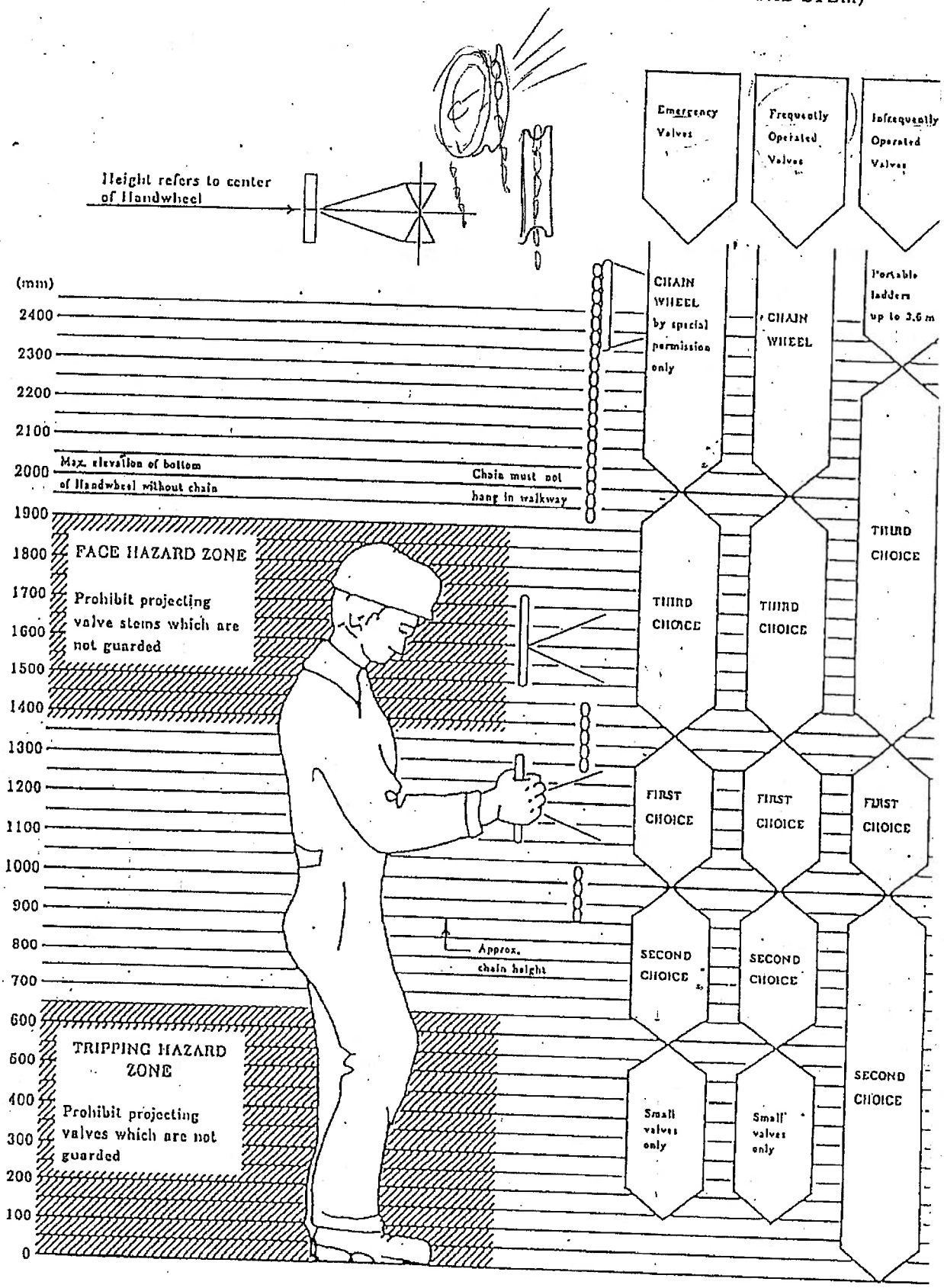
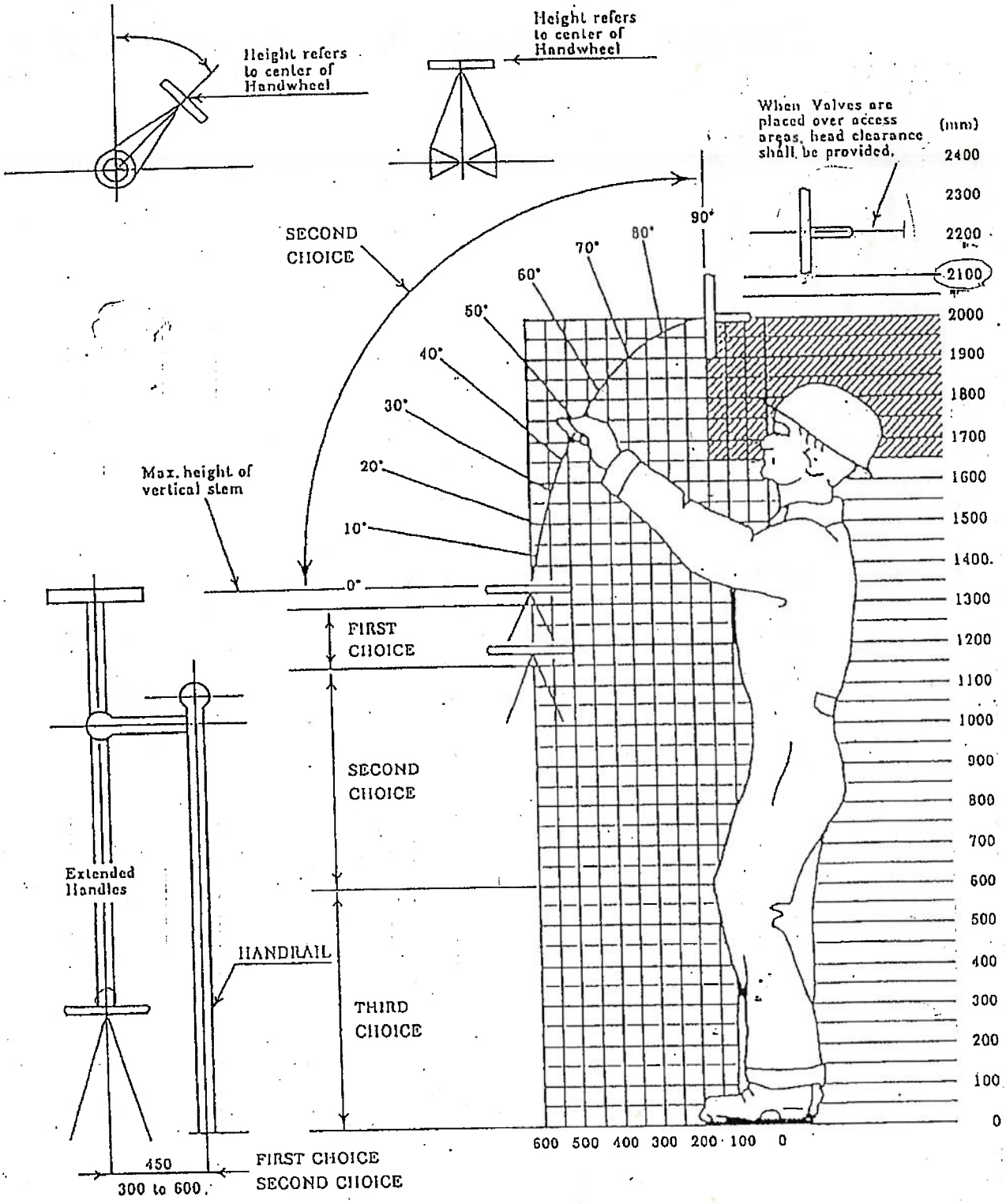
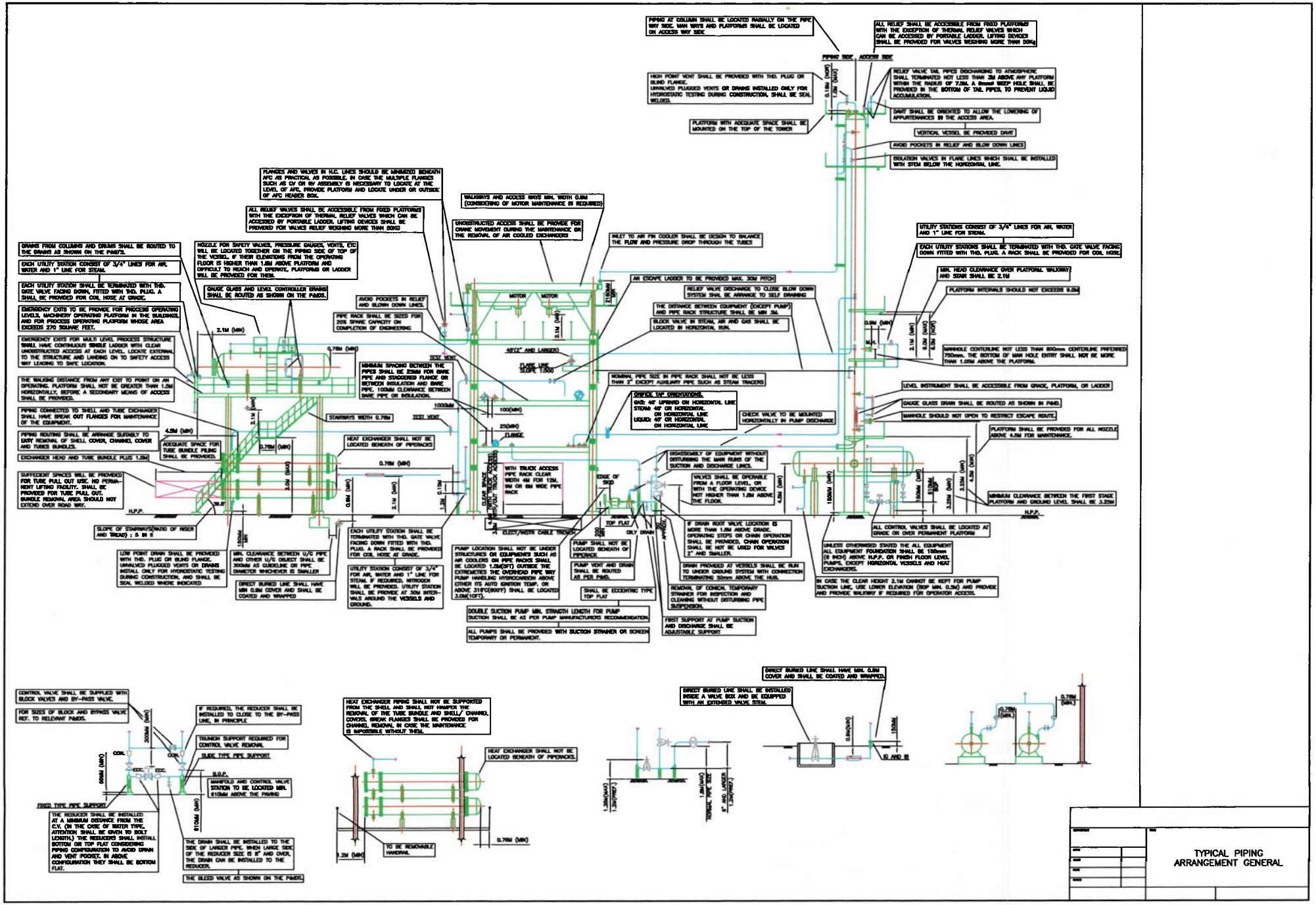
Attachment BASIS OF VALVE OPERATION HEIGHT (HORIZONTAL STEM)

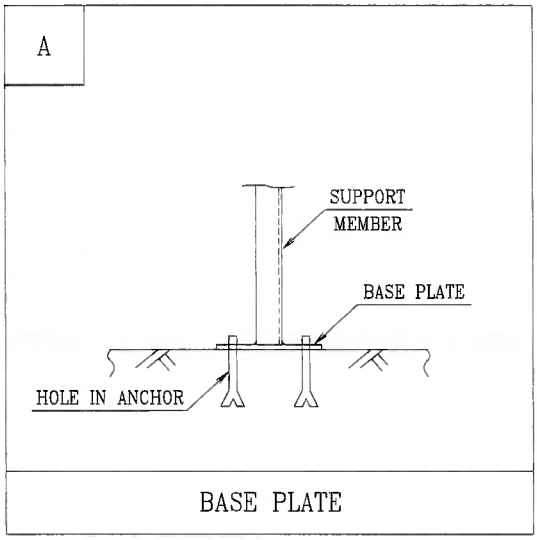


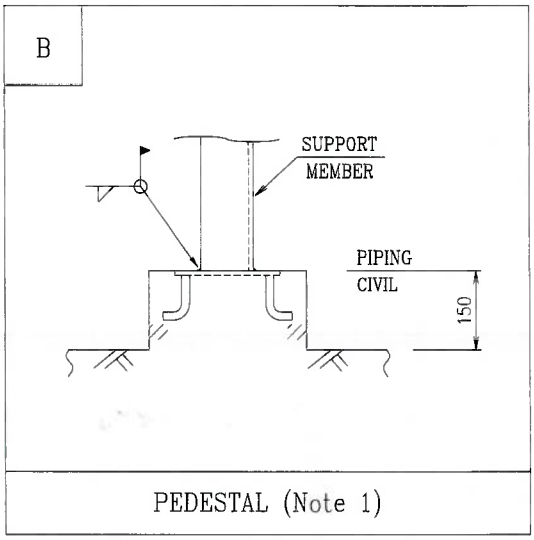
Attachment BASIS OF VALVE OPERATION HEIGHT (VERTICAL STEM)




PIPING AT COLUMN SHALL BE LOCATED INITIALLY ON THE PIPE WAY SIDE. MAN WAYS AND PLATFORMS SHALL BE LOCATED ON ACCESS WAY SIDE.
ALL RELIEF SHALL BE ACCESSIBLE FROM FIXED PLATFORMS WITH THE EXCEPTION OF THERMAL RELIEF VALVES WHICH CAN BE ACCESSED BY PORTABLE LADDER. LIFTING DEVICES SHALL BE PROVIDED FOR VALVES WEIGHING MORE THAN 50Kg
PIPING SIDE
ACCESS SIDE
HIGH POINT VENT SHALL BE PROVIDED WITH THD. PLUG OR BLIND FLANGE. UNVALVED PLUGGED VENTS OR DRAINS INSTALLED ONLY FOR HYDROSTATIC TESTING DURING CONSTRUCTION, SHALL BE SEAL WELDED.
RELIEF VALVE TAIL PIPES DISCHARGING TO ATMOSPHERE SHALL TERMINATED NOT LESS THAN 3M ABOVE ANY PLATFORM WITHIN THE RADIUS OF 7.5M. A Ø=mm WEEP HOLE SHALL BE PROVIDED IN THE BOTTOM OF TAIL PIPES, TO PREVENT LIQUID ACCUMULATION.
PLATFORM WITH ADEQUATE SPACE SHALL BE MOUNTED ON THE TOP OF THE TOWER
DAVIT SHALL BE ORIENTED TO ALLOW THE LOWERING OF APPURTENANCES IN THE ACCESS AREA.
VERTICAL VESSEL BE PROVIDED DAVIT
AVOID POCKETS IN RELIEF AND BLOW DOWN LINES
ISOLATION VALVES IN FLARE LINES WHICH SHALL BE INSTALLED WITH STEM BELOW THE HORIZONTAL LINE.
FLANGES AND VALVES IN H.C. LINES SHOULD BE MINIMIZED BENEATH AFC AS PRACTICAL AS POSSIBLE. IN CASE THE MULTIPLE FLANGES SUCH AS CV OR BV ASSEMBLY IS NECESSARY TO LOCATE AT THE LEVEL OF AFC, PROVIDE PLATFORM AND LOCATE UNDER OR OUTSIDE OF AFC HEADER BOX.
WALKWAYS AND ACCESS WAYS MIN. WIDTH 0.8M (CONSIDERING OF MOTOR MAINTENANCE IS REQUIRED)
ALL RELIEF VALVES SHALL BE ACCESSIBLE FROM FIXED PLATFORMS WITH THE EXCEPTION OF THERMAL RELIEF VALVES WHICH CAN BE ACCESSED BY PORTABLE LADDER. LIFTING DEVICES SHALL BE PROVIDED FOR VALVES RELIEF WEIGHING MORE THAN 50KG
UNOBSTRUCTED ACCESS SHALL BE PROVIDE FOR CRANE MOVEMENT DURING THE MAINTENANCE OR THE REMOVAL OF AIR COOLED EXCHANGERS
INLET TO AIR FIN COOLER SHALL BE DESIGN TO BALANCE THE FLOW AND PRESSURE DROP THROUGH THE TUBES
UTILITY STATIONS CONSIST OF 3/4" LINES FOR AIR, WATER AND 1" LINE FOR STEAM.
EACH UTILITY STATIONS SHALL BE TERMINATED WITH THD. GATE VALVE FACING DOWN FITTED WITH THD. PLUG. A RACK SHALL BE PROVIDED FOR COIL HOSE.
DRAINS FROM COLUMNS AND DRUMS SHALL BE ROUTED TO THE DRAINS AS SHOWN ON THE PAID'S.
EACH UTILITY STATION CONSIST OF 3/4" LINES FOR AIR, WATER AND 1" LINE FOR STEAM.
EACH UTILITY STATION SHALL BE TERMINATED WITH THD. GATE VALVE FACING DOWN, FITTED WITH THD. PLUG. A SHALL BE PROVIDED FOR COIL HOSE AT GRADE.
NOZZLE FOR SAFETY VALVES, PRESSURE GAUGES, VENTS, ETC. WILL BE LOCATED TOGETHER ON THE PIPING SIDE OF TOP OF THE VESSEL. IF THEIR ELEVATIONS FROM THE OPERATING FLOOR IS HIGHER THAN 1.8M ABOVE PLATFORM AND DIFFICULT TO REACH AND OPERATE, PLATFORMS OR LADDER WILL BE PROVIDED FOR THEM.
GAUGE GLASS AND LEVEL CONTROLLER DRAINS SHALL BE ROUTED AS SHOWN ON THE PAIDS.
AVOID POCKETS IN RELIEF AND BLOWN DOWN LINES.
PIPE RACK SHALL BE SIZED FOR 20% SPARE CAPACITY ON COMPLETION OF ENGINEERING
AN ESCAPE LADDER TO BE PROVIDED MAX. 30M PITCH
RELIEF VALVE DISCHARGE TO CLOSE BLOW DOWN SYSTEM SHALL BE ARRANGE TO SELF DRAINING
THE DISTANCE BETWEEN EQUIPMENT (EXCEPT PUMP) AND PIPE RACK STRUCTURE SHALL BE MIN 3M.
BLOCK VALVE IN STEAM, AIR AND GAS SHALL BE LOCATED IN HORIZONTAL RUN.
MIN. HEAD CLEARANCE OVER PLATFORM WALKWAY AND STAIR SHALL BE 2.1M
PLATFORM INTERNALS SHOULD NOT EXCEEDS 0.2M
MANHOLE CENTERLINE NOT LESS THAN 800mm CENTERLINE PREFERED 750mm. THE BOTTOM OF MAN HOLE ENTRY SHALL NOT BE MORE THAN 1.05M ABOVE THE PLATFORM.
EMERGENCY EXITS TO BE PROVIDE FOR PROCESS OPERATING LEVELS, MACHINERY OPERATING PLATFORM IN THE BUILDINGS, AND FOR PROCESS OPERATING PLATFORM WHOSE AREA EXCEEDS 270 SQUARE FEET.
EMERGENCY EXITS FOR MULTI LEVEL PROCESS STRUCTURE SHALL HAVE CONTINUOUS SINGLE LADDER WITH CLEAR UNOBSTRUCTED ACCESS AT EACH LEVEL. LOCATE EXTERNAL TO THE STRUCTURE AND LANDING ON TO SAFETY ACCESS WAY LEADING TO SAFE LOCATION.
THE WALKING DISTANCE FROM ANY EXIT TO POINT ON AN OPERATING PLATFORM SHALL NOT BE GREATER THAN 1.25M HORIZONTALLY, BEFORE A SECONDARY MEANS OF ACCESS SHALL BE PROVIDED.
PIPING CONNECTED TO SHELL AND TUBE EXCHANGER SHALL HAVE BREAK OUT FLANGES FOR MAINTENANCE OF THE EQUIPMENT.
PIPING ROUTING SHALL BE ARRANGE SUITABLY TO EASY REMOVAL OF SHELL COVER, CHANNEL COVER AND TUBES BUNDLES.
EXCHANGER HEAD AND TUBE BUNDLE PLUS 1.2M
ADEQUATE SPACE FOR TUBE BUNDLE PULING SHALL BE PROVIDED.
SUFFICIENT SPACES WILL BE PROVIDED FOR TUBE PULL OUT USE. NO PERMANENT LIFTING FACILITY. SHALL BE PROVIDED FOR TUBE PULL OUT. BUNDLE REMOVAL AREA SHOULD NOT EXTEND OVER ROAD WAY.
MINIMUM SPACING BETWEEN THE PIPES SHALL BE 25MM FOR BARE PIPE AND STAGGERED FLANGE OR BETWEEN INSULATION AND BARE PIPE. 100MM CLEARANCE BETWEEN BARE PIPE OR INSULATION.
STAIRWAYS WIDTH 0.78M
HEAT EXCHANGER SHALL NOT BE LOCATED BENEATH OF PIPERACKS
WITH TRUCK ACCESS PIPE RACK CLEAR WIDTH 4M FOR 12M, 6M OR 8M WIDE PIPE RACK
DISASSEMBLY OF EQUIPMENT WITHOUT DISTURBING THE MAIN RUNS OF THE SUCTION AND DISCHARGE LINES.
VALVES SHALL BE OPERABLE FROM A FLOOR LEVEL, OR WITH THE OPERATING DEVICE NOT HIGHER THAN 1.8M ABOVE THE FLOOR.
ORIFICE TAP ORIENTATIONS.
GAS: 45° UPWARD ON HORIZONTAL LINE
STEAM: 45° OR HORIZONTAL ON HORIZONTAL LINE
LIQUID: 45° OR HORIZONTAL ON HORIZONTAL LINE
CHECK VALVE TO BE MOUNTED HORIZONTALLY IN PUMP DISCHARGE
LEVEL INSTRUMENT SHALL BE ACCESSIBLE FROM GRADE, PLATFORM, OR LADDER
GAUGE GLASS DRAIN SHALL BE ROUTED AS SHOWN IN PAID.
MANHOLE SHOULD NOT OPEN TO RESTRICT ESCAPE ROUTE.
PLATFORM SHALL BE PROVIDED FOR ALL NOZZLE ABOVE 4.5M FOR MAINTENANCE.
MINIMUM CLEARANCE BETWEEN THE FIRST STAGE PLATFORM AND GROUND LEVEL SHALL BE 3.25M
ALL CONTROL VALVES SHALL BE LOCATED AT GRADE OR OVER PERMANENT PLATFORM
UNLESS OTHERWISED STATED THE ALL EQUIPMENT ALL EQUIPMENT FOUNDATION SHALL BE 150mm (6 INCH) ABOVE H.P.P. OR FINISH FLOOR LEVEL PUMPS, EXCEPT HORIZONTAL VESSELS AND HEAT EXCHANGERS.
IN CASE THE CLEAR HEIGHT 2.1M CANNOT BE KEPT FOR PUMP SUCTION LINE, USE LOWER ELEVATION (150 MM, 0.3M) AND PROVIDE AND PROVIDE WALKWAY IF REQUIRED FOR OPERATOR ACCESS.
SLOPE OF STAIRWAYS(RATIO OF RISER AND TREAD) : 5 IN 8
LOW POINT DRAIN SHALL BE PROVIDED WITH THD. PLUG OR BLIND FLANGE. UNVALVED PLUGGED VENTS OR DRAINS INSTALL ONLY FOR HYDROSTATIC TESTING DURING CONSTRUCTION, AND SHALL BE SEAL WELDED WHERE INDICATED
MIN. CLEARANCE BETWEEN U/G PIPE AND OTHER U/G OBJECT SHALL BE 300MM AS GUIDELINE OR PIPE DIAMETER WHICHEVER IS SMALLER
DIRECT BURIED LINE SHALL HAVE MIN 0.8M COVER AND SHALL BE COATED AND WRAPPED
EACH UTILITY STATION SHALL BE TERMINATED WITH THD. GATE VALVE FACING DOWN FITTED WITH THD. PLUG. A RACK SHALL BE PROVIDED FOR COIL HOSE AT GRADE.
UTILITY STATION CONSIST OF 3/4" FOR AIR, WATER AND 1" LINE FOR STEAM. IF REQUIRED, NITROGEN WILL BE PROVIDED. UTILITY STATION SHALL BE PROVIDE AT 30M INTERVALS AROUND THE VESSELS AND GROUND.
PUMP LOCATION SHALL NOT BE UNDER STRUCTURES OR EQUIPMENTS SUCH AS AIR COOLERS ON PIPE RACKS SHALL BE LOCATED 1.2M(4FT) OUTSIDE THE EXTREMETIES THE OVERHEAD PIPE WAY PUMP HANDLING HYDROCARBON ABOVE EITHER ITS AUTO IGNITION TEMP, OR ABOVE 316°C(600°F) SHALL BE LOCATED 3.0M(10FT).
PUMP SHALL NOT BE LOCATED BENEATH OF PIPERACK.
PUMP VENT AND DRAIN SHALL BE ROUTED AS PER P&ID.
SHALL BE ECCENTRIC TYPE TOP FLAT
DRAIN PROVIDED AT VESSELS SHALL BE RUN TO UNDER GROUND SYSTEM WITH CONNECTION TERMINATING 50mm ABOVE THE HUB.
REMOVAL OF CONICAL TEMPORARY STRAINER FOR INSPECTION AND CLEANING WITHOUT DISTURBING PIPE SUSPENSION.
FIRST SUPPORT AT PUMP SUCTION AND DISCHARGE SHALL BE ADJUSTABLE SUPPORT
DOUBLE SUCTION PUMP MIN. STRAGTH LENGTH FOR PUMP SUCTION SHALL BE AS PER PUMP MANUFACTURERS RECOMMENDATION
ALL PUMPS SHALL BE PROVIDED WITH SUCTION STRAINER OR SCREEN TEMPORARY OR PERMANENT.
IF DRAIN ROOT VALVE LOCATION IS MORE THAN 1.8M ABOVE GRADE. OPERATING STEPS OR CHAIN OPERATION SHALL BE PROVIDED. CHAIN OPERATION SHALL BE NOT BE USED FOR VALVES 2" AND SMALLER.
CONTROL VALVE SHALL BE SUPPLIED WITH BLOCK VALVES AND BY-PASS VALVE.
FOR SIZES OF BLOCK AND BYPASS VALVE REF. TO RELEVANT PAIDS.
IF REQUIRED, THE REDUCER SHALL BE INSTALLED TO CLOSE TO THE BY-PASS LINE, IN PRINCIPLE
TRUNION SUPPORT REQUIRED FOR CONTROL VALVE REMOVAL
SLIDE TYPE PIPE SUPPORT
H.G.P.
MANIFOLD AND CONTROL VALVE STATION TO BE LOCATED MIN. 610MM ABOVE THE PAVING
FIXED TYPE PIPE SUPPORT
THE REDUCER SHALL BE INSTALLED AT A MINIMUM DISTANCE FROM THE C.V. (IN THE CASE OF WATER TYPE. ATTENTION SHALL BE GIVEN TO BOLT LENGTH.) THE REDUCERS SHALL INSTALL BOTTOM OR TOP FLAT CONSIDERING PIPING CONFIGURATION TO AVOID DRAIN AND VENT POCKET. IN ABOVE CONFIGURATION THEY SHALL BE BOTTOM FLAT.
THE DRAIN SHALL BE INSTALLED TO THE SIDE OF LARGER PIPE. WHEN LARGE SIDE OF THE REDUCER SIZE IS 8" AND OVER, THE DRAIN CAN BE INSTALLED TO THE REDUCER.
THE BLEED VALVE AS SHOWN ON THE PAIDS.
HEAT EXCHANGER PIPING SHALL NOT BE SUPPORTED FROM THE SHELL AND SHALL NOT HAMPER THE REMOVAL OF THE TUBE BUNDLE AND SHELL/ CHANNEL COVERS. BREAK FLANGED SHALL BE PROVIDED FOR CHANNEL REMOVAL IN CASE THE MAINTENANCE IS IMPOSSIBLE WITHOUT THEM.
HEAT EXCHANGER SHALL NOT BE LOCATED BENEATH OF PIPERACKS.
TO BE REMOVABLE HANDRAIL
DIRECT BURIED LINE SHALL BE INSTALLED INSIDE A VALVE BOX AND BE EQUIPPED WITH AN EXTENDED VALVE STEM.
DIRECT BURIED LINE SHALL HAVE MIN. 0.8M COVER AND SHALL BE COATED AND WRAPPED.
TYPICAL PIPING ARRANGEMENT GENERAL

BASE PLATE & PEDESTAL APPLICATION BASIS



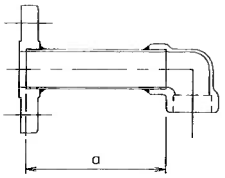


PIPE SIZE	DEAD WEIGHT (INCL. AROUND CV BLOCK)	ROTATING MACHINE (WITH NO HORIZONTAL FORCE)		OTHERS
		PUMP, CENTRIFUGAL BLOWER	RECIPROCATING COMPRESSOR, ROOT TYPE BLOWER	PIPE SUPPORT HIGHER THAN STANDARD & WITH HORIZONTAL FORCE
1"	A	A	B	B
2"				
3"				
4"				
6"				
8"				
10"	B (Note 1)	B		
12"				
14"				
16"				
18"				
20"				
22"				
24"				
26"				
28"				
30" ~ UP				

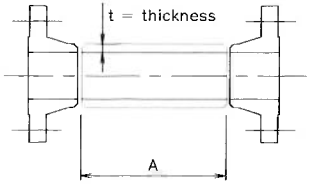
Notes:

1. Use PEDESTAL type if dead weight is more than 500kgs regardless of pipe size.

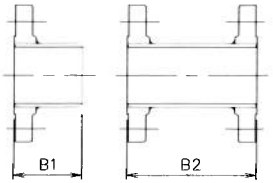
SW x SW



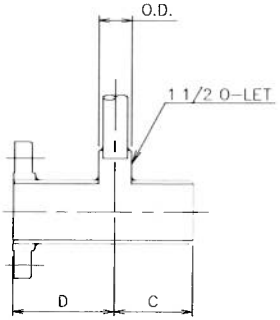
BW x BW



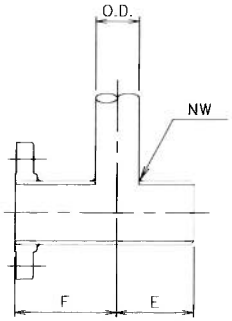
S.O. FLANGE



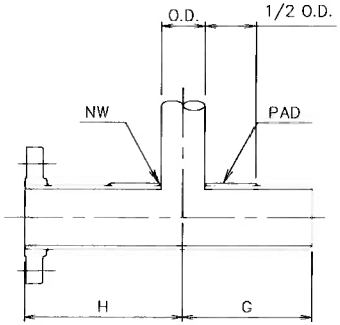
S.O. + O-LET



S.O. + NW



S.O. + NW(PAD)



(UNIT: MM)

NPS	a			A	B						C	D_SO			E	F_SO			G	H_SO		
	150	300	600		B1_150	B2_150	B1_300	B2_300	B1_600	B2_600		150	300	600		150	300	600		150	300	600
1/2	65	80	95	-	50	105	60	110	-	-	65	80	85	-	-	-	-	-	-	-	-	-
3/4	65	80	105	-	50	105	60	115	-	-	70	85	90	-	-	-	-	-	-	-	-	-
1	65	80	115	-	50	105	65	120	-	-	80	90	95	-	-	-	-	-	-	-	-	-
1 1/4	65	80	120	-	60	110	65	130	-	-	80	90	105	-	-	-	-	-	-	-	-	-
1 1/2	80	80	120	-	60	115	65	130	-	-	80	95	105	-	80	85	90	-	-	-	-	-
2	-	-	-	50	60	115	70	135	-	-	85	95	130	-	85	90	95	-	115	120	130	-
3	-	-	-	65	85	160	95	190	-	-	90	115	135	-	110	130	140	-	155	165	185	-
4	-	-	-	80	90	175	105	205	-	-	95	130	140	-	135	150	160	-	190	200	215	-
6	-	-	-	100	95	190	110	210	-	-	110	150	165	-	185	185	190	-	260	260	275	-
8	-	-	-	105	105	205	120	235	-	-	110	155	175	-	215	215	230	-	320	320	340	-
10	-	-	-	125	115	230	135	270	-	-	115	165	190	-	260	255	275	-	395	390	410	-
12	-	-	-	140	135	270	155	300	-	-	130	185	205	-	265	300	315	-	465	460	470	-
14	-	-	-	155	140	275	160	315	-	-	135	200	210	-	330	320	340	-	510	495	515	-
16	-	-	-	165	160	315	180	350	-	-	140	210	230	-	370	365	385	-	575	560	580	-
18	-	-	-	190	175	340	190	385	-	-	155	225	245	-	420	400	420	-	645	630	650	-
20	-	-	-	205	185	370	210	415	-	-	165	235	260	-	460	440	465	-	715	695	715	-
24	-	-	-	220	200	395	220	430	-	-	165	255	280	-	465	485	510	-	765	785	810	-
26	-	-	-	230	225	450	270	520	-	-	200	270	315	-	485	555	600	-	770	840	885	-
28	-	-	-	240	225	450	270	520	-	-	200	270	315	-	495	565	610	-	780	850	895	-
30	-	-	-	250	260	520	310	600	-	-	235	305	355	-	505	575	625	-	790	860	910	-
32	-	-	-	260	260	520	320	620	-	-	235	305	365	-	540	610	670	-	820	890	950	-

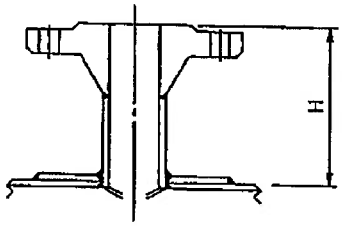
REV. NO.	DATE	DESCRIPTION	DWN.	CHK'D	APP'D	CRT'D

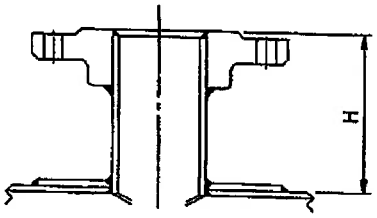
MINIMUM SPOOL LENGTH TABLE

SCALE :	JOB NO. : HC4410	
DRAWING NO.	SHEET	REVISION
	–	–

	STANDARD DRAWING ESD 1301 NOZZLE PROJECTION	ESD 1301 JOB NO. DWG. NO. REV. ◇ PAGE OF

NOTE: If nozzle heights are specified in data sheets, the figures in data sheets shall govern.





INS. THK. (mm) / RATING / NOMINAL PIPE SIZE(IN)	NOZZLE HEIGHT "H" (mm)									
	WITHOUT INS. OR UP TO 75		OVER 75 UP TO 100		OVER 100 UP TO 150		OVER 150 UP TO 200		OVER 200 UP TO 250	
	150 Lb 300 Lb	600 Lb	150 Lb 300 Lb	600 Lb	150 Lb 300 Lb	600 Lb	150 Lb 300 Lb	600 Lb	150 Lb 300 Lb	600 Lb
1/2	150	150	180	180	230	230	280	280	330	330
3/4										
1										
(1-1/4)										
1-1/2										
2										
(2-1/2)										
3		180								
(3-1/2)	180			200		250		300		350
4		200								
(5)		230	200	230	250	280	300	330	350	380
6										
8										
10	200	280	230	280	280	300	330	350	380	400
12	230									
14										
16		300		300		330		380		430
18	250	330	250	330						
20										
24	280	380	280	380	300	380	350	400	400	450

Face Type ②

A – Flat Face
B – Raised Face
R – Ring Type Joint

Rating ③

A – 125
B – 150
C – 250
D – 300
E – 400
F – 600
G – 900
H – 1500
J – 2500

1 2 3
FBD

① **F** – Flange
B – Flange Facing (RF)
D – Flange Rating (300lb)

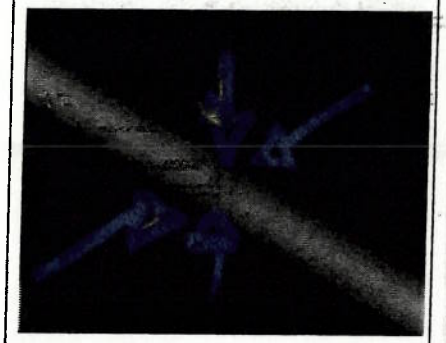
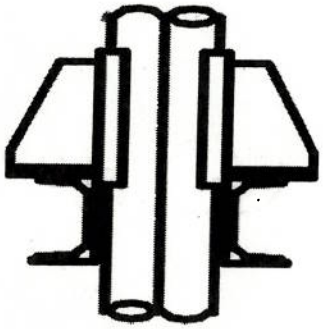
LFFD - Large Female
LFMD - Large male
- RT - 822
RI = D/2
RO = D/2(+6)

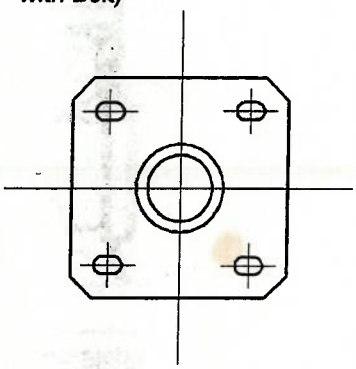
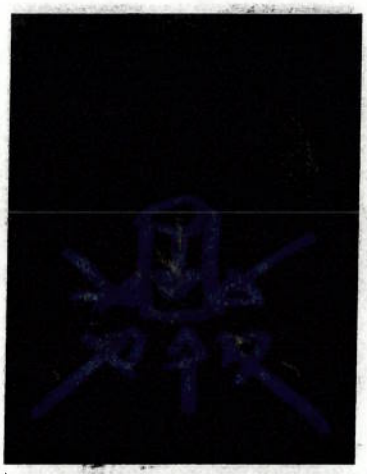
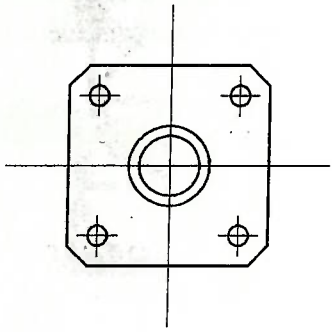
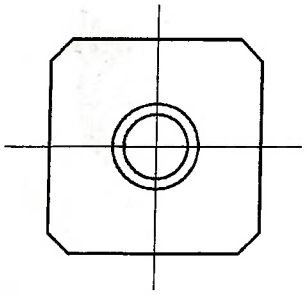
NOMINAL PIPE SIZE		ANSI	
in	mm	Dia.	Rad.
¼	8	13.7	6.9
3/8	10	17.1	8.6
½	15	21.3	10.7
¾	20	26.7	13.4
1	25	33.4	16.7
1.1/4	32	42.2	21.1
1.1/2	40	48.3	24.2
2	50	60.3	30.2
2.1/2	65	73.0	36.5
3	80	88.9	44.5
3.1/2	90	101.6	50.8
4	100	114.3	57.2
5	125	141.3	70.7
6	150	168.3	84.2
7	175	-	-
8	200	219.1	109.6
9	225	-	-
10	250	273.1	136.6
12	300	323.9	162.0
14	350	355.6	177.8
16	400	406.4	203.2
18	450	457.2	228.6
20	500	508.0	254.0
22	550	558.8	279.4
24	600	609.6	304.8
26	650	660.4	330.2
28	700	711.2	355.6
30	750	762.0	381
32	800	812.8	406.4
34	850	863.6	431.8
36	900	914.4	457.2
38	950	965.2	482.6
40	1000	1016	508.0

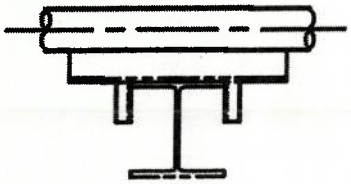
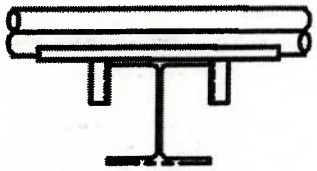
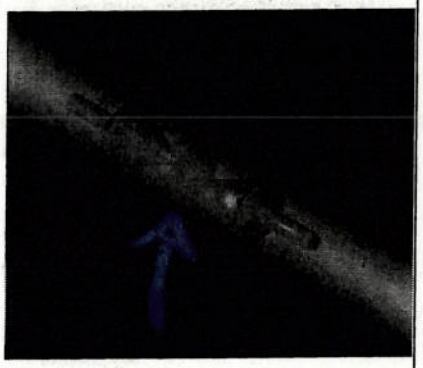
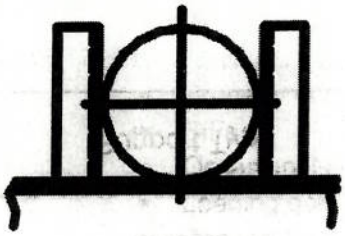
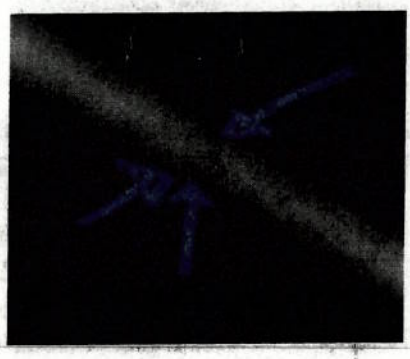
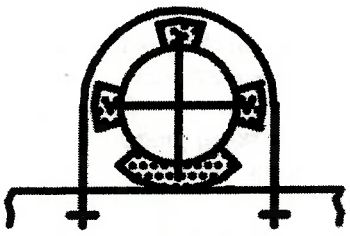
SIZE		Code	OD
	6	A	10.30
¼	8	B	13.70
3/8	10	C	17.10
½	15	D	21.30
¾	20	E	26.70
1	25	F	33.40
1.1/4	32	G	42.20
1.1/2	40	H	48.30
2	50	J	60.30
2.1/2	65	K	73.00
3	80	L	88.90
3.1/2	90	M	101.60
4	100	N	114.30
5	125	P	141.30
6	150	R	168.30
8	200	T	219.10
10	250	V	273.10
12	300	W	323.90
14	350	X	355.60
16	400	Y	406.40
18	450	Z	457.20
20	500	1	508.00
22	550	2	558.80
24	600	3	609.60
26	650	4	660.40
28	700	5	711.20
30	750	6	762.00
32	800	7	812.80
34	850	8	863.60
36	900	9	914.40
38	950	a	965.20
40	1000	b	1016.00
42	1050	c	1066.80
44	1100	d	1117.60
46	1150	e	1168.40
48	1200	f	1219.20
50	1250	g	1270.00
52	1300	h	1320.80
54	1350	i	1371.60
56	1400	j	1422.40
58	1450	k	1473.20
60	1500	l	1524.00
62	1550	m	1574.80
64	1600	n	1625.60
66	1650	o	1676.40
68	1700	p	1727.20
70	1750	q	1778.00
72	1800	r	1828.80
74	1850	s	1879.60
76	1900	t	1930.40
78	1950	u	1981.20
80	2000	v	2032.00

FOR REFERENCE
3D SYSTEM

Kanz

Support Type	Function	CAESAR II Input
6. Loose Type U-bolt 		Node: 5120 CNode: Type: +Y Gap: Stif: Mu: 0.400 Node: 5120 CNode: Type: -Y Gap: 3.000 Stif: Mu: 0.400 Node: 5120 CNode: Type: Z Gap: 3.000 Stif: Mu: 0.400
7. Rigid Type U-bolt 		Node: 5120 CNode: Type: Y Gap: Stif: Mu: 0.400 Node: 5120 CNode: Type: Z Gap: Stif: Mu: 0.400
8. Down Stopper 		Node: 10000 CNode: Type: +Y Gap: Stif: Mu: 0.400 Node: 10010 CNode: Type: +Y Gap: Stif: Mu: 0.400

Support Type	Function	CAESAR II Input
9. Stanchion (Sliding with Bolt) 		Node: 1000 CNode: Type: Y Gap: Stif: Mu: 0.400 Node: 1000 CNode: Type: X Gap: 2.000 Stif: Mu: 0.400 Node: 1000 CNode: Type: Z Gap: 5.000 Stif: Mu: 0.400
10. Stanchion (Fixed) 		Node: 1000 CNode: Type: ANC Gap: Stif: Mu:
11. Stanchion (Sliding) 		Node: 1000 CNode: Type: +Y Gap: Stif: Mu: 0.400

Support Type	Function	CAESAR II Input
3. Pipe Stopper for Insulated Line  Pipe Stopper for Uninsulated Line 		Node: 5140 CNode: Type: +Y Gap: Stif: Mu: 0.400 Node: 5140 CNode: Type: LIM Gap: 3.000 Stif: Mu: 0.400
4. Pipe Guide (Angle) Cold Insulation Line 		Node: 5120 CNode: Type: +Y Gap: Stif: Mu: 0.400 Node: 5120 CNode: Type: Guide Gap: 3.000 Stif: Mu:
5. U-band for Cold Insulation Line 		Node: 5120 CNode: Type: Y Gap: Stif: Mu: 0.400 Node: 5120 CNode: Type: Z Gap: Stif: Mu: 0.400