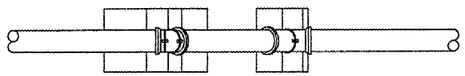
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

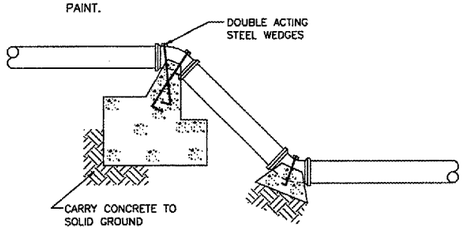
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	*	WOODFORD	24	7
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

* 05-00018-00-BR
CONTRACT #89414



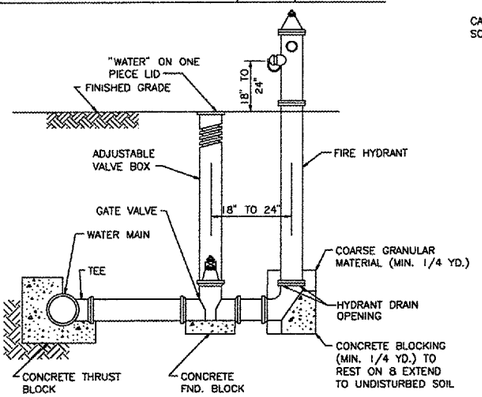
PLAN

NOTE:
NO. 6 DEFORMED BARS TO BE EMBEDDED IN CONCRETE. EXPOSED PORTIONS TO BE PAINTED WITH 2 COATS OF APPROVED BITUMINOUS PAINT.



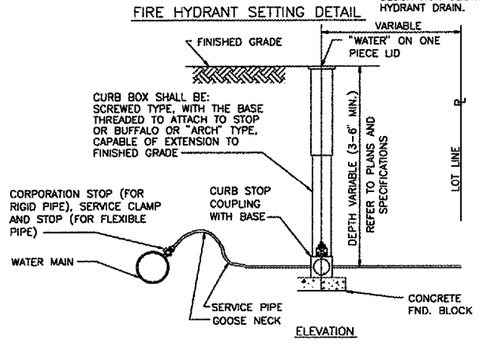
ELEVATION

THRUST BLOCKS FOR VERTICAL 1/8 & 1/16 BENDS



ELEVATION

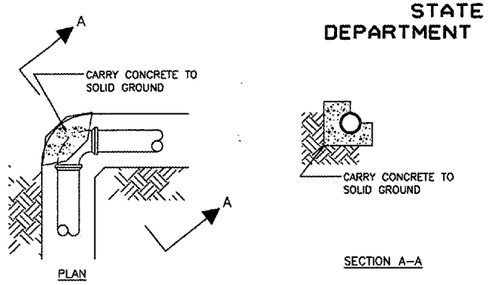
FIRE HYDRANT SETTING DETAIL



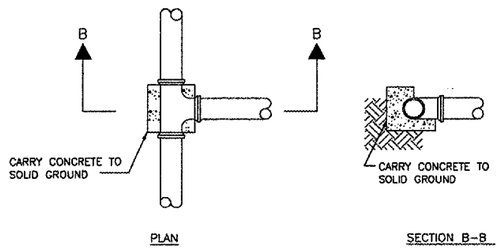
ELEVATION

SERVICE DETAIL

DESIGNED -	200
CHECKED -	EXAMINED
DRAWN -	PASSED
CHECKED -	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

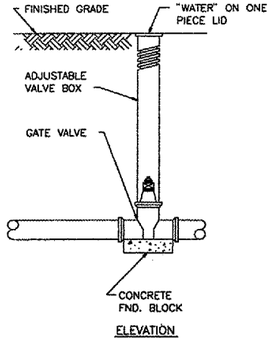


THRUST BLOCK FOR HORIZONTAL BENDS



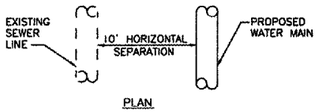
PLAN SECTION B-B

THRUST BLOCK FOR TEES

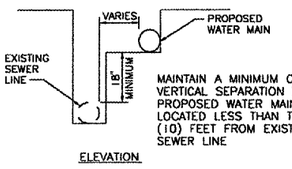


ELEVATION

VALVE & VALVE BOX SETTING DETAIL



PLAN



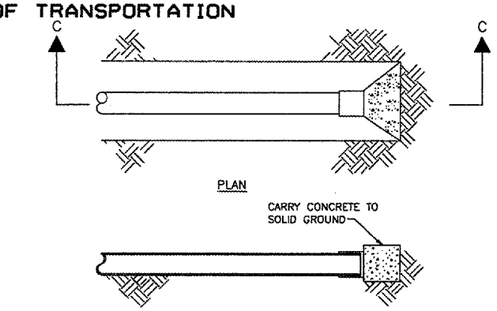
ELEVATION

MAINTAIN A MINIMUM OF 18" VERTICAL SEPARATION WHEN PROPOSED WATER MAIN IS LOCATED LESS THAN TEN (10) FEET FROM EXISTING SEWER LINE

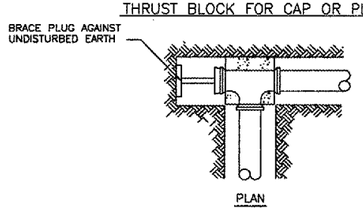
WATER AND SEWER SEPARATION

MINIMUM DIMENSIONS IN INCHES		
PIPE DIA.	DIM. A	DIM. B
8	4	8
10	4	8
12	4	8
15	4	8
18	5	10
21	5	10
24	5	10
27 OR 30	5	10

NOTE: WHERE AREA DESIGNATED "C" HAS BEEN EXCAVATED IN AN UNSHEETED TRENCH IT ALSO SHALL BE FILLED WITH CONCRETE THOUGH IN NO CASE NEED IT BE FILLED INTO MORE THAN A 12" DISTANCE FROM THE OUTSIDE FACE OF THE PIPE MEASURED AT THE LEVEL OF THE CENTER OF THE PIPE.

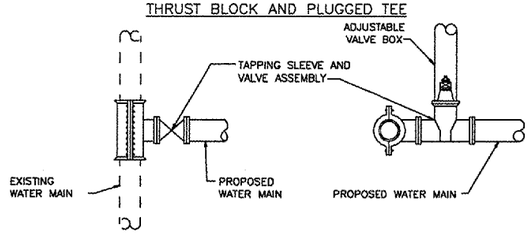


THRUST BLOCK FOR CAP OR PLUG



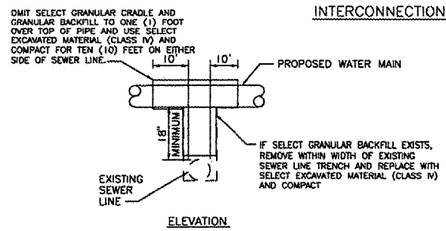
PLAN

THRUST BLOCK AND PLUGGED TEE



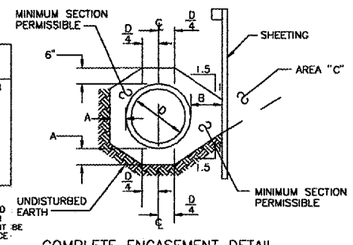
PLAN ELEVATION

INTERCONNECTION DETAIL



ELEVATION

PROPOSED WATER MAIN ABOVE EXISTING SEWER WITH 18" MIN. SEPARATION



COMPLETE ENCASEMENT DETAIL
FOR ALL TYPES AND SIZES OF SEWERS WHEN ORDERED OR SPECIFIED

THRUST BLOCK DESIGN

DESIGN SHALL BE FOR 200 PSI PRESSURE UNLESS MODIFIED BY THE SPECIFICATIONS (DESIGN PER A.W.W.A. PIPE DESIGN AND INSTALLATION MANUAL OF PRACTICE NO. M23).

TABLE A

THRUST DEVELOPED PER 100 PSI PRESSURE, LB FORCE (N)

NOMINAL PIPE SIZE		FITTING 90 DEG BEND		FITTING 45 DEG BEND		VALVES, TEES & DEAD ENDS	
IN.	(MM)	POUNDS	NEWTONS	POUNDS	NEWTONS	POUNDS	NEWTONS
4"	(100)	1,800	(8,007)	1,100	(4,893)	1,300	(5,783)
6"	(150)	4,000	(17,793)	2,300	(10,231)	2,900	(12,900)
8"	(200)	7,200	(32,027)	4,100	(18,238)	5,100	(22,686)
10"	(250)	11,200	(49,820)	6,300	(28,024)	7,900	(35,141)
12"	(300)	16,000	(71,172)	9,100	(40,479)	11,300	(50,265)
14"	(350)	21,800	(96,966)	11,800	(52,486)	15,400	(68,499)

PIPES OVER 14" SHALL BE BASED ON CALCULATED THRUST.

TABLE B

ESTIMATED BEARING LOAD

SOIL TYPE	LB/SQ FT	N/M ^{2}
MUCK, PEAT, ETC.	0	0
SOFT CLAY	500	23,940
SAND	1,000	47,881
SAND AND GRAVEL	1,500	71,821
SAND AND GRAVEL W/CLAY	2,000	95,761
SAND AND GRAVEL CEMENTED W/CLAY	4,000	191,523
HARD PAN	5,000	239,403

ALLOWABLE BEARING LOAD FOR VARIOUS TYPES OF SOIL. THE BEARING LOADS ARE ESTIMATED FOR HORIZONTAL THRUSTS WHEN DEPTH OF SATURATED SOIL COVER EXCEEDS 2 FT.

EXAMPLE

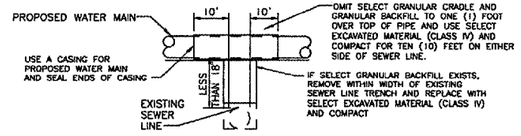
DETERMINE THE DESIGN OF A THRUST BLOCK REQUIRED AT AN 8" 90 DEGREE ELBOW. MAXIMUM TEST PRESSURE EQUALS 200 PSI; SOIL TYPE IS SAND.

(1) CALCULATE THRUST: FROM TABLE A, THRUST ON 8" 90 DEGREE ELBOW EQUALS 7200 LB PER 100 PSI OPERATING PRESSURE.

TOTAL THRUST = 2(7200) = 14,400 LBS

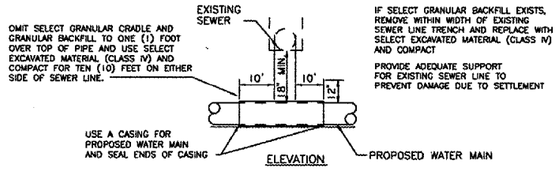
(2) CALCULATE THRUST BLOCK SIZE: FROM TABLE B, SAFE BEARING LOAD FOR SAND EQUALS 1000 LB/SQ FT.

TOTAL THRUST SUPPORT AREA = $\frac{14,400 \text{ LBS}}{1,000}$ = 14.4 SQ FT.



ELEVATION

PROPOSED WATER MAIN ABOVE EXISTING SEWER WITH LESS THAN 18" MIN. SEPARATION



ELEVATION

PROPOSED WATER MAIN BELOW EXISTING SEWER WITH 18" MIN. SEPARATION

GENERAL NOTES:

PIPE MATERIAL AND JOINT TYPES WILL BE AS INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS.

TYPICAL DETAILS SHOWN ON THIS SHEET ILLUSTRATE THE ENGINEER'S INTENT FOR INSTALLING WATER MAINS.
THEY ARE NOT PRESENTED AS A SOLUTION TO ALL CONSTRUCTION PROBLEMS WHICH MAY BE ENCOUNTERED IN
THE FIELD. THE CONTRACTOR MAY ALTER HIS METHOD OF CONSTRUCTION TO SUIT FIELD CONDITIONS, PROVIDED
HE SUBMITS HIS PROPOSED ALTERNATE TO THE ENGINEER FOR REVIEW PRIOR TO PERFORMING THE WORK.

ALL THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.

COVER ALL FITTINGS WITH PLASTIC SHEET PRIOR TO POURING CONCRETE.

WATER MAIN DETAILS
WALNUT STREET OVER SNAG CREEK
SECTION 05-00018-00-BR
WOODFORD COUNTY
STATION 13+91.11

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