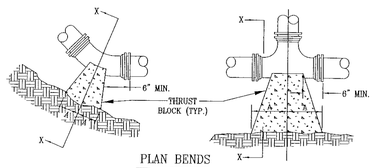
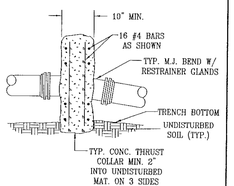
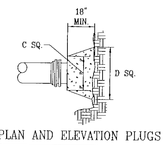


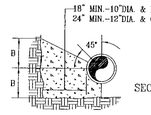
PLAN BENDS



SECTION OF VERTICAL BEND



PLAN AND ELEVATION PLUGS



SECTION X-X

BENDS AND TEES

NOTES:

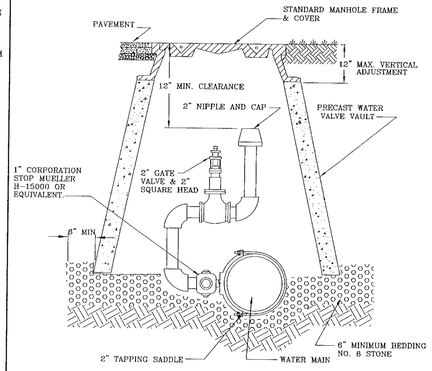
1. FOR VERT. BEND DOWN IN EXCESS OF 11 1/4° BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
2. FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
3. GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
4. ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
5. THRUST BLOCKS WITH "B" 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

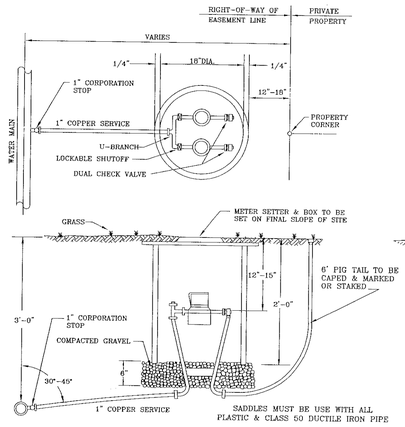
PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	8"	12"	8"	8"	6"	6"	6"	6"	11"	9"	10"	6"
6"	18"	12"	8"	10"	8"	8"	8"	8"	11"	10"	12"	18"
8"	18"	13"	10"	10"	8"	8"	8"	8"	11"	12"	12"	24"
10"	20"	15"	12"	12"	8"	12"	8"	12"	14"	15"	15"	30"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
16"	26"	20"	16"	18"	11"	13"	11"	13"	18"	20"	20"	36"
24"	82"	42"	62"	30"	44"	22"	22"	16"	82"	42"	82"	42"
30	185"	42"	100"	42"	52"	42"	40"	30"	185"	42"	185"	42"

THRUST BLOCK CONSTRUCTION

NO SCALE

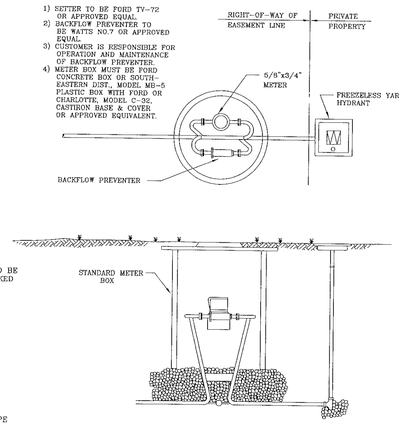


IN LINE BLOW-OFF ASSMEBLY



DOUBLE RESIDENTIAL WATER SYSTEM

1) SETTER TO BE FORD TY-72 OR APPROVED EQUAL.
2) BACKFLOW PREVENTER TO BE WATTS NO.7 OR APPROVED EQUAL.
3) CUSTOMER IS RESPONSIBLE FOR OPERATION AND MAINTENANCE OF BACKFLOW PREVENTER.
4) METER BOX MUST BE FORD CONCRETE BOX OR SOUTH-EASTERN DIST., MODEL MB-5 PLASTIC BOX WITH FORD OR CHARLOTTE, MODEL C-32, CASTIRON BASE & COVER OR APPROVED EQUIVALENT.



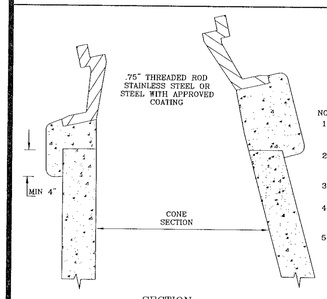
TYPICAL SPRINKLER SERVICE

VAULT & 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 503.
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 WATERTIGHT 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. SERIES 2000 OR 2001.
   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.

APPROVED MATERIALS

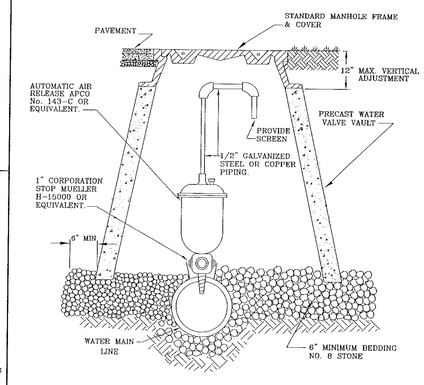
1. METER BOXES
   A) FORD IRONCRETE METER BOX WITH NO. 2 IRONCRETE TOP OR APPROVED EQUAL.
   B) SOUTHEASTERN DISTRIBUTOR MODEL MB-5 PLASTIC BOX WITH FORD OR CHARLOTTE MODEL C-32 CAST IRON BASE AND COVER (NOT APPROVED FOR ROADWAY AREA).
   C) APPROVED EQUAL.
2. METER SETTER (INCLUDING INLET RISER VALVE AND DOUBLE CHECK VALVE ON OUTLET).
   A) FORD VBHH 72-15-WD.
   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 F-600
   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.



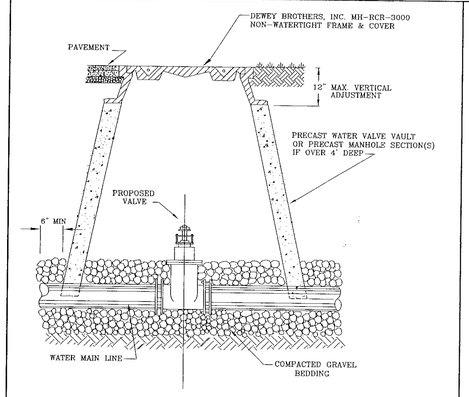
SECTION

NOTE:
1 USE MODERATELY STIF MIX OF NON SHRINK CEMENT, SAND AND 1/2" AND LESS DIAMETER GRAVEL WITH 28 DAYS, STRENGTH AT 3,000 P.S.I.
2 MIX IS TO BE FORCED INTO ALL GROOVES AND UNDER FLANGE OF FRAME AND LEFT AT OR ABOVE TOP OF FLANGE.
3 MAX. OF 4 BRICK OR CONCRETE BLOCKS TO BE USED FOR GRADE CONTROL.
4 DO NOT BACKFILL AROUND FRAME AND COVER, FOR 48 HOURS AFTER CON. IS PLACED. THE USE OF HIGHEARLY STRENGTH CONCRETE WOULD REDUCE TIME TO (24HRS).
5 RESTRICT TRAFFIC LOAD FOR MIN. 24 HOURS.

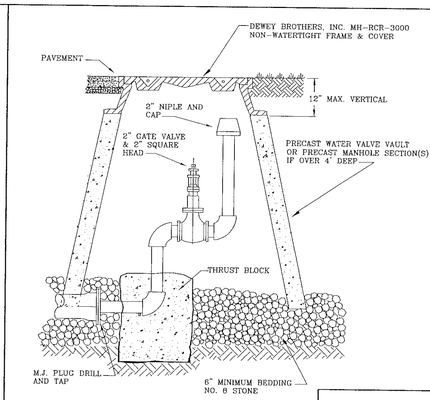
INSTALLATION DETAIL FOR ALL FRAMES AND COVERS



AUTOMATIC AIR RELEASE ASSEMBLY

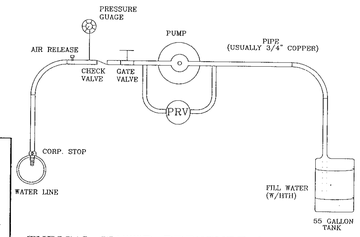


WATER LINE VALVE INSTALLATION

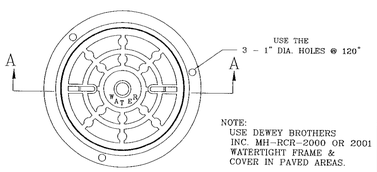


PERMANENT END OF LINE

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 CUTTER, 6' MIN., 12' MAX. FROM EDGE OF PAVEMENT.
(4) AREA AROUND HYDRANT AT A RADIUS OF 4' TO BE APPROXIMATELY LEVEL AND UNOBSTRUCTED.

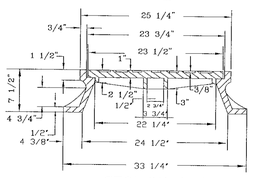


TYPICAL WATER PRESSURE TEST RIG



PLAN

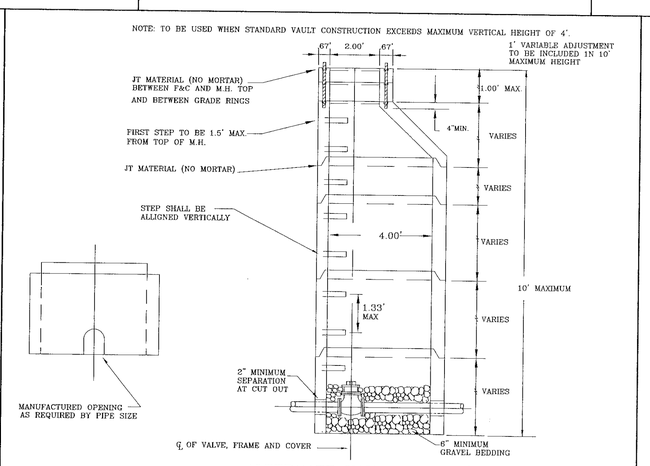
NOTE:
USE DEWEY BROTHERS INC. MH-RCR-2000 OR 2001 WATERTIGHT FRAME & COVER IN PAVED AREAS.



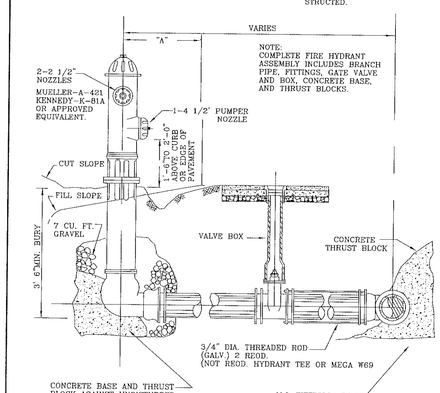
SECTION A-A

MANHOLE FRAME AND COVER

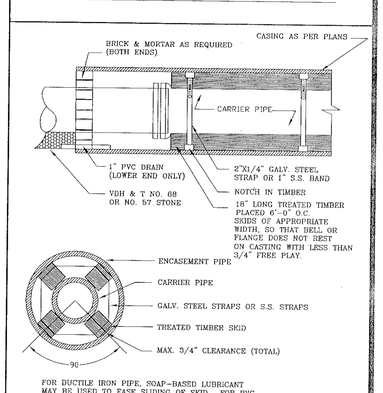
PAVED 2001EC
UNPAVED 2001(ABOVE)



ALTERNATE VALVE VAULT (MANHOLE)

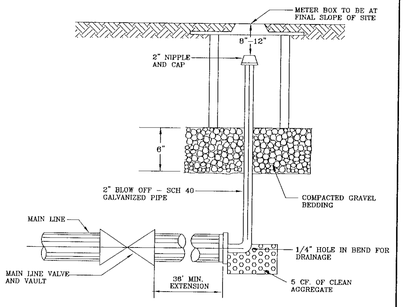


FIRE HYDRANT ASSEMBLY



FOR DUCTILE IRON PIPE, SOAP-BASED LUBRICANT MAY BE USED TO EASE SLIDING OF SKID. FOR PVC PIPE, FLAX SOAP OR DRILLING MUD SHOULD BE UTILIZED FOR LUBRICATION.

PIPE SUPPORT IN CASING PIPE



BLOW OFF ASSEMBLY FOR MAIN LINE TEMPORARY TERMINATION

DEPARTMENT OF ENGINEERING AND INSPECTIONS

NO.	REVISIONS	DATE
1		05-22-95
2	ADDED IN-LINE BLOWOFF	05-02-00
3		
4		
5		
6		

COUNTY OF ROANOKE

DATE: 03-22-95
SCALE: NOT TO SCALE
DRAWING BY: A.M.F.
DESIGNED BY:
APPROVED BY:

WATER DETAILS
THE ORCHARDS APARTMENT HOMES

SHEET 15 OF 18

Y:\Paul\Projects\ro11599\raw\roanoke\CAD\DETAILS\WATER\W_DTL.DWG Tue May 02 14:11:05 2000