www.rcenggstudios.com	**Design of Octagonal Pedestal**	Date	
		Rev	

Octagonal Pedestal Data:

Bolt circle diameter of Vessel	BC	=	40	in
Bolt circle diameter of Vessel	BC	=	1016	mm
base plate				
Bolt diameter	d	=	0.75	in
Bolt diameter	d	=	19.05	mm
Required Pedestal Dimension	D red.	=	1244.6	mm
Required Pedestal Dimension	D red.	=	49	in
Provided pedestal dimension		=	1296	mm
Provided pedestal dimension	Dpro.	=	4.25	ft
Vessel Data				
Empty weight	D_e	=	9.5	kip
Operating weight	D_o	=	5.5	kip
Hydrotest weight	D_t	=	5.5	kip
Unit weight of concrete	γ_c	=	0.15	kcf
Grade of concrete	f'_c	=	4000	psi
Grade of steel	f_y	=	60000	psi
From load combinations				
Vertical force	F_y	=	20.2	kip
Seismic /Wind Lateral Force	Fx	=	1.115	kip
Seismic/Wind Moment	M	=	0.015	kip-ft
Pedestal Height	H	=	3.34	ft
Pedestal area	A	=	$0.828D^2$	
	A	=	14.96	ft^2
Pedestal weight	D_p	=	A X H X γ_c	
	D_p	=	7.49	kip
Section Modulus	Z	=	6.13	ft3
Base pressure		=	1.01	kip/ft2
Allowable bearing capacity		=	2	kip/ft2
		=	**SAFE**	
Assumed number of dowels	N_d	=	16	
Clear cover	Cc	=	0.25	ft
Clear dimension of the pedestal	DC	=	3.75	ft
Total weight	$D_e + D_p$	=	27.69	kip
Moment at pedestal base	M_{ped}	=	3.74	kip-ft
Factor of safety	FOS	=	1	
Factored moment		=	3.74	kip-ft
Resultant force	F_u	=	$4\ Mu_{ped} / (N_d\ DC) - 0.9(D_e + D_p)/N_d$	
		=	-0.71	kip
Required steel reinforcement	A_{sreqd}	=	$F_u/\phi F_y$	
		=	0.016	in^2
Minimum vertical reinforcement	A_{smin}	=	3	in^2
Vertical reinforcement	16	Nos	#5	
Tie reinforcement	#4	Spacing	15	in
Provided Reinforcement		=	5	in^2
Vertical reinforcement	16	Nos	16	mm

Tie reinforcement	12	mm bar @	250	mm spacing
Vertical reinforcement	16	Nos	#5	
Tie reinforcement	12	mm bar @	10	in

SAFE

4.5.5 Minimum pedestal reinforcement should be as follows:

Octagons 6 ft - 0 inch to 8 ft - 6 inches:

16, #4 verticals with #3 ties at 15-inch maximum

Octagons larger than 8 ft - 6 inches to 12 ft - 0 inch:

24, #5 verticals with #4 ties at 15-inch maximum

Octagons larger than 12 ft - 0 inch:

#5 verticals at 18-inch maximum spacing with #4 ties at 15-inch maximum

4.5.6 Top reinforcement - A mat of reinforcing steel at the top of the pedestal should be provided. Minimum steel should be #4 bars at 12-inch maximum spacing across the flats in two directions only.

4.5.7 Ties - See minimum pedestal reinforcement, Section 4.5.5, this Practice.