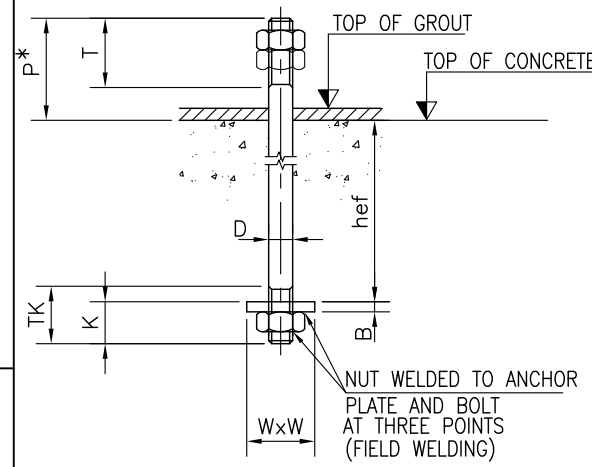


ASSUMPTIONS FOR DESIGN OF ANCHOR BOLT BASED ON COMBINED FLEXURAL TENSION AND SHEAR

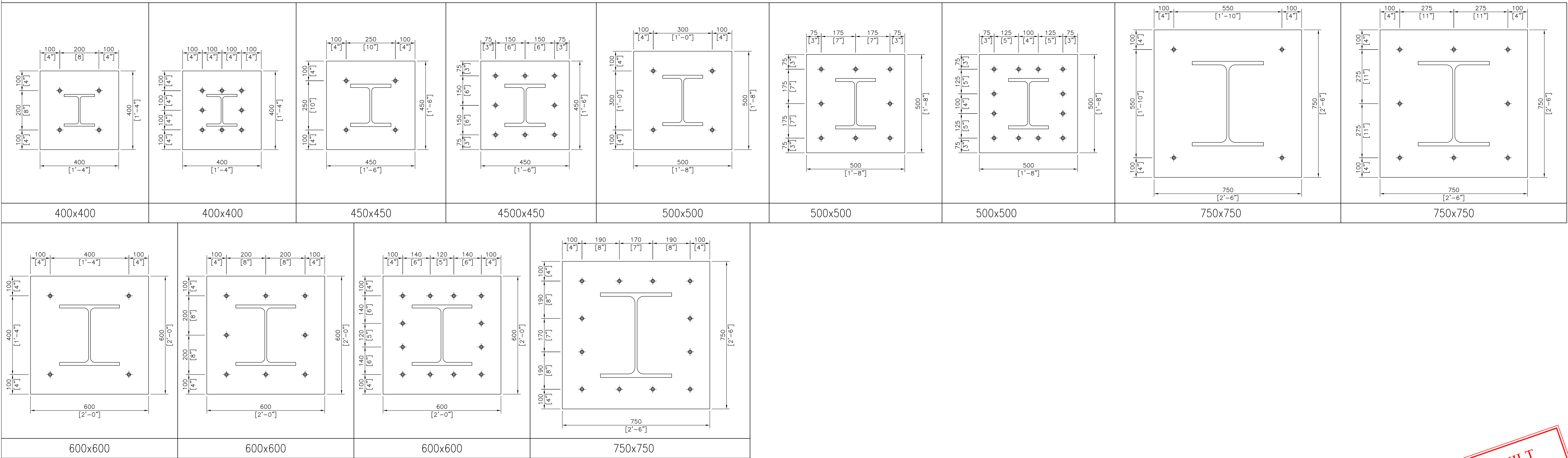
1. CONCRETE IS CRACKED
2. ALL BOLT I TYPE, ASTM A-307 AND F_{ut}=58Ksi = 400 Mpa
3. CONCRETE STRENGHT FC' = 3 Ksi, MAIN REBAR FY = 60Ksi, MIN COVER FOR PEDESTAL SIZE 450x450 AND 500x500 (C₁=75mm, C₂=75mm) & 400x400, 600x600 AND 750x750 (C₁=100mm, C₂=100mm) AND NUT = HEAVY NUTS.
4. CONDITION A-SUPPLEMENTARY REINFORCEMENT IS PROVIDED.
5. ONLY EFFECTIVE 'n' NUMBER OF BOLT ARE IN TENSION.
6. LOAD COMBINATIONS SHALL BE AS PER ACI 318-08 CHAPTER 9.
7. ANCHOR REINFT STRENGTH IS USED TO REPLACE CONCRETE TENSION / SHEAR BREAKOUT STRENGTH AS PER ACI318-08 APPENDIX D CLAUSE D.5.2.9 AND D.6.2.9.
8. FOR TIE REINFT, ONLY THE TOP MOST 2 OR 3 LAYERS OF TIES (25 MM FROM TOC AND 2x75MM AFTER) ARE EFFECTIVE.
9. STRUT-AND-TIE MODEL IS USED TO ANALYZE THE SHEAR TRANSFER AND TO DESIGN THE REQUIRED TIE REINFT.
10. ANCHOR BOLT WASHER SHALL BE TACK WELDED TO BASE PLATE FOR ALL ANCHOR BOLTS TO TRANSFER SHEAR.
11. VALUE OF ϕN_u ARE FOR EFFECTIVE NUMBER OF 'n' BOLTS.
12. CONFIRM THE COMBINED RATIO AS BELOW,
AFTER OBTAINING VALUES OF N_u AND V_u FROM ANALYSIS: $N_u / \phi N_n + V_u / \phi V_n \leq 1.2$.



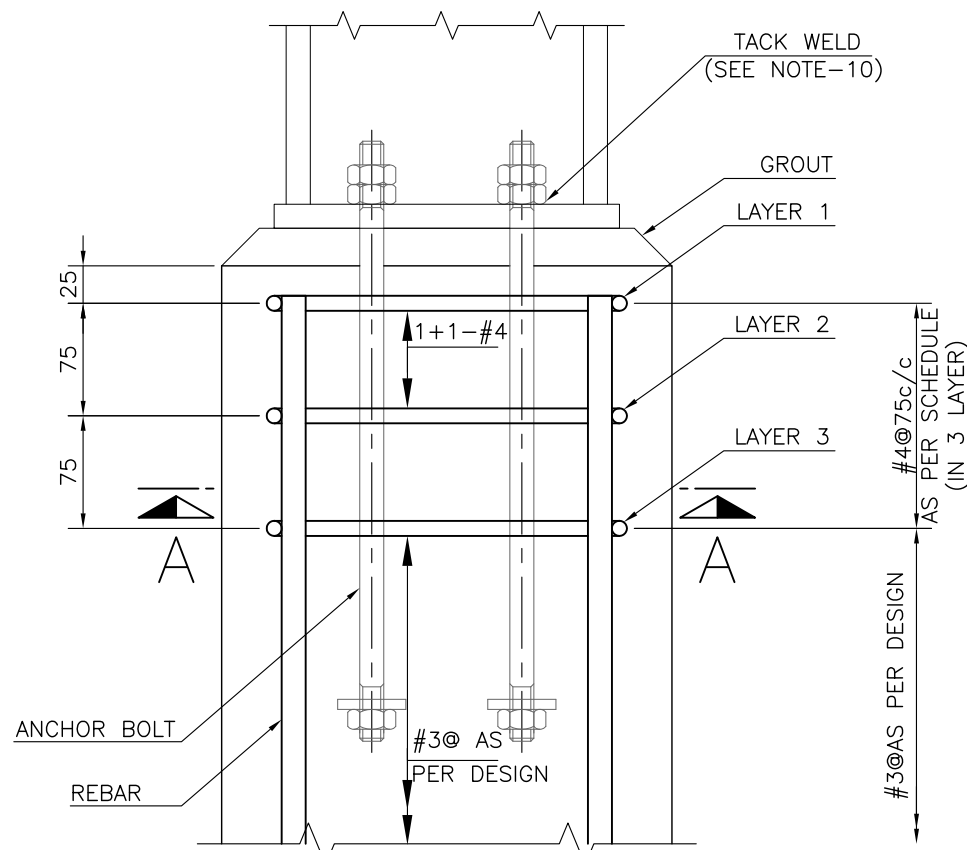
TYPE-I

N.T.S.
* TO BE VERIFIED AS PER ACTUAL/DESIGN REQUIREMENT.

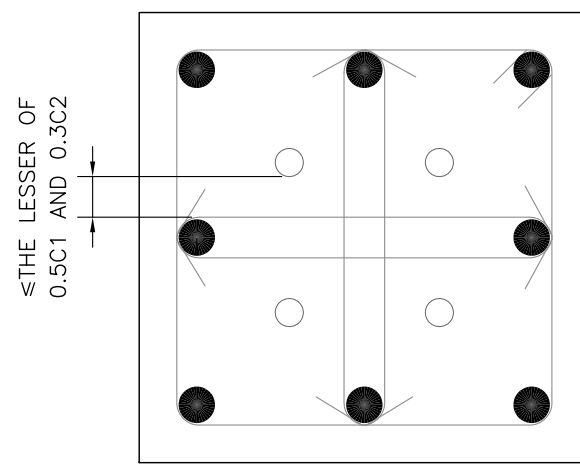
BOLT DIA (D)	hef IN mm	MAIN REINFORCEMENT (PEDESTAL)					ØNn IN KN						SHEAR REINFORCEMENT (PEDESTAL)			ØVn IN KN						REMARKS	DIMENSIONS (mm)						MATERIAL	REMARKS
		400x400 IN mm (FOR n=4, 8)	450x450 IN mm (FOR n=4, 8)	500x500 IN mm (FOR n=4, 8, 12)	600x600 IN mm (FOR n=4, 8, 12)	750x750 IN mm (FOR n=4, 8, 12)	n=4 (Effective n=2)		n=6 (Effective n=3)		n=8 (Effective n=4.2)		n=4	n=8	n=12	n=4		n=8		n=12			T	P*	K	Tk	W	B		
							CAPACITY OF 1 BOLT	CAPACITY OF 2 BOLT	CAPACITY OF 1 BOLT	CAPACITY OF 3 BOLT	CAPACITY OF 1 BOLT	CAPACITY OF 4.2 BOLT				CAPACITY OF 1 BOLT	CAPACITY OF 4 BOLT	CAPACITY OF 1 BOLT	CAPACITY OF 8 BOLT	CAPACITY OF 1 BOLT	CAPACITY OF 12 BOLT									
M12	400	12-#4	8-#5+4-#4	8-#5+4-#4	12-#6+4-#4	18-#6+4-#5	26	52	26	79	22	96	#4-2 Legs IN THREE LAYERS	#4-2 Legs IN THREE LAYERS	#4-2 Legs IN THREE LAYERS	11	46	11	91	11	132		90	110	75	90	130	20		
M16	400	12-#4	8-#5+4-#4	8-#5+4-#4	12-#6+4-#4	18-#6+4-#5	37	75	27	81	22	96	#4-2 Legs IN THREE LAYERS	#4-2 Legs IN THREE LAYERS	#4-2 Legs IN THREE LAYERS	16	66	16	132	13	165		90	110	75	90	130	20		
M20	450	12-#4	8-#5+4-#4	8-#5+4-#4	12-#6+4-#4	18-#6+4-#5	40	81	27	81	28	118	#4-2 Legs IN THREE LAYERS	#4-2 Legs IN THREE LAYERS	#4-2 Legs IN THREE LAYERS	24	99	20	165	20	248		90	110	75	90	130	20		
M25	775	12-#4	8-#5+4-#4	8-#5+4-#4	12-#6+4-#4	18-#6+4-#5	40	81	34	100	49	206	#4-4 Legs IN THREE LAYERS	#4-4 Legs IN THREE LAYERS	#4-4 Legs IN THREE LAYERS	37	149	37	297	37	446		90	110	75	90	130	20		



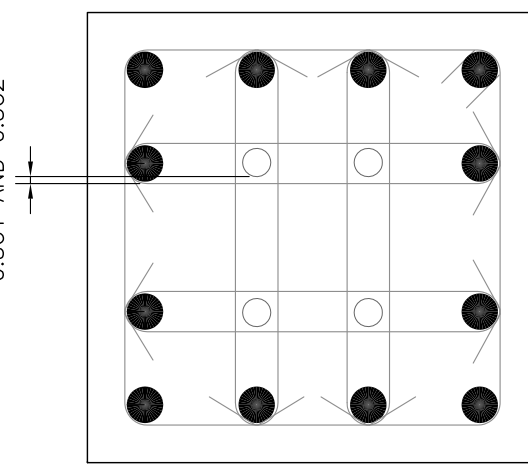
AS BUILT



SHEAR RING/STIRRUP DETAIL IN CONCRETE PEDESTALS
SCALE 1:5



TYPICAL SECTION A-A
SCALE 1:5 (FOR 2 LEGS)



TYPICAL SECTION A-A
SCALE 1:5 (FOR 4 LEGS)

FO	26-04-2018	AS BUILT	MSL	MSH	SMM
REV.	DATE	DESCRIPTION OF REVISION	DRAWN	CHECKED	APPR.
CLIENT: OIL & GAS DEVELOPMENT COMPANY LTD. OGDC HOUSE TOWER-B, FIRST FLOOR FRI-6, BLUE AREA, JINNAH AVENUE ISLAMABAD PAKISTAN FAX: +92 051 2623033, PHONE: +92 051 9209859					
CONSULTANT: Zishan Engineers (Pvt.) Ltd. An ISO 9001-2008 certified company 47/F Block 6, PECHS, Karachi-Pakistan Tel: (92-21) 34393045-46 & 34310151-54, Fax: (92-21) 34533430 & 34510156 E-Mail: contact@zishanengineers.com Website: www.zishanengineers.com			DWG. NO. 165-4-CSTD-007 REV. F0		
PROJECT : KPD-TAY INTEGRATED DEVELOPMENT PROJECT PHASE-II			JOB NO. 165-4		
TITLE : STANDARD DRAWING FOR PEDESTAL ANCHOR BOLTS			SIZE	SCALE	SHEET
			A1	N.T.S.	1