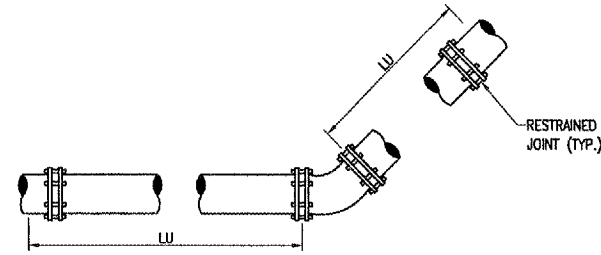


**RESTRAINED JOINT FITTING DETAIL
VERTICAL DOWN BEND**

LD = LENGTH OF RESTRAINED PIPE REQUIRED IN LF. ON EACH SIDE OF BEND

PIPE SIZE	LD		
	11.25'	22.5'	45'
4" D.I.	3	5	11
6" D.I.	4	8	16
8" D.I.	5	10	21
10" D.I.	6	12	25
4" PVC	5	10	21
6" PVC	7	15	31
8" PVC	9	19	40
10" PVC	12	23	49

DIMENSION UNITS ARE IN FEET

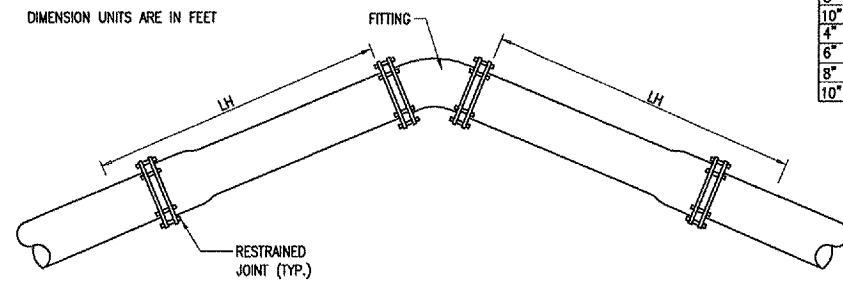


**RESTRAINED JOINT FITTING DETAIL
VERTICAL UP BEND**

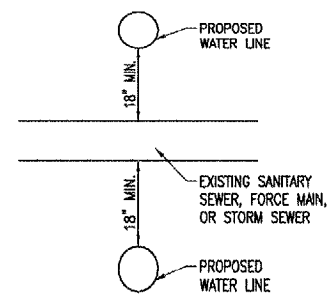
LU=LH (SEE HORIZONTAL BEND TABLE). FOR VERTICAL OFFSETS, IF PIPE LENGTH BETWEEN DOWN BEND AND UP BEND IS LESS THAN LD+LH, RESTRAIN ENTIRE LENGTH BETWEEN FITTINGS AND PROVIDE LD AND LH ON HORIZONTAL RUNS BEYOND DOWN BEND AND UP BEND FITTINGS, RESPECTIVELY.

PIPE SIZE	LH			
	11.25'	22.5'	45'	90'
4" D.I.	2	3	6	14
6" D.I.	3	5	10	22
8" D.I.	3	6	12	28
10" D.I.	4	7	15	34
4" PVC	2	4	7	16
6" PVC	3	5	10	22
8" PVC	3	6	12	28
10" PVC	4	7	15	34

DIMENSION UNITS ARE IN FEET

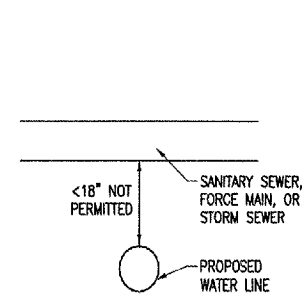


**RESTRAINED JOINT FITTING DETAIL
HORIZONTAL BENDS**

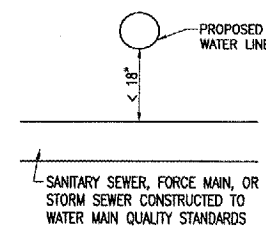


CASE I - VERTICAL SEPERATION ≥ 18"

- SEWER PIPE SHALL BE SUPPORTED TO PREVENT SETTLING AND BREAKING THE WATER MAIN.
- BOTH WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF SLIP-ON OR MECHANICAL JOINT CAST IRON OR DUCTILE IRON PIPE, PRESTRESSED CONCRETE PIPE, OR PVC PIPE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION WHEN WATER PASSES UNDER SEWER OR DRAINS.



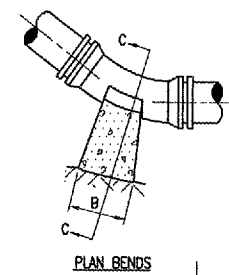
CASE II - WATER LINE < 18" BELOW SEWER NOT PERMITTED



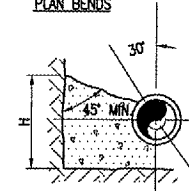
CASE III - WATER LINE < 18" ABOVE SEWER

- BOTH WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF SLIP-ON OR MECHANICAL JOINT CAST IRON OR DUCTILE IRON PIPE, PRESTRESSED CONCRETE PIPE, OR PVC PIPE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION WHEN VERTICAL SEPERATION IS LESS THAN 18" AND ABOVE SEWER

VERTICAL SEPERATION REQUIREMENTS



PLAN BENDS



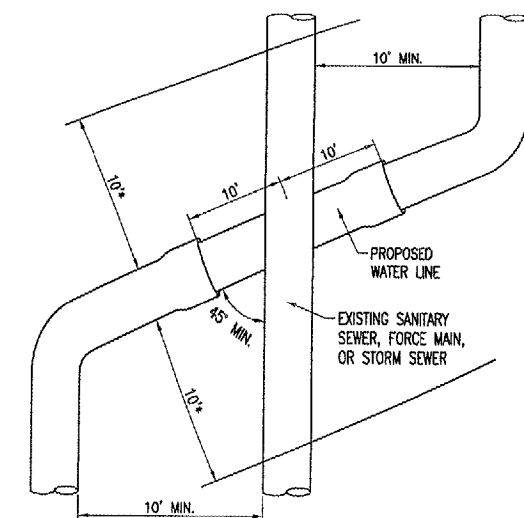
SECTION C-C BENDS & TEES

PIPE SIZE	11.25'			22.5'			45'			90'			TEE OR PLUG		
	A SF	B FT	H FT	A SF	B FT	H FT	A SF	B FT	H FT	A SF	B FT	H FT	A SF	B FT	H FT
4"	0.35	0.8	0.4	0.71	1.2	0.6	1.38	1.7	0.8	2.56	2.3	1.1	1.81	1.9	1.0
6"	0.73	1.2	0.6	1.46	1.7	0.9	2.86	2.4	1.2	5.29	3.3	1.6	3.74	2.7	1.4
8"	1.26	1.6	0.8	2.51	2.2	1.1	4.92	3.1	1.6	9.10	4.3	2.1	6.43	3.6	1.8
10"	1.90	1.9	1.0	3.78	2.7	1.4	7.41	3.8	1.9	13.69	5.2	2.6	9.68	4.4	2.2

DIMENSION UNITS ARE FEET
AREA UNITS ARE SQUARE FEET
PIPE SIZE = BRANCH SIZE FOR TEE.
DESIGN PRESSURE = 200 PSF
ALLOWABLE SOIL BEARING CAPACITY = 2000 PSF

HORIZONTAL THRUST BLOCK DETAILS

- NOTES:
- DEPTH FROM GROUND SURFACE TO TOP OF BLOCKING SHALL BE GREATER THAN HEIGHT OF BLOCKING (H).
 - BLOCKING HEIGHT (H) SHALL BE NO LESS THAN THE PIPE DIAMETER.
 - BLOCKING WIDTH (B) SHALL BE APPROXIMATELY TWICE THE BLOCKING HEIGHT (H).
 - BLOCKING SHALL NOT ENCRATCH ON FITTING JOINT.



HORIZONTAL SEPERATION REQUIREMENTS

*ALL SEWER PIPE JOINTS WITHIN 10' OF WATER LINE MUST BE COMPRESSION TYPE JOINTS.

DATE	REVISION	BY

DECATUR, ILLINOIS
A.I.P. PROJ.: 3-17-0033-XX
IL PROJ.: DEC-3801

Project No.	07A00600_0800
Revision	R-522CON.DWG
Scale	1" = 100'
Date	04/18/08
LAYOUT	03/12/08
DRAWN	BAK
REVIEWED	JMR
DATE	04/16/08

HANSON
Hanson Professional Services Inc.
Springfield, Illinois 62703-2886
Offices Nationwide

CONSTRUCT WATER MAIN
PROPOSED WATER MAIN
DETAIL SHEET 3

APR 18, 2008 1:30 PM WALLE00723
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