Design of Sewage Pumping Station / Dry cum Wet Well under Ujjain UGSS			
Name of SPS		**Unit**	**Sewage Collection Sumpwell cum SPS near Kamed**
Name of Sewerage Districts/Zones			All Ujjain Municipal Area covered in Sewerage Zones 1-2-3
Name of Area			Ujjain City -all ULB Limits
Sewage Transport to STP			SPS to EDC at STP
Population	For Year 2020	Souls	613830
	For Year 2035	Souls	735840
	For Year 2050	Souls	858585
Sewage Generation for Average Flow = DWF + Infltration = {(Populationx135x0.8)/1000000}+Inf.	For Year 2050	MLD	110.00
Qd = Seweage Generation for Average Flow per day	For Year 2050	LPS	1273.15
Qhr = Average Design Flow per Hour	Qhr = Qd*60*60/1000	Cum/Hr	4583
dt = Detention Period	dt = 30 min (say)	min	30
Vd = Desired Capacity for Standing Seweage in Sump / Wet Well	Vd = (Qhr/60)*30	Cum	2292
Vp = Proposed Capacity of Sump / Wet Well	**$Vp=0.785(Di^2 - do^2)He$**	**Cum**	**2298**
Proposed Volume must be equal to or greater than Desired Volume of Sump / Wet Well	Vp > OR => Vd		Hence Ok
W = Channel width in Wet Well	W in mtr	mtr	4.50
t = Wall Thickness of Dry Well	t = 0.3 mtr (say)	mtr	0.30
T = Wall Thickness of Wet Well	T = 0.3 mtr (say)		0.30
di = Inner Diameter of Dry Well (For placement of 5 pumps)	**di**	**mtr**	**22.00**
do = Outer Diameter of Dry Well	do = di + 2t	mtr	22.60
Di = Inner Diameter of Wet Well (For placement of "W" Width of Channel) all around dry well	Di=do+2W	mtr	31.60
Do = Outer Diameter of Wet Well	Do=Di+2T	mtr	32.20
He = Effective Depth of Wet Well	**He**	mtr	**6.00**
Fb = Free Board	Fb = 0.3 mtr (say)	mtr	0.30
d = Space above free board	d = 0.5 mtr (say)	mtr	0.45
Dof = Diameter of Over flow Pipe	Dof = 1.00 mtr (say)	mtr	2.00
Dip - Diameter of Inlet Pipe / Trunk Main	Dip	mtr	2.00
Si = Space Above Inlet Pipe	Si = 0.5 mtr (say)	mtr	0.50
hc = Canopy	hc = 0.3 mtr (say)	mtr	0.30
Hg= Depth from ground level upto top of canopy	Hg	mtr	3.00
Ht = Total Height /Depth of Wet Well	Ht = He+ Fb+d+Dof+Dip+Si+hc+hg	mtr	14.55
Hs=Height of Super Structure	Hs	mtr	4.00
Area Required for Sump (Dry cum Wet Well) + 50 % Additional for provision of EDC/Grit Chamber/One Staff quarter	A = 1.5*0.785*Do*Do	Sqm	**1221**
Pump House Type	Circular Type Large Size		Dry cum Wet Well
Pump House Area Proposed		Sqm	1500