EVALUATION RESEARCH CORPORATION

CONTROLLED COPY
CONTROL NO. QF-001

COMANCHE PEAK RESPONSE TEAM

QUALITY INSTRUCTION FOR ISSUE-SPECIFIC ACTION PLAN VII.c

INSTRUCTION NO.: QI-039

REVISION: 1

EFFECTIVE DATE: 02/20/86

REINSPECTION OF HVAC DUCTS AND PLENUMS

Prepared by: F Bossuns — QA/QC Discipline Engineer — Date: FEB. 11, 1986

Approved by: Albert A. Patterson — Issue Coordinator — Date: 2-14-86

Approved by: E C Barada — On-Site QA Representative — Date: 2/19/86

Approved by: J L Hansel — QA/QC Review Team Leader — Date: 2/19/86

1.0 PURPOSE

This instruction provides direction and accept/reject criteria for each attribute listed on the reinspection checklists which will be used for the field reinspection of HVAC ducts and plenums.

2.0 APPLICABILITY

This instruction is applicable to safety related hardware constructed and final QC accepted at Comanche Peak Unit 1 and common, and Unit 2. The population is described in the Population Description for HVAC Ducts and Plenums.

3.0 REFERENCES

3.1 Description Memorandum for Reinspection of HVAC Ducts and Plenums, QA/QC-RT-393, dated August 21, 1985, J. Schauf to A. Patterson

3.2 CPP-009, "Performance of Reinspection and Documentation Review."

3.3 QI-QP-11.18-4, "Ultrasonic Examination of HILTI Bolts", TUGCO

4.0 GENERAL

4.1 Responsibilities

Reinspections are performed and documented in accordance with established project procedures and instructions. This instruction established the attributes and accept/reject criteria for reinspection of HVAC ducts and plenums. Reference 3.2 provides the instructions for performing, documenting, and processing the results of the reinspections.

4.2 Policy

Activities performed under this instruction shall conform to the policies contained in the latest Comanche Peak Response Team Program Plan and Issue-Specific Action Plan(s).

5.0 INSTRUCTION

General

The samples that make up this population are:

a. Sheet metal duct section.
b. Plenum.
c. Flexible connection.

5.0 INSTRUCTION (Cont'd)

This section describes each sample and inscructions for performing its reinspection. Verification of the attributes to be inspected will be recorded on the Comanche Peak Response Team Checklist, Attachment 6.1.

Note that alphanumerics before the attributes refer to the checklist number.

When measuring components for location, a measuring device with increments of not greater than ¼ inch is required. When measuring size or length, increments of not greater than 1/16 inch are required. When measuring sheet metal gage, increments of not greater than 1/64 inch are required. For additional measurement information on welding, see Section 3, Welding.

Attachment 6.52, Inspection Tools and Codes, provides a list of standard inspection tools and their corresponding codes. Record on Attachment 6.53, Inspection Tools Used, the corresponding code of the inspection tools used for inspecting each attribute as applicable.

1. Sheet Metal Duct Section

General

The sample is identified by being marked on the appropriate 2323-M1(2)-XXXX BSC/HAN drawing which accompanies the Verification Package. In cases where the sample is located in a straight run which is made up of identical sections in area but with several sections of different lengths, e.g., six 40½ inch long sections and one 19½ inch long filler piece, the installed sequence of sections may not match that as pictorially represented on the BSC/HAN drawing. For example, the 19½ inch filler piece may be installed at any location in this portion of the duct run. Locate the sample following the guideline as noted on the drawing, e.g., the third 40½ inch section south of fan, disregarding the filler piece should it be installed between the fan and the sample.

The sample may include one or more of the accessories described in sections 4-13 of this procedure. When included, inspect the sample to the appropriate section.

1.a. Elevation

Verify that the sample is installed within ±6 inches of the elevation as shown on the BSC/HAN drawing.

5.0 INSTRUCTION (Cont'd)

1.b. Location perpendicular to air flow

Verify that the sample is installed within ±6 inches of the dimension as shown on the drawing which is perpendicular to air flow.

1.c. Area

Verify that the internal cross sectional area dimensions are equal to those shown on the BSC/HAN drawing. Tolerance is ±1/8 inches. Deduct material thicknesses from outside skin measurements. If the sheet metal thickness cannot be measured, the sheet metal thickness is to be obtained from the sample's Material Requisition Form or equivalent.

1.d. Length

Verify length of section from the material requisition form, (shop drawing, see sample Attachment 6.3, Material Requisition Form included in the Verification Package). Tolerance is ±½ inch.

Sheet Metal Construction

Inspection tolerances for sheet metal construction are to be determined from Attachment 6.2, Fabrication Tolerances for Rectangular and Round Ductwork

The ductwork construction level 2 or 3 is determined from Attachment 6.4, Duct Construction Classification Summary. With this level, verify that the following attributes are in accordance with the Material Requisition Form and the referenced attachment:

1.e. Duct gage

Level 2 rectangular - Attachment 6.5
Level 3 and 4 rectangular - Attachment 6.6
Round - Attachment 6.7
If the duct gage cannot be measured, note this on the Checklist.

1.f. Reinforcing angle size

Level 2 rectangular - Attachment 6.5
Level 3 and 4 rectangular - Attachment 6.6

1.g Reinforcing angle spacing

All ductwork - Attachment 6.2

5.0 INSTRUCTION (Cont'd)

1.h Companion angle size

Level 2 rectangular - None, see Attachment 6.10 for connection.
Level 3 and 4 rectangular - Attachment 6.6
Round - Attachment 6.7

1.i. Longitudinal seam

Level 2 rectangular - Attachment 6.5
Level 3 and 4 rectangular - Seal Welded
Round, all levels - Seal Welded

1.j. Tie rod spacing

Level 2 - Attachment 6.8
Level 3 and 4 - Attachment 6.9

1.k. Tie rod diameter

3/8 inch diameter. Tolerance equals ±1/16 inch.

Connecting Joint

Inspect the downstream (air flow direction) connection only.

1.l. Gasket

Verify that the gasket is in place. For level 2 duct joints refer to Attachment 6.10, Typical Flanged Joint, and for level 3 joints refer to Attachment 6.11, Typical Companion Angle Flanged Joint.

1.m. Nuts and Bolts

Verify that nuts and bolts are installed. To verify bolt tightness, visually inspect that the lock washer is compressed. For level 2 and 3 references, see 1.l.

2. Wall Penetration

For a duct section that passes through a wall, inspect as follows:

2.a. Minimum length

Verify that the minimum length is in accordance with Attachment 6.12, DCA 0719.

2.b. Maximum extension

Verify that the maximum extension is in accordance with Attachment 6.12.

5.0 INSTRUCTION (Cont'd)

2.c. Gasket

Verify that the gasket is in place in accordance with 1.1 above.

2.d. Nuts and bolts

Verify that the nuts and bolts are installed in accordance with 1.m above.

3. Welding

General

The following typical welded connections for sheet metal duct sections with attached accessories are to be inspected when they are located in a given sample and in accordance with the referenced attachment.

Connection	Level	Attachment
Typical Longitudinal Welded Seam	2	6.13
	3 & 4	6.14
Corner Detail - Flanged Duct	2	6.15
	3 & 4	6.16
Typical Reinforcing Angle Connections	2	6.17
	3 & 4	6.18
Vane Details	2, 3 & 4	6.19
Typical "Spliced Joint" Rectangular & Round Duct Construction	2	6.20
	3 & 4	6.21
Typical Companion Angle Flanged Joint (Rectangular Duct)	3 & 4	6.22
Typical Companion Angle Flanged Joint (Round Duct)	2, 3 & 4	6.24, 6.25
Typical "Tie Rod" Installation	3 & 4	6.23

Prior to the start of inspection assure that welds are clean of any foreign material which would impede an adequate visual inspection. Do not remove any sealant which covers a portion of a weld. In these cases note this on the checklist which welds could not be inspected.

5.0 INSTRUCTION (Cont'd)

Coatings need not be removed unless an inspector believes that due to excessive and/or uneven coating application he is unable to provide an adequate inspection of the weld. Then he shall contact the level III inspector and with his concurrence only then may the coating be removed.

Where it is necessary to measure weld dimensions during the course of an inspection, such dimensions should be determined as accurately as is practically achievable using standard weld inspection tools. Inspect each weld to the following:

3.a. Location

Verify that the weld configurations (fillets only) and location are as specified per the detailed drawing.

3.b. Weld size

Verify that the weld size meets the requirements of the applicable drawings except that:

- For bevel welds which are not accessible from the back side, the size is verified by assuring that the joint is welded flush.
- Oversized fillet welds shall be acceptable if the oversized weld does not interfere with mating parts.
- Weld sizes 1/8" and greater may be undersized to a maximum of 1/16" provided that the undersized portion(s) do not exceed 1/4 of the weld length.

3.c. Weld Length

Verify that the weld length complies with the referenced drawing with the following allowances:

-

Weld Length Specified On Drawing	Permissible Underlength
$<3"$	1/8"
$\geq 3"$	1/4"

- Weld lengths may be longer than specified.
- The spacing of intermittent welds may vary within 1" of the location specified on the drawing.

5.0 INSTRUCTION (Cont'd)

3.d. Fusion

Verify that if any incomplete fusion is visible it complies with the following:

- For fillet welds 3/8" maximum incomplete fusion in any 4" segment and 1/4" maximum incomplete fusion in welds less than 4" long.
- For groove welds no incomplete fusion is permitted.

3.e. Craters

Verify that the weld size is met on all welds with underfilled craters. Craters outside the specified weld length are irrelevant provided there are no cracks visible through the coated surface.

3.f. Weld profiles

Verify that the weld profiles are acceptable per Attachment 6.26, Fillet Weld Profiles.

3.g. Undercut

Verify that any undercut present does not exceed the following criteria:

- For base material less than 1/8", no undercut is permitted.
- For base material 1/8" and greater the following requirements apply:

  (1) When the member is welded from both sides and the undercut is in the same plane, the following undercut is permitted.

  - 1/32" for 1/2 the length of the total* weld or
  - 1/32" for 1/4 the length of the total* weld and 1/16" for 1/8 the length of the total* weld.

* Total weld equals the cumulative length of both sides.

5.0 INSTRUCTION (Cont'd)

(2) For all other welds the permitted undercut is:

- 1/32" for the full length of the weld or
- 1/32" for 1/2 the length of the weld and 1/16" for 1/4 the length of the weld.

3.h. Porosity

Considering that only surface porosity whose major surface dimension exceeds 1/16" shall be considered relevant, verify the following:

- The sum of the diameters of porosity do not exceed 3/8" in any linear inch of weld and shall not exceed 3/4" in any 12" of weld.

3.i. Overlap

If overlap is present verify that the required weld size and the fusion acceptance criteria are met. If fusion in the overlap length cannot be verified, then verify that the overlap length, whose fusion cannot be verified, does not exceed 3/8" in any 4" segment or 1/4" in welds less than 4" long.

3.j. Surface slag

Verify that the major surface dimensions of the slag does not exceed 1/8" or 1/4" for any isolated surface slag. (Slag is considered to be isolated when it does not occur more frequently than once in a 3" weld segment.)

3.k. Cracks

Verify that there are no cracks visible through the coated surface.

3.l. Touch-up galvanizing

Verify that galvanizing removed during the welding process and the weld have been touch-up painted.

4. Splitter Damper

5.0 INSTRUCTION (Cont'd)

4.a. Installation

Verify that the splitter damper is installed in accordance with Attachment 6.27, Splitter Damper. If an access door is not located suitable to perform this inspection, note on the checklist.

4.b. Nuts and bolts

Verify that all nuts and bolts are in place and finger tight.

4.c. Damper locked in place

Verify that the damper is set and securely locked in place. Caution: do not change setting of damper. Note its position prior to inspection.

5. Extractor

5.a. Installation

Externally, verify that the extractor is supported per Attachment 6.28, Seismic Volume Extractor. If an access door is available, inspect that the internal arrangement of the extractor is per Attachment 6.28. If this inspection cannot be made, note this on the Checklist.

5.b. Angle Size

Verify that the angles are of the proper size per Attachment 6.28.

5.c. Bolts

Verify that all bolts are in place and finger tight.

6. Turning Vane

6.a. Installation

Verify that a turning vane has been installed and check by hand to assure that it is mounted securely in place. If an access door is not available to make this verification, note this on the checklist.

5.0 INSTRUCTION (Cont'd)

6.b. Geometry

Verify geometry, e.g. blade spacing, is in accordance with Attachment 6.19, Typical - Short Radius Vaned Elbow.

6.c. Gage

Verify material gage is per Attachment 6.19.

7. Grille, register and diffuser

7.a. Location

Verify that the item is installed ± 6 inches to the plan and elevation dimensions as shown on the BSC/HAN drawing.

7.b. Installation

Verify that the grille or register has been installed in accordance with Attachment 6.29, Typical Installation of Grills & Registers. For diffusers, verify the same attribute to the manufacturer's data sheet included in the Verification Package.

7.c. Gaskets

Verify that the gasket has been installed in accordance with Attachment 6.29.

7.d. Nuts and Bolts

Verify that the nuts and bolts are installed in accordance with Attachment 6.29 and that the nuts are finger tight.

8. Volume Damper

For any sample that has a volume damper attached to it's downstream connection, the following inspection is to be performed.

8.a. Installation

Verify that the damper is installed in accordance with Attachment 6.30, Manual Volume Damper.

8.b. Gaskets

Verify that the gaskets have been installed in accordance with Attachment 6.30.

5.0 INSTRUCTION (Cont'd)

8.c. Nuts and bolts

Verify that the nuts and bolts are installed in accordance with Attachment 6.30 and that the nuts are finger tight.

8.d Verify that the damper is set and securely locked in place. Caution: do not change setting of damper. Note its position prior to inspection.

9. Access Door

9.a. Installation

For rectangular ducts verify that the access door is installed in accordance with Attachment 6.31, Typical Access Door Arrangement and in accordance with Attachment 6.32, Duct Access Panel Details. For round ducts refer to Attachment 6.33, Access Panel Assembly and Attachment 6.34, Bolted Access Panel Assembly.

9.b. Gasket

Verify that the gasket has been installed in accordance with the referenced attachments in 9.a..

9.c. Nuts and bolts

Verify that the nuts and bolts have been installed in accordance with the referenced attachments in 9.a. and that the accessible nuts or bolts are finger tight.

10. Instrument Test Holes

10.a. Caps

Verify that the caps have been installed in accordance with Attachments 6.35, Ventlock Instrument Test Hole and that the caps are finger tight.

10.b. Gasket

Verify that the gasket has been installed in accordance with Attachment 6.35.

10.c. Bolts and nuts

Verify that the nuts and bolts have been installed in accordance with Attachment 6.35 and that the nuts are finger tight.

5.0 INSTRUCTION (Cont'd)

11. Tubing Connection

11.a. Installation

Verify that the installation of mounting bracket for temperature elements, instrument connections and miscellaneous test connections is in accordance with Attachment 6.36, Typical Mounting Bracket. Note any discrepancies on the checklist. Inspect any welds per section 3., Welding.

11.b. Nuts and bolts

If the mounting bracket of 11.a is bolted to the duct, verify that they are installed in accordance with Attachment 6.36 and that the nuts are finger tight.

12 Pipe Connection

12.a. Pipe size

Verify that the pipe size is in accordance with the BSC/HAN drawing.

12.b. Pipe length

Verify that the pipe length is in accordance with Attachment 6.37, Pipe Connections. Inspect welding in accordance with Section 3., Welding.

13. Instrument Mounting

13.a. Installation

Verify that instruments are mounted and installed in accordance with the following attachments as applicable:

- Attachment 6.38, Chlorine Leak Detector Sensor
- Attachment 6.39, Smoke Detector
- Attachment 6.40, Mounting Bracket Detail for Thermostat Sensing Bulb and Instrument Probe
- Attachment 6.41, DCA No. 12,636, Revision 1 for listed Instrumentation Tag Numbers
- Attachment 6.51, Radiation Monitor

13.b. Mounting bracket

Verify that any mounting brackets are installed to the appropriate attachments referenced in 13.a.

5.0 INSTRUCTION (Cont'd)

13.c. Nuts, bolts and washers

Verify that all nuts, bolts, and washers are installed in accordance with the appropriate attachment referenced in 13.a. For bolts with lockwashers, visually inspect that the lockwasher is compressed. For other nuts and bolts, verify finger tightness.

14. Plenum

The sample is identified by being marked on the appropriate BSC/HAN drawing which accompanies the Verification Package. Construction is to be in accordance with the plenum fabrication drawing also included in the Verification Package. Weld inspection is to be performed in accordance with 3. Welding. For fabrication tolerances, see Attachment 6.2. If portions of this inspection cannot be made due to inaccessibility, this should be noted on the checklist.

14.a. Location

Verify that the sample is located within ±6 inches of the dimensions as shown on the BSC/HAN drawing.

14.b. Sheet metal gage

Verify that the sheet metal gage is in accordance with the fabrication drawing.

14.c. Reinforcing angle size

Verify that the size of any reinforcing angles or members, are in accordance with the fabrication drawing.

14.d. Reinforcing angle spacing

Verify that any reinforcing angle or member spacing is in accordance with the fabrication drawing.

14.e. Gasket

For any duct connected to the plenum sample, verify that a gasket is installed in accordance with 1.1, Gasket.

5.0 INSTRUCTION (Cont'd)

14.f. Nuts and bolts

For any duct connected to the plenum sample, verify that the nuts and bolts are installed in accordance with 1.m., Nuts and bolts.

15. Flexible Connection

The sample is identified by being marked on the appropriate BSC/HAN drawing which accompanies the Verification Package.

15.a. Location

Verify that the sample is located within ±6 inches the dimensions as shown on the drawing.

15.b. Companion angle size

Verify that the companion angle size is in accordance with Attachments 6.42, Rectangular Flex, 6.43, Flex Connection Installation Typical Arrangement Rectangular Duct for rectangular duct and Attachment 6.44, Flex Connection Installation, Typical Arrangement Round Duct for round duct.

15.c. Nuts, bolts and washers

Verify that all nuts, bolts and washers are in place. For bolts with lockwashers, usually inspect that the lockwasher is compressed. For all others, verify finger tightness.

15.d. Misalignment

Verify that the joint is not misaligned in accordance with the misalignment tolerances of Attachment 6.43 for rectangular duct or 6.44 for round duct. Measuring tolerance is ±1/8 inch.

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Section 5.16
4/13/86

6.0 ATTACHMENTS

6.1 Comanche Peak Response Team Reinspection Checklist

6.2 Fabrication Tolerance for Rectangular and Round Ductwork
(DFP-TUSI-001, pg. 36)

6.3 Material Requisition Form
(DFP-TUSI-001, pg. 52)

6.4 Duct Construction Classification Summary
(DFP-TUSI-001, pgs. 5,6)

6.5 Construction Level 2 Rectangular Ductwork
(DFP-TUSI-001, pgs. 10, 11)

6.6 Construction Level 3 and 4 Rectangular Ductwork
(DFP-TUSI-001, pgs. 24, 25)

6.7 Construction Data for Round Ductwork
(DFP-TUSI-001, pg. 42)

6.8 Duct Construction Level 2 Supply Duct
(DFP-TUSI-001, pgs. 16, 17)

6.9 Duct Construction Level 3 and 4 Supply Duct
(DFP-TUSI-001, pgs. 31, 32)

6.10 Typical Flanged Joint
(DFP-TUSI-001, pg. 12)

6.11 Typical Companion Angle Flanged Joint
(DFP-TUSI-001, pg. 26)

6.12 DCA No. 0719

6.13 Typical Longitudinal Welded Seam - Level 2
(DFP-TUSI-001, pg. 13)

6.14 Typical Longitudinal Welded Seam - Level 3 and 4
(DFP-TUSI-001, pg. 29)

6.15 Corner Detail - Flanged Joint
(DFP-TUSI-001, pg. 14)

6.16 Typical Companion Angle
(DFP-TUSI-001, pg. 27)

Note: References in parenthesis are to Bahnson Service Company, Inc. procedures.

6.0 ATTACHMENTS (Cont'd)

6.17 Typical Reinforcing Angle - Level 2
(DFP-TUSI-001, pg. 15)

6.18 Typical Reinforcing Angle - Level 3 and 4
(DFP-TUSI-001, pg. 28)

6.19 Typical - Short Radius Vaned Elbow
(DFP-TUSI-001, pg. 18)

6.20 Typical Splice Joint Level 2
(DFP-TUSI-001, pg. 19)

6.21 Typical Splice Joint Level 3 and 4
(DFP-TUSI-001, pg. 34)

6.22 Typical Flange Detail Level 3 and 4
(DFP-TUSI-001, pg. 26)

6.23 Typical Tie Rod Installation
(DFP-TUSI-001, pg. 30)

6.24 Typical Companion Angle Flanged Joint - Round Duct Construction
(DFP-TUSI-001, pg. 43)

6.25 Typical Round FLange Details
(DFP-TUSI-001, pg. 45)

6.26 Fillet Weld Profiles

6.27 Splitter Damper
(DFP-TUSI-008, pg. 8)

6.28 Seismic Volume Extractor
(DFP-TUSI-008, pg. 7)

6.29 Typical Installation of Grills and Registers
(DFP-TUSI-008, pg. 4)

6.30 Manual Volume Damper
(DFP-TUSI-008, pg. 9)

6.31 Typical Access Door Arrangement
(DFP-TUSI-008, pgs. 10, 11)

6.32 Duct Access Panel Details
(DFP-TUSI-008, pg. 14)

6.33 Access Panel Assembly
(DFP-TUSI-008, pg. 15)

6.0 ATTACHMENTS (Cont'd)

6.34 Bolted Access Panel Assembly
(DFP-TUSI-008, pg. 16)

6.35 Ventlock Instrument Test Hole
(DFP-TUSI-008, pg. 28)

6.36 Typical Mounting Bracket
(DFP-TUSI-008, pg. 21)

6.37 Pipe Connections

6.38 Chlorine Leak Detector Assembly
(DFP-TUSI-008, pg. 22)

6.39 Smoke Detector
(DFP-TUSI-008, pg. 22)

6.40 Mounting Bracket Detail for Thermostat Sensing Bulb Instrument and Probe
(DFP-TUSI-008, pg. 23)

6.41 DCA No. 12,636

6.42 Rectangular Flex
(DFP-TUSI-008, pg. 17)

6.43 Flex Connection Installation-Typical Arrangement Rectangular Duct
(DFP-TUSI-008, pg. 18)

6.44 Flex Connection Installation-Typical Arrangement Round Duct
(DFP-TUSI-008, pg. 19)

6.45 (Deleted)

6.46 (Deleted)

6.47 (Deleted)

6.48 (Deleted)

6.49 (Deleted)

6.50 (Deleted)

6.51 Mounting for Radiation Monitor

6.52 Inspection Tools and Codes

6.53 Inspection Tools Used

COMANCHE PEAK RESPONSE TEAM CHECKLIST

POPULATION DESC	VERIFICATION PKG NO.	PAGE 1 OF 3
HVAC Ducts and Plenums	I-M-DUPL-	
QUALITY INSTRUCTION QI-039	[X] REINSPECTION	[ ] UNIT 1
EQUIPMENT MARK/TAG NO.	[ ] DOCUMENTATION REVIEW	[ ] UNIT 2
		[ ] COMMON

ATTRIBUTE	VERIFICATION			REMARKS
	ACCEPT	REJECT	DATE	
1. Sheet Metal Duct				
a. Elevation				
b. Location Perpendicular to Air Flow				
c. Area				
d. Length				
e. Duct Gage				
f. Reinforcing Angle Size				
g. Reinforcing Angle Spacing				
h. Companion Angle Size				
i. Longitudinal Seam				
j. Tie Rod Spacing				
k. Tie Rod Diameter				
l. Gasket				
m. Nuts and Bolts				
2. Wall Penetration				
a. Minimum Length				
b. Maximum Extension				
c. Gasket				
d. Nuts and Bolts				
3. Welding				
a. Location				
b. Weld Size				
c. Length				
d. Fusion				
e. Craters				

PREPARED BY:	APPROVED BY:
DISCIPLINE ENGR. / DATE	LEAD DISCIPLINE ENGR. / DATE
INSPECTED BY:	APPROVED BY:
INSPECTOR / DATE	LEAD INSPECTOR / DATE

COMANCHE PEAK RESPONSE TEAM
CHECKLIST

POPULATION DESC HVAC Ducts and Plenums	VERIFICATION PKG NO. I-M-DUPL-			PAGE 2 OF 3
ATTRIBUTE	VERIFICATION			REMARKS
	ACCEPT	REJECT	DATE	
f. Weld Profiles g. Undercut h. Porosity i. Overlap j. Surface Slag k. Cracks l. Touch-up Galvanizing				
4. Splitter Damper a. Installation b. Nuts and Bolts c. Locked in Place				
5. Extractor a. Installation b. Angle Size c. Bolts				
6. Turning Vane a. Installation b. Geometry c. Gage				
7. Grille, register and Diffuser a. Location b. Installation c. Gaskets d. Nuts and Bolts				
8. Volume Damper a. Installation b. Gaskets c. Nuts and Bolts d. Locked in Place				
9. Access Door a. Installation b. Gasket c. Nuts and Bolts				
10. Instrument Test Holes a. Caps b. Gasket c. Bolts				

COMANCHE PEAK RESPONSE TEAM
CHECKLIST

POPULATION DESC HVAC Ducts and Plenums	VERIFICATION PKG NO. I-M-DUPL			PAGE 3 OF 3
ATTRIBUTE	VERIFICATION			REMARKS
	ACCEPT	REJECT	DATE	
11. Tubing Connection a. Installation b. Nuts and bolts				
12. Pipe Connection a. Pipe Size b. Pipe Length				
13. Instrument Mounting a. Installation b. Mounting Bracket c. Nuts, Bolts and Washers				
14. Plenums a. Location b. Sheet Metal Gage c. Reinforcing Angle Size d. Reinforcing Angle Spacing e. Gasket f. Nuts and Bolts				
15. Flexible Connection a. Location b. Companion Angle Size c. Nuts, Bolts and Washers d. Misalignment				
16. Concrete Expansion Anchors a. Size and Number b. Embedment c. Bolt Spacing d. Angularity e. Concrete Damage f. Nut Engagement and Bearing				

IV-I FABRICATION TOLERANCES FOR RECTANGULAR AND ROUND DUCTWORK

A. Sheet Metal

1. All dimensional tolerances and measurements shall be inside dimensions unless otherwise noted. (Refer to attached sketch)

2. Where the shortest side or diameter of a joint of duct is greater than 6", the following tolerances shall be held:

Dimension	Tolerances (inches)
Length (L)	± 1/4
Width (W)	± 1/8
Height (H)	± 1/8
Diameter (D)	± 1/8
Diagonal (d_1) = Diagonal (d_2)	± 1/8 Level 2 ± 3/16

B. Companion Angle

1. The companion angle shall be sheared to the designated lengths, (A_1 & A_2), within a tolerance of ± 1/16".

2. Bolt holes shall be punched or drilled in the companion angles as designated within a tolerance of ± 1/16". (12)

C. Reinforcing Angle

1. The intermediate reinforcing angle shall be sheared to the designated lengths, (A_1 & A_2), within a tolerance of ± 1/16".

2. The reinforcing angle shall be located at the midpoint (M) of the duct length, or as shown on the drawings in special cases, within a tolerance of ± 1/4".

3. The reinforcing angle shall be positioned flush on each side of the duct and shall be perpendicular to the longitudinal centerline.

4. If a design change is issued, to shorten a joint of duct, the reinforcing angle will remain at its original location.

5. Duct reinforcing angles may be permanently removed to allow installation of expansion joints, dampers, registers, etc.

D. Ells, Transitions, Offsets, and Special Construction

1. The same sheet metal, companion angle, and reinforcing angle tolerance limits will apply to the manufacturer of ells, transitions, offsets, and special construction.

GROUP NO. ______

DUCT TAKE OFF ______

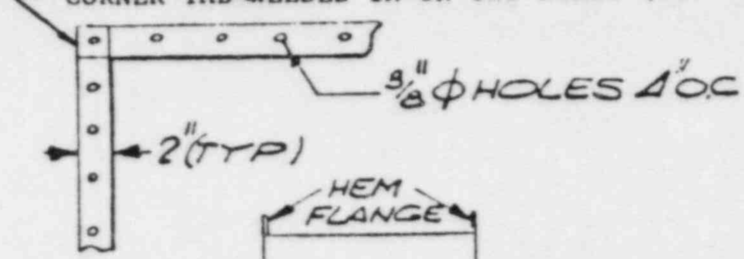
DWG. NO. ______

STATION NO. ______

CUBE NO. ______

HEAT NO. ______

CORNER TAB WELDED IN ON TWO SIDES (TYP 4 CORNERS)



PE ______

CUSTOMER: TUSI - Comanche Peak
Glen Rose, Texas 76

DUCT NO.	DIMENSIONS	SIDE VIEW AIR →	PLAN VIEW AIR →	Q.C INSP	DATE	TACK	W/O	OTHER	MATERIAL REQUISTION PART NO.	NO. PCS.	DESCRIPTION	WIDTH	LE

SAMPLE

" ATTACHMENT # 1 "

Attachment 6.3
OI-039
Rev. 1
Page 1 of 1

PROCEDURE NO. DFP-TUSI-001 REV. 12
DATE APR 1 8 1985 PAGE 52 OF 52

QA-17-77F

REV. NO. ____ DATE ______ PAGE ____

DUCT CONSTRUCTION CLASSIFICATION SUMMARY

I. Reference ORNL NSIC 65
ERDA 76021 SMACNA 1969

	BUILDING SYSTEM	DUCTWORK CONSTRUCTION LEVEL	QA PROGRAM APPLICABLE	SEISMIC CATEGORY
	AUXILIARY			
1.	Primary Plant Vent Supply	2	FULL	I
2.	Primary Plant Vent Exhaust	3	FULL	I
3.	Containmemt Purge Supply	2	FULL	I
4.	Containment Purge Exhaust	3	FULL	I
5.	Office & Service Area Supply & Exhaust	2	FULL	I
6.	Office & Service Area Controlled Exhaust	3	FULL	I
7.	Control Room A/C	2	FULL	I
8.	Control Room A/C Ductwork between isolation dampers & environs	3	FULL	I
9.	Uncontrolled Access Area Ventilation	2	FULL	I
10.	Battery Room Exhausts	2	FULL	I
11.	Hydrogen Purge Supply Duct (Between Outdoor Air Intake & Filter Unit)	2	FULL	I
12.	Roof Vent Exhaust	2	NON-QA	N/A
	SAFEGUARDS			
1.	Primary Plant Vent Supply	2	FULL	I
2.	Primary Plant Vent Exhaust	3	FULL	I
3.	Uncontrolled Access Area Vent Supply & Exhaust	2	FULL	I

cont'd....

DUCT CONSTRUCTION CLASSIFICATION SUMMARY

I. Reference: ORNL NSIC 65
ERDA 76021 SMACNA 1969

	BUILDING SYSTEM	DUCTWORK CONSTRUCTION LEVEL	QA PROGRAM APPLICABLE	SEISMIC CATEGORY
	MISCELLANEOUS AREAS			
1.	Main Steam & Feedwater Vent			
	a. Piping Area	2	NON-QA	N/A
	b. Electrical Area	2	FULL	I
2.	Diesel Generator Vent	2	FULL	I
3.	Turbine Building Vent	2	NON-QA	N/A
4.	Office & Service Area Supply & Exhaust (Turbine Building)	2	NON-QA	N/A
5.	Office & Service Area Controlled Exhaust (Turbine Building)	2	NON-QA	N/A
6.	Distribution Room Ventilation Exhaust Chemical Feed and Storage Area	2	NON-QA	N/A
	CONTAINMENT BUILDING			
1.	Containment Air Recirc. & Cooling	2	FULL	I
2.	Containment Preaccess Filtering	2	FULL	I
3.	Containment Purge Exhaust (inside containment)	2	FULL	I
4.	CRDM Ventilation	4	FULL	I
5.	Neutron Detector Well Cooling System	4	FULL	I
6.	Reactor Coolant Sleeve Cooling System	2	FULL	I
	FUEL HANDLING BUILDING			
1.	Supply	2	FULL	I
2.	Exhaust	3	FULL	I
	SERVICE WATER INTAKE STRUCTURE			
1.	Service Water Pump Exhaust Fans	2	FULL	I
2.	Fire Pump Area Exhaust Fan	2	FULL	I

CONSTRUCTION LEVEL 2 RECTANGULAR DUCTWORK

(UP TO 10" W.G. POSITIVE PRESSURE)

SUPPLY SYSTEM DUCTWORK

Largest Side Of Duct	Sheet Metal Gauge	Reinforcing Angle Size	Longitudinal Seam Type	Tie Rod Spacing
Up to 12"	18	None	Pittsburgh	None
12½" to 24"	18	None	Pittsburgh	None
24½" to 36"	18	(ref. note 9.) 1½" x 1½" x 3/16"	Pittsburgh	None
36½" to 48"	18	(ref. note 9.) 1½" x 1½" x 3/16"	Pittsburgh	None
48½" to 60"	16	2" x 2" x 3/16"	Pittsburgh	None
60½" to 72"	16	2" x 2" x 3/16"	Welded	1 on C.L.
72½" to 84"	16	2" x 2" x 3/16"	Welded	1 on C.L.
84½" to 96"	16	2" x 2" x 3/16"	Welded	2 equally spaced
96½" to 120"	14	2" x 2" x 3/16"	Welded	2 equally spaced

Notes:

1. Full face gasketed flanged joints.
2. Pittsburgh seams flooded with silicone sealant.
3. No cross breaking or cross beading required.
4. All tie rods are 3/8" diameter.
5. All four sides of duct shall be constructed of same gauge metal.
6. No reinforcing angles required on duct joints 24" or shorter.
7. Ductwork used strictly for outdoor air intake shall conform to this schedule.
8. Longitudinal seams in transitions may be welded in lieu of Pittsburgh lock.
9. 2" x 2" x 3/16" may be used.

CONSTRUCTION LEVEL 2 RETANGULAR DUCTWORK

(UP TO 10" W.G. NEGATIVE PRESSURE)

RETURN OR EXHAUST SYSTEM DUCTWORK

Largest Side of Duct	Sheet Metal Gauge	Reinforcing Angle Size
Up to 12"	16	None
12½" to 24"	16	None
24½" to 36"	16	(ref. note 6.) 1½" x 1½" x 3/16"
36½" to 48"	14	2" x 2" x 3/16"
48½" to 60"	14	2" x 2" x 3/16"
Over 60"	12	2" x 2" x 3/16"

Notes:

1. Full face gasketed flanged joints.
2. Seal welded longitudinal seams.
3. No Tie Rods, cross breaking or cross beading permitted on negative pressure ductwork.
4. All four sides of duct shall be constructed of same gauge metal.
5. No reinforcing angles required on duct joints 24" or shorter.
6. 2" x 2" x 3/16" may be used.

CONSTRUCTION LEVEL 3 & 4 RECTANGULAR DUCTWORK

(UP TO 12" W.G. NEGATIVE PRESSURE)

RETURN OR EXHAUST SYSTEM DUCTWORK

Largest Side of Duct	Sheet Metal Gauge	Companion Angle Size	Reinforcing Angle Size
Up to 12"	16	2" x 2" x 3/16"	None
12 1/2" to 24"	16	2" x 2" x 3/16"	None
24 1/2" to 36"	12	2" x 2" x 3/16"	* 1 1/2" x 1 1/2" x 3/16"
36 1/2" to 48"	12	2" x 2" x 3/16"	* 1 1/2" x 1 1/2" x 3/16"
48 1/2" to 60"	12	2" x 2" x 3/16"	2" x 2" x 3/16"
Over 60"	10	2" x 2" x 3/16"	2" x 2" x 3/16"

Notes:

1. Full face gasketed companion angle joints.
2. Seal welded longitudinal seams.
3. No tie rod, corss breaking or cross beading permitted on negative pressure ductwork.
4. All four sides of duct shall be constructed of same gauge metal.
5. No reinforcing angles required on duct joints 24" or shorter.

* 6. 2" x 2" x 3/16" may be used.

CONTSTRUCTION LEVEL 3 & 4 RECTANGULAR DUCTWORK

(UP TO 12" W.G. POSITIVE PRESSURE)

SUPPLY SYSTEM DUCTWORK

Largest Side of Duct	Sheet Metal Gauge	Companion Angle Size	Reinforcing Angle Size	Tie Rod Spacing
Up to 12"	16	2" x 2" x 3/16"	None	None
12 1/2" to 24"	16	2" x 2" x 3/16"	None	None
24 1/2" to 36"	12	2" x 2" x 3/16"	*1½" x 1½" x 3/16"	None
36 1/2" to 48"	12	2" x 2" x 3/16"	*1½" x 1½" x 3/16"	None
48 1/2" to 60"	12	2" x 2" x 3/16"	2" x 2" x 3/16"	None
Over 60"	10	2" x 2" x 3/16"	2" x 2" x 3/16"	See Detail

Notes:

1. Full face gasketed companion angle joints.
2. Seal welded longitudinal seams.
3. No cross breaking or cross beading required.
4. All tie rods are 3/8" diameter.
5. All four sides of duct shall be constructed of same gauge metal.
6. No reinforcing angles required on duct joint 24" or shorter.

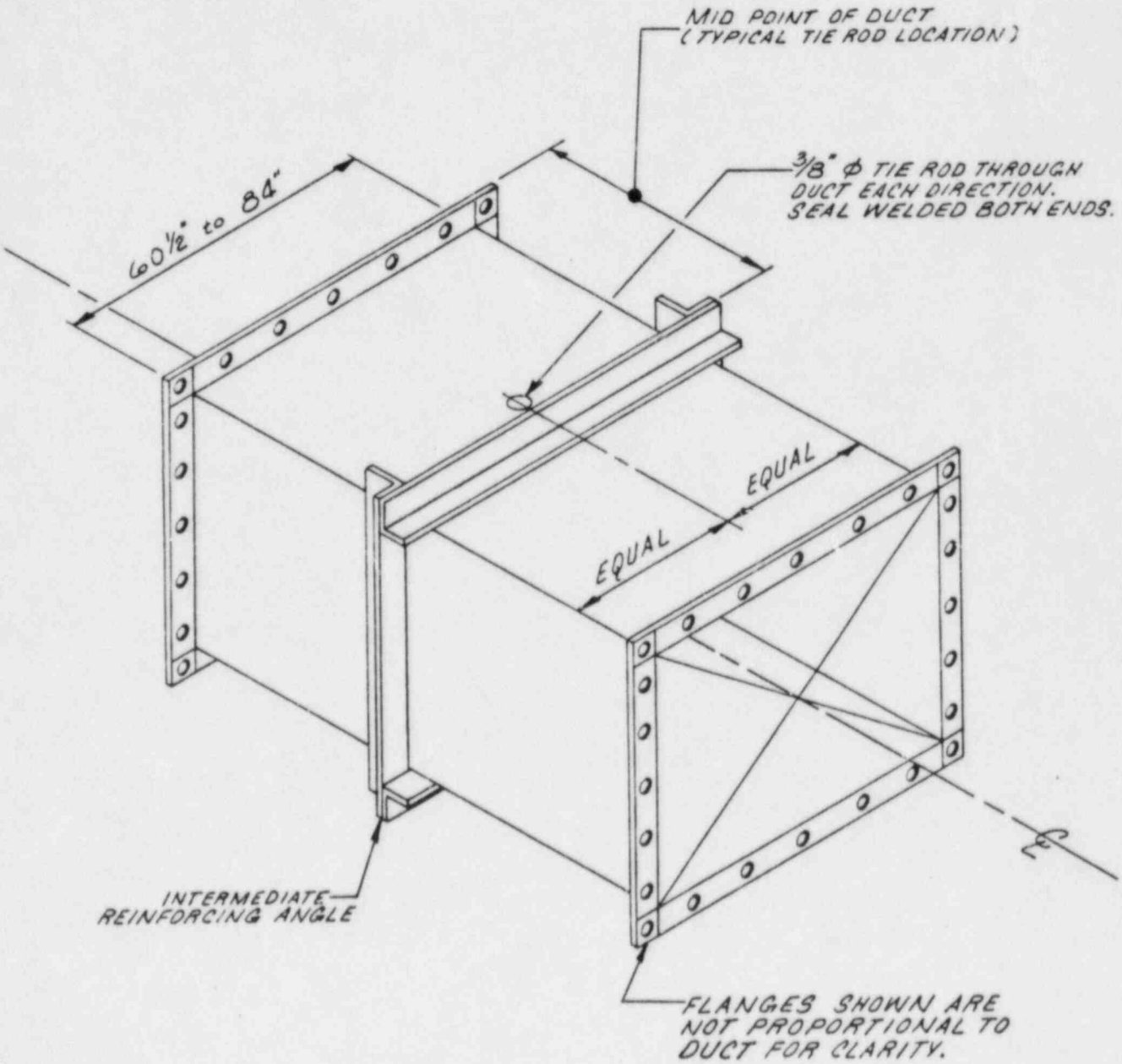
* 7. 2" x 2" x 3/16" may be used.

CONSTRUCTION DATA FOR ROUND DUCTWORK

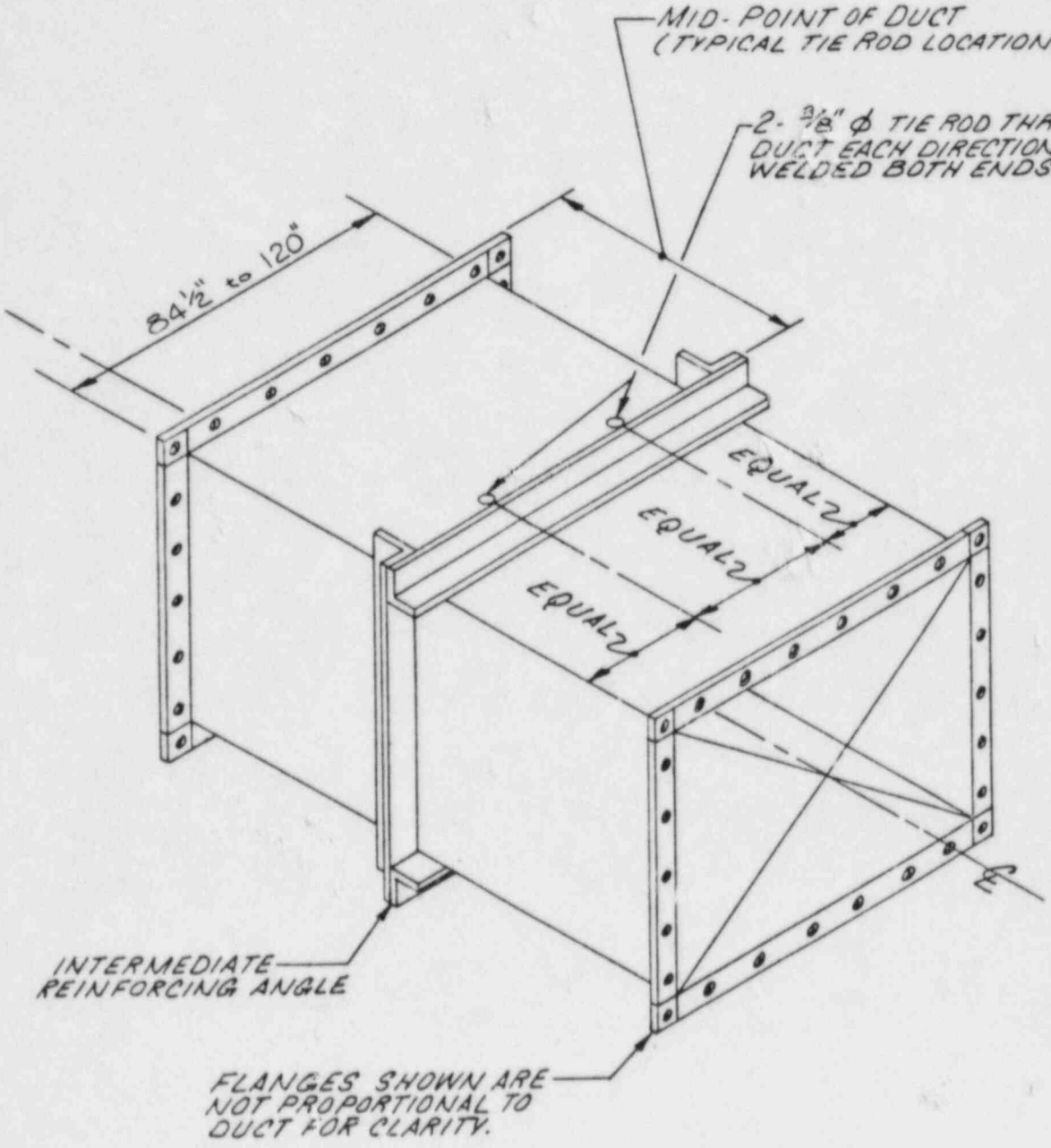
Duct Diameter	Sheet Metal Gauge	Companion Angle Size
8" through 18"	16	2" x 2" x 1/4"
19" through 36"	14	2" x 2" x 1/4"
37" through 48"	12	2" x 2" x 1/4"
49" and up	12	2" x 2" x 14/"

Notes:

1. Full face gasketed companion angle joints.
2. Seal welded longitudinal seams.
3. Lighter gauge material may be substituted if angle reinforcement is provided as required in "SMACNA Round Industrial Duct Construction Standards".

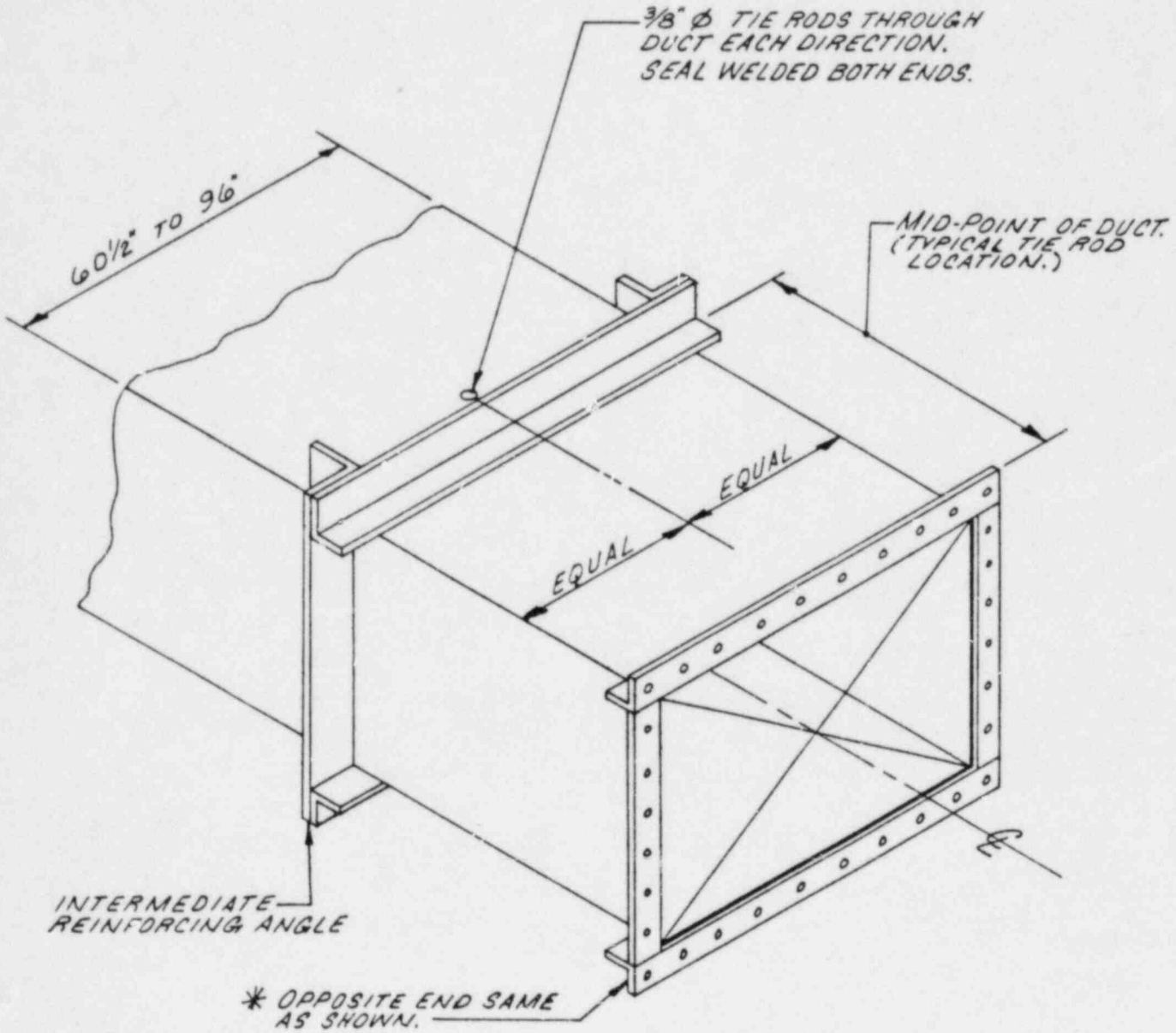


DUCT CONSTRUCTION
"LEVEL-2" SUPPLY DUCT



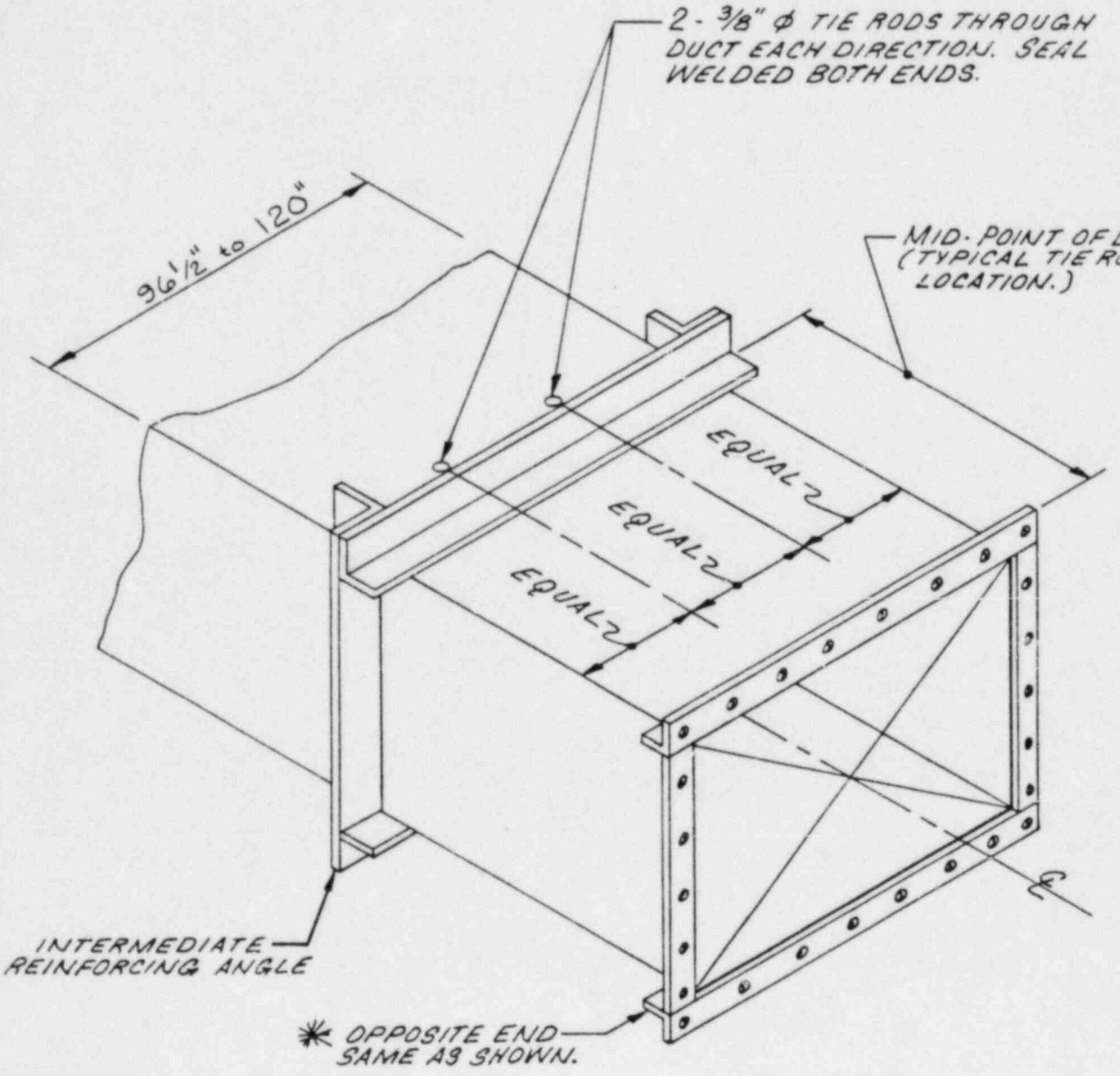
DUCT CONSTRUCTION "LEVEL 2"
SUPPLY SYSTEM

Flakt BAHNSON

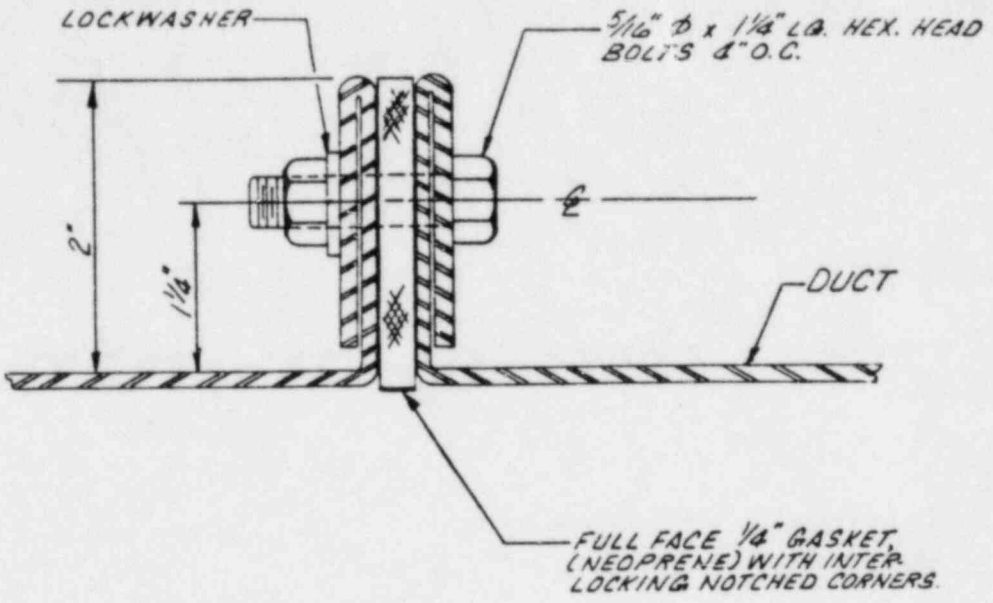


DUCT CONSTRUCTION-
"LEVEL 3 & 4"
SUPPLY SYSTEM

Flakt BAHNSON



DUCT CONSTRUCTION "LEVEL 3 & 4"
SUPPLY SYSTEM



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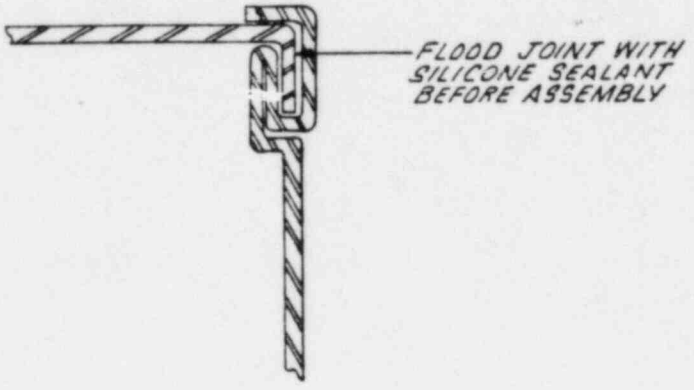
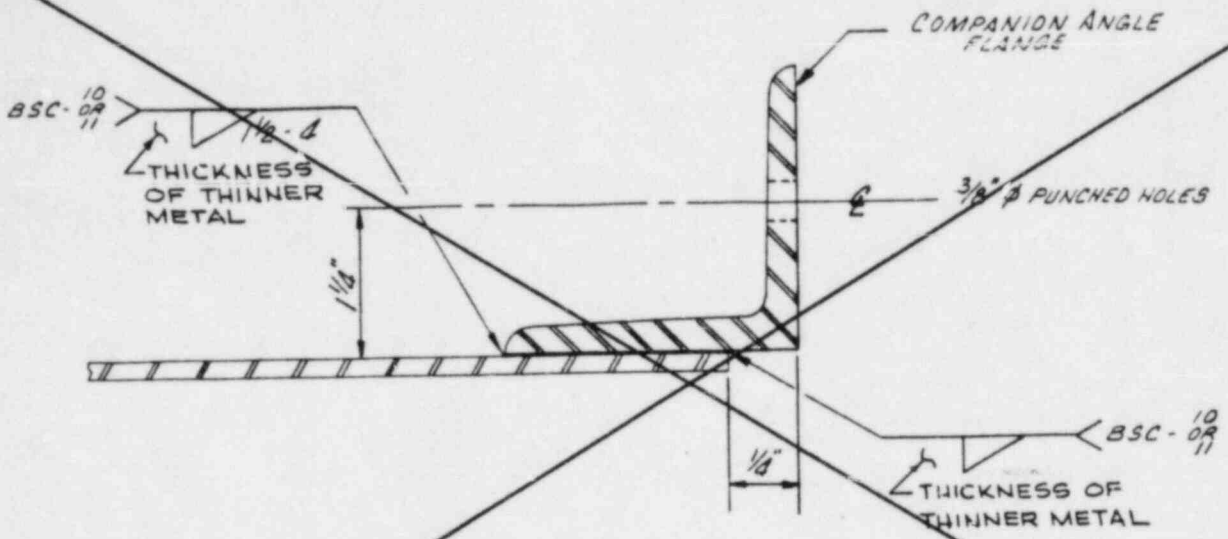
TYPICAL "FLANGED" JOINT
DUCT CONSTRUCTION LEVEL-2

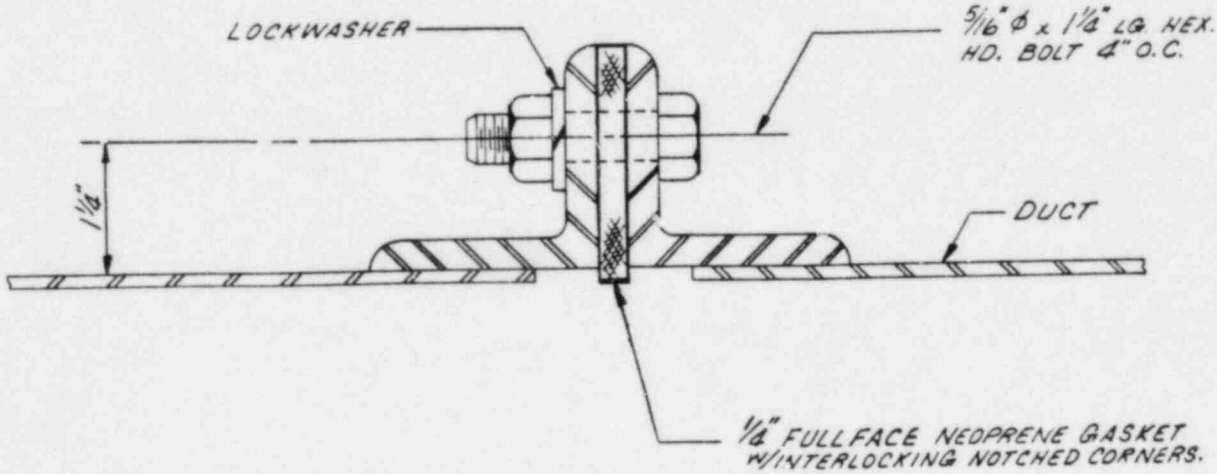


"TYPICAL PITTSBURGH LONGITUDINAL SEAM"
DUCT CONSTRUCTION LEVEL-2

Flakt BAHNSON



"TYPICAL FLANGE DETAIL"
COMPANION ANGLE FLANGED JOINT
DUCT CONSTRUCTION LEVEL 3 & 4



(12)

"TYPICAL COMPANION ANGLE"
FLANGED JOINT
DUCT CONSTRUCTION LEVEL 3 & 4

Figure 4.7-1

COMANCHE PEAK STEAM ELECTRIC STATION
H,FILE,ROT,ARMS DESIGN CHANGE/DESIGN DEVIATION AUTHORIZATION

(WILL)(~~XXXXXXX~~) BE INCORPORATED IN DESIGN DOCUMENTS.

AUTHORIZATION NO. ~~719~~ Rev. 1

SAFETY RELATED: DATE X YES ___ NO 1

1. DESCRIPTION OF CHANGE/ ~~XXXXXXXX/XXXXXXXXXX~~

A. APPLICABLE SPEC/ ~~XXXXXXXXX~~ 2323-MS-85 1 Rev. 5-1-76 Issue Date

THIS DOCUMENT SUPERSEDES AND VOIDS DC/DDA-719

~~B. DETAILS~~ ~~Problem:~~ ~~Requirements for wall penetration are unclear.~~

Solution: Add the following guidelines to the Specification:

2.8.2.H.1) Ductwork penetrations should have a minimum length of 12".

2.8.2.H.2) The penetrations should have a maximum extension from the wall of 6".

2.8.2.H.3) Penetrations shall be flanged to connect to adjoining ductwork.

CPSES 35-1195 CONTROL [redacted] COPY DOCUMENT CONTROL CENTER

~~JOB NO. 35-11~~

RECEIVED DEC 09 1977

RECEIVED CPSES 35-1195 CONTROL COPY DOCUMENT CONTROL CENTER

2. SUPPORTING DOCUMENTATION

DALM-214

3. SIGNATURES G.L.M./akh 12-8-77

A. APPROVED BY: _____ 12-8-77
G&H Representative Date

B. APPROVED BY: _____ 12/8/77
Responsible Engineer Date

C. APPROVED BY: _____ 12-8-77 1
Project Engineer or Engineering Supervisor Date

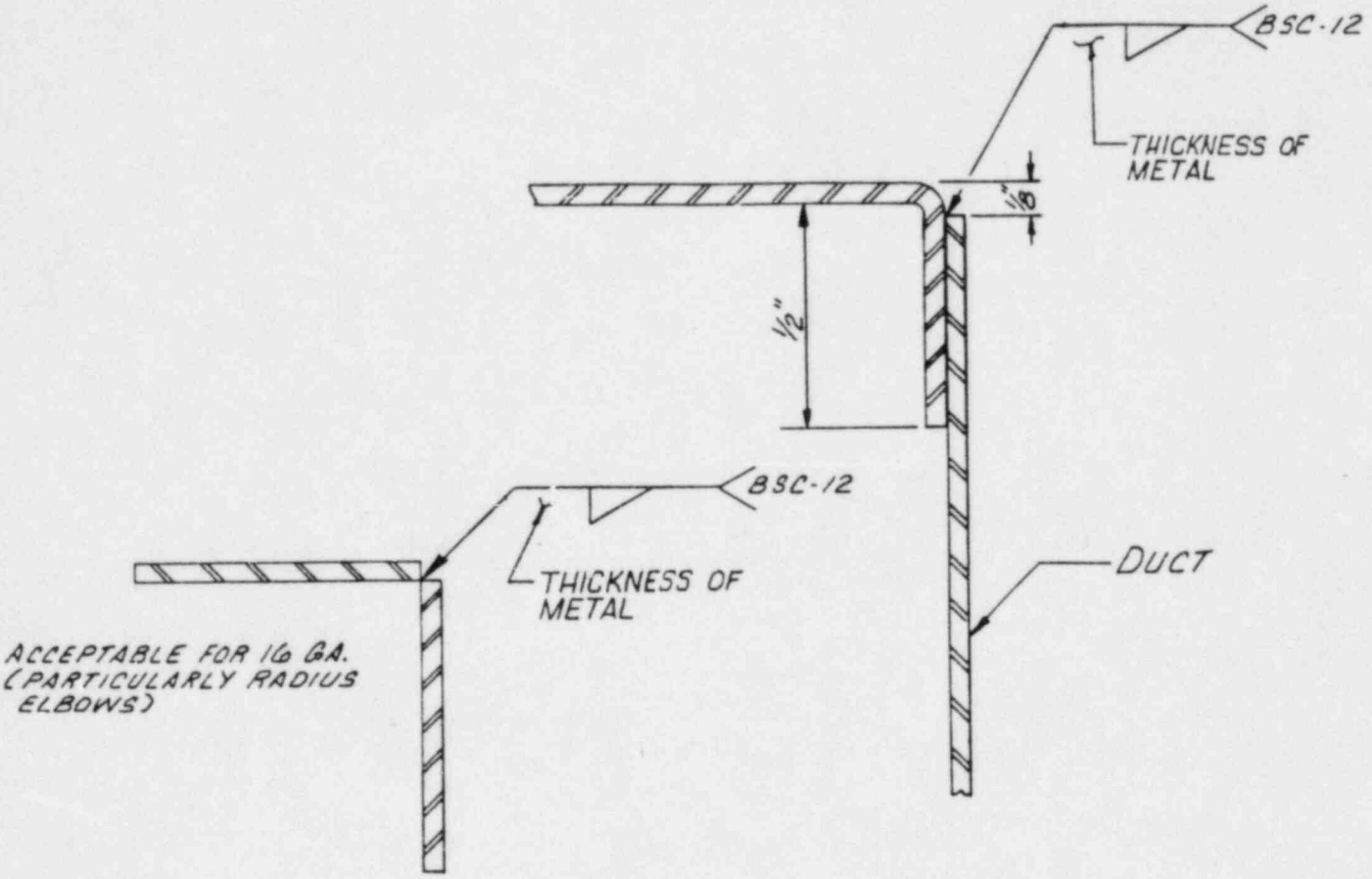
4. STANDARD DISTRIBUTION

TUSI Dallas	(1)	B&R Field	(1)
TUSI Field	(1)	B&R Houston	(1)
TUGCO Site QA	(1)	B&R Site QA	(1)
G&H New York	(1)	B&R Houston QA	(1)
G&H Dallas	(1)		

5. DOCUMENT CONTROL

___ FOR RECORD ONLY
___ FOR CLARIFICATION ONLY
___ NEED TO KNOW
X ALL (AFFECTED) DOCUMENT HOLDERS
___ PER ATTACHED LIST

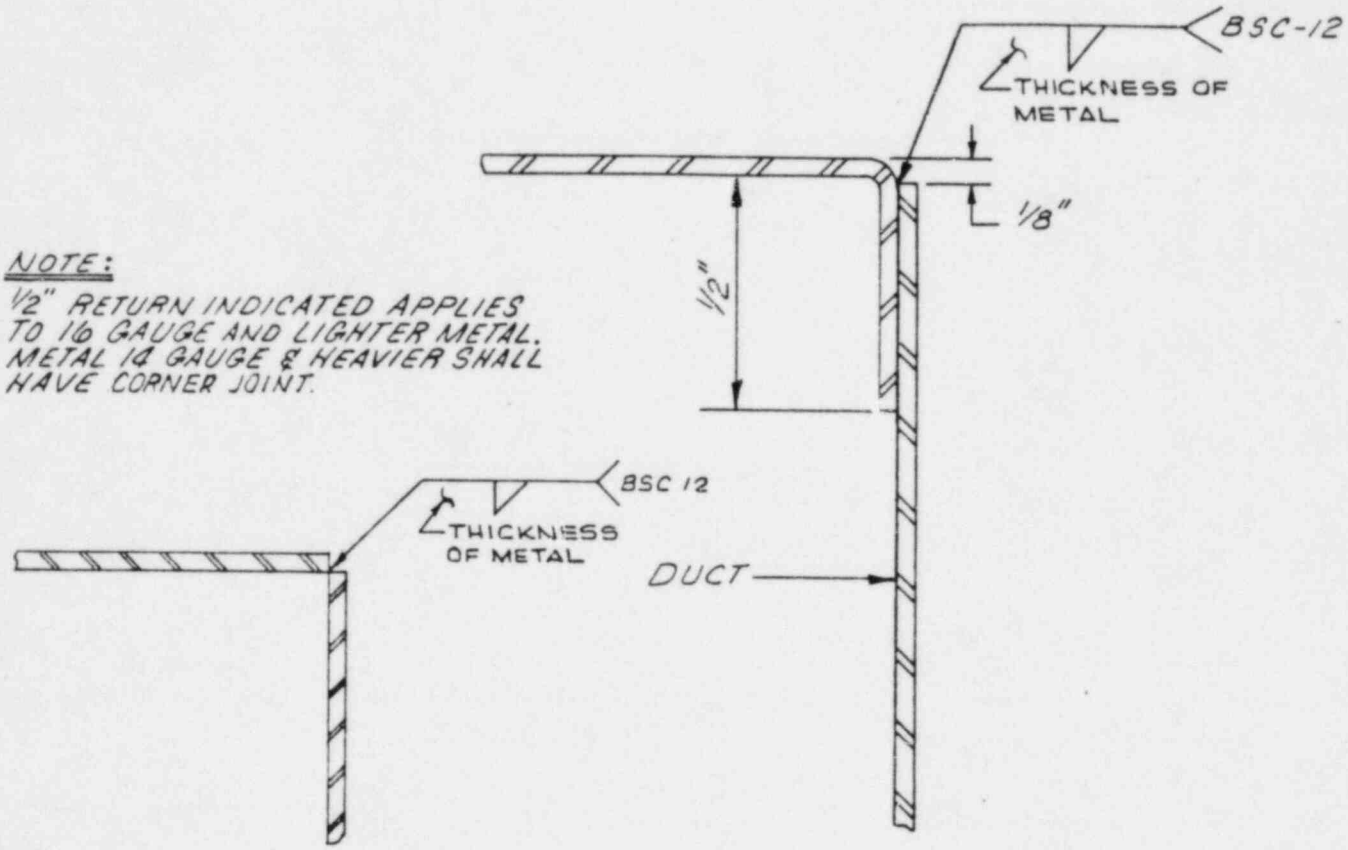
NOTE:
½" RETURN INDICATED APPLIES TO 16 GAUAGE AND LIGHTER METAL. METAL 14 GAUGE AND HEAVIER SHALL HAVE CORNER JOINT



"TYPICAL LONGITUDINAL WELDED SEAM"

DUCT CONSTRUCTION LEVEL-2

Flakt BAHNSON



NOTE:
1/2" RETURN INDICATED APPLIES TO 16 GAUGE AND LIGHTER METAL. METAL 14 GAUGE & HEAVIER SHALL HAVE CORNER JOINT.

TYPICAL "LONGITUDINAL" WELDED SEAM DUCT CONSTRUCTION "LEVEL 3 & 4"

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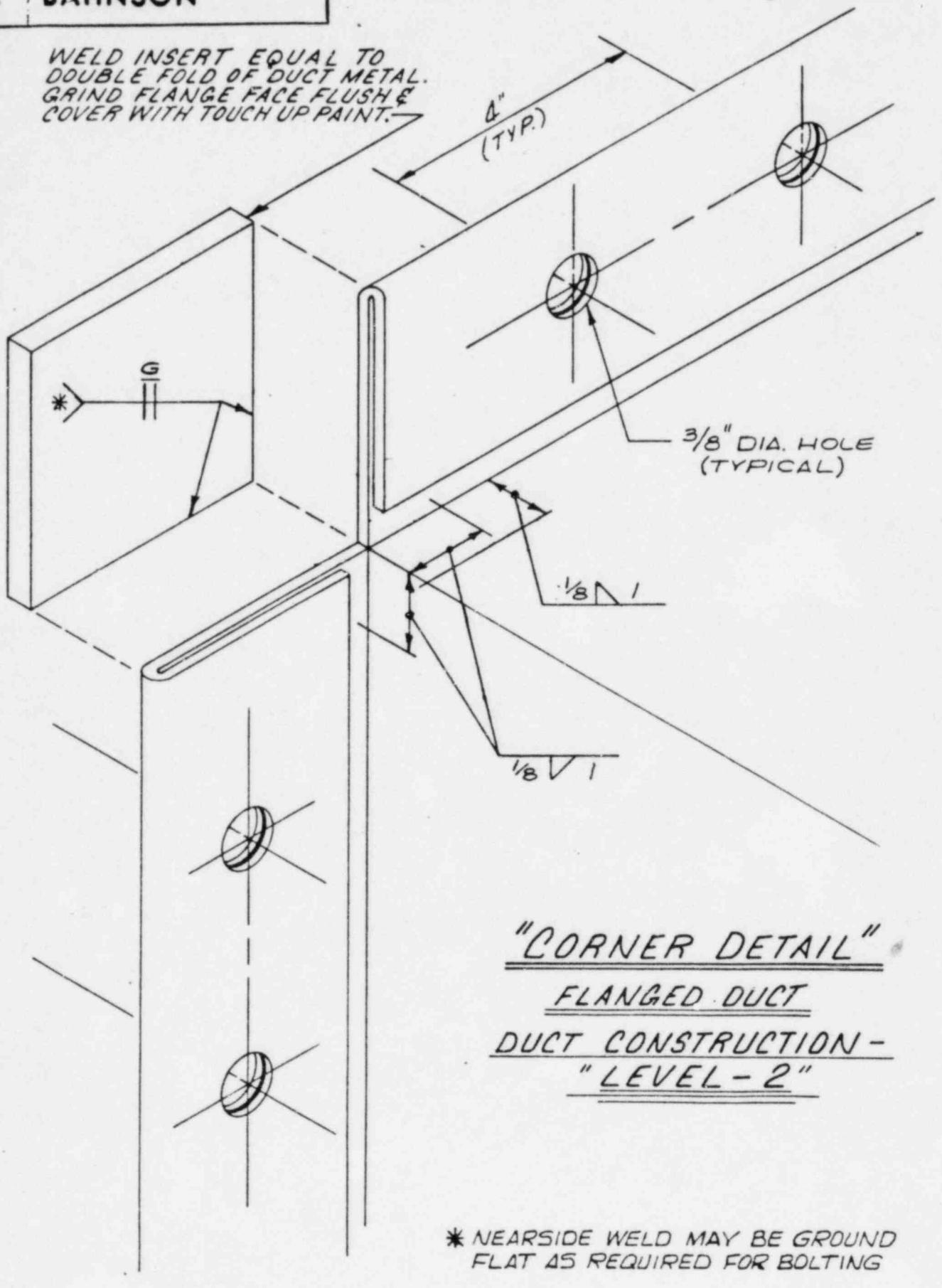


"CORNER DETAIL"

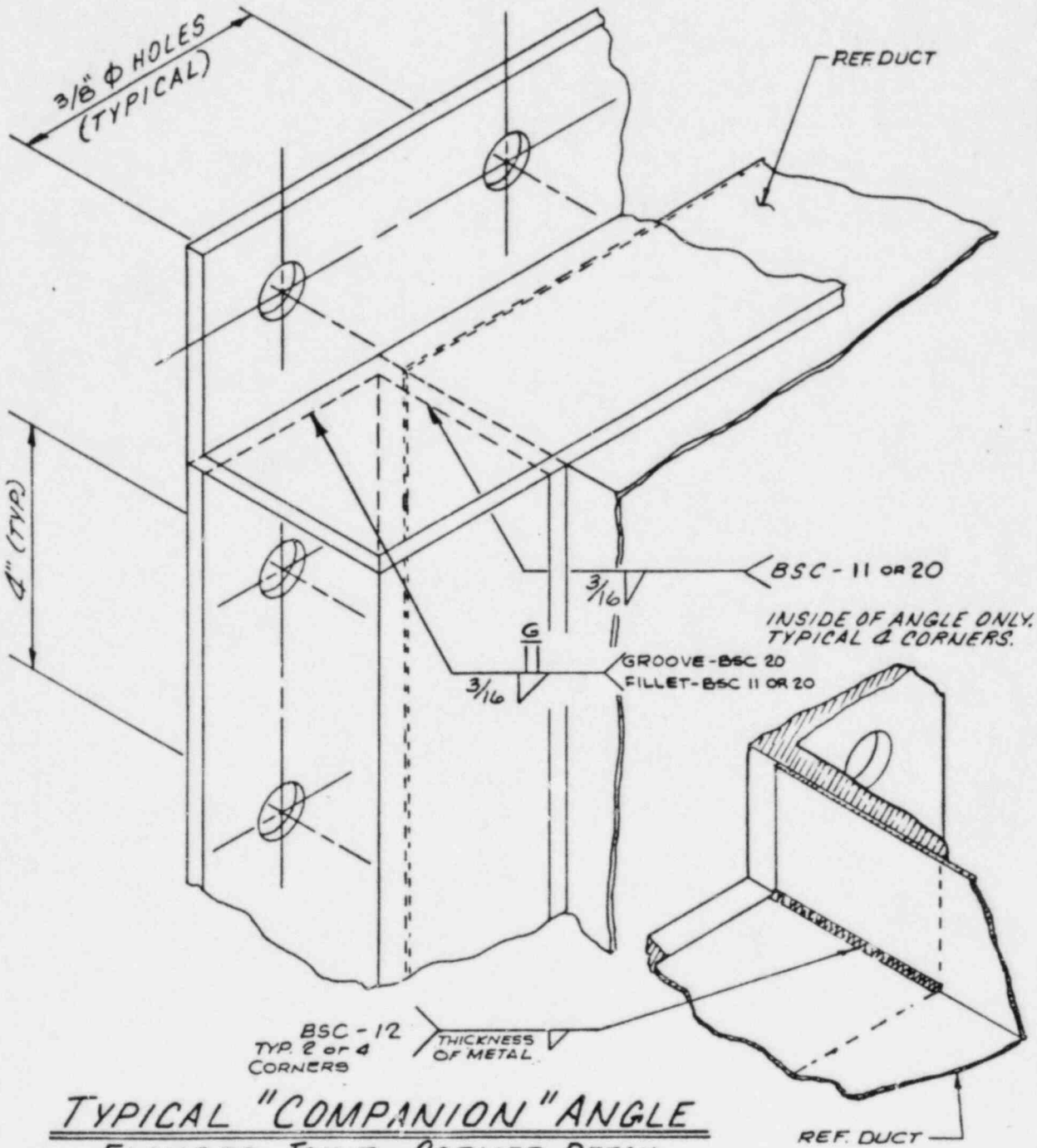
FLANGED DUCT

DUCT CONSTRUCTION - "LEVEL - 2"

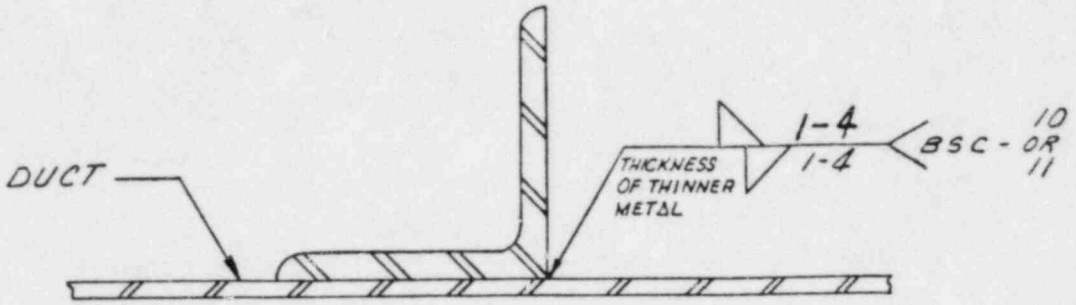
* NEARSIDE WELD MAY BE GROUND FLAT AS REQUIRED FOR BOLTING

Flakt BAHNSON

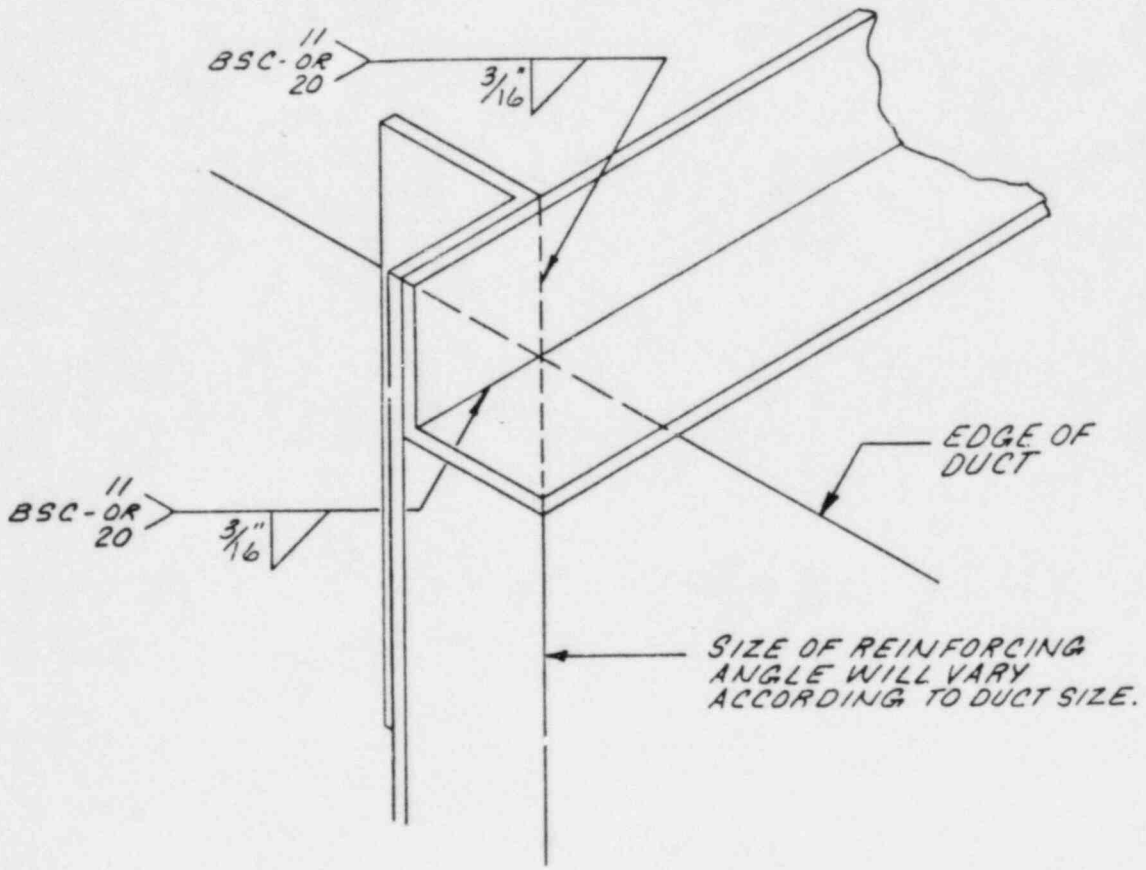
DUCTWORK FABRICATION PROCEDURE



TYPICAL "COMPANION" ANGLE
FLANGED JOINT - CORNER DETAIL
DUCT CONSTRUCTION "LEVEL 3 & 4"



TYPICAL INTERMEDIATE REINFORCING ANGLE WELDED TO DUCT DUCT CONSTRUCTION "LEVEL 2"



TYPICAL REINFORCING ANGLE CORNER CONNECTION DUCT CONSTRUCTION "LEVEL 2"

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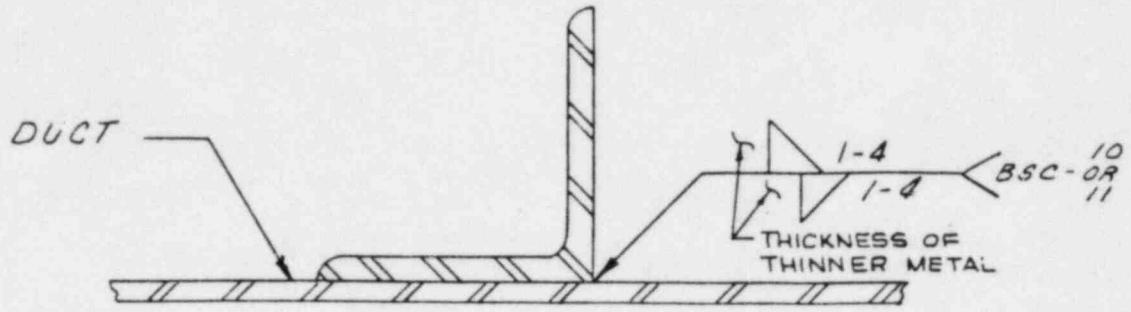
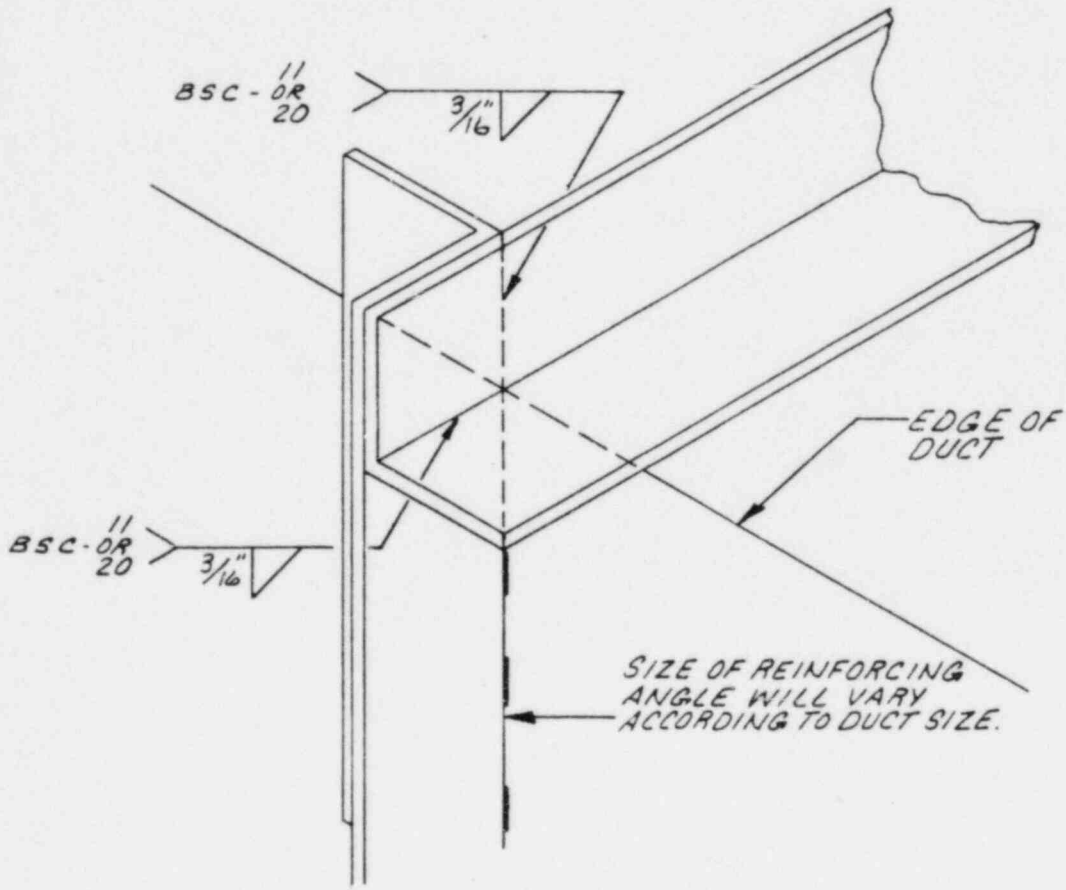
DUCTWORK FABRICATION PROCEDURE



TYPICAL INTERMEDIATE REINFORCING ANGLE WELDED TO DUCT

DUCT CONSTRUCTION "LEVEL 3 & 4"



TYPICAL REINFORCING ANGLE CORNER CONNECTION

DUCT CONSTRUCTION "LEVEL 3 & 4"

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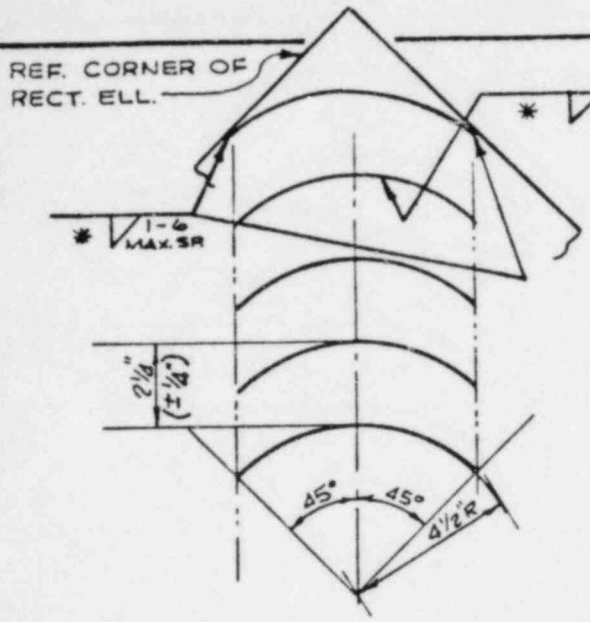
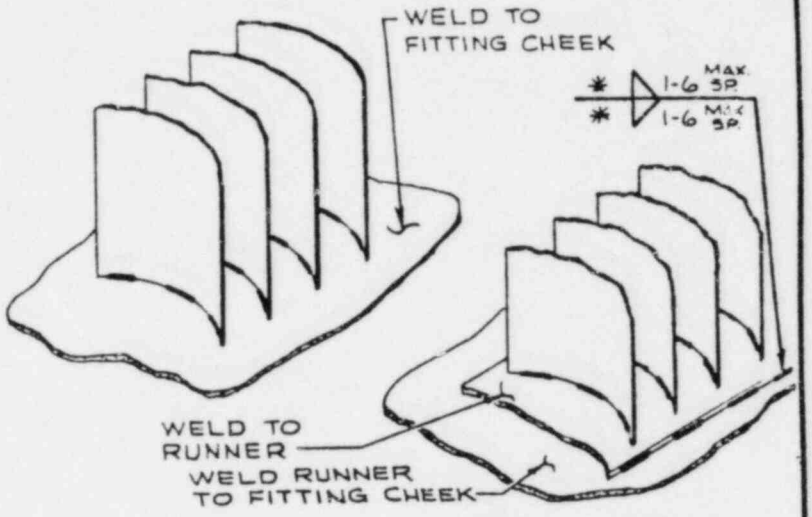


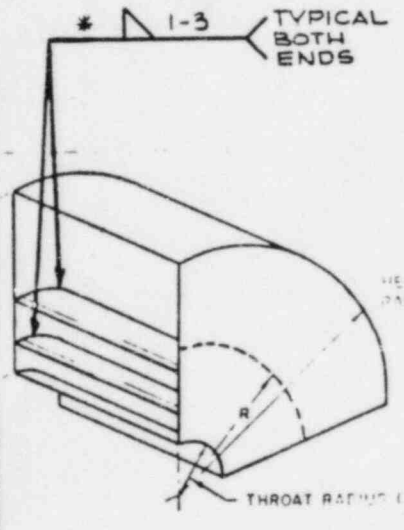


ALTERNATE CONSTRUCTION

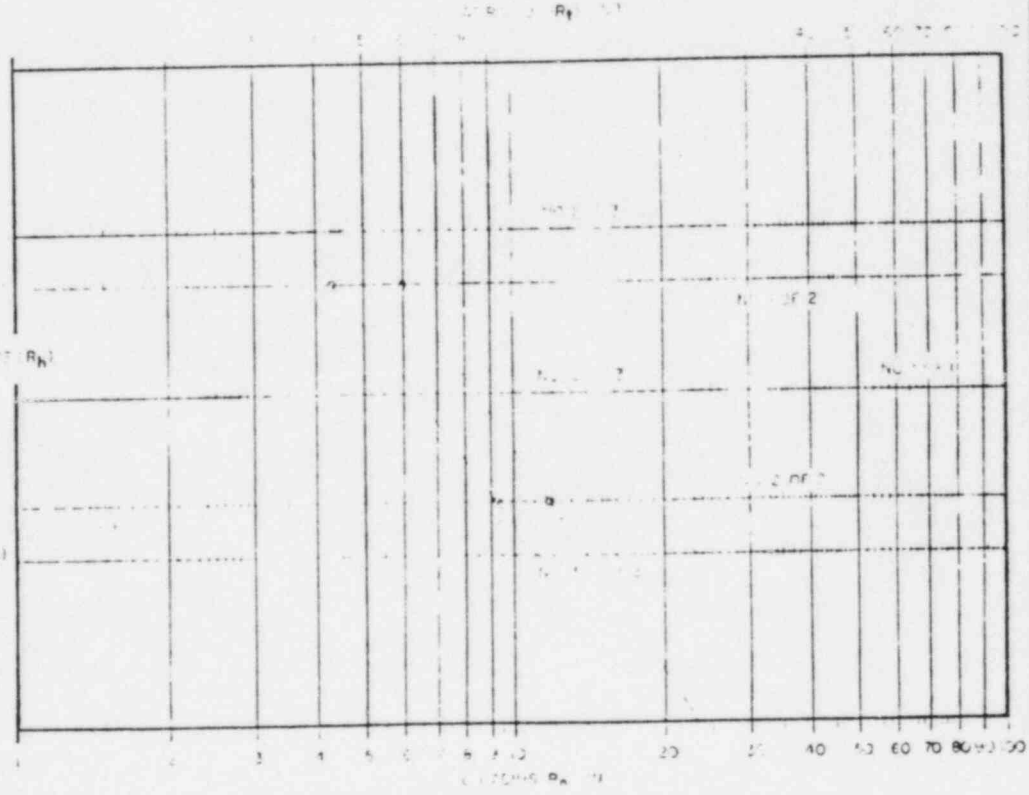
SPLITTERS IN TRANSITION WILL BE WELDED 1" ON 6" MAX., STAGGERED
WELD SIZE 3/32"

* WELD SIZE TO BE THICKNESS OF THINNER MEMBER

TYPICAL-TURN VANE DETAIL



METAL GAUGE AND TYPE OF VANES WILL BE SAME AS JOINT IN WHICH INST.

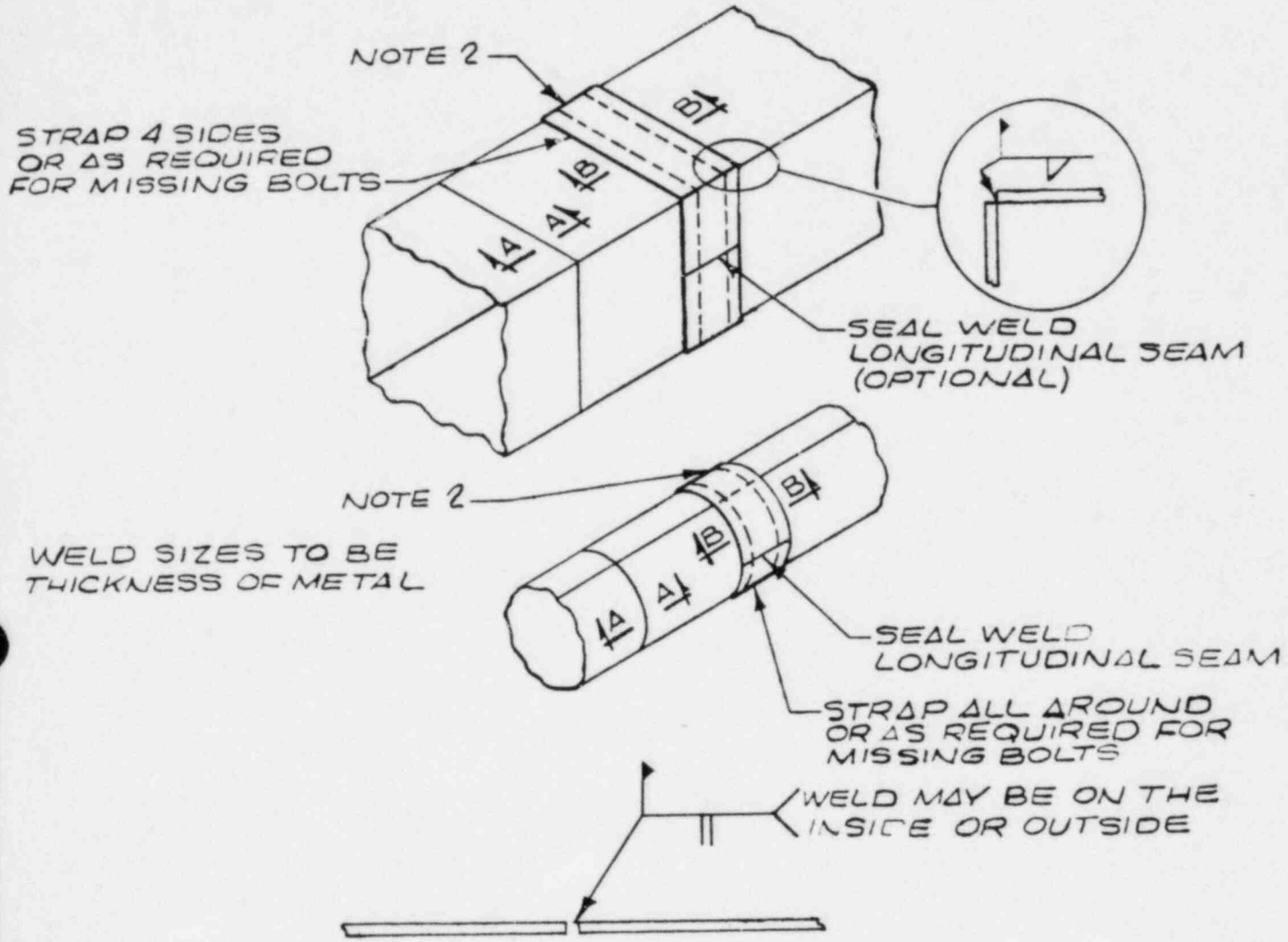


VANE LOCATION

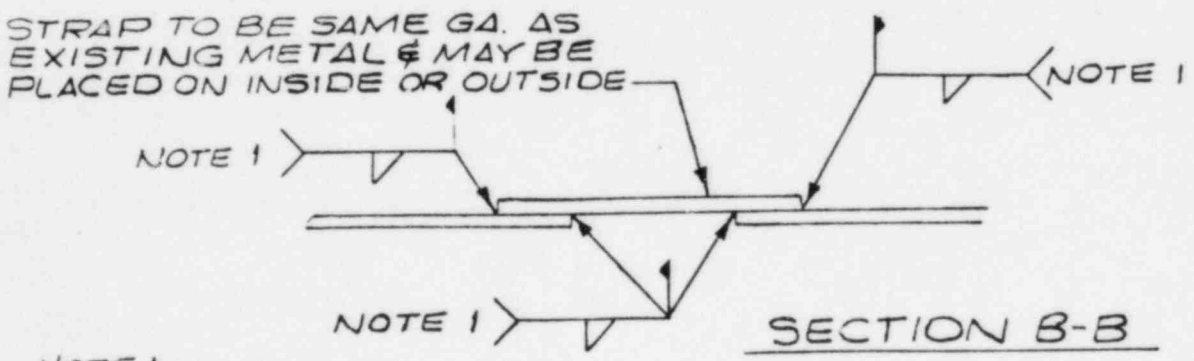
TYPICAL-SHORT RADIUS VANED ELBOW

(WHEN ℄ RADIUS IS LESS THAN 1½ x DUCT WIDTH)

TYPICAL "SPLICED JOINT" LEVEL 2 – RECTANGULAR & ROUND DUCT CONST.



SECTION A-A

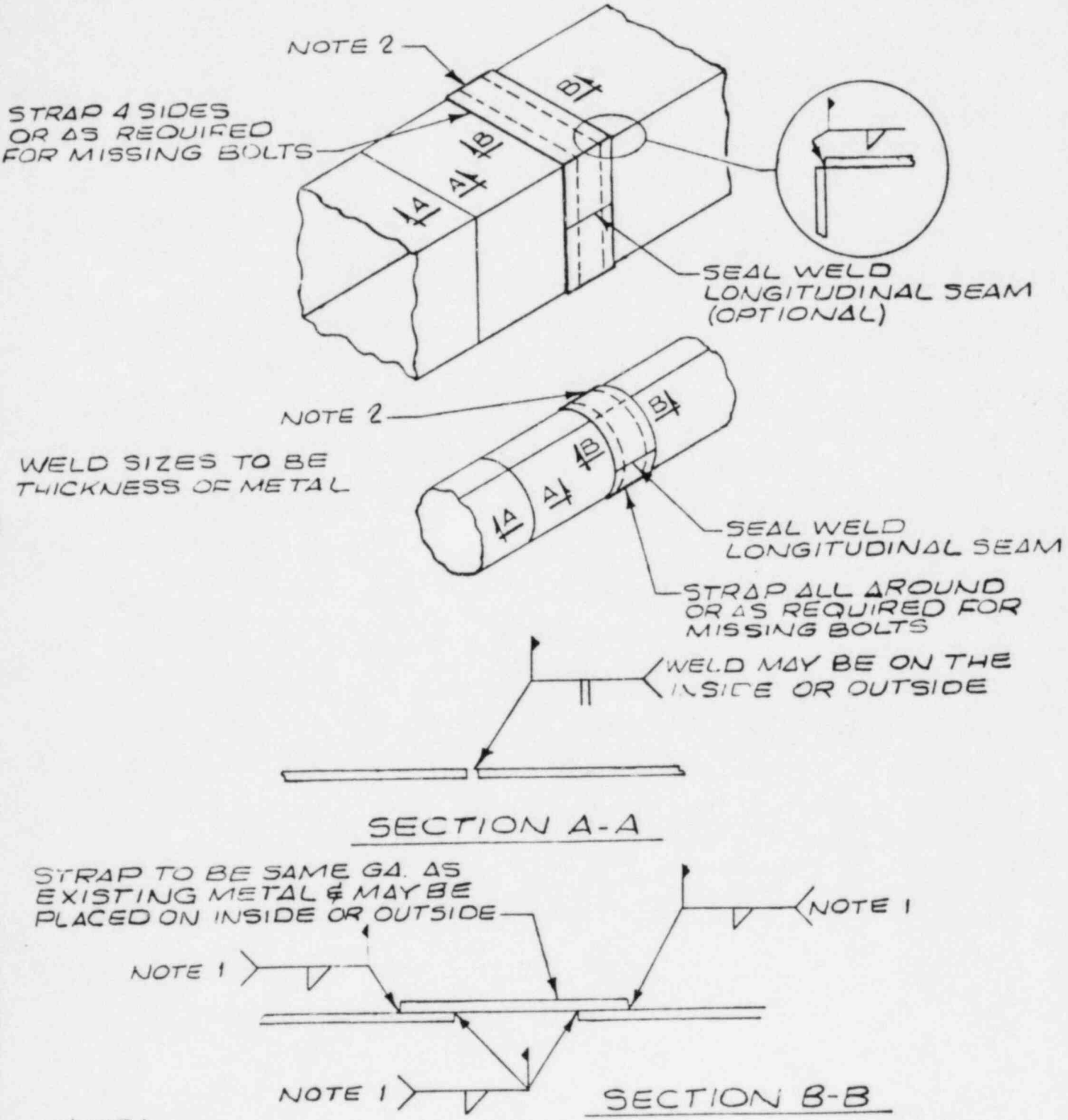


SECTION B-B

NOTE 1
WELD MAY BE OMITTED IF INACCESSIBLE & WELD ON OTHER SIDE EXISTS.

NOTE 2
EXISTING FLANGES MAY BE LEFT IN PLACE WHERE SEAL WELD OR STRAP IS PLACED ON THE INSIDE OF DUCT.

TYPICAL "SPLICED JOINT"
LEVEL 3 & 4 – RECTANGULAR & ROUND DUCT CONST.

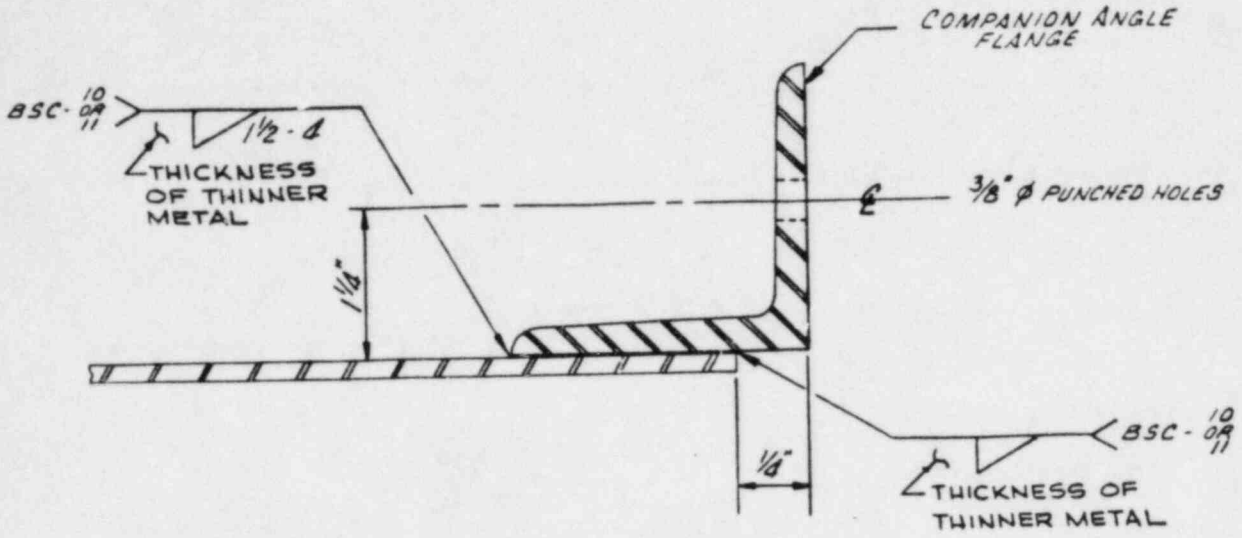


SECTION A-A

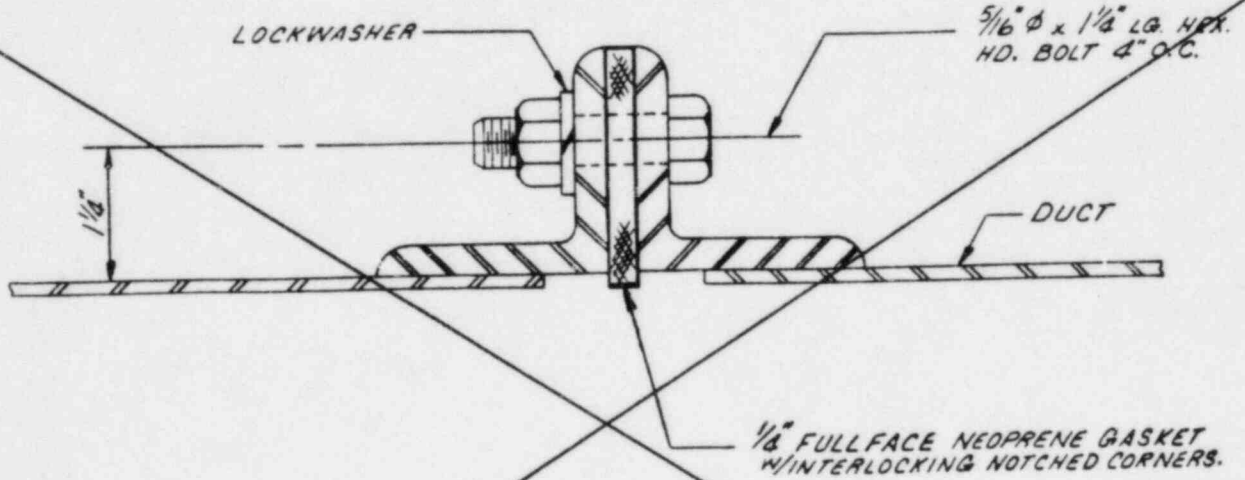
SECTION B-B

NOTE 1
WELD MAY BE OMITTED IF INACCESSIBLE & WELD ON OTHER SIDE EXISTS.

NOTE 2
EXISTING FLANGES MAY BE LEFT IN PLACE WHERE SEAL WELD OR STRAP IS PLACED ON THE INSIDE OF DUCT.



"TYPICAL FLANGE DETAIL"
COMPANION ANGLE FLANGED JOINT
DUCT CONSTRUCTION LEVEL 3 & 4



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"TYPICAL COMPANION ANGLE"
FLANGED JOINT
DUCT CONSTRUCTION LEVEL 3 & 4

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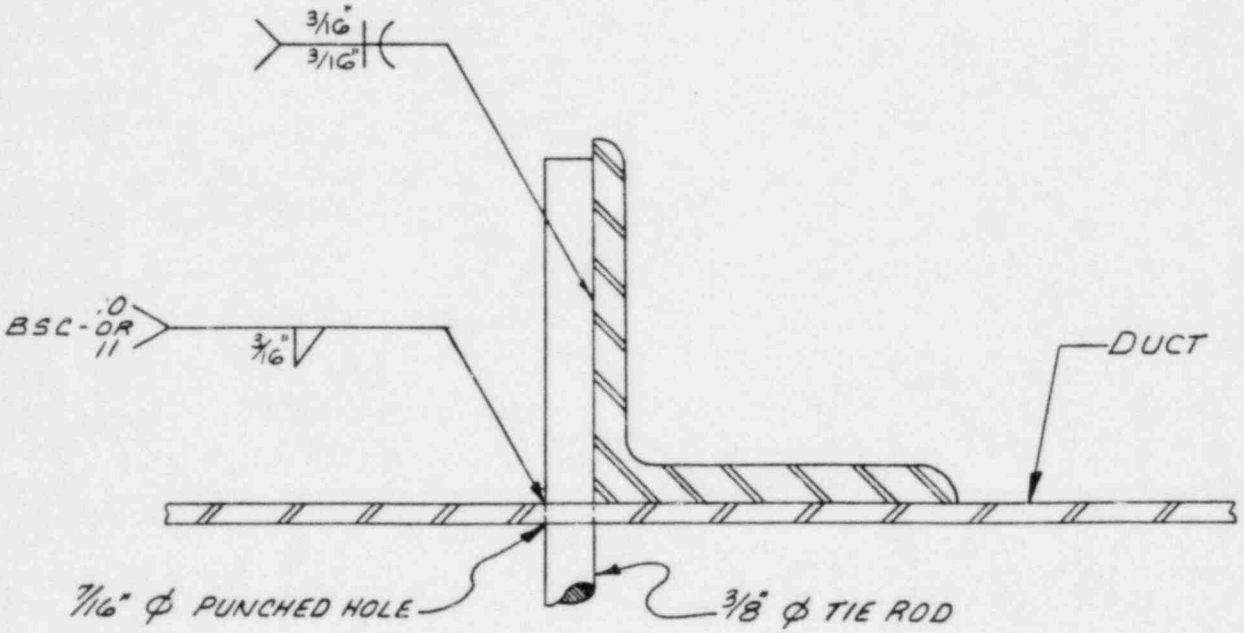
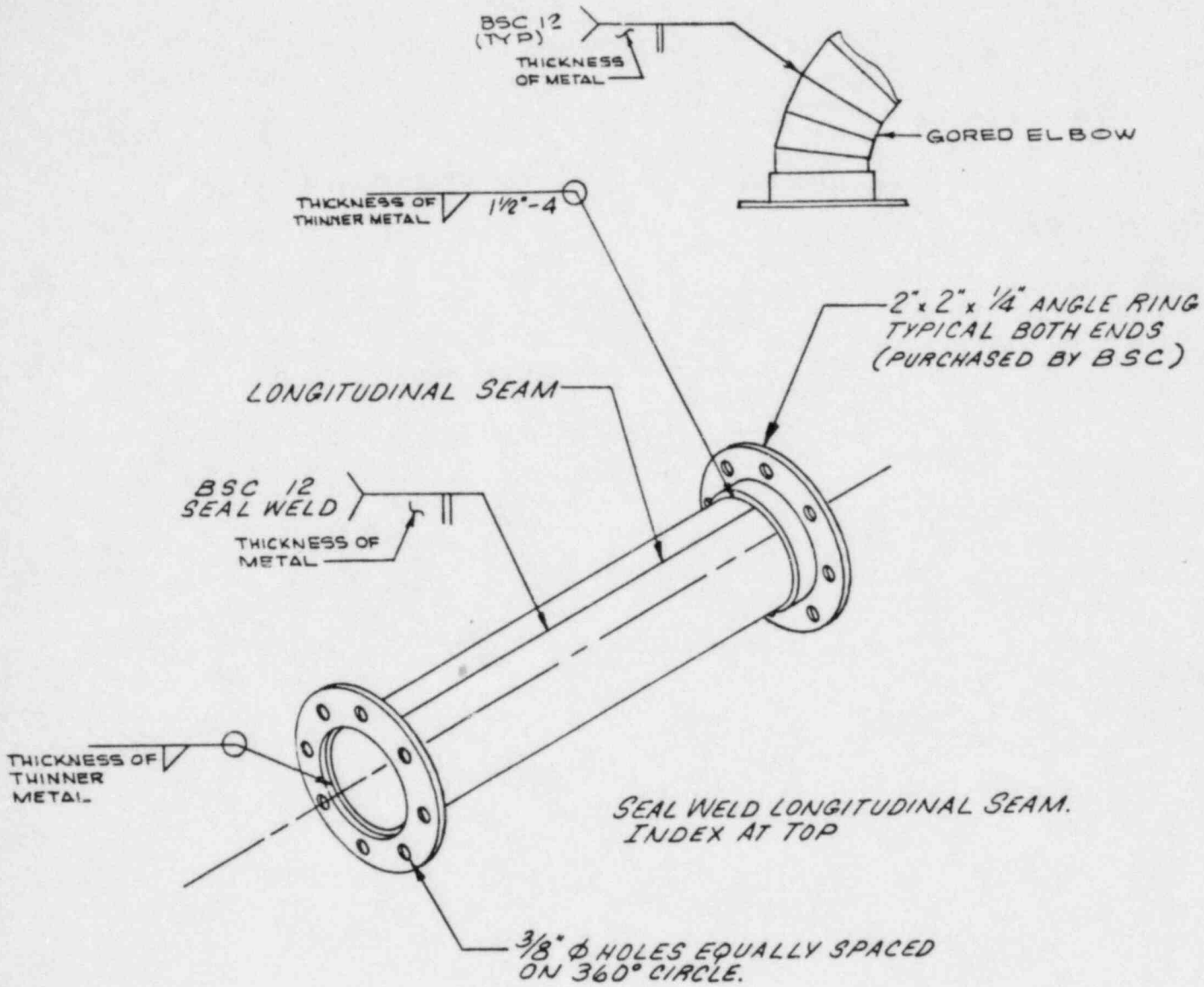


TYPICAL "TIE ROD" INSTALLATION

DUCT CONSTRUCTION "LEVEL 3 & 4"

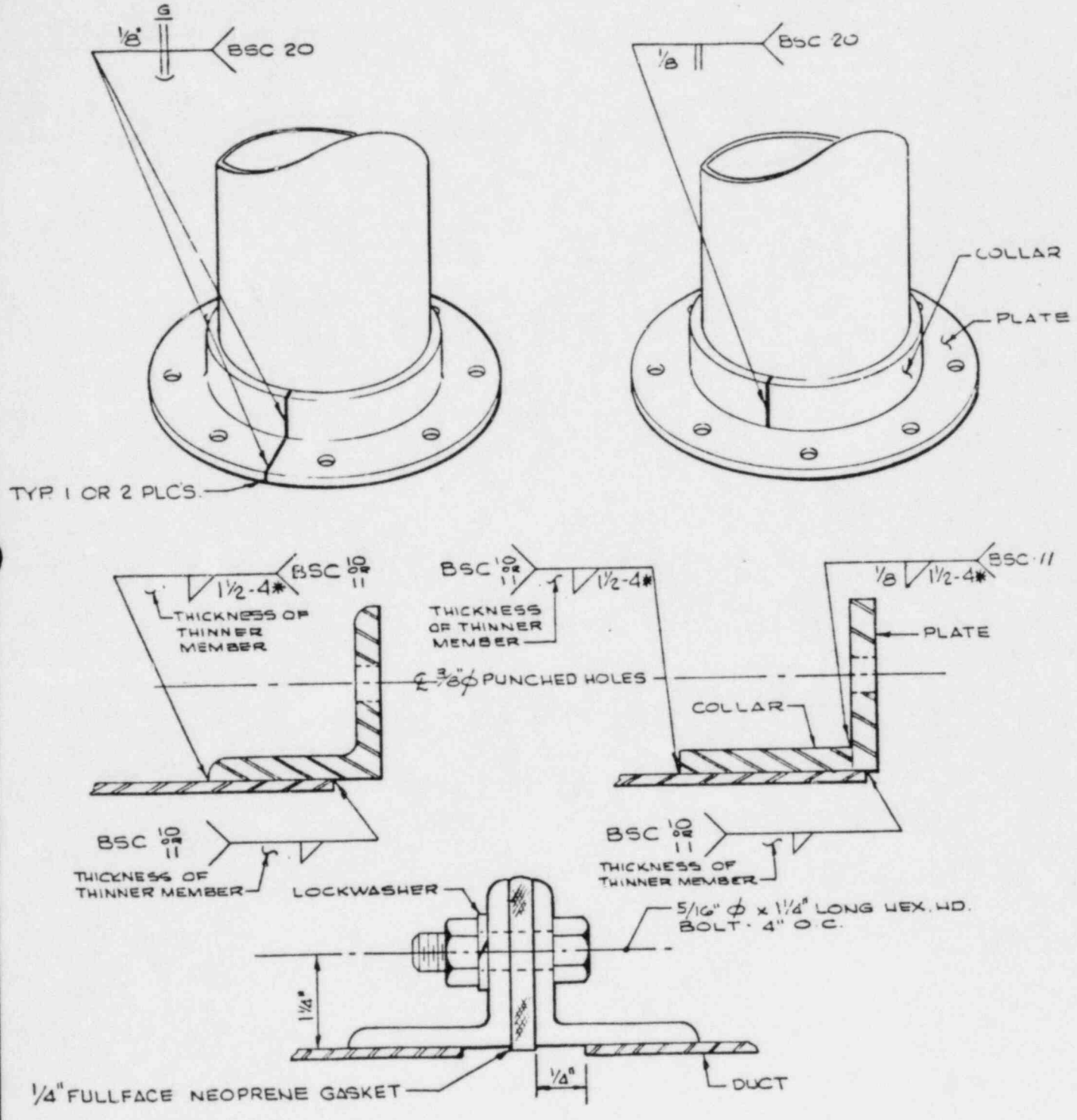
SUPPLY SYSTEM DUCT



TYPICAL "COMPANION ANGLE" FLANGED JOINT

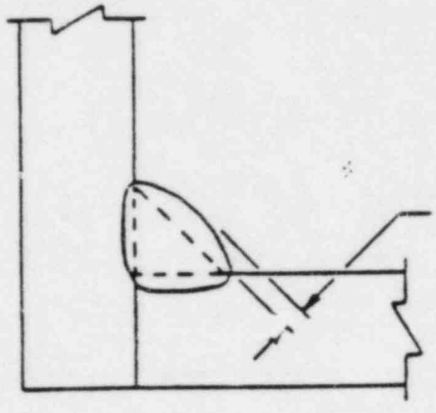
"ROUND DUCT CONSTRUCTION"

* PREFERRED WELD — WELD MAY BE CONTINUOUS

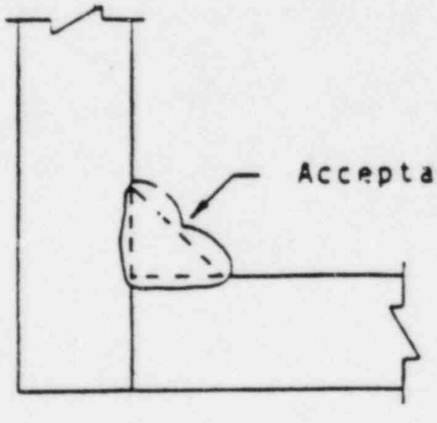


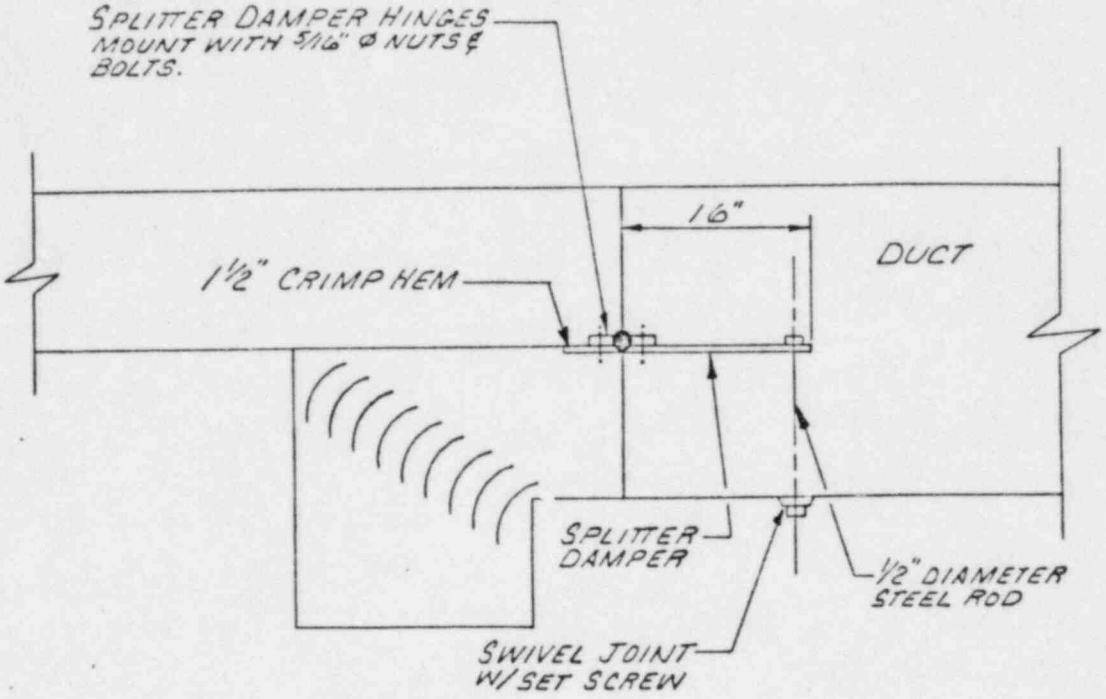
TYPICAL ROUND FLANGE DETAILS

FILLET WELD PROFILES

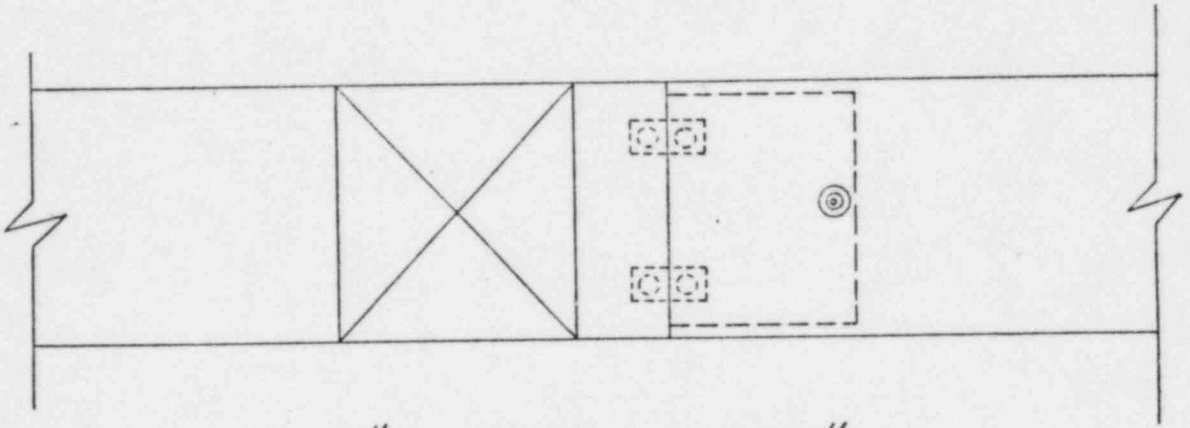


Acceptable Convexity





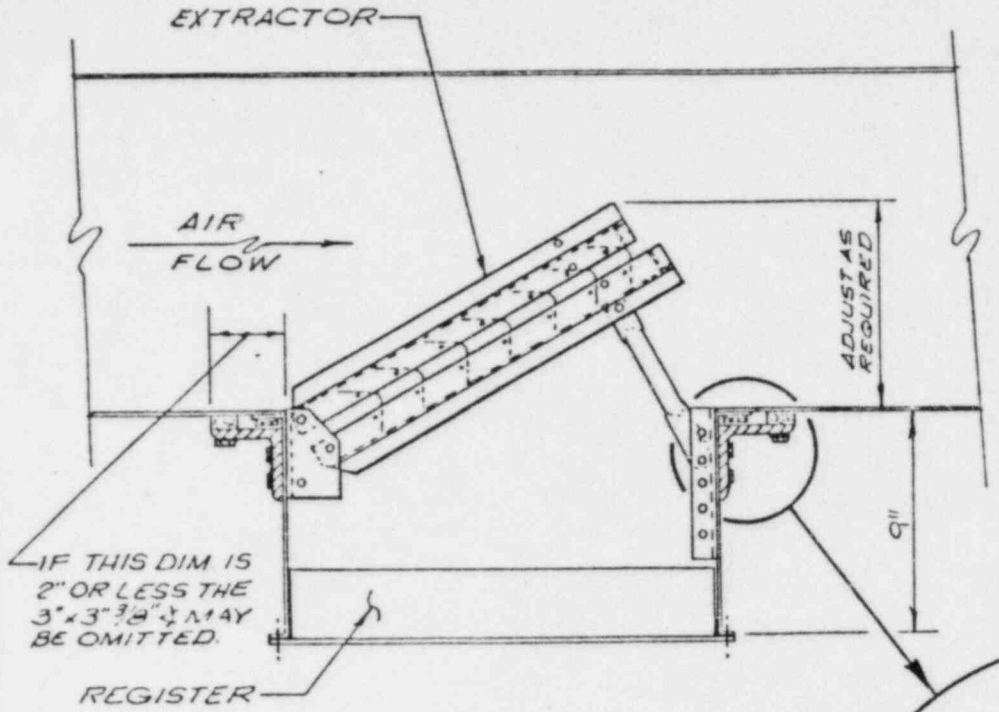
"PLAN VIEW"
WITH TOP OF DUCT REMOVED



"SIDE ELEVATION"

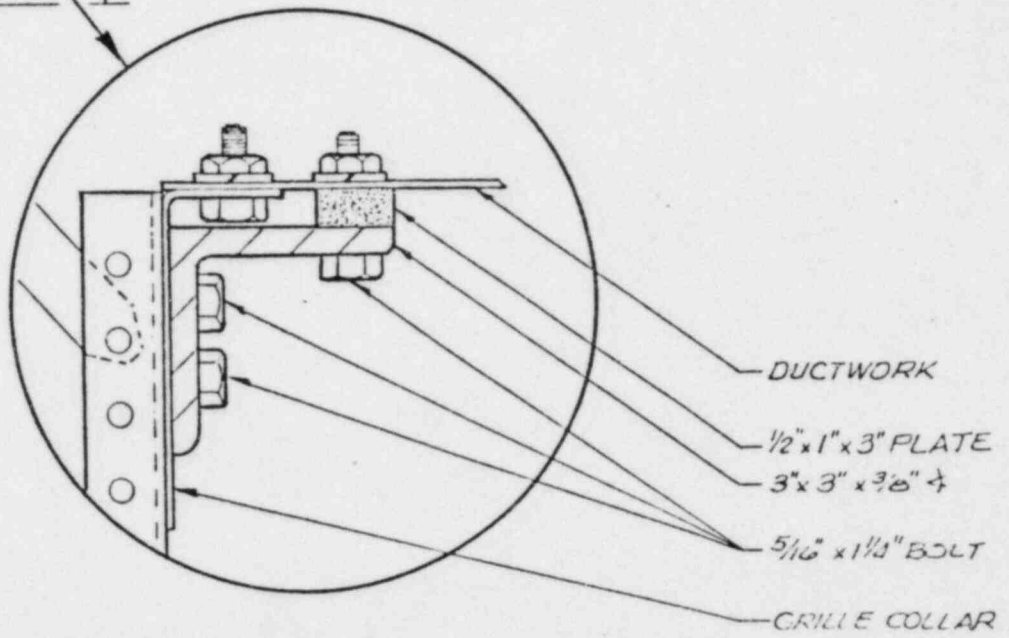
SPLITTER DAMPER (TYP. INSTALLATION)

QA
REV. 43-77
0



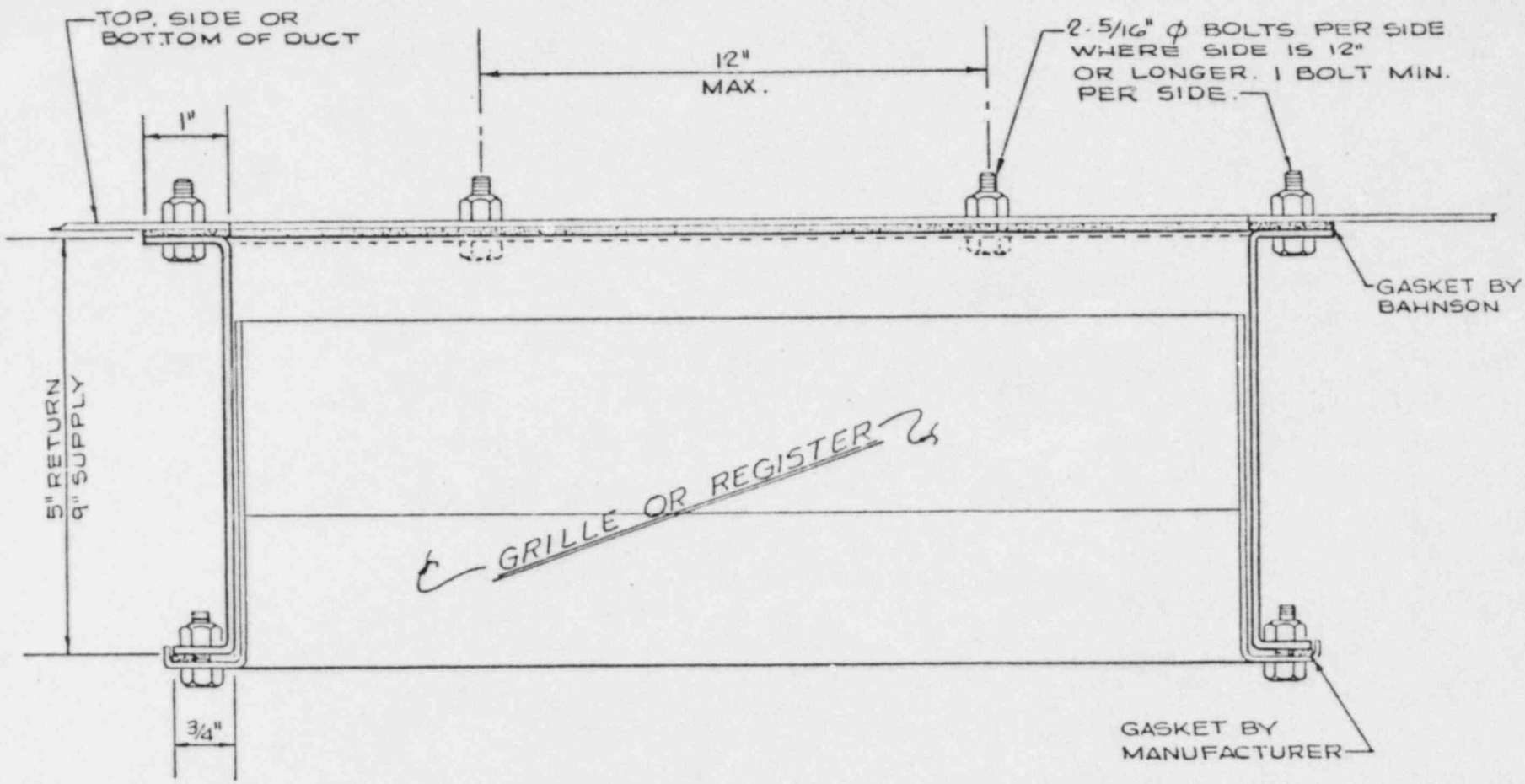
NOTES:

1. EXTRACTOR TO BE ADJUSTABLE AS REQUIRED FOR PROPER AIR FLOW.
2. SIMILAR ARRANGEMENT USED WHERE REQUIRED ON BRANCH DUCT.



SEISMIC VOLUME EXTRACTOR
SEISMIC CATEGORY I DUCTWORK

PROCEDURE NO. DEP-TIDI-008 REV. 1
DATE AUG 08 1991 PAGE 7 OF 29

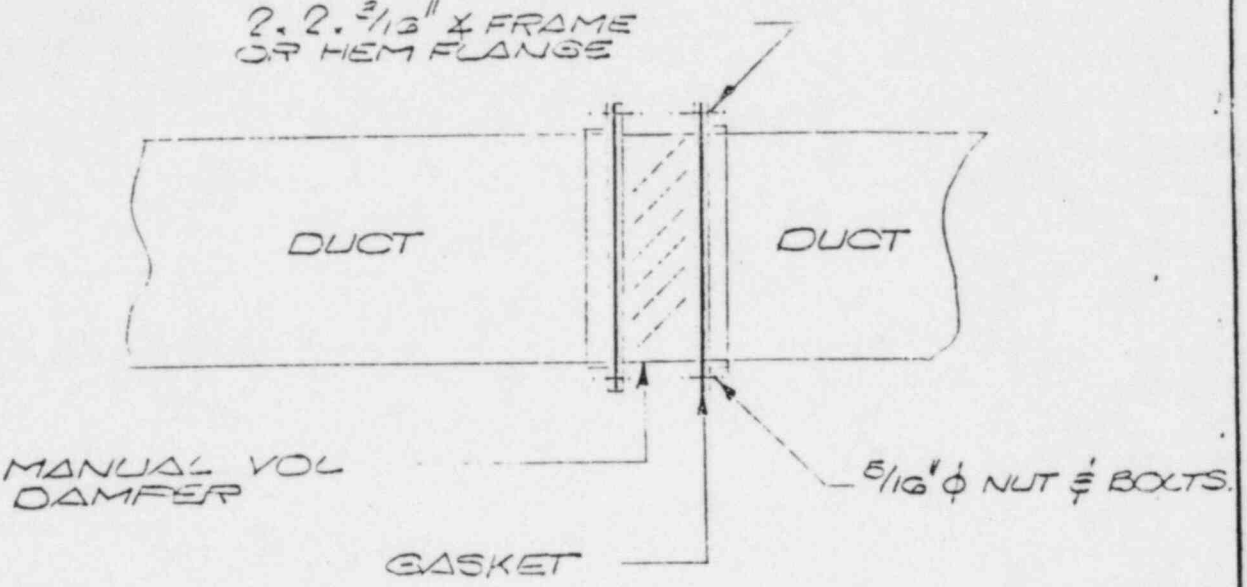


TYPICAL INSTALLATION OF GRILLS & REGISTERS

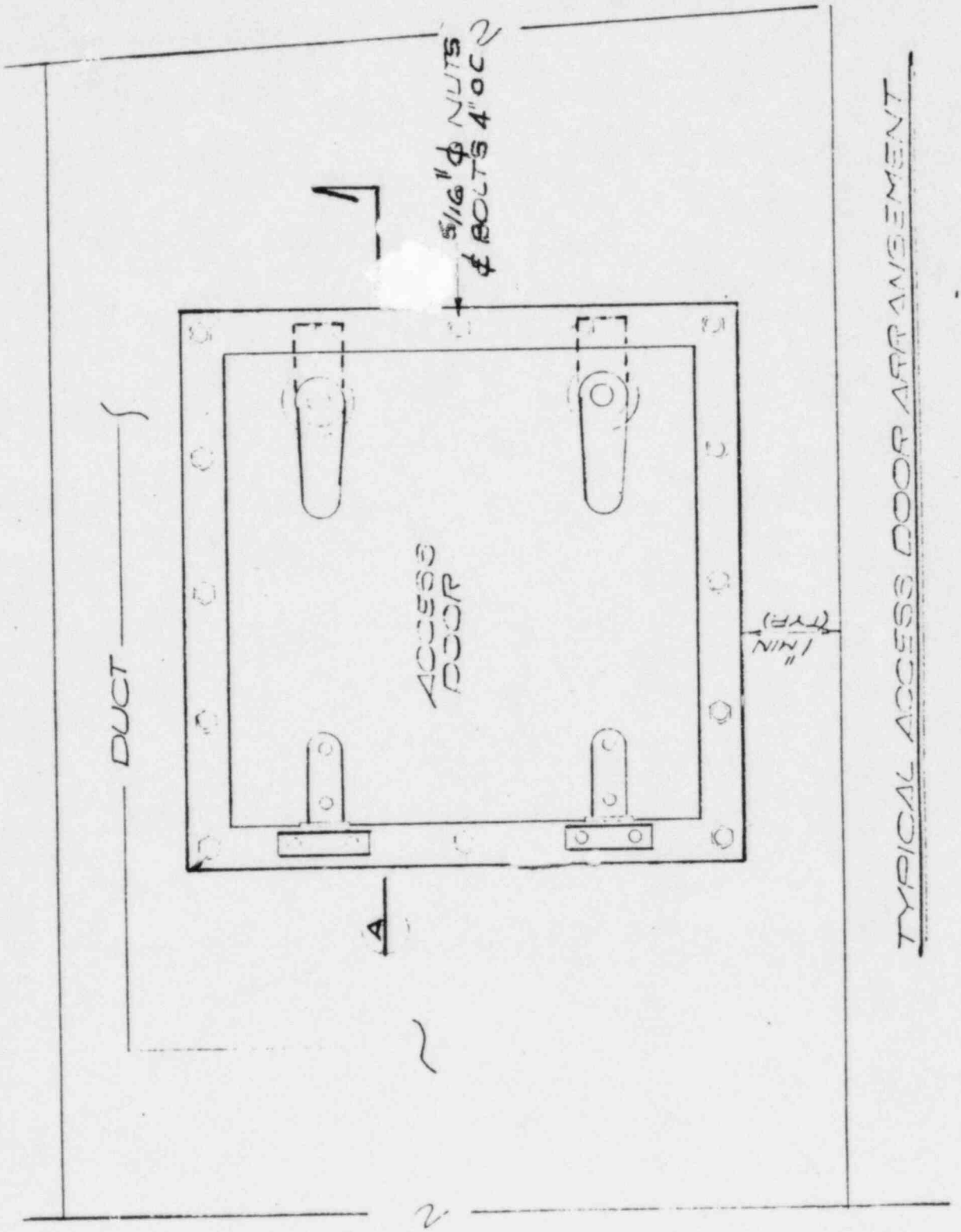
(WITHOUT EXTRACTORS)

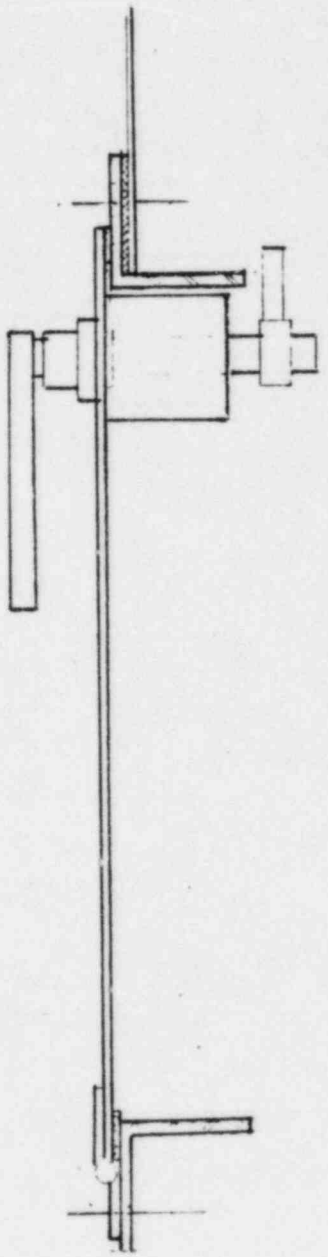
BAHNSON

NOTE: OPERATOR/QUADRANT SHALL BE FIELD LOCATED ON ACCESSIBLE SIDE OF DUCT.

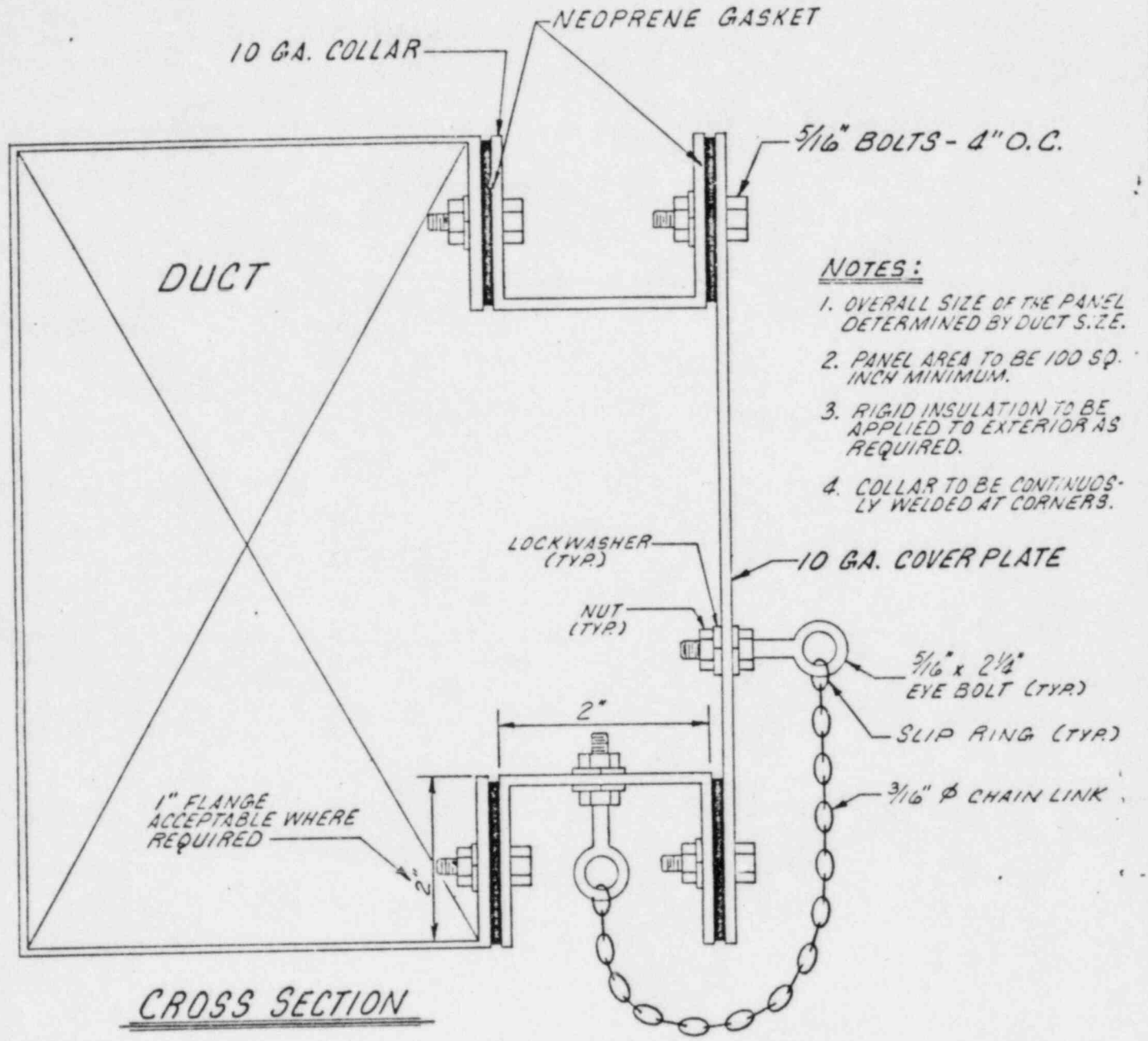


MANUAL VOLUME DAMPER (TYPICAL INSTALLATION)


5/16" ϕ NUTS
BOLTS 4" OC
DUCT
ACCESS DOOR
1" MIN (TYP)
A
TYPICAL ACCESS DOOR ARRANGEMENT



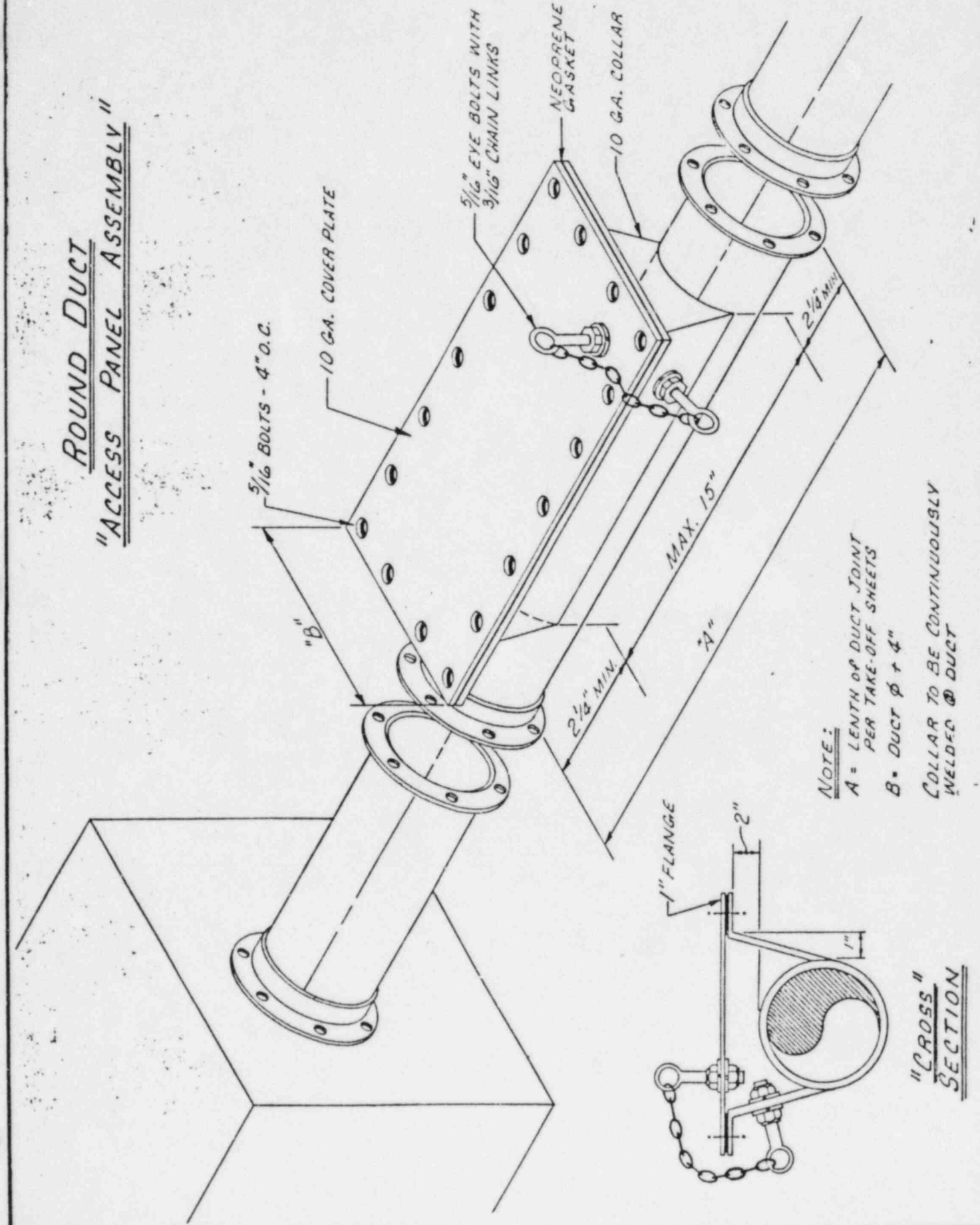
SECTION-A
TYPICAL ACCESS DOOR ARRANGEMENT

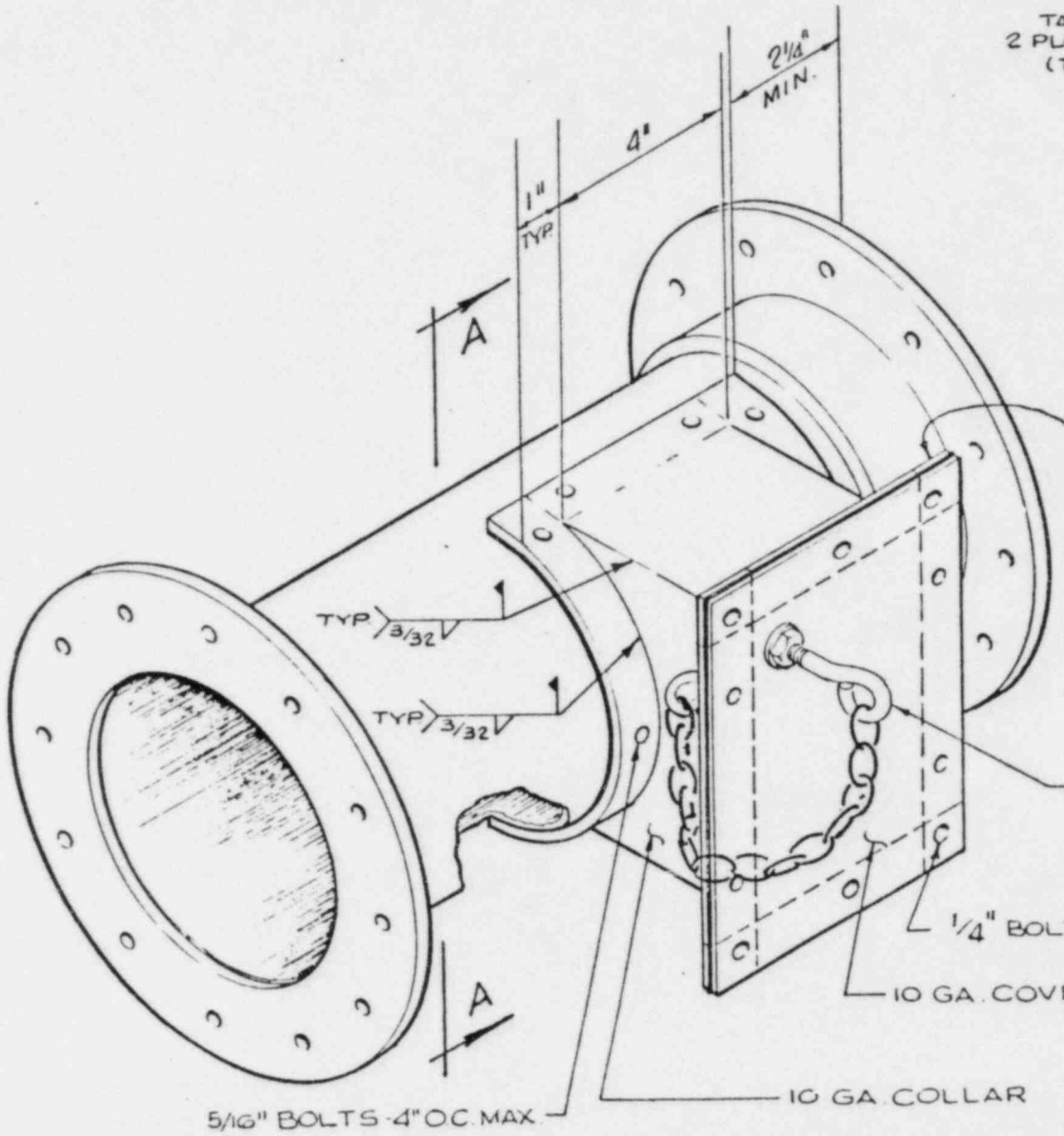


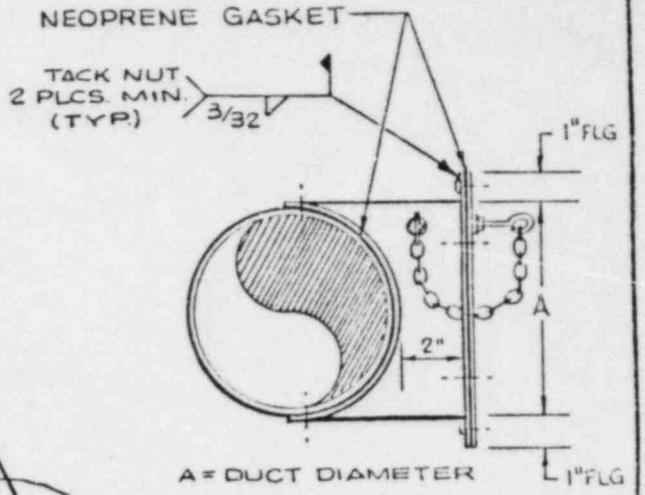
CROSS SECTION

"DUCT ACCESS PANEL DETAILS"

ROUND DUCT "ACCESS PANEL ASSEMBLY"







SECTION A-A

NOTE:

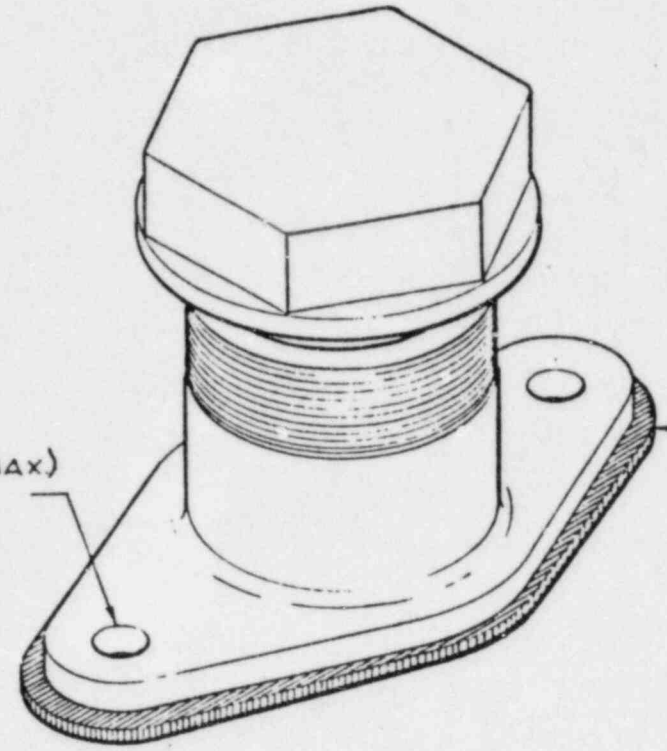
1. DIM. ± 1/4" UNLESS NOTED.
2. REF. DEP-TUSI-001 FOR CORNER TAB WELDS ONLY.

ROUND DUCT
BOLTED ACCESS PANEL ASSEMBLY

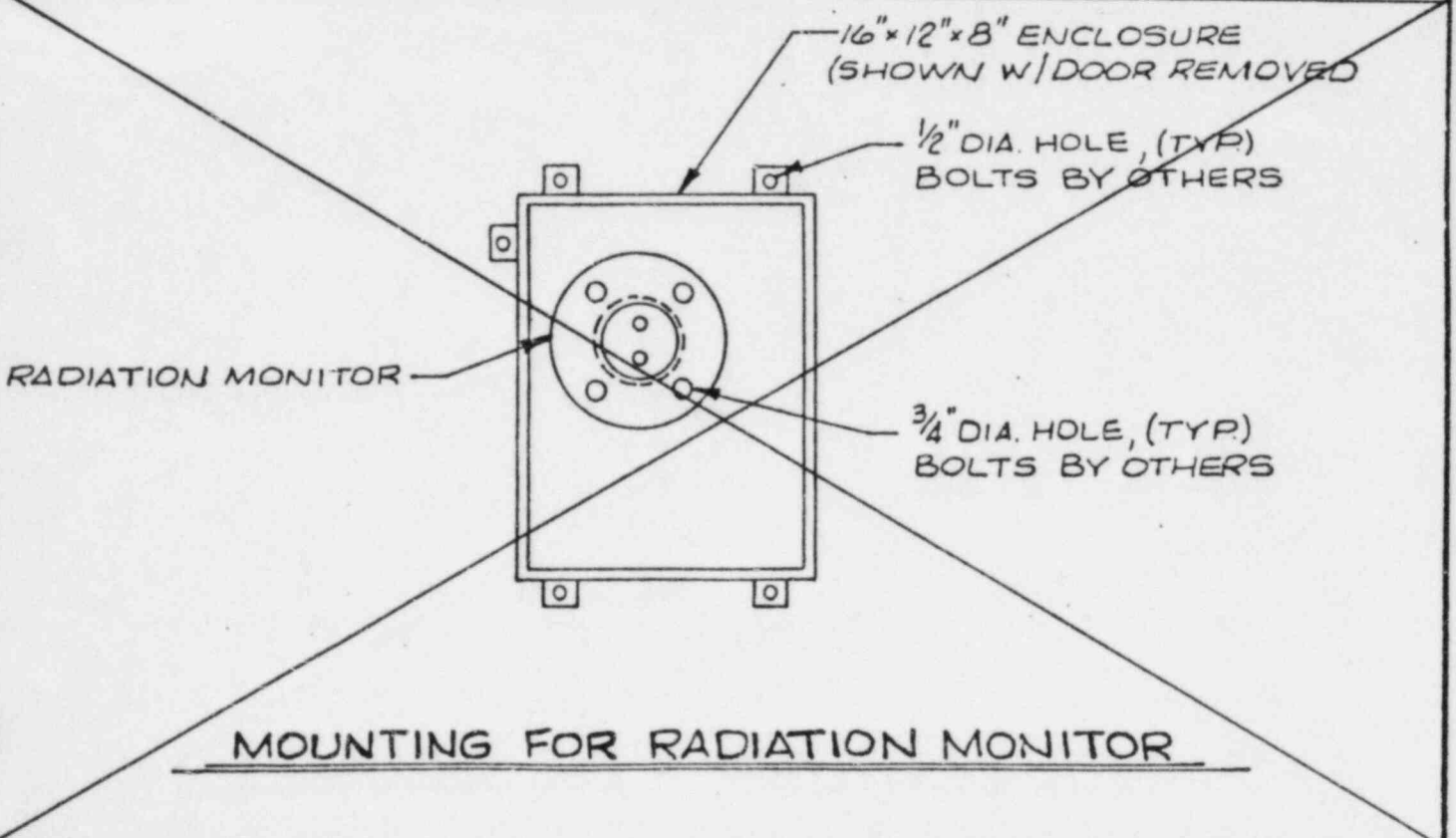
Attachment 6.34
QI-039
Rev. 1
Page 1 of 1

QA 43-77
REV. 0

PROCEDURE NO. DEP-TUSI-008 REV. 7
DATE AUG 08 1983 PAGE 16 OF 29



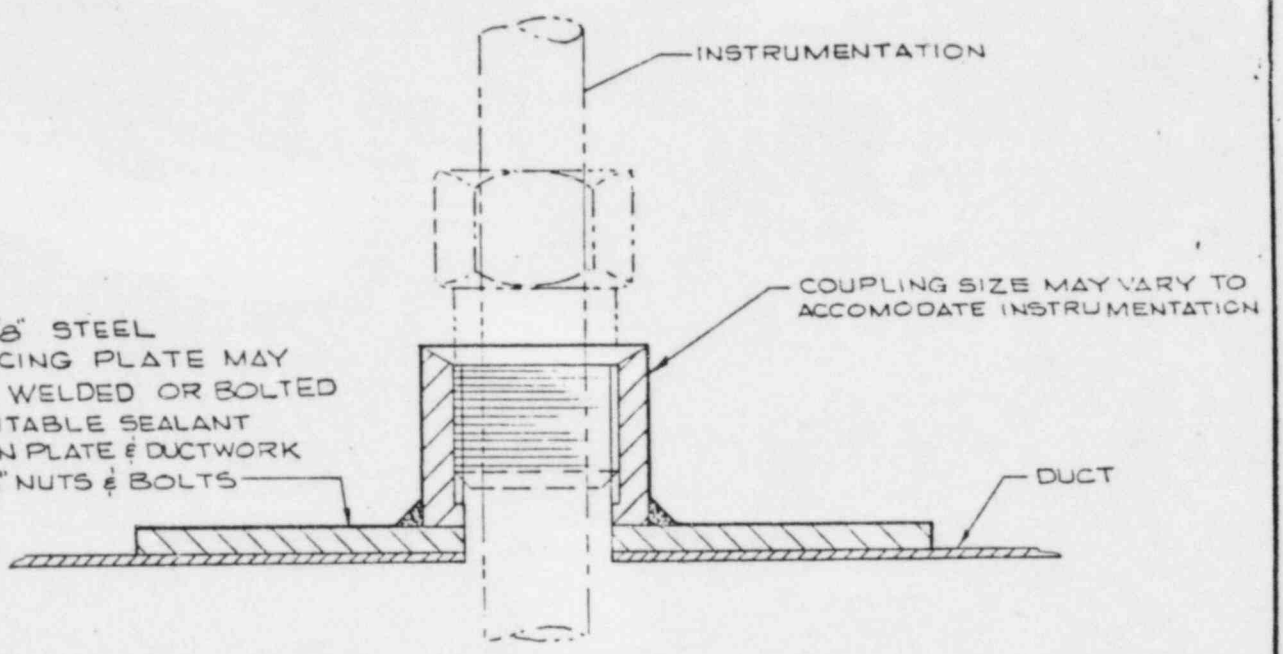
VENTLOCK INSTRUMENT TEST HOLE



MOUNTING FOR RADIATION MONITOR

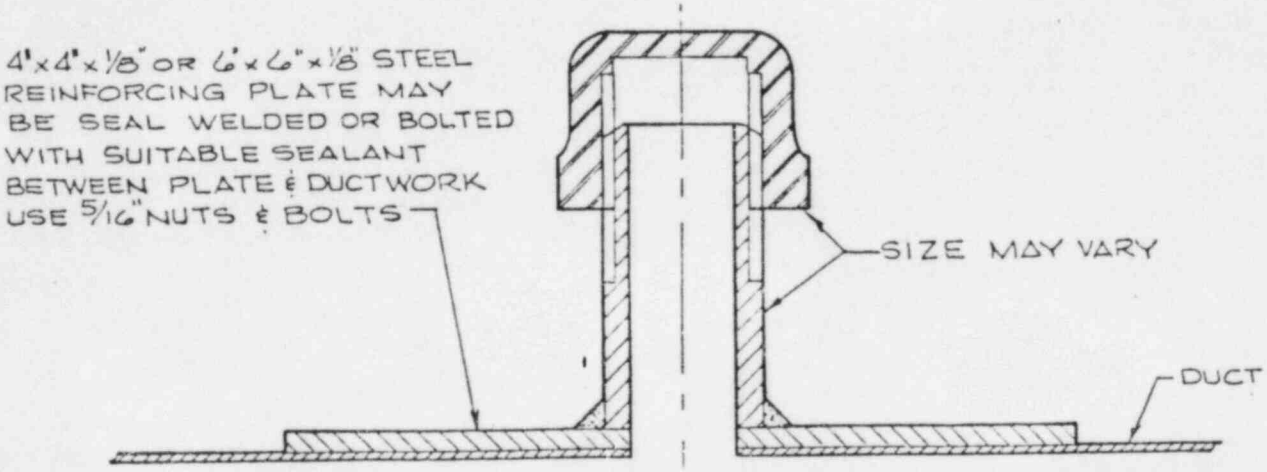
TYPICAL MOUNTING BRACKET

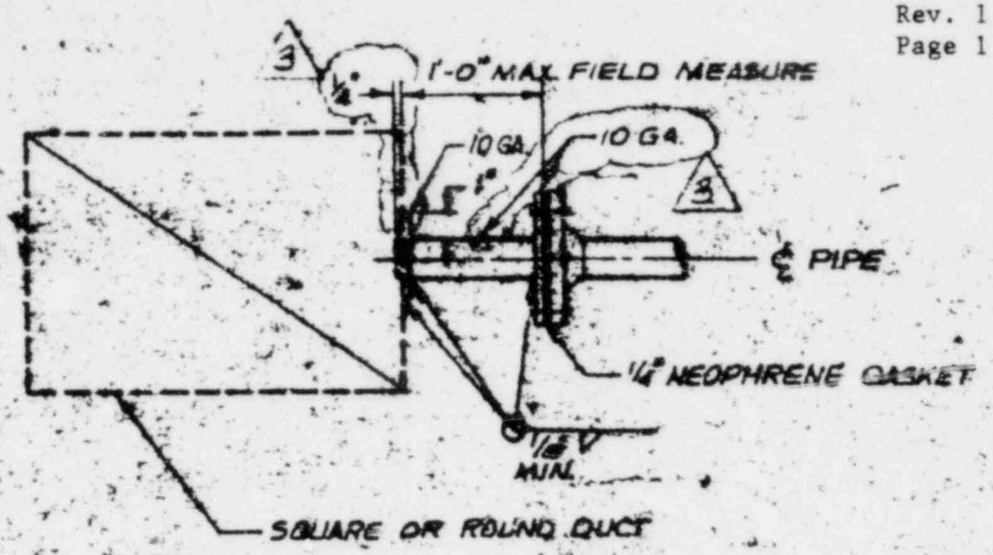
FOR TEMPERATURE ELEMENT AND INSTRUMENT CONNECTIONS



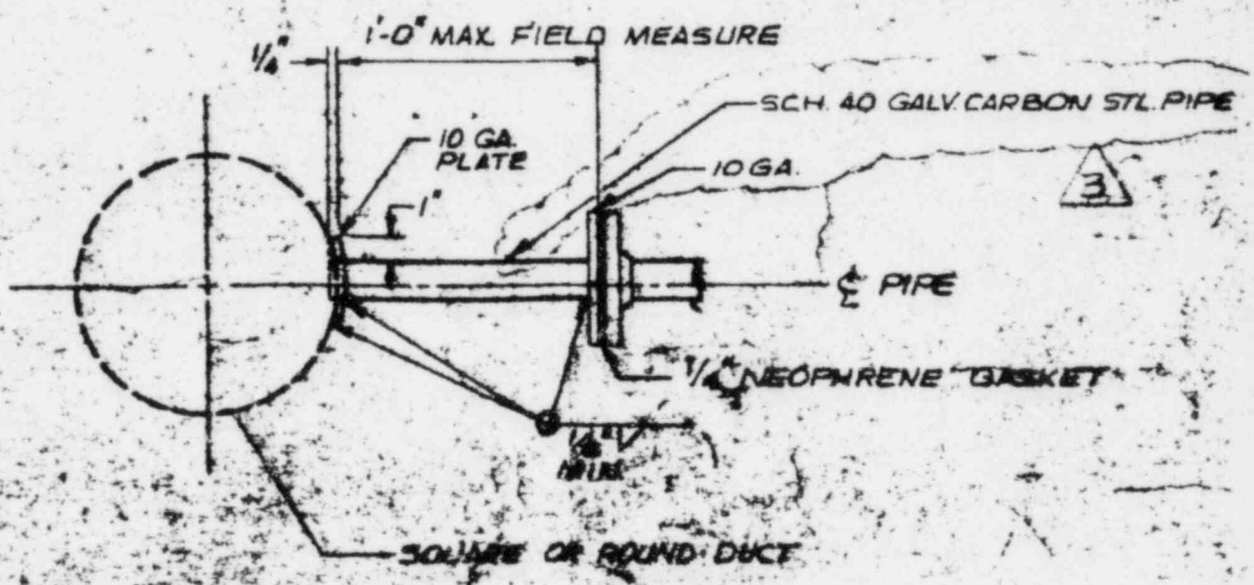
TYPICAL MOUNTING BRACKET

FOR MISCELLANEOUS TEST CONNECTIONS



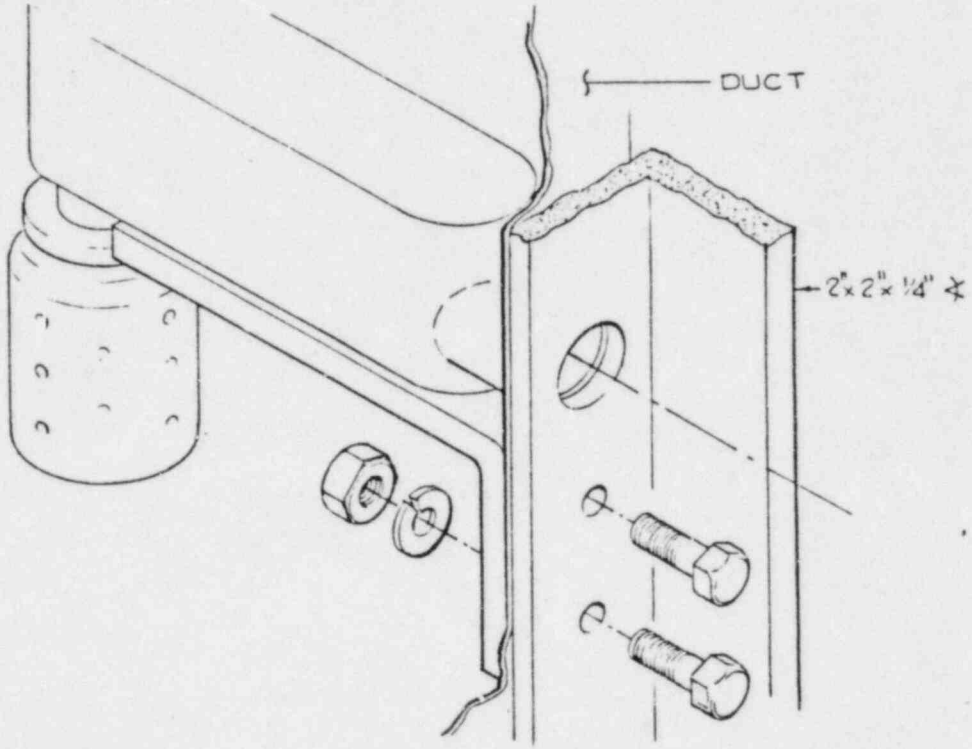


6" ⌀ LARGER PIPE TO DUCT CONNECTION

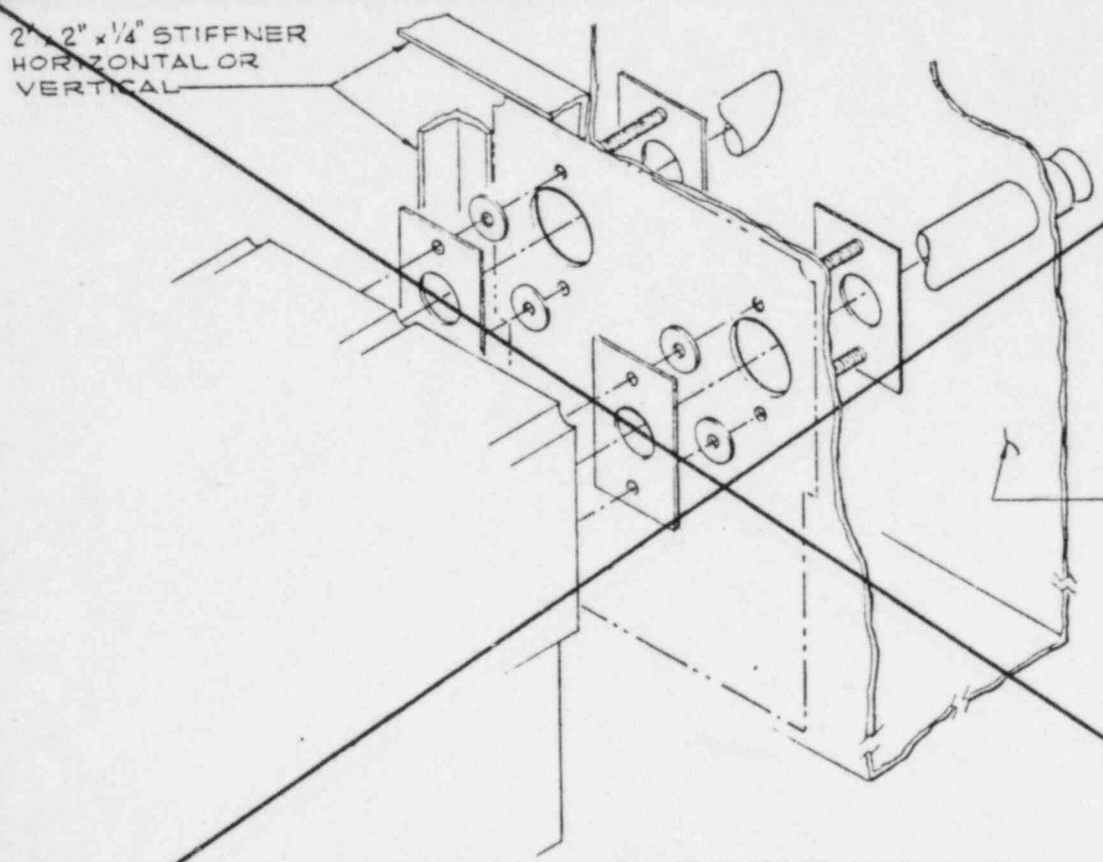


5" ⌀ SMALLER PIPE TO DUCT CONNECTION

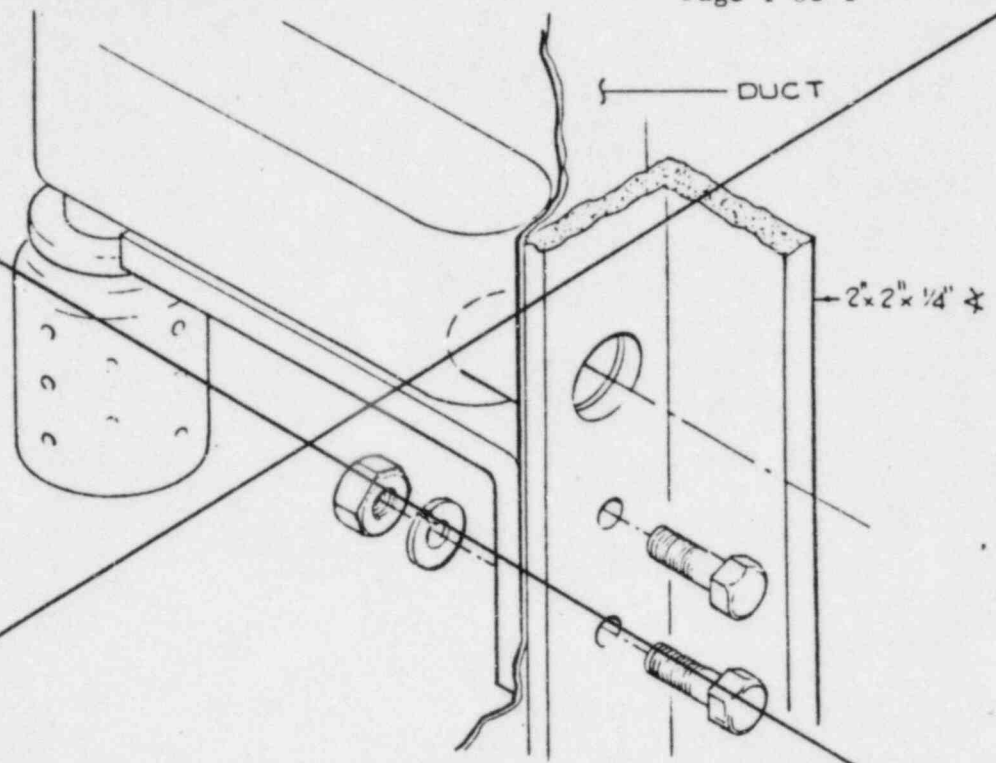
PIPING CONNECTIONS



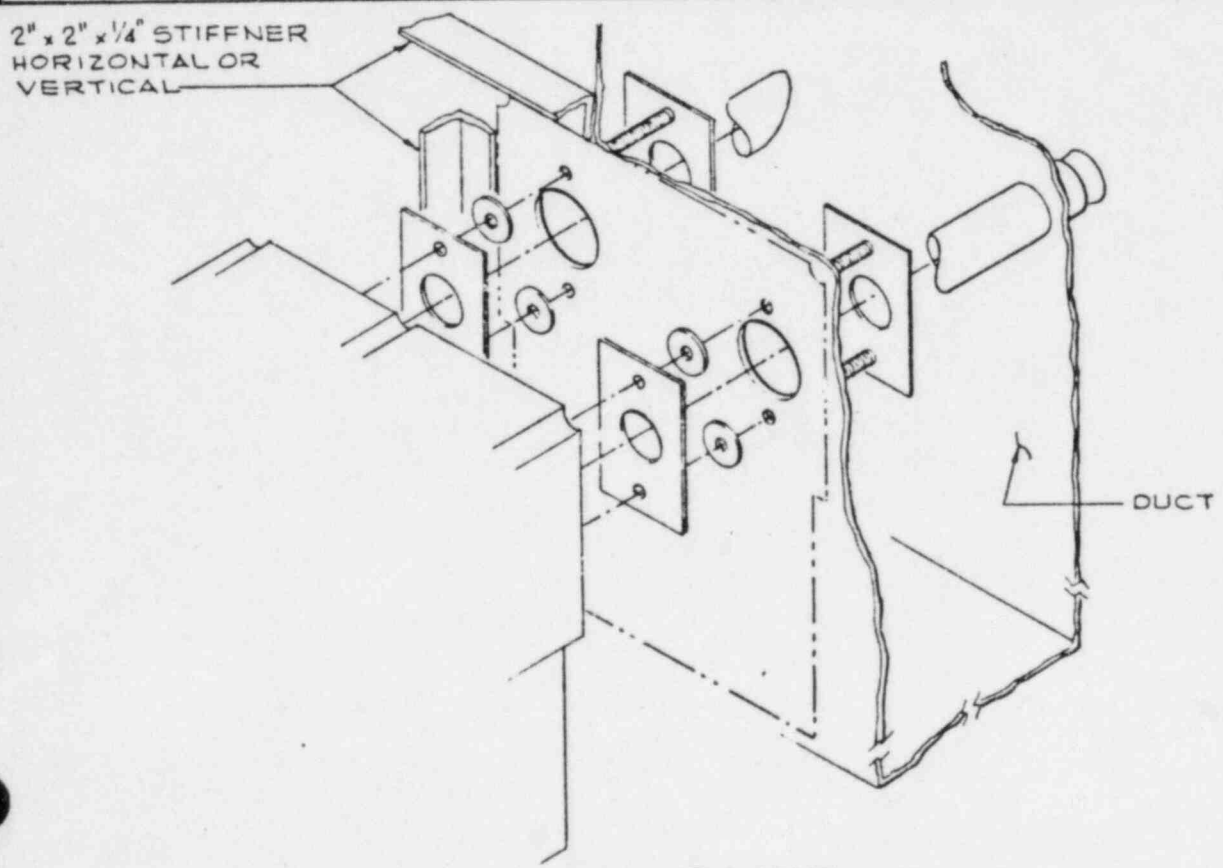
CHLORINE LEAK DETECTOR SENSOR
TYPICAL INSTALLATION



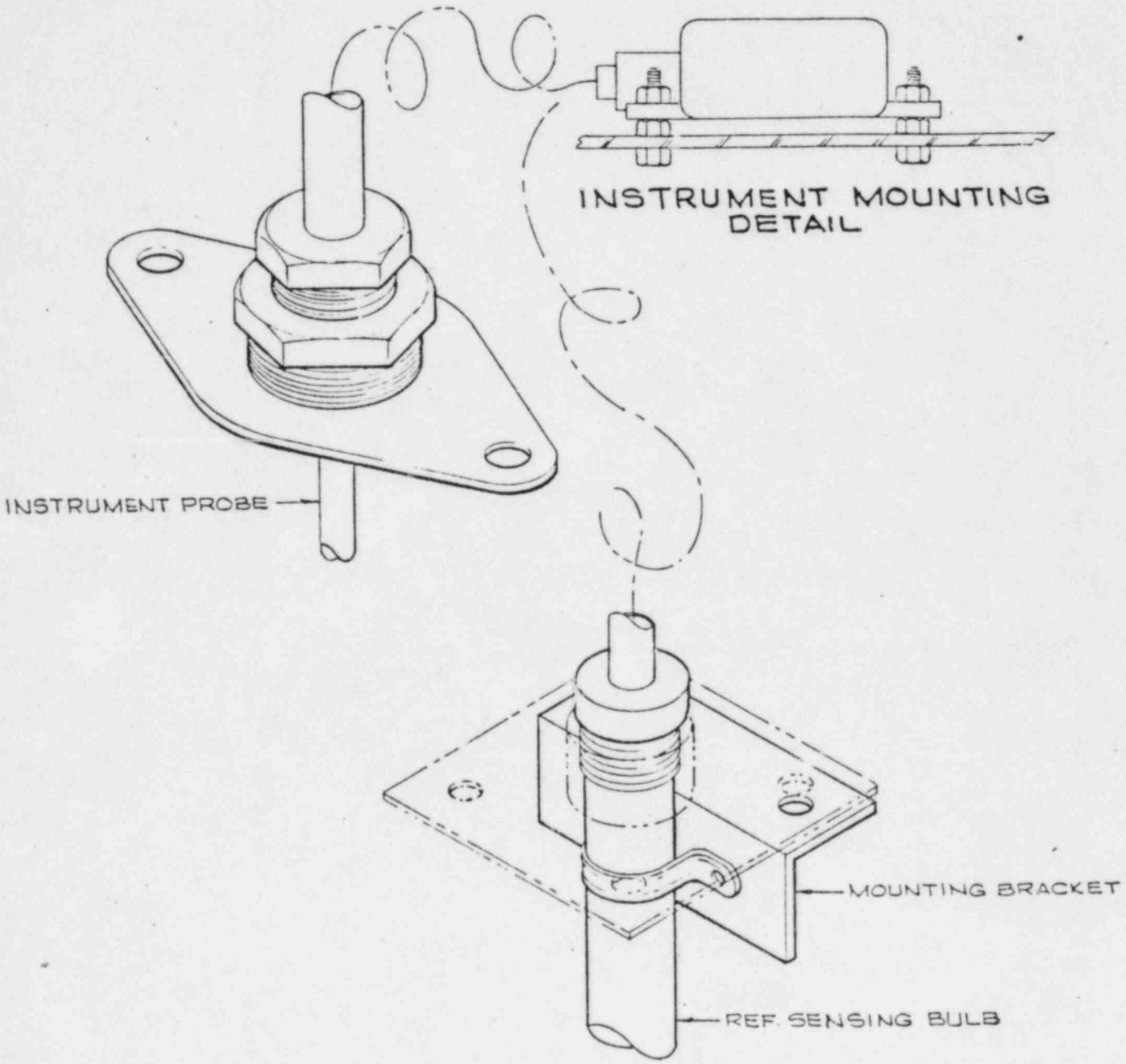
SMOKE DETECTOR
TYPICAL INSTALLATION



CHLORINE LEAK DETECTOR SENSOR
TYPICAL INSTALLATION



SMOKE DETECTOR
TYPICAL INSTALLATION



MOUNTING BRACKET DETAIL

FOR THERMOSTAT SENSING BULB AND INSTRUMENT PROBE

SPEC,HAH,TUGCO,A,(4)

FIGURE 1.

COMANCHE PEAK STEAM ELECTRIC STATION
DESIGN CHANGE AUTHORIZATION

(WILL) ~~(WILL NOT)~~ BE INCORPORATED IN DESIGN DOCUMENTS

DCA NO. 12.636 R. 1

1. SAFETY RELATED DOCUMENT: XX YES _____ NO

2. ORIGINATOR: CPPE XX ORIGINAL DESIGNER _____

3. DESCRIPTION:

A. APPLICABLE SPEC/~~DWG/DOCUMENT~~ 2323-MS-85 REV. 1

B. DETAILS THIS DCA VOIDS & SUPERSEDES DCA 12,636 R. 0
Problem: Duct mounted instrumentation as currently located cannot be removed without entering the duct.

Solution: Mount the instrumentation as shown on pages 2 & 3 ⚠

Justification: To permit instrument calibration without entering potentially radioactive air flow.

⚠ Added page 3. Revised probe mtg. detail on page 2. Added instrument no's.

CPSES 35-1195 CONTROL COPY 10 DOCUMENT CONTROL CENTER

CPSES 35-1195 CONTROL [redacted] COPY DOCUMENT CONTROL CENTER

4. SUPPORTING DOCUMENTATION:

TDCR #852

5. APPROVAL SIGNATURES: LT:ch

A. ORIGINATOR: _____ DATE 4-27-82

B. DESIGN REPRESENTATIVE: _____ DATE 4-28-82

6. VENDOR TRANSMITTAL REQUIRED: YES _____ NO XX

7. STANDARD DISTRIBUTION:

ARMS (Original)	(1)
Quality Engineering	(1)
TS for Orig. Design.	(1)
Westinghouse-Site	(1)

JOB NO. 35-1195

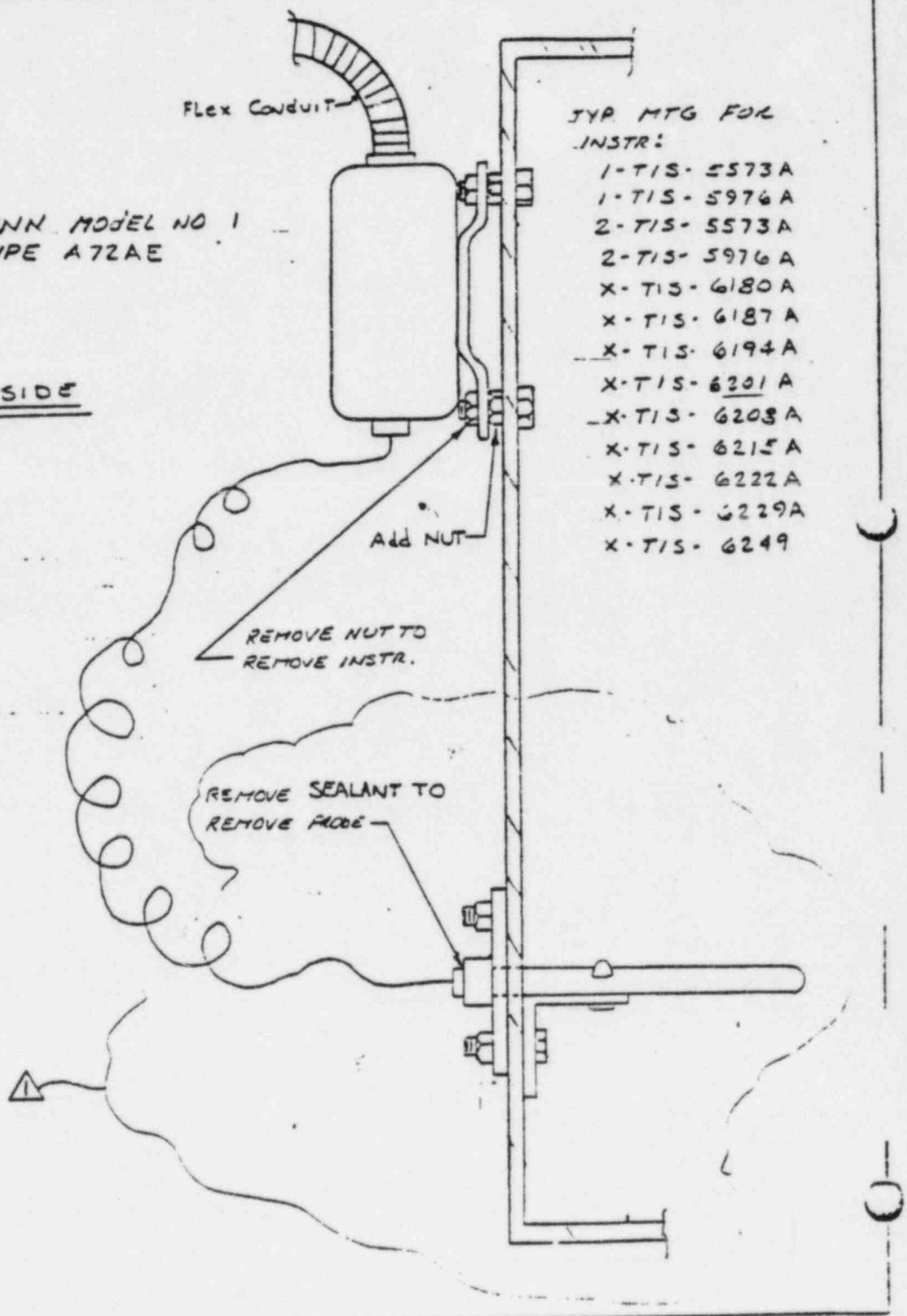
DCA FORM 11-80

RECEIVED APR 30 1982 RECEIVED

TEXAS UTILITIES SERVICES INC.
COMANCHE PEAK S.E.S.
Agent For
DALLAS POWER & LIGHT COMPANY
TEXAS ELECTRIC SERVICE COMPANY
TEXAS POWER & LIGHT COMPANY

DCA - 12636 R1
PG 2

Date 2-11-82
Calc By L. T.
Chk'd/Apprd. By
Filing Code
Sheet No. 1 OF 1
G & H Job. No.
Subject DUCT MTD. INSTRUMENTS
Rel. Dwg./Spec. No. MS-85 Rev 1

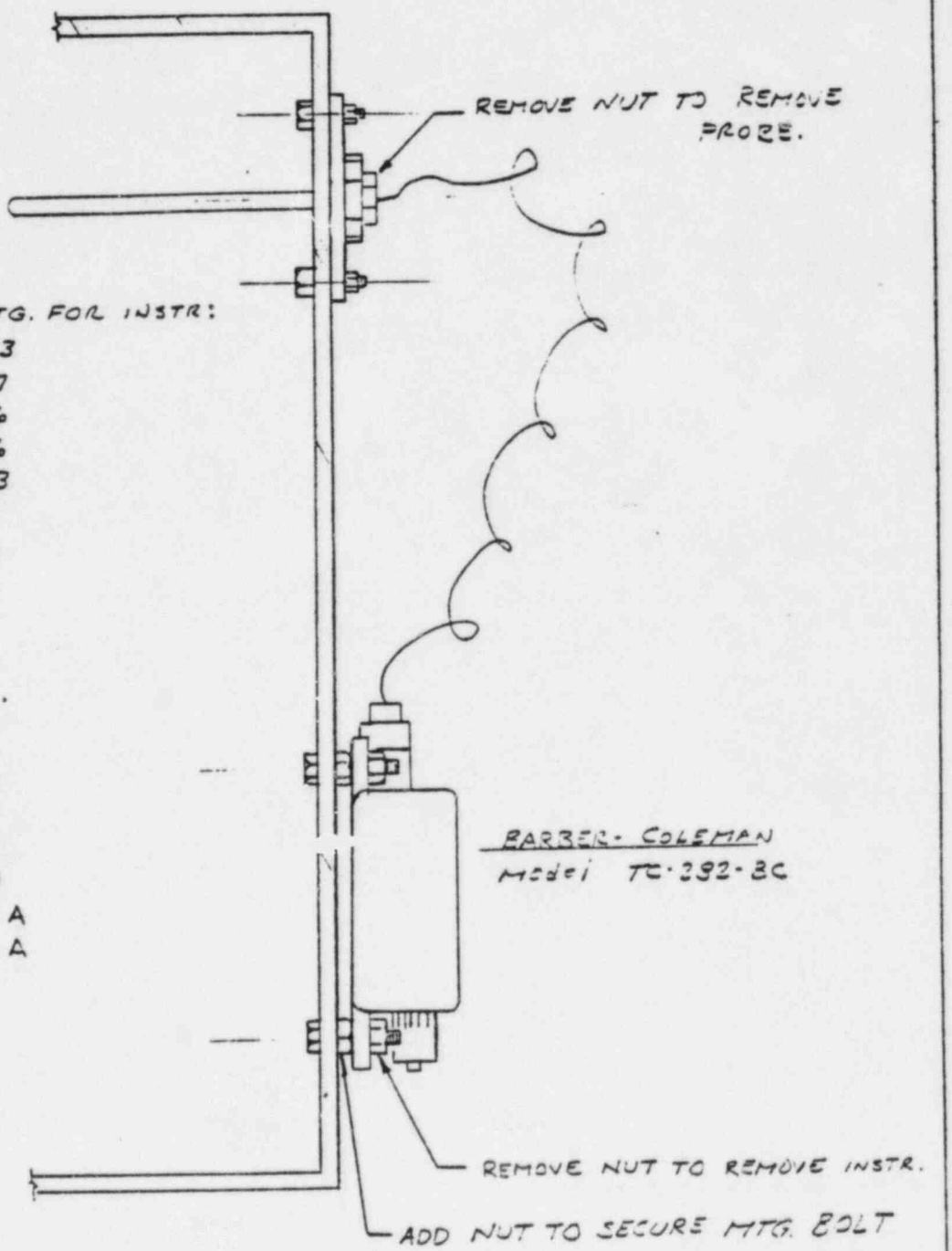


FORM DHE-5

TEXAS UTILITIES SERVICES INC.
COMANCHE PEAK S.E.S.
Agent For
DALLAS POWER & LIGHT COMPANY
TEXAS ELECTRIC SERVICE COMPANY
TEXAS POWER & LIGHT COMPANY

DCA-12636 R.1
PG. 3

Date 4-27-92
Calc By E. T.
Chk'd/Apprd. By N/A
Filing Code N/A
Sheet No. 1 Of 1
G & H Job. No.
Subject DUST MTG. INSTRUMENT
Ref. Dwg./Spec. No. CC-55 Rev 1



TYPICAL MTG. FOR INSTR:
1-TIS-5573
1-TIS-5607
1-TIS-5616
1-TIS-5976
2-TIS-5573
2-TIS-5607
2-TIS-5616
2-TIS-5976
X-TIS-5931
X-TIS-6180
X-TIS-6187
X-TIS-6194
X-TIS-6201
X-TIS-6208
X-TIS-6215
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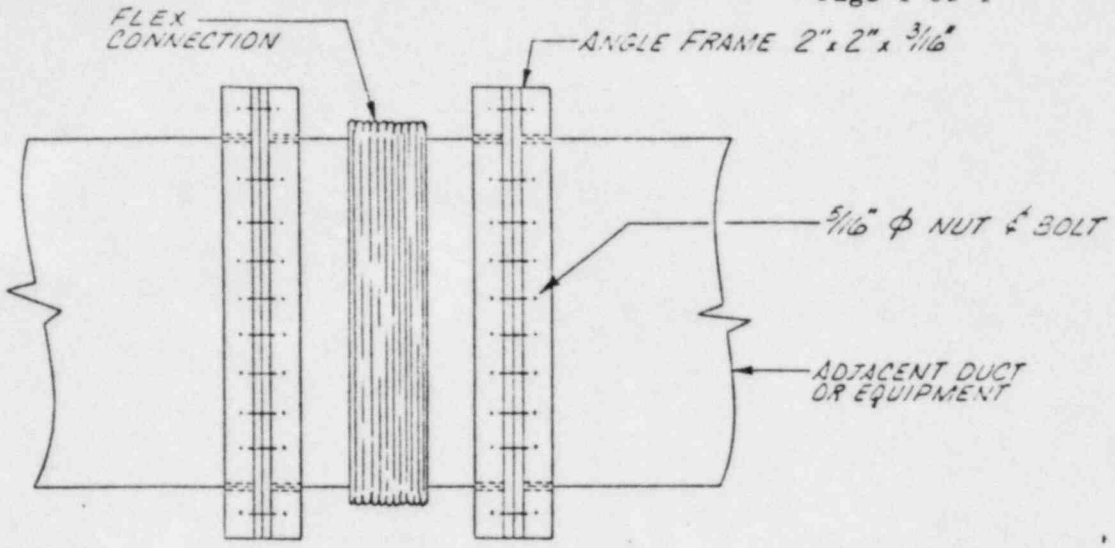
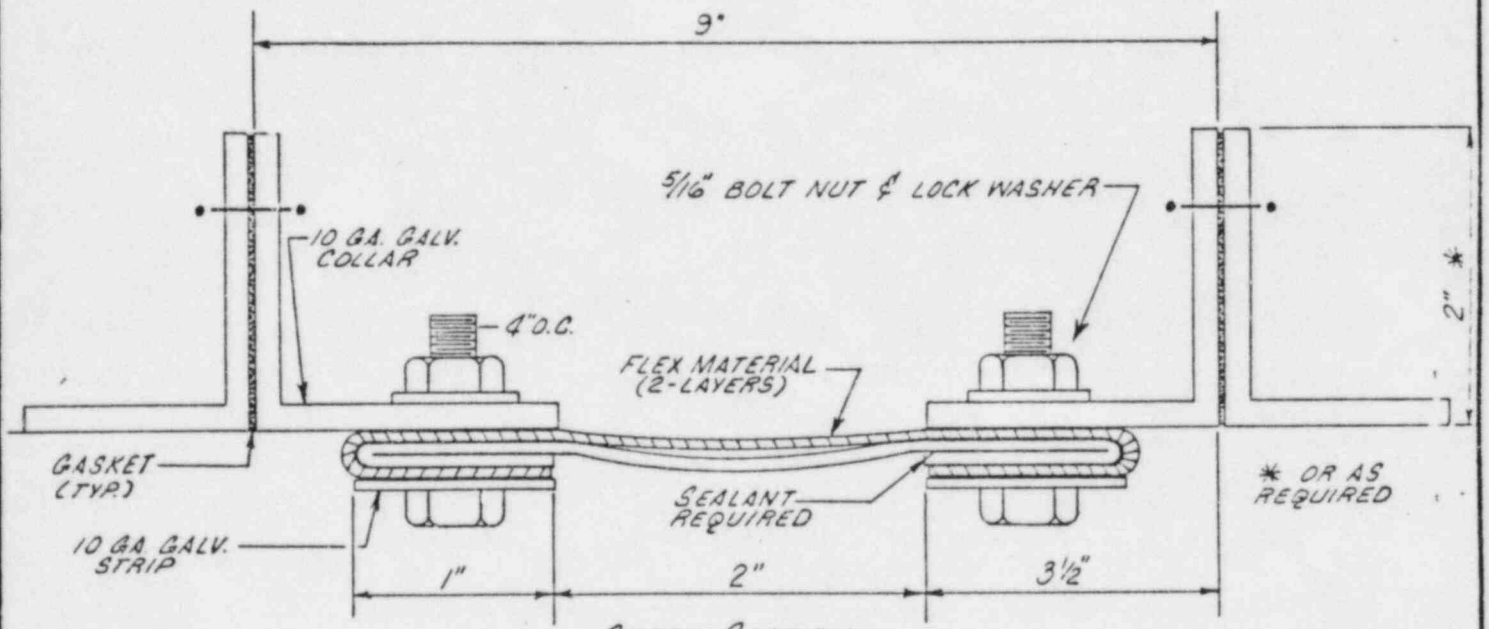
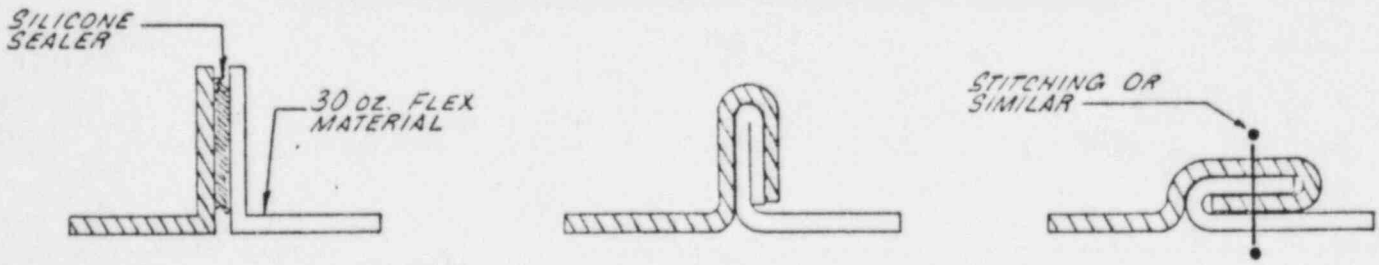
X-TIS-6229
X-TIS-6249 A
X-TIS-5931 A



RECTANGULAR FLEX
TYPICAL INSTALLATION



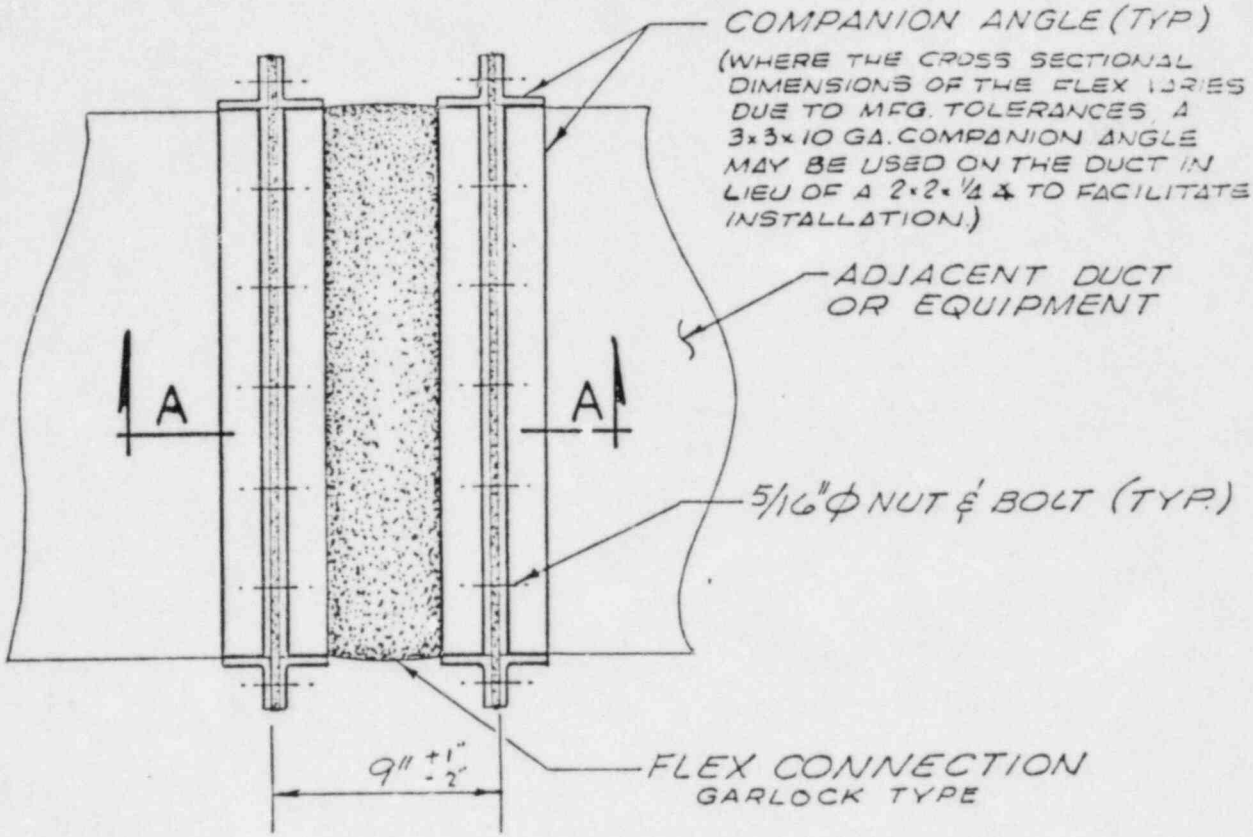
CROSS SECTION
RECTANGULAR FLEX CONNECTION DETAILS



STEP 1 STEP 2 STEP 3

"CORNER MAKE-UP"

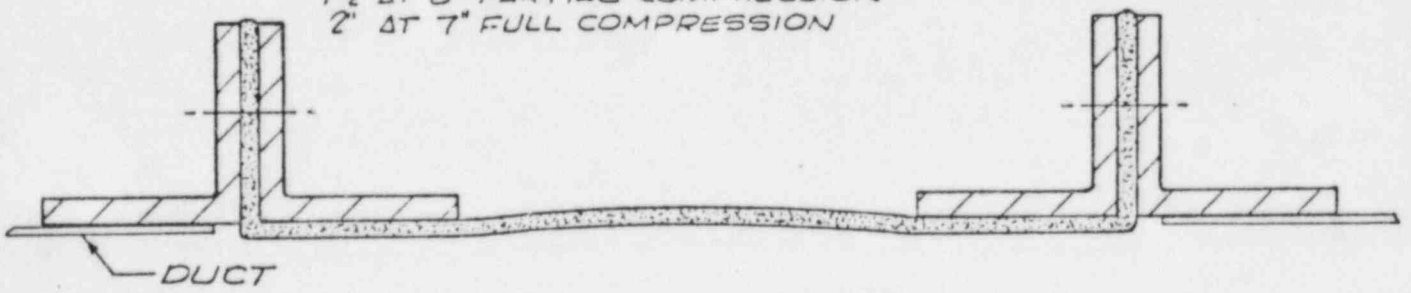
SCALE = NONE



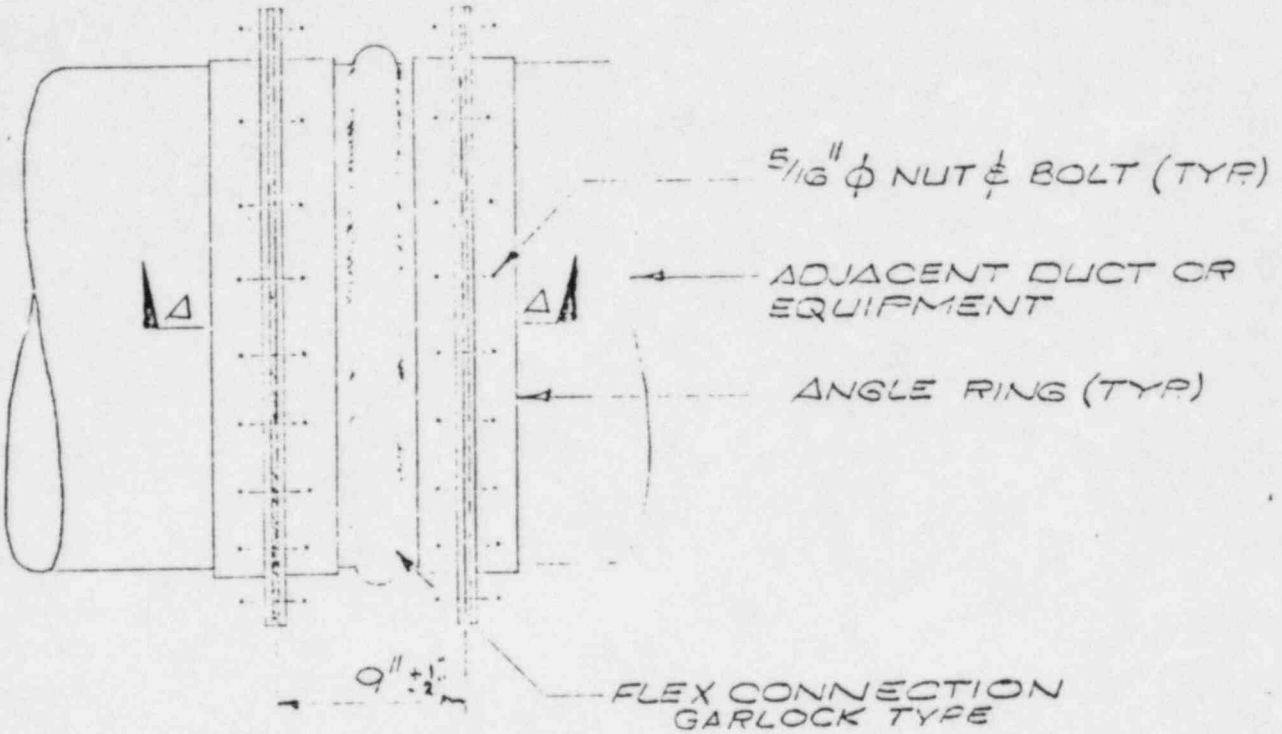
FLEX CONNECTION INSTALLATION
TYPICAL ARRANGEMENT
RECTANGULAR DUCT

ACCEPTABLE MISALIGNMENT TOLERANCES

1/2" AT 10" FULL ELONGATION
1" AT 9" NEUTRAL POSITION
1 1/2" AT 8" PARTIAL COMPRESSION
2" AT 7" FULL COMPRESSION



SECTION A-A

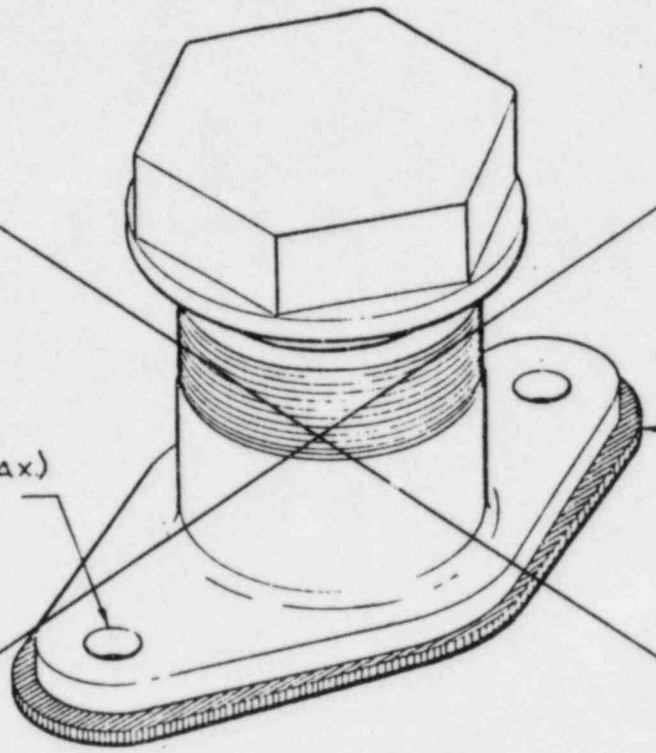


FLEX CONNECTION INSTALLATION TYP. ARRANGEMENT FOUND DUCT

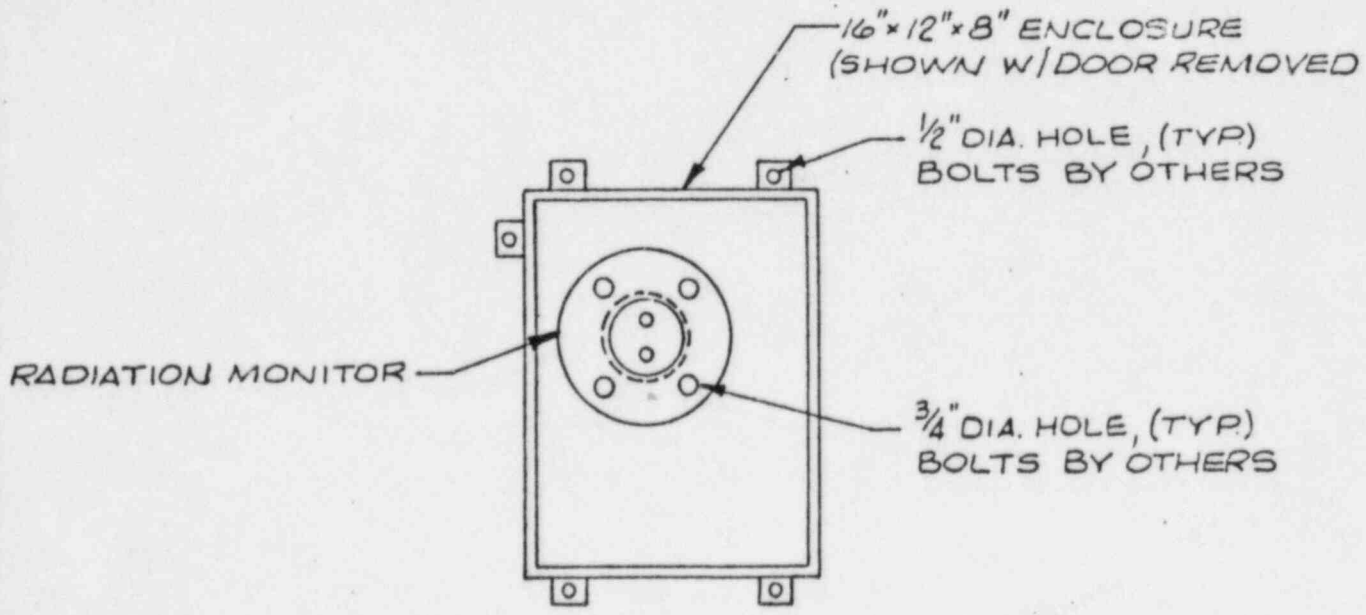
ACCEPTABLE MISALIGNMENT TOLERANCES

½" AT 10" FULL ELONGATION
1" AT 9" NEUTRAL POSITION
1½" AT 8" PARTIAL COMPRESSION
2" AT 7" FULL COMPRESSION

SECTION AA



VENTLOCK INSTRUMENT TEST HOLE



MOUNTING FOR RADIATION MONITOR

INSPECTION TOOL AND CODES

CODE	TOOL
AF	Angle Finder
BL	Bubble Level
BS	Boroscope
BW	1/32", 1/16", 3/32", 1/8" Wire
CG	Contour Gauge
DF	Dry Film Thickness Gage
FG	Feeler Gages
FL	Flashlight
FM	Fibre Metal Fillet Gages
GG	GAL Fillet Gages
HL	Hi-Low Gage
MG	Magnifying Glass
MI	Micrometers
MM	Mirror
MN	Magnet
PB	Plum Bob
PR	Protractor
SC	Slide Caliper
SR	6" Rule
ST	Steel Tape Measure
TG	Taper Gage
TW	Torque Wrench
UD	Undercut Gage (Dial)
UP	Undercut Gage (Pit)
VC	Vernier Caliper
VT	Visual Inspection

INSPECTION TOOLS USED

ATTRIBUTE	TOOL CODE	SERIAL NO/CALIBRATION DUE DATE
1. Sheet Metal Duct a. Elevation b. Location Perpendicular to Air Flow c. Area d. Length e. Duct Gage f. Reinforcing Angle Size g. Reinforcing Angle Spacing h. Companion Angle Size i. Longitudinal Seam j. Tie Rod Spacing k. Tie Rod Diameter l. Gasket m. Nuts and Bolts		
2. Wall Penetration a. Minimum Length b. Maximum Extension c. Gasket d. Nuts and Bolts		
3. Welding a. Location b. Weld Size c. Length d. Fusion e. Craters f. Weld Profiles g. Undercut h. Porosity i. Overlap j. Surface Slag k. Cracks l. Touch-up Galvanizing		
4. Splitter Damper a. Installation b. Nuts and Bolts c. Locked in Place		

INSPECTION TOOLS USED

ATTRIBUTE	TOOL CODE	SERIAL NO/CALIBRATION DUE DATE
5. Extractor a. Installation b. Angle Size c. Bolts		
6. Turning Vane a. Installation b. Geometry c. Gage		
7. Grille, register and Diffuser a. Location b. Installation c. Gaskets d. Nuts and Bolts		
8. Volume Damper a. Installation b. Gaskets c. Nuts and Bolts d. Locked in Place		
9. Access Door a. Installation b. Gasket c. Nuts and Bolts		
10. Instrument Test Holes a. Caps b. Gasket c. Bolts		
11. Tubing Connection a. Installation b. Nuts and bolts		
12. Pipe Connection a. Pipe Size b. Pipe Length		

INSPECTION TOOLS USED

ATTRIBUTE	TOOL CODE	SERIAL NO/CALIBRATION DUE DATE
13. Instrument Mounting a. Installation b. Mounting Bracket c. Nuts, Bolts and Washers		
14. Plenums a. Location b. Sheet Metal Gage c. Reinforcing Angle Size d. Reinforcing Angle Spacing e. Gasket f. Nuts and Bolts		
15. Flexible Connection a. Location b. Companion Angle Size c. Nuts, Bolts and Washers d. Misalignment		
16. Concrete Expansion Anchors a. Size and Number b. Embedment c. Bolt Spacing d. Angularity e. Concrete Damage f. Nut Engagement and Bearing		

INSPECTOR _____