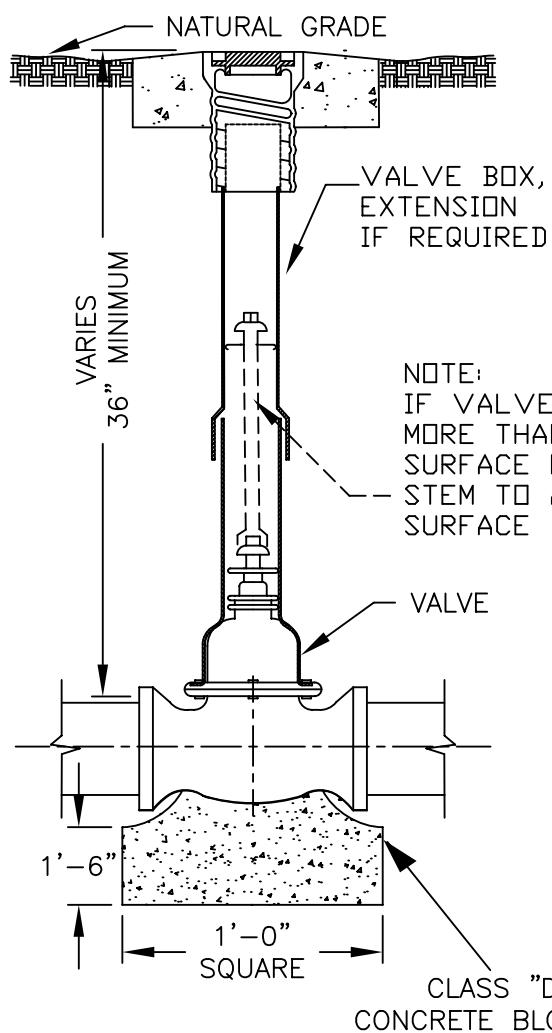


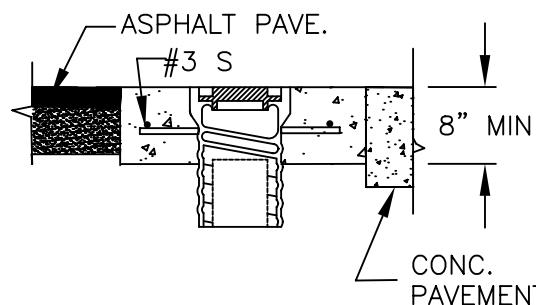
VALVE BOX* AND COVER. 14" VALVE AND SMALLER. TYLER 6855 SERIES, W/DROP LID MARKED "WATER". OR APPROVED EQUAL. DOMESTIC ONLY.

*USE EXTENSION WHERE NECESSARY

VALVES NOT SUBJECT TO TRAFFIC



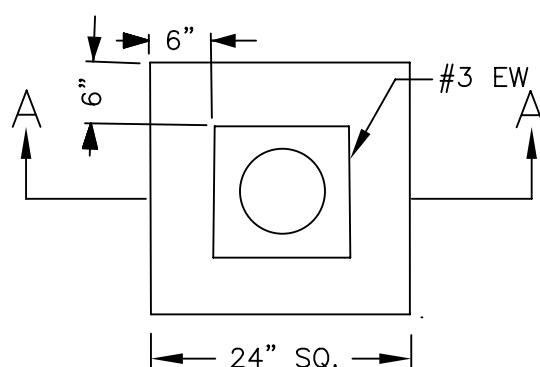
VALVES WITHIN ROADWAYS OR OTHER PAVED OR SURFACED AREAS



SECTION A-A

ELEVATION

PLAN



STEEL REQUIRED
IN CONCRETE BLOCKOUT
IN NON-TRAFFIC AREA

OCT. 2006

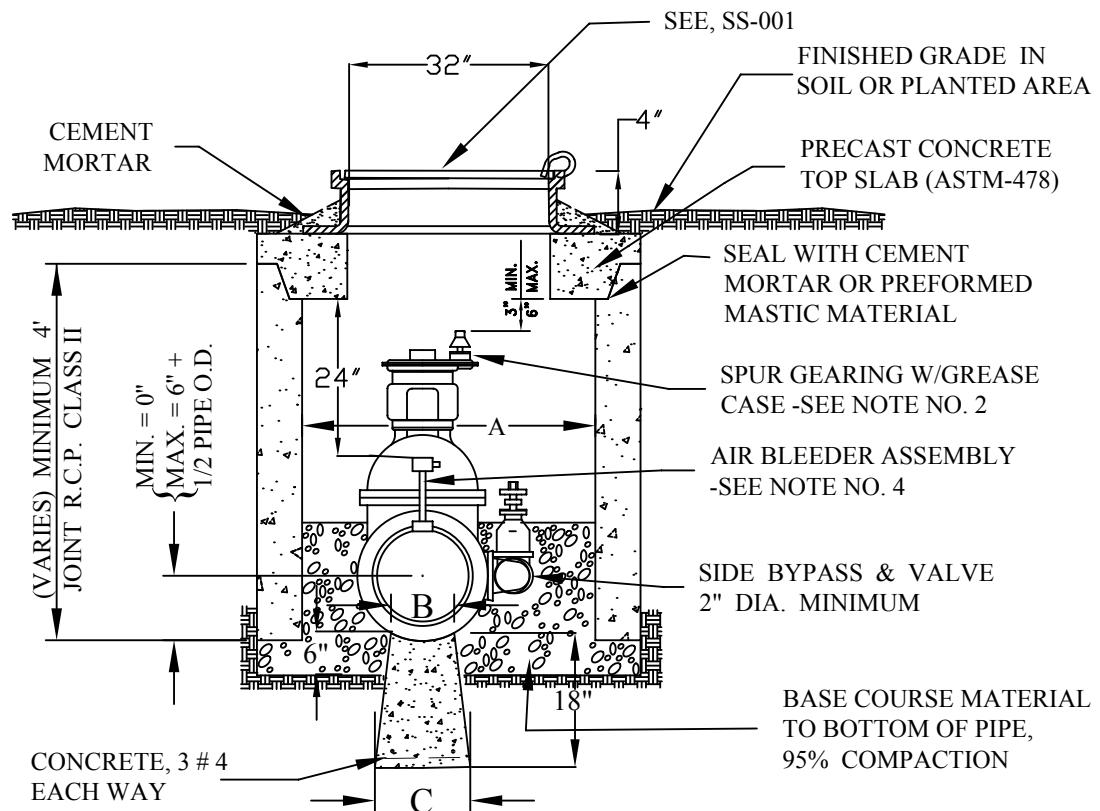


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GATE VALVE
AND BOX
WM-001

GATE VALVE & BOX
INSTALLATION
16-INCH AND LARGER

SEE DRAWING WM-003
FOR SQUARE BOX
ALTERNATE PLAN



PIPE SIZE	"A"	"B"	"C"
16"	52"	10" SQ.	16" SQ.
18"	54"	12" SQ.	18" SQ.
20"	56"	14" SQ.	20" SQ.
24"	60"	16" SQ.	24"SQ.

NOTES:

1. PLACE 1/2" EXPANSION JOINT MATERIAL AROUND WATER PIPE WHERE IT PASSES THROUGH CONCRETE VAULT.
2. VALVES 16" AND LARGER SHALL HAVE SPUR GEARING WITH GREASE CASE.
3. NOTE: LARGER DIAMETER R.C.P. MAY BE REQUIRED DEPENDENT UPON MANUFACTURER'S STANDARD SIZE FOR GATE VALVE.
4. PROVIDE CORPORATION WITH COPPER RISER AND CURB STOP AT A MAXIMUM OF 12" FROM EACH END OF GATE VALVE AS SHOWN. CORPORATION AND CURB STOP SIZES SHALL BE 1". EXTEND RISER TO WITHIN 24" OF TOP OF MANHOLE.
5. VALVES, BYPASS, CORPORATION STOP AND PIPING SHALL BE DESIGNED TO OPERATE AT THE MAXIMUM PRESSURES AS DESCRIBED IN THE SPECIFICATIONS.

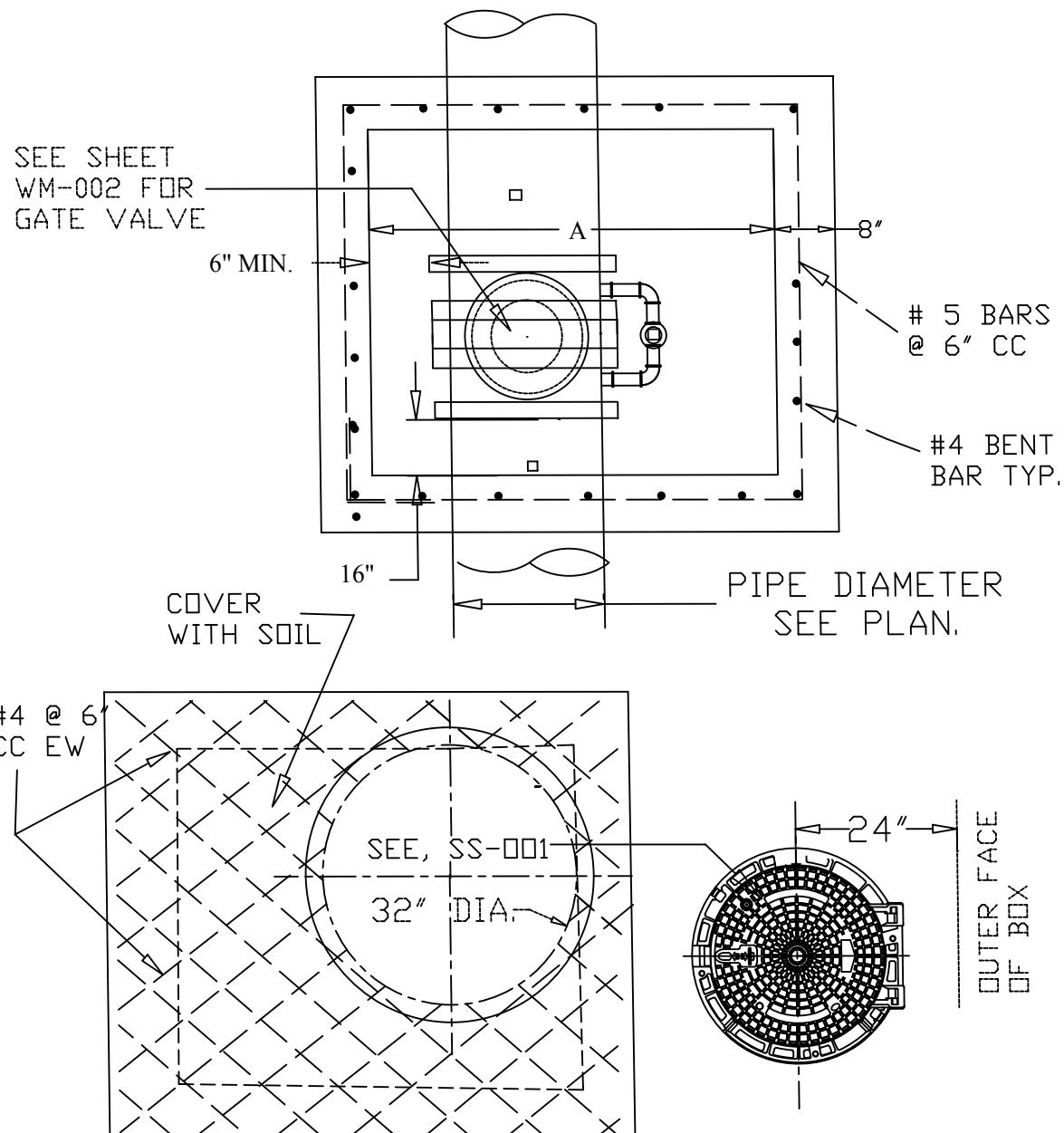
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VALVE & BOX
16" & GREATER
WM-002

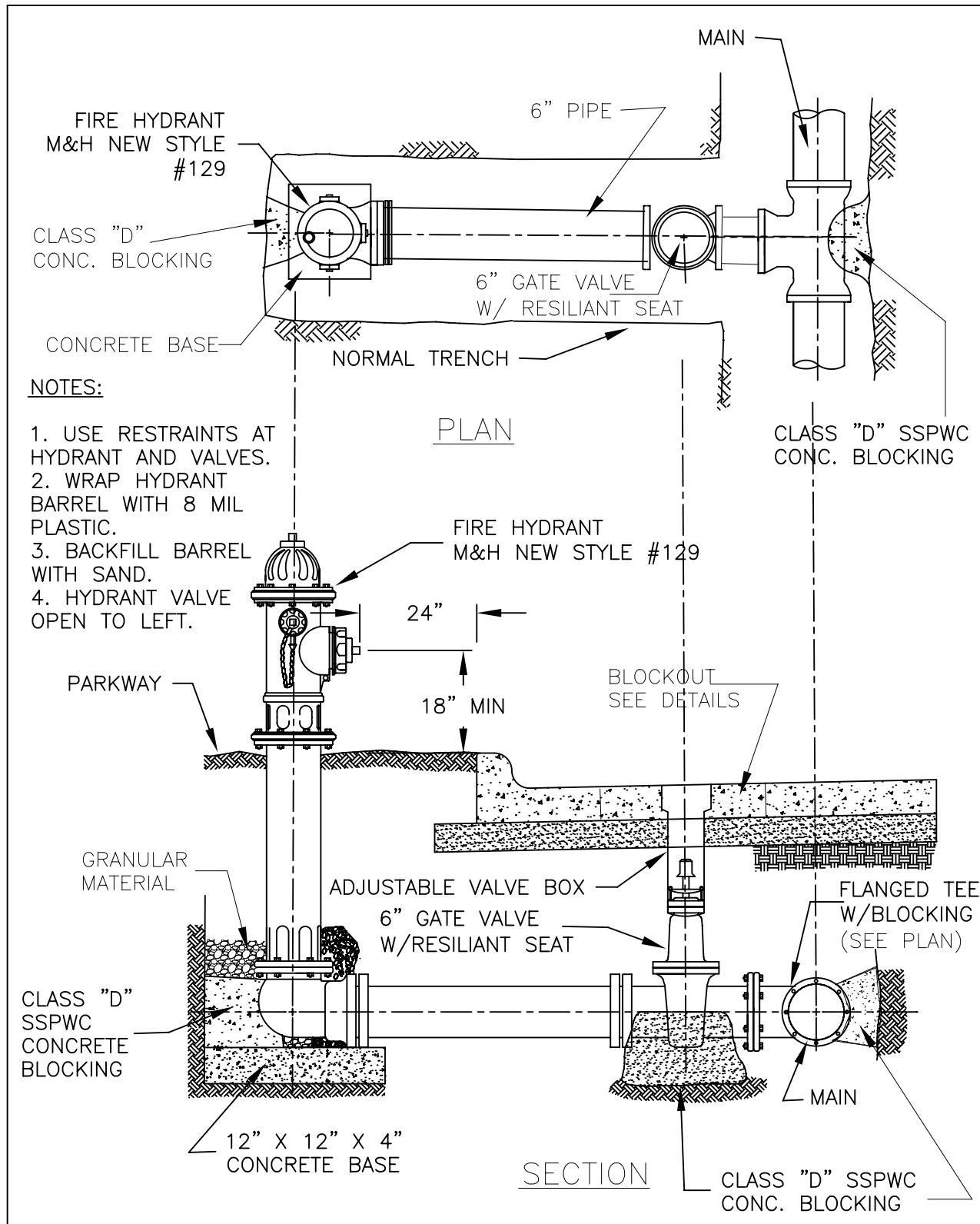
SQUARE BOX FOR GATE
VALVE 16-INCH AND LARGER



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HALTOM CITY, TEXAS 76117

VALVE &
SQUARE BOX
16" & GREATER
WM-003



OCT. 2006

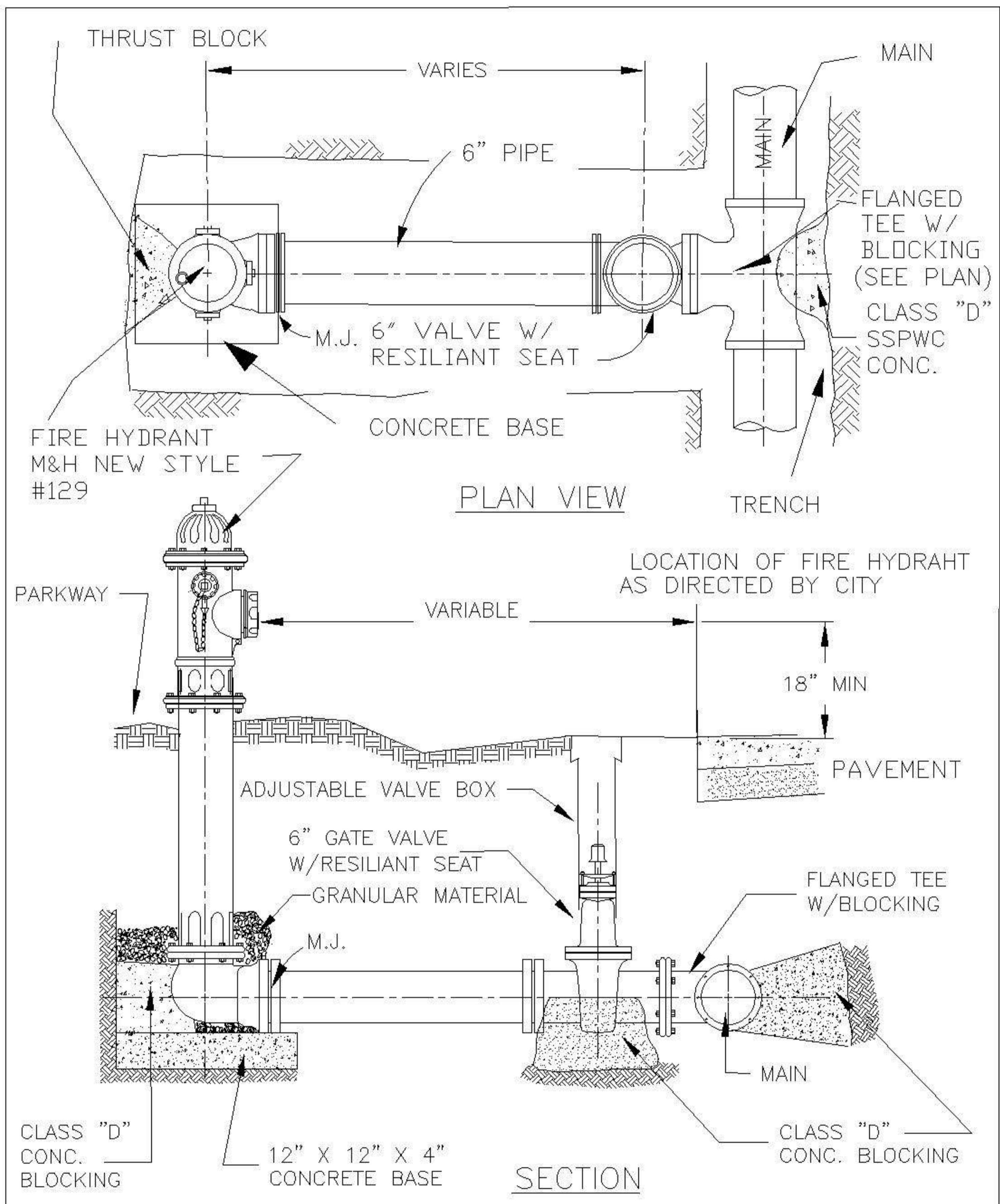


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FIRE
HYDRANT
WM-004



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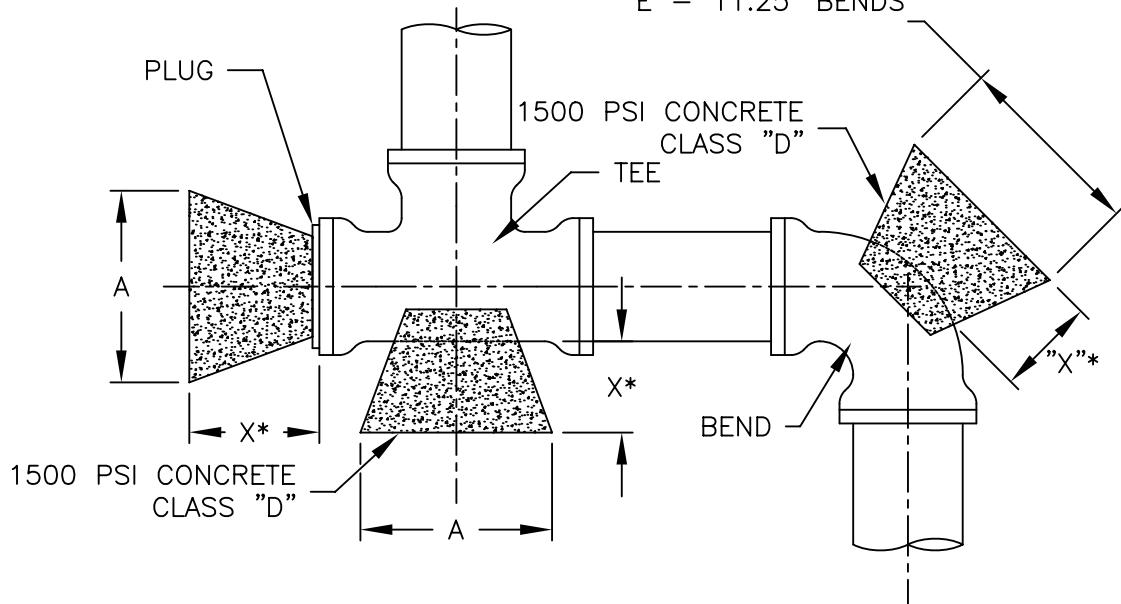


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FIRE HYDRANT
OFF PAVEMENT
WM-005

NOTE: USE RETAINING
GLANDS AT BENDS

B - 90° BENDS
C - 45° BENDS
D - 22.5° BENDS
E - 11.25° BENDS



HORIZONTAL BLOCKING TABLE

* DIMENSION "X" TO BE A MINIMUM OF (1) FOOT, BUT IS TO BE INCREASED
WHERE NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED TRENCH.

PIPE SIZE	"X" DIM	PLUGS/TEES			90° BENDS			45° BENDS			22.5° BENDS			11.25° BENDS		
		"A"	AREA	VOL.	"B"	AREA	VOL.	"C"	AREA	VOL.	"D"	AREA	VOL.	"E"	AREA	VOL.
4"	1'-6"	1'-0"	0.83	0.05	1'-0"	0.83	0.05	1'-0"	0.83	0.05	1'-0"	0.83	0.05	1'-0"	0.83	0.05
6"	1'-6"	1'-0"	1.06	0.06	1'-2"	1.50	0.09	1'-0"	0.83	0.05	1'-0"	0.83	0.05	1'-0"	0.83	0.05
8"	1'-6"	1'-3"	1.89	0.11	1'-6"	2.66	0.15	1'-3"	1.44	0.08	1'-0"	0.83	0.05	1'-0"	0.83	0.05
10"	1'-6"	1'-9"	2.95	0.17	2'-0"	4.17	0.24	1'-6"	2.26	0.13	1'-3"	1.15	0.07	1'-0"	0.83	0.05
12"	1'-6"	2'-0"	4.25	0.24	2'-3"	6.00	0.34	1'-9"	3.25	0.18	1'-3"	1.65	0.10	1'-0"	0.83	0.05
16"	2'-0"	2'-7"	7.54	0.56	3'-0"	10.65	0.79	2'-3"	5.76	0.43	1'-8"	2.94	0.22	1'-2"	1.48	0.11
18"	2'-0"	2'-11"	7.70	0.57	3'-5"	10.89	0.82	2'-6"	5.89	0.44	1'-10"	3.01	0.22	1'-5"	1.51	0.11
20"	2'-0"	3'-8"	7.86	0.59	3'-9"	11.12	0.84	2'-9"	6.01	0.45	2'-0"	3.07	0.23	1'-7"	1.54	0.12
24"	2'-0"	3'-8"	11.33	0.84	4'-3"	16.00	1.20	3'-2"	8.65	0.65	2'-6"	4.42	0.33	1'-10"	2.22	0.17

NOTE: CALCULATIONS IN AREA COLUMN ARE MINIMUM Sq. Ft., CALCULATIONS IN
VOLUME COLUMN ARE MAXIMUM Cu. Yd.

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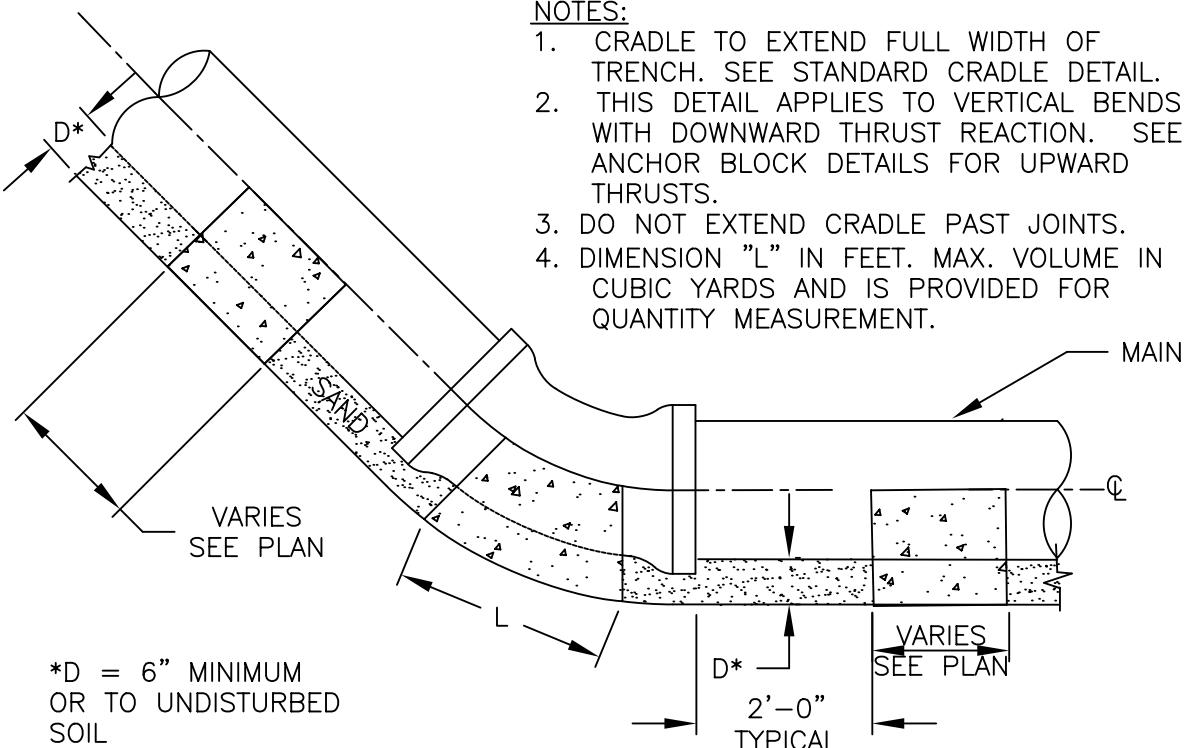
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HORIZ.
BLOCKING
WM-006

CONCRETE CRADLE AT VERTICAL BENDS

NOTES:

1. CRADLE TO EXTEND FULL WIDTH OF TRENCH. SEE STANDARD CRADLE DETAIL.
2. THIS DETAIL APPLIES TO VERTICAL BENDS WITH DOWNWARD THRUST REACTION. SEE ANCHOR BLOCK DETAILS FOR UPWARD THRUSTS.
3. DO NOT EXTEND CRADLE PAST JOINTS.
4. DIMENSION "L" IN FEET. MAX. VOLUME IN CUBIC YARDS AND IS PROVIDED FOR QUANTITY MEASUREMENT.



*D = 6" MINIMUM
OR TO UNDISTURBED
SOIL

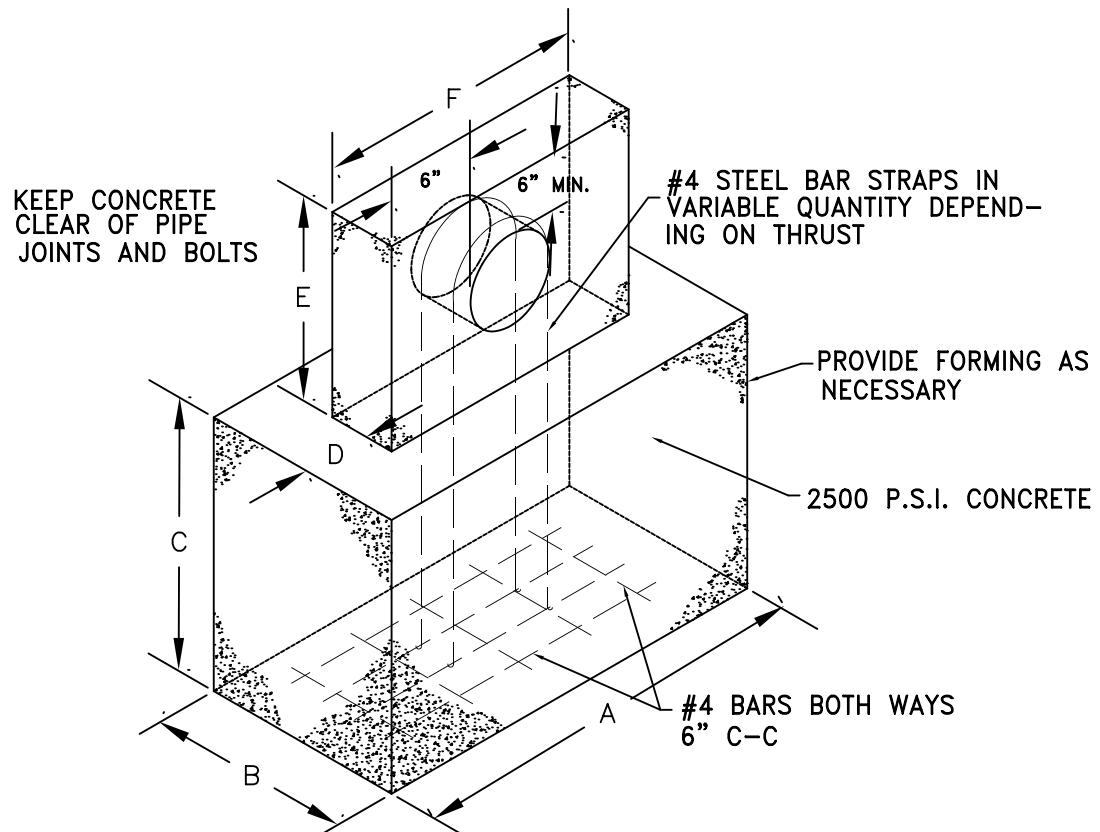
PIPE CLASS	PIPE SIZE	11°-15°		22°-30°		45°		90°	
		"L"	MAX VOL	"L"	MAX VOL	"L"	MAX VOL	"L"	MAX VOL
150	6"	0.42	0.02	0.45	0.02	0.50	0.02	1.00	0.04
150	8"	0.42	0.02	0.45	0.02	0.80	0.04	1.40	0.06
150	10"	0.42	0.03	0.58	0.03	1.15	0.06	2.03	0.11
150	12"	0.42	0.04	0.73	0.05	1.43	0.09	2.53	0.17
150	16"	0.42	0.08	0.74	0.14	1.48	0.27	2.61	0.48
150	18"	0.66	0.14	1.30	0.28	SEE PLAN SHEETS FOR BLOCKING REQUIREMENTS			
150	20"	0.77	0.18	1.53	0.36				
200	18"	0.88	0.18	1.74	0.37				
200	20"	1.03	0.24	2.04	0.48				
250	18"	1.05	0.22	2.03	0.43				
250	20"	1.20	0.28	2.38	0.56				

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VERTICLE
BLOCKING
WM-007



NOTE:

DIMENSIONS WILL BE SPECIFIED
IN DETAIL ON THE PLANS, AS
DIRECTED BY THE ENGINEER

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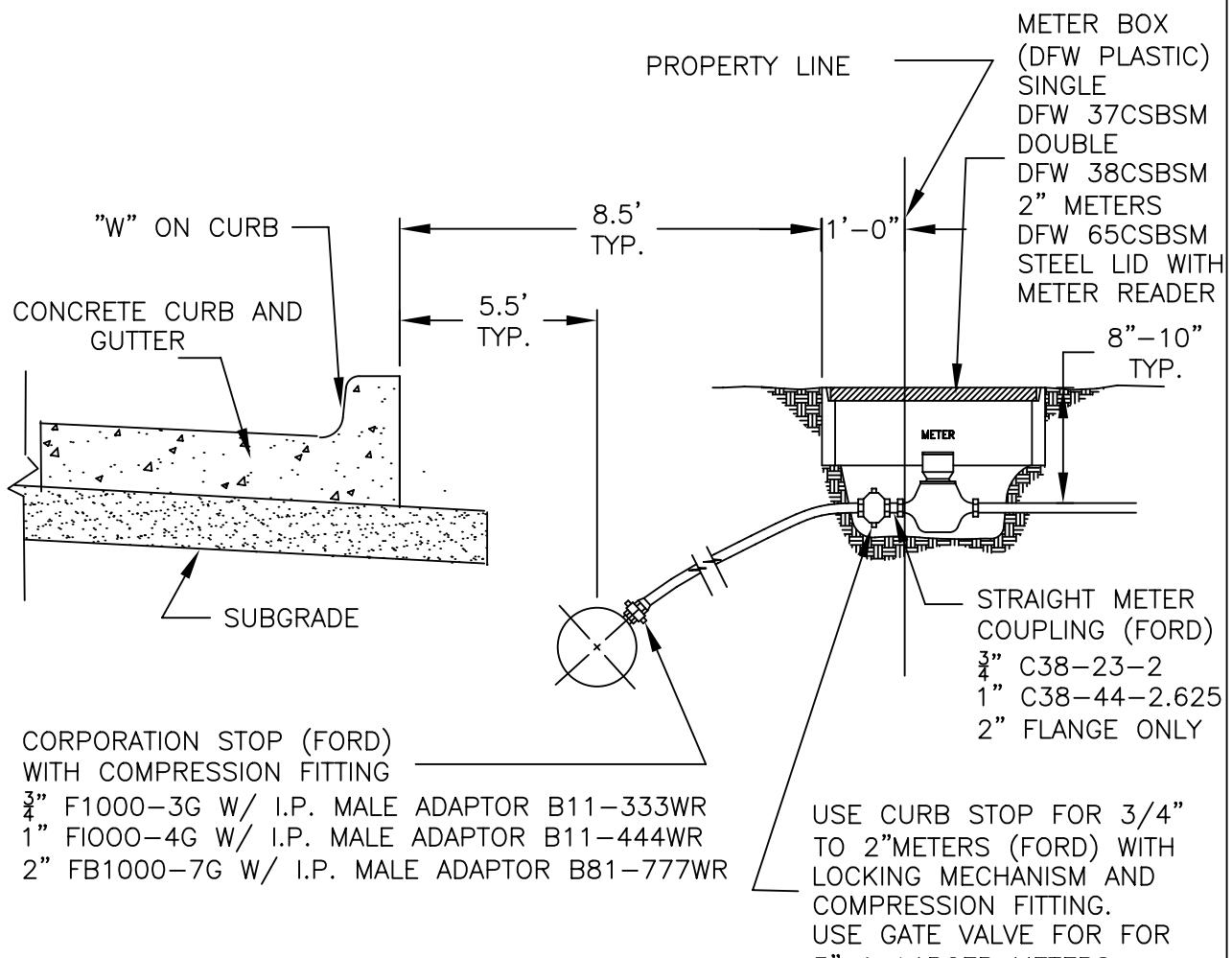
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HALTOM CITY, TEXAS 76117

CONC. STEP
ANCHOR
WM-008

NOTE:

1. METER BOXES ON PROPERTY LINE, CLOSE TO SIDEWALK, BUT NOT IN SIDEWALK. NOT TO BE SET IN DRIVE APPROACH.
2. SINGLE FAMILY SERVICES PIPING SHALL BE 3/4" MINIMUM DIAMETER.
3. TWO FAMILY SERVICES PIPING SHALL BE 1" MINIMUM DIAMETER GOING INTO ONE METER BOX.
4. SERVICE LINE PIPE SHALL BE TYPE "K", CLASS 1 ANNEALED COPPER WATER TUBING CONFORMING TO ASTM DESIGNATION B 88.
5. SERVICE TAPS LOCATIONS SHALL BE MARKED WITH A "W" ENGRADED (GROUND) INTO THE CURB.

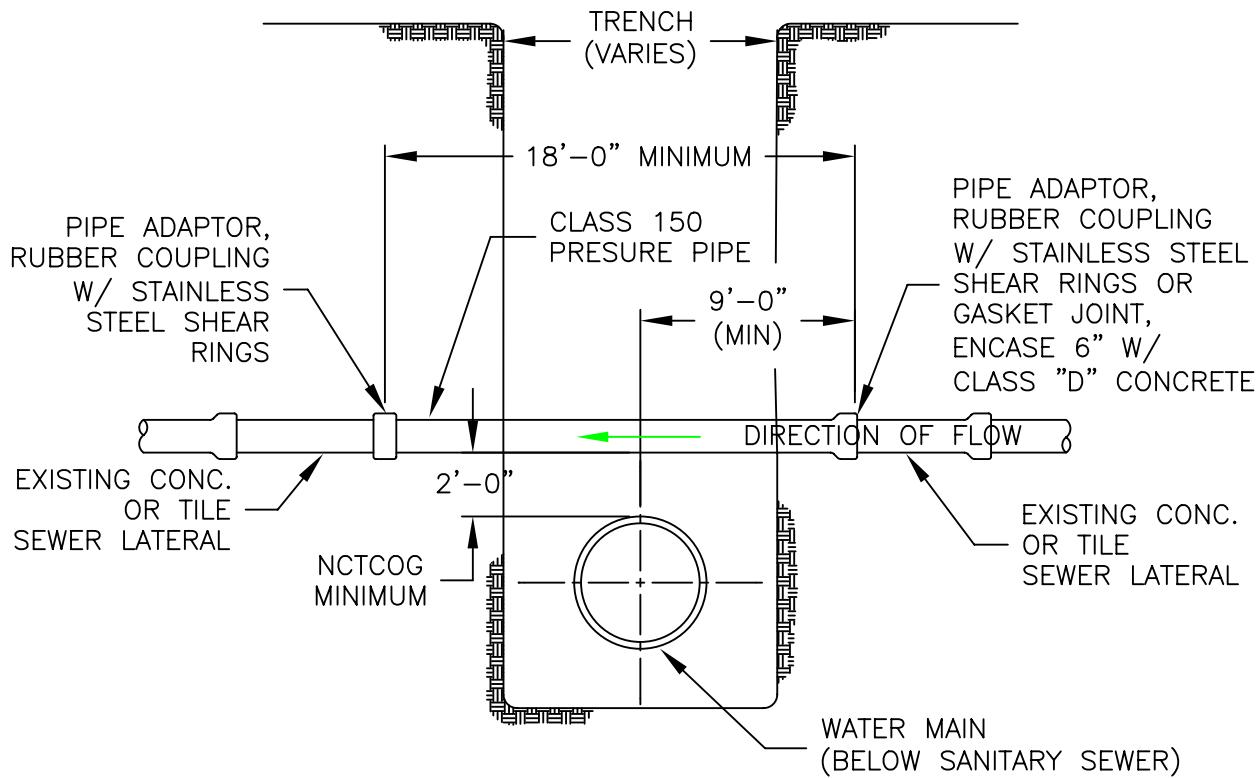


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WATER
SERVICE
CONNECTION
WM-009



CROSSING SECTION

NOTE:

1. NO JOINTS WILL BE ALLOWED IN THE 18' OF PRESSURE PIPE. CONTRACTOR SHALL FURNISH CLASS 150 PRESSURE PIPE OF SUFFICIENT LENGTH TO ACHIEVE THIS.
2. WATER MAIN CROSSING ABOVE SANITARY SEWER AND AT LESS THAN NCTCOG SEPARATION REQUIREMENTS: CONTRACTOR SHALL EXCAVATE TO SANITARY SEWER AND REPLACE SEWER AS SHOWN ABOVE, OR ENCASE SEWER MAIN IN CONCRETE.

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SAN.SEWER
OVER WATER
MAIN
WM-010

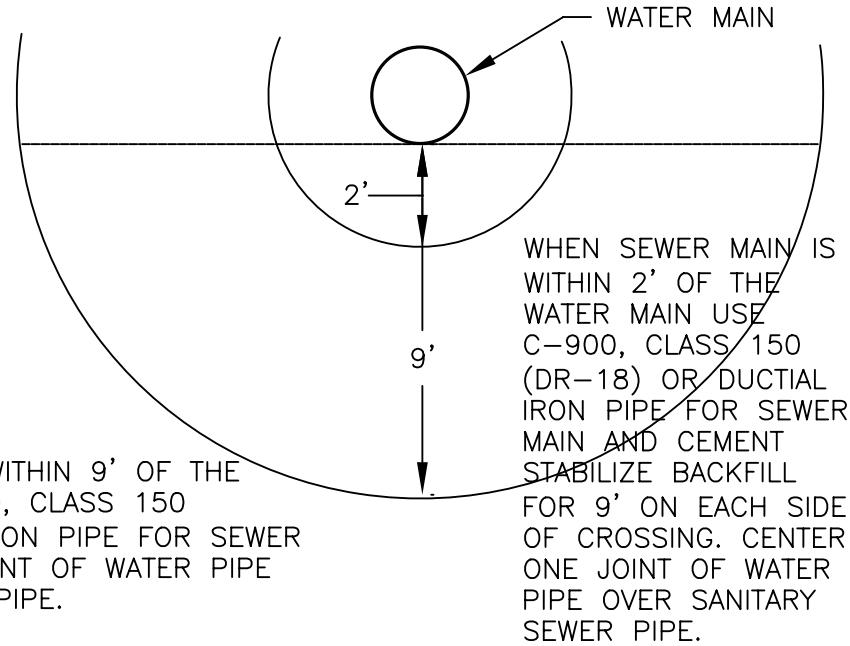
LOCATE SANITARY
SEWER MAIN BELOW
WATER MAIN.

MAINTAIN ABSOLUTE 6"
CLEARANCE BETWEEN WATER MAIN
AND SANITARY SEWER MAIN.

USE STANDARD
PIPE MATERIAL IF
THE WATER MAIN
AND SEWER MAIN
SEPARATION
DISTANCE IS
GREATER THAN 10'.

REQUIREMENTS IF
SEPERATION IS
LESS THAN 10'

WHEN SEWER MAIN IS WITHIN 9' OF THE
WATER LINE USE C-900, CLASS 150
(DR-18) OR DUCTILE IRON PIPE FOR SEWER
MAIN. CENTER ONE JOINT OF WATER PIPE
OVER SANITARY SEWER PIPE.



NOTES:

1. THE SANITARY SEWER LINE SHALL BE LOCATED BELOW THE WATER LINE.
2. ONE WATER MAIN PIPE SEGMENT SHALL BE CENTERED OVER THE SANITARY SEWER PIPE SUCH THAT THE JOINTS OF THE WATER PIPE ARE EQUIDISTANT AND AT LEAST 9' HORIZONTALLY FROM THE CENTERLINE OF THE SANITARY SEWER PIPE.
3. WHERE CEMENT STABILIZED SAND BEDDING IS REQUIRED, THE CEMENT STABILIZED SAND SHALL HAVE A MINIMUM OF 10% CEMENT PER CUBIC YARD OF CEMENT STABILIZED SAND MIXTURE BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 2.5 BAGS OF CEMENT PER CUBIC YARD OF MIXTURE). THE CEMENT STABILIZED SAND BEDDING SHALL BE A MINIMUM OF SIX INCHES ABOVE AND FOUR INCHES BELOW THE SANITARY SEWER PIPE.
4. MAINTAIN 9' SEPARATION BETWEEN FIRE HYDRANTS AND SANITARY SEWER LINES.
5. MAINTAIN 10' SEPARATION BETWEEN SANITARY SEWER MANHOLES AND WATER LINES.

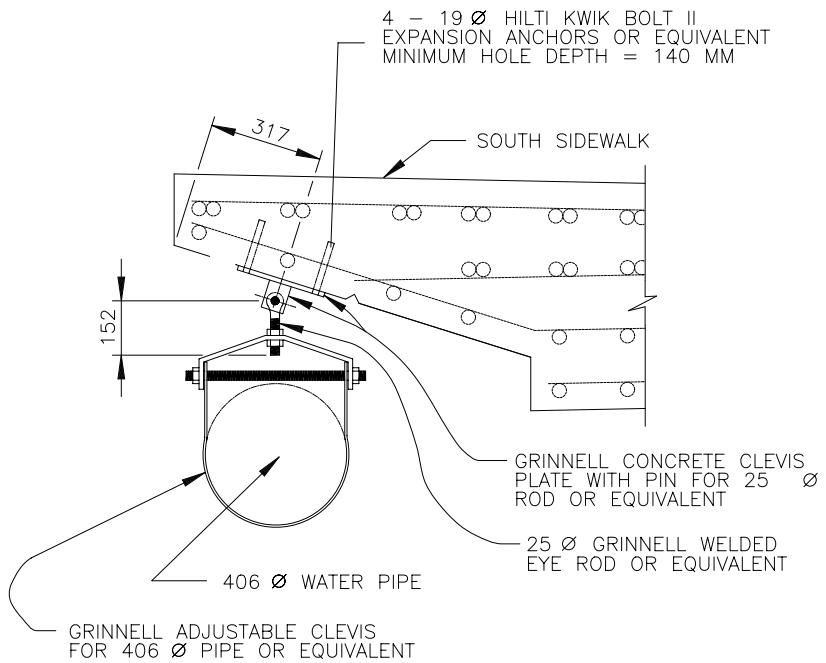
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SEP. WATER
MAIN AND SAN.
SEWER MAIN
WM-011

PIPE HANGER DETAIL



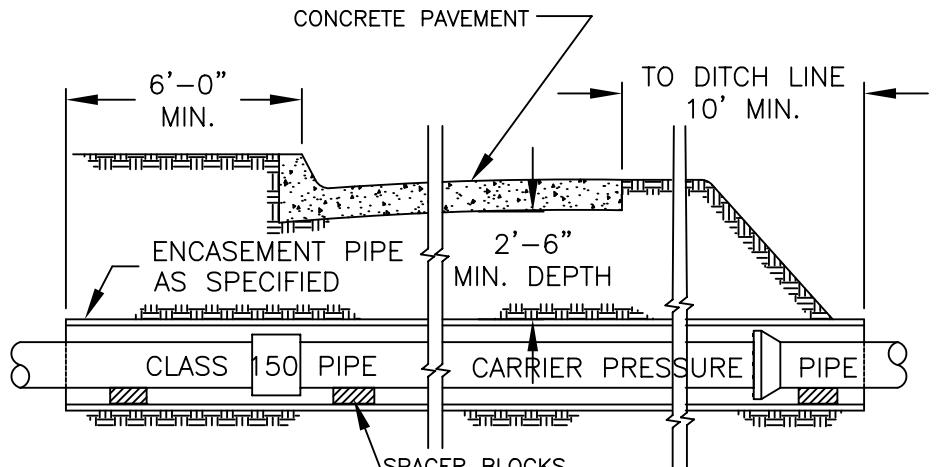
1 METER = 39.372 INCHES

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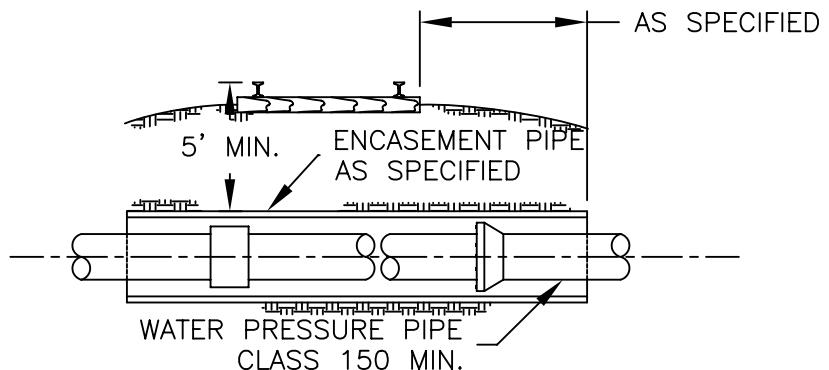


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BRIDGE
PIPE
HANGER
WM-012



ENCASEMENT PIPE TO BE CAPPED AT BOTH ENDS WITH CONCRETE AND/OR IN ACCORDANCE WITH R.O.W. OWNER'S STANDARDS.



MINIMUM ENCASEMENT	
WATER PIPE SIZE	ENCASEMENT PIPE ID
8" C.I.	15" STEEL PIPE
10" C.I.	18" STEEL PIPE
12" C.I.	21" STEEL PIPE
14" CONC.	24" STEEL PIPE
16" CONC.	27" STEEL PIPE
18" CONC.	30" STEEL PIPE
20" CONC.	33" STEEL PIPE
24" CONC.	36" STEEL PIPE

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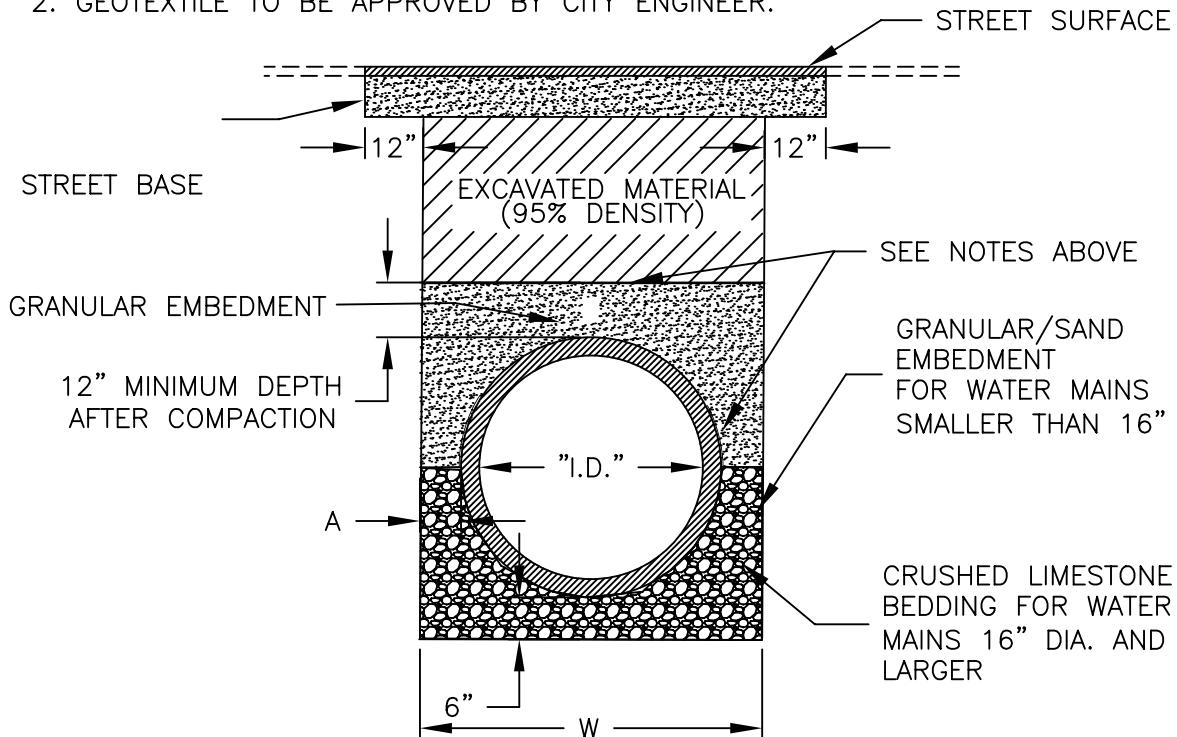


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BORED
CROSSING
WM-013

NOTE:

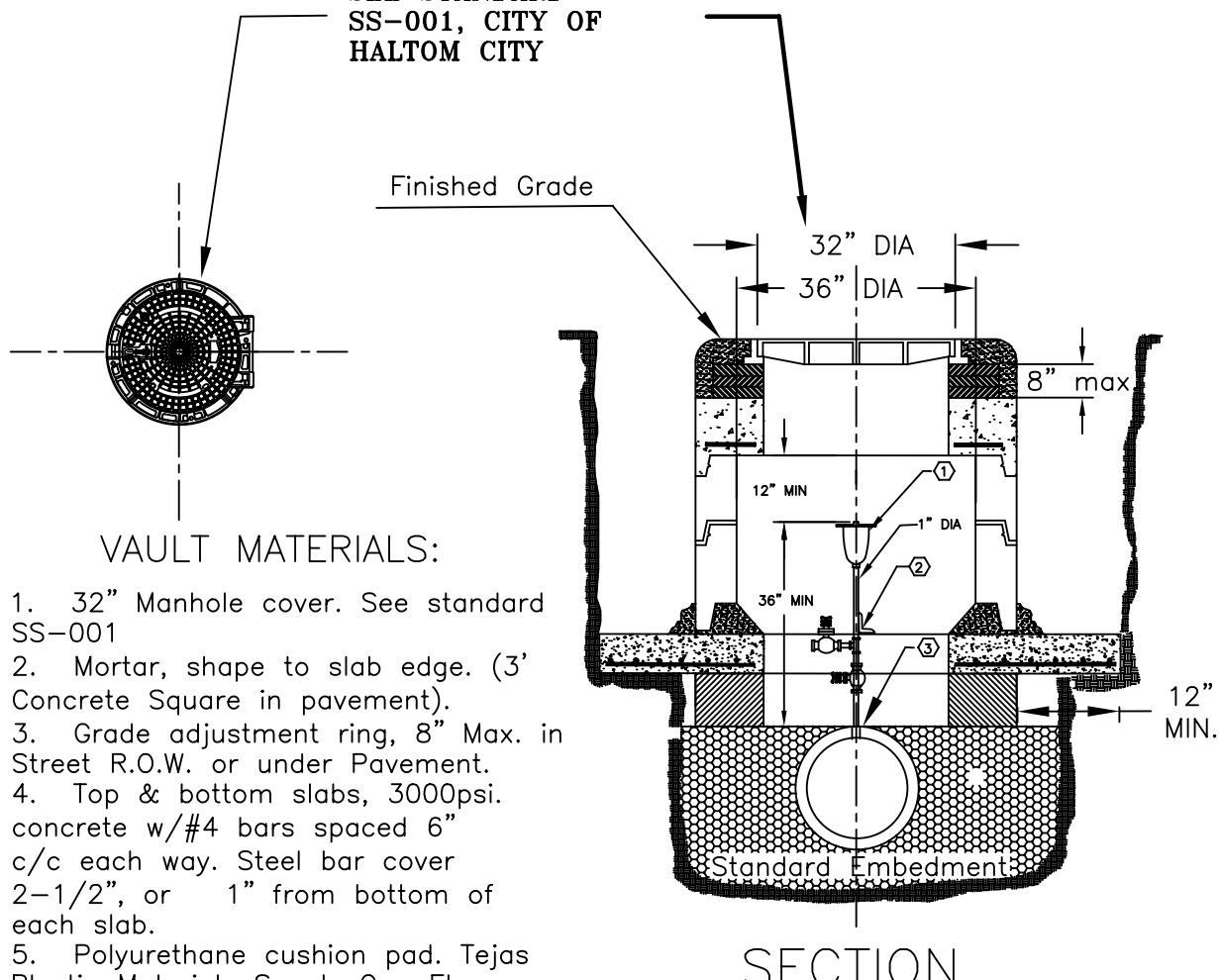
1. GEOTEXTILE TO BE PLACED BETWEEN CRUSHED LIMESTONE BEDDING MATERIAL AND GRANULAR EMBEDMENT. BETWEEN GRANULAR MATERIAL AND EXCAVATED MATERIAL.
2. GEOTEXTILE TO BE APPROVED BY CITY ENGINEER.



PIPE SIZE "I.D."	DITCH WIDTH "W" C.I. PIPE	DITCH WIDTH "W" PRETENSIONED	DITCH WIDTH "W" PRESTRESSED	DITCH WALL CLEARANCE "A"
2-1/2"	2'-0"	—	—	
4"	2'-0"	—	—	9.6"
6"	2'-0"	—	—	8.6"
8"	2'-0"	—	—	7.5"
10"	2'-0"	—	—	6.5"
12"	2'-2"	—	—	6"
16"	2'-6"	2'-7"	—	6"
20"	2'-10"	3'-0"	—	6"
24"	3'-2"	3'-4"	—	6"
30"	—	—	4'-6"	9"
36"	—	—	5'-0"	9"
42"	—	—	5'-7"	9"
48"	—	—	6'-2"	9"

FEB. 2004	 <p>CITY OF HALTOM CITY 5024 BROADWAY AVENUE, P.O. BOX 14246 HALTOM CITY, TEXAS 76117</p>	BACKFILL DITCH WIDTH WM-014
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SEE STANDARD
SS-001, CITY OF
HALTOM CITY



Bracket Materials for 1" Air Release Valve

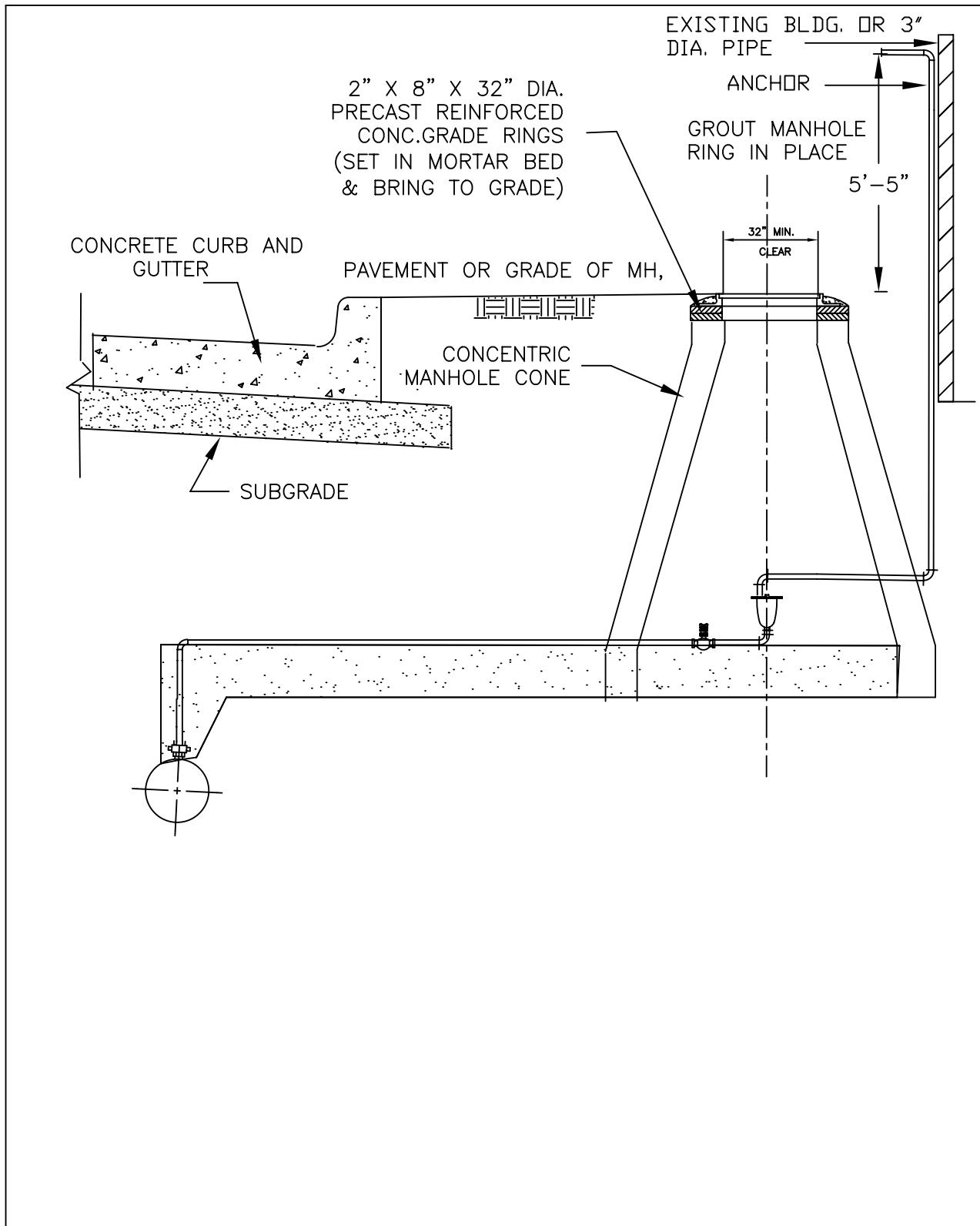
1. 1" air release valve, 2 ea. gate valves, and 1 ea. tee.
2. Angle 1-1/4" x 1-1/4" x 1/4" x 46" with 1 ea. 3/8" DIA U-clamp. Each end of angle to be bolted to floor slab with 1/4" lag bolts. Angle to be treated with 2 coats of red lead primer prior to installation.
3. Water main with threaded insulator tap or tapping saddle.

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1" AIR
RELEASE
VALVE
WM-015



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OFFSET 1" AIR RELIEF VALVE
WM-016