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 - 250KL CAPACITY PANGIDIMADHARAM AT TRIYANI MANDAL

DOC./DRG. No.	SIZE	REV.
LE150883-C-WS-RW-DC-1491	A4	A

RELEASED FOR

☐ PRELIMINARY	☐ INFORMATION	☑ APPROVAL	☐ CONSTRUCTION

(20)

DESIGN CALCULATION

PROJECT TITLE

PROVIDING DRINKING WATER TO HABITATIONS
IN KOMARAMBHEEM ASIFABAD SEGMENT
IN ADILABAD DISTRICT (30 MLD WTP)

UNIT

250KL CAPACITY GLBR
AT CHINTAL MADHARAM VILLAGE

PRINCIPAL CLIENT

RURAL WATER SUPPLY
AND
SANITATION DEPARTMENT,
TELANGANA

CONTRACTOR

L&T CONSTRUCTION
WATER & EFFLUENT TREATMENT SBG

DESIGN OF GLBR

BASIC DATA

Diameter = 11.2 m
Water depth = 2.71 m
Free board = 0.3 m

CAPACITY CHECK

Required capacity = 250 KL

Capacity of section

Clear diameter = 11.2 – 2 x plaster thickness
= 11.2 – 2 x 0.012
= 11.176 m

Water depth = 2.71 m

Volume = (pi * d x d ./ 4) x H
= (Pi* 11.176 x 11.176 / 4) * 2.71 = 265.84 m^3 (including dead storage)

Volume-Dead storage = 265.84 – 14.71 = 251.13 m^3

Volume of single column = pi * d x d. / 4 x H
= Pi x 0.30 x 0.30 / 4 x 2.71
= 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 = 0.19 m^3 x 4 nos = 0.72 m^3

Total deduction = 0.4 + 0.72 = 1.12

Net volume = 250.1 m^3 > 250 m^3 hence O.K.

ELEMENT:
Inside tank: (1) Cylindrical wall
(2) Top Slab

SBC – 15 t/m^2

GROUND WATER TABLE: NO GWT

Design of Sump

Design Approach

Element

- Cylindrical wall
- Flat slab
- Column

CYLINDRICAL WALL

Cylindrical 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 = 2.71 m
   b. Free board = 0.3 m

   Total height = 3.01 m

   Water pressure is as below

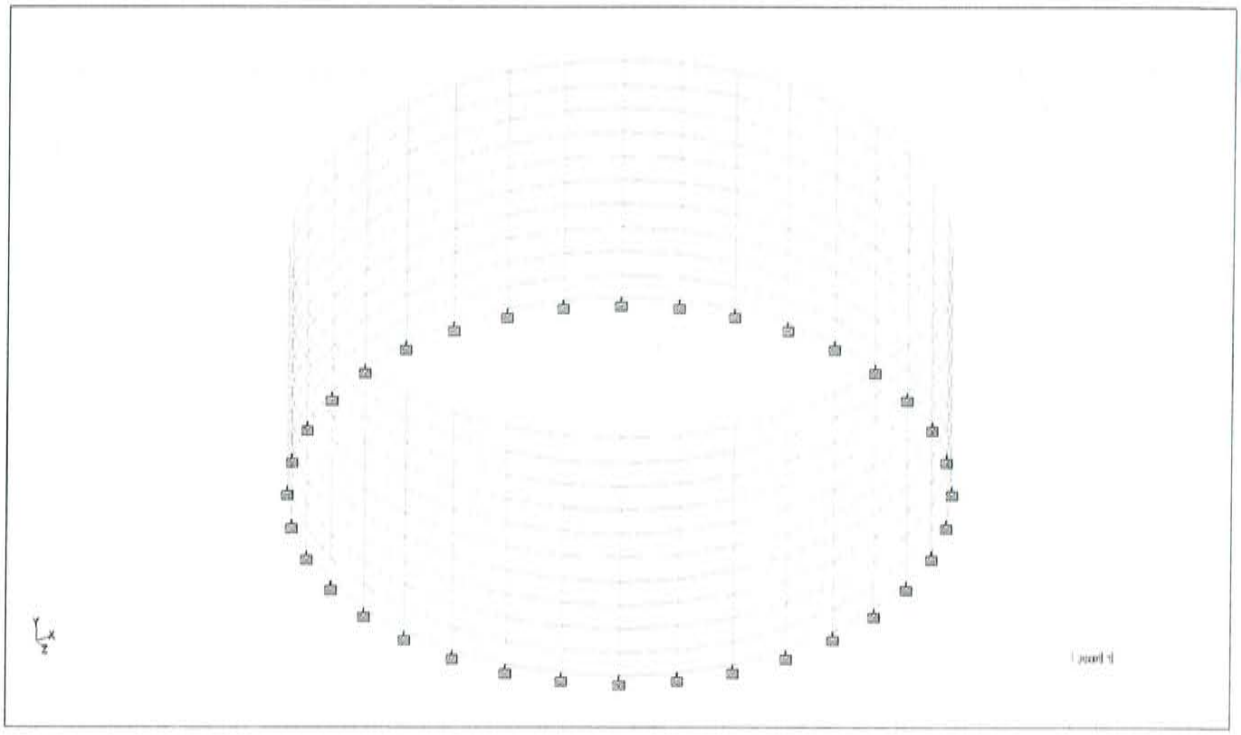
2. Soil load :

   a. Depth below ground level = 0.5 m say 0.6 m to match staad geometry
   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) + Surcharge load
= 18 * 0.6 * (1 – sin 30)/ (1+ sin 30) + 10 x 0.333
= 6.93 kN/m^2

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

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



STAAD MODEL

```
STAAD SPACE
START JOB INFORMATION
JOB NAME 2.50 lac GSR
JOB PART 11.2 m dia WATER HEIGHT 2.71 + 0.3 fb
END JOB INFORMATION
INPUT WIDTH 79
UNIT METER KN
JOINT COORDIANTE CYL REV
1 5.6 0 0 36 5.6 0 350
REPEAT 1 0 0.30 0
REPEAT 7 0 0.30 0
REPEAT 1 0 0.31 0
REPEAT 1 0 0.30 0
ELEMENT INCIDENCES
1 1 2 38 37 TO 35 1 1
36 36 1 37 72
REPEAT ALL 9 36 36
DEFINE MATERIAL START
ISOTROPIC MATERIAL1
E 2.73e+007
POISSON 0.17
DENSITY 25
ALPHA 1.2e-011
DAMP 0.05
END DEFINE MATERIAL
ELEMENT PROPERTY
1   TO 36  THICKNESS 0.2
37  TO 72  THICKNESS 0.2
73  TO 108 THICKNESS 0.2
109 TO 144 THICKNESS 0.2
145 TO 180 THICKNESS 0.2
181 TO 216 THICKNESS 0.2
217 TO 252 THICKNESS 0.2
253 TO 288 THICKNESS 0.2
289 TO 324 THICKNESS 0.2
325 TO 360 THICKNESS 0.2
CONSTANTS
MATERIAL MATERIAL1 ALL
SUPPORTS
1 TO 36 FIXED
LOAD 1 WATER
ELEMENT LOAD
1   TO 36  TRAP Y 30.1 27.1
37  TO 72  TRAP Y 27.1 24.1
73  TO 108 TRAP Y 24.1 21.1
109 TO 144 TRAP Y 21.1 18.1
145 TO 180 TRAP Y 18.1 15.1
181 TO 216 TRAP Y 15.1 12.1
217 TO 252 TRAP Y 12.1 9.10
253 TO 288 TRAP Y 9.10 6.10
289 TO 324 TRAP Y 6.10 3.00
325 TO 360 TRAP Y 3.00 0.00
LOAD 2 LOADTYPE None  TITLE SEIMIC - 9.04% , CONSIDER 12 %
ELEMENT LOAD
1   TO 36  TRAP Y 3.61 3.25
37  TO 72  TRAP Y 3.25 2.89
73  TO 108 TRAP Y 2.89 2.53
109 TO 144 TRAP Y 2.53 2.17
145 TO 180 TRAP Y 2.17 1.81
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181 TO 216 TRAP Y 1.81 1.45
217 TO 252 TRAP Y 1.45 1.09
253 TO 288 TRAP Y 1.09 0.73
289 TO 324 TRAP Y 0.73 0.36
325 TO 360 TRAP Y 0.36 0.00
LOAD 3 SOIL - 0.5M DEPTH
ELEMENT LOAD
1   TO 36  TRAP Y -6.93 -5.13
37  TO 72  TRAP Y -5.13 -3.33
LOAD COMB 4 COMBINE LOAD : WATER + SEISMIC
1 1.0 2 1.0
PERFORM ANALYSIS
PRINT ELEMENT FORCE LIST 1 37 73 109 145 181 217 253 289 325
FINISH
```

EXCEL SHEET FOR WALL DESIGN WATER PRESSURE

Circular wall			
Load case : Water + Seismic			
BASIC DATA			
Diameter - in to in	Diain	**11.2**	m
Maximum wall thickness	wthk	**0.2**	m
Clear cover to main steel	Cv	**45**	mm
Maximum dia of bar	mdbar	**10**	mm
Concrete grade	Fck	**30**	N/mm2
Allowable crack width	Acw	**0.2**	mm
GENERAL DATA			
As per IS 3370-2009	Dmin	15	m
steel grade	Fy	**500**	N/mm2
Modulus of Elasiticity of Concrete	Ec	27386	N/mm2
Modulus of Elasiticity of reinforcement	Es	200000	N/mm2
Maximum out to out Dia	Maxdia	11.60	m
Permissible stress in direct tension	fyuc	130	N/mm2
Permissible stress in tension due to bending	fyucb	130	N/mm2
Minimum % steel as per IS 3370-2009	ptmin	**0.24**	%
per. stress in con. for direct comp	fckc	8.0	N/mm2
per. stress in con in com.due to bending	fckbc	10.0	N/mm2
per. stress in con. for direct tension	fckt	1.5	N/mm2
per. stress in con. In ten due to bending	fcktb	2.0	N/mm2
Modular ratio	m	9.33	
	k	0.418	
	j	0.861	
As maximum diameter is less than 15 m , minimum steel = 0.24 %			

Paste data from STADD

Plate	L/C	SQX kN/m2	SQY kN/m2	MX kNm/m	MY kNm/m	MXY kNm/m	SX kN/m2	SY kN/m2	SXY kN/m2
1	4	0	78.4	-0.5	-2.9	0	33	0	0
37	4	0	37.5	0.0	0.0	0	159	0	0
73	4	0	10.8	0.2	1.1	0	288	0	0
109	4	0	-2.8	0.2	1.3	0	366	0	0
145	4	0	-7.7	0.2	1.0	0	384	0	0
181	4	0	-7.7	0.1	0.7	0	354	0	0
217	4	0	-5.8	0.1	0.3	0	293	0	0
253	4	0	-3.5	0.0	0.1	0	217	0	0
289	4	0	-1.7	0.0	0.0	0	135	0	0
325	4	0	-0.4	0.0	0.0	0	50	0	0

OUTPUT

Calculation for hoop steel

Sr.no	Plate	Sx - Str.	Thk	Axial	Steel	Steel	Dia.	spc	Astp

	no	Stress		Force	reqd Design	reqd Minimum	mm	mm	mm2
		Kn/m2		kn	mm2	mm2	Provided steel mm2		
1	1	33	**200**	6.7	52	480	**10**	**200**	785
2	37	159	**200**	31.7	244	480	**10**	**200**	785
3	73	288	**200**	57.6	443	480	**10**	**200**	785
4	109	366	**200**	73.2	563	480	**10**	**175**	898
5	145	384	**200**	76.8	591	480	**10**	**175**	898
6	181	354	**200**	70.7	544	480	**10**	**175**	898
7	217	293	**200**	58.6	451	480	**10**	**200**	785
8	253	217	**200**	43.4	334	480	**10**	**200**	785
9	289	135	**200**	27.0	207	480	**10**	**200**	785
10	325	50	**200**	10.1	77	480	**10**	**200**	785

Check for hoop steel and stress

	steel			Concrete stress		
	Steel reqd mm2	Steel Prov mm2	check	perm. stress N/mm2	Actual stress N/mm2	check
1	480	785	O.K	1.5	0.03	O.K
2	480	785	O.K	1.5	0.15	O.K
3	480	785	O.K	1.5	0.28	O.K
4	563	898	O.K	1.5	0.35	O.K
5	591	898	O.K	1.5	0.37	O.K
6	544	898	O.K	1.5	0.34	O.K
7	480	785	O.K	1.5	0.28	O.K
8	480	785	O.K	1.5	0.21	O.K
9	480	785	O.K	1.5	0.13	O.K
10	480	785	O.K	1.5	0.05	O.K

Calculation Vertical steel

Sr.no	Plate no	My Stress	Thk	Effective Depth	Steel reqd	Steel			
						Water face		Other face	
						Design	Min	Design	Min
		Kn-m	mm	mm	mm2	mm2	mm2	mm2	mm2
1	1	2.9	200	150	-172	172	240	0	240
2	37	0.0	200	150	-3	3	240	0	240
3	73	1.1	200	150	68	0	240	68	240
4	109	1.3	200	150	79	0	240	79	240
5	145	1.0	200	150	62	0	240	62	240
6	181	0.7	200	150	39	0	240	39	240
7	217	0.3	200	150	20	0	240	20	240
8	253	0.1	200	150	7	0	240	7	240
9	289	0.0	200	150	1	0	240	1	240
10	325	0.0	200	150	0	0	240	0	240

Check for Vertical steel

Sr.no	Plate no	Steel provd.				Steel required	Steel Provided	check
		Water side						
		Dia	mm	Dia	mm	mm2	mm2	

1	1	**10**	**200**	**10**	**200**	240	785	O.K
2	37	**10**	**200**	**10**	**200**	240	785	O.K
3	73	**10**	**200**			240	393	O.K
4	109	**10**	**200**			240	393	O.K
5	145	**10**	**200**			240	393	O.K
6	181	**10**	**200**			240	393	O.K
7	217	**10**	**200**			240	393	O.K
8	253	**10**	**200**			240	393	O.K
9	289	**10**	**200**			240	393	O.K
10	325	**10**	**200**			240	393	O.K

Check for Vertical steel

Sr.no	Plate no	Steel provd.				Steel required	Steel Provided	check
		Outer side						
		Dia	mm	Dia	mm	mm2	mm2	
1	1	**10**	**200**			240	393	O.K
2	37	**10**	**200**			240	393	O.K
3	73	**10**	**200**			240	393	O.K
4	109	**10**	**200**			240	393	O.K
5	145	**10**	**200**			240	393	O.K
6	181	**10**	**200**			240	393	O.K
7	217	**10**	**200**			240	393	O.K
8	253	**10**	**200**			240	393	O.K
9	289	**10**	**200**			240	393	O.K
10	325	**10**	**200**			240	393	O.K

Calculation for Coefficient of Uncrack condition					
RCC wall					
	notation		Unit		
DATA					Steel provided
Bending moment	Bm	**7.55**	kN-m	dia	spc
Reinforcement	Fy	**500**	N/mm2		
Concrete grade	fck	**30**	N/mm2	**10**	**200**
Area of steel provised	Ast	785	mm2	10	200
Depth provided	Dp	**200**			
Width	B	1000			
Clear Cover	Cv	**45**	mm		
maximum bar dia	dbar	**10**			
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	0.0039			=Ast/Dp/B
Effective depth	Def	150	mm		
Constants	ka	0.75			=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	0.5076			=kb/kc
Depth of neutral axis	nd	101.5230			=n*Dp
Check for Mu/bd2					
	kd	0.0018			=(ka-n)^2*(md-1)*PT
	ke	0.0834			=1/3-n*(1-n)
	kf	0.0852			=kd+ke
m/bd2	Unc	3.4622			=Pstb/(1-n)*kf
Depth reuired	Dr	147.7	mm		=(Bm*100/Unc)^0.5*10
Calculation od Steel	Ast				
Effective Depth	De	150	mm		=Dp-Cv-dbar/2
Area of steel required		430	mm2		=Bm*1000000/(0.9*Fyub*De)
Check		OK			

WALL FOOTING

WALL FOOTING DESIGN								
PROJECT : P16_02_Adilabad W.S.S				JOB : P16_02				
UNIT : 250KL GLBR								
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	**0.50**	m					
Water depth	wtd	**2.71**	m					
free board	fb	**0.30**	m					
Wall above Ground		**2.51**	m					
Clear cover	Cv	**50**	mm					
Maximum size of bar dia	Db	**10**	mm					
Water depth with free board	Wd	**3.01**	m					
minimum % steel	pt	**0.24**	%					
Moment								
Due to Water	Mtw	**7.55**	kN-m	(From Analysis Result)				
Due to soil if any	Mts	**0.50**	kN-m					
Wt from top dome/slab/column/wall	Slabwt	**15.00**	kN-m					
Wall geometry (Figure 1)								
Straight portion	lb	**3.010**	m					
Tapered portion	lc	**0.000**	m					
	tb	**0.200**	m					
	td	**0.200**	m					
Footing geometry								
Toe projection	ht	**0.450**	m					
Heel straight projection	hh1	**0.600**	m					
Heel tapered projection	hh2	**0.000**	m					

Heel portion for soil stability	hh3	**0.450**	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	3.010	m
Total length of wall footing	wf	1.250	m

CASE 1 : TANK FULL CONDITION WITH NO SOIL OUTSIDE

Total load & Moment calculation

Taking moment @ toe

Component		Wt	Lever Arm	Moment
		kN	m	kN-m
		W	Dist	W * dist
Wall Straight portion	W1	15.05	0.55	8.28
Wall Tapered portion	W2	0.00	0.45	0.00
Walkway/slab	P	15.00	0.55	8.25
Footing				
Footing : toe	W3	3.38	0.23	0.76
Footing center	W4	1.50	0.55	0.83
Footing : heel (straight)	W5	4.50	0.95	4.28
Footing : heel (tapered)	W6	0.00	1.25	0.00
Water	W7	18.06	0.95	17.16
Total downward load		57.49		39.54

Total restoring moment @ toe	TRM	39.5	kN-m
Total over turning moment		7.6	kN-m
F.S.against over turning		5.2	
Check for over turning	Hense o.k		
Total moment due to vertical load	Tmv	39.5	kN-m
Total moment due to horizontal load	Tmh	7.6	kN-m
Total vertical load	TPv	57.5	kn
Net Moment	Tmn	32.0	kN-m
M/p	E	0.56	m
Ecc	Ecc	0.068	m
b/6	Aec	0.21	m
Net moment From ECC	Mdg	3.934	

Property of footing			
Width of footing		1.00	m
Depth of footing		1.25	m
Footing Area	Fare	1.25	m2
Modulus of section	Fz	0.26	m3
Pressure distribution			
Pressure due to direct load =P/A	prea	45.99	kN/m2
Pressure due to moment =M/Z	Preb	15.11	kN/m2
Pressure			
Maximum pressure - P/A + M/Z	Pmax	61.10	kN/m2
Minimum pressure - P/A + M/Z	Pmin	30.88	kN/m2
Check for SBC			
Maximum pressure < SBC		OK	
Minimum presure > 0		OK	
Pressure difference		30.22	
Pressure difference / m		24.17	
Pressure at outer Wall face - A	preow	50.22	kN/m2
Pressure at inner Wall face B	preiw	45.38	kN/m2
Pressure at point C	preiw1	30.88	kN/m2

Design of Toe - At Point A			
Moment at face of outer wall			
Due to rectangle diagram	Mreco	5.08	kN-m
	Mtrio	0.73	kN-m
Total moment due to upward pressure		5.82	kN-m
Net moment at A from Toe side	Toem	5.82	kN-m
Thickness at toe		300	mm
Effective depth	Deftoe	245	mm
Ast required =		212	mm2
Check for minimum steel			
top		360	mm2
bottom		240	mm2
Design Steel			

Main steel - Top		360	mm2
Main steel - bottom		240	mm2
Distribution steel - top		360	mm2
Distribution steel - bottom		240	mm2
Design of heel : At point B & C			
Design at point B			
Due to rectangle diagram (upward)	Mreci	5.6	kN-m
	Mtrii	0.9	kN-m
Total Upward moment		6.4	kN-m
Due to water (down ward)		5.4	kN-m
Net downward moment at B from heel side	heelm	1.0	kN-m
Thickness Provided		300	mm
	defheel	245	mm
Ast required =		37	mm2
Check for minimum steel - straight portion			
top		360	mm2
bottom		240	mm2
Design Steel			
Main steel - Top		360	mm2
Main steel - bottom		240	mm2
Distribution steel - top		360	mm2
Distribution steel -bottom		240	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
	defheel	245	mm
Ast required =		0	mm2
Check for minimum steel - tapered portion			
Avrage thickness	thav	0.30	m
top		360	mm2
bottom		240	mm2
Design Steel			
Main steel - Top		360	mm2
Main steel - bottom		240	mm2
Distribution steel - top		360	mm2
Distribution steel -bottom		240	mm2

SUMMARY									
Pressure Check									
1>	P/A + M/Z	61.1	<	150	OK				
2>	P/A - M/Z	30.9	>	0	OK				
Reinforcement									
	AstR							Astp	
Toe		dia	spc	+	dia	spc			
Top - main	360	10	200		0	0		393	OK
Bottom main	240	10	200		0	0		393	OK
Top - Dist	360	10	200		0	0		393	OK
Bottom - Dist	240	10	200		0	0		393	OK
Heel Straight portion									
Top - main	360	10	200		0	0		393	OK
Bottom main	240	10	200		0	0		393	OK
Top - Dist	360	10	200		0	0		393	OK
Bottom - Dist	240	10	200		0	0		393	OK
Heel tapered portion									
Top - main	360	10	200		0	0		393	OK
Bottom main	240	10	200		0	0		393	OK
Top - Dist	360	10	200		0	0		393	OK
Bottom - Dist	240	10	200		0	0		393	OK

LARSEN & TOUBRO LTD Komaram Construction-TDWSP-ADILABAD

"APPROVED
17/11/16
SE, TDWSP
NIRMAL

Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad

"Designs Vetted"

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

WAPCOS LIMITED

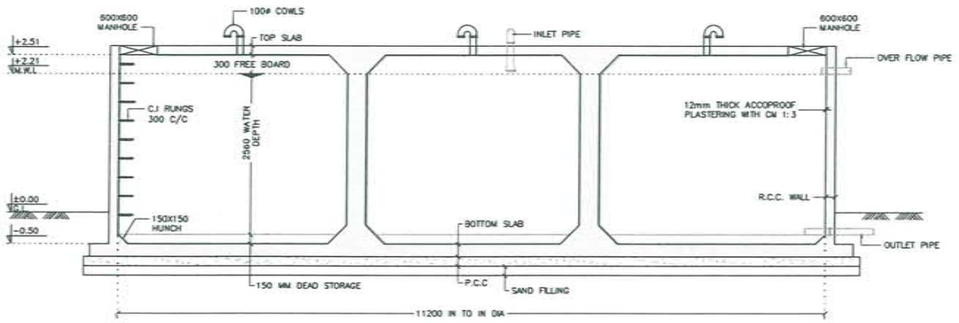
Superintendent Engineer
TDWSP Nirmal

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



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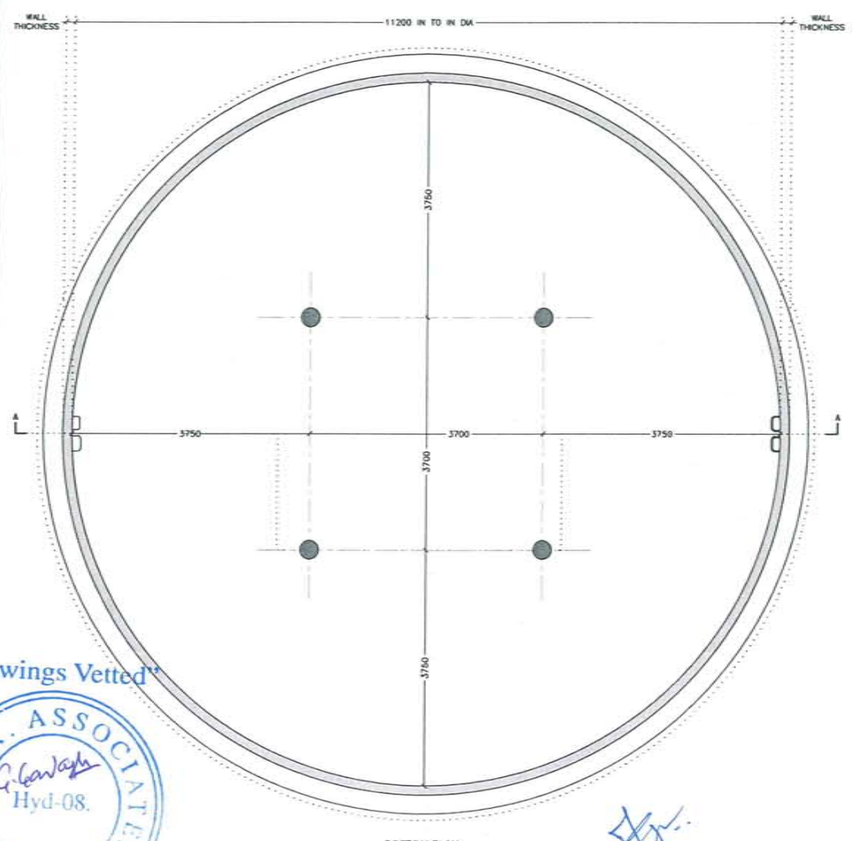
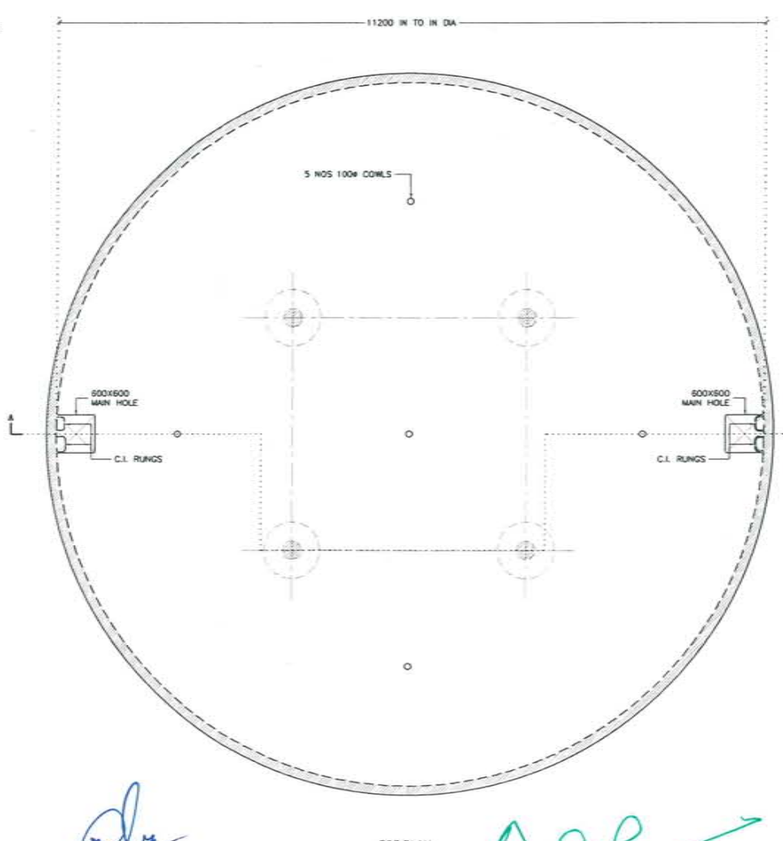


BOTTOM PLAN



TOP PLAN

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12/7/2016
SE, TDWSP
NIRMAL

WAPCOS LIMITED
Hyderabad

Superintendent Engineer
TDWSP Nirmal

L&T Construction
Komaram Bheem - Asifabad Segment
Construction-TDWSP-ADILABAD

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

Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	04/07/16	-	DAP	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	L2150883		
	NAME	SIGN	DATE
DSGN	HMP		04/07/16
DRWN	DAP		04/07/16
CHKD	RMM		04/07/16
APPD	-		04/07/16

TITLE: 250KL CAPACITY GLBR AT CHINTAL MADHARAM (GENERAL ARRANGEMENT DRAWING)

SCALE: 1: 60

PROJECTION

DRAWING No. LE150883-C-WS-RW-GA-1575 | SIZE A2 | REV. A

COMP. DAIA : P16-02_32-01-01 | SHEET 1 OF 1

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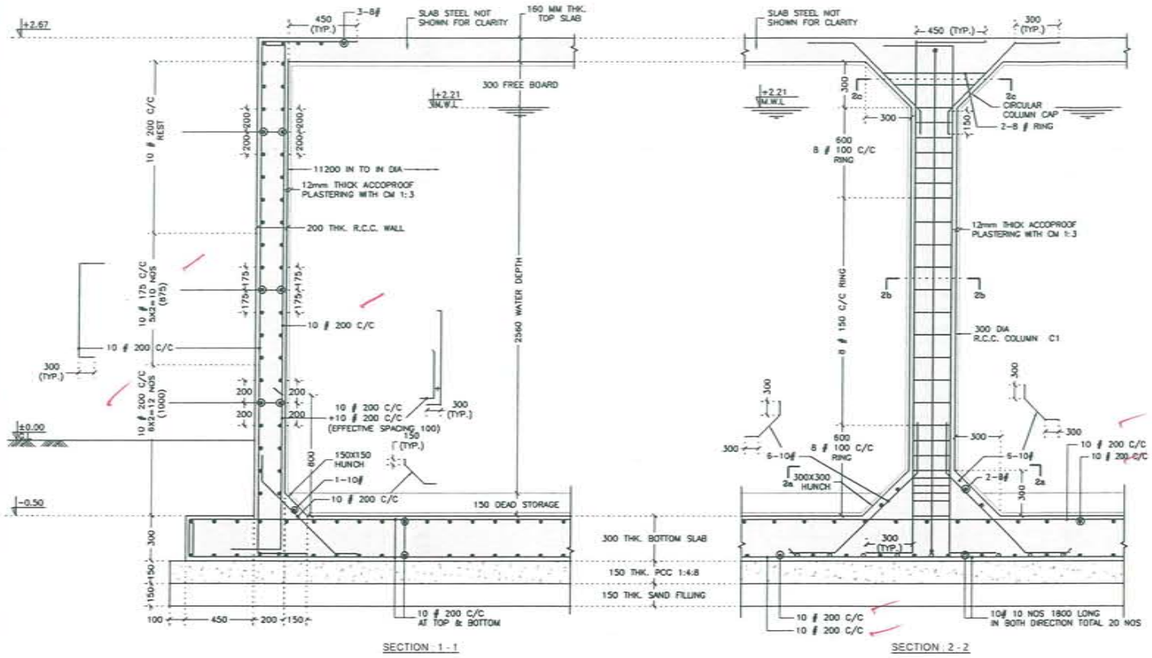
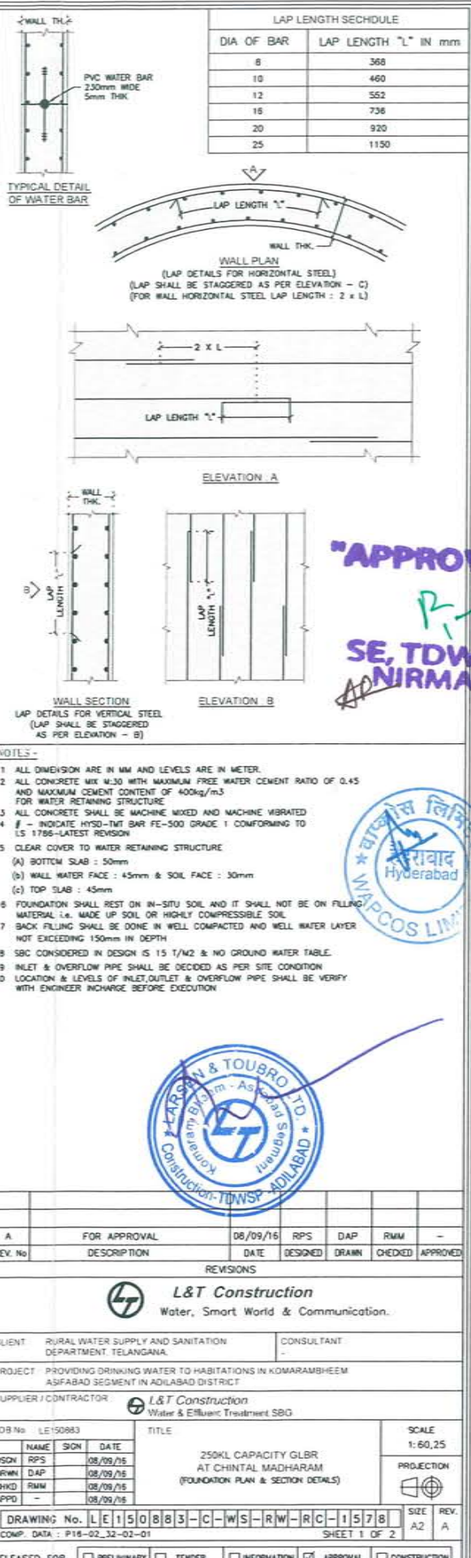
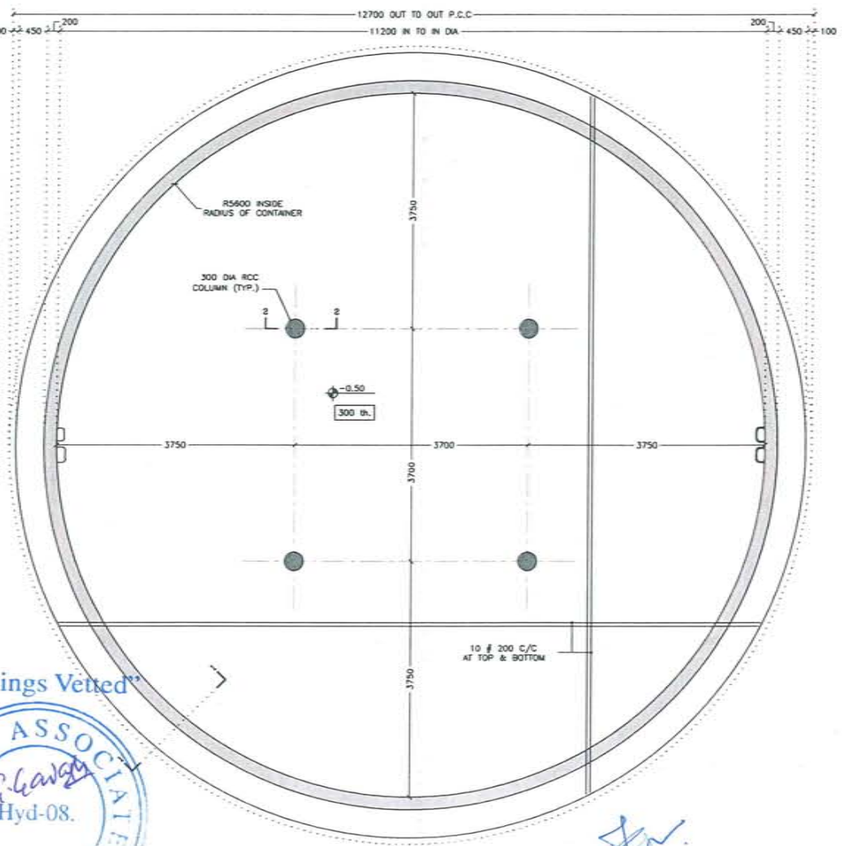
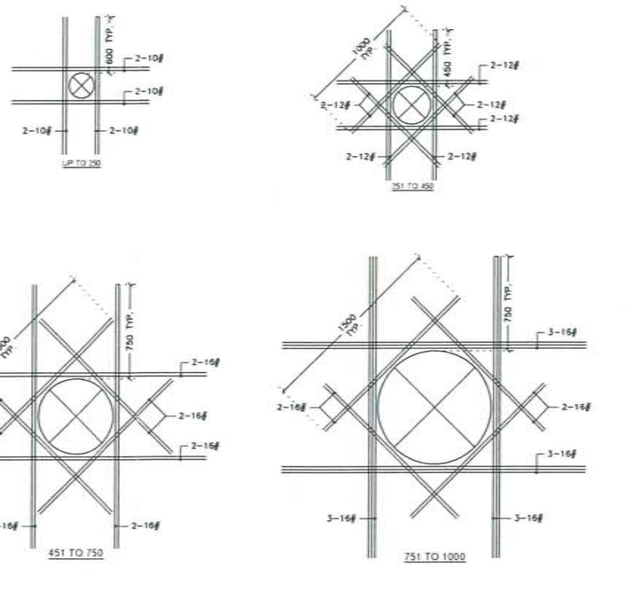




"APPROVED
R 7/11/16
SE, TDWSP
NIRMAL





TYPICAL DETAIL FOR EXTRA STEEL BAR AT CUT-OUT

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. ϕ - INDICATE HYSD-TMT BAR FE-500 GRADE 1 CONFORMING TO IS 1786-LATEST REVISION
5. CLEAR COVER TO WATER RETAINING STRUCTURE
   (A) BOTTOM SLAB : 50mm
   (b) WALL WATER FACE : 45mm & SOIL FACE : 30mm
   (c) TOP SLAB : 45mm
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 IN DESIGN IS 15 T/M2 & NO GROUND WATER TABLE.
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

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	08/09/16	RPS	DAP	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	RPS		08/09/16
DRWN	DAP		08/09/16
CHKD	RMM		08/09/16
APPD	-		08/09/16

TITLE: 250KL CAPACITY GLBR AT CHINTAL MADHARAM (FOUNDATION PLAN & SECTION DETAILS)
SCALE: 1:60,25
PROJECTION

DRAWING No. LE150883-C-WS-RW-RC-1578 | SIZE A2 | REV. A
COMP. DATA : P16-02_32-02-01 | SHEET 1 OF 2

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M/S. S.K. ASSOCIATES
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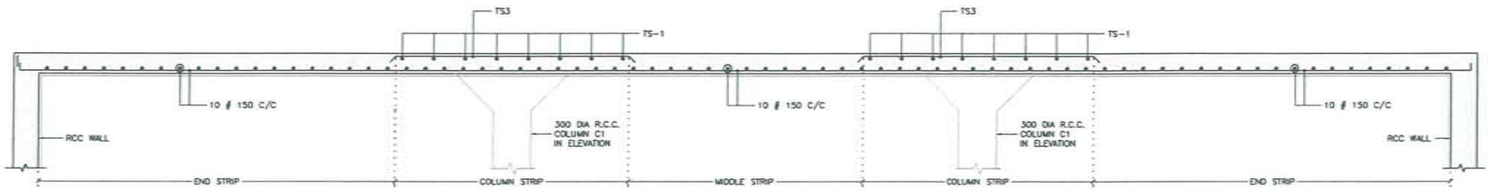
Superintendent Engineer
TDWSP Nirmal

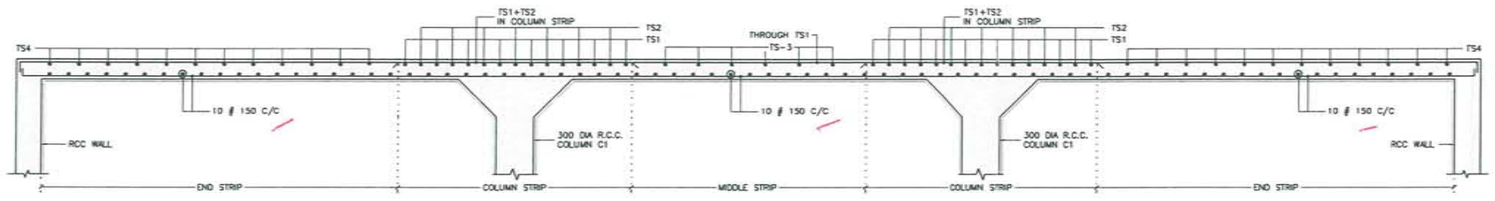
Executive Engineer
TDWSP Asifabad

WAPCOS LIMITED
Hyderabad

LARSEN & TOUBRO LTD.
Komaram Bheem - Asifabad
Construction-TDWSP-ADILABAD



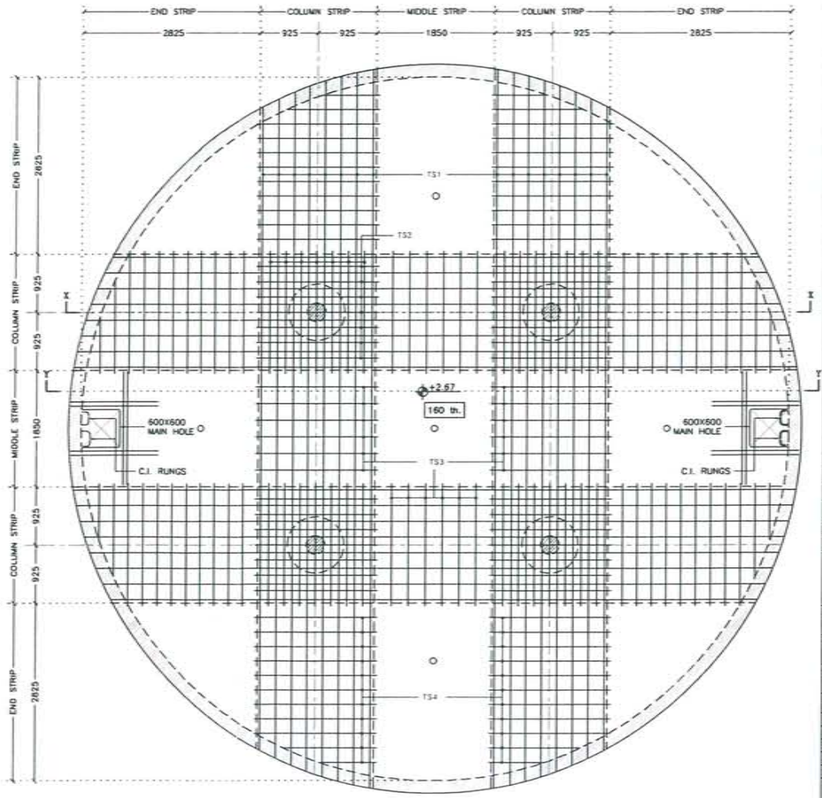
SECTION : Y - Y



SECTION : X - X

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

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



TYPICAL 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 2.
<3> READ THIS DRAWING ALONG WITH DRG.NO. 1 OF 2 TO 2 OF 2.

SLAB SCHEDULE

TYPE	DESCRIPTION
TS - 1	10 ϕ THROUGH 8 NOS
TS - 2	12 ϕ 1850 LONG 7 NOS BOTH WAYS (TOTAL 14 NOS)
TS - 3	8 ϕ 1850 LONG 6 NOS
TS - 4	8 ϕ 200 C/C AT END STRIP

"APPROVED
17/11/16
SE, TDWSP
NIRMAL

Superintendent Engineer
TDWSP Nirmal

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

Asst. Executive Engineer
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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
TITLE	250KL CAPACITY GLBR AT CHINTAL MADHARAM (STRUCTURAL LAYOUT AT YTOP SLAB TOP & BOTTO REINFORCEMENT & SECTION DETAILS)
SCALE	1:60,25
PROJECTION	

	NAME	SIGN	DATE
DSGN	RPS		08/09/16
DRWN	DAP		08/09/16
CHKD	RMM		08/09/16
APPD	–		08/09/16

DRAWING No. LE150883-C-WS-RW-RC-1578 SHEET 2 OF 2 | SIZE A2 | REV. A
COMP. DATA : P16-02_32-02-02

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