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 SUMP - 10KL CAPACITY
OTTIGHAT AT ASIFABAD MANDAL

DOC./DRG. No.

LE150883-C-WS-RW-DC-1443

SIZE: A4

REV.: A

RELEASED FOR

- ☐ PRELIMINARY
- ☐ INFORMATION
- ☑ APPROVAL
- ☐ CONSTRUCTION

Submitted sir,

Sub:RWS&S-TDWSP- Vadoni 10KL clear water sump in Asifabad Mandal–Komarambheem Asifabad Segment-Adilabad District-Designs -Approval-Reg.

*****

Kindly puruse the Designs of the following 10KL Clear Water sump at Ottighat(V), Asifabad(M), submitted by the Executive Engineer TDWSP Asifabad Division, Adilabad district for approval.

1. **10KL Clear Water Sump.**

The Executive Engineer TDWSP Asifabad Division has submitted Structural Designs & Drawings of 10KL Clear Water sump based on the field conditions and as per the estimate provisions, the structural designs & drawings for the above structure is verified with RWS&S standard Type Designs and submitted for approval.

The following design parameters were considered:

- Capacity : 10KL
- Net SBC of Soil : 10.0 t/sqm
- Grade of concrete & Steel : M 30 & Fe 500
- Dia of sump Inner to Inner : 3 .00m
- Sidewall Height : 1.90mts
- Sidewall Thickness: 200mm
- Top Slab thickness: 150 mm
- RaftSlab thickness: 200mm

As per the above parameters the structural design and drawings of the clear water sump is verified, as per similar Type designs available and approved by the RWS&S Department considering the SBC and type of soil, duly following IS codes, IS: 456-2000, SP:16, 34, IS:3370 and IS 1893-2002 (seismic codes).The sizes and steel proposed in the designs and drawings of all components are safe and sufficient.

The additional points noted after checking the designs are:

- Detailed Estimate of the Structure with these specifications has to be prepared and compared with the provision made in sanctioned estimate. Such that deviation if any is within authorized limits. If any deviations noticed, the Estimate should be submitted for obtaining approval from the Competent Authority.

Subject to approval a draft memo addressed to the EE, TDWSP Asifabad Division , for communicating approved Structure is put up for kind perusal and approval.

AEE (Designs)	DEE (Designs)	Superintending Engineer,
TDWSP,Nirmal Circle	TDWSP,Nirmal Circle	TDWSP,Nirmal Circle

DESIGN CALCULATION

PROJECT TITLE

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

UNIT

10 KL SUMP

DCI NO: - LE150883-C-WS-RW-DC-1442
&
LE150883-C-WS-RW-NU-1443

PRINCIPAL CLIENT

RURAL WATER SUPPLY
AND
SANITATION DEPARTMENT,
TELANGANA

CONTRACTOR

L&T CONSTRUCTION
WATER & EFFLUENT TREATMENT SBG

DESIGN OF SUMP

BASIC DATA

Diameter = 3 m
Water depth = 1.6 m
Free board = 0.30 m

CAPACITY CHECK

Required capacity = 10 KL

Capacity of suction

Clear diameter = 3 – 2 x plaster thickness
= 3 – 2 x 0.012
= 2.976 m

Water depth = 1.6 m

Volume = (pi * d x d ./ 4) x H
= (Pi* 2.976 x 2.976 / 4) * 1.6 = 11.13 m^3 (including dead storage)

Volume-Dead storage = 11.13-1.04 =10.09

Net volume = 10.09 m^3 > 10 m^3 hence O.K.

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

SBC – 10 t/m^2

GROUND WATER TABLE: NO GWT

SUMP : 10 KL					FORMULA
PROJECT: PROVIDING DRINKING WATER TO HABITATIONS IN KOMARAMBHEEM ASIFABAD SEGMENT IN ADILABAD DISTRICT (30 MLD WTP)	SUMP AT	CLIENT			
	Different village	RURAL WATER SUPPLY AND SANITATION DEPARTMENT, TELANGANA			
STRUCTURE	DESIGN CALCULATION FOR SUMP	DATE		REV	
		2/2/2016		0	

DESIGN CALCULATION

DATA

General Data				As per tender Specification
Required Capacity of Sump	Sumpcap	**10.000**	m3	
Location				
Hydraulic Features				
Ground Level	GL	**0.00**	m	
Dead Storage	Ds	**0.15**	m	
Free Board	FB	**0.30**	m	
Basic Shape :		Circular with flat slab		
Material Data				
unit weight of concrete	uwc	**25.000**	kN/m3	
unit weight of water	uww	**10.000**	kN/m3	
unit weight of plaster	uwp	**21.000**	kN/m3	
load Data				
live load at roof slab	llf	**1.500**	kN/m2	
Finish load	Fl	**1.000**	kN/m2	
Geometry Data				
Diameter	Dia	**3.00**	m	
Depth of tank above GL		**0.90**		
Depth of tank below GL		**1.00**		
Water depth : With Dead storage	Wd	**1.60**	m	
Top Slab thickness	Tsthk	**0.150**	m	

Bottom slab thickness	Bsthk	**0.200**	m		
plaster thickness	pt	**0.012**	m		
Permissible stress (As per IS 456 & IS 3370)					
Concrete					
Concrete grade -FCK	fck	30	N/mm2		
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		
modulus of elasticity for container	em	2.74E+04	N/mm2		=5000*(fck)^0.5*100
Reinforcement	fy	500 ~~415~~	N/mm2		
per. Ten. str.- steel tension due to bending	fyc	130	N/mm2		
per. Ten. str.- steel tension due to direct ten	fyuc	130	N/mm2		
Modular ratio	md	9.33			
Dimension for minimum steel	Dmin	15.0	m		
Mass & Wt relation factor	g	9.810			
[A] CAPACITY OF CONTAINER					
Volume Calculation					
Water Depth with Dead Storage	Wdd	1.600			
Inside Diameter		3.000			
Clear Inside Diamater without plaster	Diac	2.976			
total volume	**vt**	**11.13**	m3		
dead storage	vdd	1.04	m3		
net volume	vn	10.09	m3 >	10.000	OK
[B] TOP SLAB DESIGN					
Concrete grade	Fck	30	N/mm2		
Steel	Fy	415	N/mm2		
Clear cover	Cv	45	mm		
Slab Diameter	Lx	3.000	m		
Slab type	St	1	Simply supported		

Width	B		1000	mm
Depth	D		150	mm
Maximum Bar dia	Db		10	mm
Density of concrete	Wd		25	kN/m3
Loading				
Live load	Ll		1.5	kN/m2
Finishing load	Fl		1	kN/m2
CALCULATION				
Calculation of loading				
Self wt (Dead load)	Dl		3.75	kN/m2
Total Load	Tl		6.25	kN/m2
Effective depth	De		100	mm
Bending Moment	Bm		1.758	kN-m
Modular ratio			9.33	
K		k	0.42	
j = 1-k/3		j	0.9	
Ast			157.1	mm2
Provide : 10 dia - 200 c/c				

[C] CYLINDRICAL WALL			
inner diameter	cyid	3.000	m
top thickness	cytt	**0.150**	m
bottom thickness	cybt	**0.150**	m
Water depth	cyh	**1.600**	m
coefficient of constant height	cyc	**0.000**	
free board		0.300	m
height of wall fir design	cyhh	1.600	m
increment in thickness	cyith	0.000	m

Hoop Force ; Wall free at Top and hinge at bottom condition
F = coe x H x D / 2
F= Hoop force

H = Height of water above that section
D = Diameter of wall at that section

Ration H^2/DT 5.689
Enter Value for Auto serach **8.000**

h

hoop force

	sr. no	depth from top in meter	thickness at section	coeiffient	hoop force in wall = Coe. X rad * height * unit wt of liquid	area of steel required = force / 1300 in cm2	actual tensile stress in concrete = force/(thk*width+m*ast)	Minimum Area of steel in mm2 on each face
		m	mm		kN	mm2		
	1	0.160	0.150	0.010	0.2	2	0.002	180
Minimun % steel as per IS 3370-2009	2	0.320	0.150	0.106	2.6	20	0.016	180
	3	0.480	0.150	0.227	5.4	42	0.035	180
Maximum Dimension	4	0.640	0.150	0.347	8.3	64	0.053	180
3.000	5	0.800	0.150	0.465	11.2	86	0.071	180
Permissible dimension for 0.24 % steel	6	0.960	0.150	0.565	13.6	104	0.087	180
15.000	7	1.120	0.150	0.632	15.2	117	0.097	180
Minimum Steel	8	1.280	0.150	0.631	15.2	117	0.097	180
0.240	9	1.440	0.150	0.533	12.8	98	0.082	180
	10	1.600	0.150	0.317	7.6	58	0.049	180

	sr. no	area of steel requd	dia of bar	bar spacing	area of steel prod
	1	180.000	**10**	**200**	785
	2	180.000	**10**	**200**	785
	3	180.000	**10**	**200**	785
	4	180.000	**10**	**200**	785
	5	180.000	**10**	**200**	785
	6	180.000	**10**	**200**	785
	7	180.000	**10**	**200**	785
	8	180.000	**10**	**200**	785
	9	180.000	**10**	**200**	785
	10	180.000	**10**	**200**	785

weight of wall					
straight part	cyspw	59.4	kN		=PI()*(cyid+cytt)*cyh*cytt*uwc
tapered part	cytpw	0.0	kN		=PI()*(cyid+cytt+(cybt-cytt)/3)*cyh*(1-cyc)*(cybt-cytt)/2*uwc
plaster	cyppw	4.5	kN		=(cyid-pt)*PI()*pt*(trdd+cyh+mrdd/2-cyxa)*uwp
total weight	tlcy	63.9	kN		=cyspw+cytpw+cyppw

Maximum moment in wall

	sr. no	depth from top in meter	thickness at section	coeiffient	moment in wall = Coe. X height^3 * unit wt of liquid	effective depth	Aera of steel required	Minimum Area of steel in mm2
		m	m		kN-m	m		
	1	0.160	0.150	0.00013	0.005	0.095	0	180
Minimun % steel as per IS 3370-2009	2	0.320	0.150	0.00046	0.019	0.095	2	180
	3	0.480	0.150	0.00105	0.043	0.095	4	180
Maximum Dimension	4	0.640	0.150	0.00221	0.091	0.095	8	180
#REF!	5	0.800	0.150	0.00364	0.149	0.095	13	180
Permissible dimension for 0.24 % steel	6	0.960	0.150	0.00500	0.205	0.095	18	180
15.000	7	1.120	0.150	0.00535	0.219	0.095	20	180
Minimum Steel	8	1.280	0.150	0.00287	0.118	0.095	11	180
#REF!	9	1.440	0.150	-0.00463	-0.190	0.095	-17	180
	10	1.600	0.150	-0.01979	-0.811	0.095	-73	180

	sr. no	area of steel requd	dia of bar	bar spacing	area of steel prod	distance
	1	180.000	**10**	**200**	393	0.160
	2	180.000	**10**	**200**	393	0.320
	3	180.000	**10**	**200**	393	0.480
	4	180.000	**10**	**200**	393	0.640
	5	180.000	**10**	**200**	393	0.800
	6	180.000	**10**	**200**	393	0.960
	7	180.000	**10**	**200**	393	1.120
	8	180.000	**10**	**200**	393	1.280
	9	180.000	**10**	**200**	393	1.440
	10	180.000	**10**	**200**	393	1.600

Vertical steel		
as compression only,I provide min r/f	0.240	%
area of steel required total on both face	3.600	cm2

FOUNDATION DESIGN

WALL FOOTING DESIGN				
PROJECT: ADILABAD W.S.S				P16-2
UNIT : 10 KL Sump				
WALL TYPE 1				**W1**
BASIC DATA				
Density of water	denwt	**10**	kN/m3	
Density of soil	denso	**18**	kN/m3	
Density of concrete	decon	**25**	kN/m3	
Angle of Repose	Phi	**30**	degree	
Safe bearing capacity of soil	Sbc	**100.0**	kN/m2	
Concrete grade	Fck	**30**	N/mm2	
Steel grade	Fy	**415**	N/mm2	
Depth below GI	Dbg	**1.00**	m	
Water depth	wtd	**1.60**	m	
free board	fb	**0.30**	m	
Wall above Ground		**0.90**	m	
Clear cover	Cv	**50**	mm	
Maximum size of bar dia	Db	**12**	mm	
Water depth with free board	Wd	**1.90**	m	
minimum % steel	pt	**0.24**	%	
Moment				
Due to Water	Mtw	**1.00**	kN-m	(From Analysis Result)
Wt from top dome/slab/column/wall	Slabwt	**5.00**	kN-m	
Wall geometry				
Straight portion	lb	**1.900**	m	
Tapered portion	lc	**0.000**	m	
	tb	**0.150**	m	
	td	**0.150**	m	
Footing geometry				
Toe projection	ht	**0.250**	m	
Heel straight projection	hh1	**0.450**	m	
Heel tapered projection	hh2	**0.000**	m	
Thickness at toe (free end)	tta	**0.200**	m	
Thickness at toe (fwall face)	ttb	**0.200**	m	
Thickness at heel (wall end)	tha	**0.200**	m	
Thickness at heel (freel face)	thb	**0.200**	m	
Total Height of Wall	Tlw	1.900	m	
Total length of wall footing	wf	0.850	m	

CASE 1 : TANK FULL CONDITION WITH NO 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	7.13	0.33	2.32
Wall Tapered portion	W2	0.00	0.25	0.00
Walkway/slab	P	5.00	0.33	1.63
Footing				
Footing : toe	W3	1.25	0.13	0.16
Footing center	W4	0.75	0.33	0.24
Footing : heel (straight)	W5	2.25	0.63	1.41
Footing : heel (tapered)	W6	0.00	0.85	0.00
Water	W7	8.55	0.63	5.34
Total downward load		24.93		11.09

Total restoring moment @ toe	TRM	11.1	kN-m
Total over turning moment		1.0	kN-m
F.S.against over turning		11.1	
Check for over turning	Hense o.k		
Total moment due to vertical load	Tmv	11.1	kN-m
Total moment due to horizontal load	Tmh	1.0	kN-m
Total vertical load	TPv	24.9	kn
Net Moment	Tmn	10.1	kN-m
M/p	E	0.40	m
Ecc	Ecc	0.020	m
b/6	Aec	0.14	m
Net moment From ECC	Mdg	0.503	

Property of footing

Width of footing		1.00	m
Depth of footing		0.85	m
Footing Area	Fare	0.85	m2
Modulus of section	Fz	0.12	m3

Pressure distribution

Pressure due to direct load =P/A	prea	29.32	kN/m2
Pressure due to moment =M/Z	Preb	4.17	kN/m2
Pressure			
Maximum pressure - P/A + M/Z	Pmax	33.50	kN/m2
Minimum pressure - P/A + M/Z	Pmin	25.15	kN/m2

Check for SBC

Maximum pressure < SBC		OK		
Minimum presure > 0		OK		
Pressure difference		8.346		
Pressure difference / m		9.819		
Pressure at outer Wall face - A		preow	31.04	kN/m2
Pressure at inner Wall face B		preiw	29.57	kN/m2
Pressure at point C		preiw1	25.15	kN/m2

Design of Toe - At Point A

Moment at face of outer wall			
Due to rectangle diagram	Mreco	0.97	kN-m
	Mtrio	0.05	kN-m
Total moment due to upward pressure		1.02	kN-m
Net moment at A from Toe side	Toem	1.02	kN-m
Thickness at toe		200	mm
Effective depth	Deftoe	144	mm
Ast required =		60.61	mm2
Check for minimum steel			
top		240	mm2
bottom		0	mm2
Design Steel			
Main steel - Top		240	mm2
Main steel - bottom		61	mm2
Distribution steel - top		240	mm2
Distribution steel - bottom		0	mm2

Design of heel : At point B & C

Design at point B

Due to rectangle diagram (upward)	Mreci	2.55	kN-m
	Mtrii	0.15	kN-m
Total Upward moment		2.70	kN-m
Due to water (down ward)		1.92	kN-m
Net downward moment at B from heel side	heelm	0.77	kN-m
Thickness Provided		200	mm
	defheel	144	mm
Ast required =		46	mm2
Check for minimum steel - straight portion			
top		240	mm2
bottom		0	mm2
Design Steel			
Main steel - Top		240	mm2
Main steel - bottom		0	mm2
Distribution steel - top		240	mm2
Distribution steel -bottom		0	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		200	mm
	defheel	144	mm
Ast required =		0	mm2
Check for minimum steel - tapered portion			
Avrage thickness	thav	0.20	m
top		240	mm2
bottom		0	mm2
Design Steel			
Main steel - Top		240	mm2
Main steel - bottom		0	mm2
Distribution steel - top		240	mm2
Distribution steel -bottom		0	mm2

SUMMARY

Pressure Check

1>	P/A + M/Z	33.5	<	100	OK
2>	P/A - M/Z	25.2	>	0	OK

Reinforcement

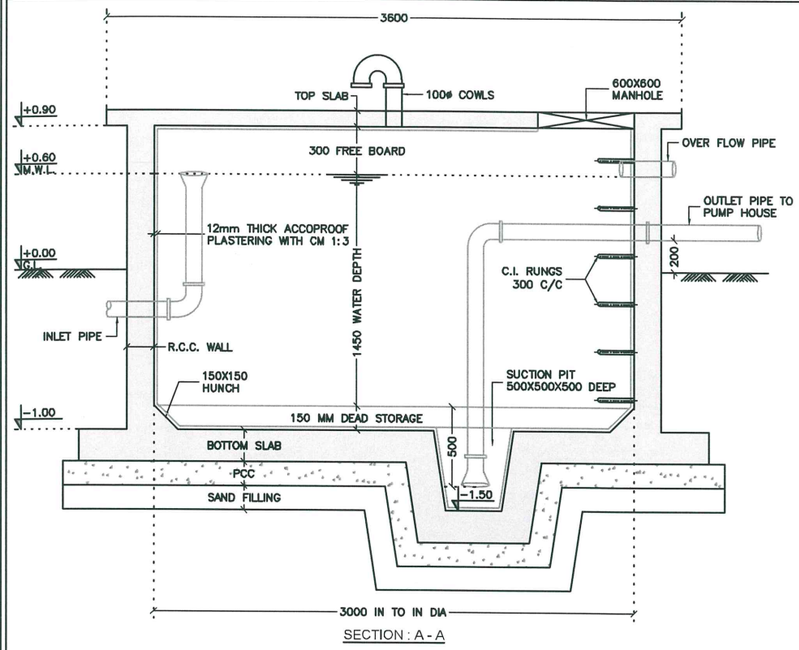
	AstR						Astp	
Toe		dia	spc	+	dia	spc		
Top - main	240	10	200		0	0	393	OK
Bottom main	61	10	200		0	0	393	OK
Top - Dist	240	10	200		0	0	393	OK
Bottom - Dist	0	10	200		0	0	393	OK
Heel Straight portion								
Top - main	240	10	200		0	0	393	OK
Bottom main	0	10	200		0	0	393	OK
Top - Dist	240	10	200		0	0	393	OK
Bottom - Dist	0	10	200		0	0	393	OK
Heel tapered portion								
Top - main	240	10	200		0	0	393	OK
Top - Dist	240	10	200		0	0	393	OK
Bottom - Dist	0	10	200		0	0	393	OK

Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad

APPROVED
6/4/16
SE, NIRMAL



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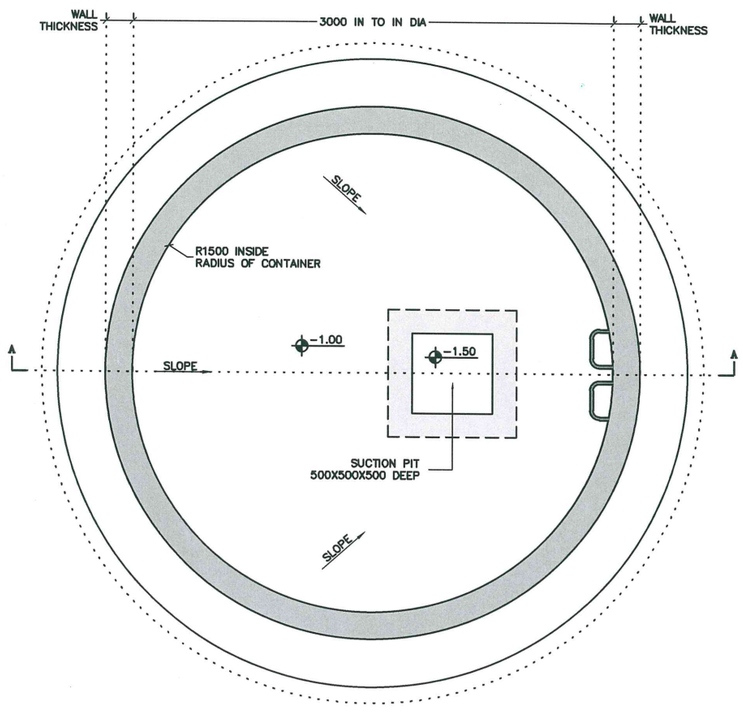
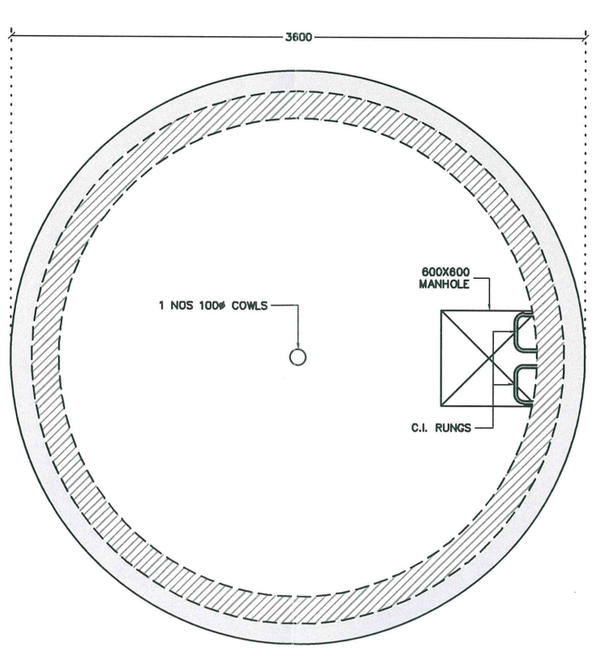


BOTTOM PLAN



TOP PLAN

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

NAME OF VILLAGE				
KOLAMGUDA	MADHARAMGUTTA	GOUNDUGUDA	GOVARGUDA	BABAPUR
DODDIGUDEM	OTTIGHAT	NAYAKAPPUGUDA	GOTTIGOUNDUGUDA	PAVUGUDA
OOTPALLI	BHEEM GUDA	KONDI GG	SOMIGUDA	ALIGUDA 3
NAYAKAPPU GUDA	PATHAGUDA	KANNEPALLY	RAJULAGUDA	KHILADIGAON

NOTES :

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

<2> LOCATION OF SUCTION PIT SHALL BE DECIDED AS PER SITE CONDITION BEFORE EXECUTION

<3> LOCATION & LEVELS OF INLET,OUTLET & OVERFLOW PIPE SHALL BE VARIFIED WITH ENGINEER INCHARGE BEFORE EXECUTION

APPROVED
6/4/16
SE, NIRMAL

LARSEN & TOUBRO LIMITED Construction Chennai

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	02/02/16	–	PMD	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		02-02-16
DRWN	PMD		02-02-16
CHKD	RMM		02-02-16
APPD	–		02-02-16

TITLE : 10KL CAPACITY SUMP AT DIFFERENT VILLAGE (GENERAL ARRANGEMENT DRAWING)

SCALE 1: 30

PROJECTION

DRAWING No. LE150883-C-WS-RW-GA-1441

COMP. DATA : P16-02_79-01-02

SHEET 2 OF 2

SIZE A3

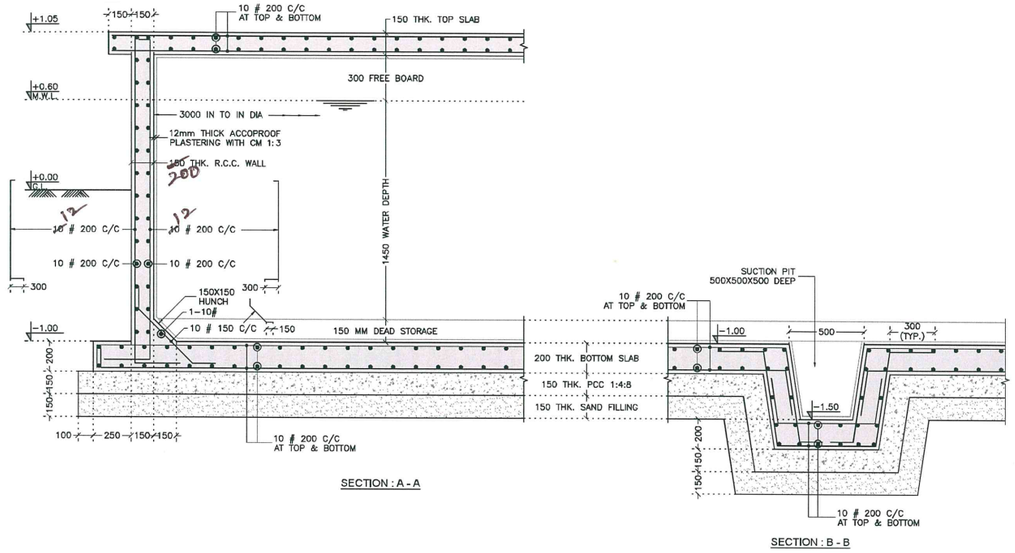
REV. A

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

Asst. Executive Engineer
TDWSP Asifabad

Dy. Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad

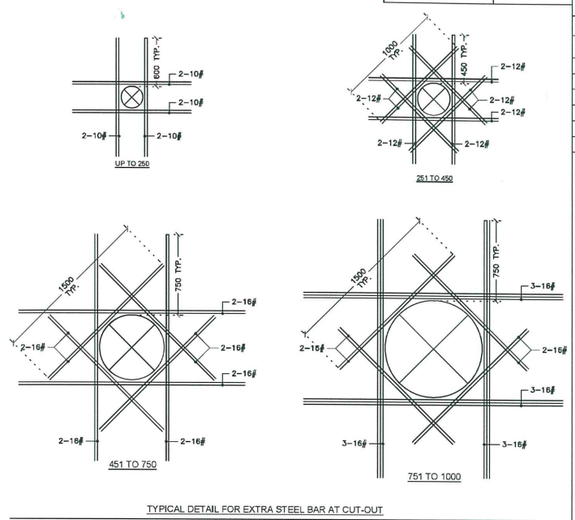


SECTION : A - A

SECTION : B - B

NAME OF VILLAGE				
KOLAMGUDA	MADHARAMGUTTA	GOUNDUGUDA	GOVARGUDA	BABAPUR
DODDIGUDEM	OTTIGHAT	NAYAKAPPUGUDA	GOTTIGOUNDUGUDA	PAVUGUDA
OOTPALLI	BHEEM GUDA	KONDI GG	SOMIGUDA	ALIGUDA 3
NAYAKAPPU GUDA	PATHAGUDA	KANNEPALLY	RAJULAGUDA	KHILADIGAON

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

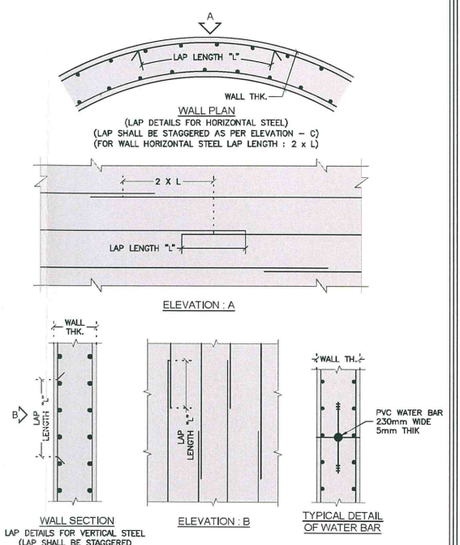


TYPICAL DETAIL FOR EXTRA STEEL BAR AT CUT-OUT

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. # – INDICATE HYSD–TMT BAR FE–415 GRADE 1 COMFORMING TO I.S 1786–LATEST REVISION
5. CLEAR COVER TO MAIN STEEL 50mm IN BOTTOM SLAB & 25mm IN BEAM, 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 EXCEDDING 150mm IN DEPTH
8. SBC CONSIDERED IN DESIGN IS 10 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

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



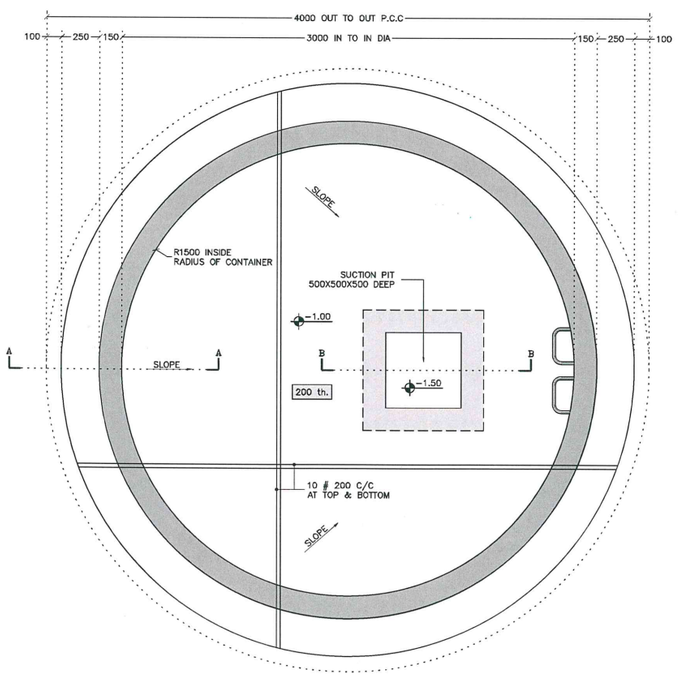
WALL PLAN
(LAP DETAILS FOR HORIZONTAL STEEL)
(LAP SHALL BE STAGGERED AS PER ELEVATION – C)
(FOR WALL HORIZONTAL STEEL LAP LENGTH : 2 x L)

ELEVATION : A

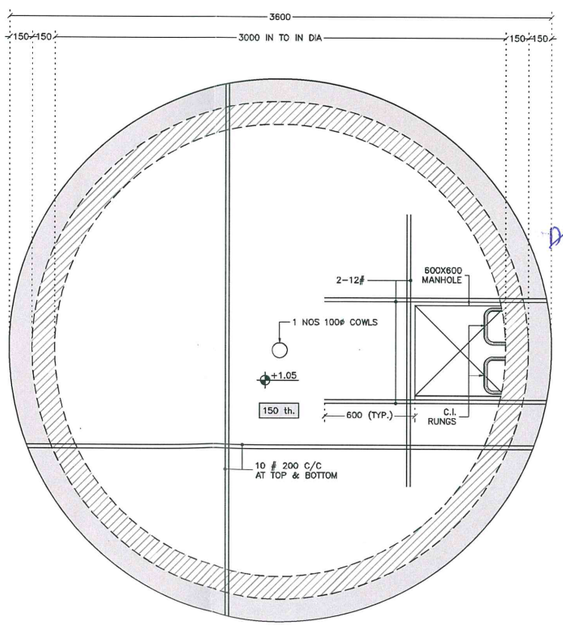
WALL SECTION
LAP DETAILS FOR VERTICAL STEEL
(LAP SHALL BE STAGGERED AS PER ELEVATION – B)

ELEVATION : B

TYPICAL DETAIL OF WATER BAR



FOUNDATION PLAN



TOP PLAN

APPROVED
6/4/16
SE, NIRMAL

LARSEN & TOUBRO LIMITED Construction - Chennai

REV. No	DESCRIPTION	DATE	DESIGNED	DRAWN	CHECKED	APPROVED
A	FOR APPROVAL	02/02/16	HMP	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		02-02-16
DRWN	NSP		02-02-16
CHKD	RMM		02-02-16
APPD	–		02-02-16

TITLE : 10KL CAPACITY SUMP AT DIFFERENT VILLAGE (STRUCTURAL DETAILS)

SCALE 1: 25

PROJECTION

DRAWING No. LE1508833-C-WS-RW-RC-1444 | SIZE A2 | REV. A

COMP. DATA : P16-02_79-02-01 | SHEET 1 OF 1

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

Asst. Executive Engineer
TDWSP Asifabad

By Executive Engineer
TDWSP Asifabad

Executive Engineer
TDWSP Asifabad