

3. IN ADDITION TO THE ABOVE THRUST BLOCKING:
ALL MECHANICAL JOINTS, BENDS OVER 10° AND
FIRE HYDRANTS SHALL HAVE A "MEGALUG" RESTRAINT.
OR AS APPROVED BY THE ENGINEERING DIVISION.
BOLTS SHALL BE "COR-TEN".

DATE: 11-:

Minimum Restrained Lenghts (in feet) back from both sides of fitting

Fitting type/nominal size	4 "	6"	8"	10"	12"	16"	
90 Degree Bend	17	25	32	38	45	59	
45 Degree Bend	7	10	13	16	19	24	
22.5 Degree Bend	3	5	6	8	9	12	
11.25 Degree Bend	2	2	3	4	4	6	
Dead End	39	55	73	87	103	134	
Top Side Vertical Offset * (45 Degree)	16	23	30	36	43	55	
Bottom Side Vertical Offset * (45 Degree)	4	6	8	10	11	15	
Tee Run X Branch *** 6" by	1	17					
Tee Run X Branch ** 8" by	1	5	34				
Tee Run X Branch *** 10" by	1	1	24	49			
Tee Run X Branch ** 12" by	1	1	15	41	65		
Tee Run X Branch *** 16" by	1	1	1	26	52	95	
Reducer *** 6" by	28						
Reducer *** 8" by	52	30					
Reducer *** 10" by	71	54	29				
Reducer *** 12" by	90	75	55	51			
Reducer *** 16" by	123	113	97	94	54		

\* Vertical offset with minimum 10' of solid pipe between upper and lower bend.

\*\* Tee with Minimum 10' solid pipe on both sides of run.

Number indicates length of branch to be restrained.

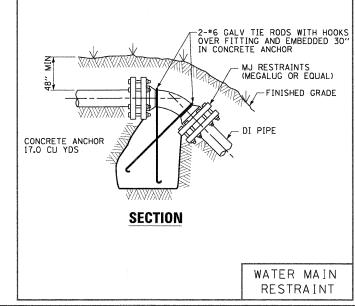
\*\*\* Length back from Large Eng of Reducer.

WATER MAIN
DATE: 3-31-09 RESTRAINT

TO STA.

## NOTE

- 1. USE READY-MIX CONCRETE WITH 3,000 PSI STRENGTH @ 28 DAYS
- 2. PLACE CONCRETE CLEAR OF JOINT & JOINT ACCESSORIES
- 3. DIMENSIONS ARE BASED ON 200 PSI STATIC PRESSURE PLUS AWWA WATER HAMMER (FS = 1.5)



FILE NAME =	DESIGNED	-	MAC	REVISED	-
\watermain\WM_DET-01.dgn	DRAWN	~	TMB	REVISED	
USER NAME := mcoleman	CHECKED	-	RMT	REVISED	-
PLOT DATE = 11/10/2011	DATE	-	10/23/2011	REVISED	-



NOT TO SCALE

THRUST BLOCK

INSTALLATION

DATE: 11-2-09 DETAILS



WATER MAIN DETAILS

SCALE: NTS SHEET NO. 8 OF 10 SHEETS STA.

 
 F.A. RTE.
 SECTION
 COUNTY
 TOTAL SHEETS
 SHEETS NO.

 04-00092-00-BR
 KANE
 440
 151

 CONTRACT
 NO.
 63650

 ILLINOIS FED. AID PROJECT