

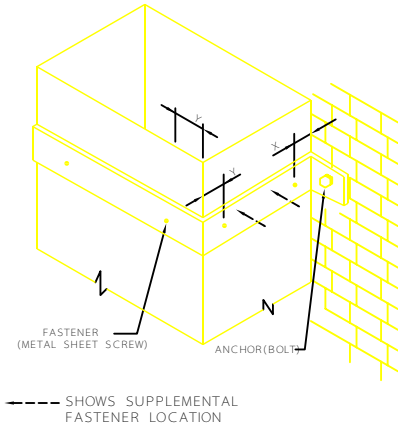
DETAIL OF DUCT FABRICATION & SUPPORTS

C			IRANIAN PETROLEUM STANDARDS			
B			NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION			
A			COVER SHEET	DATE	DRAWING No.	SHT/REV.
REV	DESCRIPTION	DATE			IPS - D - AR - 013	1/11

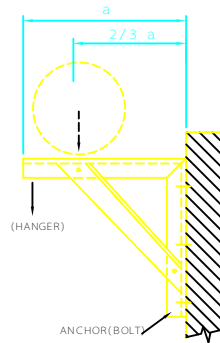
FIG. A - SUGGESTED SIZING

DUCT SIZE mm (in)	BAND mm (in)
450 (18") x 300 (12")	38 (1 1/2") x 1.6 (1/16")
600 (24") x 500 (20")	25 (1") x 3 (1/8")

DUCT THK. mm. (GA)	ALLOWABLE LOAD PER FASTENER (Kg)
0.5 (28) , 0.55 (26)	11.5
0.70 (24) , 0.85 (32) , 1.0 (20)	16
1.3 (18") , 1.6 (16)	23



*WELD, BOLT OR No. 8 SCREW (MIN.) DEVIATION PERMITTED BY OTHER ANALYSIS
 X = 25 mm.(1"), Y = 50 mm.(2"), ADD OTHERS TO ACCOMMODATE LOAD.
 MINIMUM OF 3 ON 600 mm.(24") WIDTH AND UP.
 ADD ALONG SIDES NEAREST ANCHORS.



KNEE BRACKET FOR ROUND DUCT LOCATION POINT

FIG. B - SUGGESTED SIZING

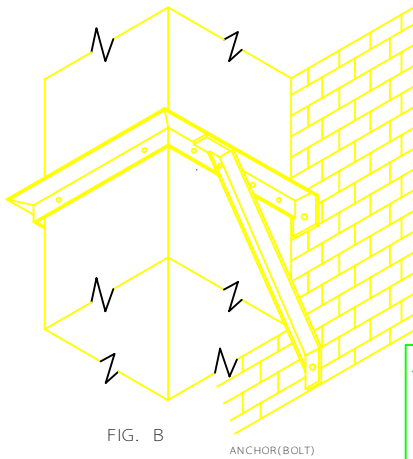
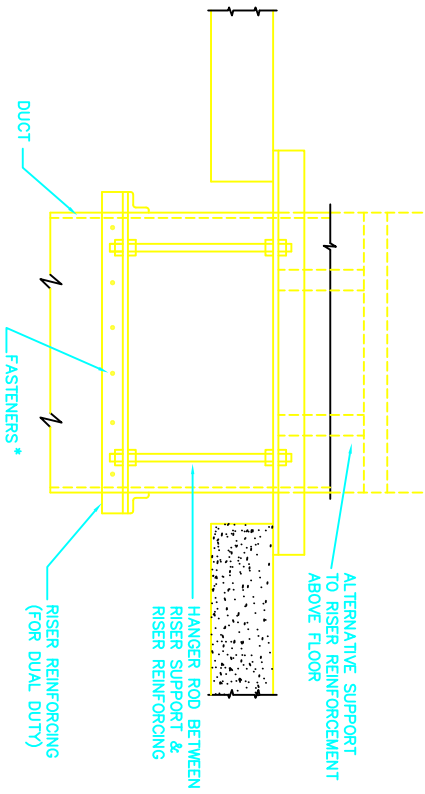


FIG. B

DUCT SIZE mm (in)	ANGLE mm (in)
750 (30") x 300 (12")	25 (1") x 25 (1") x 3 (1/8")
900 (36") x 450 (12")	25 (1") x 25 (1") x 3 (1/8")
1050 (42") x 600 (24")	32 (1 1/4") x 32 (1 1/4") x 3 (1/8")
1200 (48") x 750 (30")	32 (1 1/4") x 32 (1 1/4") x 3 (1/8")

- NOTES: 1. BRACKETS ARE SIZED FOR 3.65 m (12 ft) OF DUCT, MAXIMUM.
 2. LOCATE DUCTS AGAINST WALL OR MAXIMUM OF 50 mm.(2") AWAY FROM WALL.
 3. EACH WALL ANCHOR SHALL SATISFY THE FOLLOWING CRITERIA UNLESS OTHER ANALYSIS IS MADE.
 A. TENSILE LOAD = 3/8 x DUCT WEIGHT; SAFETY FACTOR OF 4.
 B. SHEAR LOAD = 1/2 x DUCT WEIGHT; SAFETY FACTOR OF 4.

C			IRANIAN PETROLEUM STANDARDS 			
B			NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION			
A			DATE	DRAWING No.	SHT	REV.
REV	DESCRIPTION	DATE	DUCT WALL SUPPORTS	IPS-D-AR-013	2	11



MINIMUM NUMBER OF FASTENERS
* ON EACH OF TWO SUPPORT BARS
FIG. B

LARGEST DUCT DIM. mm (IN)	MINIMUM NUMBER OF FASTENERS
100 (16") AND DOWN	2
425 (17")-600 (24") OVER	3
	LARGEST DUCT DIM. DIVIDED BY 203(8)

SUGGESTED SIZING FOR SUPPORT OF 300mm. OF DUCT

DUCT SIZE mm (IN)	ANGLE mm (IN)
900 (36") x 450 (18")	40 (1 1/2") x 40 (1 1/2") x 3 (1/8")
1200 (48") x 600 (24")	40 (1 1/2") x 40 (1 1/2") x 3 (1/8")
1500 (60") x 750 (30")	40 (1 1/2") x 40 (1 1/2") x 5 (13/64")
1500 (60") x 1500 (60")	40 (1 1/2") x 40 (1 1/2") x 6 (1/4")
	OR 50 (2") x 50 (2") x 3 (1/8")

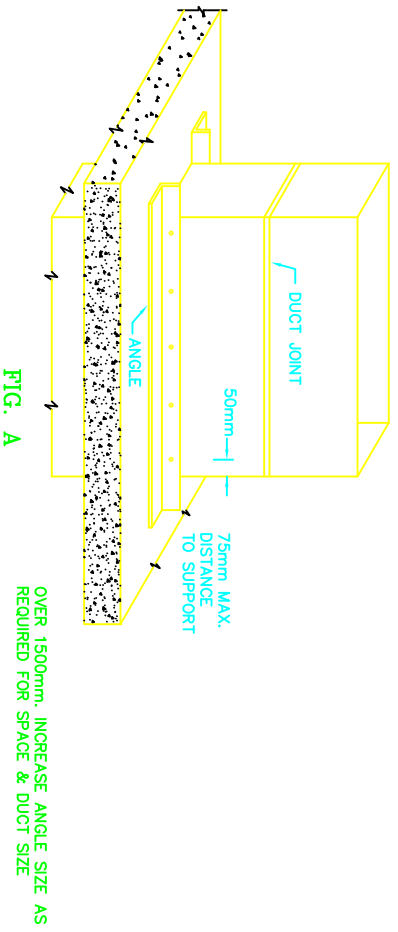


FIG. A

C			
B			
A			
REV.	DESCRIPTION	DATE	

IRANIAN PETROLEUM STANDARDS



NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION

RISER SUPPORTS- FROM FLOOR

DATE	DRAWING No.	SHT REV.
	IPS-D-AR-013	3 / 11

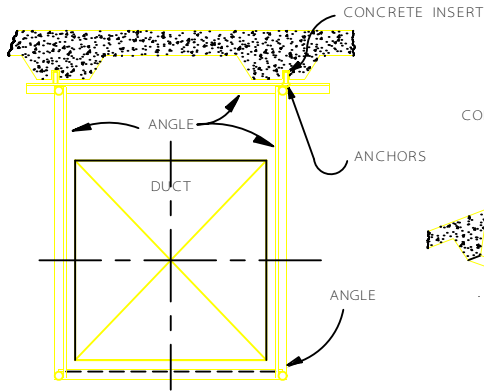


FIG. A

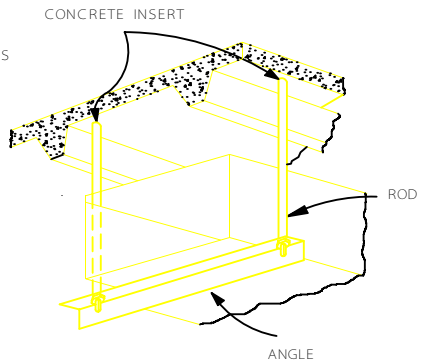


FIG. B

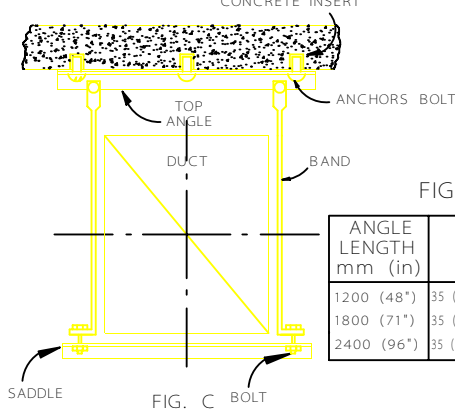


FIG. C


FIG. B - SUGGESTED SIZING

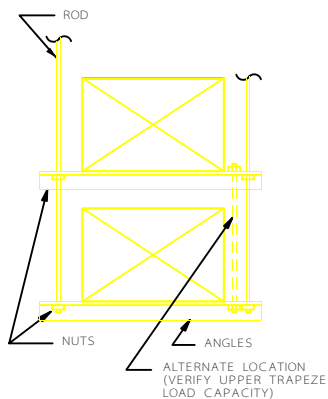
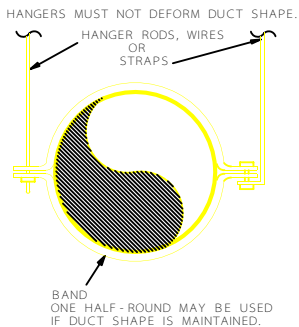
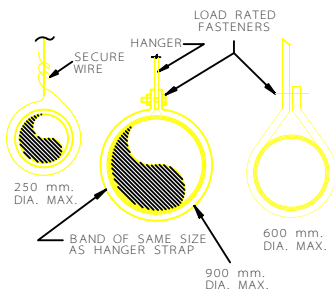
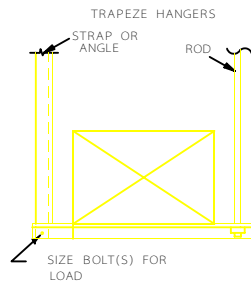
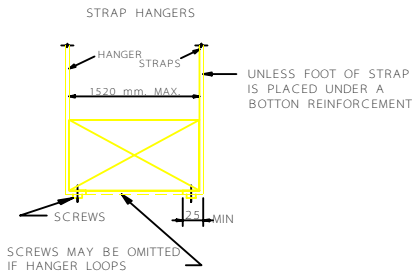
ANGLE LENGTH mm (in)	ANGLE mm (in)	ROD DIA. mm (in)	SPACING mm (ft)
1200 (48")	35 (1 1/8") x 35 (1 1/8") x 4 (5/32)	6.5 (17/64")	2.50 (8.2)
1800 (71")	35 (1 1/8") x 35 (1 1/8") x 4 (5/32)	6.5 (17/64")	2.50 (8.2)
2400 (96")	35 (2 3/16") x 55 (2 3/16") x 5 (13/64)	8 (10/32")	2.50 (8.2)

FIG.A & FIG.C - SUGGESTED SIZING

DUCT SIZE mm (in)	TOP ANGLE mm (in)	SHELF ANGLE mm (in)	BAND mm (in) S	SPACING mt (ft)
600 (24") x 300 (12")	25 (1") X 25 (1") X 5 (13/64")	25 (1") X 25 (1") X 5 (13/64")	25 (1") x 3 (1/8")	2.5 (8.2)
900 (36") x 450 (18")	35 (1 1/8") X 35 (1 1/8") X 6 (1/4")	35 (1 1/8") X 35 (1 1/8") X 6 (1/4")	25 (1") x 3 (1/8")	2.5 (8.2)
1200 (48") x 600 (24")	35 (1 1/8") X 35 (1 1/8") X 6 (1/4")	35 (1 1/8") X 35 (1 1/8") X 6 (1/4")	30 (1 3/16") x 5 (13/64")	2.5 (8.2)
1350 (60") x 750 (30")	50 (2") X 50 (2") X 6 (1/4")	50 (2") X 50 (2") X 6 (1/4")	50 (2") x 5 (13/64")	2.5 (8.2)
over 1350 (60")	75 (3") X 75 (3") X 6 (1/4")	75 (3") X 75 (3") X 6 (1/4")	75 (3") x 5 (13/64")	2.5 (8.2)

NOTE: THE DUCT SHOWN IN FIG A,B, AND C CAN BE CONSIDERED AS INSULATED.

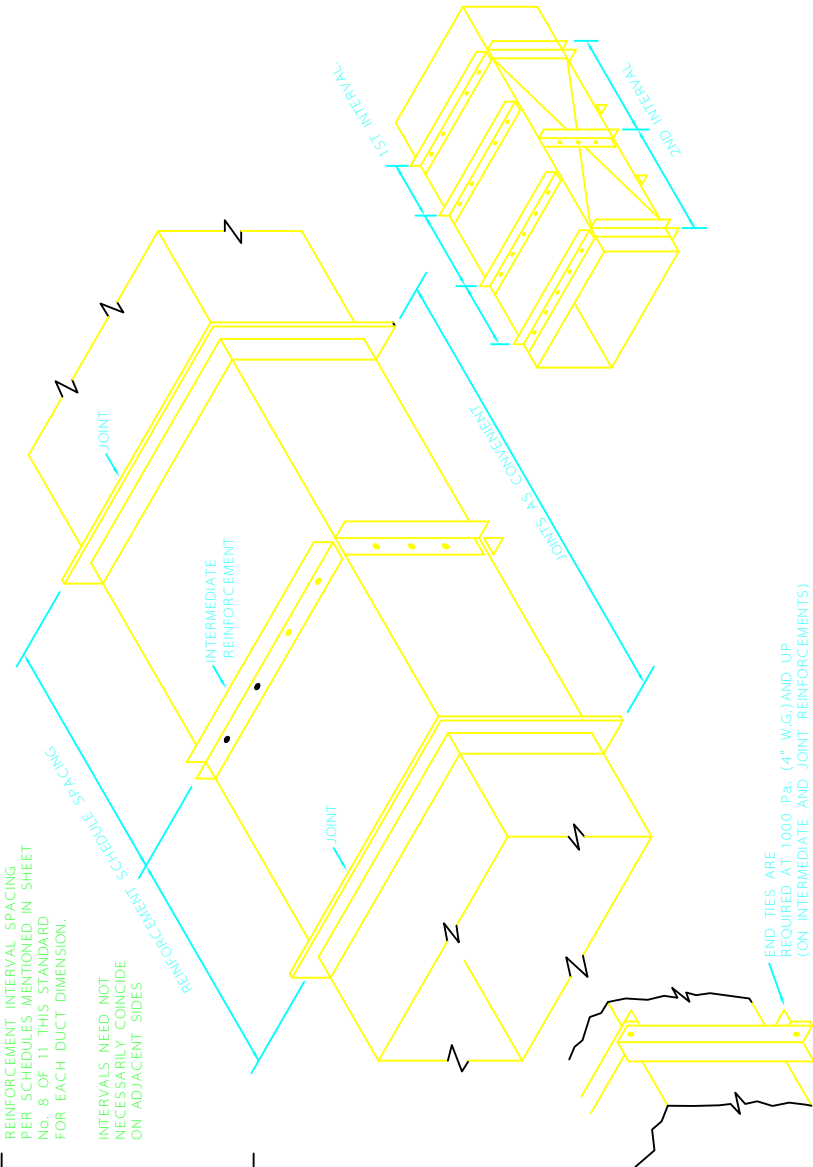
C			IRANIAN PETROLEUM STANDARDS  NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION		
B					
A			DATE	DRAWING No.	SHT/REV.
REV	DESCRIPTION	DATE	HANGERS FOR HORIZONTAL DUCTS		4 11



NOTES:

1. REINFORCEMENT MAY BE USED FOR ATTACHMENT IF IT QUALIFIES FOR BOTH DUTIES.
2. ALLOWABLE LOAD LIMITS SHALL NOT BE EXCEEDED.

C			IRANIAN PETROLEUM STANDARDS 			
B			NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION			
A			HANGER ATTACHMENTS FOR DUCTING	DATE	DRAWING No.	SHT/REV.
REV	DESCRIPTION	DATE			IPS-D-AR-013	5/11

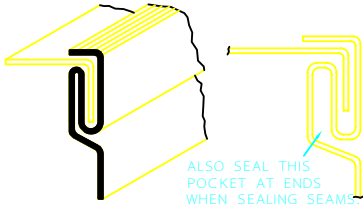


REINFORCEMENT INTERVAL SPACING PER SCHEDULES MENTIONED IN SHEET No. 8 OF 11 THIS STANDARD FOR EACH DUCT DIMENSION.

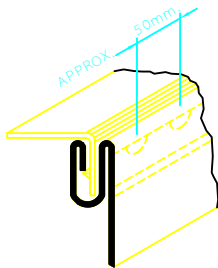
INTERVALS NEED NOT NECESSARILY COINCIDE ON ADJACENT SIDES

END TIES ARE REQUIRED AT 1000 Pa. (4" W.G.) AND UP (ON INTERMEDIATE AND JOINT REINFORCEMENTS)

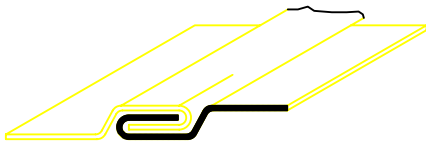
C			IRANIAN PETROLEUM STANDARDS 			
B						
A			DUCT REINFORCED ON ALL SIDES	DATE	DRAWING No.	SHT/REV.
REV	DESCRIPTION	DATE		IPS - D - AR - 013	6	11



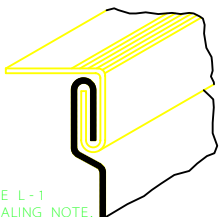
L-1
PITTSBURGH LOCK



L-2
BUTTON PUNCH SNAP LOCK

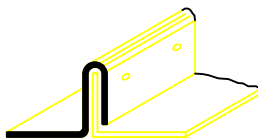


L-3
GROOVED SEAM
ALSO CALLED FLAT LOCK AND PIPE LOCK



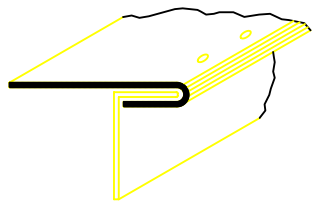
SEE L-1
SEALING NOTE.

L-6
DOUBLE CORNER SEAM



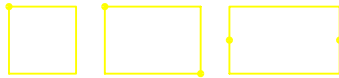
SEE FIG. L-6
ALSO

L-4
STANDING SEAM



L-5
SINGLE CORNER SEAM

SEAM LOCATIONS



(a)



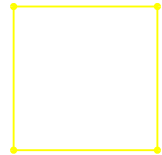
(b)



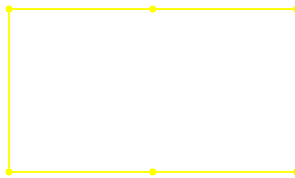
(c)



(d)




(e)



(f)

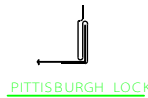
NUMBER OF SEAMS AND LOCATION VARIES WITH JOINT TYPE, SHEET STOCK AND ASSEMBLY PLANS.

C			IRANIAN PETROLEUM STANDARDS 				
B			NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION				
A			LONGITUDINAL SEAMS (RECT. DUCT)	DATE	DRAWING No.	SHT	REV.
REV	DESCRIPTION	DATE			IPS-D-AR-013	7	11

NOTES:

- 1- ALL LONGITUDINAL SEAMS SHALL BE PITTSBURGH LOCK
- 2- CLOSEST EQUIVALENT IN MILLIMETER DIMENSIONS SHALL BE CONSIDERED.

DIMENSION OF LONGEST SIDE mm. (IN.)	SHEET METAL GAGE (ALL FOUR SIDES)			TRANSVERSE REINFORCEMENT																	
				AT JOINTS																	
	STEEL	ALUMINUM ALLOY	COPPER	MINIMUM REINFORCING ANGLE SIZE mm. (IN.) AND MAXIMUM LONGITUDINAL SPACING mm. (IN.) BETWEEN TRANSVERSE JOINTS AND/OR INTERMEDIATE REINFORCING	MINIMUM HIGH (mm.)	PLAIN "S" SLIP		HEMMED "S" SLIP		ALTERNATE BAR SLIP		REINFORCED BAR SLIP		BAR SLIP		STANDING SEAM		POCKET LOCK		GASKET OR SEALER	
						ANGLE SLIP		ANGLE REINFORCED		ANGLE REINFORCED		ANGLE REINFORCED		ANGLE REINFORCED		COMpanion ANGLES					
						mm.(Ga.)	THICKNESS mm. (IN.)	KG/m ² (OZ/ft ²)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)	mm.(Ga.)
UP THRU 300(12)	0.55(26)	0.50 (0.020)	4.85 (16)	NONE RECOMMENDED	25	0.55(26)	0.55(26)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED	NOT REQUIRED	0.70(24)	NOT REQUIRED	-						
325 - 450 (13 - 18)	0.70(24)	0.60 (0.025)	7.30 (24)	NONE RECOMMENDED	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED	NOT REQUIRED	0.70(24)	NOT REQUIRED	-						
475 - 750 (19 - 30)	0.70(24)	0.60 (0.025)	7.30 (24)	25x25x3 & 1500 1x1x1/8 & 60	25		0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED	NOT REQUIRED	0.70(24)	NOT REQUIRED	-						
775 - 1050 (31 - 42)	0.85(22)	0.80 (0.032)	9.75 (32)	25x25x3 & 1500 1x1x1/8 & 60	25			0.85(22)	0.85(22)	0.85(22)	NOT REQUIRED	NOT REQUIRED	0.85(22)	NOT REQUIRED	-						
1075 - 1350 (43 - 54)	0.85(22)	0.80 (0.032)	9.75 (32)	40x40x3 & 1500 1 1/2x1 1/2x1/8 & 60	40			0.85(22)	0.85(22)	0.85(22)	40x40x3 1 1/2x1 1/2x1/8	NOT REQUIRED	0.85(22)	NOT REQUIRED	-						
1375 - 1500 (55 - 60)	1.0(20)	1.0 (0.040)	11.0 (36)	40x40x3 & 1500 1 1/2x1 1/2x1/8 & 60	40			0.85(22)	0.85(22)	0.85(22)	40x40x3 1 1/2x1 1/2x1/8	NOT REQUIRED	0.85(22)	NOT REQUIRED	-						
1525 - 2100 (61 - 84)	1.0(20)	1.0 (0.040)	11.0 (36)	40x40x3 & 1500 1 1/2x1 1/2x1/8 & 60	40			0.85(22)	0.85(22)	0.85(22)	40x40x3 1 1/2x1 1/2x1/8	40x40x3 1 1/2x1 1/2x1/8	0.85(22)	40x40x3 1 1/2x1 1/2x1/8	-						
2125 - 2400 (85 - 96)	1.30(18)	1.25 (0.050)	14.65 (48)	40x40x3 & 750 1 1/2x1 1/2x1/8 & 30	40				0.85(22)	0.85(22)	40x40x4 1 1/2x1 1/2x3/16	40x40x3 1 1/2x1 1/2x1/8	0.85(22)	40x40x4 1 1/2x1 1/2x3/16	40x40x4 1 1/2x1 1/2x3/16						
2425 - 3000 (97 - 120)	1.30(18)	1.25 (0.050)	14.65 (48)	50x50x6 & 750 2x2x1/4 & 30	50				0.85(22)	0.85(22)	50x50x6 2x2x1/4	50x50x6 2x2x1/4	0.85(22)	50x50x6 2x2x1/4	50x50x6 2x2x1/4						
3000 OVER(120)	1.30(18)	1.25 (0.050)	14.65 (48)	50x50x6 & 750 2x2x1/4 & 30	50				0.85(22)	0.85(22)	50x50x6 2x2x1/4	50x50x6 2x2x1/4	0.85(22)	50x50x6 2x2x1/4	50x50x6 2x2x1/4						

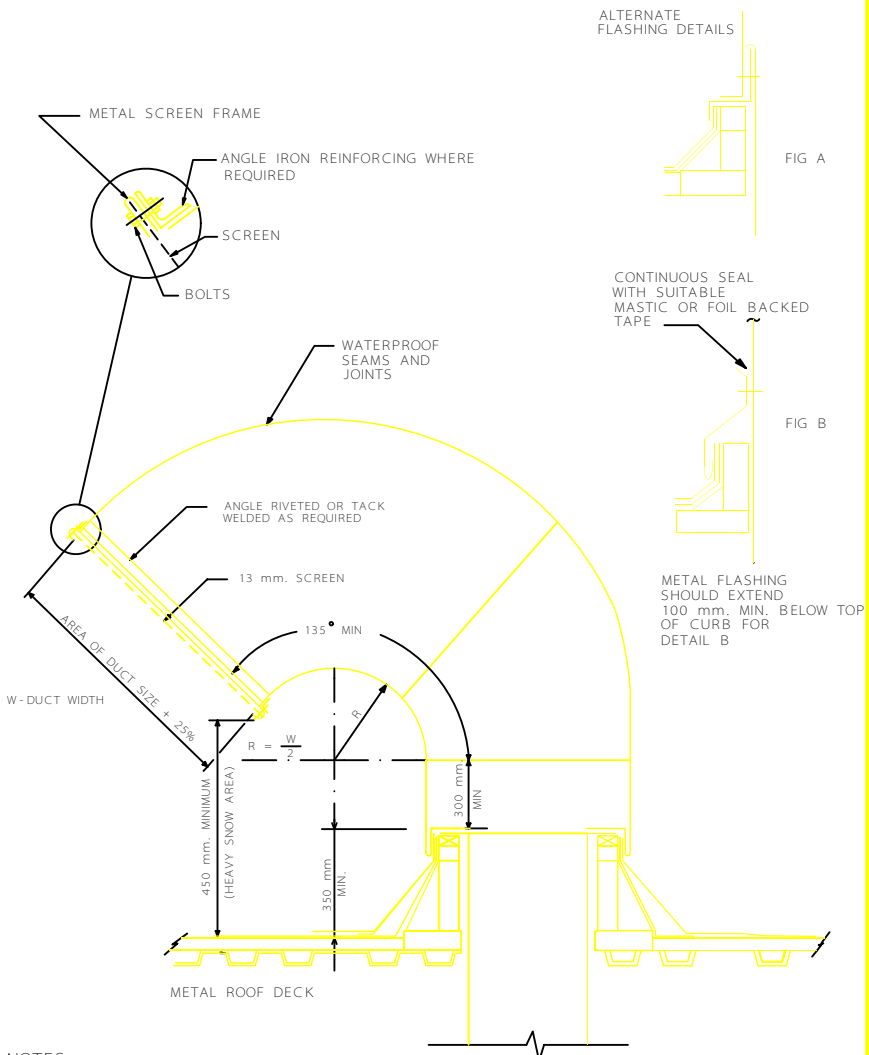


REV	DESCRIPTION	DATE
C		
B		
A		

IRANIAN PETROLEUM STANDARDS 
 NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION

RECOMMENDED CONSTRUCTION
 RECTANGULAR LOW PRESSURE DUCT

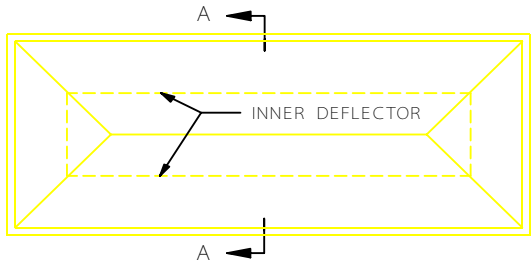
DATE	DRAWING No.	SHEET	REV.
	IPS - D - AR - 013	8	11



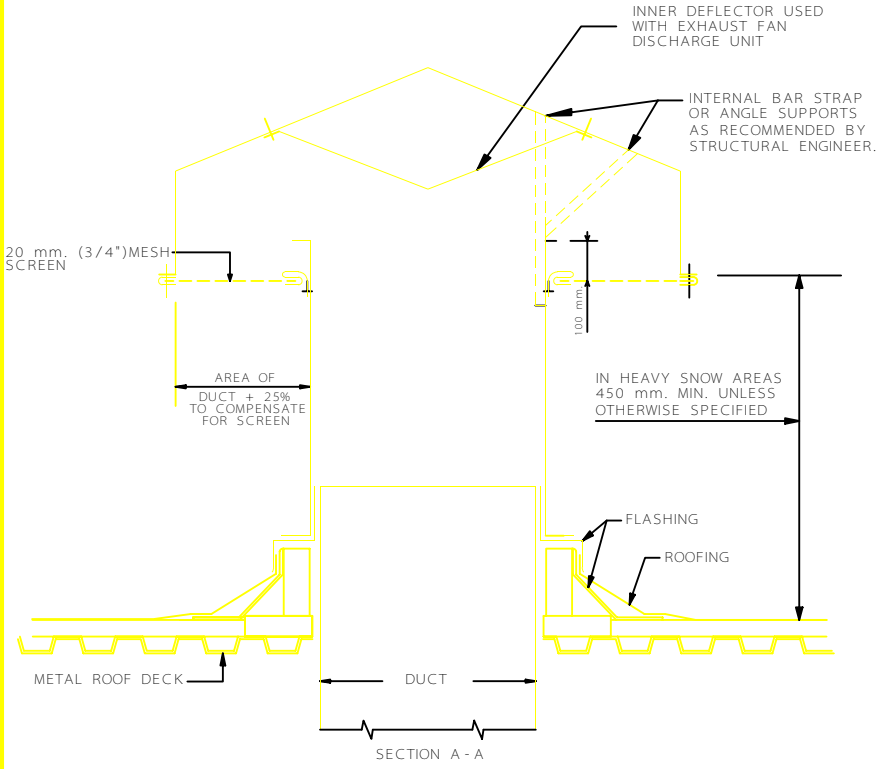
NOTES :

- 1 - CURBS ARE PREFERABLE FOR ALL DUCT PENETRATIONS ON ROOFS.
- 2 - FLASHING MATERIAL DETAIL SHALL BE PER RECOMMENDED BY CIVIL ENGINEER.
- 3 - W= DUCT WIDTH

C			IRANIAN PETROLEUM STANDARDS			
B			NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION			
A			RECTANGULAR GOOSENECK.	DATE	DRAWING No.	SHT/REV.
REV	DESCRIPTION	DATE			IPS - D - AR - 013	9/11



PLAN VIEW

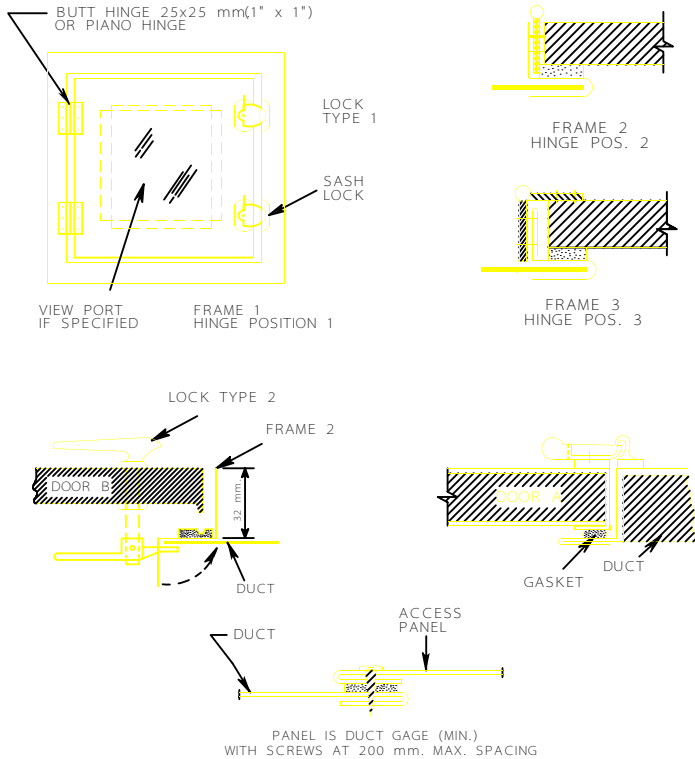


SECTION A - A

NOTES:

1. SEE DWG.NO IPS-D-AR-013 SHT. 9/11 FOR CURB OPTIONS
2. METAL GAUGES DUCT SCHEDULE SHALL BE BASED ON SMACNA STANDARDS.

C			IRANIAN PETROLEUM STANDARDS  NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION				
B							
A			LARGE INTAKE OR EXHAUST COVERS ON ROOF	DATE	DRAWING No.	SHT	REV.
REV	DESCRIPTION	DATE			IPS-D-AR-013	10	11



- Notes: 1- CONSTRUCTION AND AIR TIGHTNESS SHALL BE SUITABLE FOR THE DUCT PRESSURE CLASS USED.
 2- CLOSEST EQUIVALENT DIMENSIONS (MILLIMETER) & PRESS (Pa.) SHALL BE CONSIDERD.

STATIC PRESSURE	Door Size(mm.)	No. OF Hinges	No. OF Locks	MATERIAL THK. mm.(GA.)		
				Frame	Door	Back
500 Pa.(2"W.g.) Static and Less	300 x 300	2	1-S	0.70(24)	0.55(26)	0.55(26)
	400 x 500	2	2-S	0.85(22)	0.70(24)	0.55(26)
	600 x 600	3	2-S	0.85(22)	0.85(22)	0.55(26)
750 Pa.(3"W.g.) Static	300 x 300	2	1-S	0.85(22)	0.85(22)	0.55(26)
	400 x 500	2	1-S, 1-T, 1-B	1.0 (20)	1.0 (20)	0.55(26)
	600 x 600	3	2-S, 1-T, 1-B	1.0 (20)	1.0 (20)	0.70(24)
1000 Pa.(4"W.g.) to 2500 Pa(10"W.g.)	300 x 300	2	1-S, 1-T, 1-B	1.0 (20)	1.0 (20)	0.55(26)
	400 x 500	3	2-S, 1-T, 1-B	1.0 (20)	1.30(18)	0.70(24)
	600 x 600	3	2-S, 2-T, 2-B	1.30(18)	1.30(18)	0.70(24)

S = Side opposite hinges, T = Top, B = Bottom

C			IRANIAN PETROLEUM STANDARDS			
B			NO REVISION PERMITTED UNLESS APPROVED BY STANDARD ORGANIZATION			
A			RECTANGULAR DUCT ACCESS DOORS. (REACH THROUGH)	DATE	DRAWING No.	SHT/REV.
REV	DESCRIPTION	DATE			IPS-D-AR-013	11/11