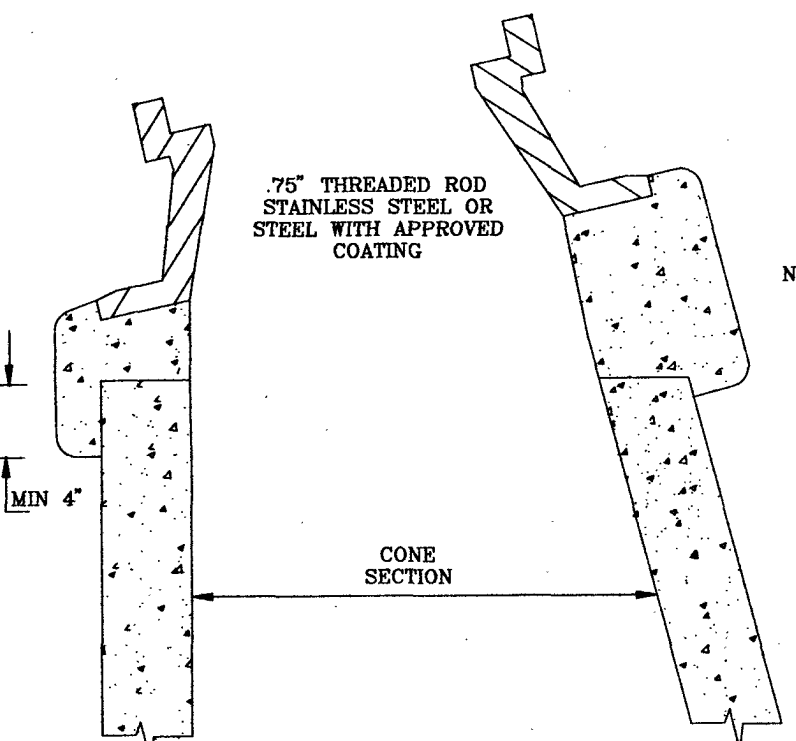


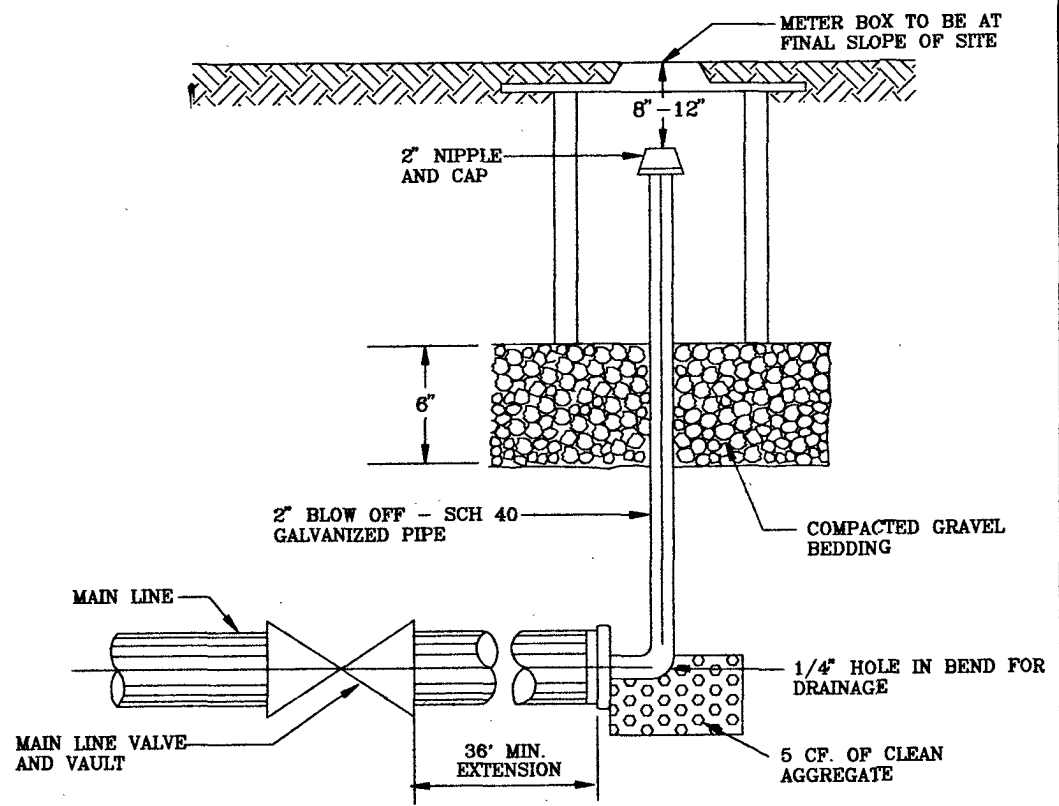
- NOTES:
- FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
  - FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
  - GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
  - ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
  - THRUST BLOCKS WITH "H" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER.
- PRESSURE = 200 psi  
BEARING = 2000 psf  
FACTOR OF SAFETY = 1.5

PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE	PLUG
4"	8"	8"	8"	8"	11"	6"
6"	12"	12"	12"	12"	13"	8"
8"	16"	16"	16"	16"	15"	10"
10"	20"	20"	20"	20"	17"	12"
12"	24"	24"	24"	24"	19"	14"
14"	28"	28"	28"	28"	21"	16"
16"	32"	32"	32"	32"	23"	18"
18"	36"	36"	36"	36"	25"	20"
20"	40"	40"	40"	40"	27"	22"
22"	44"	44"	44"	44"	29"	24"
24"	48"	48"	48"	48"	31"	26"
26"	52"	52"	52"	52"	33"	28"
28"	56"	56"	56"	56"	35"	30"
30"	60"	60"	60"	60"	37"	32"

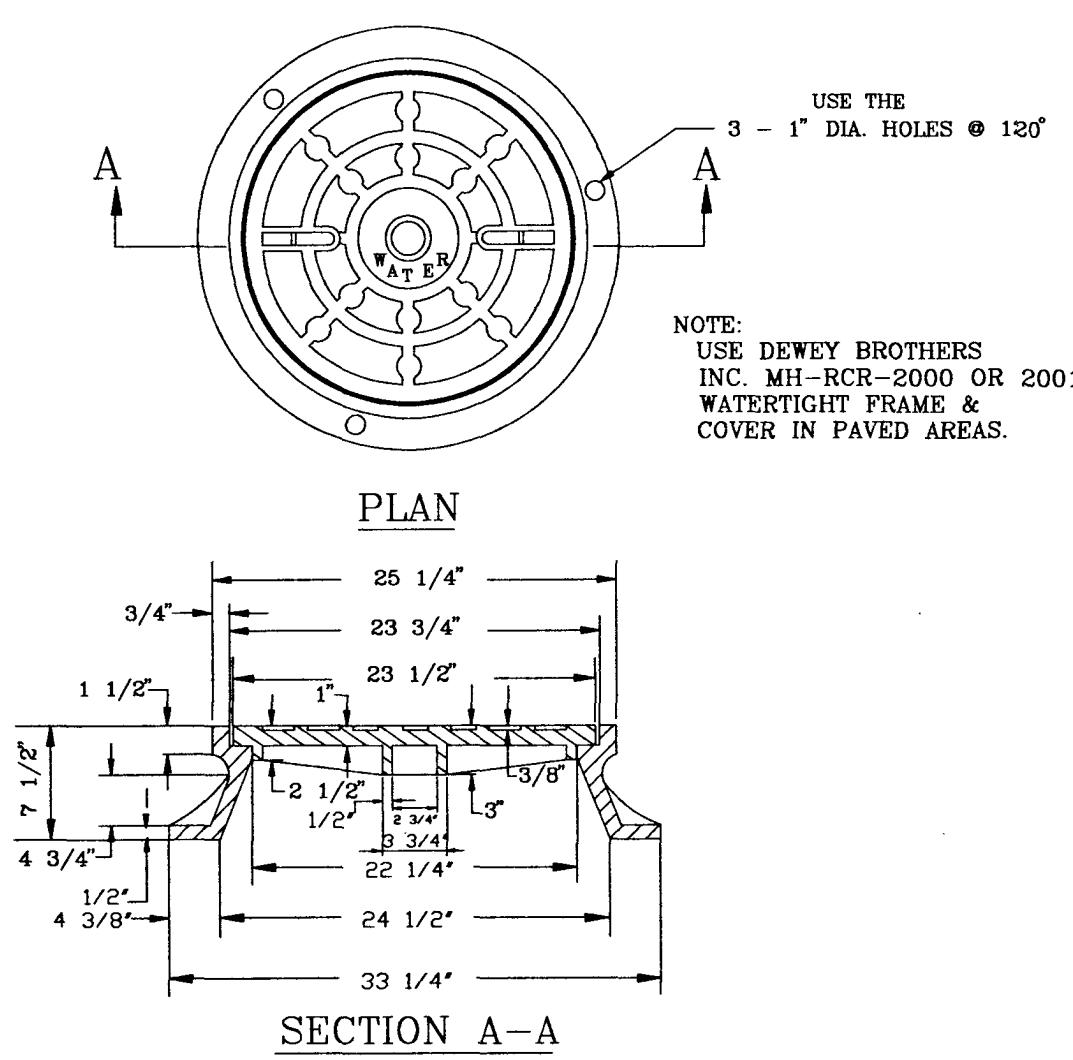
THRUST BLOCK CONSTRUCTION  
NO SCALE



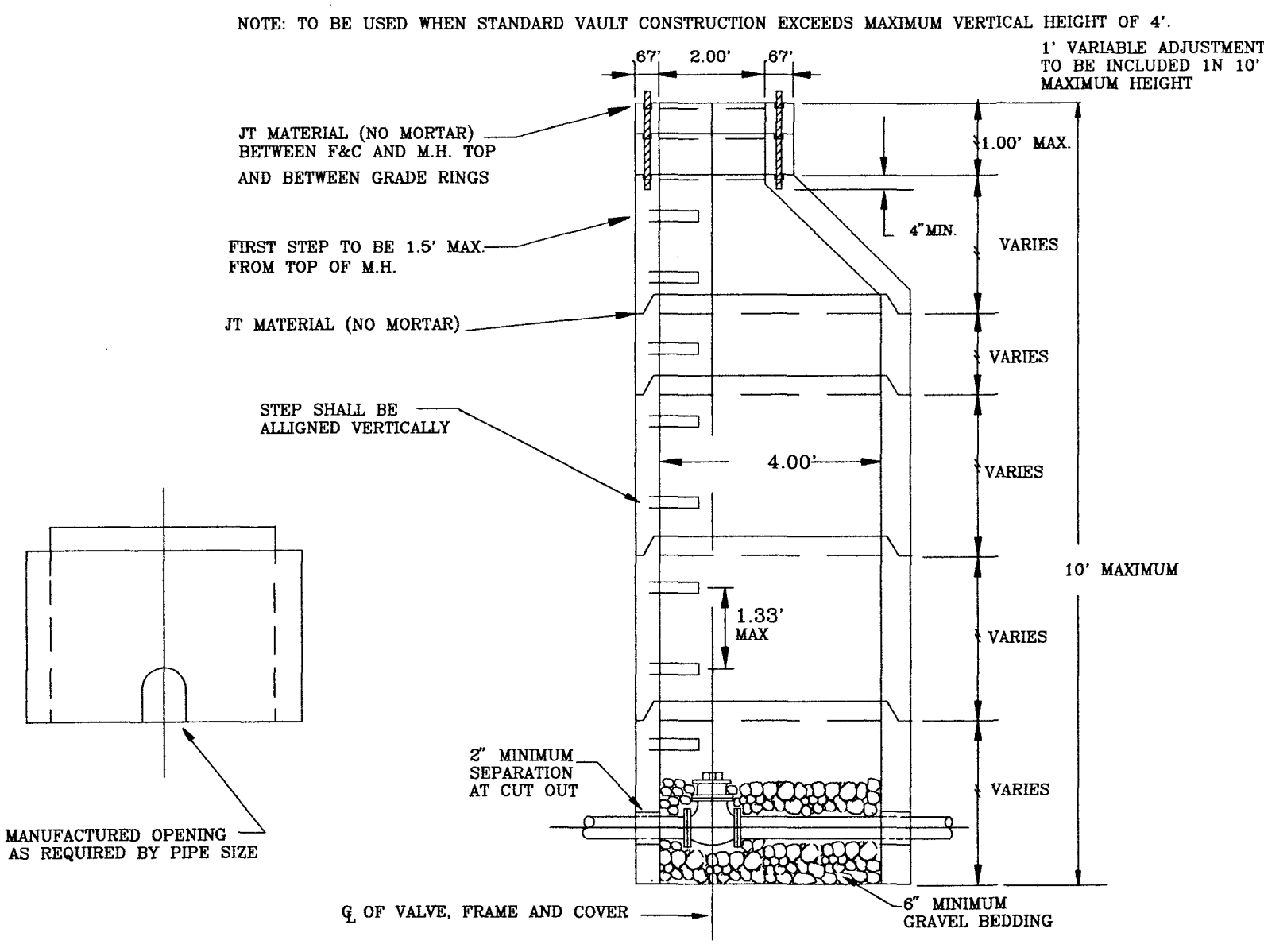
INSTALLATION DETAIL  
FOR ALL FRAMES AND COVERS



BLOW OFF ASSEMBLY FOR MAIN LINE  
TEMPORARY TERMINATION

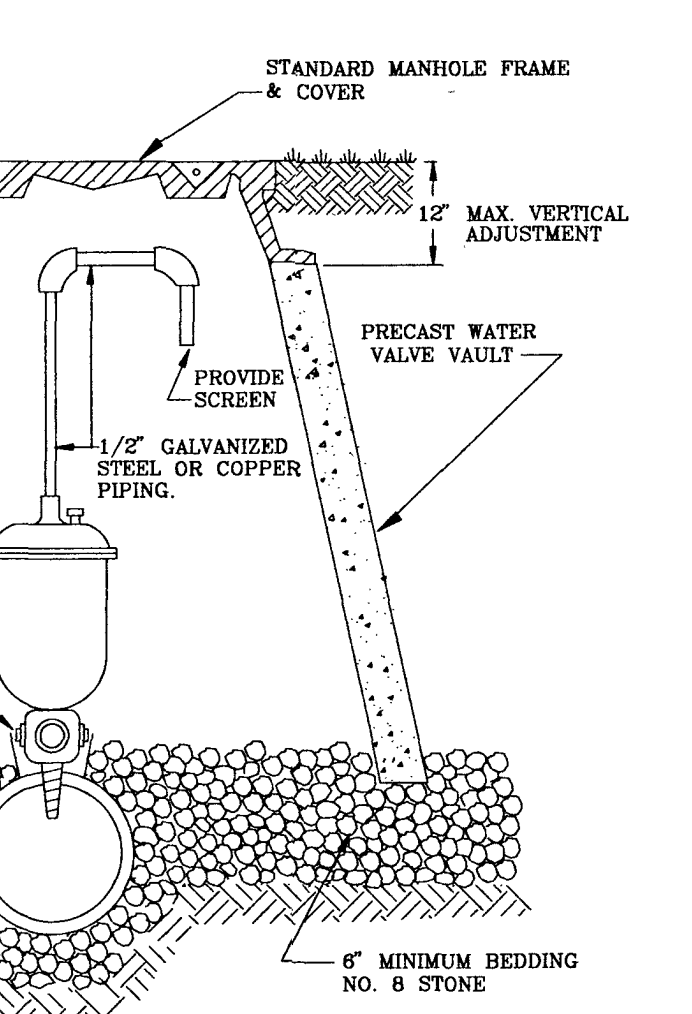


MANHOLE FRAME AND COVER  
PAVED 2001EC  
UNPAVED 2001(ABOVE)



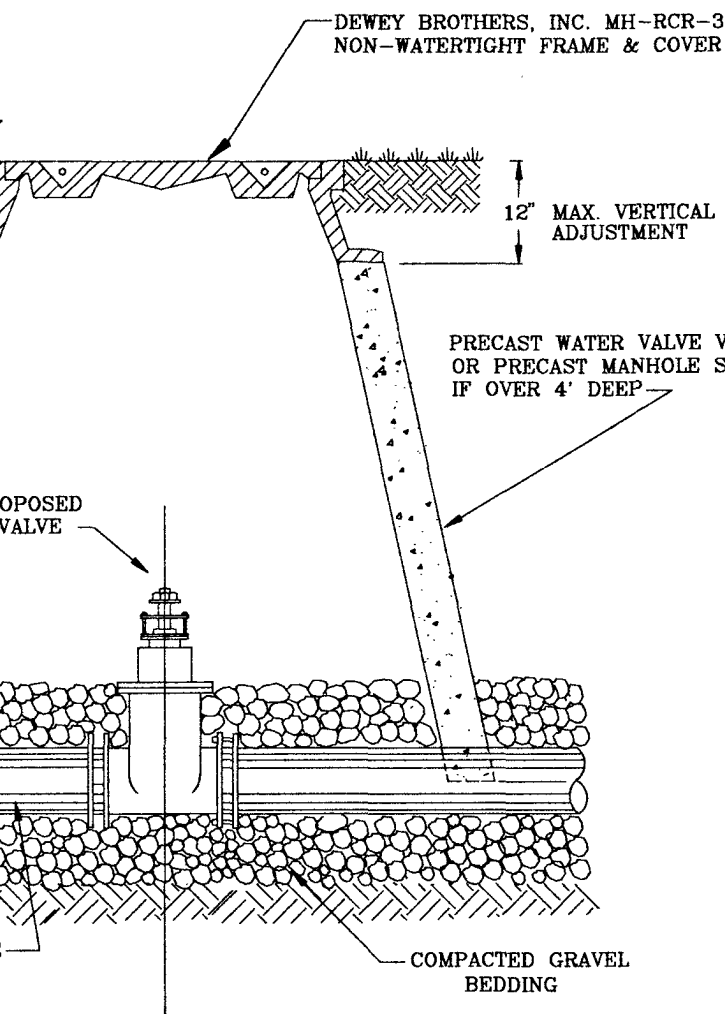
ALTERNATE VALVE VAULT (MANHOLE)

SINGLE RESIDENTIAL  
WATER SERVICE



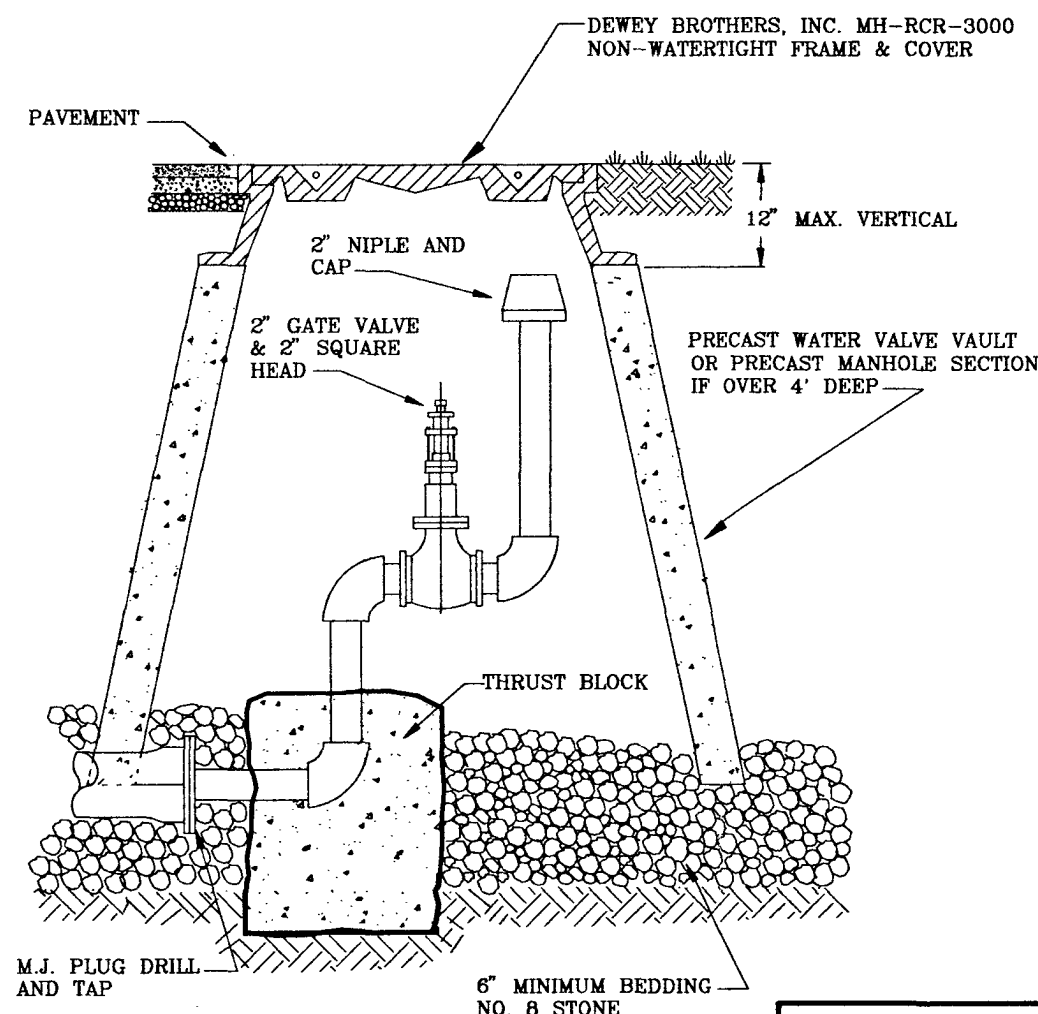
AUTOMATIC AIR  
RELEASE ASSEMBLY

DOUBLE RESIDENTIAL  
WATER SYSTEM



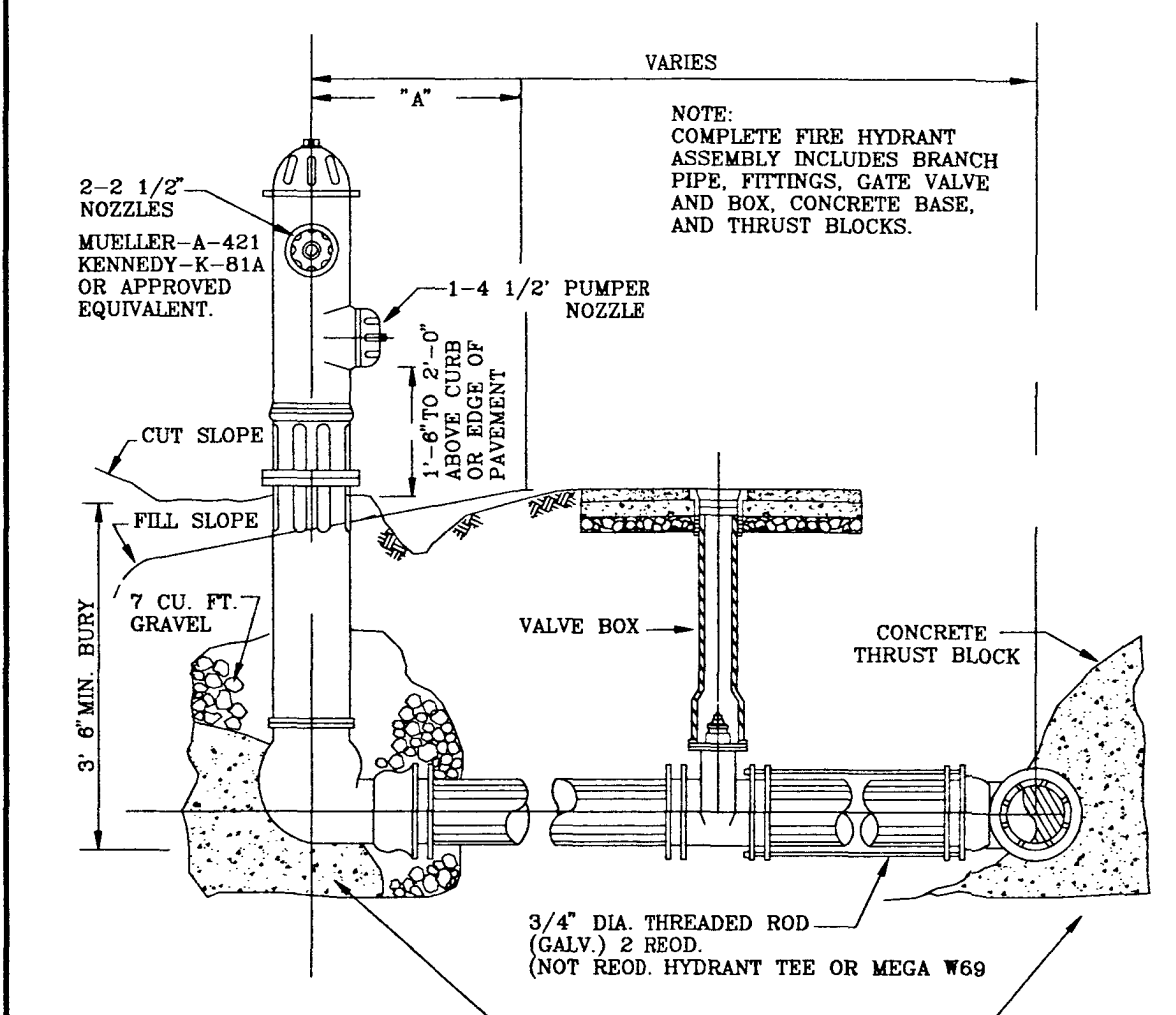
WATER LINE VALVE  
INSTALLATION

TYPICAL SPRINKLER SERVICE



PERMANENT END OF LINE

- NOTES:
- MAIN BODY OF HYDRANT MUST BE SILVER AND HAVE RED CAPS AND BONNET.
  - DISTANCE "A" WITH CURB AND GUTTER. 2' MIN., 4' MAX. FROM BACK OF CURB.
  - DISTANCE "A" WITHOUT CURB AND GUTTER. 6' MIN., 12' MAX. FROM EDGE OF PAVEMENT.
  - AREA AROUND HYDRANT AT A RADIUS OF 4' TO BE APPROXIMATELY LEVEL AND UNOBTSTRUCTED.

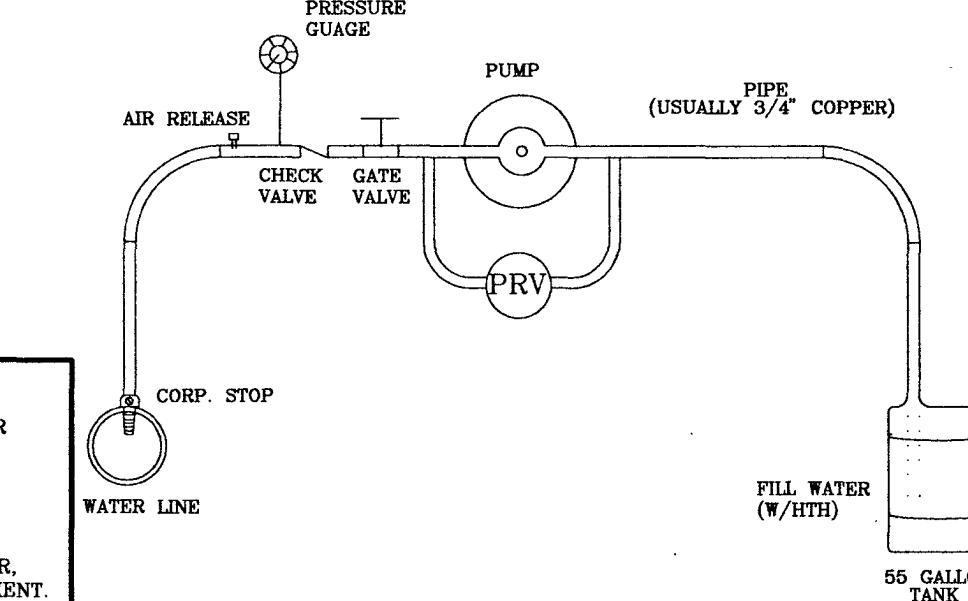


FIRE HYDRANT ASSEMBLY

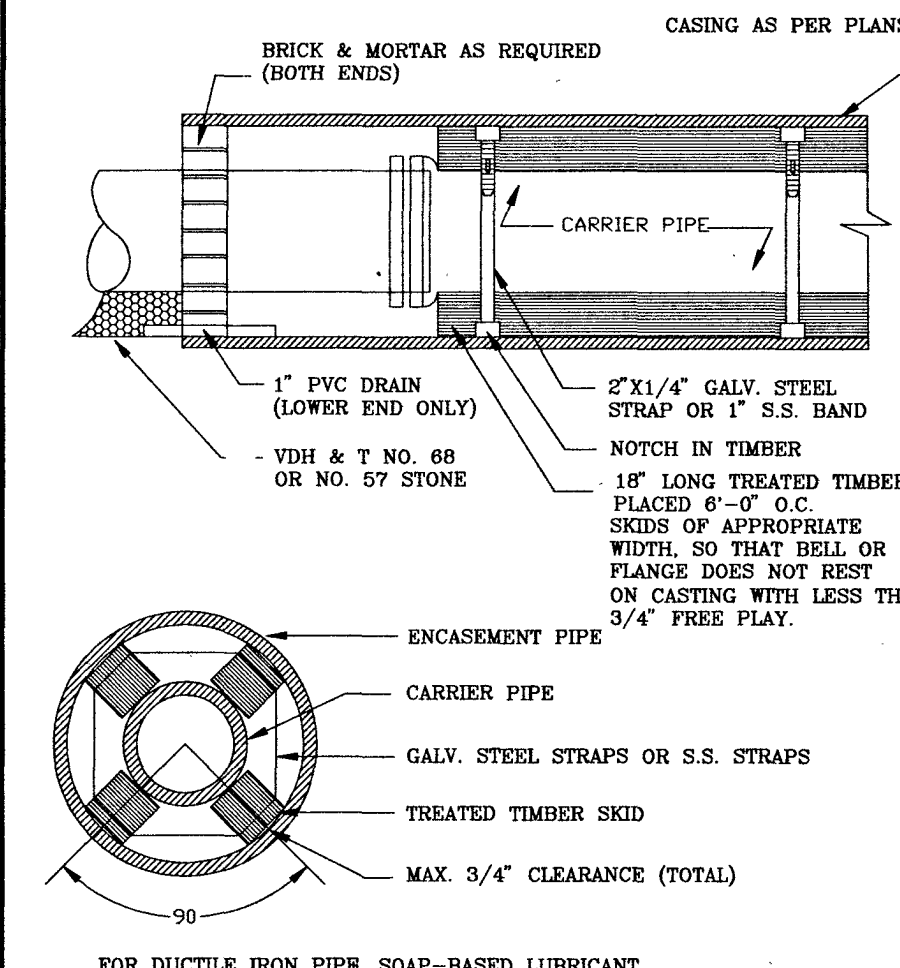
- VAULT & WATER STANDARDS FOR CONSTRUCTION
- VAULTS, MANHOLE BASES, RISERS, TAPERS AND GRADE RINGS SHALL BE PRECAST REINFORCED CONCRETE MANUFACTURED IN ACCORDANCE WITH VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, SECTION 503.
  - MANHOLE BASE AND RISER SECTIONS CONSTRUCTION SHALL BE VERTICAL WITH MAXIMUM 1" IN 4' TILT.
  - A MAXIMUM OF 2 CONSTRUCTION GRADE RINGS OR MAXIMUM OF 1' OF GRADE RINGS AND FRAME AND COVER ADJUSTMENT ARE ALLOWABLE.
  - FINAL ADJUSTMENT OF FRAME AND COVER SHALL BE IN ACCORDANCE TO FRAME AND COVER ADJUSTMENT DETAIL USING NON SHRINK CONCRETE WITH MAXIMUM OF 4 BRICKS OR CONCRETE BLOCKS FOR GRADE CONTROL. FRAME AND COVER ARE TO BE SET AT FINISH GRADE OR 1/4" ABOVE FINISH GRADE IN PAVEMENT AND YARD AREAS AND MINIMUM 6" ABOVE FINISH GRADE IN OTHER AREAS. MANHOLE FRAMES AND COVERS ARE NOT TO BE SET IN DRAINAGE SWALE, VALLEY GUTTER, ETC.
  - JOINTS AND OPENINGS IN MANHOLE UNITS SHALL BE MADE WATERTIGHT BY USING BUTYL SEALANTS, "O" RING GASKETS OR MASTIC. THE CONCRETE SURFACE SHALL BE CLEANED PRIOR TO USE OF SEALANT.
  - FRAME AND COVERS  
A) DEWEY BROTHERS INC. SERIES 2000 OR 2001.  
B) APPROVED EQUAL.
  - ALL LIFT HOLES, OPENINGS AROUND PIPE, ETC. SHALL BE FILLED FROM INSIDE AND OUTSIDE TO THICKNESS OF STRUCTURE.
  - ALL UNITS USED IN MANHOLE AND VAULT CONSTRUCTION SHALL BE SECURELY CONNECTED BY INTERLOCKING BETWEEN UNITS, CONCRETE COLLARS OR OTHER APPROVED METHODS.
  - AREA AROUND METER BOX AT A RADIUS OF 4' TO BE ON FINISH GRADE AND UNOBTSTRUCTED.

APPROVED MATERIALS

- METER BOXES  
A) FORD IONCRETE METER BOX WITH NO. 2 IONCRETE TOP OR APPROVED EQUAL.  
B) SOUTHEASTERN DISTRIBUTOR MODEL MB-5 PLASTIC BOX WITH FORD OR CHARLOTTE MODEL C-32 CAST IRON BASE AND COVER (NOT APPROVED FOR ROADWAY AREA).  
C) APPROVED EQUAL.
- METER SETTER (INCLUDING INLET RISER VALVE AND DOUBLE CHECK VALVE ON OUTLET)  
A) FORD VBHH 72-15-WD.  
B) APPROVED EQUAL.
- METER SETTER EXTENDER OR RISER  
A) NOT ALLOWED UNLESS APPROVED BY THE UTILITY DIRECTOR.
- CORPORATION STOP  
A) MUELLER MODEL H-1500  
B) FORD MODEL F-600  
C) APPROVED EQUAL.
- U-BRANCH  
A) FORD MODEL U28-43  
B) MUELLER MODEL H 15362  
C) APPROVED EQUAL.
- SERVICE SADDLES (FOR PVC PIPE)  
A) FORD MODEL FS 202 AND FC 202 WITH STAINLESS STEEL BAND AND BOLTS.  
B) APPROVED EQUAL.



TYPICAL WATER PRESSURE TEST RIG



PIPE SUPPORT IN CASING PIPE