

1. 24 HOUR NOTICE IS REQUIRED PRIOR TO STARTING CONSTRUCTION.
2. A MINIMUM SEPARATION OF 24" OR A CASING PIPE IS REQUIRED AT ANY LOCATION WHERE A WATER LINE CROSSES A SANITARY OR STORM SEWER LINE.
3. WATER/SEWER LINE TRENCHES IN EXISTING DRIVEWAYS OR STREETS SHALL BE BACKFILLED WITH #9 CRUSHED STONE TO THE TOP OF THE TRENCH.
4. 2" PVC ENCASMENT PIPE FOR WATER SERVICES CROSSING THE ROAD MUST BE SCHEDULE 80 OR CLASS 160 GASKET WATER PIPE. 3" PVC ENCASMENT PIPE IS REQUIRED FOR LENGTHS GREATER THAN 50'. DETECTABLE MYLAR TAPE IS REQUIRED.
5. WATER LINE TRENCHES OUTSIDE EXISTING DRIVEWAYS OR STREETS SHALL BE BEDDED 6" BELOW AND 1' ABOVE THE PIPE WITH GOOD EARTH FREE OF ROCK. THE REMAINDER OF THE TRENCH SHALL BE GOOD EARTH FREE OF ROCK NO LARGER THAN 1 SQUARE FOOT.
6. ALL FITTINGS REQUIRING THRUST BLOCKS SHALL BE FORMED WITH PLYWOOD OR PARTICLE BOARD TO ALLOW ACCESS FOR REMOVAL OF BOLTS AND WRAPPED IN HEAVY PLASTIC (4 MILS MIN.) PRIOR TO PLACEMENT OF CONCRETE.
7. THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.
8. WATER LINE PIPE AND FITTINGS MUST BE DUCTILE IRON (CLASS 51).
9. VALVE BOXES SHALL BE TWO PIECE SLIP TYPE (TYLER 6855 SERIES, MODEL NUMBER 562-A OR EQUAL)
10. STEEL ENCASMENT PIPE SHALL BE PLACED AT THE LOCATION SHOWN ON THE PLANS IN ACCORDANCE WITH THE NOTED SIZE, LENGTH, AND TYPE OF MATERIAL. THE ENCASMENT PIPE SHALL HAVE A MINIMUM WALL THICKNESS OF 1/4" FOR NEW CASING PIPE OR 3/8" FOR SALVAGED CASING PIPE. FOR EXISTING PIPE INSTALLATION, APPLICATIONS, SPLIT STEEL CASING PIPE SHALL CONFORM TO THE ABOVE SPECIFICATIONS EXCEPT THAT IT SHALL BE IN TWO (2) SEMICIRCULAR SECTIONS JOINED BY A CONTINUOUS WELD FROM ONE END TO THE OTHER WITHOUT ANY TRACEABLE VOIDS. THE ENCASMENT PIPE MUST BE BITUMINOUS COATED INSIDE AND OUT, AND SEALED ON BOTH ENDS WITH A RUBBER FERNCO END SEAL.
11. DUCTILE IRON RETAINER GLANDS ARE REQUIRED ON ALL MECHANICAL JOINT FITTINGS. (NO EXCEPTIONS)



General Notes (Water)

SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 01

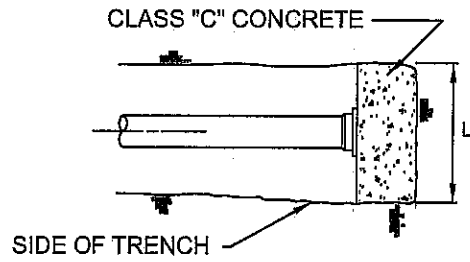
THRUST BLOCK SCHEDULE
MINIMUM REQUIREMENTS FOR ANCHORS

PIPE SIZE	90° BEND			45° BEND			22 ½° BENDS			11 ¼° BENDS			TEES & ENDS		
	D	W	L	D	W	L	D	W	L	D	W	L	D	W	L
2"	6"	10"	4"	4"	7"	3"	4"	7"	3"	4"	7"	3"	6"	10"	4"
3"	6"	10"	8"	4"	8"	6"	4"	8"	3"	4"	8"	3"	6"	10"	6"
4"	6"	11"	9"	6"	11"	7"	4"	9"	5"	4"	9"	3"	6"	11"	8"
6"	8"	1'-3"	1'-1"	6"	1'-1"	12"	4"	11"	8"	4"	11"	4"	8"	1'-3"	10"
8"	10"	1'-9"	1'-7"	8"	1'-5"	15"	6"	1'-3"	10"	4"	1'-1"	6"	10"	1'-9"	1'-9"
10"	10"	1'-11"	2'-5"	8"	1'-8"	1'-10"	6"	1'-5"	1'-1"	6"	1'-5"	7"	10"	1'-11"	2'-6"
12"	12"	2'-3"	2'-7"	10"	2'-0"	2'-3"	10"	1'-11"	1'-2"	6"	1'-7"	9"	12"	2'-3"	3'-0"
14"	1'-2"	2'-7"	3'-2"	1'-1"	2'-5"	2'-7"	12"	2'-3"	1'-5"	6"	1'-9"	12"	1'-2"	2'-7"	3'-6"
16"	1'-3"	2'-10"	3'-8"	1'-3"	2'-9"	3'-0"	1'-2"	2'-7"	1'-7"	8"	2'-1"	1'-11"	1'-5"	3'-0"	4'-0"
18"	1'-9"	3'-6"	3'-9"	1'-6"	3'-2"	3'-3"	1'-5"	3'-0"	1'-9"	10"	2'-5"	1'-2"	1'-9"	3'-5"	4'-6"
20"	1'-10"	3'-9"	4'-5"	1'-9"	3'-7"	3'-6"	1'-6"	3'-3"	2'-0"	10"	2'-7"	1'-4"	1'-10"	3'-8"	5'-0"

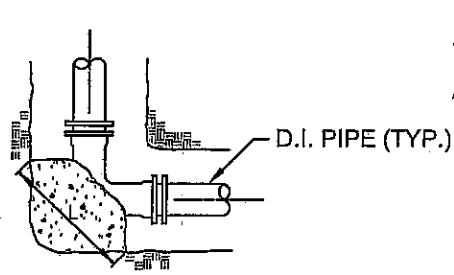


Thrust Block Schedule

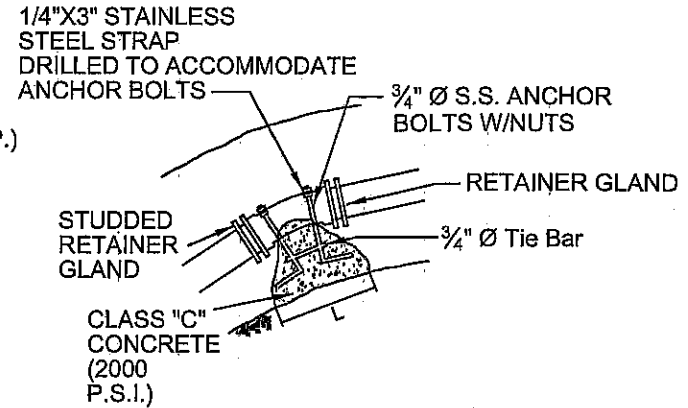
SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 02



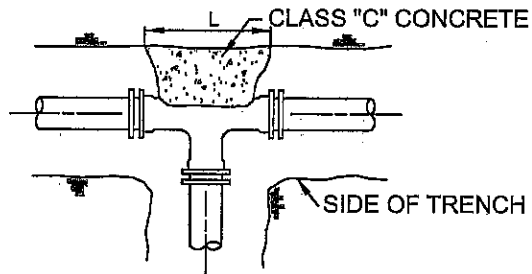
END OF MAIN - PLUG*



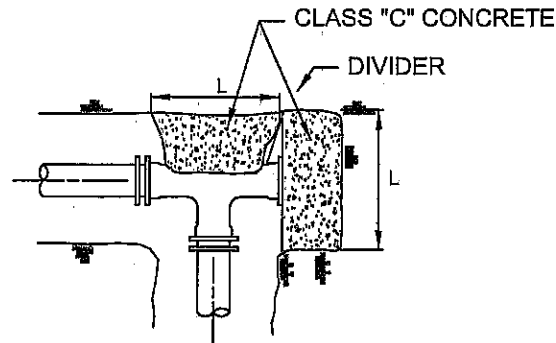
45°, 90° BENDS*



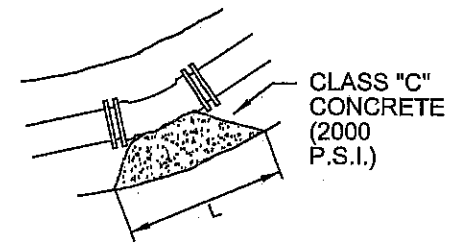
VERTICAL BEND*



TEE*



PLUGGED TEE*



11 1/4°, 22 1/2°, 45° BENDS*

*(SEE NOTE 6 & 7, SDW - 01)



*Winchester
Municipal
Utilities*

Thrust Block Detail

SCALE:

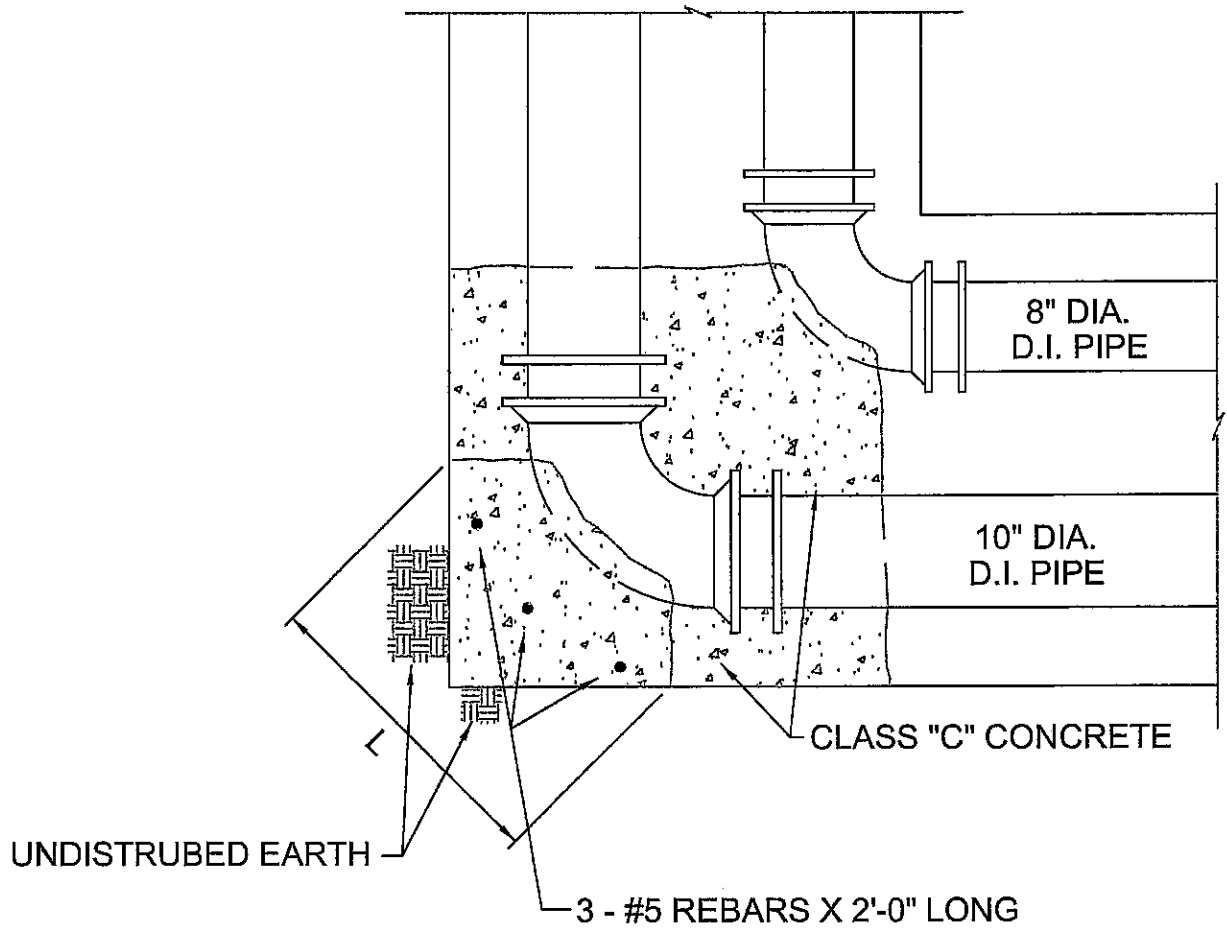
NONE

DATE:

FEB 2003

DWG. NO.:

SDW - 03



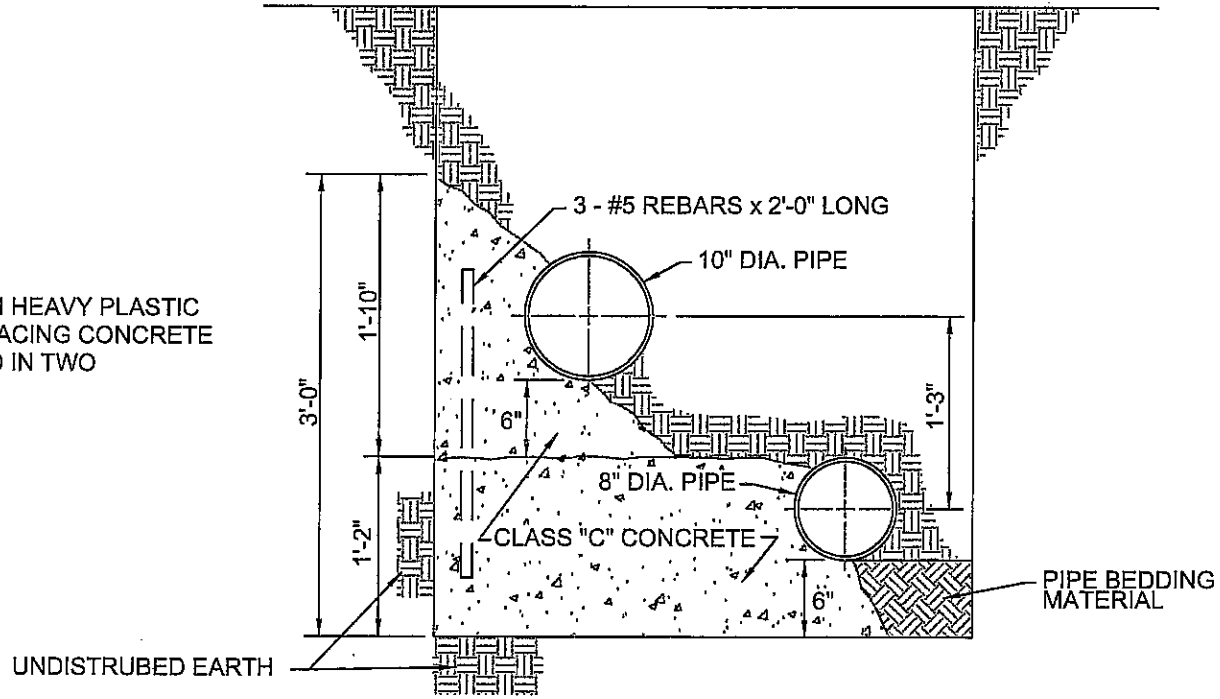
*Winchester
Municipal
Utilities*

Thrust Block Detail (Double Pipes)

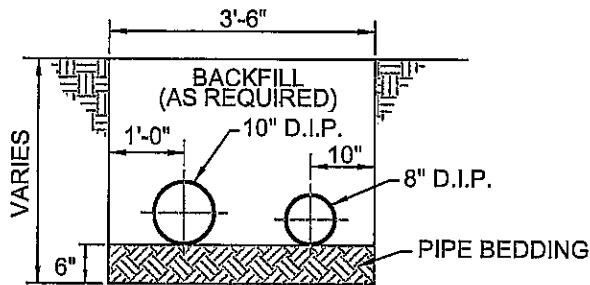
SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 04

NOTES:

- 1.) WRAP PIPE FITTINGS WITH HEAVY PLASTIC (4 MILS MIN.) PRIOR TO PLACING CONCRETE
- 2.) CONCRETE TO BE PLACED IN TWO SEPARATE POURS



THRUST BLOCK DETAILS DOUBLE PIPES

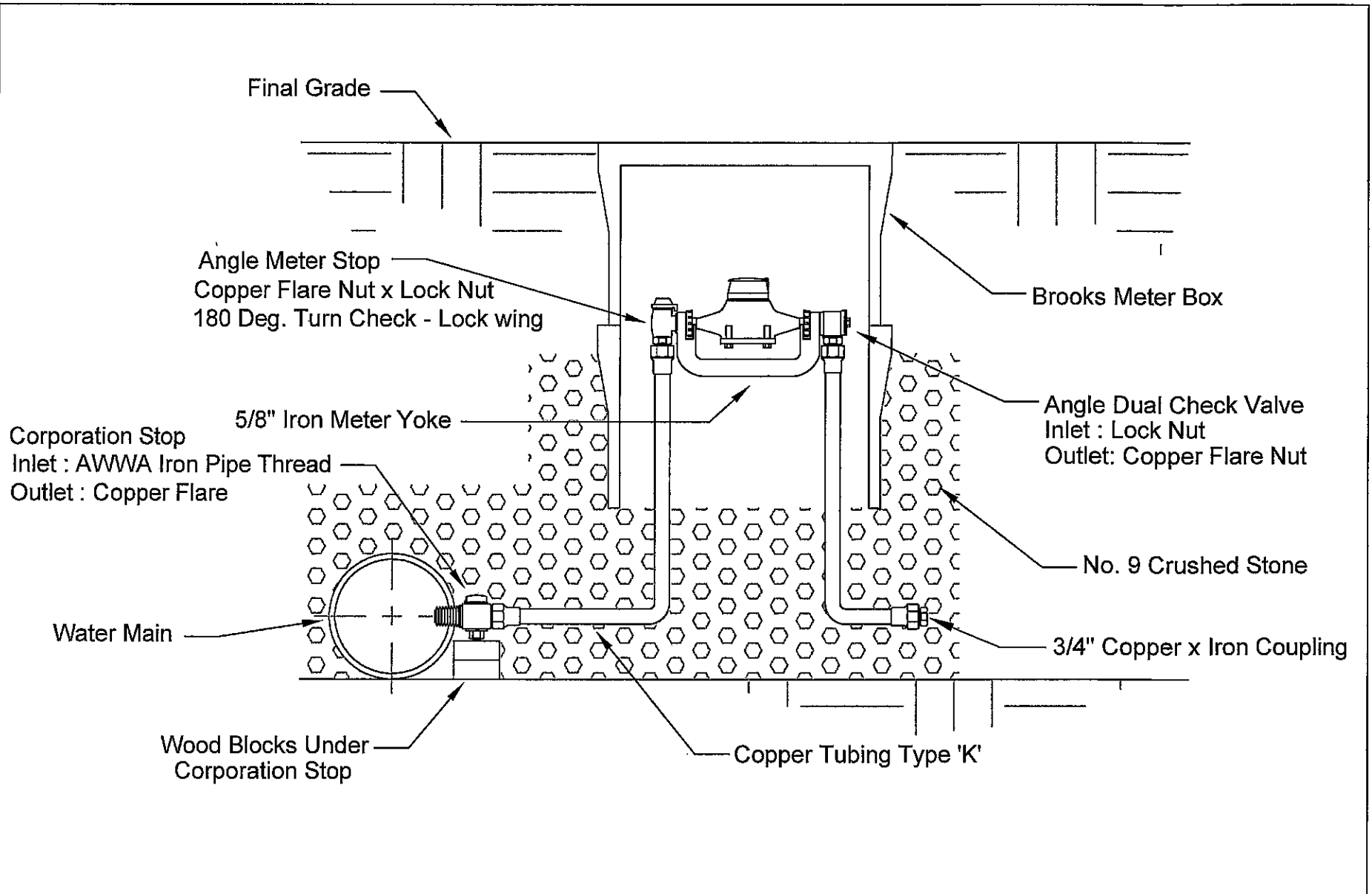



TYPICAL SECTION THRU TRENCH



**Thrust Block Detail Section
(Double Pipes)**

SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 05



 Winchester Municipal Utilities	Typical Meter Setting	
	SCALE: NONE	DATE: FEB 2003

1" ANGLE YOKE VALVE (FLARED)

504 YOKE

COPPER SERVICE BY WMU (TYP.)

1" COPPER

1" STANDARD METER SETTING

1" YOKE ELBOW (FLARED)

1" SWING CHECK WITH FEMALE IRON PIPE THREAD

SERVICE CONNECTION BY PROPERTY OWNER (TYP.)

5/8" X 3/4" ANGLE YOKE VALVE (FLARED)

COPPER SERVICE BY WMU (TYP.)

5/8" STANDARD METER SETTING

5/8" X 3/4" ANGLE DUAL CHECK VALVE (FLARED)

501 YOKE

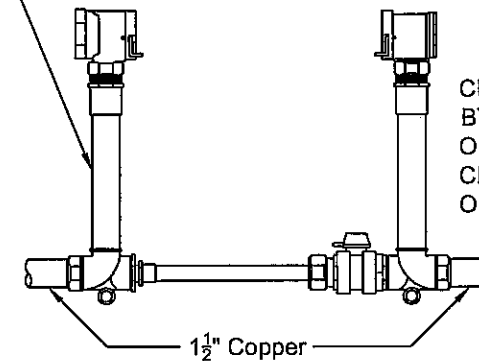
SERVICE CONNECTION BY PROPERTY OWNER (TYP.)

3/4" COPPER

NOTE:

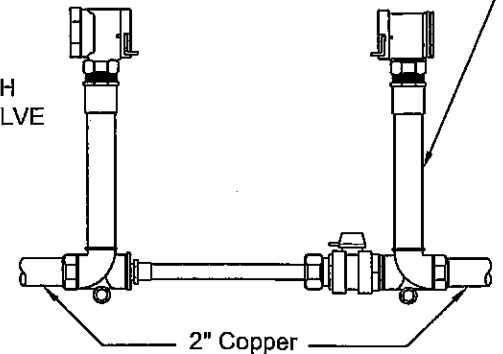
- ALL FITTINGS ARE BRASS.
- COPPER TUBING MUST BE TYPE 'K'.
- TAPS FOR THE 1 1/2" AND 2" STANDARD METER SETTINGS MUST BE MADE WITH A TYPE F202 TAPPING SADDLE AND A TYPE FB500 BALLCORP.
- TYPE 36H30 CONCRETE METER BOX AND LID TO BE LOCATED AT PROPERTY/EASEMENT LINE.

1 1/2" - VFH66-HT. X LENGTH



1 1/2" STANDARD METER SETTING

2" - VF77-HT. X LENGTH

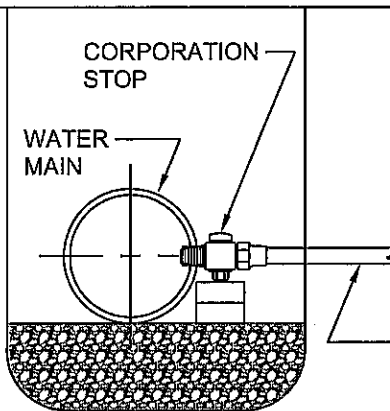


2" STANDARD METER SETTING

CUSTOM SETTER WITH BYPASS FLANGED VALVE ON INLET AND ANGLE CHECK VALVE ON OUTLET.

CORPORATION STOP

WATER MAIN



COPPER SERVICE BY WMU (TYP.)



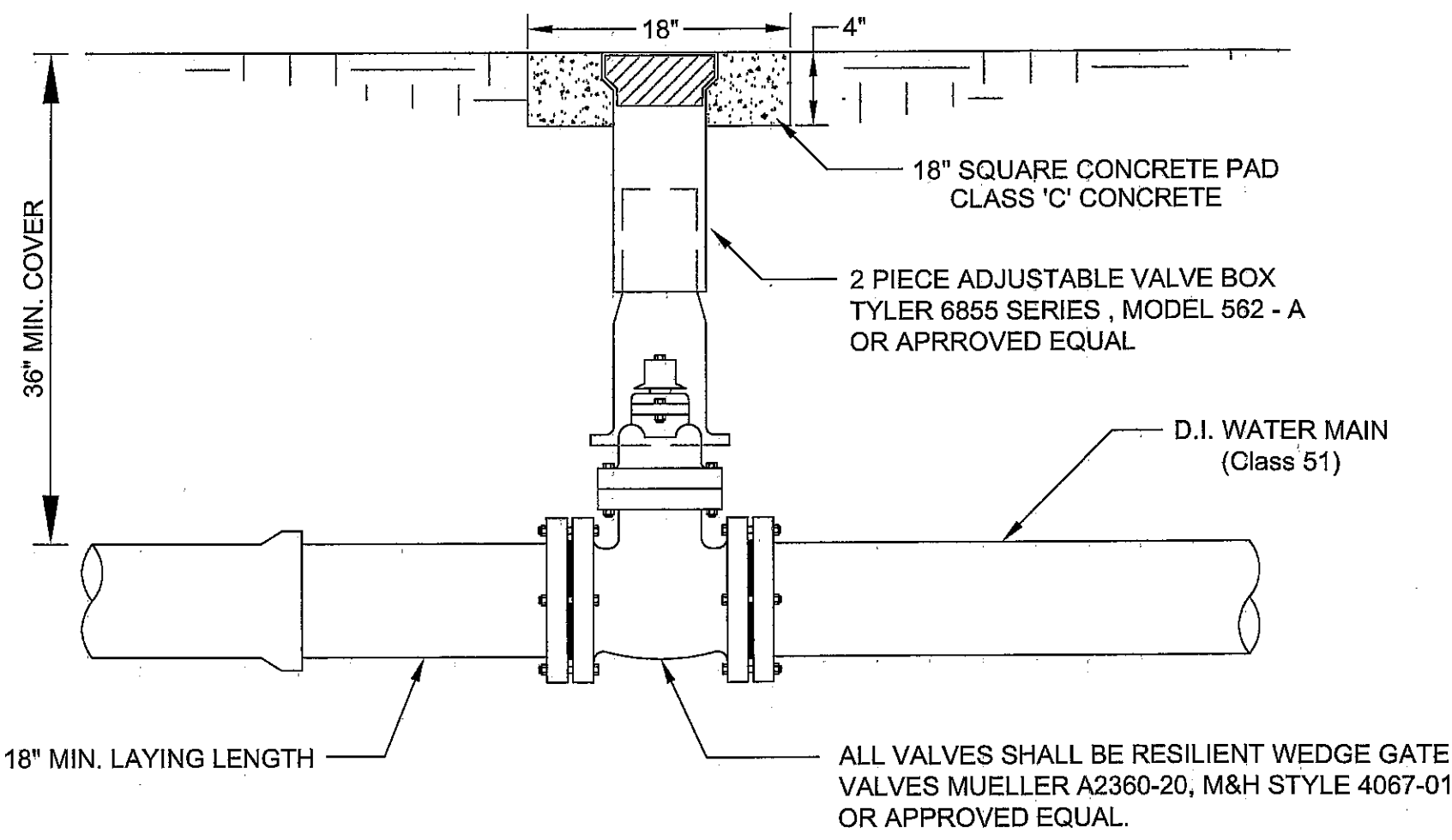
*Winchester
Municipal
Utilities*

Water Service Connections

Scale:
1" = 12"

Date:
Jan. 2004

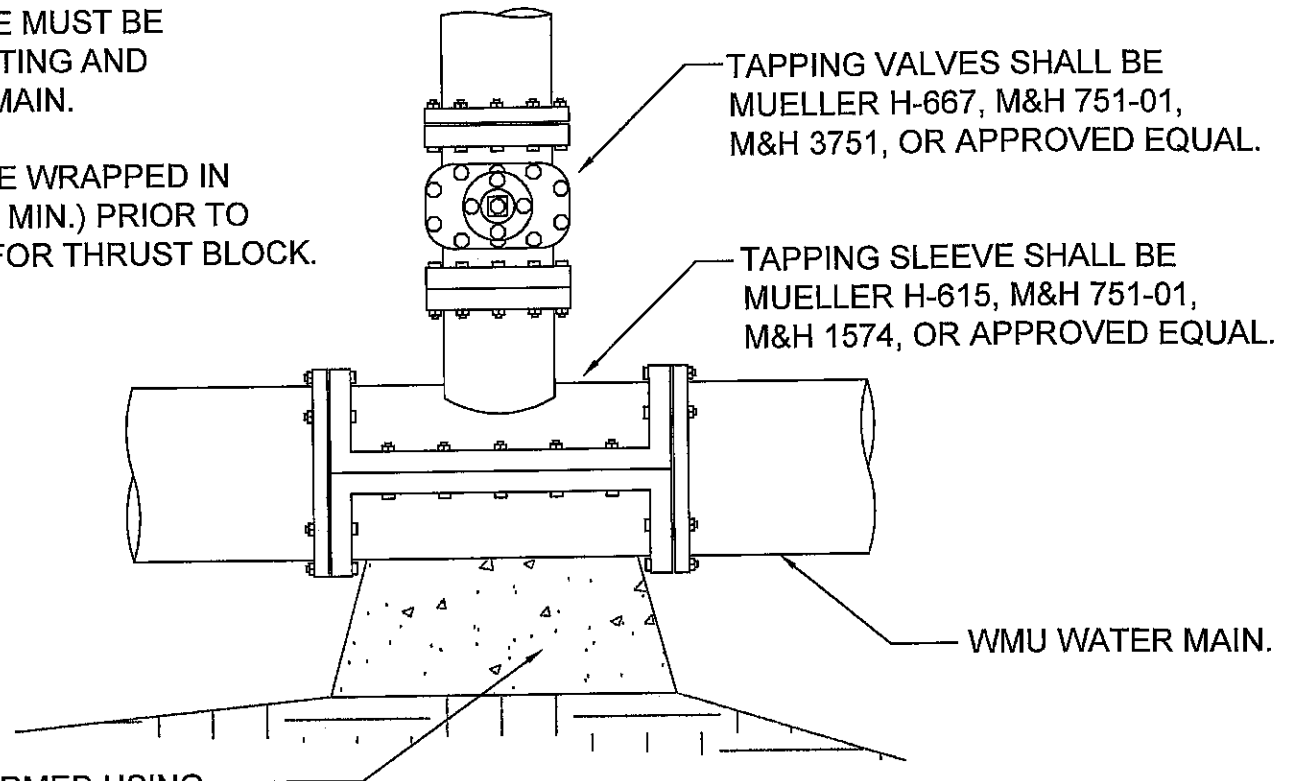
Dwg. No.:
SDW - 07



Typical Gate Valve Setting		
SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 08

NOTES:

- 1.) ASSEMBLED TAPPING SLEEVE AND VALVE MUST BE PRESSURE TESTED AT 150 PSI FOR 30 MINUTES PRIOR TO WET TAPPING THE WATER MAIN.
- 2.) WMU REPRESENTATIVE MUST BE PRESENT DURING TESTING AND THE WET TAP TO THE MAIN.
- 3.) TAPPING SLEEVE TO BE WRAPPED IN THICK PLASTIC (4 MILS MIN.) PRIOR TO POURING CONCRETE FOR THRUST BLOCK.

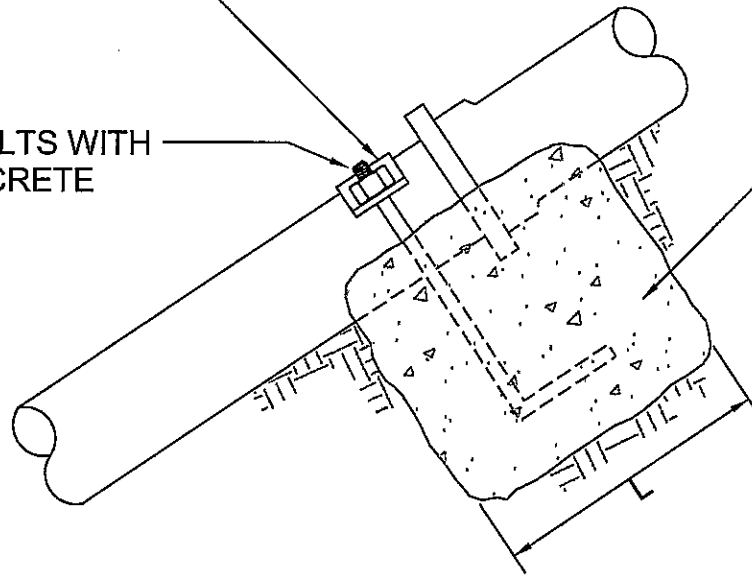


Typical Tapping Sleeve & Valve		
SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 09

1/4" X 3" STAINLESS STEEL STRAP
DRILLED TO ACCOMODATE
ANCHOR BOLTS

2-5/8"Ø ANCHOR BOLTS WITH
NUTS SET IN CONCRETE

CLASS 'C' CONCRETE



STRAIGHT PIPE ANCHOR

SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 10

NOTE:
 BASE OF FIRE HYDRANT MUST
 BE WRAPPED WITH HEAVY
 PLASTIC (MIN. 4 MILS) PRIOR
 TO POURING CONCRETE
 THRUST BLOCK

TRAFFIC MODEL FIRE HYDRANT
 MUELLER A423 OR M&H 129
 ANSI/AWWA C502

FINAL GRADE

18" SQUARE
 CONC. PAD

2 PIECE ADJUSTABLE VALVE BOX
 TYLER 6855 SERIES , MODEL 562-A
 OR APPROVED EQUAL

36" MIN. COVER

ONE CUBIC YARD
 NO. 3 GRAVEL

D.I. MECHANICAL JOINT
 ANCHORING TEE

THRUST BLOCK (Required)
 POURED AGAINST
 UNDISTURBED EARTH

WEEP HOLES NOT TO BE
 COVERED BY CONCRETE

D.I. MECHANICAL JOINT
 ANCHORING PIPE

GATE VALVE SHALL BE MUELLER A2380-20, M&H
 STYLE 1067 - 01, WATEROUS RESILIENT WEDGE
 VALVE OR APPROVED EQUALL

THRUST BLOCK - ONE CUBIC YARD
 3500 PSI CONCRETE POURED
 AGAINST UNDISTURBED EARTH



Winchester
 Municipal
 Utilities

Typical Fire Hydrant Setting

SCALE:

DATE:

DWG. NO.:

NONE

FEB 2003

SDW - 11

THRUST BLOCK - ONE CUBIC YARD
3500 PSI CONCRETE POURED AGAINST
UNDISTURBED EARTH.

TRAFFIC MODEL FIRE HYDRANT
MUELLER A423 OR M&H 129

ONE CUBIC YARD
NO. 3 GRAVEL

D.I. MECHANICAL JOINT
ANCHOR COUPLING

D.I. MECHANICAL JOINT
ANCHORING TEE

GATE VALVE SHALL BE MUELLER
A2380-20, M&H STYLE 1067-01,
WATEROUS RESILIENT WEDGE
VALVE OR APPROVED EQUAL.

18" MIN. LAYING LENGTH

DUCTILE IRON PIPE
(CLASS 51 MIN.)

THRUST BLOCK (Required)
POURED AGAINST
UNDISTURBED EARTH.

NOTES:

- 1.) BASE OF FIRE HYDRANT TO BE WRAPPED WITH HEAVY PLASTIC (4 mils min.) PRIOR TO POURING CONCRETE.
- 2.) FIRE HYDRANT WEEP HOLES NOT TO BE COVERED BY CONCRETE.
- 3.) CONCRETE THRUST BLOCKS SHALL BE FORMED WITH PLYWOOD OR PARTICLE BOARD POURED TO UNDISTURBED EARTH.
- 4.) ALL FITTINGS REQUIRING THRUST BLOCKS SHALL BE WRAPPED IN HEAVY PLASTIC (4 MILS MIN.) PRIOR TO POURING CONCRETE THRUST BLOCK.

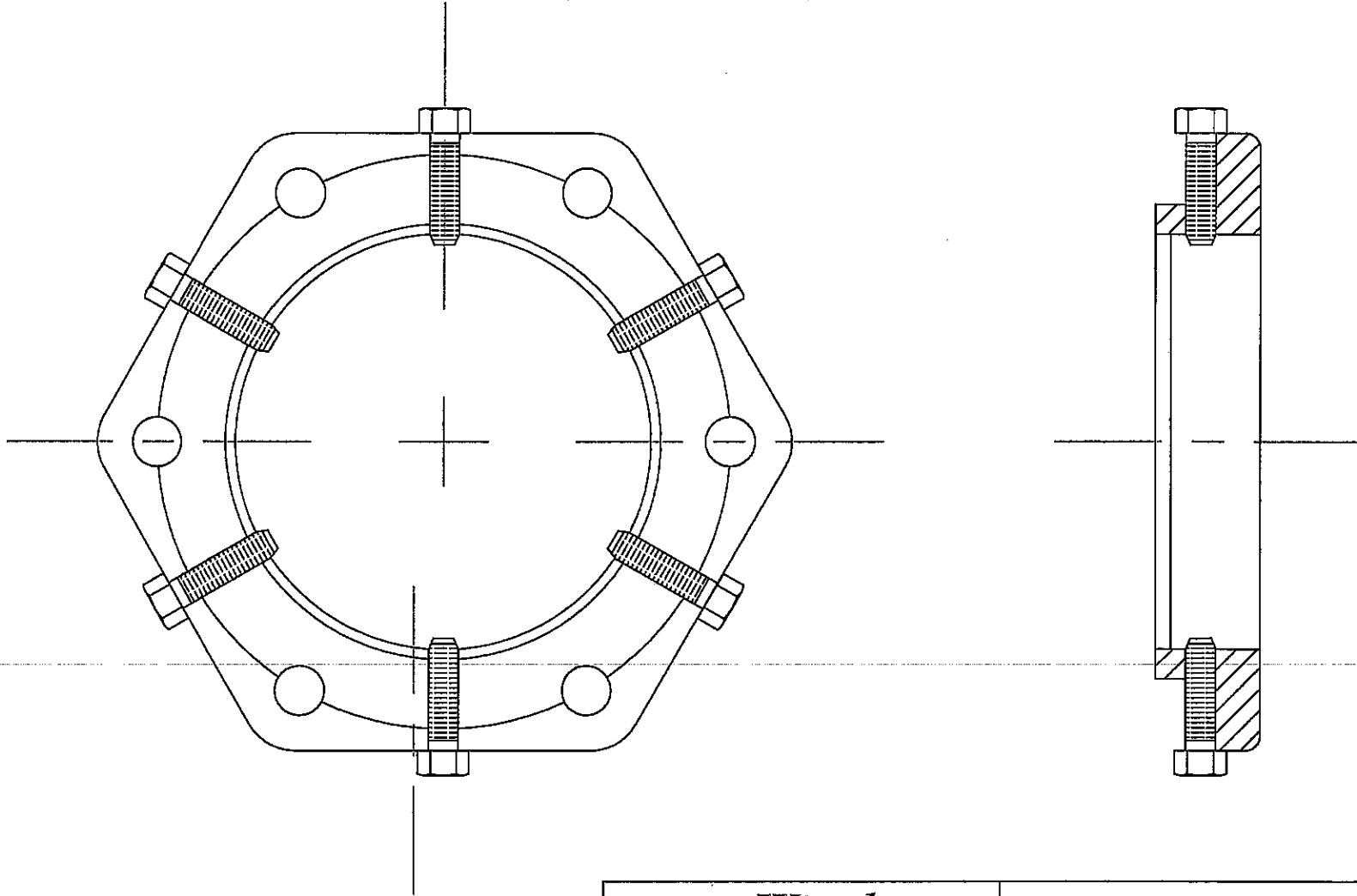


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Municipal
Utilities*

Fire Hydrant & Anchor Tee

SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 12

D.I. MECHANICAL JOINT RETAINER GLANDS SHALL BE
USED FOR ALL MECHANICAL JOINT FITTINGS.
(NO EXCEPTIONS)



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Utilities*

Retainer Gland

SCALE:

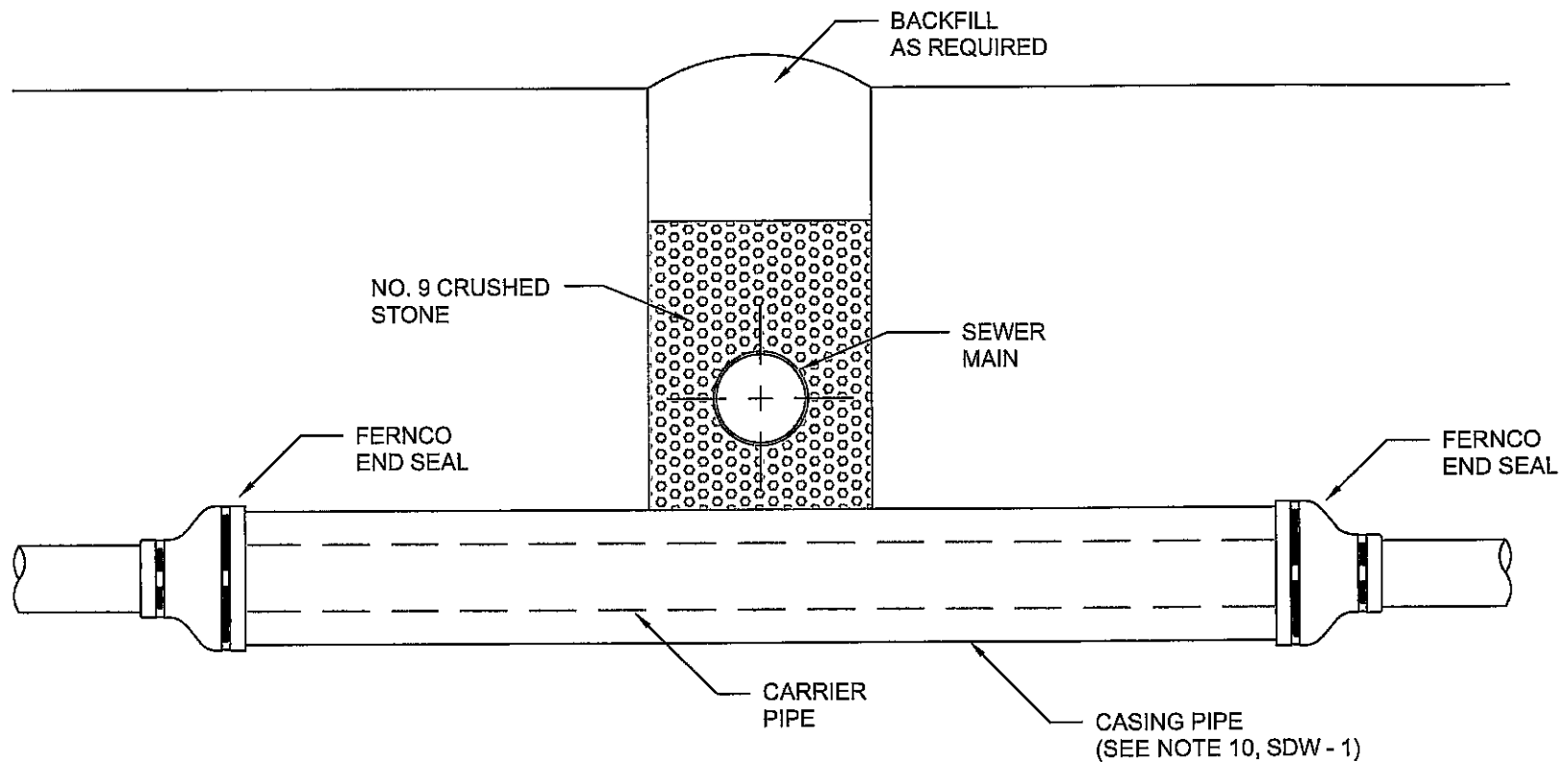
NONE

DATE:


FEB 2003

DWG. NO.:

SDW - 13



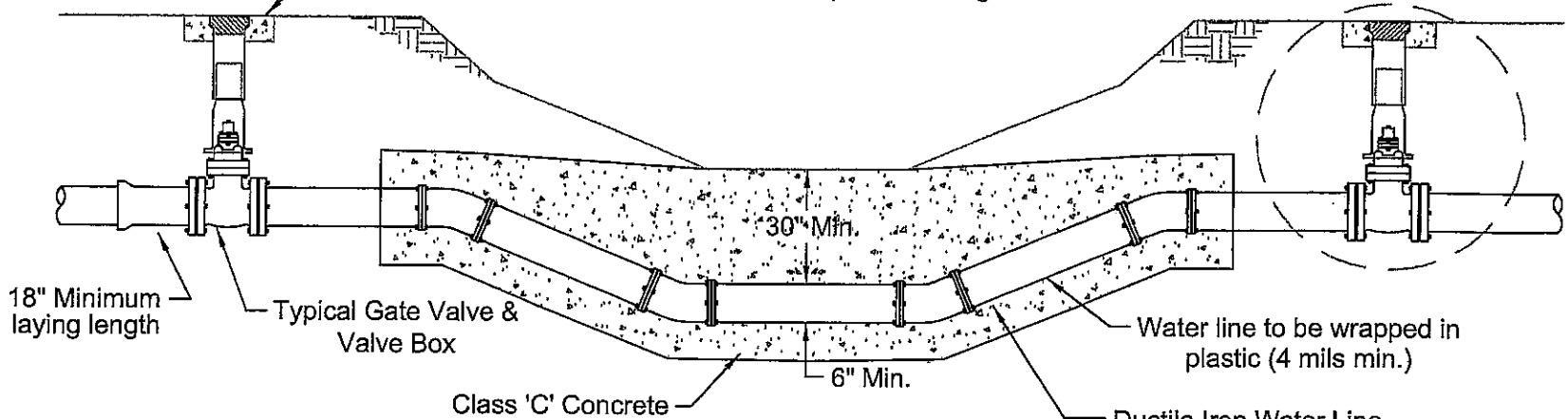
* SEE NOTE 2, SDW - 1

 Winchester Municipal Utilities	Water Line Encasement Detail		
	SCALE: NONE	DATE: FEB 2003	DWG. NO.: SDW - 14

Concrete Gate Valve
Box Pad

NOTE: Entire Excavation below rock line to be filled solid with
Class 'C' concrete to the same shape as the original creek bed

See leak detection detail below



Concrete Gate Valve
Box Pad

Typical Meter Box

Typical Gate Valve

Typical Gate Valve &
Valve Box

Meter setting

Type 'K' Copper

Corp. Stop

Meter

Corp. Stop

Angle Yoke
Valve

Corporation Stop



Winchester
Municipal
Utilities

TYPICAL CREEK CROSSING

SCALE:

DATE:

DWG. NO.:

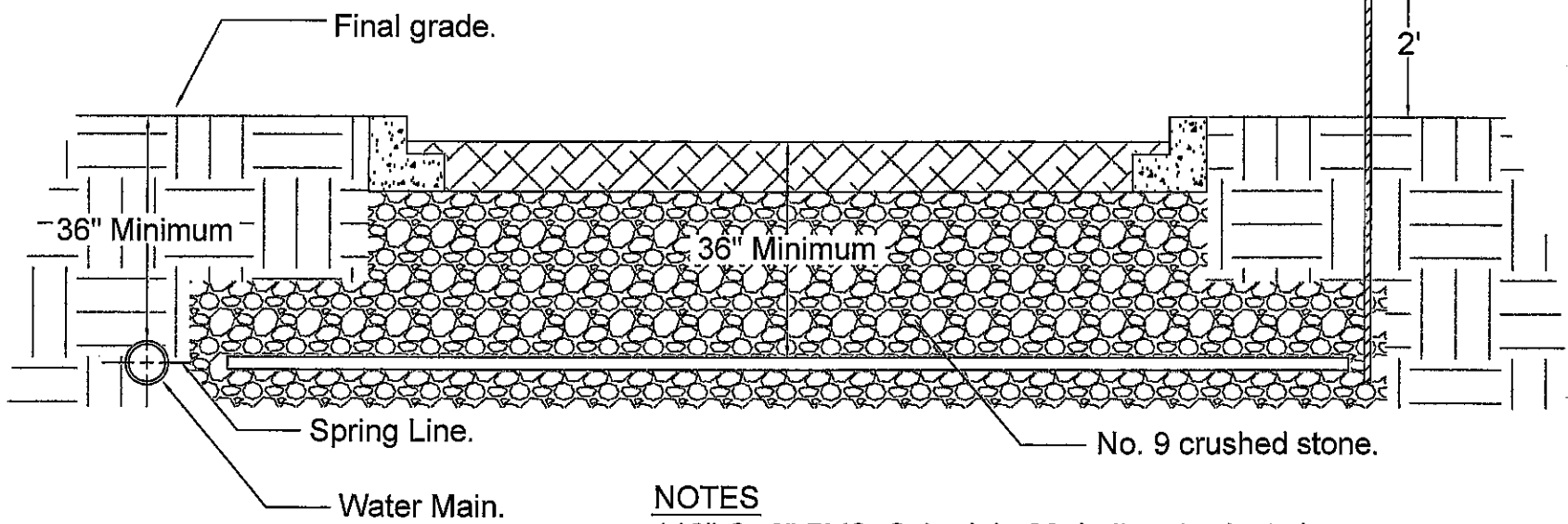
NONE

FEB 2003

SDW - 15



Provide No. 4 rebar, painted blue, to protect the end of pipe from trenching equipment.

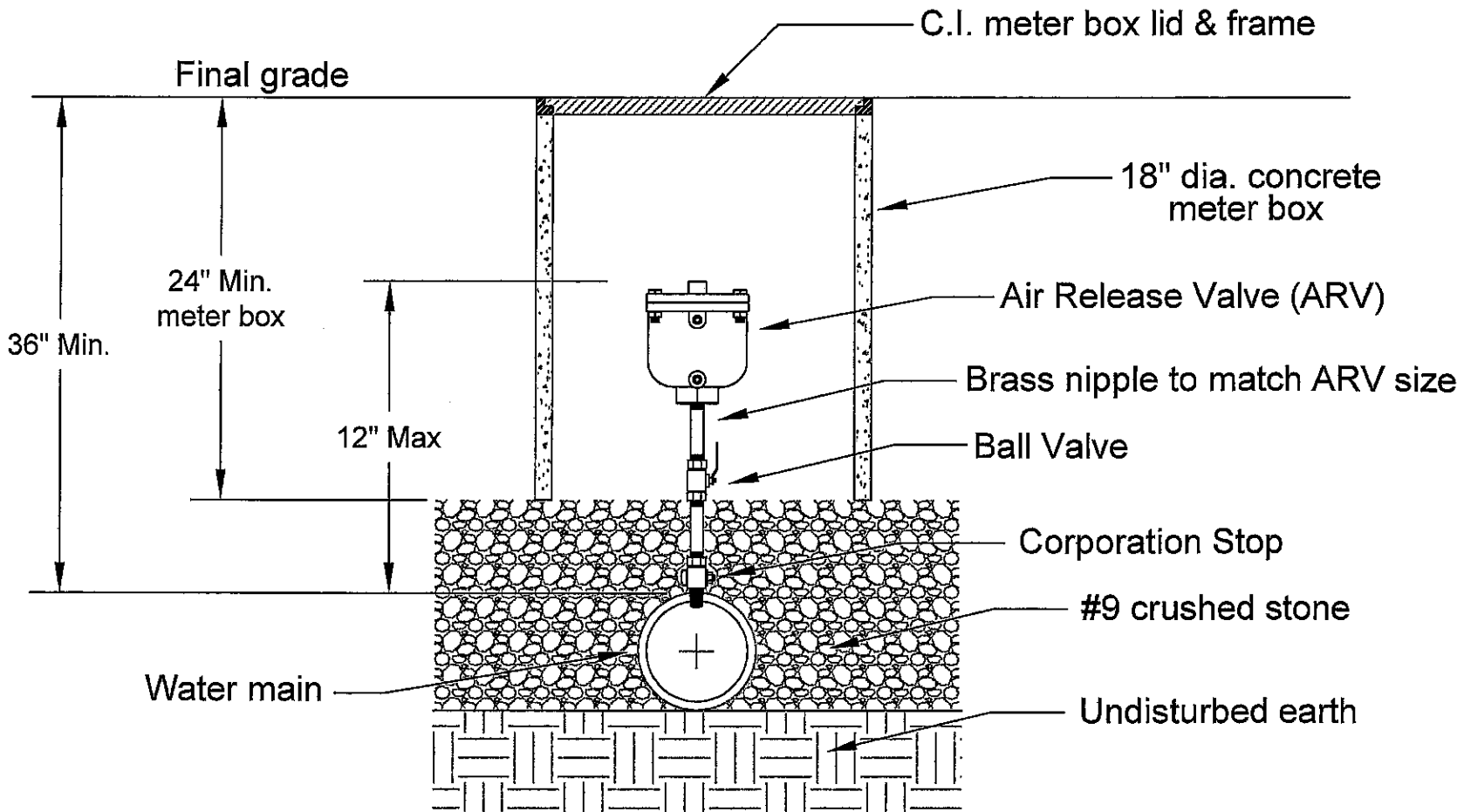


NOTES

- 1.) 2" Or 3" PVC, Schedule 80, bell and spigot pipe.
- 2.) Max. Laying length for 2" Is 50 feet.
- 3.) Lines extending beyond 50 feet shall be 3" PVC, Schedule 80, bell and spigot pipe.
- 4.) Conduits shall be laid from the spring line of the water main at a minimum depth of 36".
- 5.) Detectable mylar tape is required 12" above pipe.

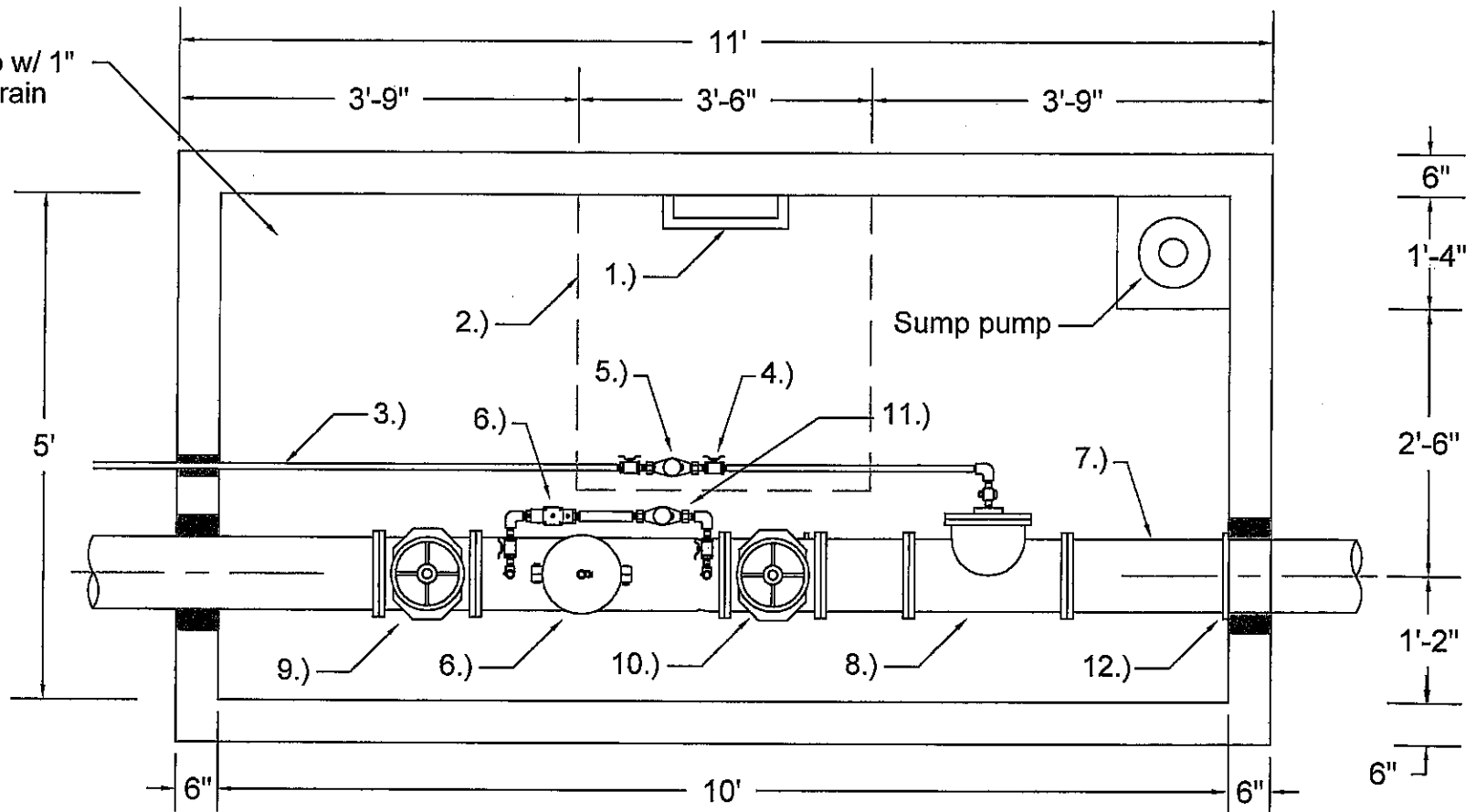


Water Service Connections		
SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 16



Air Release Valve		
SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 17

Conc. Slab w/ 1" slope to drain



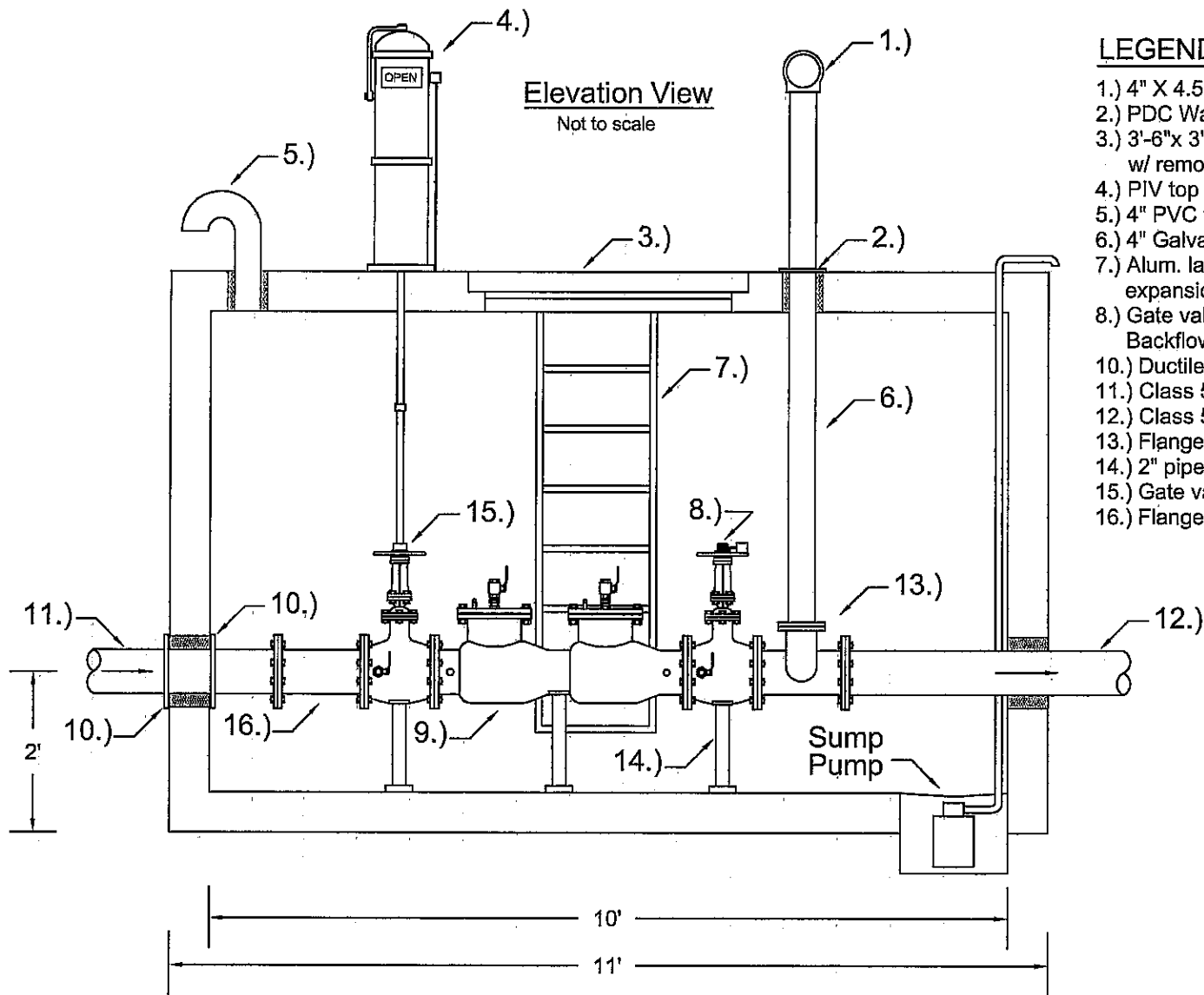
LEGEND

- 1.) Alum. ladder secured to wall w/ non corrosive expansion anchor bolts.
- 2.) 3'-6" x 3'-6" alum. single hatch & frame w/ removable key wrench.
- 3.) Domestic water line.
- 4.) Ball valve.
- 5.) Domestic water meter.
- 6.) Backflow prevention device.
- 7.) Water main line.
- 8.) Blind Flange.
- 9.) Gate valve(NRS) w/ tamper switch.
- 10.) Gate valve(NRS).
- 11.) Detector meter.
- 12.) Ductile iron retainer gland.

PLAN VIEW



Fire Protection Vault (Plan View)		
SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 18




LEGEND

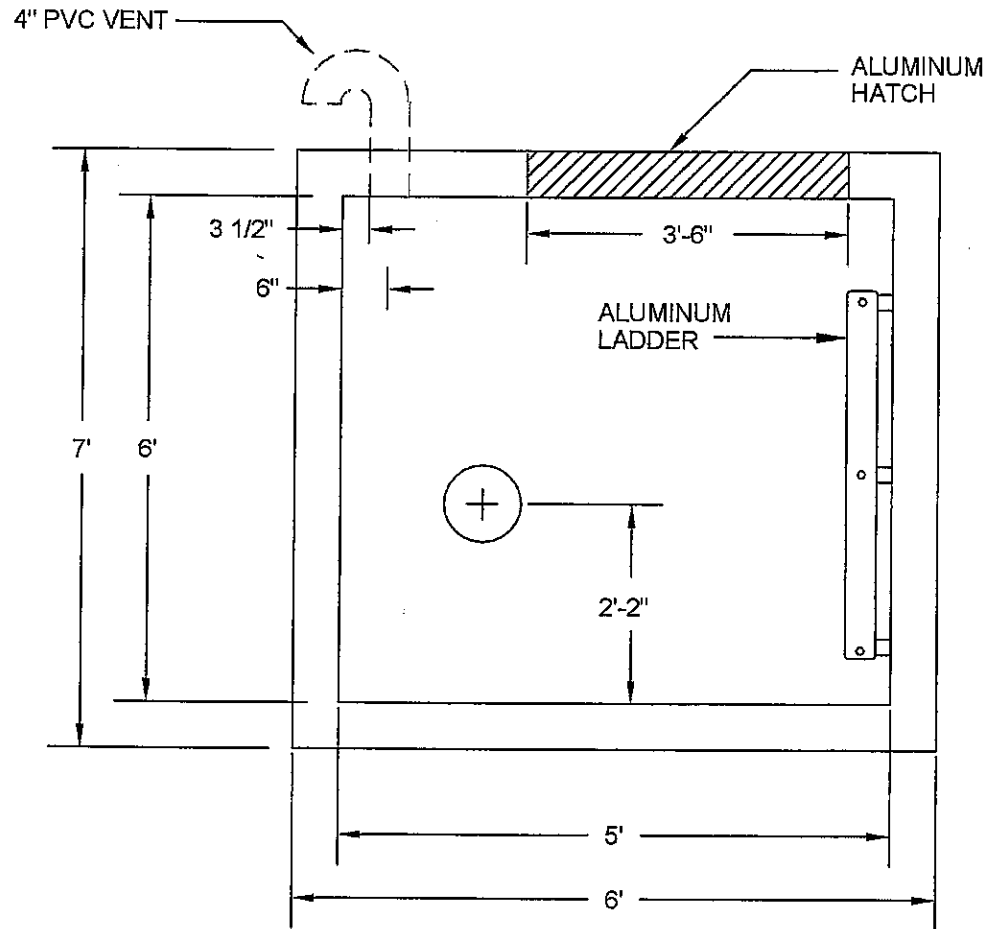
- 1.) 4" X 4.5" Brass FDC w/ caps.
- 2.) PDC Wall Plate.
- 3.) 3'-6"x 3'-6"Alum. single hatch and frame w/ removable key wrench.
- 4.) PIV top w/tamper switch.
- 5.) 4" PVC vent w/ rodent screen.
- 6.) 4" Galvanized pipe up to FDC.
- 7.) Alum. ladder secured to wall w/ non-corrosive expansion anchor bolts.
- 8.) Gate valve w/ tamper switch. Backflow prevention device.
- 10.) Ductile iron retainer gland.
- 11.) Class 51 DIP (min.) water main.
- 12.) Class 51 DIP (min.) fire protection line.
- 13.) Flanged Tee.
- 14.) 2" pipe stands.
- 15.) Gate valve.
- 16.) Flanged Tee.

GENERAL NOTES

- 1.) Vault may have gravity drain to daylight where feasible.
- 2.) All seams and any lift holes inside the vault shall be grouted.
- 3.) All pipes entering the vault must be grouted in place.

 Winchester Municipal Utilities	Fire Protection Vault (Elev. View)	
	SCALE: NONE	DATE: FEB 2003

VAULT SECTION VIEW



*Winchester
Municipal
Utilities*

Fire Protection Vault (Section View)

SCALE:

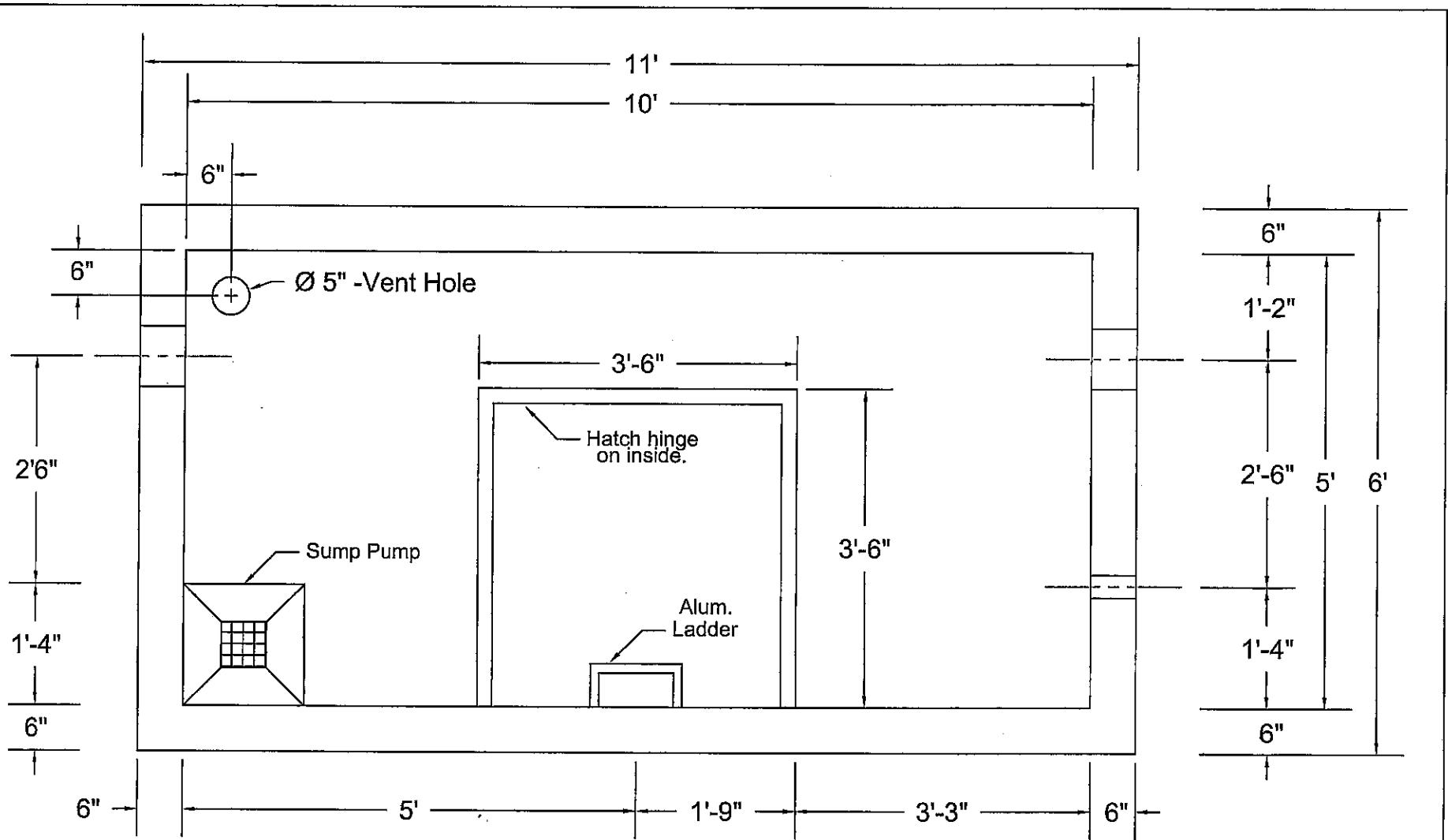
NONE

DATE:

FEB 2003

DWG. NO.:

SDW - 20



General Notes

- 1.) Vault may have gravity drain to day light where feasible.
- 2.) All seams and any lift holes inside the vault shall be grouted.
- 3.) All pipes entering the vault shall be grouted.
- 4.) The vault floor shall have 1" slope to drain.

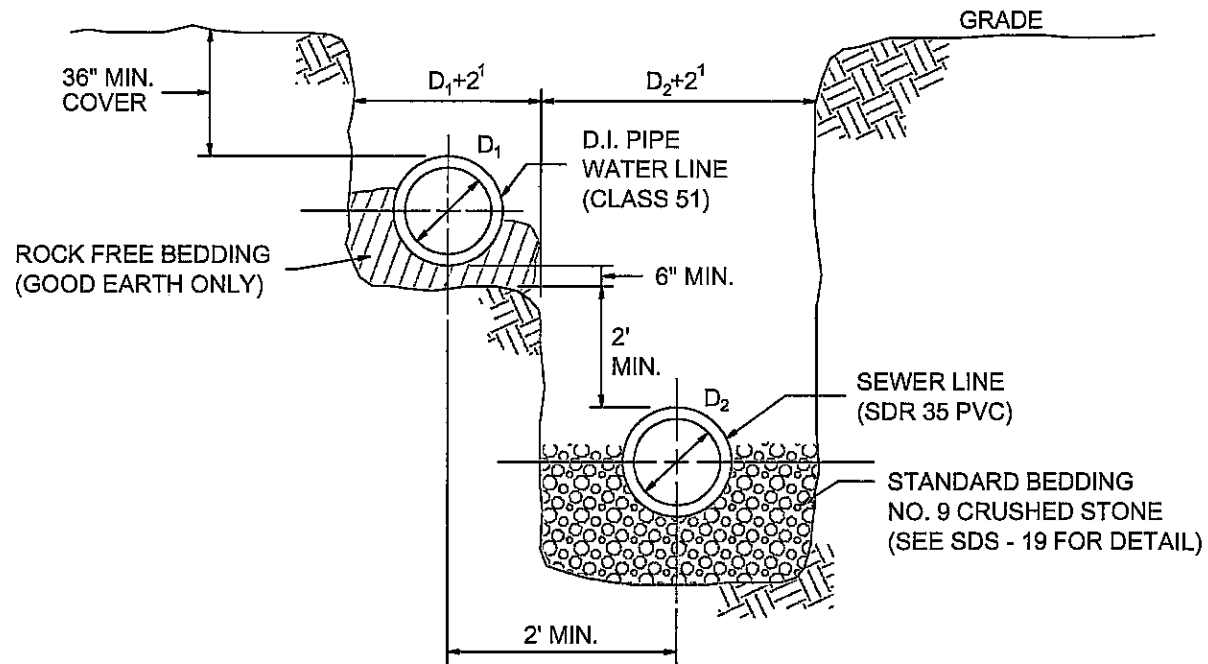
Vault Top View

Not to scale



Fire Protection Vault (Top View)

SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 21



NOTE:

WATER LINES AND SEWER LINES LAID ON SAME ELEVATION MUST BE SEPERATED A MINIMUM DISTANCE OF 10'.



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Utilities*

Typical Section Through Trench

SCALE:

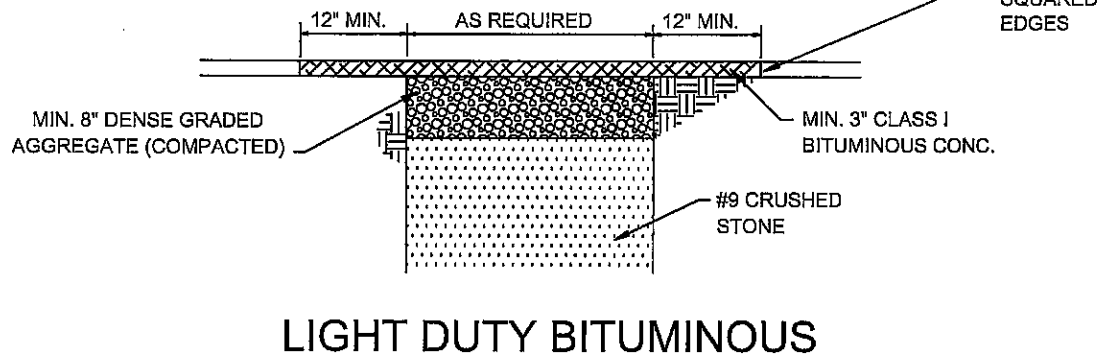
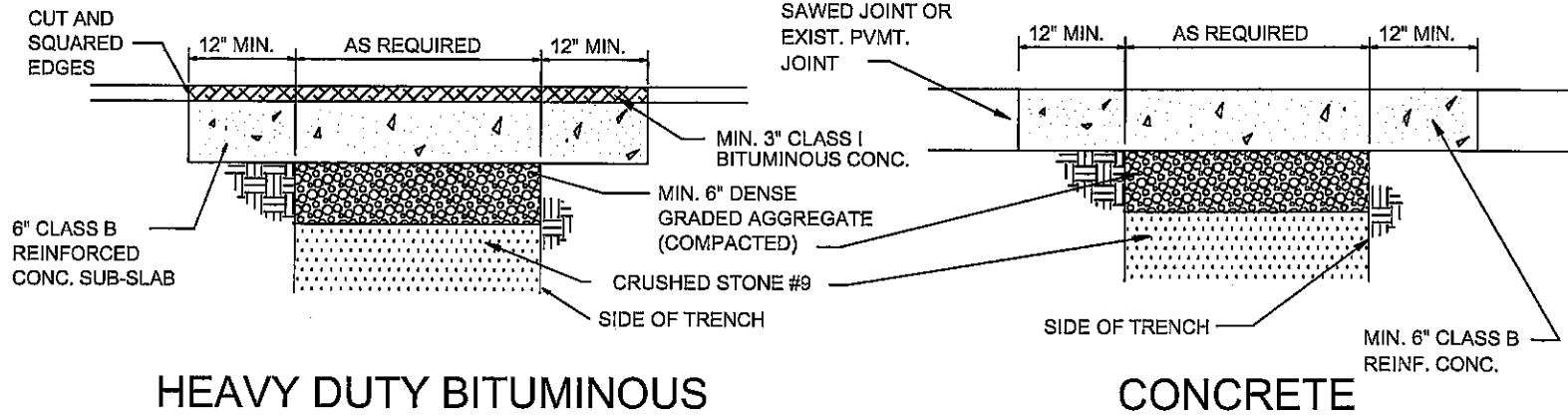
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DATE:

FEB 2003

DWG. NO.:

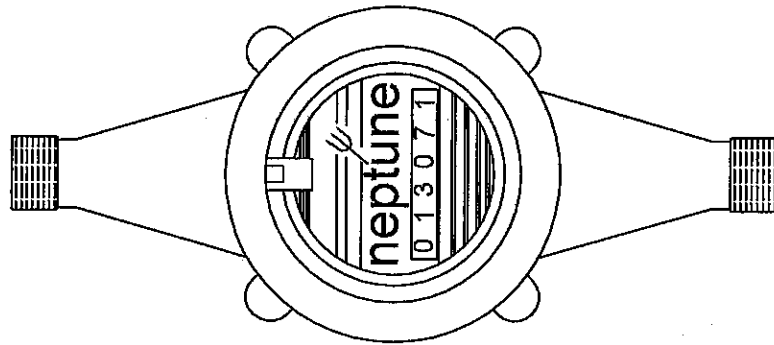
SDW - 22



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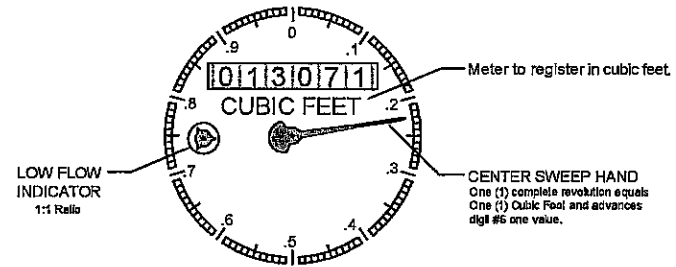
Pavement Replacement

SCALE:	DATE:	DWG. NO.:
NONE	FEB 2003	SDW - 23

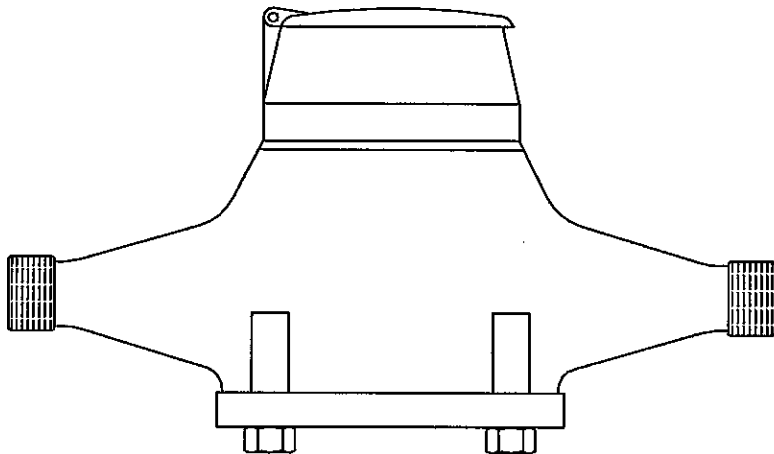


TYPICAL SMALL SIZE METER

5/8" x 3/4", 3/4", 1"



**WATER METER REGISTER
DIAL DETAIL**



METER SIZE	NORMAL OPERATING RANGE @ 100% ACCURACY (±1.5%)	AWWA STANDARD	LOW FLOW @ 95% ACCURACY
5/8" X 3/4"	1/2 to 20 GPM	1 to 20 GPM	1/8 GPM
3/4"	3/4 to 30 GPM	2 to 30 GPM	1/4 GPM
1"	1 to 50 GPM	3 to 50 GPM	3/8 GPM



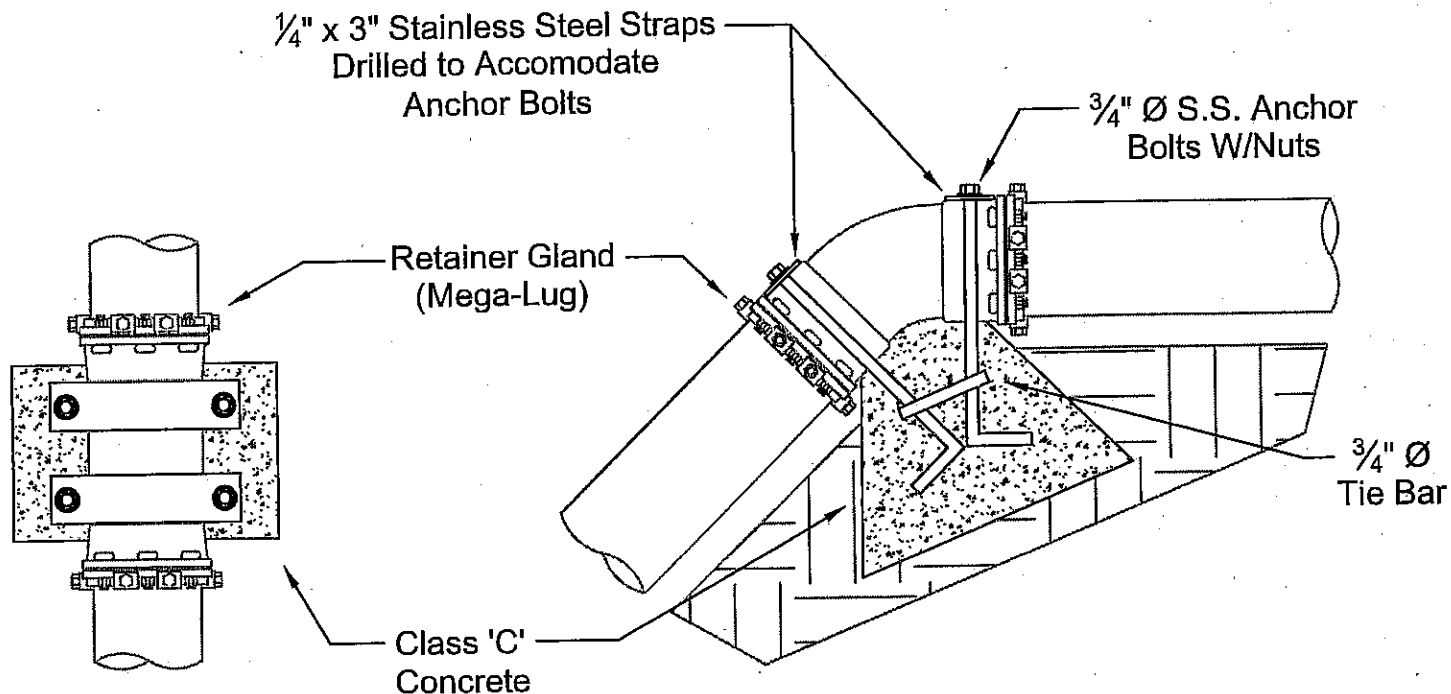
**Winchester
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Utilities**

Typical Small Size Meter

Scale:
1" = 2.5"

Date:
Jan 2004

Dwg. No.:
SDW - 24



$$\text{Gravity Block Size (ft}^3\text{)} = \frac{\text{Safety Factor (1.5) x Thrust Force (lb)}}{\text{Density of Block Material (lb/ft}^3\text{)}}$$



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Gravity Thrust Block

Scale:	Date:	Dwg. No.:
1" = 12"	Sept. 04	SDW - 25