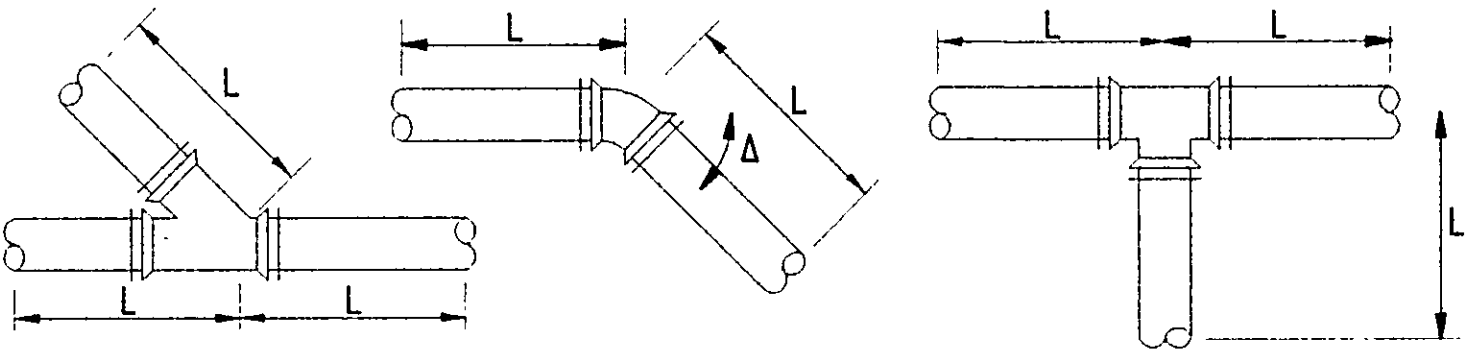


UTILITY ADJUSTMENT DETAILS

MECHANICAL RESTRAINING DEVICE DETAILS AND NOTES

NOTE:

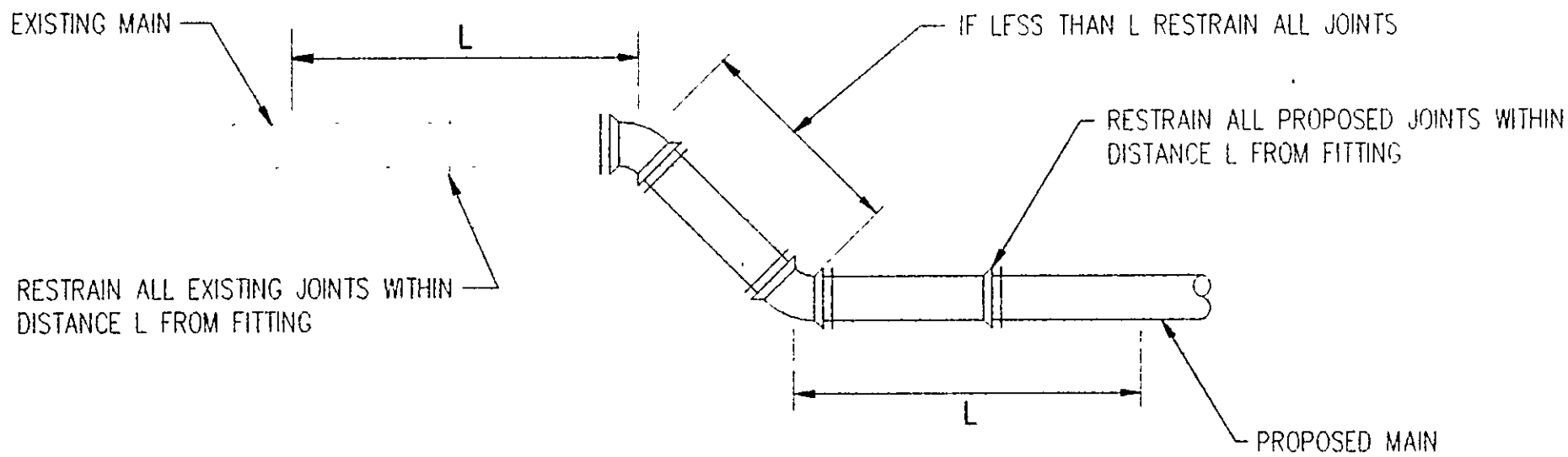
- MECHANICAL JOINT RESTRAINT SHALL BE INCORPORATED IN THE DESIGN OF THE FOLLOWER GLAND AND SHALL INCLUDE A RESTRAINING MECHANISM WHICH, WHEN ACTUATED, IMPARTS MULTIPLE WEDGING ACTION AGAINST THE PIPE, INCREASING ITS RESISTANCE AS THE PRESSURE INCREASES. FLEXIBILITY OF THE JOINT SHALL BE MAINTAINED AFTER BURIAL. GLANDS SHALL BE MANUFACTURED OF DUCTILE IRON CONFORMING TO ASTM A 526-80. RESTRAINING DEVICES SHALL BE OF DUCTILE IRON HEAT TREATED TO A MINIMUM HARDNESS OF 370 BHN. DIMENSIONS OF THE GLAND SHALL BE SUCH THAT IT CAN BE USED WITH THE STANDARDIZED FITTINGS (AWWA C153). TWIST-OFF NUTS SHALL BE USED TO INSURE PROPER ACTUATING OF THE RESTRAINING DEVICES. THE MECHANICAL JOINT RESTRAINT DEVICES SHALL HAVE A WORKING PRESSURE OF 250 PSI WITH A MINIMUM SAFETY FACTOR OF 2.
- RESTRAINED LENGTH BASED ON INTERNAL PRESSURE OF 150 PSI, 3' OF COVER, AND SOILTYPE "MH" UNLESS OTHERWISE NOTED.
- PLUGS SHALL BE RESTRAINED BASED ON RESTRAINED LENGTH FOR 90° VERTICAL BENDS UNLESS OTHERWISE NOTED.
- VALVES, TEES, AND WYES SHALL BE RESTRAINED BASED ON RESTRAINED LENGTH FOR 45° HORIZONTAL BENDS.
- EXISTING PIPE ADJACENT TO PROPOSED BENDS, WYES, VALVES, TEES, AND PLUGS SHALL BE UNCOVERED AND THE JOINTS RESTRAINED FOR THE LENGTHS INDICATED, WITH A MECHANICAL JOINT RESTRAINING MECHANISM. IF THE EXISTING PIPE IS UNABLE TO ACCEPT THE MECHANICAL JOINT RESTRAINING MECHANISM, THE EXISTING PIPE SHALL BE REPLACED WITH DUCTILE IRON WATER MAIN IN ACCORDANCE WITH MATERIAL NOTE 2 ON SHEET (2) FOR THE LENGTH INDICATED. MECHANICAL JOINT RESTRAINING MECHANISMS SHALL NOT BE USED ON EXISTING POLYVINYLCHLORIDE (PVC) OR ASBESTOS CEMENT PIPE.



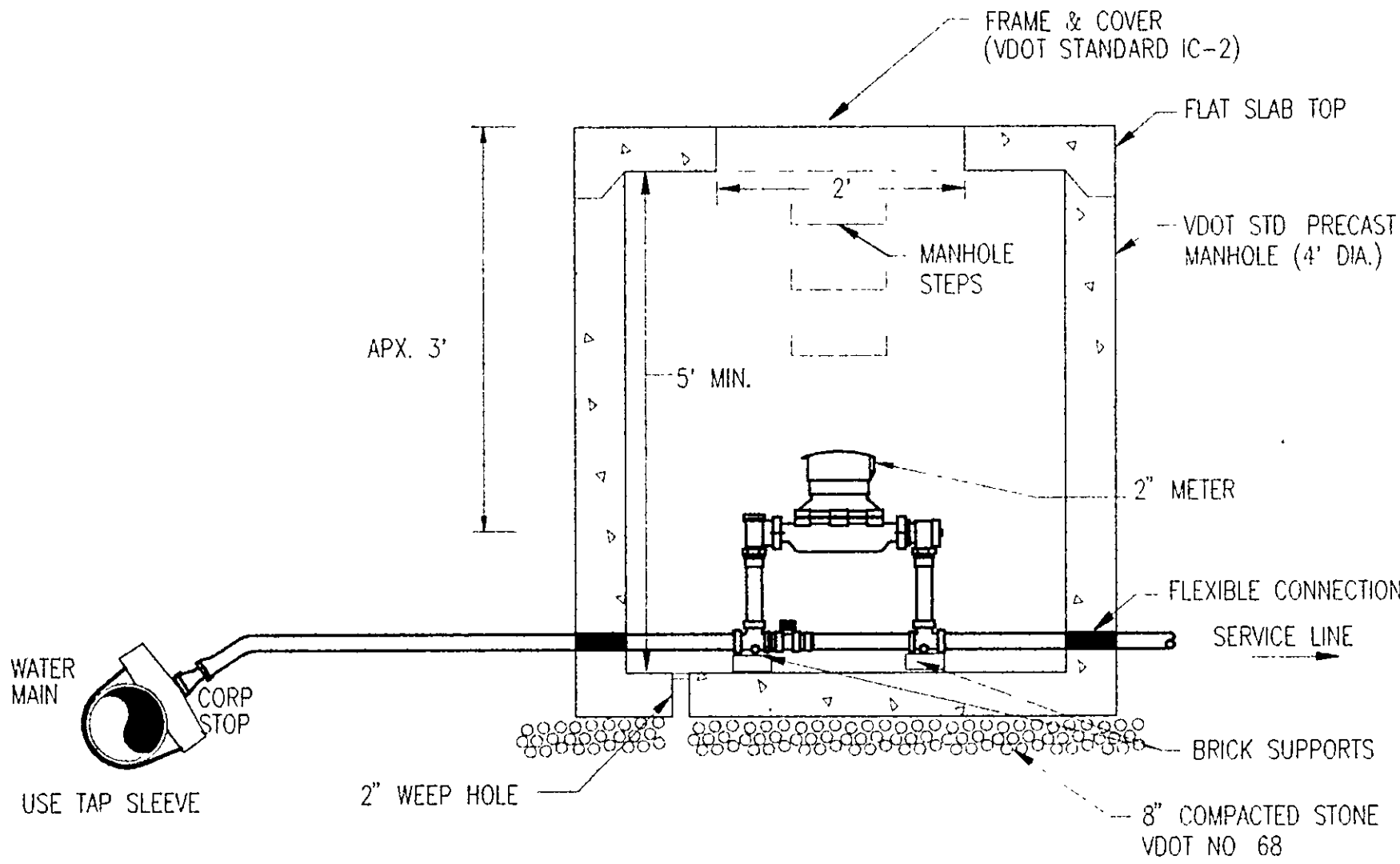
PIPE SIZE	MINIMUM LENGTH OF PIPE WITH RESTRAINED JOINTS (L)							
	Δ=90°		Δ=45°		Δ=22 1/2°		Δ=11 1/4°	
	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.
4"	25'	35'	10'	14'	5'	7'	2'	3'
6"	35'	49'	14'	20'	7'	10'	3'	5'
8"	45'	64'	19'	27'	9'	13'	4'	6'
12"	64'	90'	26'	37'	13'	18'	6'	9'
16"	82'	115'	34'	48'	16'	23'	8'	11'

NO SCALE

RESTRAINING DEVICE EXAMPLE



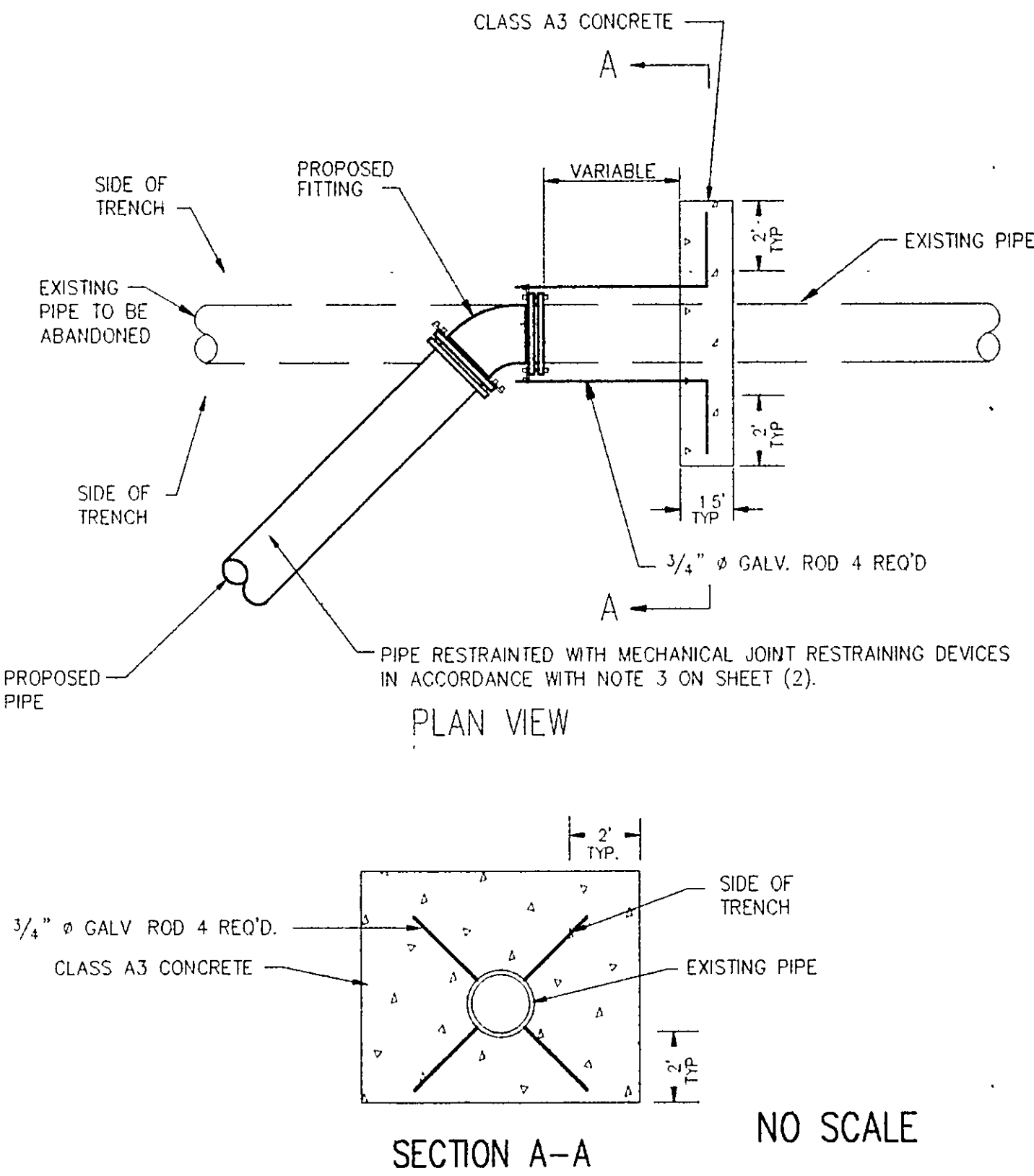
WATER METER BOX DETAIL FOR 1 1/2" AND 2" METERS



NO SCALE

- MANHOLE FRAME & COVER SHALL BE IN ACCORDANCE WITH VDOT STANDARD IC-2.
- FLAT SLAB TO SHALL BE IN ACCORDANCE WITH VDOT STANDARD T-MH-2.
- PRECAST MANHOLE SHALL BE IN ACCORDANCE WITH VDOT STANDARD SMH-1.
- MANHOLE STEPS SHALL BE IN ACCORDANCE WITH VDOT STANDARD ST-1.
- WATER SERVICE LINE SHALL BE IN ACCORDANCE WITH MATERIAL NOTE 1 ON SHEET (2).

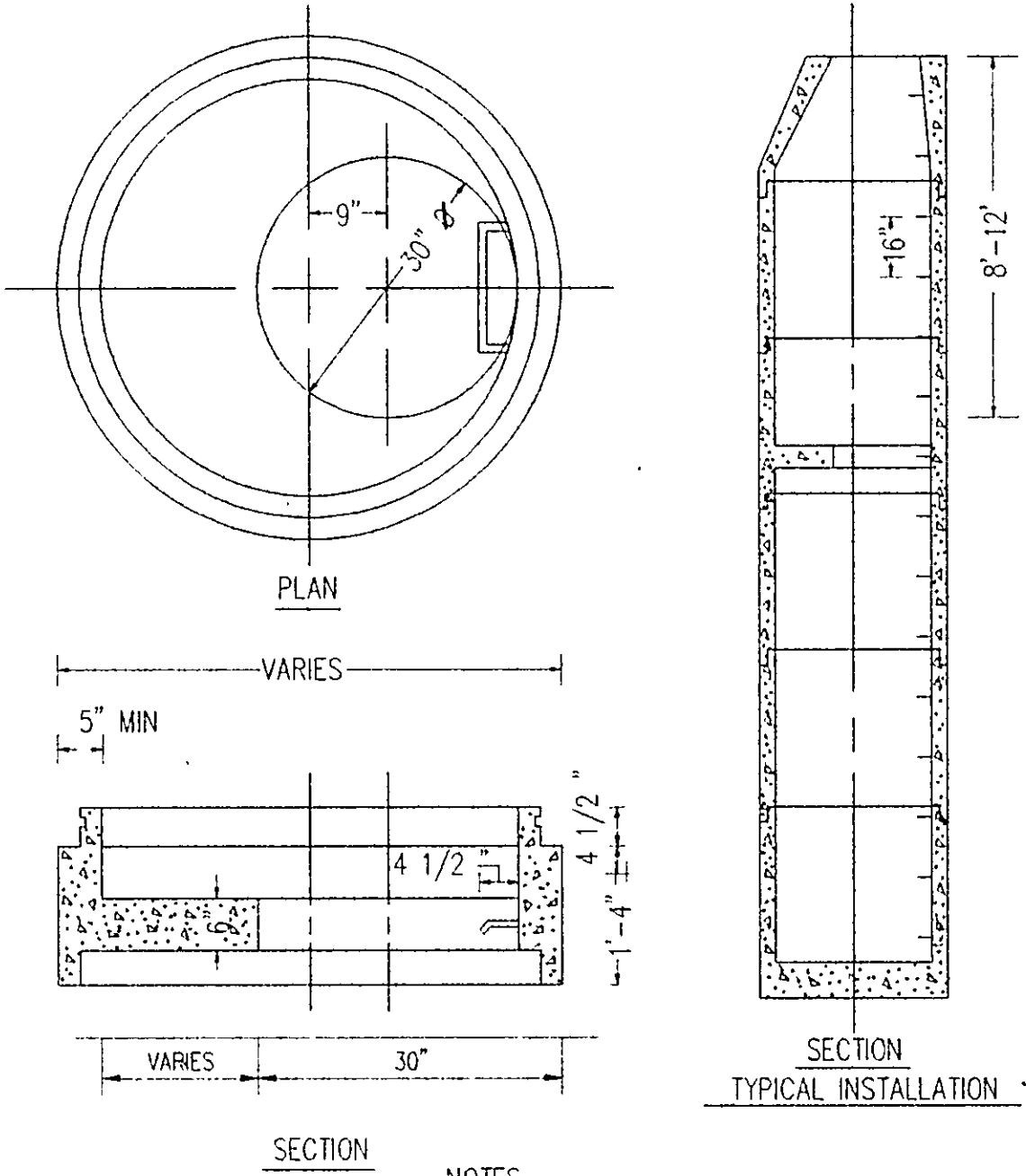
CONNECT TO EXISTING WATER MAIN DETAIL (ALTERNATE METHOD WHEN EXISTING PIPE WILL NOT ACCEPT MECHANICAL RESTRAINING DEVICE)



NO SCALE

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

MANHOLE SAFETY SLAB

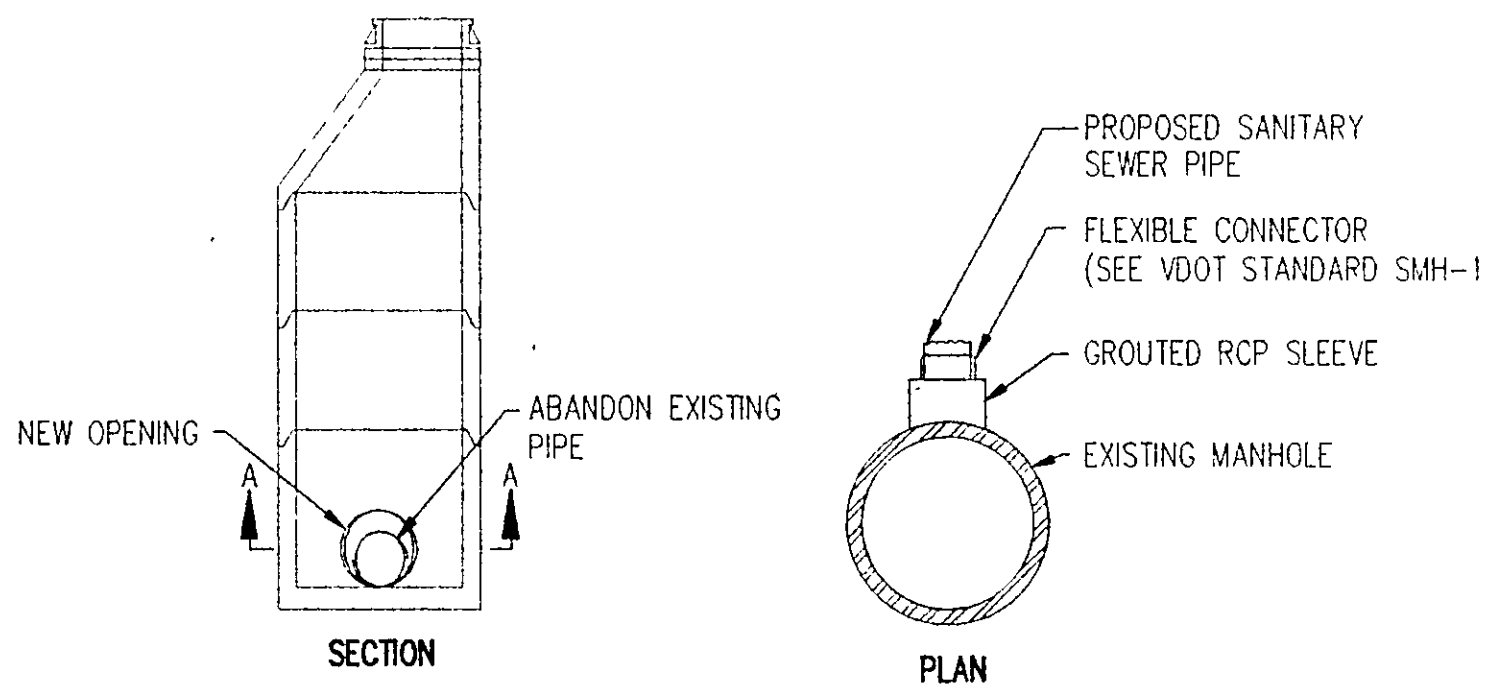


NO SCALE

- NOTES
- TYPICAL INSTALLATION IS ONE SAFETY SLAB FOR EVERY 8 - 12 FEET OF MANHOLE DEPTH
- ALL REINFORCEMENT ACCORDING TO ASTM C478

REVISED	FHWA REGION	STATE	FEDERAL AID PROJECT	ROUTE	STATE PROJECT	SHEET NO.
	3	VA.		117	0117-128-F01,RW-201 0117,128,101, C-502	20(38)

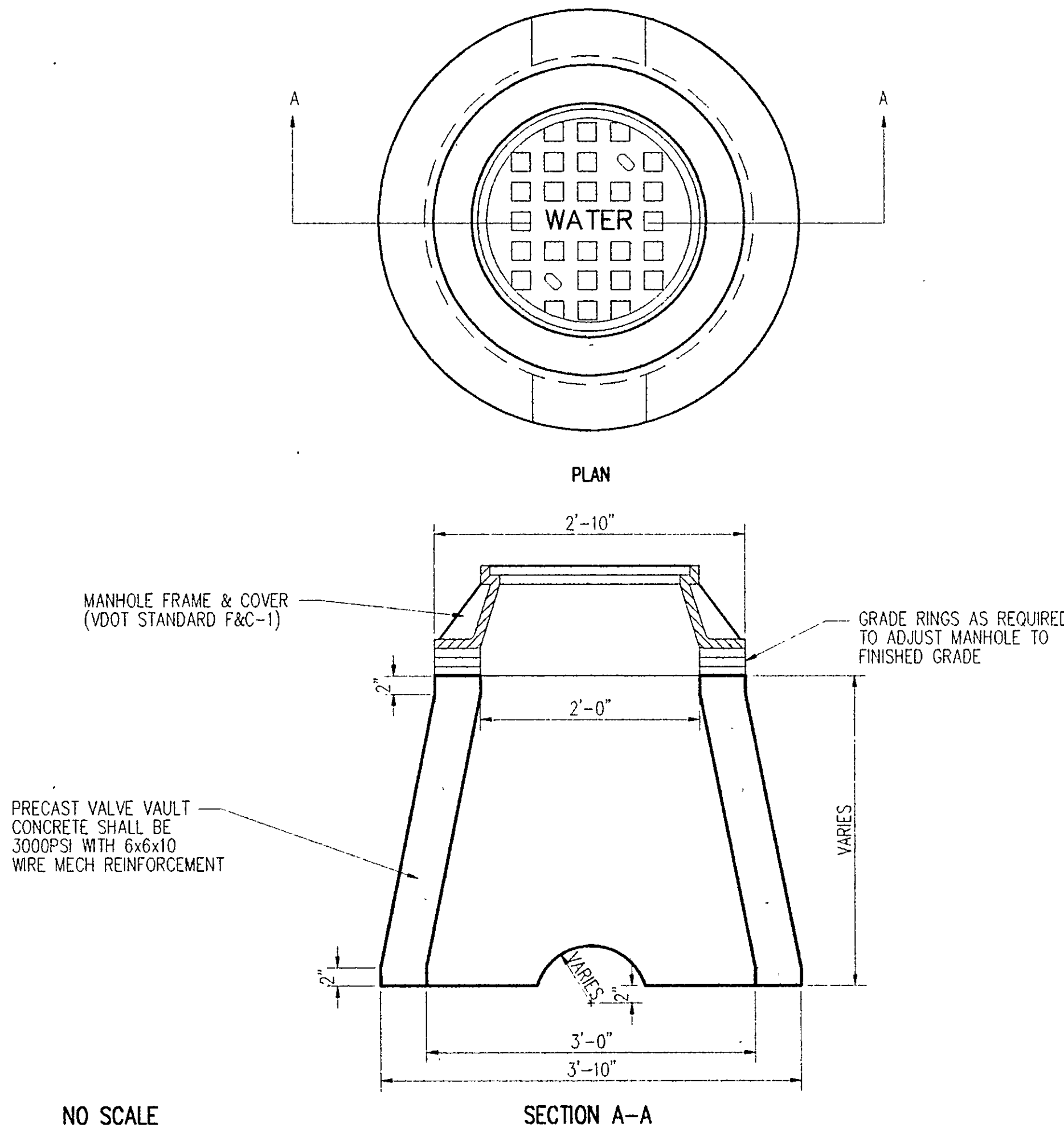
CONNECT TO EXISTING MANHOLE



- ABANDON EXISTING PIPE OPENING.
- PROVIDE NEW PIPE OPENING.
- INSERT AND GROUT NEW RCP, CLASS III, SLEEVE.
- INSERT NEW FLEXIBLE CONNECTOR.
- PROVIDE RESHAPING OF INVERT IN ACCORDANCE WITH VDOT STANDARD IS-1.

NO SCALE

PRECAST VALVE VAULT DETAIL



NO SCALE

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A	0117-128-F01		20(38)