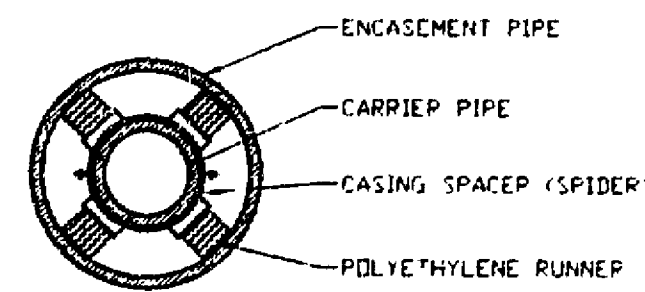
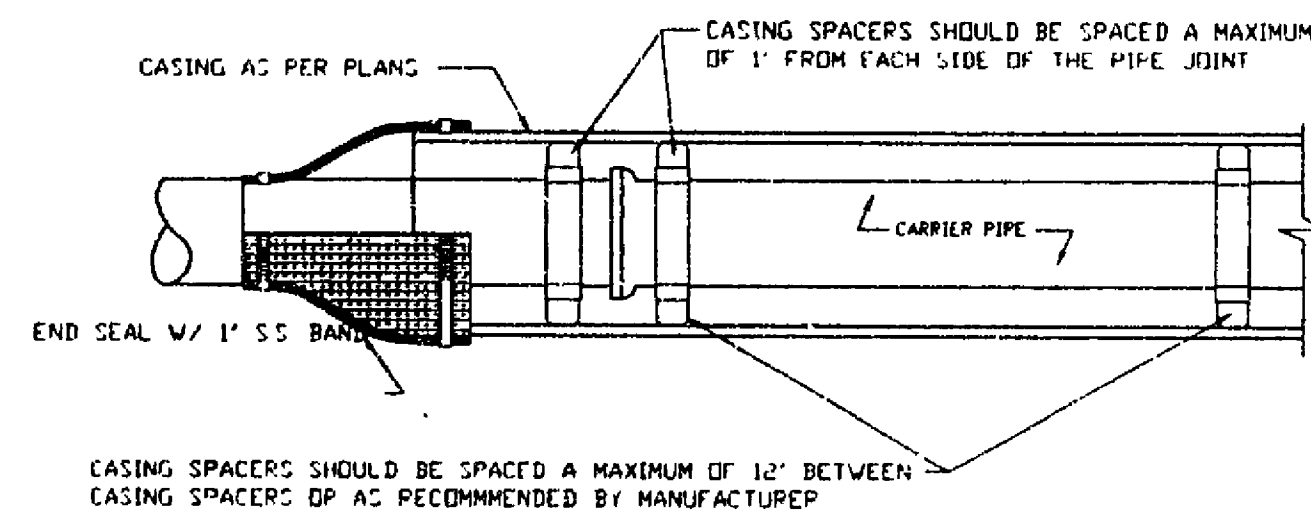


ALTERNATE VALVE VAULT (MANHOLE)

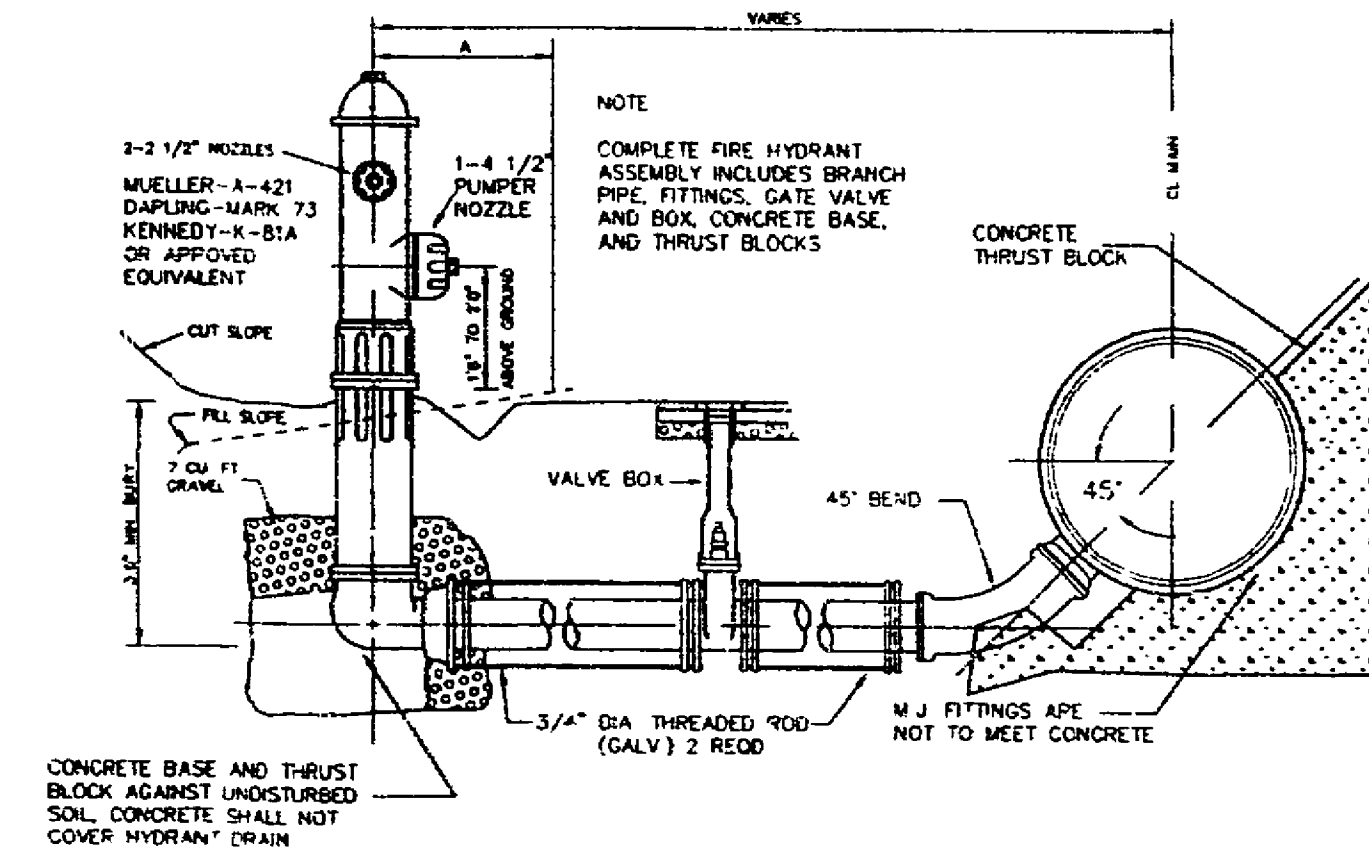


ALTERNATE PIPE SUPPORT IN CASING PIPE  
18" LONG TREATED TIMBER SKIDS OF APPROPRIATE WIDTH SO THAT BELLS OR FLANGES DO NOT REST ON CASING WITH MORE THAN 2/4" FREE PLAY. SKIDS TO BE PLACED AT 4'-0" O.C. AND SECURED WITH 2"x4" GALV. STEEL STRAPS OR 1" S.S. BANDS. SOAP-BASED LUBRICANT MAY BE USED FOR SLIDING OF SKID WITH DUCTILE IRON PIPE AND FLARE-BASED LUBRICANT MAY BE USED FOR SLIDING OF SKID WITH PVC PIPE.

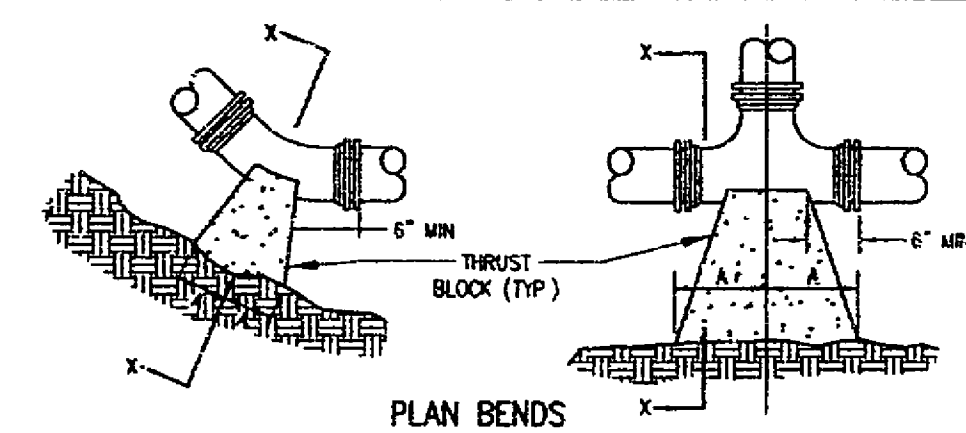
NOTE: A 1" DRAIN WILL BE REQUIRED ON THE LOWER END OF THE CASING IF THE CASING ENDS ARE SEALED WITH MORTAR AND BRICK.

PIPE SUPPORTS IN CASING PIPE

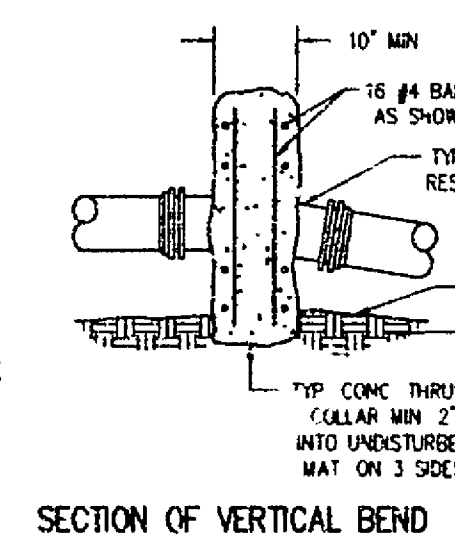
- NOTES
- (1) MAIN BODY OF HYDRANT MUST BE SILVER AND HAVE RED CAPS AND BONNET
  - (2) DISTANCE "A" WITH CURB AND GUTTER, 2' MIN.; 4' MAX FROM BACK OF CURB
  - (3) DISTANCE "A" WITHOUT CURB AND GUTTER, 5' MIN.; 12' MAX FROM EDGE OF PAVEMENT
  - (4) AREA AROUND HYDRANT AT A RADIUS OF 4' TO BE APPROXIMATELY LEVEL AND UNCONSTRUCTED FOR ROAD CONSTRUCTION



FIRE HYDRANT ASSEMBLY



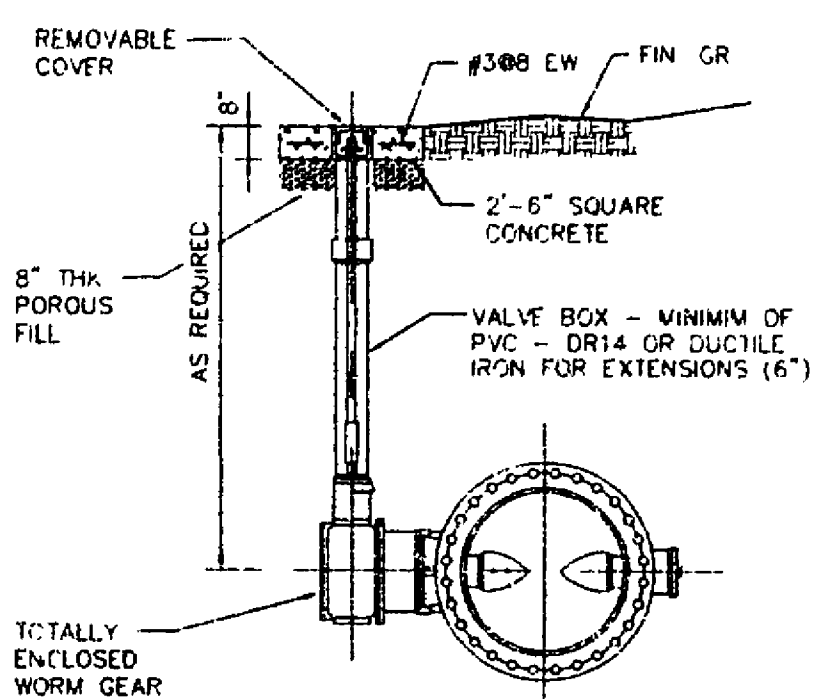
BENDS AND TEES



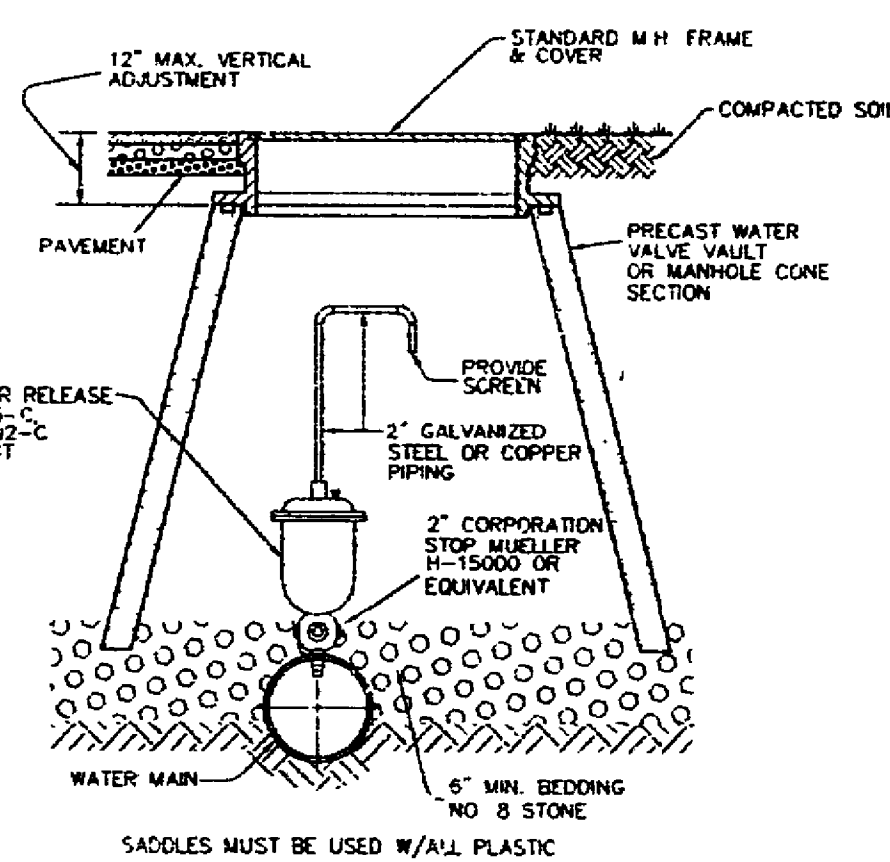
SECTION OF VERTICAL BEND

PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE	PLUG
4"	12"	8"	6"	4"	11"	10"
6"	18"	12"	10"	8"	17"	16"
8"	24"	16"	14"	12"	23"	22"
10"	30"	20"	18"	16"	29"	28"
12"	36"	24"	22"	20"	35"	34"
14"	42"	28"	26"	24"	41"	40"
16"	48"	32"	30"	28"	47"	46"
18"	54"	36"	34"	32"	53"	52"
20"	60"	40"	38"	36"	59"	58"
24"	72"	48"	46"	44"	69"	68"
30"	90"	60"	58"	56"	87"	86"

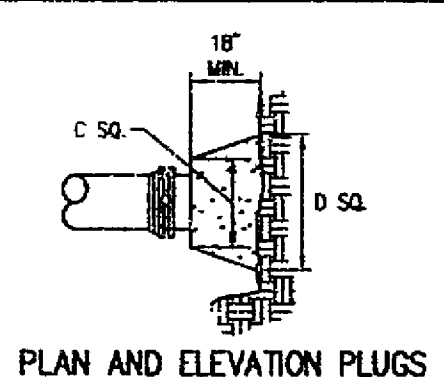
THRUST BLOCK CONSTRUCTION



BURIED BUTTERFLY VALVE (BFV)



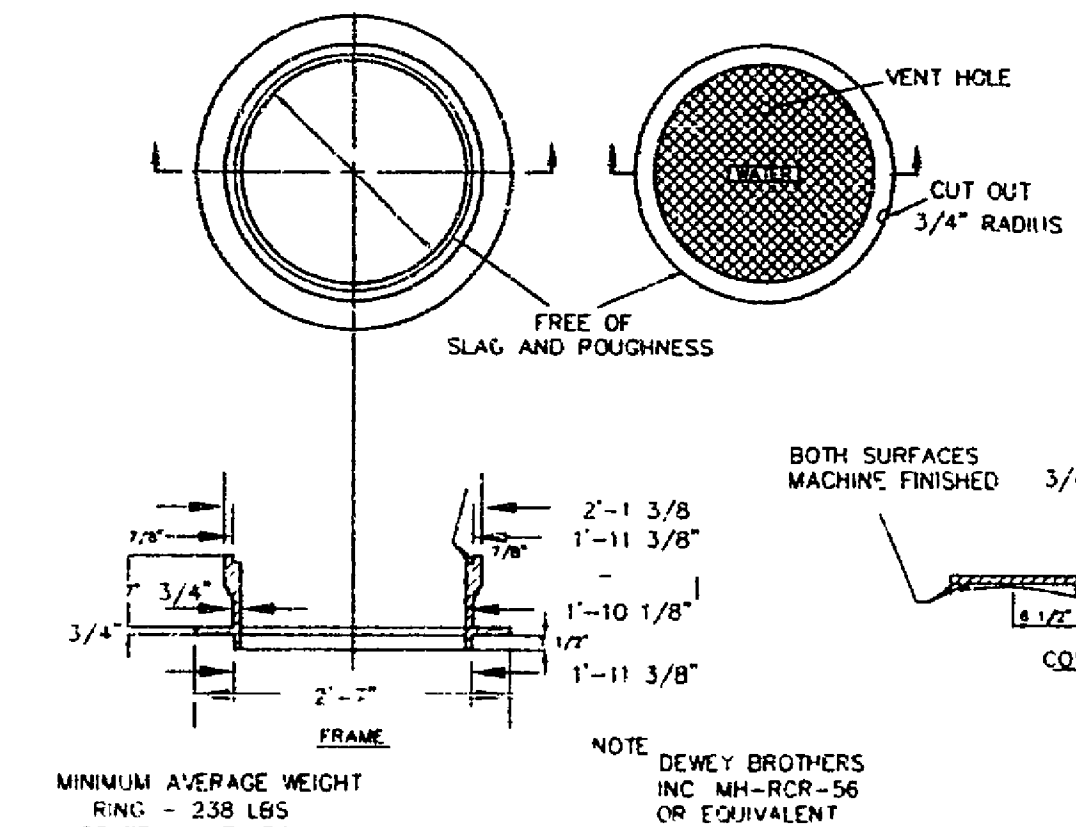
AUTOMATIC AIR RELEASE ASSEMBLY



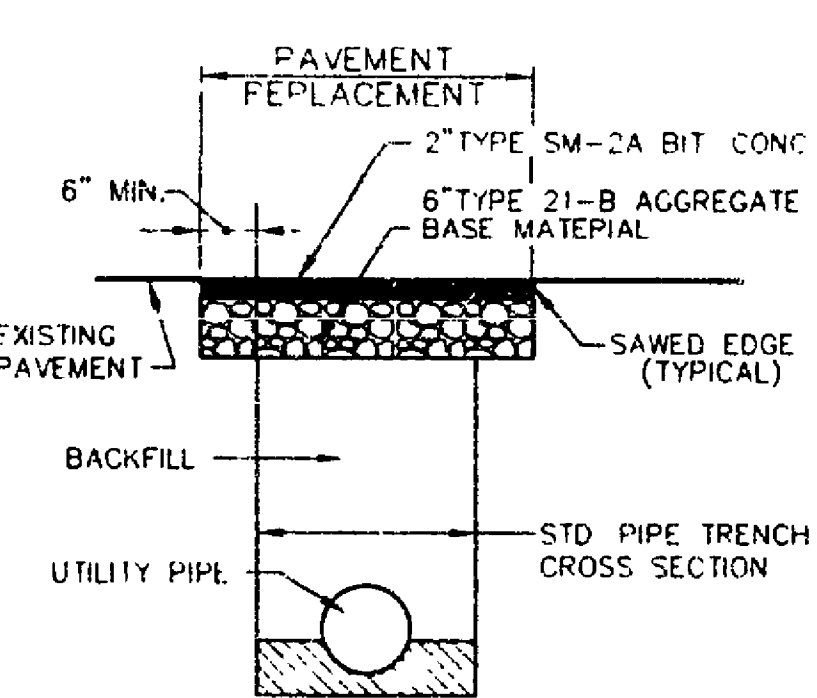
PLAN AND ELEVATION PLUGS

- NOTES
- (1) FOR VERT BEND DOWN IN EXCESS OF 1.25', ANCHORAGE SHALL BE RECOMMENDED BY ENGINEER
  - (2) FOR VERT BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ BEND
  - (3) CLAMPS & BOLTS SHALL BE PROTECTED FROM CONC WHEN POURING THRUST BLOCKS
  - (4) ALL THRUST BLOCK & SUPPORT CONC SHALL BE CLASS B
  - (5) THRUST BLOCKS WITH 10" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER
- PRESSURE = 200 psi  
BEARING = 2000 psi  
FACTOR OF SAFETY = 1.5

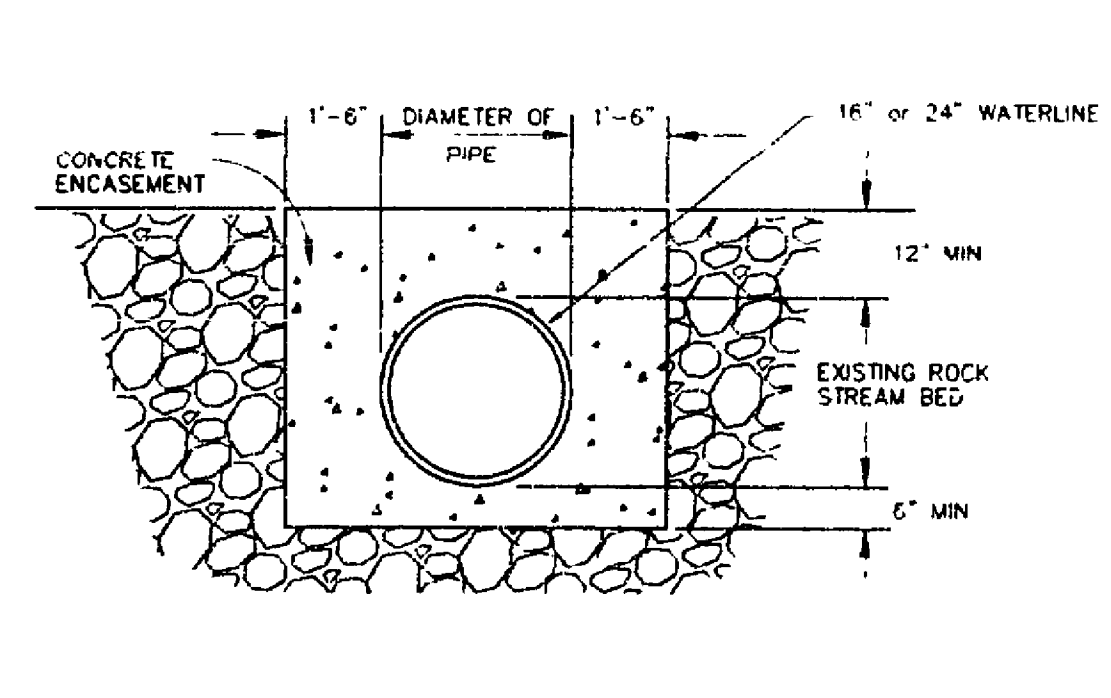
NOTE:  
1. SUBSTITUTE SEWER FOR WATER ON SANITARY SEWER MANHOLE FRAME & COVERS.



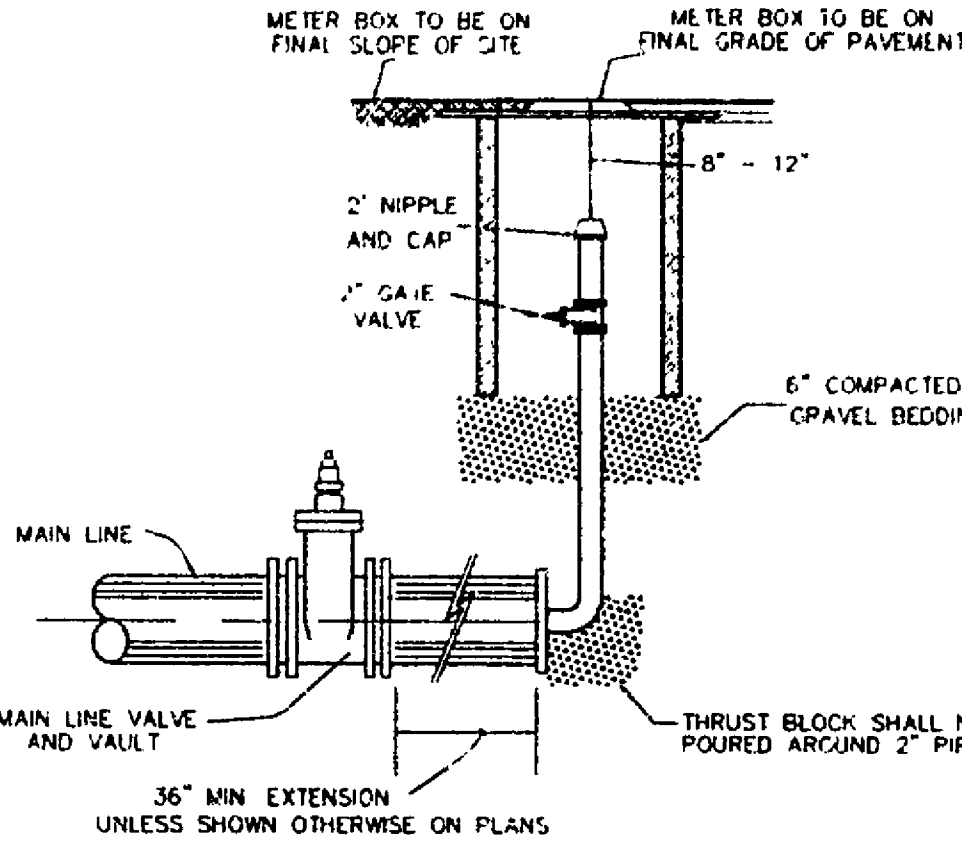
MANHOLE FRAME AND COVER



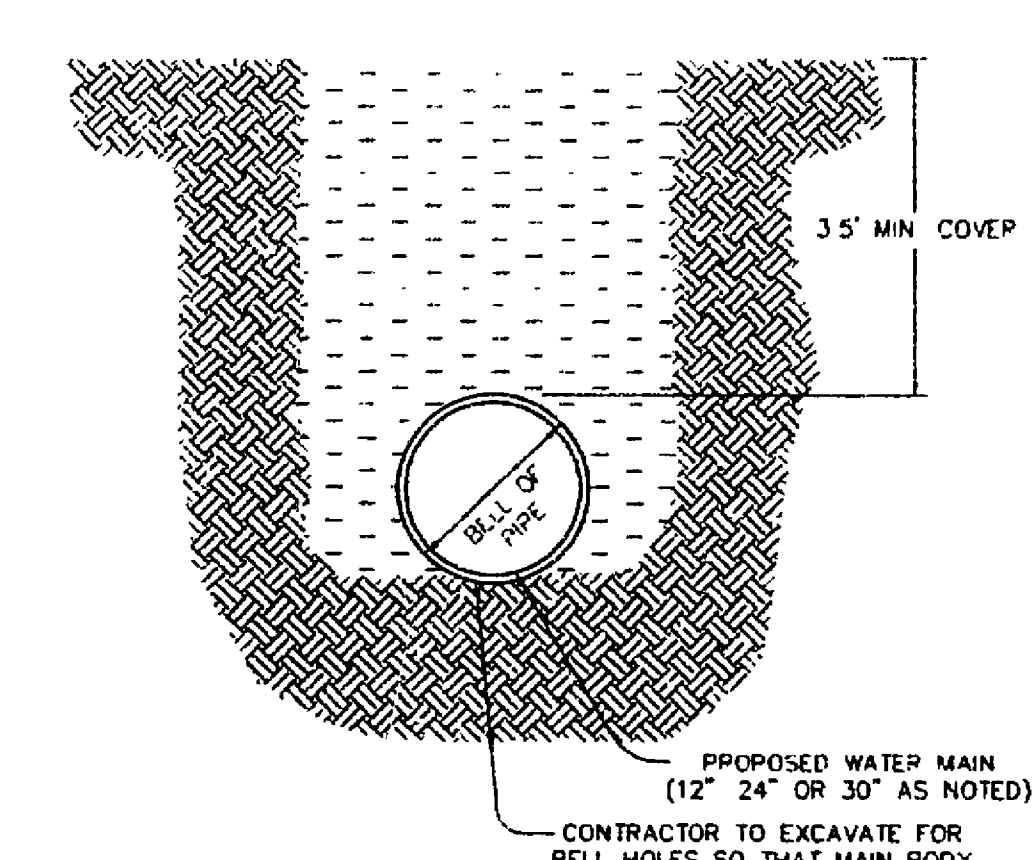
PAVEMENT REPLACEMENT



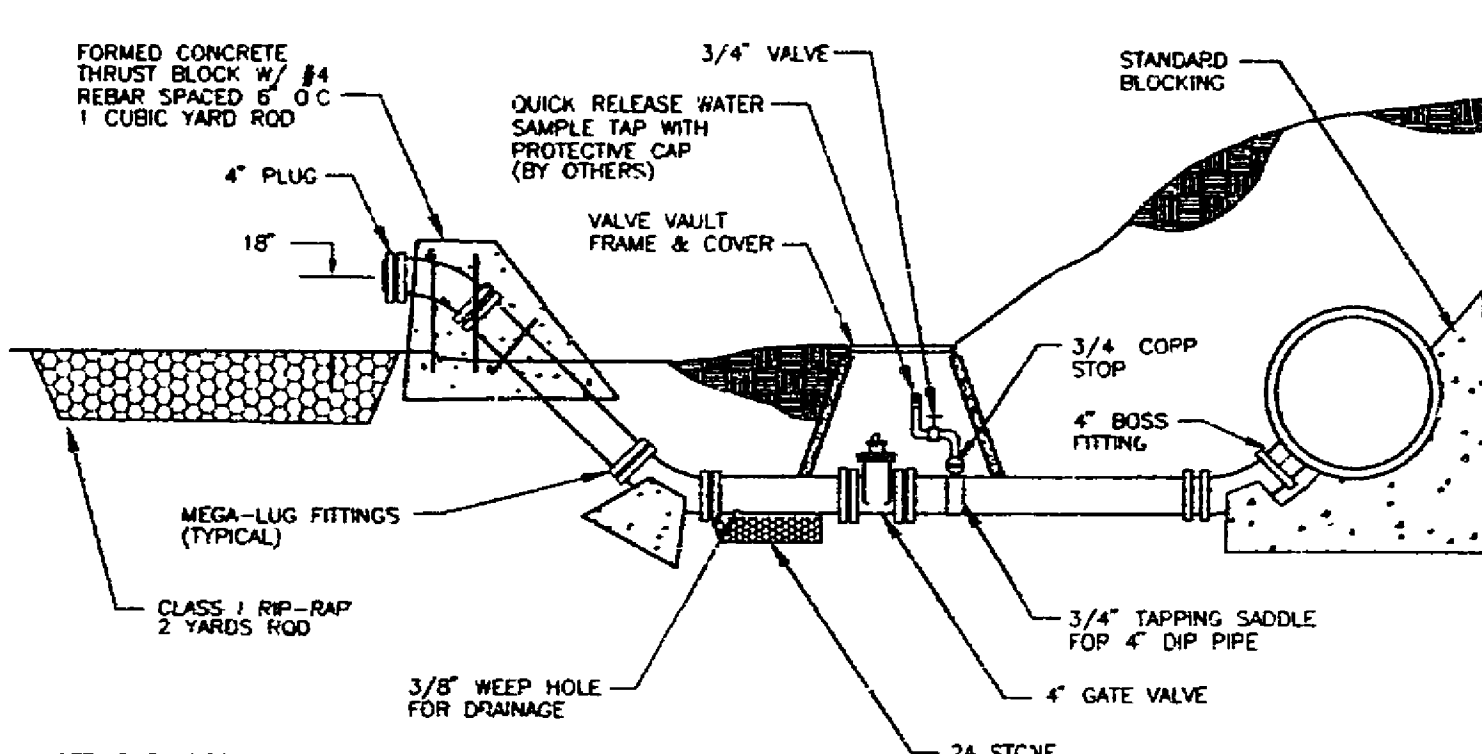
STREAM CROSSING DETAIL



BLOW OFF ASSEMBLY  
TEMPORARY TERMINATION



WATER MAIN INSTALLATION



- NOTES
- (1) INSTALL FLUSH TYPE BLOW OFF WITH A SAMPLING TAP WHERE SPECIFICALLY CALLED OUT ON CONSTRUCTION DRAWINGS. WHERE NO SAMPLING TAP IS SPECIFIED OMT 1" SAMPLING TAP AND ALL ASSOCIATED APPURTENANCES. IN ALL OTHER INSTANCES THE STANDARD BLOW OFF DETAIL SHOULD BE USED FOR CONSTRUCTION OF BLOW OFF ASSEMBLY
  - (2) SAMPLING TAP SHALL BE CONSTRUCTED USING GUIDELINES AS SET FORTH IN THE ROANOKE COUNTY PLUMBING STANDARDS

FLUSH TYPE BLOW OFF

- VAULT AND WATER STANDARDS FOR CONSTRUCTION
- (1) 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 203.
  - (2) MANHOLE BASE AND RISER SECTIONS CONSTRUCTION SHALL BE VERTICAL WITH MAXIMUM 1" IN 4' TILT.
  - (3) A MAXIMUM OF 2 CONSTRUCTION GRADE RINGS OR MAXIMUM OF 1' OF GRADE RINGS AND FRAME AND COVER ADJUSTMENT ARE ALLOWABLE.
  - (4) 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.
  - (5) JOINTS AND OPENINGS IN MANHOLE UNITS SHALL BE MADE WATER-TIGHT BY USING BUTYL SEALANTS, "O" RING GASKETS OR MASTIC. THE CONCRETE SURFACE SHALL BE CLEANED PRIOR TO USE OF SEALANT.
  - (6) FRAME AND COVERS  
A) DEWEY BROTHERS INC. MH - RCR - 56  
B) APPROVED EQUAL
  - (7) ALL LIFT HOLES, OPENINGS AROUND PIPE, ETC SHALL BE FILLED FROM INSIDE AND OUTSIDE TO THICKNESS OF STRUCTURE.
  - (8) ALL UNITS USED IN MANHOLE AND VAULT CONSTRUCTION SHALL BE SECURELY CONNECTED BY INTERLOCKING BETWEEN UNITS, CONCRETE COLLARS OR OTHER APPROVED METHODS.
  - (9) AREA AROUND METER BOX AT A RADIUS OF 4' TO BE ON FINISH GRADE AND UNOBSTRUCTED EXCEPT FOR ROAD CONSTRUCTION.

- APPROVED MATERIALS
- (1) METER BOXES  
A) FORD IRON/CONCRETE METER BOX WITH NO. 2 IRON/CONCRETE 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
  - (2) METER SETTER (INCLUDING INLET RISER VALVE AND DOUBLE CHECK VALVE ON OUTLET)  
A) FORD METER SETTER-15-NO  
B) APPROVED EQUAL
  - (3) METER SETTER EXTENDER OR RISER  
A) NOT ALLOWED UNLESS APPROVED BY THE UTILITY DIRECTOR
  - (4) CORPORATION STOP  
A) MUELLER MODEL H-1500  
B) FORD MODEL T-100  
C) APPROVED EQUAL
  - (5) U-BRANCH  
A) FORD MODEL U28-43  
B) MUELLER MODEL H 15362  
C) APPROVED EQUAL
  - (6) SERVICE SADDLES (FOR PVC PIPE)  
A) FORD MODEL FS 202 AND FC 202 WITH STAINLESS STEEL BAND AND BOLTS.  
B) APPROVED EQUAL

WATER DETAILS  
FOR  
NORTH LOOP WATER TRANSMISSION MAIN  
PHASE 1  
FOR  
THE COUNTY OF ROANOKE  
SITUATE CANTAMBA MAGISTERIAL DISTRICT  
COUNTY OF ROANOKE, VIRGINIA  
SCALE: AS SHOWN DATE: JANUARY 5, 1996

DESIGNED BY \_\_\_\_\_  
DRAWN BY \_\_\_\_\_  
CHECKED BY \_\_\_\_\_  
W.D. # 92-1027  
N.B. \_\_\_\_\_  
TAX NO. \_\_\_\_\_

T. P. PARKER & SON  
216 Boulevard  
Post Office Box 39  
Salem, Virginia 24158  
Telephone: 540-367-1153  
FAX: 540-369-5787

TPP&S  
ENGINEERS  
SURVEYORS  
PLANNERS