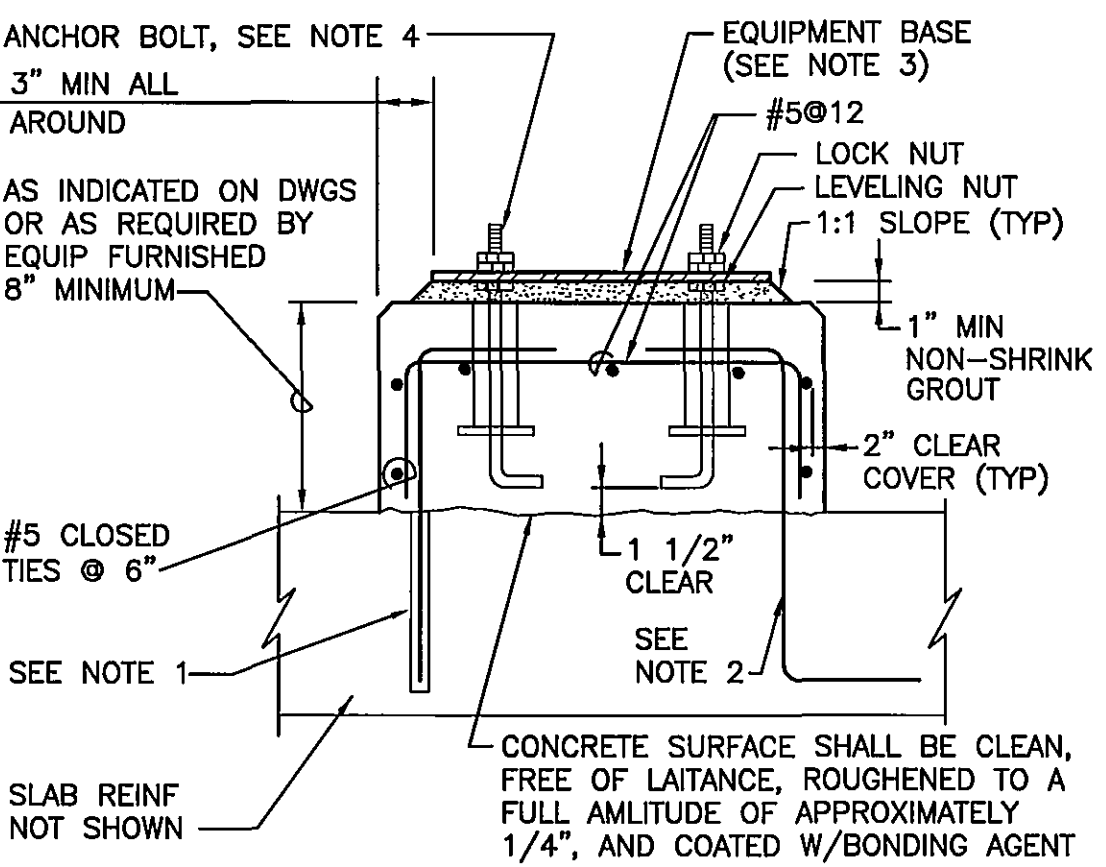
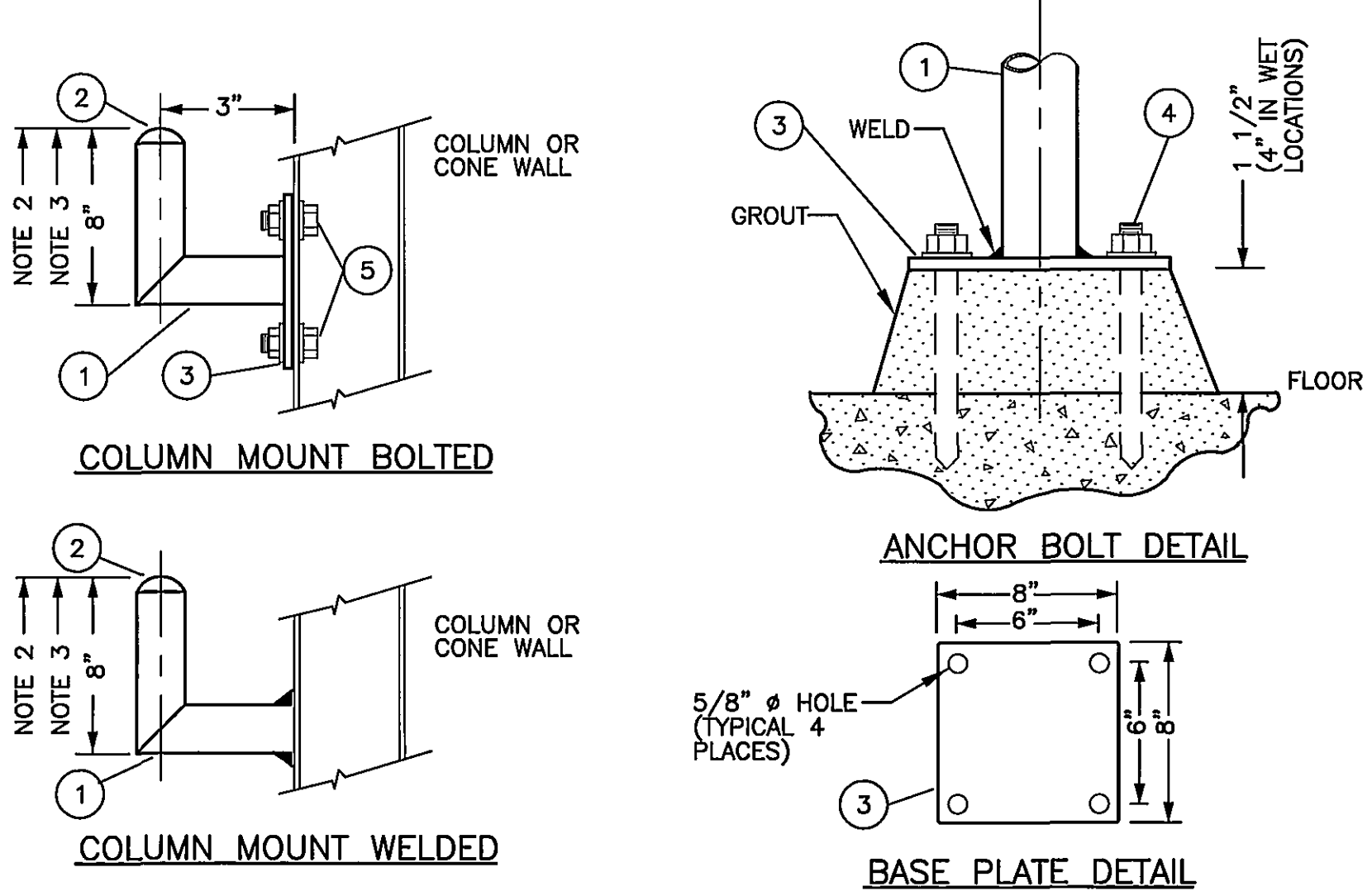


CONCRETE PEDESTAL SUPPORT
NTS (15090-01) 1
P-23



EQUIPMENT BASE DETAIL
NTS (11005-01) 4
P-23

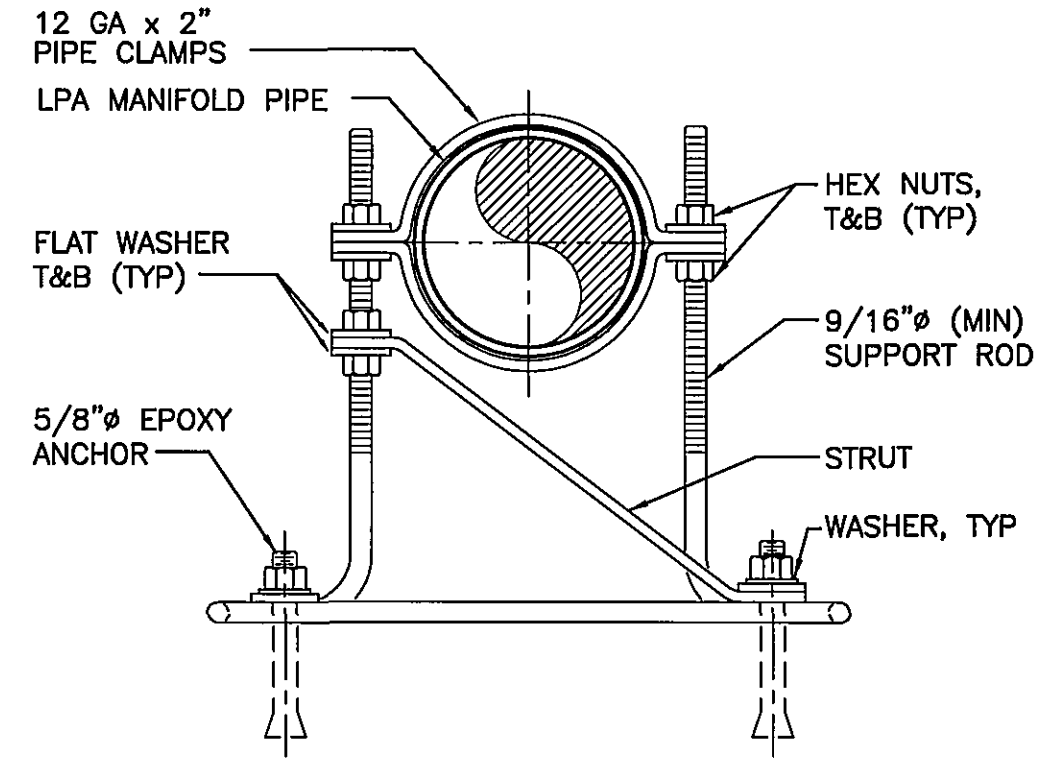
- NOTES:**
- FOR NEW EQUIPMENT BASES ON EXISTING SLABS, DRILL INTO EXISTING SLAB TO DEVELOPMENT DEPTH AT 12" CENTERS AROUND PERIMETER OF EQUIPMENT BASE AND SET #5 HOOKED DOWELS IN EPOXY GROUT.
 - FOR EQUIPMENT BASES ON NEW SLABS, PROVIDE #5 DOWELS HAVING TWO HOOKED ENDS AT 12" CENTERS AROUND PERIMETER OF EQUIPMENT BASE.
 - EQUIPMENT BASE DIMENSIONS SHALL BE AS INDICATED ON THE DRAWINGS OR AS DETERMINED BY THE EQUIPMENT MANUFACTURER AND APPROVED BY THE ENGINEER.
 - ANCHOR BOLTS AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER. BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE WHILE EQUIPMENT BASE IS BEING CAST.
 - PIPE SLEEVES SHALL BE USED TO PROVIDE THE ANCHOR BOLT A MIN MOVEMENT OF 1/2" IN ALL DIRECTIONS. MIN SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT. PIPE SLEEVES SHALL HAVE A MIN INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAX INTERNAL DIAMETER OF 3" GREATER THAN BOLT DIAMETER.
 - EQUIPMENT BASES SHALL BE INSTALLED LEVEL. TOLERANCE IS 1/16".



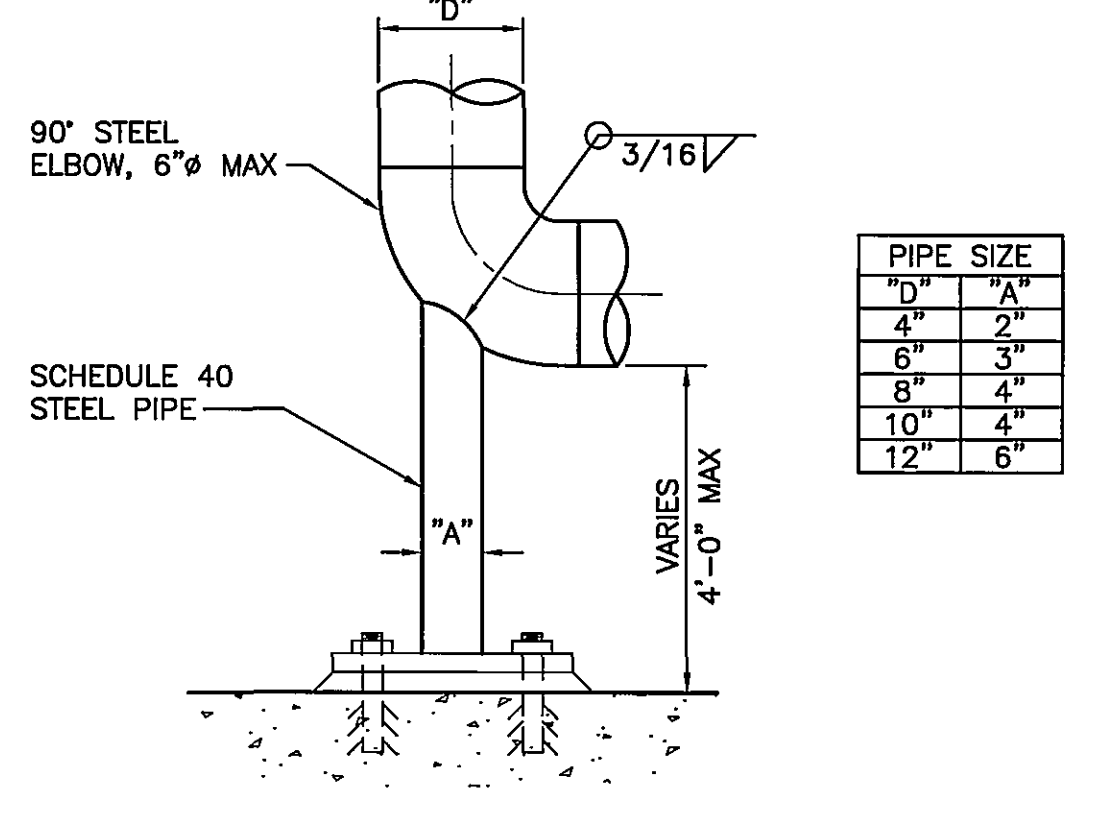
**FIELD INSTRUMENT MOUNTING
PIPE STAND INSTALLATION DETAIL**
NTS (13442-15) 7
P-23

BILL OF MATERIALS PER INSTALLATION		
ITEM #	QTY.	DESCRIPTION
1	A/R	2" SCH. 40 PIPE, ASTM A106 GR. B CARBON STEEL
2	A/R	2" WELD CAP
3	A/R	1/2" X 8" X 8" STEEL PLATE
4	A/R	1/2" STUD EXPANSION ANCHOR W/NUT & WASHER
5	A/R	1/2" MACHINE BOLT, HEX. HEAD W/NUT & WASHERS

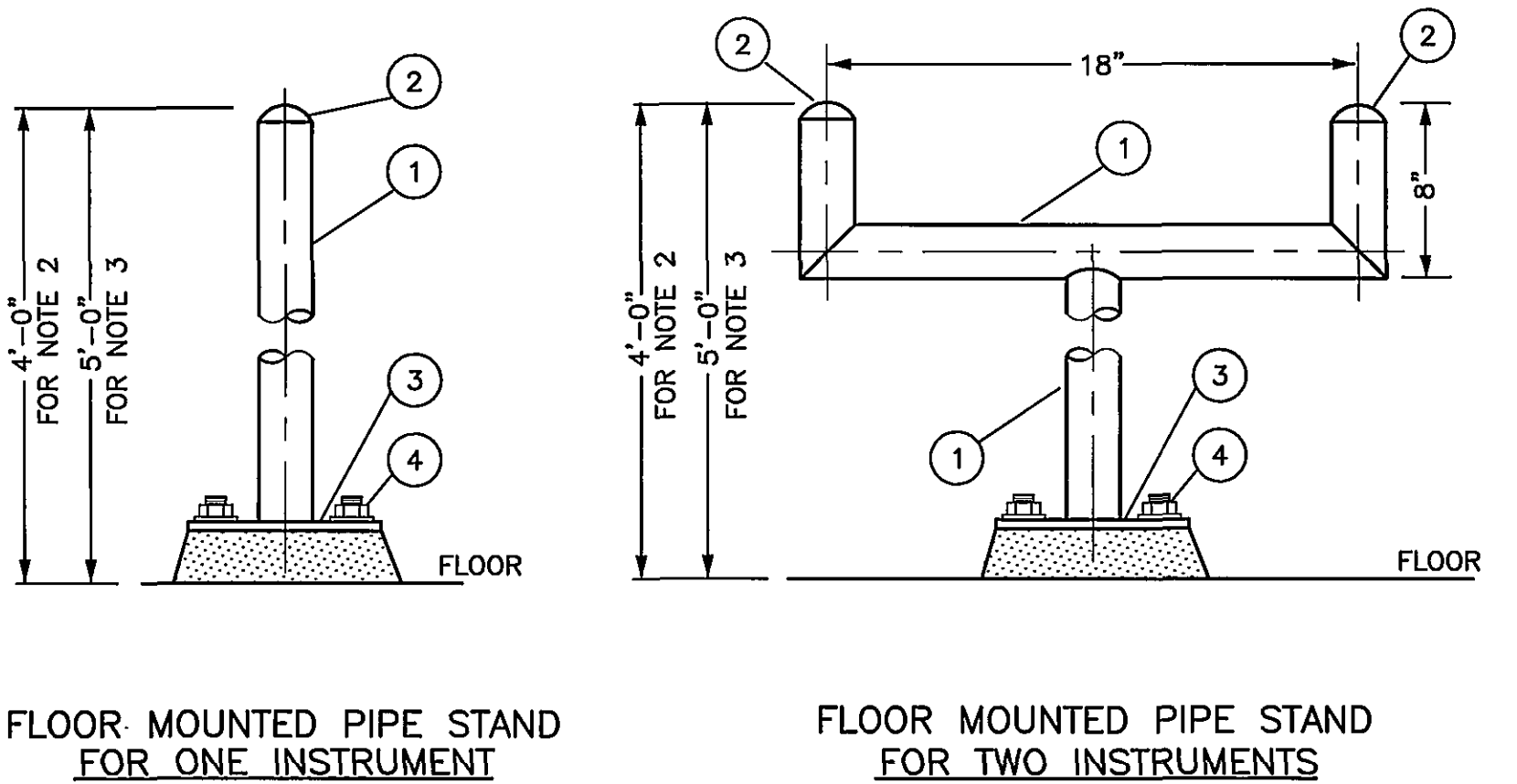
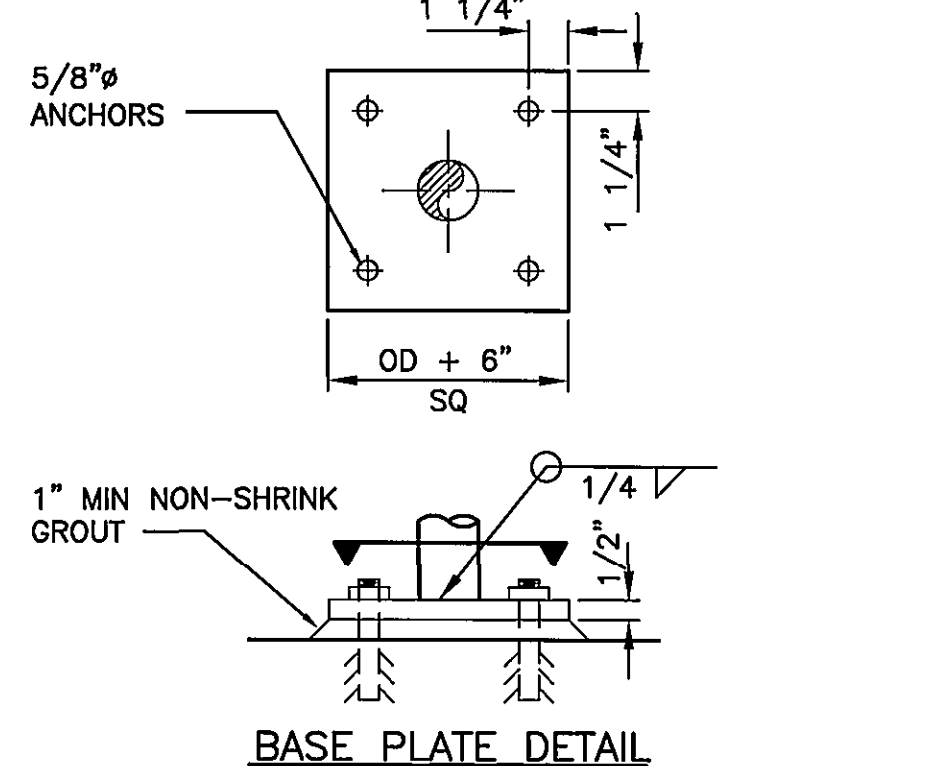
- NOTES:**
- SUPPORTS ARE TO BE FABRICATED IN THE FIELD FROM 2" SCHEDULE 40 CARBON STEEL PIPE, HOT DIPPED GALVANIZED.
 - MOUNT BLIND INSTRUMENTS SO THAT BODY MASS IS 52" ABOVE FLOOR.
 - MOUNT INDICATOR INSTRUMENTS SO THAT CENTER LINE OF INDICATOR IS 60" ABOVE FLOOR.
 - DIMENSIONS ARE TYPICAL. VARIATIONS ARE ACCEPTABLE TO THE EXTENT THAT GOOD PRACTICES ARE FOLLOWED.



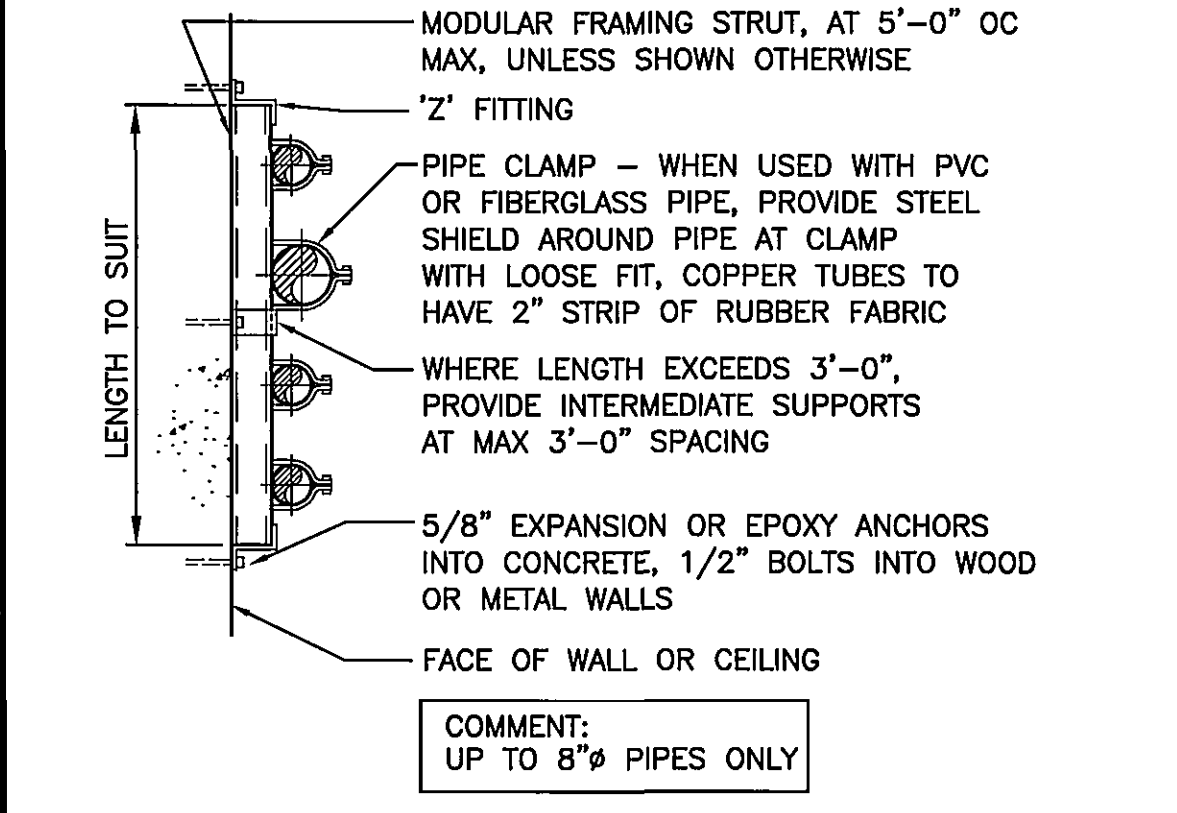
MANIFOLD PIPING SUPPORT
NTS (15090-18) 2
P-23



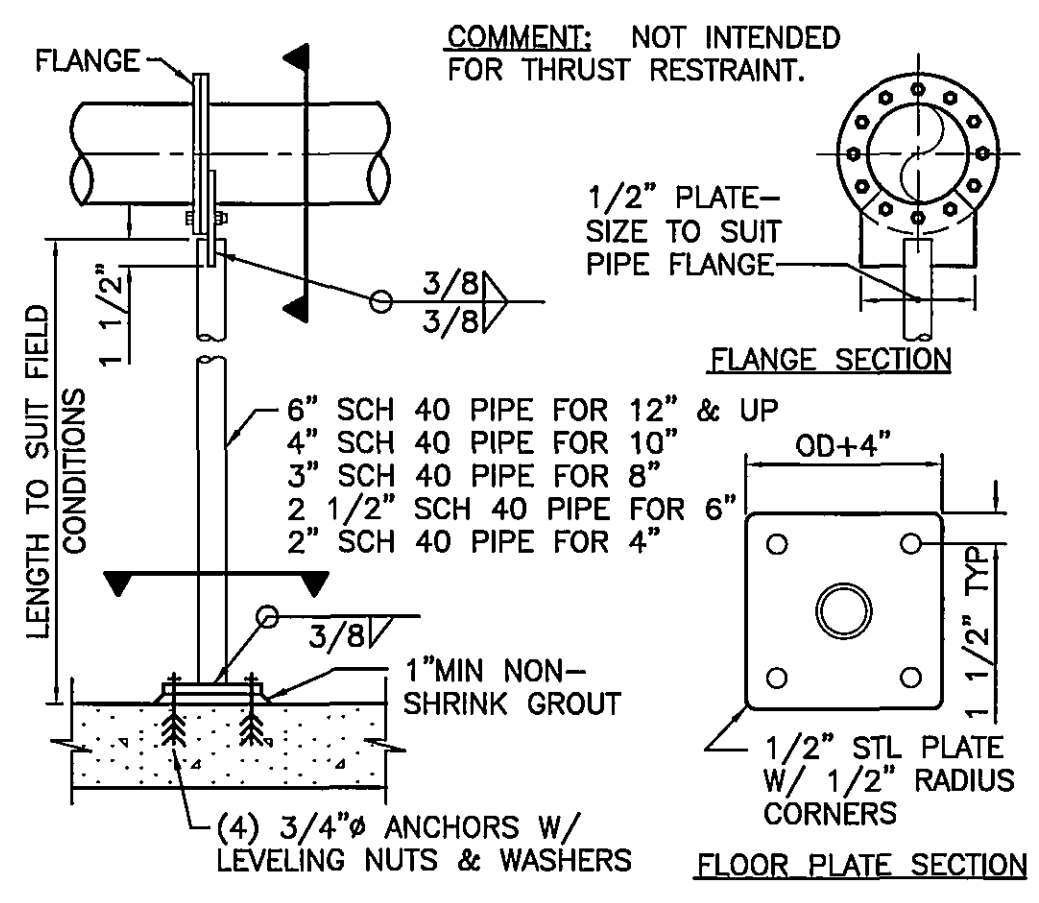
STEEL ELBOW SUPPORT
NTS (15061-02) 5
P-23



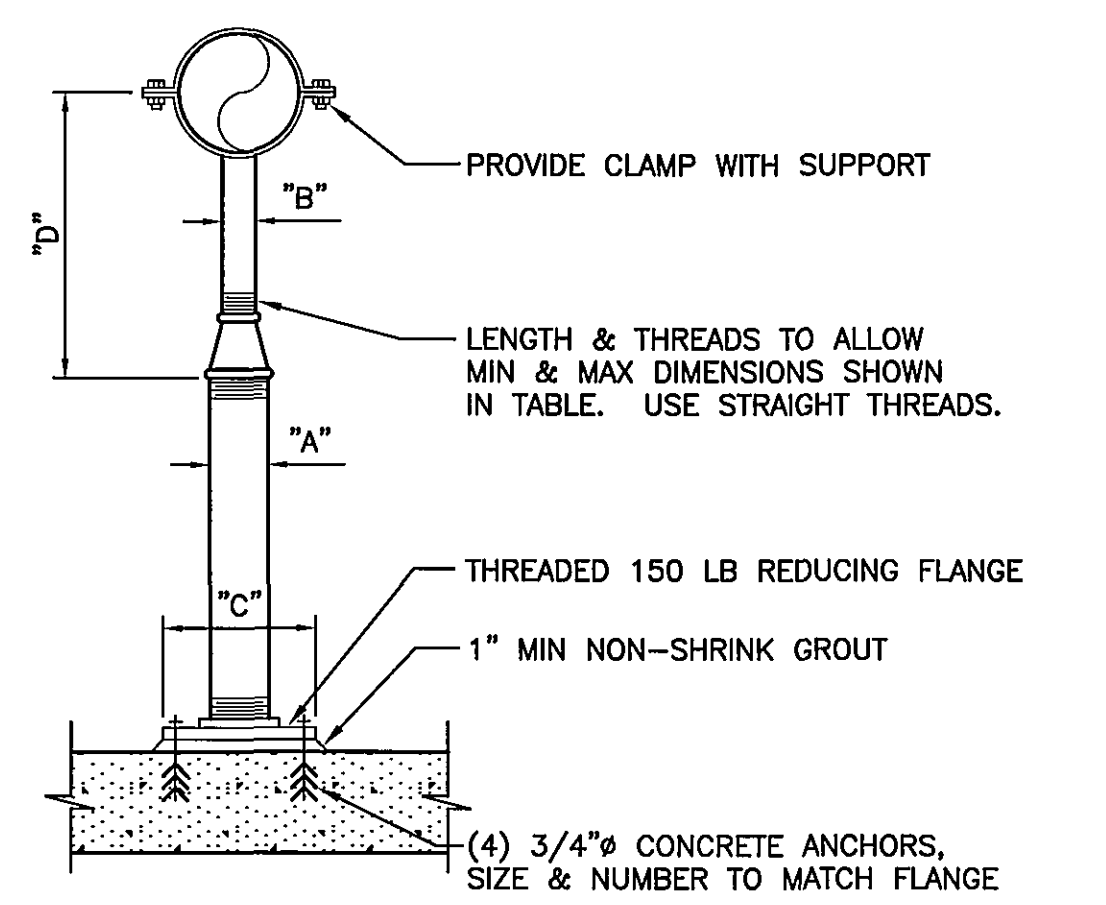
**FIELD INSTRUMENT MOUNTING
PIPE STAND INSTALLATION DETAIL**
NTS (13442-16) (13442-17) 8
P-23



**PS TYPE W
DETAIL** 9
P-23

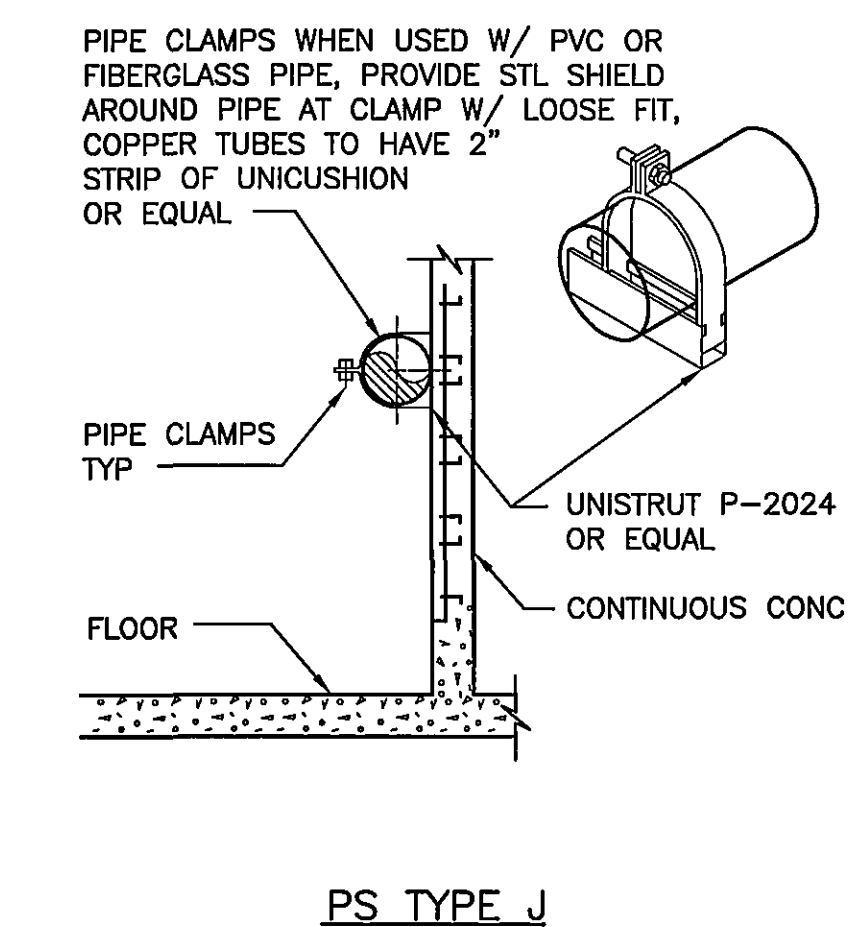


FLANGED PIPE SUPPORT
NTS (15090-11) 3
P-23

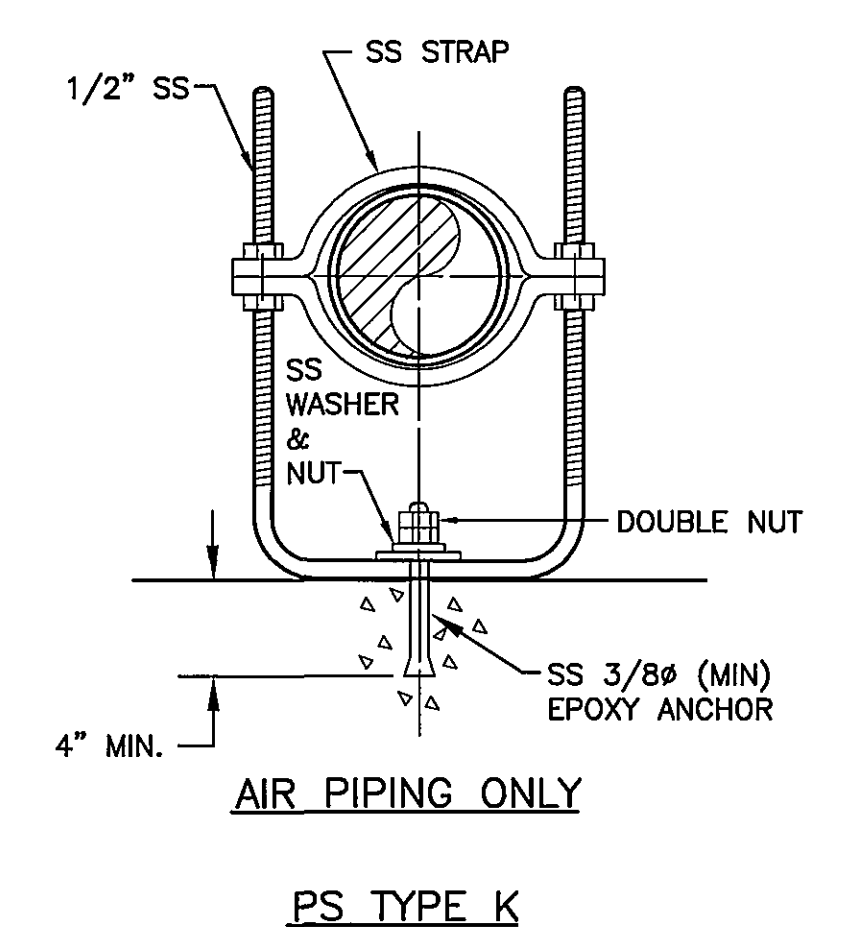


ADJUSTABLE PIPE SUPPORT
(15090-19) 6
P-23

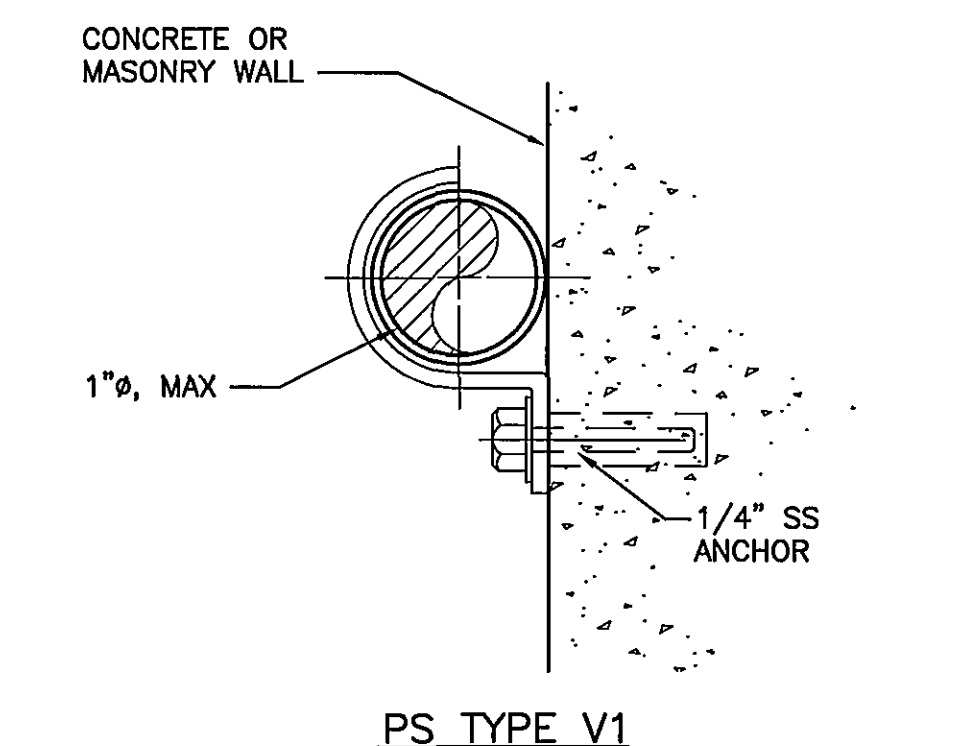
ADJUSTABLE PIPE SUPPORT SCHEDULE DIMENSIONS IN INCHES					
PIPE SIZE	"A"	"B"	"C"	"D"	
				MINIMUM	MAXIMUM
≤ 2 1/2	2 1/2	1 1/2	9	8	13
3	2 1/2	1 1/2	9	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	9	8 1/2	13 1/2
4	3	2 1/2	9	9 1/2	14
6	3	2 1/2	9	10 1/2	15 1/2
8	3	2 1/2	9	11 1/2	16 1/2
10	3	2 1/2	9	13 1/2	18 1/2
12	3	2 1/2	9	15	19 1/2
14	4	3	11	16 1/2	20 1/2
16	4	3	11	17 1/2	22 1/2
18	6	3 1/2	13 1/2	19 1/2	24
20	6	3 1/2	13 1/2	21	25 1/2
24	6	4	13 1/2	23 1/2	28 1/2
30	6	4	13 1/2	27	31 1/2
32	6	4	13 1/2	28 1/2	32 1/2
36	6	4	13 1/2	30 1/2	34 1/2



**PS TYPE J
DETAIL** 10
P-23



**PS TYPE K
DETAIL** 11
P-23



**PS TYPE V1
DETAIL** 12
P-23

**RECORD DRAWING
APRIL 28, 2003**

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IN ASSOCIATION WITH
HDR
HDR Engineering, Inc.

DESIGNED ADE	DRAWN JMB	PROJECT CRYSTAL SPRING WATER TREATMENT PLANT FOR THE CITY OF ROANOKE, VIRGINIA
CHECKED PJD		REFERENCE PROCESS
COMM. NO.		TITLE DETAILS
CADD NO.		DWG. NO. P-23
DATE AUGUST 27, 2001		SHEET NO. REV.

1	9/13/2001			REVISED AS PER ADDENDUM DATED (9/13/2001)
0	8/27/2001			ISSUED FOR CONSTRUCTION
REV.	DATE	BY	APP.	DESCRIPTION