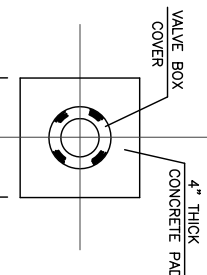


Pipe Diameter	Trench Width	Min. Width
8"	2,2'	2,2'
10"	2,2'	2,2'
12"	2,2'	2,2'
15"	2,6'	2,6'
18"	2,6'	2,6'
21"	3,3'	3,3'
24"	3,8'	3,8'
27"	4,2'	4,2'
30"	4,5'	4,5'
33"	4,9'	4,9'
36"	5,2'	5,2'

NOTES:  
 GRANULAR BEDDING SHALL BE CRUSHED ROCK OR PEA GRAVEL WITH NOT LESS THAN 95% PASSING 1/2" (95% PASSING 3/4" FOR 30" AND LARGER PIPE) AND NOT LESS THAN 75% RETAINED ON A NO. 4 SIEVE TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLONG WITH A SHOVEL OR VIBRATING.

### WATER MAIN EMBEDMENT DETAIL

NO SCALE



### VALVE BOX DETAIL

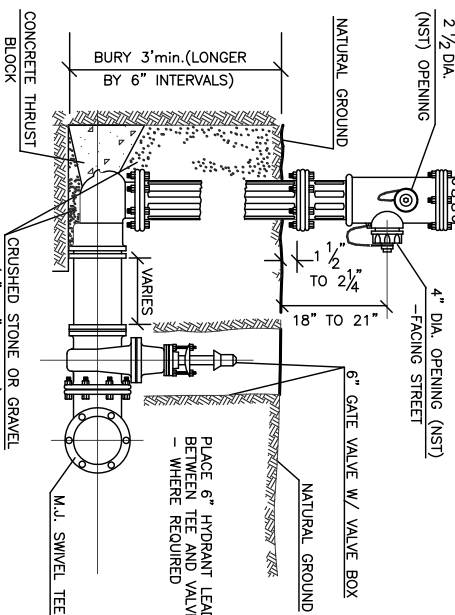
NO SCALE

**FIRE HYDRANT NOTES:**  
 DRY BARREL TYPE (MUST MEET OR EXCEED AWWA C-502-85)  
 MAIN VALVE OPENING 5 1/4"  
 OPENING DIRECTION COUNTERCLOCKWISE  
 6" MECHANICAL JOINT SHOE

**APPROVED MANUFACTURERS:**  
 MUELLER A-42  
 MUELLER A-432  
 KENNEDY K-81A  
 AMERICAN B-84B  
 US PIPE METROPOLITAN 250  
 AMERICAN AWK CO SERIES 2780  
 OWNER APPROVED EQUAL

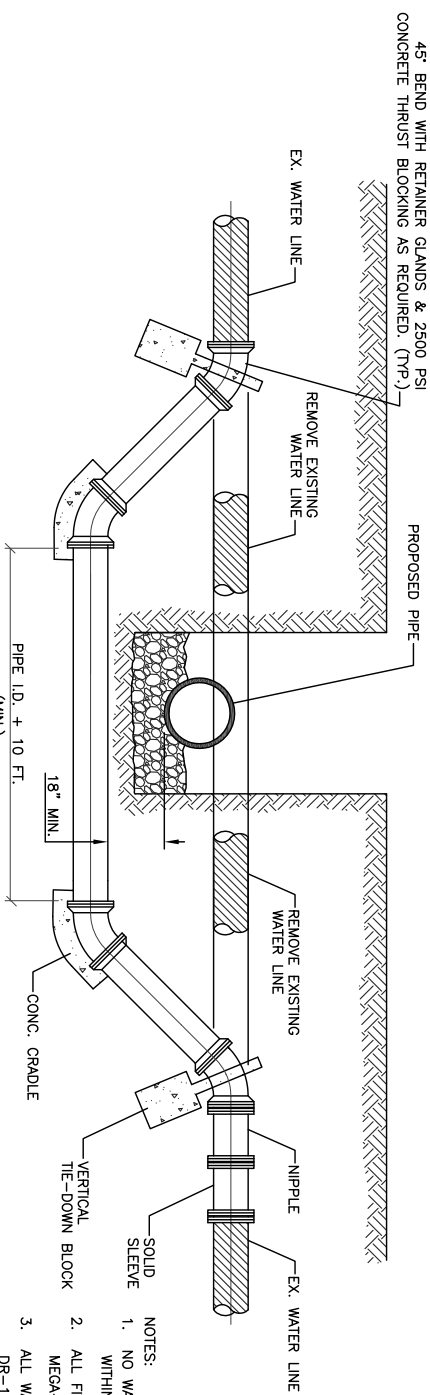
**2 COATS RUSTOLEUM ENAMEL PAINT OR EQUAL. CAP - FOREST GREEN BODY - HIGH REFLECTANCE SILVER PAINT**

FIRE HYDRANT W/ SAFETY FLANGE 1 3/16" PENT NUT  
 2 1/2" DIA. (NST) OPENING  
 4" DIA. OPENING (NST) - FACING STREET  
 6" GATE VALVE W/ VALVE BOX



### STANDARD FIRE HYDRANT DETAIL

NO SCALE



### STANDARD WATER MAIN LOWERING

NO SCALE

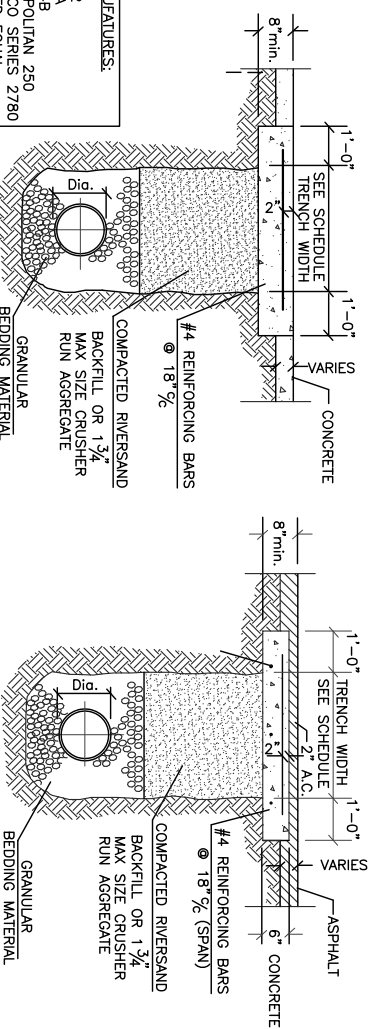
NOTES:  
 1. NO WATER SERVICES SHALL BE LOCATED WITHIN THE WATER MAIN LOWERING LIMITS.  
 2. ALL FITTINGS SHALL BE RESTRAINED USING MEGA-LUGS.  
 3. ALL WATER PIPE SHALL BE C-900 DR-18 PVC PIPE.

PIPE SIZE	PLUGS & TEES		90° BENDS		45° BENDS		22-1/2° BENDS					
	A	E	A	E	A	E	A	E				
4" & 6"	20	20	12	24	24	12	16	16	12	12	12	
8"	24	24	12	29	29	15	18	18	12	15	15	12
10"	30	30	14	40	32	16	21	21	12	19	19	12
12"	36	36	24	50	36	25	26	26	13	22	22	12
16"	58	40	37	82	40	41	34	34	17	30	30	15
20"	86	42	43	121	42	60	70	36	25	38	42	19
24"	108	46	54	150	46	75	82	42	41	48	42	24

IN SOFT OR YIELDING SOILS, LARGER THRUST BLOCKS MAY BE REQUIRED AND ROCK SIZES MAY BE REDUCED. VARIATIONS IN SIZE SHALL BE APPROVED BY THE ENGINEER.  
 CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 1500 PSI.

### SECTION Y-Y

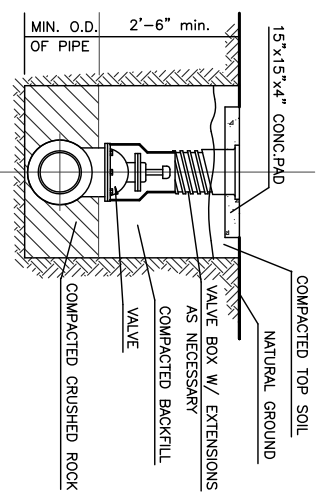
### TYPICAL THRUST BLOCK DIMENSIONS



### PAVING CUTS AND PERMANENT REPAIRS

NO SCALE

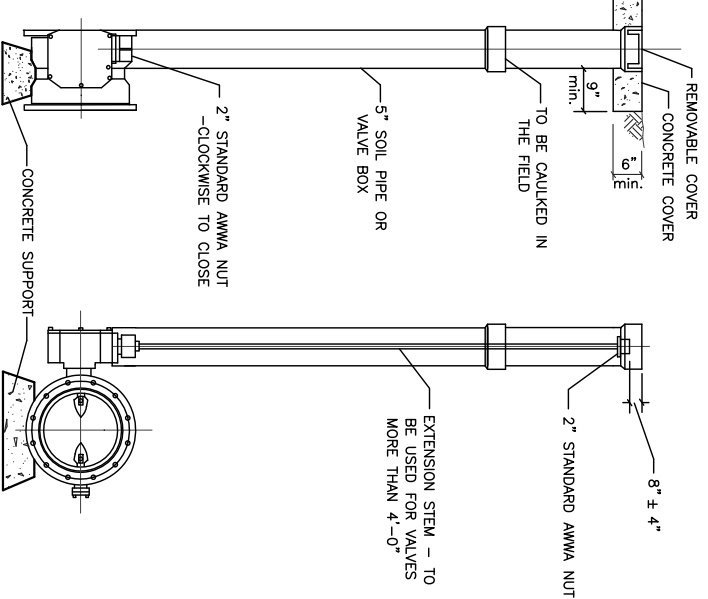
NOTES:  
 1. IN PAVED AREAS, THE BEDDING SHALL BE GRANULAR MATERIAL PER THE DIMENSIONS SHOWN IN THE WATER MAIN BEDDING DETAIL.  
 2. CONCRETE SHALL HAVE A MIN. 28-DAY COMPRESSIVE STRENGTH OF 3,500 PSI. HIGH EARLY STRENGTH SHALL BE USED WHERE DIRECTED BY THE ENGINEER.



### TYPICAL VALVE SETTING

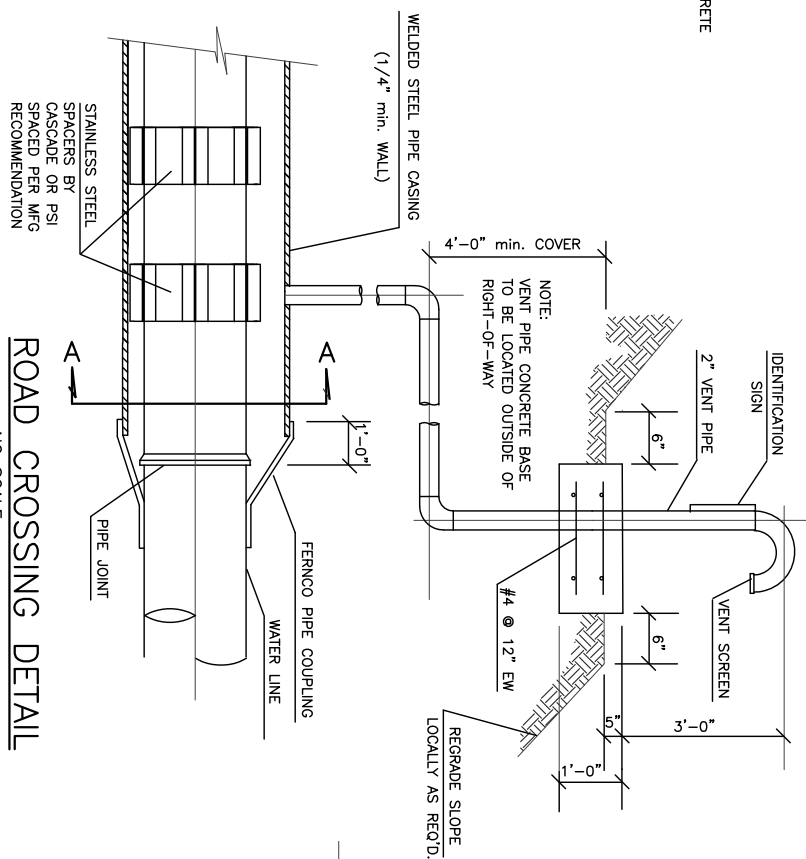
NO SCALE

**GENERAL NOTES:**  
 1) WATER LINE PIPE SHALL BE C-900 DR-18 PVC PIPE. HDPE WATER LINE SHALL BE DR 11 DIPS.  
 2) ALL FITTINGS SHALL BE RESTRAINED WITH MEGA-LUGS.  
 3) ALL WATER LINES AND SERVICE CONDUITS SHALL HAVE A #12 TRACER WIRE AND MAGNETIC LOCATE TAPE.  
 4) FOR EXISTING MAIN CONNECTIONS, UTILIZE A SMITH-BLAIR MODEL 662 TAPPING SLEEVE. PRESSURIZE SADDLE AND ONCE SADDLE HAS DEMONSTRATED APPROPRIATE SEAL, CITY WILL MAKE THE TAP. COORDINATE TAP 48 HOURS IN ADVANCE WITH TERRY LAURITSEN, DIRECTOR OF ENGINEERING AND WATER UTILITIES AT 338-4116.



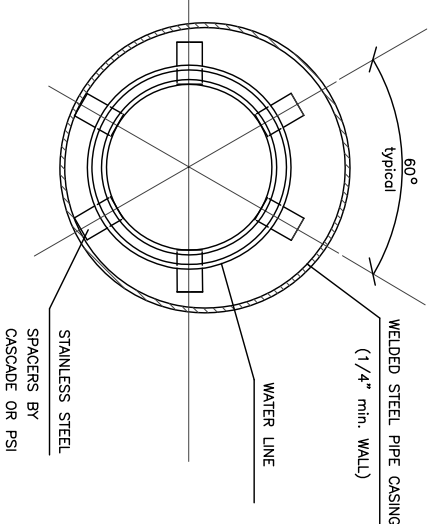
### TYPICAL BUTTERFLY VALVE

NO SCALE

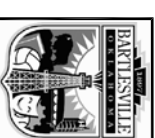


### ROAD CROSSING DETAIL

NO SCALE



### SECTION A-A

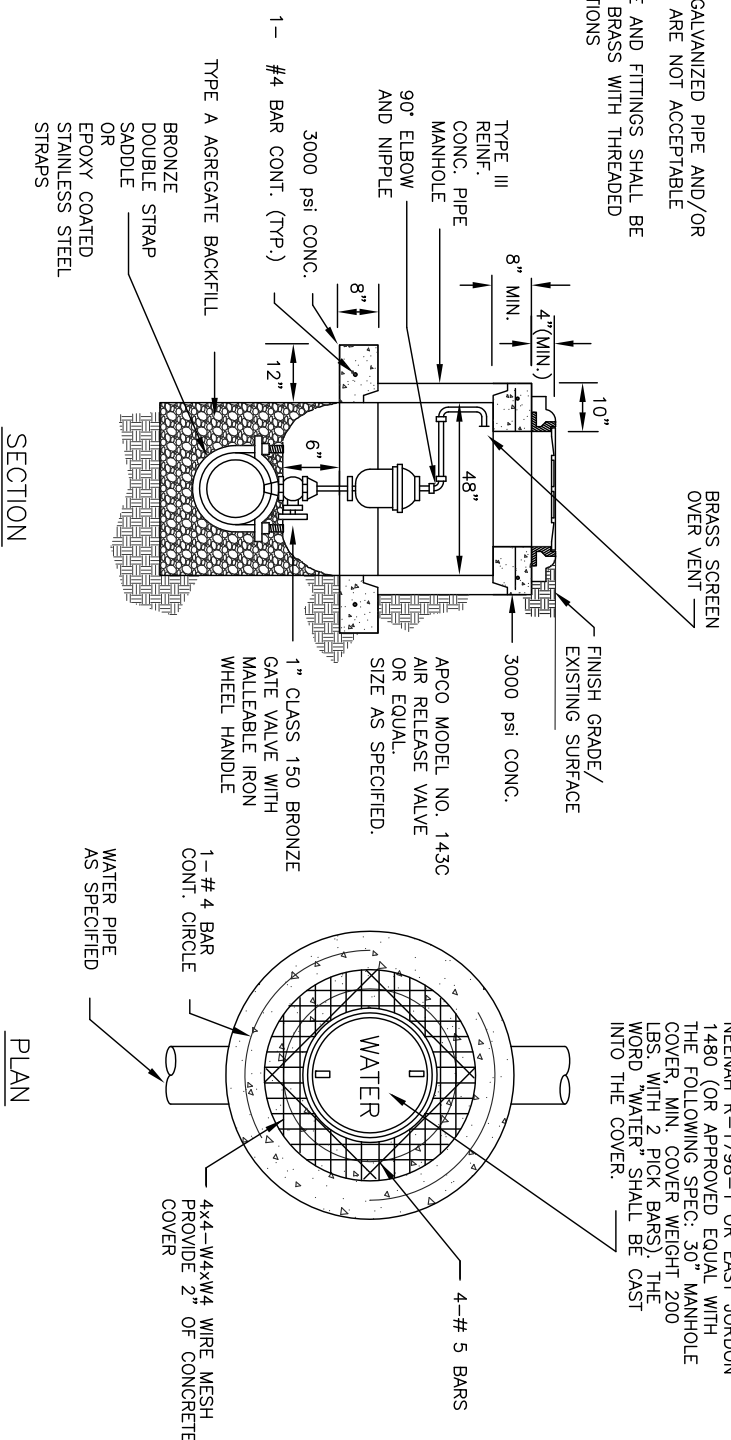


CITY OF BARTLESVILLE  
 ENGINEERING SERVICES

WATER DETAILS

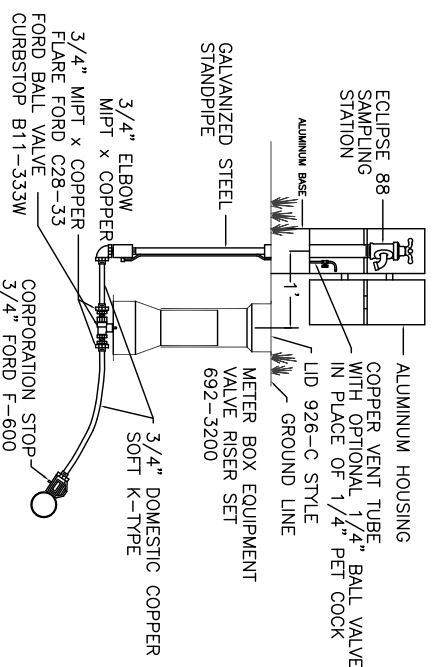
APPROVED BY CITY ENGINEER  
 REVISED - JAN. 2014

NOTE: GALVANIZED PIPE AND/OR FITTINGS ARE NOT ACCEPTABLE  
ALL PIPE AND FITTINGS SHALL BE SCH 40 BRASS WITH THREADED CONNECTIONS



NOTES:  
1. A PRECAST TOP SECTION WILL BE ACCEPTABLE.  
IF IT MEETS THE SPECS. SHOWN ON THE DETAIL.  
2. THE STRUCTURAL COMPONENTS ARE NOT DESIGNED FOR STREET (H-20) LOADINGS.

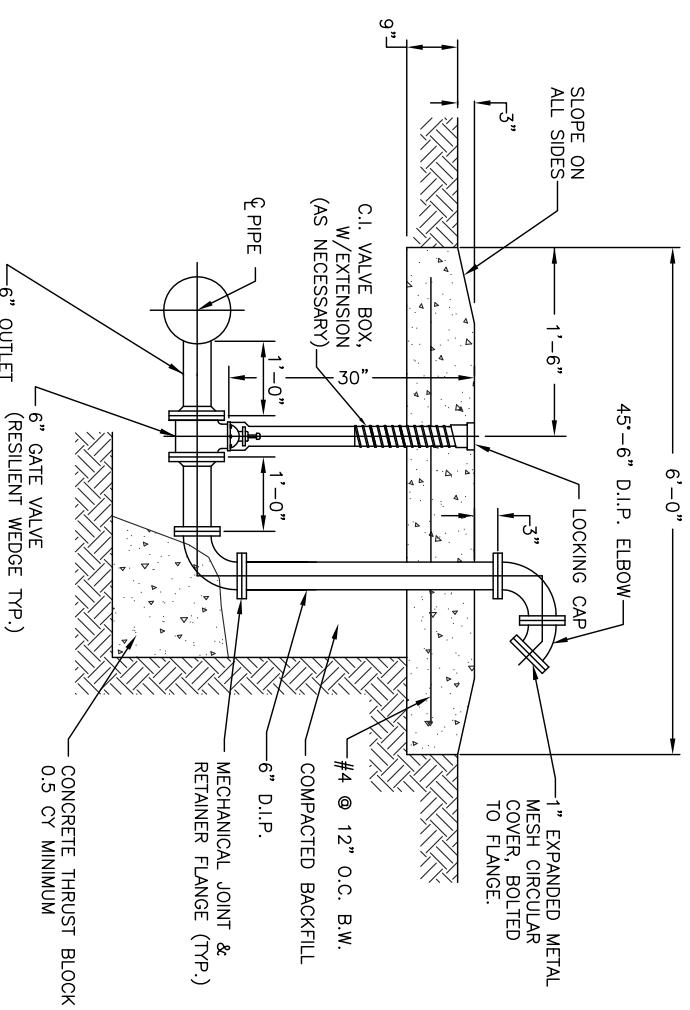
**AIR RELEASE VALVE & MANHOLE VAULT DETAIL**  
NO SCALE



NOTES:  
SAMPLING STATIONS SHALL BE 3' BURY WITH A 3/4" FIP INLET AND A 3/4" HOSE OR UNTHREADED NOZZLE.  
SAMPLING STATIONS SHALL BE PROVIDED AT MAXIMUM 500' INTERVALS.  
ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, NONREMOVABLE, ALUMINUM HOUSING.  
WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION AND THE WATER WILL FLOW IN AN ALL BRASS WATERWAY.  
ALL WORKING PARTS WILL ALSO BE OF BRASS AND BE REMOVABLE FROM ABOVE GROUND WITH NO DIGGING. EXTERIOR PIPING SHALL BE GALVANIZED STEEL (BRASS PIPE IS ALSO ACCEPTABLE).  
A COPPER VENT TUBE WILL ENABLE EACH STATION TO BE PUMPED FREE OF STANDING WATER TO PREVENT FREEZING AND TO MINIMIZE BACTERIAL GROWTH.  
ECLIPSE NO. 88 SAMPLING STATION AS MANUFACTURED BY KUPERLE FOUNDRY, ST. LOUIS, MO IS PRE-APPROVED FOR THIS SAMPLING STATION. ALL OTHER PRODUCTS MUST BE APPROVED BY THE CITY PRIOR TO USE.

**BLOW OFF/TEST SAMPLE DETAIL**  
NO SCALE

GENERAL NOTES:  
1) WATER LINE PIPE SHALL BE C-900 DR-18 PVC PIPE. HDPE WATER LINE SHALL BE DR 11 DIPS.  
2) ALL FITTINGS SHALL BE RESTRAINED WITH MEGA-LUGS.  
3) ALL WATER LINES AND SERVICE CONDUITS SHALL HAVE A #12 TRACER WIRE AND MAGNETIC LOCATE TAP.  
4) FOR EXISTING MAIN CONNECTIONS, UTILIZE A SMITH-BLAIR MODEL 662 TAPPING SLEEVE. PRESSURIZE SADDLE AND ONCE SADDLE HAS DEMONSTRATED APPROPRIATE SEAL, CITY WILL MAKE THE TAP. COORDINATE TAP 48 HOURS IN ADVANCE WITH TERRY LAURITSEN, DIRECTOR OF ENGINEERING AND WATER UTILITIES AT 338-4116.



NOTES:  
1. ALL EXPOSED METAL TO RECEIVE 2 COATS OF ALUMINUM INDUSTRIAL GRADE PAINT.  
2. CONCRETE PAD SHALL BE 2'-8" x 6'-0" x 1'-0"

**BLOW OFF VALVE ASSEMBLY DETAIL**  
NO SCALE



CITY OF BARTLESVILLE  
ENGINEERING SERVICES

APPROVED BY CITY ENGINEER  
REVISED - JAN 2014

WATER DETAILS