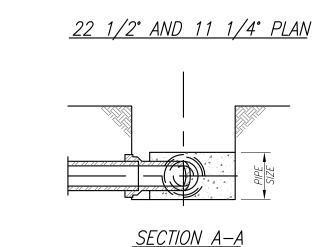
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REVISIONS

Rev. No.| Description | Date



11.25° BEND 90° BEND | 45° BEND | 22.5° BEND | 1.0 1.5 2.5 10.0 14.0 4.0 14.0 5.5 19.0 7.5 25.0 *35.0* 10.0 19.0 31.5 44.5 12.5 40.0 54.0 31.0 16.5 7.5 *55.5 78.5* 42.5 22.0 11.0 86.5 122.0 66.0 34.0 17.0 *175.5* 124.0 48.5 168.0 237.5 128.5 65.5 33.0 212.0 366.0 160.0 85.0

(MINIMUM AREA IN SQ. FT. REQUIRED FOR CONCRETE THRUST BLOCKING)

<u>NOTE:</u> TABLE VALUES BASED UPON A 4' MINIMUM BURY, GRANULAR BACKFILL, TYPE 2 LAYING CONDITION. 150 psig TEST SAFETY FOR POLY WRAPPED DUCTILE IRON OR PVC PIPE. <u>DEAD END PLUG</u>

<u>NOTE:</u> 1. FITTINGS TO BE RESTRAINED WITH EBBA IRON MEGA-LUG SERIES 1000 OR 2000 PV OR APPROVED EQUAL FOR DUCTILE IRON OR PVC WATERMAIN, RESPECTIVELY. 2. DUCTILE IRON PIPE SHALL BE RESTRAINED WITH EBBA IRON, INC. SERIES 1100 AT MECHANICAL JOINTS, AND SERIES 1700

AT PIPE BELLS. 3. PVC PIPE SHALL BE RESTRAINED WITH EBBA IRON, INC. SERIES 2000 AT MECHANICAL JOINTS, AND SERIES 1600 OR 2800

PRESSURE AND A 2:1 FACTOR OF 4. TO STABILIZE THE JOINTS AT TEES, THE CONTRACTOR SHALL PROVIDE RESTRAINT DEVICES ON BOTH RUN JOINTS OF ALL TEES. FULL LENGTHS OF PIPE SHOULD BE USED AT TEES.

<u>RED</u>	<u>IUCE</u>

	'A'	'A'	'A'	'A'	'A'	'A'	'A'	'A'	'A'		'A'
FITTING SIZE	90° HORIZ. BEND	45° HORIZ. BEND	22 1/2° HORIZ. BEND	BRANCH FOR TAPPING SLEEVE OR TEE	DEAD END PLUG OR IN-LINE VALVE	45° VERTICAL DOWNWARD BEND	22 1/2° VERTICAL DOWNWARD BEND	45° VERTICAL UPWARD BEND	22 1/2° VERTICAL UPWARD BEND	DIFFERENCE IN REDUCER NOMINAL SIZE	RESTRAINED JOINT LENGTH
4"	31'-0"	13'-0"	6'-0"	54'-0"	<i>54'-0"</i>	34'-0"	17'-0"	13'-0"	6'-0"	2-INCHES	44'-0"
6"	45'-0"	19'-0"	9'-0"	77'-0"	77'-0"	49'-0"	24'-0"	19'-0"	9'-0"	4-INCHES	83'-0"
8"	58'-0"	24'-0"	12'-0"	101'-0"	101'-0"	64'-0"	31'-0"	24'-0"	12'-0"	6-INCHES	117'-0"
12"	83'-0"	34'-0"	17'-0"	146'-0"	146'-0"	93'-0"	44'-0"	34'-0"	17'-0"	8-INCHES	153'-0"
14"	96'-0"	40'-0"	19'-0"	169'-0"	169'-0"	107'-0"	51'-0"	40'-0"	19'-0"	12-INCHES	228'-0"
16"	108'-0"	45'-0"	21'-0"	191'-0"	191'-0"	121'-0"	58'-0"	45'-0"	21'-0"		

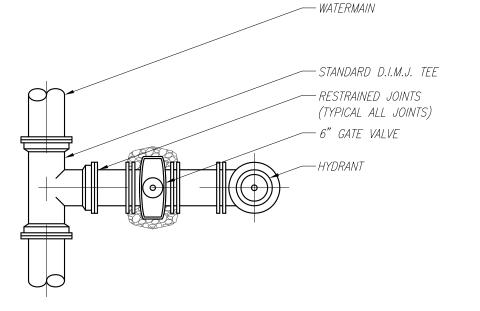
NOTE: RESTRAINING JOINTS ARE REQUIRED AT ALL LOCATIONS AS REQUIRED PER THE ABOVE CHART UNLESS SPECIFICALLY CALLED FOR IN THE PLANS.

<u>45° PLAN</u>

<u>90° PLAN</u>

- 1. ALL THRUST BLOCKS TO BE 4000 PSI CAST-IN-PLACE CONCRETE.
- 2. ALTERNATE RESTRAINING METHODS OR JOINTS MAY BE ACCEPTABLE IF APPROVED BY THE ENGINEER DURING CONSTRUCTION.
- 3. CONCRETE THRUST BLOCKS ALLOWED ONLY AS SPECIFICALLY NOTED IN THE PLANS. CONCRETE THRUST BLOCKS ARE NOT AN ACCEPTABLE
- ALTERNATIVE TO THE REQUIRED MECHANICAL RESTRAINTS. 4. ALL THRUST BLOCKS TO BE EXTENDED TO UNDISTURBED EARTH.

THRUST BLOCKING DETAILS



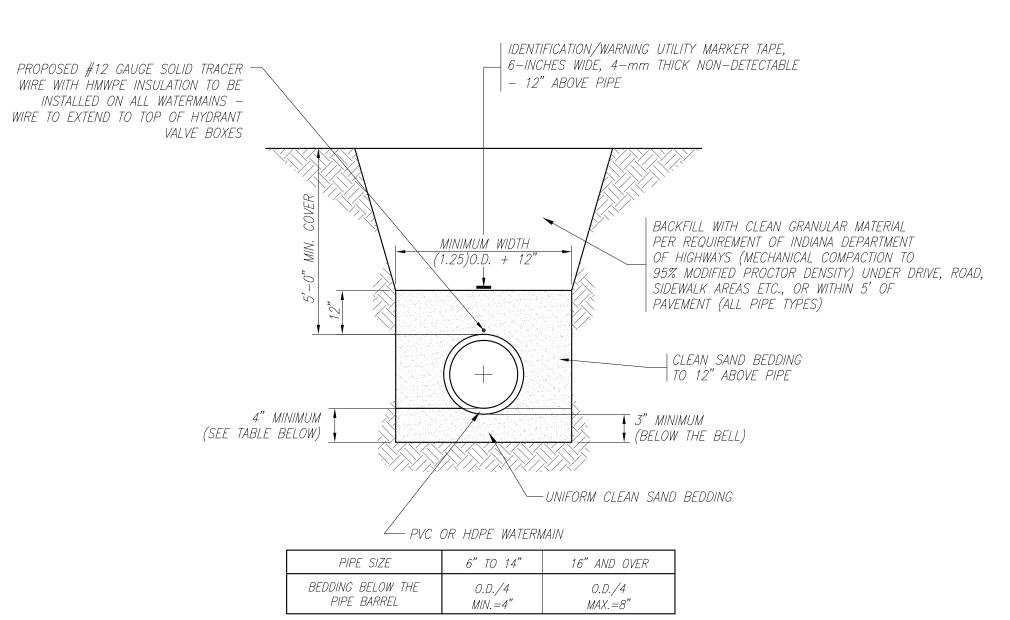
FITTING DETAILS

RESTRAINED JOINT

INSTALLATION PERPENDICULAR TO MAIN

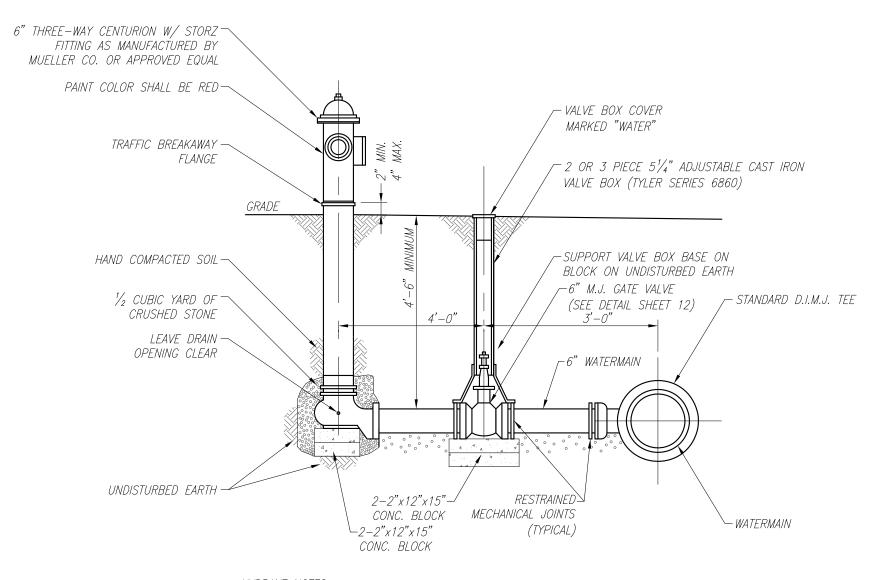
NOIL: 1. SEE SHEET 11 FOR VALVE AND HYDRANT LOCATIONS WHEN SIDEWALKS ARE

FIRE HYDRANT CONNECTION DETAIL



TYPICAL HDPE PIPE TRENCH DETAIL

- 1. CLEAN SAND BEDDING SHALL BE FREE OF OTHER SOIL AND DEBRIS AND BE WITH NO MORE THAN 5% OF THE MATERIAL PASSING A #200 SIEVE.
- 2. HDPE WATERMAINS TO BE ALLOWED WHEN SPECIFICALLY APPROVED BY THE TOWN ON A CASE-BY-CASE BASIS.



1. HYDRANTS SHALL BE PROVIDED AT EACH STREET INTERSECTION AND AT INTERMEDIATE POINTS BETWEEN INTERSECTIONS OR AS DIRECTED BY THE TOWN ENGINEER OR THE CICERO FIRE DEPARTMENT. 2. HYDRANTS SHALL BE SPACED AT NO GREATER THAN 400 FEET.

3. HYDRANTS SHALL BE PLACED IN A LOCATION TO AVOID UNNECESSARY RISK OF DAMAGE AS REQUIRED. 4. ALL JOINTS TO BE MECHANICALLY RESTRAINED.

FIRE HYDRANT ASSEMBLY DETAIL

AS NOTED

CERTIFIED BY:

10 of 17

8/11/09

| IDENTIFICATION/WARNING UTILITY MARKER TAPE, — 6-INCHES WIDE, 4-mm THICK NON-DETECTABLE – 12" ABOVE PIPE /— FINISHED GRADE COMPACTED "B"-BORROW WHEN € OF PIPE ENCROACHES WITHIN 3' OF AN EXISTING OR PROPOSED STREET OR SIDEWALK. APPROVED BACKFILL MATERIAL OUTSIDE OF MINIMUM WIDTH STREET OR SIDEWALK BACKFILL LIMITS. APPROVED (1.25)0.D. + 12" BACKFILL MATERIAL MAY BE USED UNDER PROPOSED SIDEWALKS PROVIDED SIDEWALKS ARE CONSTRUCTED 6 MONTHS AFTER BACKFILLING OR TRENCH. 4" MINIMUM - PROPOSED #12 GAUGE SOLID TRACER WIRE WITH HMWPE (BELOW THE BARREL) INSULATION TO BE INSTALLED ON ALL WATERMAINS -WIRE TO EXTEND TO TOP OF HYDRANT VALVE BOXES 4" MINIMUM (SEE TABLE BELOW) — 3" MINIMUM (BELOW THE BELL) - UNIFORM CLEAN SAND TO CROWN (BELL HOLE EXCAVATED) DUCTILE IRON (D.I.) WATERMAIN — PIPE SIZE 6" TO 14" | 16" AND OVER

BEDDING BELOW THE PIPE BARREL MAX.=8"

TYPICAL D.I. PIPE TRENCH DETAIL