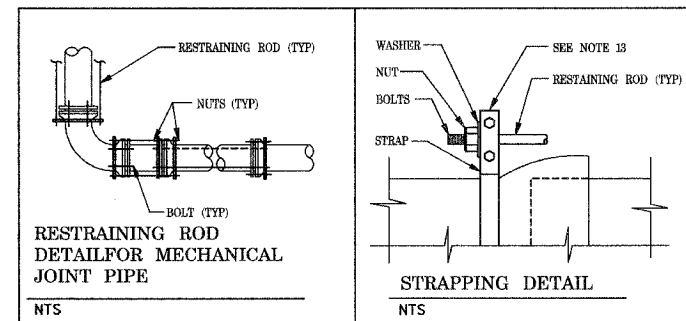
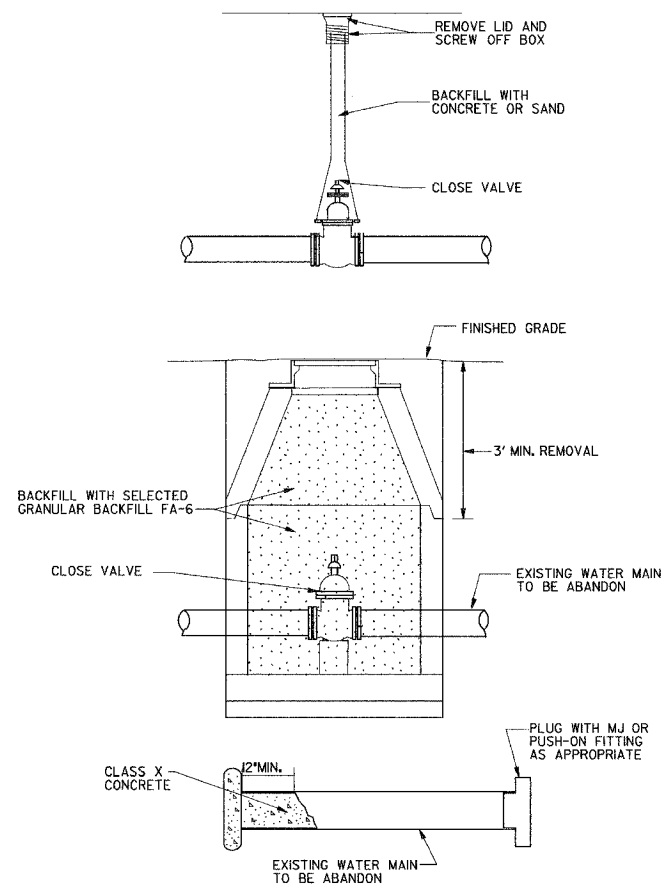


**TYPICAL SERVICE TAP CONNECTION**

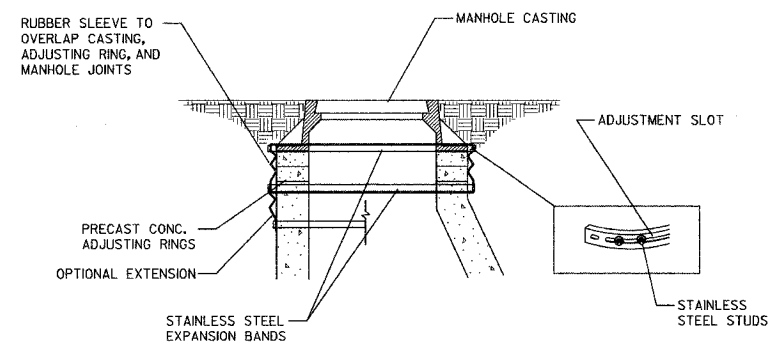
NOTE:  
 1. TEFTON PASTE OR TAPE SHALL NOT BE ALLOWED  
 2. WATER SERVICE AND FIRE SUPPRESSION SYSTEMS SHALL BE MADE AND INSTALLED BY A LICENSED PLUMBER IN ACCORDANCE W/ THE ILLINOIS STATE PLUMBING CODE.



- WHERE THRUST BLOCKS ARE NOT POSSIBLE BECAUSE OF POOR SOIL CONDITIONS OR LACK OF ROOM, STRAPPING SHALL BE PERMITTED. THE CONTRACTOR SHALL SUBMIT, TO THE ENGINEER FOR THE REVIEW, A LIST OF RESTRAINT MATERIAL, DETAILS OF THE RESTRAINT AND METHODS OF CONSTRUCTION, AND SIZES OF ALL RESTRAINTS MEMBERS HE DESIRES TO USE FOR THRUST ANCHOR BLOCKS, RESTRAINING ROD AND STRAPS. REFER TO THE SPECIFICATIONS FOR THE PRESSURE RATING OF THE PIPING SYSTEMS.
- THE CONTRACTOR SHALL SIZE ALL STRAPS, BOLTS, AND WASHERS TO BE COMPATIBLE WITH THE STRENGTH OF THE RESTRAINING RODS AND THE DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
- THE CONTRACTOR SHALL REFER TO THE LATEST EDITION OF "A GUIDE FOR THE INSTALLATION OF DUCTILE IRON PIPE" PUBLISHED BY THE CAST IRON PIPE RESEARCH ASSOCIATION FOR DESIGN AND INSTALLATION OF RESTRAINT SYSTEM.



**VALVE VAULT, WATERMAIN & VALVE BOX ABANDONMENT DETAIL**



**EXTERNAL CHIMNEY SEAL**

NOTE: INSTALL CHIMNEY SEAL AS SPECIFIED, ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

MINIMUM LENGTHS OF RESTRAINED JOINT PIPE REQUIRED FROM BEND

PIPE SIZE	DEFLECTION DOWN		DEFLECTION UP		HORIZONTAL 45 DEGREE	HORIZONTAL 90 DEGREE
	UPPER	LOWER	UPPER	LOWER		
6"	30'	7'	26'	11'	9'	21'
8"	40'	10'	34'	14'	12'	28'
10"	48'	12'	41'	17'	14'	33'
12"	57'	14'	48'	20'	16'	40'
16"	74'	18'	63'	27'	21'	52'
20"	90'	22'	77'	32'	26'	63'
24"	106'	26'	90'	38'	31'	75'

VERTICAL BENDS MAXIMUM 45 DEGREE.  
 VERTICAL LENGTHS BASED ON MINIMUM COVERS OF:  
 5' DEFLECTING TO 8' (DOWN)  
 6' DEFLECTING TO 4' (UP)  
 LENGTHS BASED ON:  
 CLAY SOILS WITH GRANULAR FILL, POLY-WRAPPED D.I.P., AND TEST PRESSURE OF 150 PSI.  
 AT A MINIMUM PROVIDE RESTRAINED JOINTS WITHIN 20' OF ALL FITTINGS.

REVISIONS	
NAME	DATE

**CG** Giorba Group, Inc.  
 CONSULTING ENGINEERS  
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 Tel. 773.775.4009 Fax 773.775.4014 Email chicago@giorba.com

THE CITY OF EVANSTON  
 ASBURY AVENUE BRIDGE IMPROVEMENTS

**DETAILS**

SCALE: N.T.S. DRAWN BY: DLP  
 DATE: OCTOBER, 2004 CHECKED BY: JSL