GOVERNMENT OF TELANGANA
TELANGANA DRINKIMG WATER SUPPLY PROJECT
Rural Water Supply & Sanitation Department

TELANGANA WATER GRID

L&T Construction - Water, Smart World & Communication
CHENNAI

CLIENT:	CONSULTANT :
RURAL WATER SUPPLY AND SANITATION DEPARTMENT (WATER GRID), TELUNGANA.	WAPCOS LIMITED

PROJECT :	PROVIDING DRINKING WATER TO HABITATIONS IN KOMARAMBHEEM ASIFABAD SEGMENT IN ADILABAD DISTRICT
SUPPLIER / CONTRACTOR:	L&T Construction, Water, Smart World and Communication

JOB Ref. No. : LE150883

	NAME	SIGN	DATE
DSGN			
CHKD			
APPD			

TITLE :

DESIGN OF GLBR - 350KL CAPACITY MANIGUDAGUTTA AT ASIFABAD MANDAL

DOC./DRG. No.	SIZE	REV.
LE150883-C-WS-RW-DC-1522	A4	A

RELEASED FOR

☐ PRELIMINARY	☐ INFORMATION	☑ APPROVAL	☐ CONSTRUCTION

DESIGN OF SUMP

CAPACITY = 3.5 LAC

Width = 11.1 m
Length = 11.1 m
Water depth = 3.20 m

Free board = 0.450 m
Plaster thickness = 0.012 m

Column = 300 dia
Concrete grade = M 30
Clear cover to main steel = 45.0 mm

SBC: 15 T/M^2

GWT: GROUND WATER TABLE IS NOT OBSERVED

CAPACITY CHECK:

Capacity of compartment

Width = 11.10 m
Length = 11.10 m

Clear Width = 11.10–2 x plaster thickness
= 11.10 – 2 x 0.012
= 11.076 m

Dead storage = 0.15
Free board = 0.3
Water depth = 2.9 m

Volume = B x L x H
= 11.076 x 11.076 x 2.9 = 355.77 m^3

Volume of single column = pi * d x d. / 4 x H
= Pi x 0.30 x 0.30 / 4 x 2.9
= 0.205

Total nos of column = 4 nos

Less for pedestal = 4 x 1 x 1 x 0.1 = 0.4

Less volume of column = 0.205 m^3 x 4 nos = 0.82 m^3

Total deduction = 0.4 + 0.82 = 1.22

Net volume = 355.77 – 1.22 = 354.55 m^3 > 350 m^3 i.e. 3.5 lacs hence O.K.

Design of Sump

Design Approach

Element

- External wall
- Flat slab
- Column

EXTERNAL WALL

External wall

Wall is designed as top hinge, bottom fixed condition Subject to triangular loading

- Water pressure from inside
- Soil pressure from outside

Loading

1. Water load :
   a. Water depth = 3.20 m
   b. Free board = 0.45 m

      Total height = 3.650 m

   Water pressure is as below

2. Soil load :

   a. Depth below ground level = 0.4 m
   b. Density of soil = 1.80 t/m3
   c. Angle of repose = 30 degree

Pressure at bottom = Y * H * (1-sin th)/ (1 + sin th)
= 18 * 0.4 * (1 – sin 30)/ (1+ sin 30)
= 2.4 kN/m

Analysis is done in STADD, Input data & Output result are given

Provide, 200 to 350 mm tapered thick wall
Analysis of wall is done using software STAAD.Pro

STAAD MODEL

```
STAAD SPACE
START JOB INFORMATION
JOB NAME 4 lac sump
JOB NO P16_02
JOB PART SECTION EXTERNAL WALL
ENGINEER DATE 04-03-16
JOB CLIENT Adilabad RWSS
JOB REV R0
END JOB INFORMATION
INPUT WIDTH 79
UNIT METER KN
JOINT COORDINATES
1 0 0 0; 2 0 0.4 0; 3 0 0.8 0; 4 0 1.2 0; 5 0 1.6 0; 6 0 2 0; 7 0 2.4 0;
8 0 2.8 0; 9 0 3.25 0; 10 0 -0.4 0;
MEMBER INCIDENCES
4 9 8; 5 8 7; 6 7 6; 7 6 5; 8 5 4; 9 4 3; 10 3 2; 11 2 1; 12 1 10;
DEFINE MATERIAL START
ISOTROPIC CONCRETE
E 2.73e+007
POISSON 0.17
DENSITY 25
ALPHA 1e-005
DAMP 0.05
END DEFINE MATERIAL
MEMBER PROPERTY INDIAN
4  PRIS YD 0.2 ZD 1
5 PRIS YD 0.2 ZD 1
6 PRIS YD 0.23 ZD 1
7 PRIS YD 0.25 ZD 1
8 PRIS YD 0.27 ZD 1
9 PRIS YD 0.29 ZD 1
10 PRIS YD 0.31 ZD 1
11 PRIS YD 0.33 ZD 1
12 PRIS YD 0.35 ZD 1
SUPPORTS
10 FIXED
9 PINNED
CONSTANTS
MATERIAL CONCRETE ALL
LOAD 1 WATER
MEMBER LOAD
4 TRAP GX 0 4.5
5 TRAP GX 4.5 8.5
6 TRAP GX 8.5 12.5
7 TRAP GX 12.5 16.5
8 TRAP GX 16.5 20.5
9 TRAP GX 20.5 24.5
10 TRAP GX 24.5 28.5
11 TRAP GX 28.5 32.5
12 TRAP GX 32.5 36.5
SELFWEIGHT Y -1
LOAD 2 SOIL
MEMBER LOAD
12 TRAP GX -0 -2.4
PERFORM ANALYSIS
FINISH
```

BEAM END FORCE (WATER LOAD)

Beam	L/C	Node	Axial Force kN	Shear-Y kN	Shear-Z kN	Torsion kNm	Moment-Y kNm	Moment-Z kNm
4	1	9	-9.577	-11.023	0	0	0	0
		8	7.327	10.011	0	0	0	-5
5	1	8	-7.327	-10.011	0	0	0	5
		7	5.327	7.411	0	0	0	-8
6	1	7	-5.327	-7.411	0	0	0	8
		6	3.027	3.211	0	0	0	-11
7	1	6	-3.027	-3.211	0	0	0	11
		5	0.527	-2.589	0	0	0	-11
8	1	5	-0.527	2.589	0	0	0	11
		4	-2.173	-9.989	0	0	0	-8
9	1	4	2.173	9.989	0	0	0	8
		3	-5.073	-18.989	0	0	0	-2
10	1	3	5.073	18.989	0	0	0	2
		2	-8.173	-29.589	0	0	0	7
11	1	2	8.173	29.589	0	0	0	-7
		1	-11.473	-41.789	0	0	0	21
12	1	1	11.473	41.789	0	0	0	-21
		10	-14.973	-55.589	0	0	0	41

Maximum moment at bottom = 41 kNm Say 42 KNm

Calculation for Coefficient of Uncrack condition					
RCC wall					
	notation		Unit		
DATA					Steel provided
Bending moment	Bm	**42**	kN-m	dia	spc
Reinforcement	Fy	**500**	N/mm2		
Concrete grade	fck	**30**	N/mm2	**10**	**200**
Area of steel provised	Ast	1398	mm2	16	200
Depth provided	Dp	**350**			
Width	B	1000			
Clear Cover	Cv	**50**	mm		
maximum bar dia	dbar	**25**			
Permissible stress in Steel	Fyub	**130**	N/mm2		
Calculation					equation
Modular ratio	md	9			For Fck 30
Per.str.in direct Tension	Pst	15	kg/cm2		For Fck 30
Per.str.tension due to bending	Pstb	20	kg/cm2		For Fck 30
steel	PT	0.0040			=Ast/Dp/B
Effective depth	Def	287.5	mm		
Constants	ka	0.82			=Def/Dp
	kb	1.05			=1+2*PT*ka*(md-1)
	kc	2.06			=2+2*PT*(md-1)
Depth of neutral axis - N	n	0.5100			=kb/kc
Depth of neutral axis	nd	178.4836			=n*Dp
Check for Mu/bd2					
	kd	0.0031			=(ka-n)^2*(md-1)*PT
	ke	0.0834			=1/3-n*(1-n)
	kf	0.0865			=kd+ke
m/bd2	Unc	3.5316			=Pstb/(1-n)*kf
Depth reuired	Dr	344.9	mm		=(Bm*100/Unc)^0.5*10
Calculation od Steel	Ast				
Effective Depth	De	287.5	mm		=Dp-Cv-dbar/2
Area of steel required		1249	mm2		=Bm*1000000/(0.9*Fyub*De)
Check		OK			

BEAM END FORCE (SOIL LOAD)

Beam	L/C	Node	Axial Force kN	Shear-Y kN	Shear-Z kN	Torsion kNm	Moment-Y kNm	Moment-Z kNm
4	2	9	0	0.001	0	0	0	0
		8	0	-0.001	0	0	0	0
5	2	8	0	0.001	0	0	0	0
		7	0	-0.001	0	0	0	0
6	2	7	0	0.001	0	0	0	0
		6	0	-0.001	0	0	0	0
7	2	6	0	0.001	0	0	0	0
		5	0	-0.001	0	0	0	0
8	2	5	0	0.001	0	0	0	0
		4	0	-0.001	0	0	0	0
9	2	4	0	0.001	0	0	0	0
		3	0	-0.001	0	0	0	0
10	2	3	0	0.001	0	0	0	0
		2	0	-0.001	0	0	0	0
11	2	2	0	0.001	0	0	0	0
		1	0	-0.001	0	0	0	0
12	2	1	0	0.001	0	0	0	0
		10	0	0.479	0	0	0	0

Maximum moment at bottom = 0.04 kNm say 2 kNm

R/F at Different Place

1> Water load

GSR - TOTAL HEIGHT 3.4 m

Water load

concrete grade	Fck	30	N/mm2		fyuc	130	N/mm2
Steel grade	Fy	500	N/mm2		fyucb	130	N/mm2
Height of wall	H	3.20	m		fckbc	10.0	N/mm2
Free board	Fb	0.45	m		fckt	1.5	N/mm2
cover	Cv	45	mm	modular ratio	m	9.333	
Maximum Diameter of bar	Db	12	mm		K	0.418	
Minimum % steel	pt	0.35	%		j	0.861	

Sr.no	Height from top	Moment (kN-m)	Depth provide(mm)	effective depth(mm)	Design Steel in mm2		Minimum steel / Dist steel in mm2		Required steel in mm2	
					Water face	soil face	Water face	soil face	Water face	soil face
	m	mm	mm	mm						
1	0.45	-5.00	200	149		300	350	350	350	350
2	0.85	5.00 -8.00	200	149		480	350	350	350	480
3	1.25	8.00 -11.00	230	179		549	403	403	403	549
4	1.65	11.00 -11.00	250	199		494	438	438	438	494
5	2.05	11.00 -8.00	270	219		326	473	473	473	473
6	2.45	8.00 -2.00	290	239		75	508	508	508	508
7	2.85	2.00 7.00	310	259	242		543	543	543	543
8	3.25	-7.00 21.00	330	279	673		578	578	673	578
9	3.65	-21.00 41.00	350	299	1226	########	613	613	1226	613

REINFORCMENT BAR PROVIDED

WATER FACE due to WATER LOAD

	Dist in m	Ast required	Reinforcement					Ast Provided	
1	0.45	350	10	200			=	393	TRUE
2	0.85	350	10	200			=	393	TRUE
3	1.25	403	10	200	+ 16	400	=	895	TRUE
4									

5	1.65	438	10	200	+	16	400	=	895	TRUE
6	2.05	473	10	200	+	16	400	=	895	TRUE
7	2.45	508	10	200	+	16	400	=	895	TRUE
8	2.85	543	10	200	+	16	200	=	1398	TRUE
9	3.25	673	10	200	+	16	200	=	1398	TRUE
	3.65	1226	10	200		16	200	=	1398	TRUE

SOIL FACE due to WATER LOAD

	Dist in m	Ast required	Reinforcement					Ast Provided	
1	0.45	350	10	200				= 393	TRUE
2	0.85	480	10	200	+	8	200	= 644	TRUE
3	1.25	549	10	200	+	8	200	= 644	TRUE
4	1.65	494	10	200	+	8	200	= 644	TRUE
5	2.05	473	10	200	+	8	200	= 644	TRUE
6	2.45	508	10	200	+	8	200	= 644	TRUE
7	2.85	543	10	200	+	8	200	= 644	TRUE
8	3.25	578	10	200	+	8	200	= 644	TRUE
9	3.65	613	10	200	+	8	200	= 644	TRUE

REINFORCMENT BAR PROVIDED

DISTRIBUTION STEEL

	Dist in m	Thickness	Ast required	Reinforcement			Ast Provided	
1	0.45	200	350	10	200	=	393	OK
2	0.85	200	350	10	200	=	393	OK
3	1.25	230	403	10	160	=	491	OK
4	1.65	250	438	10	160	=	491	OK
5	2.05	270	473	10	160	=	491	OK
6	2.45	290	508	10	140	=	561	OK
7	2.85	310	543	10	140	=	561	OK
8	3.25	330	578	10	125	=	628	OK
9	3.65	350	613	10	125	=	628	OK

WALL FOOTING

WALL FOOTING DESIGN

PROJECT : P16_02_Adilabad W.S.S JOB : P16_02

UNIT : Rectangular Sump

WALL TYPE 1 **W1**

BASIC DATA

Density of water	denwt	**10**	kN/m3		fyuc	130	N/mm2
Density of soil	denso	**18**	kN/m3		fyucb	130	N/mm2
Density of concrete	decon	**25**	kN/m3		fckbc	10.0	N/mm2
Angle of Repose	Phi	**30**	degree		fckt	1.5	N/mm2
Safe bearing capacity of soil	Sbc	**150.0**	kN/m2	modular ratio	m	9.33	
Concrete grade	Fck	**30**	N/mm2		K	0.42	
Steel grade	Fy	**500**	N/mm2		j	0.86	
Depth below GI	Dbg	**0.40**	m				
Water depth	wtd	**3.20**	m				
free board	fb	**0.45**	m				
Wall above Ground		**3.25**	m				
Clear cover	Cv	**50**	mm				
Maximum size of bar dia	Db	**12**	mm				
Water depth with free board	Wd	**3.65**	m				
minimum % steel	pt	**0.35**	%				
Moment							
Due to Water	Mtw	**42.00**	kN-m	(From Analysis Result)			
Due to soil if any	Mts	**2.00**	kN-m				
Wt from top dome/slab/column/wall	Slabwt	**25.00**	kN-m				

Wall geometry (Figure 1)			
Straight portion	lb	**0.000**	m
Tapered portion	lc	**3.650**	m
	tb	**0.200**	m
	td	**0.350**	m
Footing geometry			
Toe projection	ht	**0.450**	m
Heel straight projection	hh1	**1.500**	m
Heel tapered projection	hh2	**0.000**	m
Heel portion for soil stability	hh3	**0.500**	m
Thickness at toe (free end)	tta	**0.300**	m
Thickness at toe (fwall face)	ttb	**0.300**	m
Thickness at heel (wall end)	tha	**0.300**	m
Thickness at heel (freel face)	thb	**0.300**	m
Total Height of Wall	Tlw	3.650	m
Total length of wall footing	wf	2.300	m

CASE 1 : TANK FULL CONDITION WITH NO SOIL OUTSIDE

Total load & Moment calculation
Taking moment @ toe

Component	Wt	Lever	Momen

		kN W	Arm m Dist	t kN-m W * dist
Wall Straight portion	W 1	18.25	0.70	12.78
Wall Tapered portion	W 2	6.84	0.55	3.76
Walkway/slab	P	25.00	0.70	17.50
Footing				
Footing : toe	W 3	3.38	0.23	0.76
Footing center	W 4	2.63	0.63	1.64
Footing : heel (straight)	W 5	11.25	1.55	17.44
Footing : heel (tapered)	W 6	0.00	2.30	0.00
Water	W 7	54.75	1.55	84.86
Total downward load		122.09		138.74

Total restoring moment @ toe	TRM	138.7	kN-m
Total over turning moment		42.0	kN-m
F.S.against over turning		3.3	
Check for over turning	Hense o.k		
Total moment due to vertical load	Tmv	138.7	kN-m
Total moment due to horizontal load	Tmh	42.0	kN-m
Total vertical load	TPv	122.1	kn
Net Moment	Tmn	96.7	kN-m
M/p	E	0.79	m
Ecc	Ecc	0.358	m
b/6	Aec	0.38	m
Net moment From ECC	Mdg	43.67	

Property of footing

Width of footing		1.00	m
Depth of footing		2.30	m
Footing Area	Fare	2.30	m2
Modulus of section	Fz	0.88	m3

Pressure distribution			
Pressure due to direct load =P/A	prea	53.08	kN/m2
Pressure due to moment =M/Z	Preb	49.53	kN/m2
Pressure			
Maximum pressure - P/A + M/Z	Pma x	102.61	kN/m2
Minimum pressure - P/A + M/Z	Pmin	3.55	kN/m2
Check for SBC			
Maximum pressure < SBC		OK	
Minimum presure > 0		OK	
Pressure difference		99.06	

Pressure difference / m	43.07		
Pressure at outer Wall face - A	preow	83.23	kN/m2
Pressure at inner Wall face B	preiw	68.16	kN/m2
Pressure at point C	preiw1	3.55	kN/m2

Design of Toe - At Point A

Moment at face of outer wall			
Due to rectangle diagram	Mreco	8.43	kN-m
	Mtrio	1.31	kN-m
Total moment due to upward pressure		9.74	kN-m
Net moment at A from Toe side	Toem	9.74	kN-m
Thickness at toe		300	mm
Effective depth	Deftoe	244	mm
Ast required =		357	mm2
Check for minimum steel			
top		525	mm2
bottom		350	mm2
Design Steel			
Main steel - Top		525	mm2
Main steel - bottom		357	mm2
Distribution steel - top		525	mm2
Distribution steel - bottom		350	mm2

Design of heel : At point B & C

Design at point B			
Due to rectangle diagram (upward)	Mreci	4.0	kN-m
	Mtrii	24.2	kN-m
Total Upward moment		28.2	kN-m
Due to water (down ward)		41.1	kN-m
Net downward moment at B from heel side	heelm	12.8	kN-m
Thickness Provided		300	mm
	defheel	244	mm
Ast required =		470	mm2
Check for minimum steel - straight portion			
top		525	mm2
bottom		350	mm2
Design Steel			
Main steel - Top		525	mm2
Main steel - bottom		350	mm2
Distribution steel - top		525	mm2
Distribution steel -bottom		350	mm2
Design at point C			
Due to rectangle diagram (upward)	Mreci	0.00	kN-m
	Mtrii	0.00	kN-m
Total Upward moment		0.00	kN-m
Due to water (down ward)		0.00	kN-m
Net downward moment at B from heel side	heelm	0.00	kN-m
Thickness Provided		300	mm
	defhee	244	mm

Ast required =		0	mm2
Check for minimum steel - tapered portion			
Avrage thickness	thav	0.30	m
top		525	mm2
bottom		350	mm2
Design Steel			
Main steel - Top		525	mm2
Main steel - bottom		350	mm2
Distribution steel - top		525	mm2
Distribution steel -bottom		350	mm2

SUMMARY

Pressure Check

1>	P/A + M/Z	103	<	150	OK
2>	P/A - M/Z	3.55	>	0	OK

Reinforcement

	AstR			+			Astp	
Toe		dia	spc		dia	spc		
Top - main	525	12	200		0	0	565	OK
Bottom main	357	10	220		0	0	357	OK
Top - Dist	525	12	200		0	0	565	OK
Bottom - Dist	350	10	220		0	0	357	OK
Heel Straight portion								
Top - main	525	12	200		0	0	565	OK
Bottom main	350	10	220		0	0	357	OK
Top - Dist	525	12	200		0	0	565	OK
Bottom - Dist	350	10	220		0	0	357	OK
Heel tapered portion								
Top - main	525	12	200		0	0	565	OK
Bottom main	350	10	220		0	0	357	OK
Top - Dist	525	12	200		0	0	565	OK
Bottom - Dist	350	10	220		0	0	357	OK

CASE 2 : TANK EMPTY CONDITION WITH SOIL OUTSIDE

Total load & Moment calculation
Taking moment @ toe

Component		Wt kN W	Lever Arm m Dist	Moment kN-m W * dist
Wall Straight portion	W1	18.25	0.60	10.95
Wall Tapered portion	W2	6.84	0.75	5.13
Walkway/slab	P	25.00	0.60	15.00
Footing				
Footing : toe	W3	3.38	1.08	3.63
Footing center	W4	2.63	0.68	1.77
Footing : heel	W5	3.75	0.25	0.94
Soil on toe	W6	3.24	1.08	3.48
Total downward load		**63.08**		**40.90**

Total restoring moment @ heel	TRMs	40.9	kN-m
Total over turning moment due to soil		2.0	kN-m
F.S.against over turning		20.5	
Check for over turning	Hense o.k		
Total moment due to vertical load	Tmv1	40.9	kN-m
Total moment due to horizontal load	Tmh1	2.0	kN-m
Total vertical load	TPv1	63.1	kn
Net Moment	Tmn1	38.9	kN-m
M/p	E1	0.62	m
Ecc	Ecc1	0.033	m
b/6	Aec1	0.22	m
Net moment From ECC	Mdg1	2.1011	

Property of footing

Width of footing		1.00	m
Depth of footing		1.30	m
Footing Area	Fare1	1.30	m2
Modulus of section	Fz1	0.28	m3

Pressure distribution			
Pressure due to direct load =P/A	prea1	48.53	kN/m2
Pressure due to moment =M/Z	Preb1	7.5	kN/m2
Pressure			
Maximum pressure - P/A + M/Z	Pmax1	55.99	kN/m2
Minimum pressure - P/A + M/Z	Pmin1	41.07	kN/m2
Check for SBC			
Maximum pressure < SBC		OK	
Minimum presure > 0		OK	
Pressure difference		14.92	kN/m2
Pressure difference / m		11.48	kN/m2
Pressure at outer Wall face - A	preow1	46.23	kN/m2
Pressure at inner Wall face B	preiw1	50.25	kN/m2

Design of Toe - At Point A

Moment at face of outer wall			
Due to rectangle diagram	Mreco1	4.16	kn-m
Due to triabgular diagram	Mtrio1	0.17	kn-m
Total moment due to upward pressure		4.33	kn-m
Total downward moment due to soil		0.73	kn-m
Net moment at A from Toe side	Toem1	-3.60	kn-m
Thickness at toe		300	mm
Effective depth	Deftoe1	244	mm
Ast required =		#####	mm2

Check for minimum steel			
top		525	mm2
bottom		350	mm2
Design Steel			
Main steel - Top		525	mm2
Main steel - bottom		350	mm2
Distribution steel - top		525	mm2
Distribution steel - bottom		350	mm2

Design of heel : At point B			
Design at point B			
Due to rectangle diagram (upward)	Mreci1	6.28	kn-m
	Mtrii1	0.48	kn-m
Total Upward moment	heelm1	6.76	kn-m
Net downward moment at B from heel side		300	mm
Thickness Provided	defheel1	244	mm
Steel required at bottom		248	mm2
Ast required =			
Check for minimum steel - straight portion			
top		525	mm2
bottom		350	mm2
Design Steel			
Main steel - Top		525	mm2
Main steel - bottom		350	mm2
Distribution steel - top		525	mm2
Distribution steel -bottom		350	mm2

SUMMARY

Pressure Check

1>	P/A + M/Z	56	<	150.0	OK
2>	P/A - M/Z	41.1	>	0	OK

Reinforcement

	AstR						Astp	
Toe		dia	spc	+	dia	spc		
Top - main	525	12	200				565	OK
Bottom main	350	10	220		0	0	357	OK
Top - Dist	525	12	200		0	0	565	OK
Bottom - Dist	350	10	220		0	0	357	OK
Heel Straight portion								
Top - main	525	12	200		0	0	565	OK
Bottom main	350	10	220		0	0	357	OK
Top - Dist	525	12	200		0	0	565	OK
Bottom - Dist	350	10	220		0	0	357	OK

DESIGN OF FLAT SLAB

Top slab

Loading:

Assume top slab = 160 th

(1) Dead load = 0.160 x 2.5 = 0.4 t/m2
(2) Live load = 0.150 t/m2
(3) Finishing load = 0.125 t/m2

Total load = 0.675 t/m2

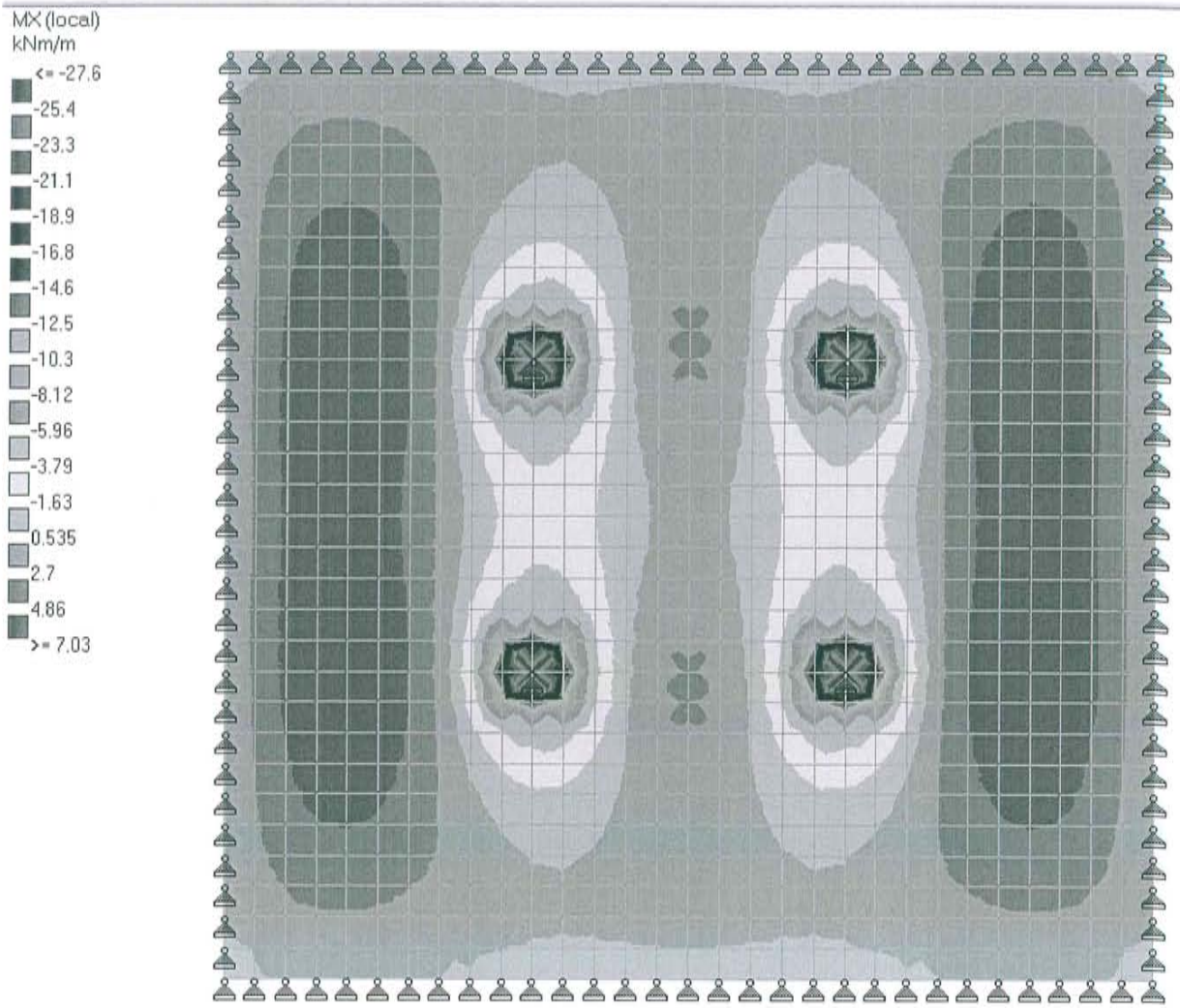
Analysis of Slab is done on STAAD.Pro with Slab is Plate.

STAAD INPUT DATA

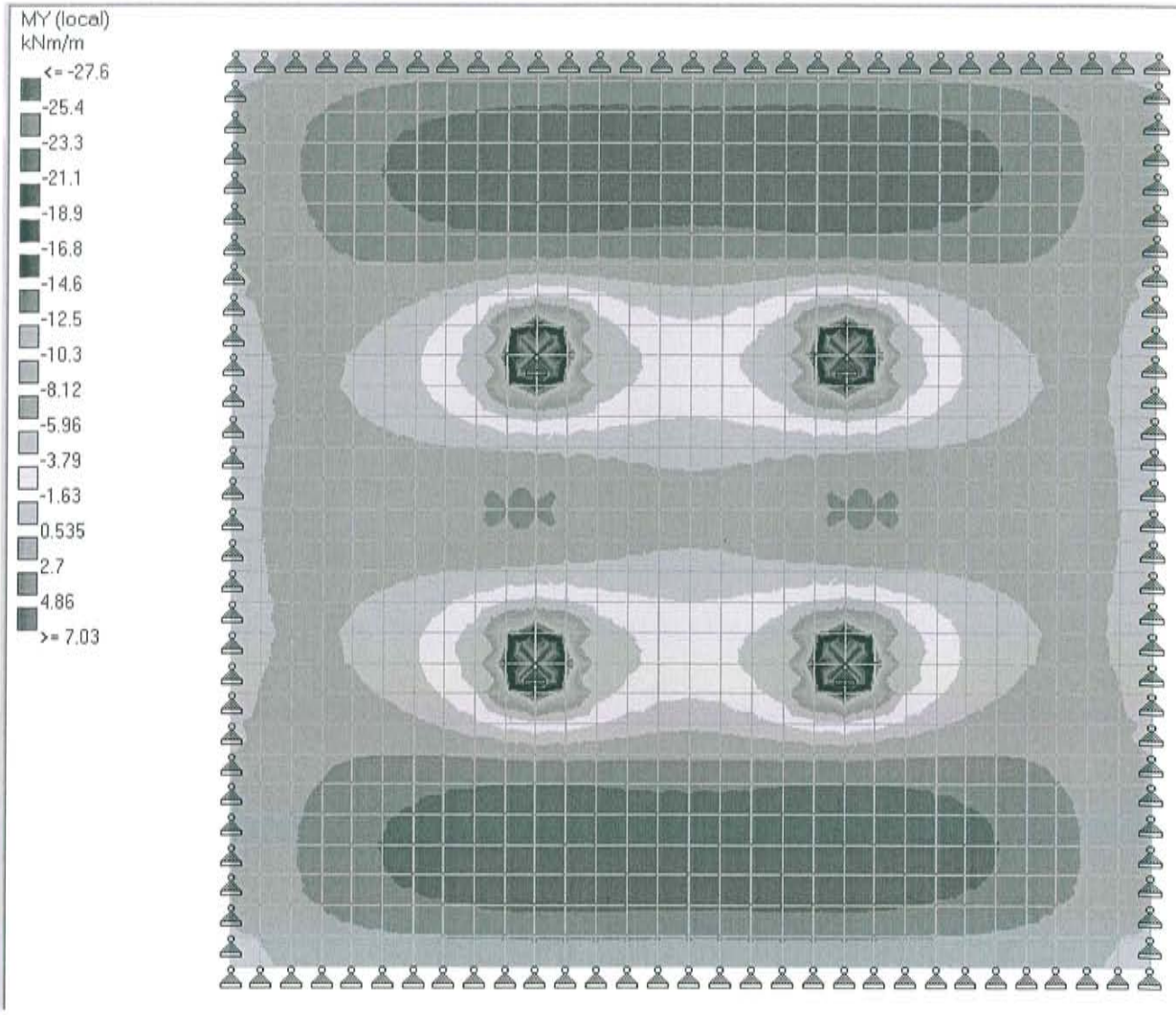
```
STAAD SPACE
START JOB INFORMATION
ENGINEER DATE 01-Mar-16
END JOB INFORMATION
INPUT WIDTH 79
UNIT METER KN
JOINT COORDINATES
1 0 0 0; 2 3.75 0 0; 3 7.55 0 0; 4 11.3 0 0; 5 0 0 3.75; 6 3.75 0 3.75;
7 7.55 0 3.75; 8 11.3 0 3.75; 9 0 0 7.55; 10 3.75 0 7.55; 11 7.55 0 7.55;
12 11.3 0 7.55; 13 0 0 11.3; 14 3.75 0 11.3; 15 7.55 0 11.3; 16 11.3 0 11.3;
17 0.375 0 0; 18 0.375 0 0.375; 19 0 0 0.375; 20 0.75 0 0; 21 0.75 0 0.375;
22 1.125 0 0; 23 1.125 0 0.375; 24 1.5 0 0; 25 1.5 0 0.375; 26 1.875 0 0;
27 1.875 0 0.375; 28 2.25 0 0; 29 2.25 0 0.375; 30 2.625 0 0; 31 2.625 0 0.375;
32 3 0 0; 33 3 0 0.375; 34 3.375 0 0; 35 3.375 0 0.375; 36 3.75 0 0.375;
37 0.375 0 0.75; 38 0 0 0.75; 39 0.75 0 0.75; 40 1.125 0 0.75; 41 1.5 0 0.75;
42 1.875 0 0.75; 43 2.25 0 0.75; 44 2.625 0 0.75; 45 3 0 0.75; 46 3.375 0 0.75;
ELEMENT INCIDENCES SHELL
27 1 17 18 19; 29 17 20 21 18; 31 20 22 23 21; 33 22 24 25 23; 35 24 26 27 25;
37 26 28 29 27; 39 28 30 31 29; 41 30 32 33 31; 43 32 34 35 33; 45 34 2 36 35;
47 19 18 37 38; 48 18 21 39 37; 49 21 23 40 39; 50 23 25 41 40; 51 25 27 42 41;
52 27 29 43 42; 53 29 31 44 43; 54 31 33 45 44; 55 33 35 46 45; 57 35 36 47 46;
59 38 37 48 49; 60 37 39 50 48; 61 39 40 51 50; 62 40 41 52 51; 63 41 42 53 52;
64 42 43 54 53; 65 43 44 55 54; 66 44 45 56 55; 67 45 46 57 56; 69 46 47 58 57;
71 49 48 59 60; 72 48 50 61 59; 73 50 51 62 61; 74 51 52 63 62; 75 52 53 64 63;
76 53 54 65 64; 77 54 55 66 65; 78 55 56 67 66; 79 56 57 68 67; 81 57 58 69 68;
83 60 59 70 71; 84 59 61 72 70; 85 61 62 73 72; 86 62 63 74 73; 87 63 64 75 74;
88 64 65 76 75; 89 65 66 77 76; 90 66 67 78 77; 91 67 68 79 78; 93 68 69 80 79;
95 71 70 81 82; 96 70 72 83 81; 97 72 73 84 83; 98 73 74 85 84; 99 74 75 86 85;
ELEMENT PROPERTY
160 270 287 397 426 541 542 552 642 659 660 760 789 905 915 1023 THICKNESS 0.31
27 29 31 33 35 37 39 41 43 45 47 TO 55 57 59 TO 67 69 71 TO 79 81 83 TO 91 -
93 95 TO 103 105 107 TO 115 117 119 TO 127 129 131 TO 139 141 143 145 147 -
149 151 153 155 157 159 162 164 166 168 170 172 174 176 178 180 TO 189 191 -
192 TO 200 202 TO 211 213 TO 222 224 TO 233 235 TO 244 246 TO 255 257 TO 266 -
268 272 274 276 278 280 282 284 286 289 291 293 295 297 299 301 303 305 307 -
308 TO 316 318 TO 327 329 TO 338 340 TO 349 351 TO 360 362 TO 371 373 TO 382 -
384 TO 393 395 399 401 403 405 407 409 411 413 414 416 TO 424 428 TO 436 -
438 440 TO 448 450 452 TO 460 462 464 TO 472 474 476 TO 484 486 488 TO 496 -
498 500 TO 508 510 512 TO 520 522 524 526 528 530 532 534 536 538 540 543 -
544 TO 550 553 TO 561 563 TO 572 574 TO 583 585 TO 594 596 TO 605 607 TO 616 -
618 TO 627 629 TO 638 640 644 646 648 650 652 654 656 658 661 TO 668 670 -
671 TO 679 681 TO 690 692 TO 701 703 TO 712 714 TO 723 725 TO 734 736 TO 745 -
747 TO 756 758 762 764 766 768 770 772 774 776 777 779 TO 787 791 TO 799 -
801 803 TO 811 813 815 TO 823 825 827 TO 835 837 839 TO 847 849 851 TO 859 -
861 THICKNESS 0.16
863 TO 871 873 875 TO 883 885 887 889 891 893 895 897 899 901 903 904 906 -
907 TO 913 916 TO 924 926 TO 935 937 TO 946 948 TO 957 959 TO 968 970 TO 979 -
981 TO 990 992 TO 1001 1003 1005 1007 1009 1011 1013 1015 1017 1019 1021 -
1022 1024 TO 1031 1033 TO 1042 1044 TO 1053 1055 TO 1064 1066 TO 1075 1077 -
1078 TO 1086 1088 TO 1097 1099 TO 1108 1110 TO 1119 1121 1123 1125 1127 1129 -
1131 1133 1135 1137 1139 1140 THICKNESS 0.16
DEFINE MATERIAL START
ISOTROPIC CONCRETE
E 2.7386e+007
POISSON 0.17
DENSITY 25
```

```
ALPHA 1e-005
DAMP 0.05
TYPE CONCRETE
STRENGTH FCU 27579
END DEFINE MATERIAL
CONSTANTS
MATERIAL CONCRETE ALL
SUPPORTS
1 TO 17 19 20 22 24 26 28 30 32 34 38 49 60 71 82 93 104 115 134 136 138 140 -
142 144 146 148 150 242 244 246 248 250 252 254 256 258 260 270 280 290 300 -
310 320 330 340 351 362 373 384 395 406 417 428 439 566 576 586 596 606 616 -
626 636 646 657 668 679 690 701 712 723 734 745 755 TO 763 854 TO 862 872 -
882 892 902 912 922 932 942 952 TO 961 PINNED
LOAD 1 LOADTYPE Dead  TITLE DL
SELFWEIGHT Y -1 LIST ALL
ELEMENT LOAD
27 29 31 33 35 37 39 41 43 45 47 TO 55 57 59 TO 67 69 71 TO 79 81 83 TO 91 -
93 95 TO 103 105 107 TO 115 117 119 TO 127 129 131 TO 139 141 143 145 147 -
149 151 153 155 157 159 160 162 164 166 168 170 172 174 176 178 180 TO 189 -
191 TO 200 202 TO 211 213 TO 222 224 TO 233 235 TO 244 246 TO 255 -
257 TO 266 268 270 272 274 276 278 280 282 284 286 287 289 291 293 295 297 -
299 301 303 305 307 TO 316 318 TO 327 329 TO 338 340 TO 349 351 TO 360 362 -
363 TO 371 373 TO 382 384 TO 393 395 397 399 401 403 405 407 409 411 413 414 -
416 TO 424 426 428 TO 436 438 440 TO 448 450 452 TO 460 462 464 TO 472 474 -
476 TO 484 486 488 TO 496 498 500 TO 508 510 512 TO 520 522 524 526 528 530 -
532 534 536 538 540 TO 550 552 TO 561 563 TO 572 574 TO 583 585 TO 594 596 -
597 TO 605 607 TO 616 618 TO 627 629 TO 638 640 642 644 646 648 650 652 654 -
656 658 TO 668 670 TO 679 681 TO 690 692 TO 701 703 TO 712 714 TO 723 725 -
726 TO 734 736 TO 745 747 TO 756 758 760 762 764 766 768 770 772 774 776 777 -
779 TO 787 789 791 TO 799 801 803 TO 811 813 815 TO 823 825 827 TO 835 837 -
839 PR GY -1.25
840 TO 847 849 851 TO 859 861 863 TO 871 873 875 TO 883 885 887 889 891 893 -
895 897 899 901 903 TO 913 915 TO 924 926 TO 935 937 TO 946 948 TO 957 959 -
960 TO 968 970 TO 979 981 TO 990 992 TO 1001 1003 1005 1007 1009 1011 1013 -
1015 1017 1019 1021 TO 1031 1033 TO 1042 1044 TO 1053 1055 TO 1064 -
1066 TO 1075 1077 TO 1086 1088 TO 1097 1099 TO 1108 1110 TO 1119 1121 1123 -
1125 1127 1129 1131 1133 1135 1137 1139 1140 PR GY -1.25
LOAD 2 LOADTYPE Live REDUCIBLE TITLE LL
ELEMENT LOAD
27 29 31 33 35 37 39 41 43 45 47 TO 55 57 59 TO 67 69 71 TO 79 81 83 TO 91 -
93 95 TO 103 105 107 TO 115 117 119 TO 127 129 131 TO 139 141 143 145 147 -
149 151 153 155 157 159 160 162 164 166 168 170 172 174 176 178 180 TO 189 -
191 TO 200 202 TO 211 213 TO 222 224 TO 233 235 TO 244 246 TO 255 -
257 TO 266 268 270 272 274 276 278 280 282 284 286 287 289 291 293 295 297 -
299 301 303 305 307 TO 316 318 TO 327 329 TO 338 340 TO 349 351 TO 360 362 -
363 TO 371 373 TO 382 384 TO 393 395 397 399 401 403 405 407 409 411 413 414 -
416 TO 424 426 428 TO 436 438 440 TO 448 450 452 TO 460 462 464 TO 472 474 -
476 TO 484 486 488 TO 496 498 500 TO 508 510 512 TO 520 522 524 526 528 530 -
532 534 536 538 540 TO 550 552 TO 561 563 TO 572 574 TO 583 585 TO 594 596 -
597 TO 605 607 TO 616 618 TO 627 629 TO 638 640 642 644 646 648 650 652 654 -
656 658 TO 668 670 TO 679 681 TO 690 692 TO 701 703 TO 712 714 TO 723 725 -
726 TO 734 736 TO 745 747 TO 756 758 760 762 764 766 768 770 772 774 776 777 -
779 TO 787 789 791 TO 799 801 803 TO 811 813 815 TO 823 825 827 TO 835 837 -
839 PR GY -1.5
840 TO 847 849 851 TO 859 861 863 TO 871 873 875 TO 883 885 887 889 891 893 -
895 897 899 901 903 TO 913 915 TO 924 926 TO 935 937 TO 946 948 TO 957 959 -
960 TO 968 970 TO 979 981 TO 990 992 TO 1001 1003 1005 1007 1009 1011 1013 -
1015 1017 1019 1021 TO 1031 1033 TO 1042 1044 TO 1053 1055 TO 1064 -
1066 TO 1075 1077 TO 1086 1088 TO 1097 1099 TO 1108 1110 TO 1119 1121 1123 -
1125 1127 1129 1131 1133 1135 1137 1139 1140 PR GY -1.5
```

```
LOAD COMB 3 COMBINATION LOAD
1 1.0 2 1.0
PERFORM ANALYSIS
LOAD LIST 3
FINISH
```



STRESS DIAGRAM – MX



STRESS DIAGRAM – MY

Design of bottom Reinforcement

Provide depth of 160 mm

Program for Finding Wall steel subject to moment & Axial tension

Basic Data

Concrete mix	fck	30	N/mm2
Modular ratio	md	9.3	N/mm2
Permissible stress in concrete : Direct tension	Pst	3	N/mm2
Permissible stress in concrete : bending	Pstb	15	N/mm2
Permissible stress in steel	Pstt	20	N/mm2
Cover	Cv	1300	kg/cm2
wall thickness	wth	45	mm
		0.2	m

Type A : Horivontal wall : Horizontal steel at corner — Depth provide 160 mm

At Corner	Load case	Moment kn-m	Tension /comp kn/m2	Design moment kn-m	Design tension kn	Calculation constant			Depth required mm	Depth provided mm	Effective depth mm	Ecc due to moment mm	Ea mm	Moment kn-m	Steel for moment cm2	Steel for tension cm2	Total steel cm2	Minimum steel cm2
bottom	3	8.0	0.0	8.0	11.0	0.1	240	0.4	151	160	115	727	692	7.6	5.85	0.85	6.70	3.62
bottom	3	8.0	0.0	8.0	11.0	0.1	240	0.4	151	160	115	727	692	7.6	5.85	0.85	6.70	3.62

Check for Shear:

Slab is to be checked at a distance d/2 from column head

Total depth D = 160

Effective depth = 160-45-5 =110 mm

Length at critical section for shear = 1060, Similar area = 0.94 x0.94

Total panel load = 3.8 x 3.7 x 0.65 = 9.386 T

Net load at critical section

= 9.386 – 0.94x0.94 x 0.675

= 8.79 T

Net load at critical section = 8.79 T

Actual shear stress = $8.79 \times 10^4 / (940 \times 4 \times 110)$

$= 0.212\ N/mm^2$

Permissible stress = Ks x Tc

$Tc = 0.16 * fck^{0.5}$

$= 0.16 * 30^{0.5}$

=0.87

Ks = (0.5 + beta) or Ks < 1

Beta = 1

Hence Ks = 1.0

$Tc = 0.87 * 1 = 0.87\ N/mm^2 >> 0.212$ O.K.

COLUMN REACTION

Node	L/C	Force-X kN	Force-Y kN	Force-Z kN	Moment-X kNm	Moment-Y kNm	Moment-Z kNm
6	3	0	119.497	0	0	0	0
7	3	0	119.497	0	0	0	0
10	3	0	119.497	0	0	0	0
11	3	0	119.497	0	0	0	0

Maximum load on column = 11.95 T (Refer computer output)
Add self wt = 1.0 T

Total = 12.95 t

Capacity of column = σ_{cc}*Ac + σ_{sc} *Ast

= 8*70686 + 275*1206

= 89.7 T > > 12.95 T O.K

Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad

"Designs Vetted"

M/s. S.K. ASSOCIATES Hyd-08

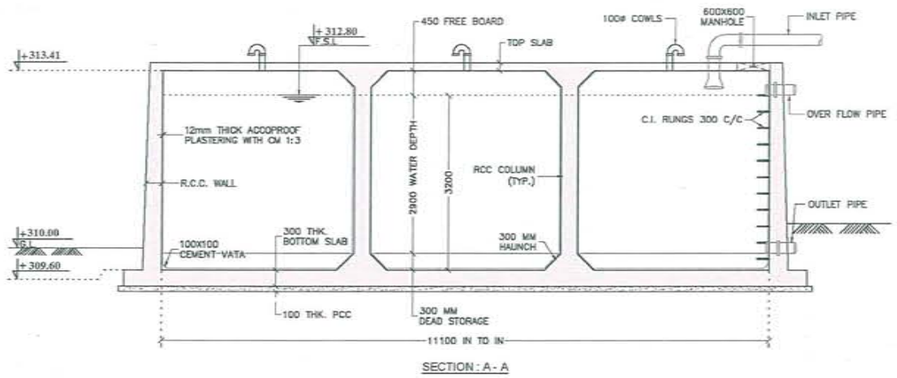
"APPROVED"

TDWSP
RMAL

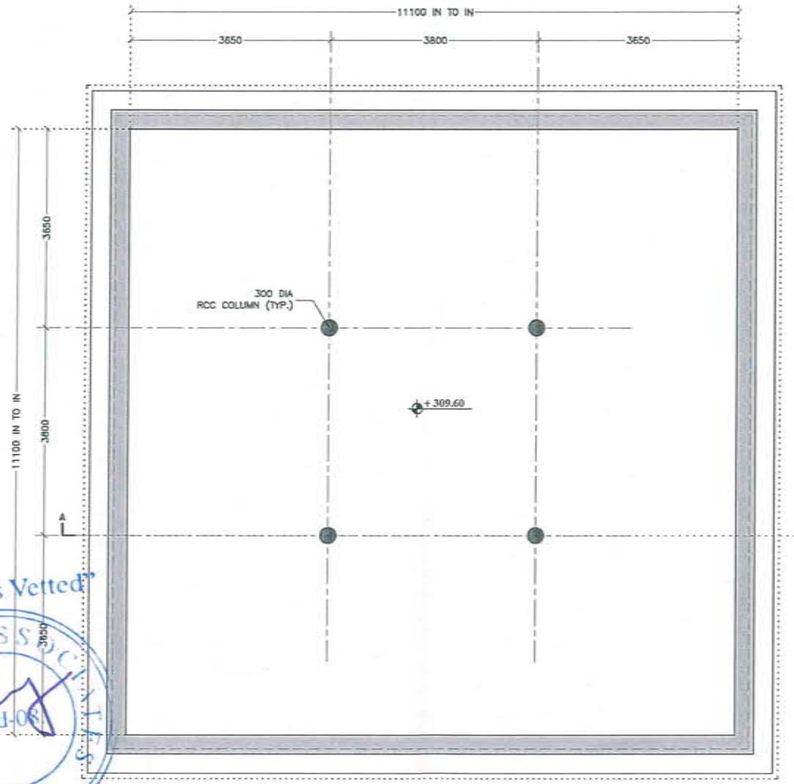
WAPCOS LIMITED Hyderabad

LARSEN & TOUBRO LTD. Construction-TDWSP

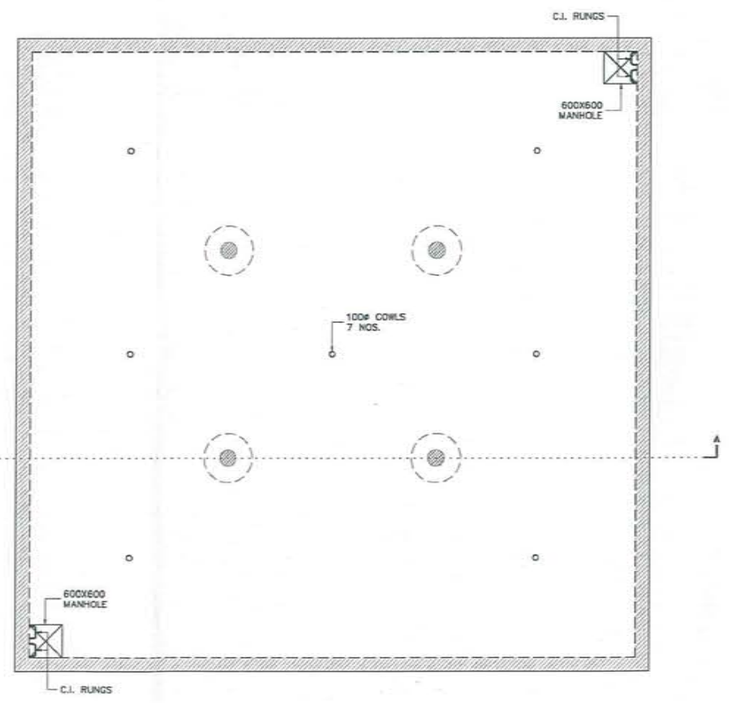
Superintending Engineer
TDWSP (RWS&S) Circle



SECTION : A - A



BOTTOM PLAN



TOP PLAN

SCHEDULE OF PIPE	
INLET PIPE SIZE	–
OUTLET PIPE SIZE	–
OVER FLOW PIPE SIZE	–

NOTES :

<1> ALL DIMENSION ARE IN MM AND LEVELS ARE IN METER.

<2> LOCATION & LEVELS OF INLET,OUTLET & OVERFLOW PIPE SHALL BE VARIFIED WITH ENGINEER INCHARGE BEFORE EXECUTION

"Drawings Vetted"
M/s. S.K. ASSOCIATES Hyd-08
Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad

Superintendent Engineer
TDWSP Nirmal

APPROVED
12/11/16
SE, NIRMAL

WAPCOS LIMITED

LARSEN & TOUBRO LTD Construction-TDWSP ADILABAD

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	03/06/16	–	NSP	RMM	–

REVISIONS

L&T Construction
Water, Smart World & Communication.

CLIENT : RURAL WATER SUPPLY AND SANITATION DEPARTMENT, TELANGANA.

CONSULTANT : -

PROJECT : PROVIDING DRINKING WATER TO HABITATIONS IN KOMARAMBHEEM ASIFABAD SEGMENT IN ADILABAD DISTRICT

SUPPLIER / CONTRACTOR : L&T Construction Water & Effluent Treatment SBG

JOB No. : LE150883

	NAME	SIGN	DATE
DSGN	HMP		03-06-16
DRWN	NSP		03-06-16
CHKD	RMM		03-06-16
APPD	–		03-06-16

TITLE : 350KL CAPACITY OLSR MADHARAMGUTTA AT ASIFABAD AMANDAL (GENERAL ARRANGEMENT DRAWING)

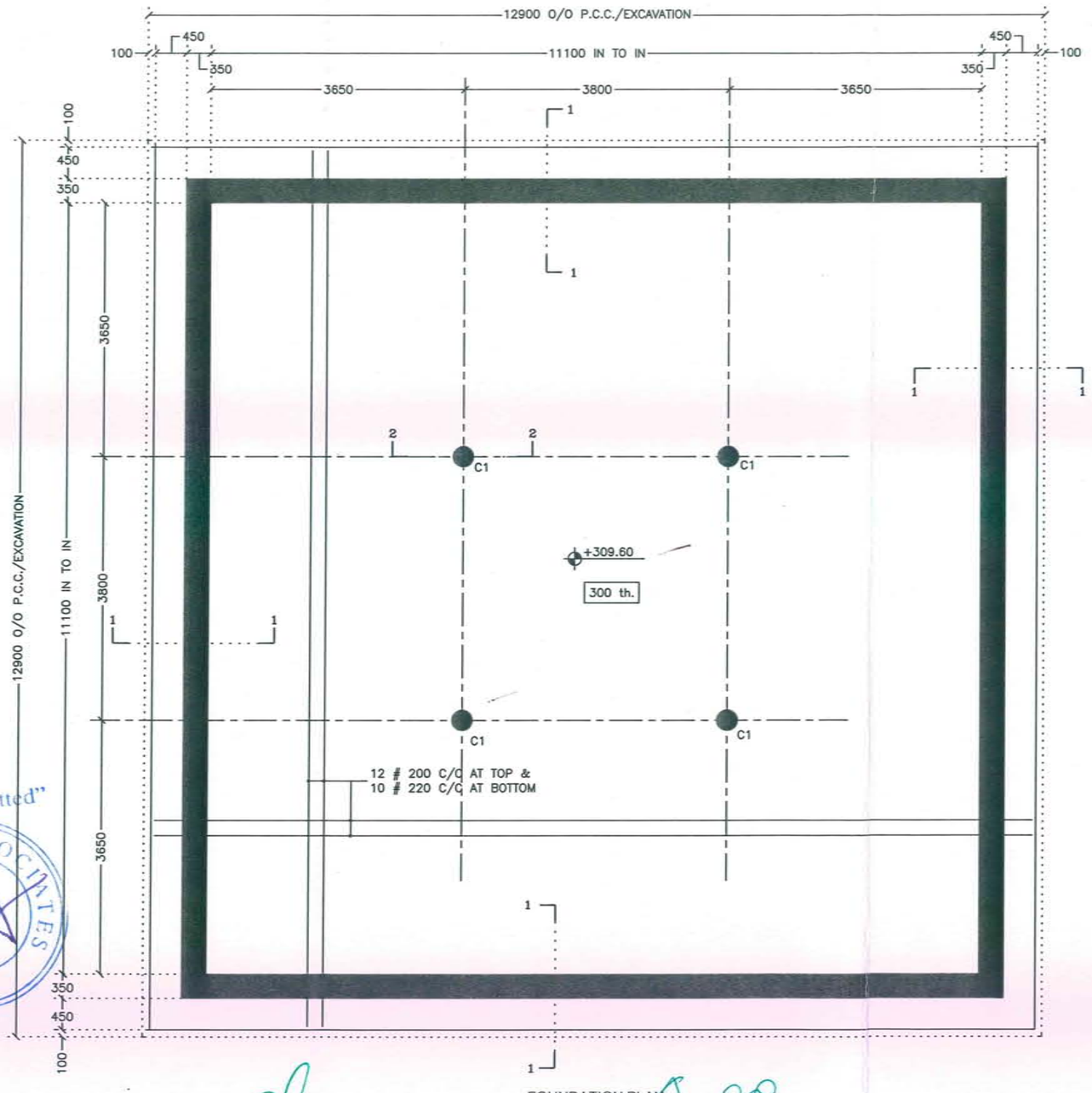
SCALE 1:75

PROJECTION

DRAWING No. LE1508833-C-WS-RW-GA-1522 SIZE A2 REV. A

COMP. DATA : P15-02_106-01-01 SHEET 1 OF 1

RELEASED FOR ☐ PRELIMINARY ☐ TENDER ☐ INFORMATION ☑ APPROVAL ☐ CONSTRUCTION



FOUNDATION PLAN

IMPORTANT NOTES

1 NO GROUND WATER TABLE WAS FOUND UP TO DEPTH OF INVESTIGATION. IF WATER TABLE IS FOUND DURING THE EXECUTION, WORK SHALL BE STOP AND SAME SHALL BE INFORMED TO CONCERNED AUTHORITY AND DESIGNER. PROPER STORM WATER DRAINAGE SYSTEM FOR SURROUNDING AREA SHALL ALSO BE PROVIDED TO AVOID LOCALIZED TEMPORARY WATER TABLE EFFECTS.

2 FOUNDATION SHALL REST ON GOOD SOIL. IT SHOULD NOT REST ON BLACK COTTON SOIL OR SOIL HAVING EXPANSIVE PROPERTY.

NOTES -

1 ALL DIMENSION ARE IN MM AND LEVELS ARE IN METER

2 ALL CONCRETE MIX M:30 WITH MAXIMUM FREE WATER CEMENT RATIO OF 0.45 AND MAXIMUM CEMENT CONTENT OF 400kg/m3 FOR WATER RETAINING STRUCTURE

3 ALL CONCRETE SHALL BE MACHINE MIXED AND MACHINE VIBRATED

4 # – INDICATE TMT BAR FE–500 GRADE 1 CONFIRMING TO I.S 1786–LATEST REVISION

5 CLEAR COVER TO MAIN STEEL 50mm IN BOTTOM SLAB & 45mm TOP SLAB & WALL

6 FOUNDATION SHALL REST ON IN–SITU SOIL AND IT SHALL NOT BE ON FILLING MATERIAL i.e. MADE UP SOIL OR HIGHLY COMPRESSIBLE SOIL

7 BACK FILLING SHALL BE DONE IN WELL COMPACTED AND WELL WATER LAYER NOT EXCEEDING 150mm IN DEPTH

8 SBC CONSIDERED 15.0 t/m2 IN DESIGN.

9 INLET & OVERFLOW PIPE SHALL BE DECIDED AS PER SITE CONDITION

10 LOCATION & LEVELS OF INLET,OUTLET & OVERFLOW PIPE SHALL BE VERIFY WITH ENGINEER INCHARGE BEFORE EXECUTION

11 SEISMIC ZONE CONSIDERED IN DESIGN IS ZONE II

12 READ THIS DRAWING ALONG WITH SHEET NO. 2 OF 3 TO 3 OF 3.

13 STEEL CHAIRS SHALL BE PROVIDE TO KEPT TOP REINFORCEMENT OF SLAB IN PROPER POSITION

APPROVED
SE, NIRMAL

"Drawings Vetted"
M/s. S.K. ASSOCIATES Hyd-08

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	08/06/16	HMP	PMG	RMM	–

REVISIONS

L&T Construction
Water, Smart World & Communication.

CLIENT : RURAL WATER SUPPLY AND SANITATION DEPARTMENT, TELANGANA.

CONSULTANT : -

PROJECT : PROVIDING DRINKING WATER TO HABITATIONS IN KOMARAMBHEEM ASIFABAD SEGMENT IN ADILABAD DISTRICT

SUPPLIER / CONTRACTOR : L&T Construction
Water & Effluent Treatment SBG

JOB No. : LE150883

	NAME	SIGN	DATE
DSGN	HMP		08-06-16
DRWN	PMG		08-06-16
CHKD	RMM		08-06-16
APPD	–		08-06-16

TITLE : 350KL CAPACITY GLBR MANIGUDAGUTTA AT ASIFABAD MANDAL (FOUNDATION PLAN)

SCALE 1:75

PROJECTION

DRAWING No. LE150883-C-WS-RW-RC-1522 SIZE A3 REV. A

COMP. DATA : P16-02_106-02-01 SHEET 1 OF 3

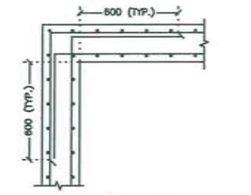
RELEASED FOR ☐ PRELIMINARY ☐ TENDER ☐ INFORMATION ☑ APPROVAL ☐ CONSTRUCTION

Asst. Executive Engineer
TDWSP Asifabad

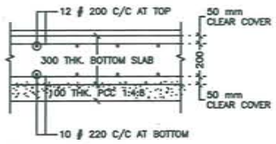
Dy. Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad

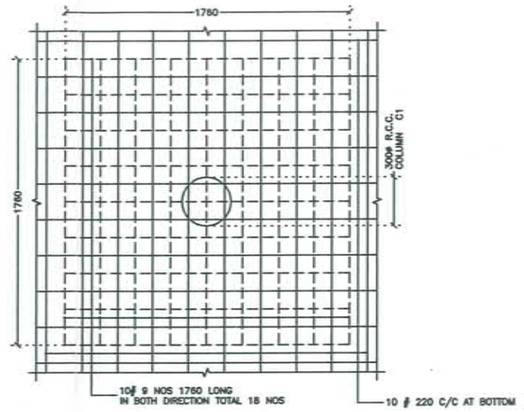
Superintendent Engineer
TDWSP Nirmal



TYPICAL ENLARGE DETAIL FOR RCC WALL
(AT CORNER)



ENLARGE DETAIL "X"



PLAN : 2a - 2a

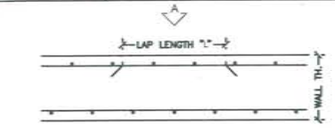
APPROVED
17/11/16
ASE, NIRMAL

Superintendent Engineer
TDWSP Nirmal

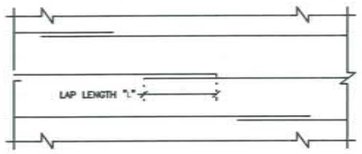
NOTES :
<1> ALL DIMENSION ARE IN MM AND LEVELS ARE IN METER.
<2> FOR ALL OTHER NOTES REFER SHEET NO 1 OF 3.
<3> READ THIS DRAWING ALONG WITH DRG.NO. 1 OF 3 TO 3 OF 3.

LAP LENGTH SCHEDULE

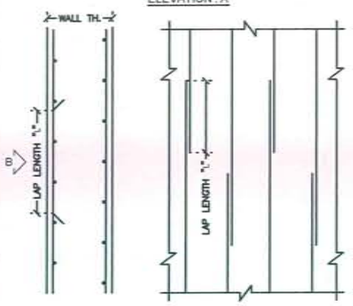
DIA OF BAR	LAP LENGTH "L" IN mm
8	320
10	400
12	480
16	640
20	800
25	1000



WALL PLAN
(LAP DETAILS FOR HORIZONTAL STEEL)
(LAP SHALL BE STAGGERED AS PER ELEVATION – A)

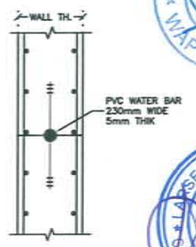


ELEVATION : A

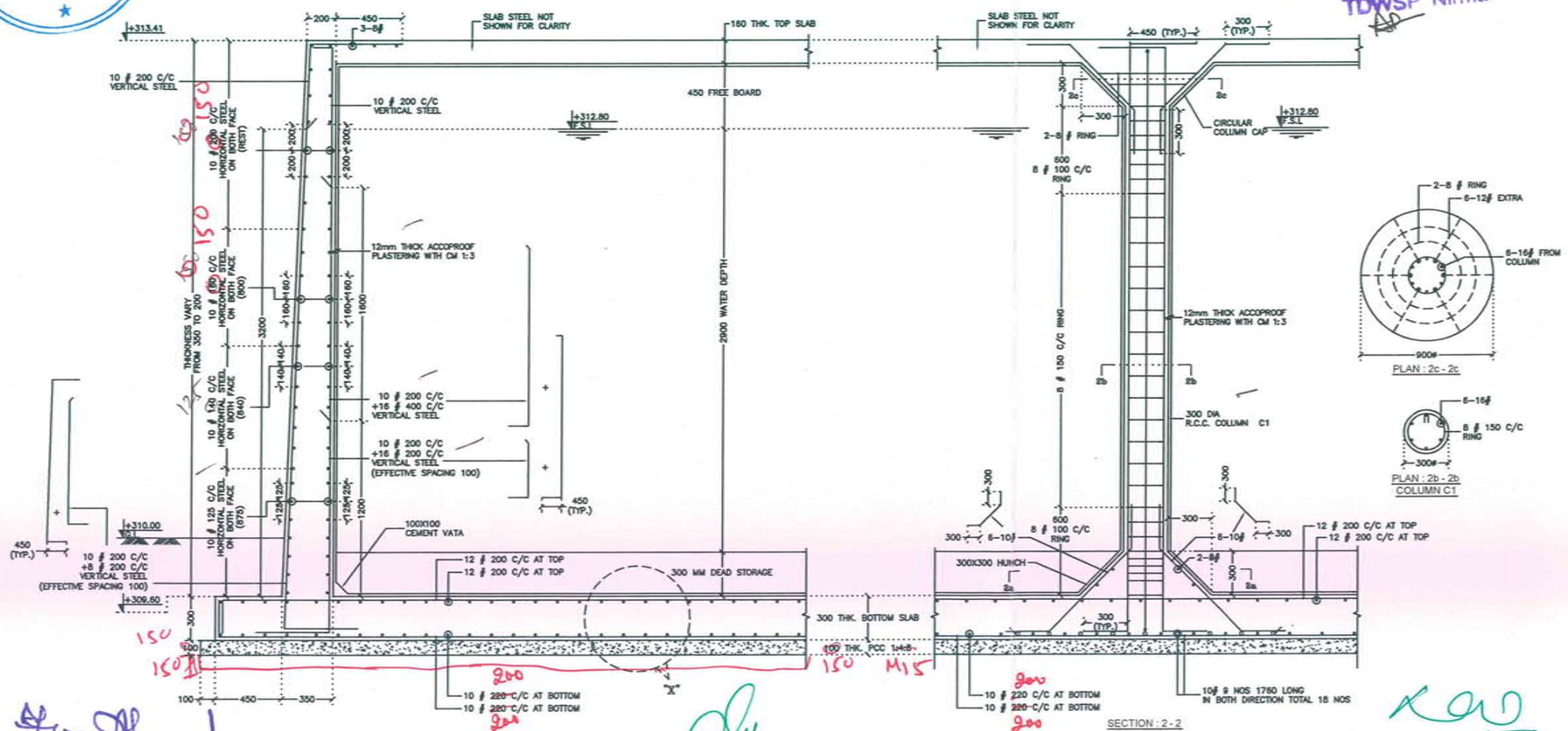


WALL SECTION
LAP DETAILS FOR VERTICAL STEEL
(LAP SHALL BE STAGGERED AS PER ELEVATION – B)

ELEVATION : B



TYPICAL DETAIL OF WATER BAR



PLAN : 2c - 2c

PLAN : 2b - 2b
COLUMN C1

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	08/06/16	HMP	PMG	RMM	–

REVISIONS

L&T Construction
Water, Smart World & Communication.

CLIENT : RURAL WATER SUPPLY AND SANITATION DEPARTMENT, TELANGANA.
CONSULTANT : -
PROJECT : PROVIDING DRINKING WATER TO HABITATIONS IN KOMARAMBHEEM ASIFABAD SEGMENT IN ADILABAD DISTRICT
SUPPLIER / CONTRACTOR : L&T Construction, Water & Effluent Treatment SBG
JOB No. : LE150883

	NAME	SIGN	DATE
DSGN	HMP		08-06-16
DRWN	PMG		08-06-16
CHKD	RMM		08-06-16
APPD	–		08-06-16

TITLE : 350KL CAPACITY GLBR MANIGUDAGUTTA AT ASIFABAD MANDAL (SECTION DETAILS)
SCALE 1:25
PROJECTION
DRAWING No. LE150883-C-WS-RW-RC-1522
COMP. DATA : P16-02_106-02-02
SHEET 2 OF 3
SIZE A2
REV. A
RELEASED FOR ☐ PRELIMINARY ☐ TENDER ☐ INFORMATION ☑ APPROVAL ☐ CONSTRUCTION

"Drawings Vetted"
M/s. S.K. ASSOCIATES
Hyd-08.

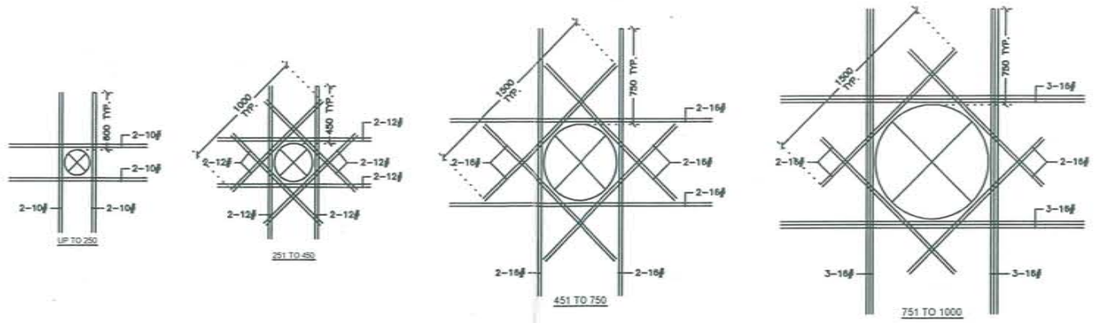
Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad

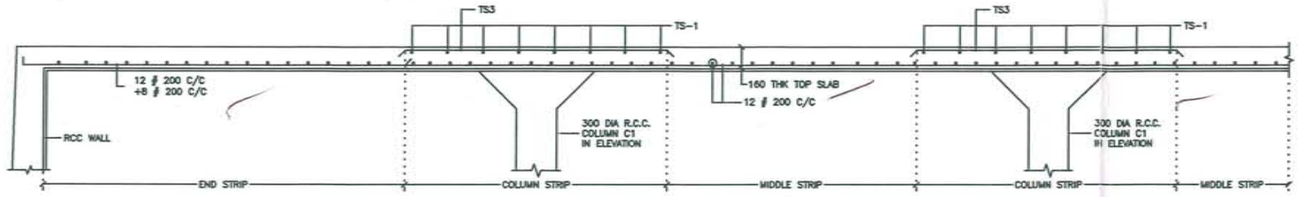
Executive Engineer
TDWSP Asifabad

वाप्कोस लिमिटेड
हैदराबाद
WAPCOS LIMITED

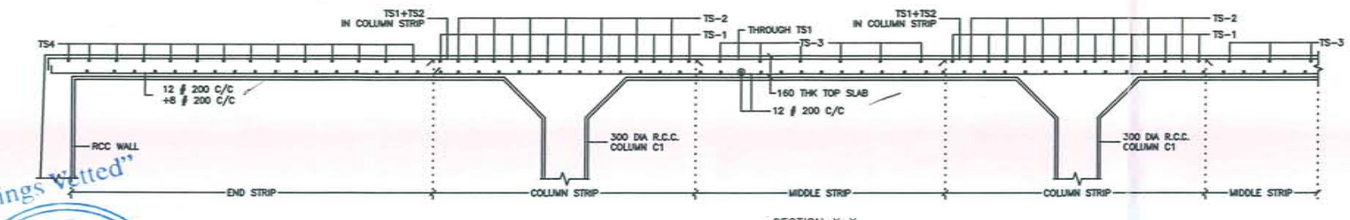
LARSEN & TOUBRO LTD
Construction



TYPICAL DETAIL FOR EXTRA STEEL BAR AT CUT-OUT

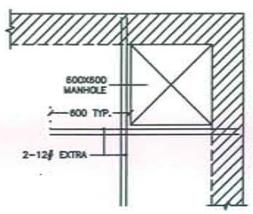


SECTION : Y - Y

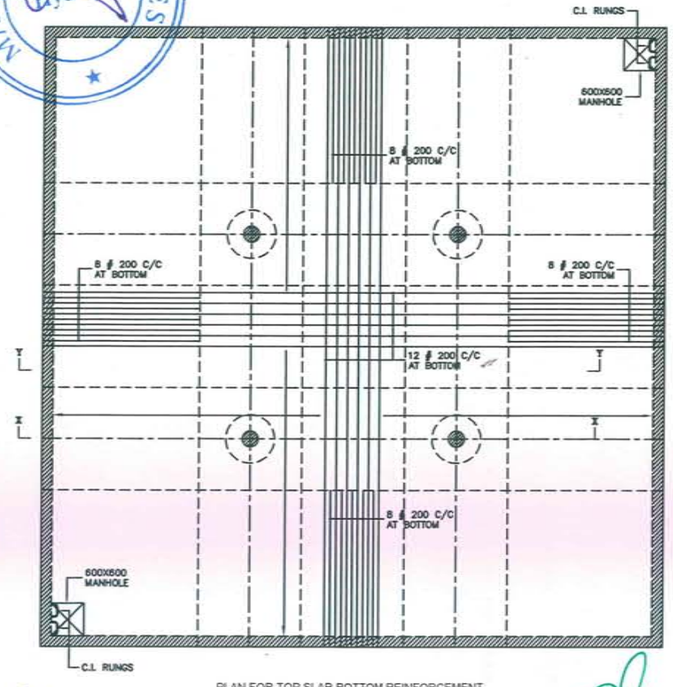


SECTION : X - X

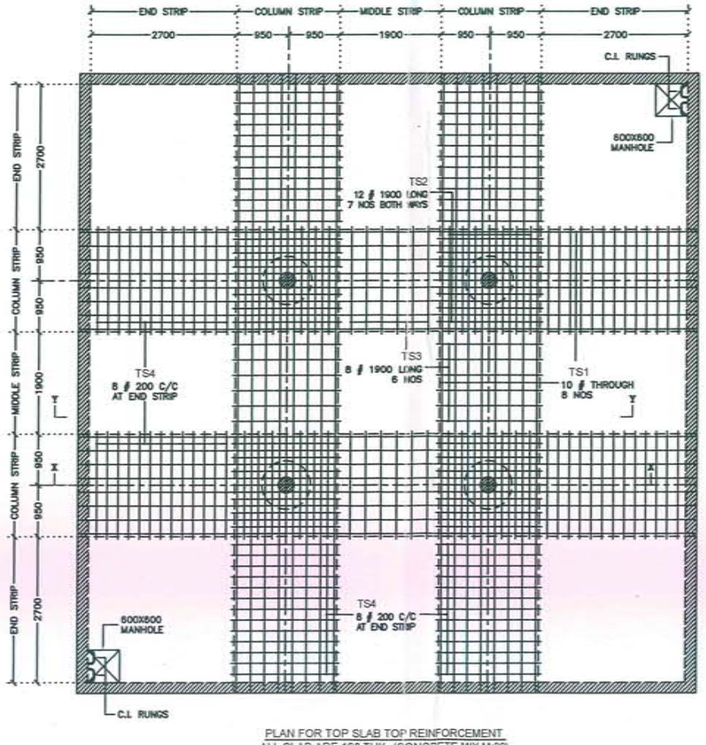
STEEL CHAIRS SHALL BE PROVIDE TO KEPT TOP REINFORCEMENT OF SLAB IN PROPER POSITION



TYPICAL DETAIL FOR MANHOLE



PLAN FOR TOP SLAB BOTTOM REINFORCEMENT
ALL SLAB ARE 160 THK. (CONCRETE MIX M:30)



PLAN FOR TOP SLAB TOP REINFORCEMENT
ALL SLAB ARE 160 THK. (CONCRETE MIX M:30)

NOTES :
<1> ALL DIMENSION ARE IN MM AND LEVELS ARE IN METER.
<2> FOR ALL OTHER NOTES REFER SHEET NO 1 OF 3.
<3> READ THIS DRAWING ALONG WITH DRG.NO. 1 OF 3 TO 2 OF 3.

SLAB SCHEDULE

TYPE	DESCRIPTION
TS - 1	10 ϕ THROUGH 8 NOS
TS - 2	12 ϕ 1900 LONG 7 NOS BOTH WAYS (TOTAL 14 NOS)
TS - 3	8 ϕ 1900 LONG 6 NOS
TS - 4	8 ϕ 200 C/C AT END STRIP

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	08/06/16	–	PMG	RMM	–

REVISIONS

L&T Construction
Water, Smart World & Communication.

CLIENT : RURAL WATER SUPPLY AND SANITATION DEPARTMENT, TELANGANA
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CHKD	RMM		08-06-16
APPD	–		08-06-16

TITLE : 350KL CAPACITY GLBR AT KOWTHALA GUTTA VILLAGE (STRUCTURAL LAYOUT & DETAILS AT BOTTOM REINFORCEMENT & TOP REINFORCEMENT OF TOP SLAB)

SCALE 1:75,30

PROJECTION

DRAWING No. LE150883-C-WS-RW-RC-1584
COMP. DATA : P18-02_106-02-03
SHEET 3 OF 3

SIZE A2 | REV. A

RELEASED FOR ☐ PRELIMINARY ☐ TENDER ☐ INFORMATION ☑ APPROVAL ☐ CONSTRUCTION

"Drawings Vetted"
M/s. S.K. ASSOCIATES
Hyd-08

APPROVED
SE, NIRMAL
17/11/16

WAPCOS LIMITED

LARSEN & TOUBRO LTD

Superintendent Engineer
TDWSP Nirmal

Executive Engineer
TDWSP Asifabad

Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad