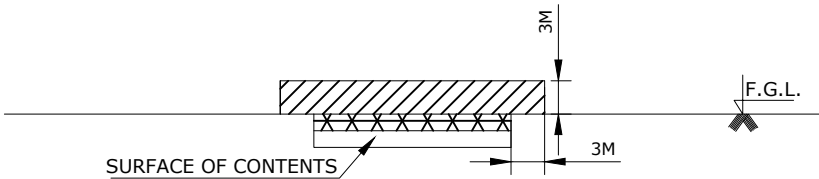
NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



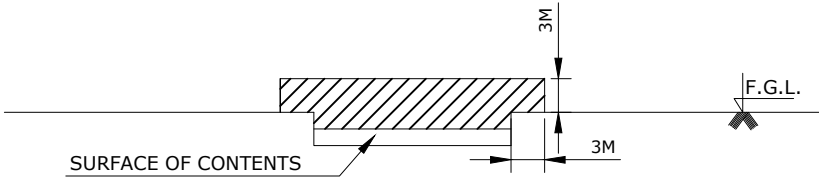
DETAIL-17

UNIT SEPARATORS, PRE-SEPARATORS AND SEPERATORS
(APPLICABLE FOR OPEN TANKS OR BASINS)



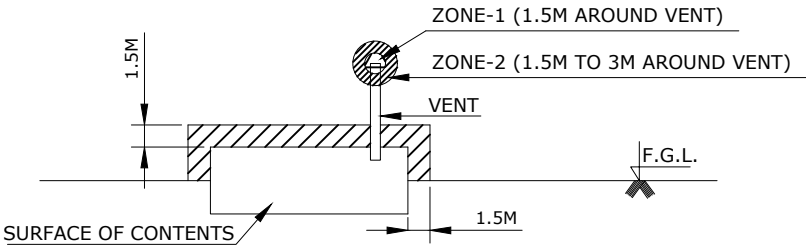
DETAIL-18

DISSOLVED AIR FLOATATION (DAF) UNITS
(APPLICABLE FOR OPEN TANKS OR BASINS)



DETAIL-19

BIOLOGICAL OXIDATION (BIOX) UNITS

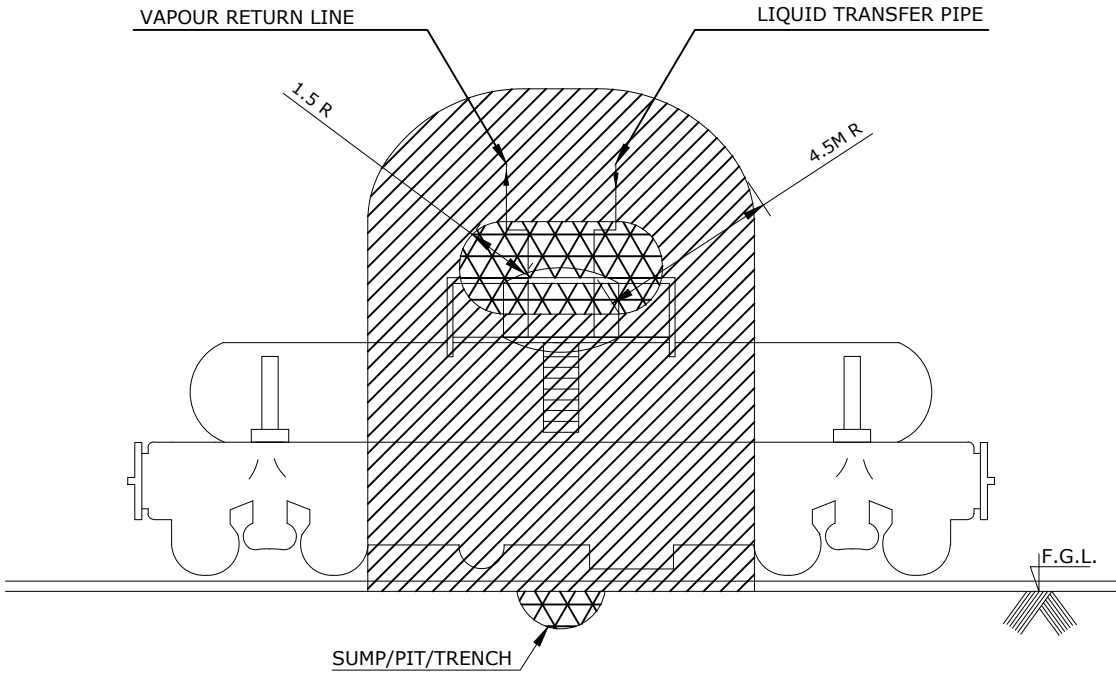


DETAIL-20

UNDERGROUND COVERED SUMP OR OILY WATER SEPARATOR

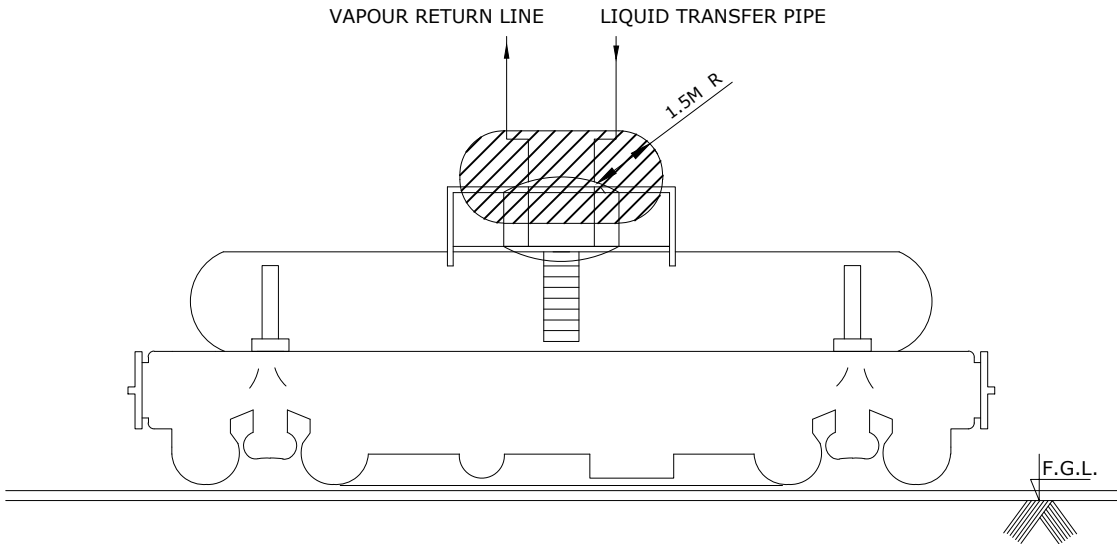
NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-21

(MATERIAL: LIQUIFIED GAS/ COMPRESSED GAS/ CRYOGENIC LIQUID)
 WAGON/TANK TRUCK LOADING AND UNLOADING VIA CLOSED SYSTEM.
 PRODUCT TRANSFER THROUGH DOME ONLY

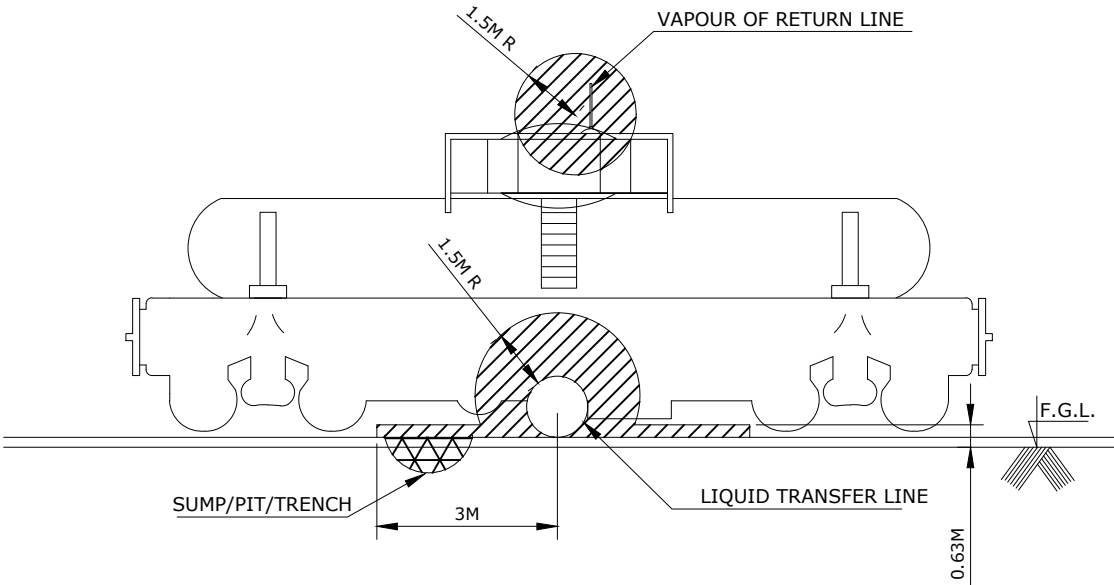


DETAIL-22

(MATERIAL: FLAMMABLE LIQUID)
 WAGON/ TANK TRUCK LOADING AND UNLOADING VIA CLOSED SYSTEM.
 PRODUCT TRANSFER THROUGH DOME ONLY

NOTES:

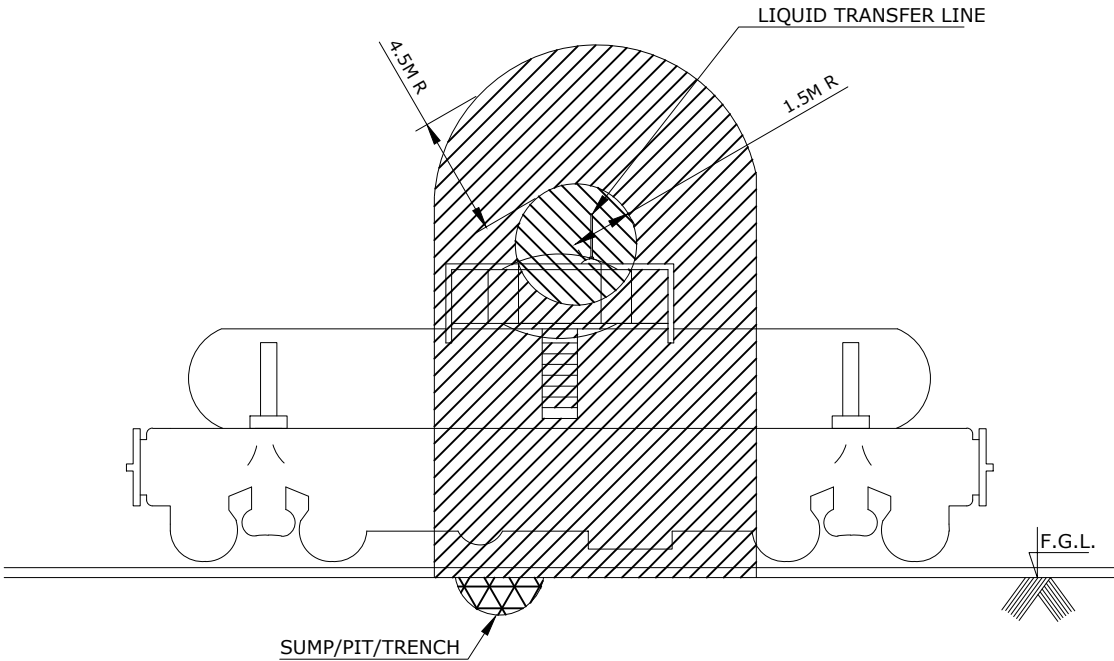
	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



DETAIL-23

(MATERIAL: FLAMMABLE LIQUID)

WAGON/TANK TRUCK LOADING AND UNLOADING VIA CLOSED SYSTEM.
BOTTOM PRODUCT TRANSFER ONLY



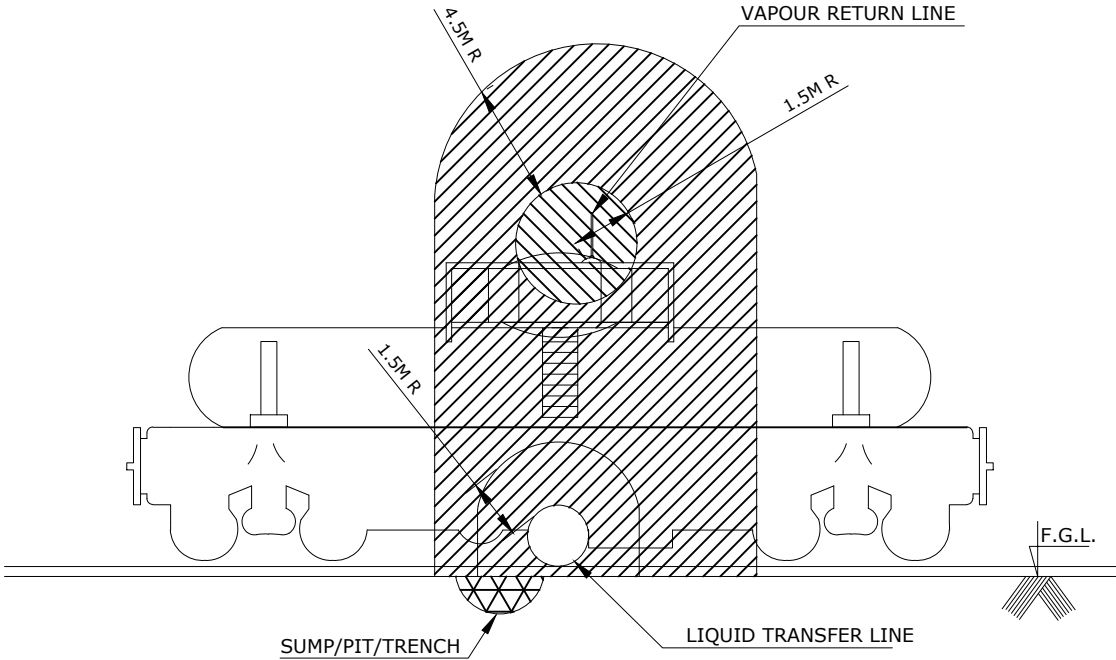
DETAIL-24

(MATERIAL: FLAMMABLE LIQUID)

WAGON/TANK TRUCK LOADING AND UNLOADING VIA OPEN SYSTEM.
TOP OR BOTTOM PRODUCT TRANSFER ONLY

NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

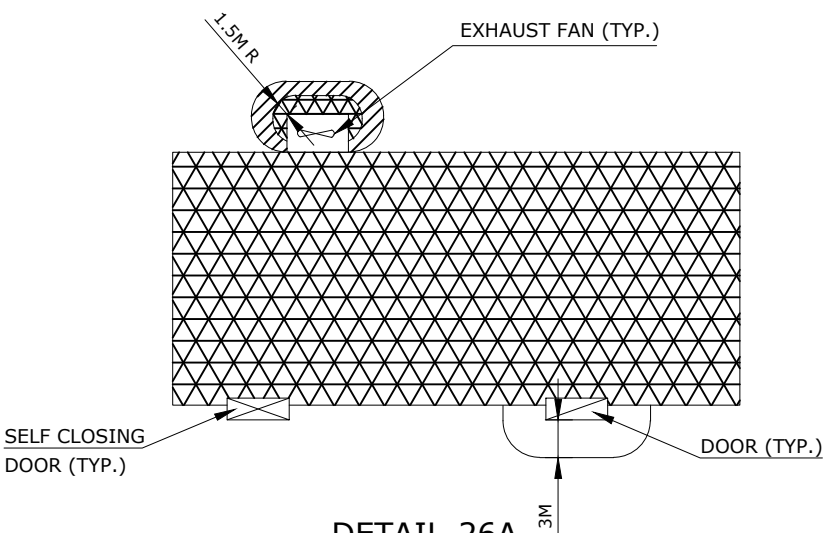


DETAIL-25

(MATERIAL: LIQUIFIED GAS/ COMPRESSED GAS/ CRYOGANIC GAS)
WAGON/TANK TRUCK LOADING AND UNLOADING VIA CLOSED SYSTEM.
PRODUCT TRANSFER THROUGH BOTTOM ONLY

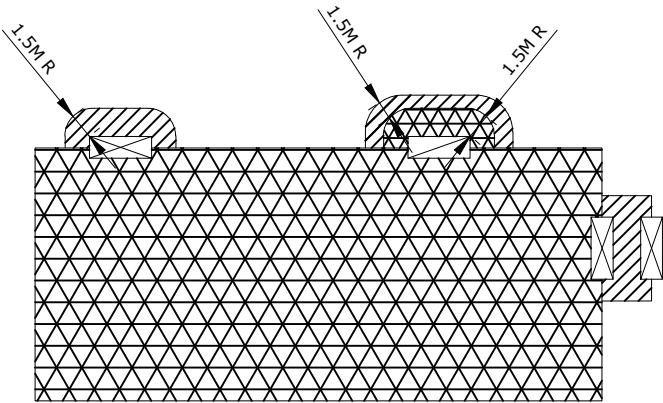
NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



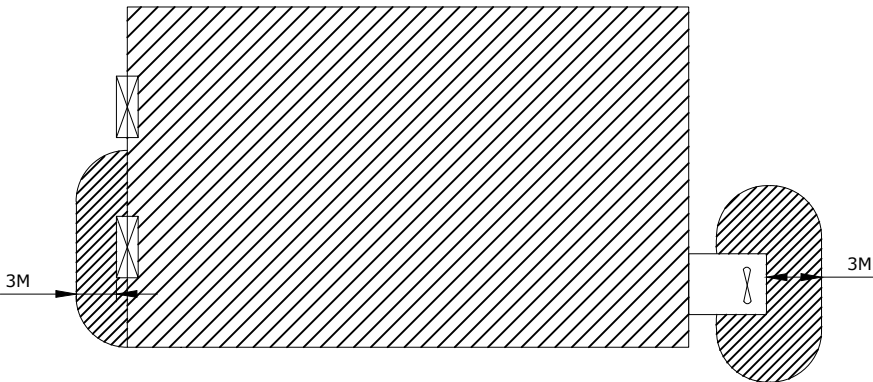
DETAIL-26A

FLAMMABLE SUBSTANCE RELEASED DURING NORMAL
OPERATION WITH INADEQUATE VENTILATION



DETAIL-26B

FLAMMABLE SUBSTANCE RELEASED DURING ABNORMAL SITUATION
OR INFREQUENT OPERATIONS WITH INADEQUATE VENTILATION

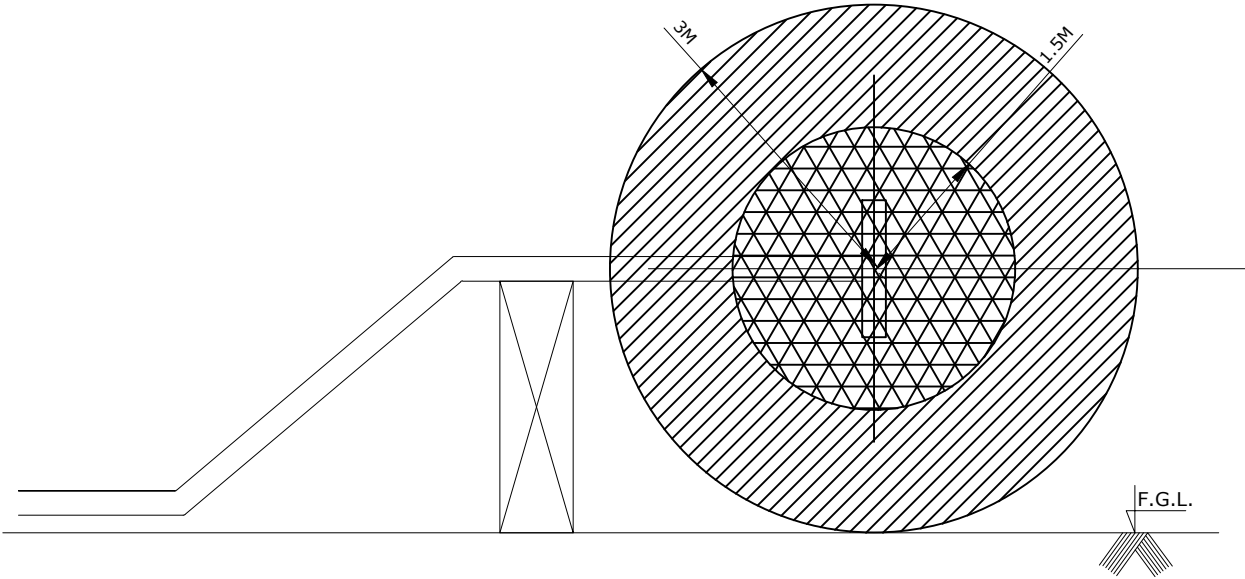


DETAIL-26C

FLAMMABLE SUBSTANCE RELEASED DURING ABNORMAL SITUATION
OR INFREQUENT OPERATIONS WITH ADEQUATE VENTILATION

NOTES:

1	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		

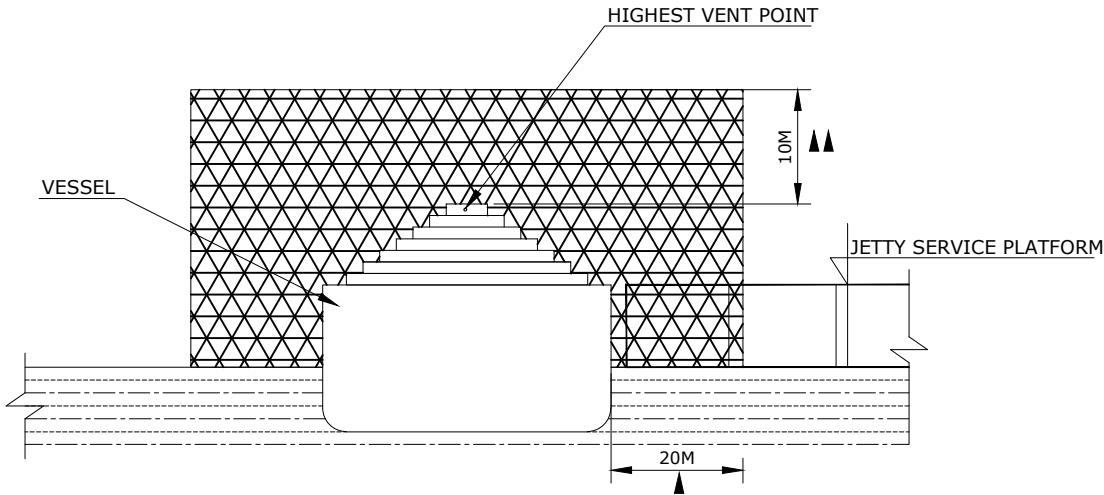


DETAIL-27

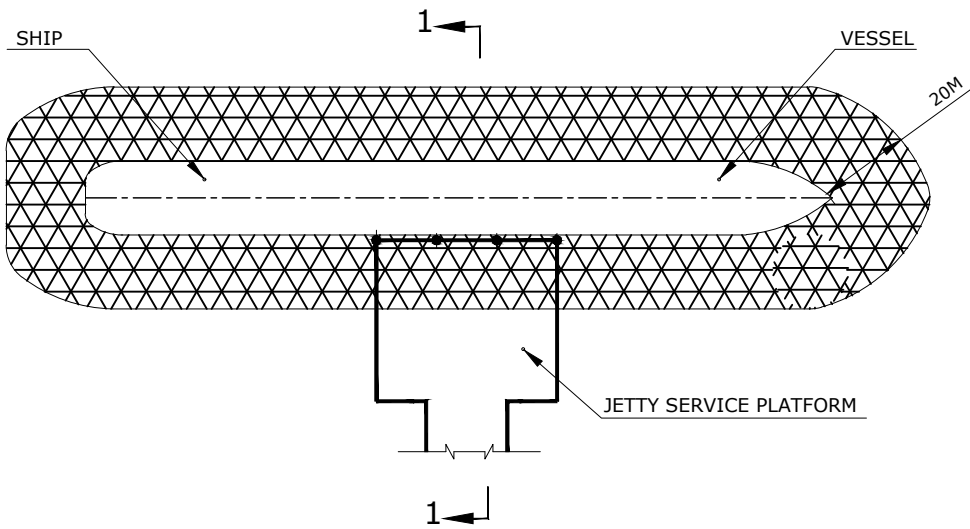
BALL OR PIG LAUNCHING OR RECEIVING INSTALLATION
IN A NON-ENCLOSED, ADEQUATELY VENTILATED AREA

NOTES:

	DETAILS FOR AREA CLASSIFICATION (OIL/GAS INSTALLATION)	STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



SECTION 1-1

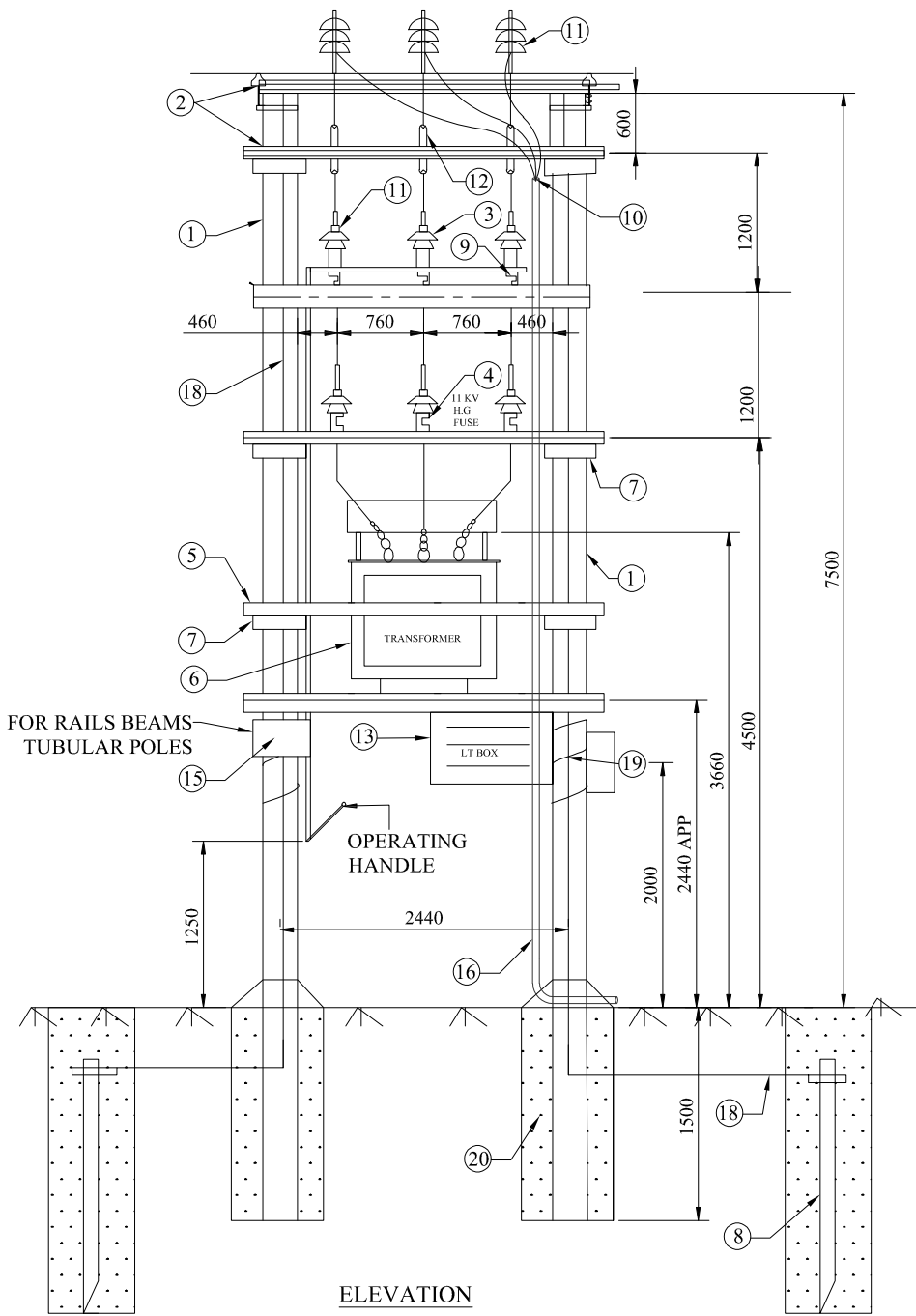


PLAN
DETAIL-28
JETTIES OR MARINE FACILITIES

NOTES:

- ▲ SHALL BE REDUCED TO 10M IN CASE OF VESSELS WITH LOADING OR DISCHARGES RATES $\leq 10\text{M}^3/\text{MIN}$.
- ▲▲ SHALL BE REDUCED TO 5M FOR LOADING RATES $\leq 10\text{M}^3/\text{MIN}$.

2 POLE STRUCTURAL		STANDARD DRAWING NO.		REV.	SIZE
				02	A4
		SHEET NO.	1 OF 1		



BILL OF MATERIAL (APRX. QTY.)

S.No		
1	POLE (RCC/MS) - 9m	2
2	CHANNEL 100X50	2
3	AB ISOLATOR / G.O. SWITCH	2
4	H.G. FUSE	3
5	ANGLE 50X50X6 - 2800 (APP.)	3
6	TRANSFORMER	1
7	CLAMP	1
8	EARTHING PIT	2
9	G.O. AB SWITCH	1
10	HT CABLE	1 SET
11	11 kV INSULATOR	1 SET
12	11 kV LIGHTING ARREST'RS	3
13	DISTRIBUTION BOX	1
14	LT CABLE	2
15	DANGER BOARD	1
16	HT CABLE PIPE	AS REQD
17	LT CABLE PIPE	AS REQD
18	EARTHING STRIP	AS REQD
19	BARBED WIRE	AS REQD
20	POLE FOUNDATION	2