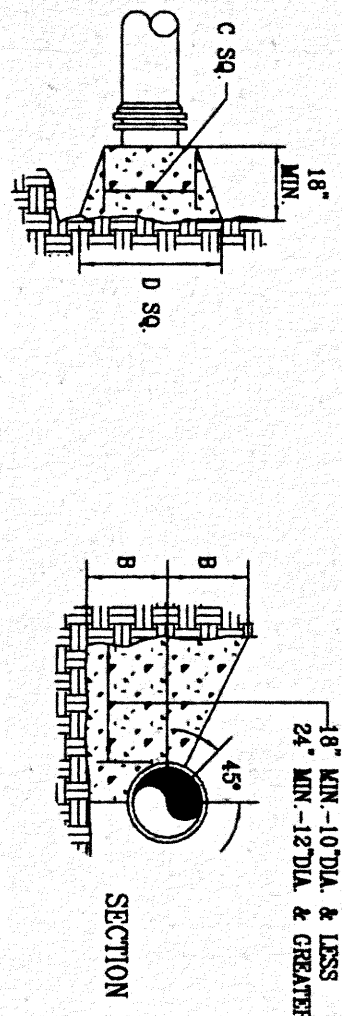
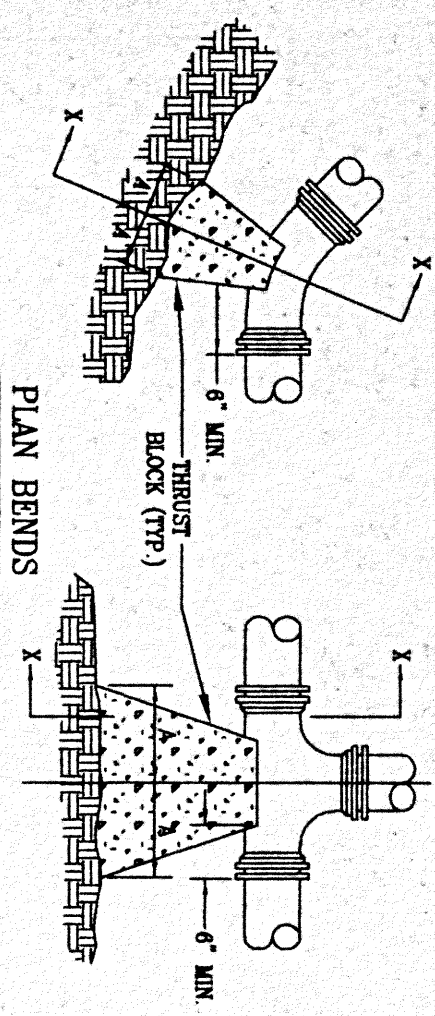
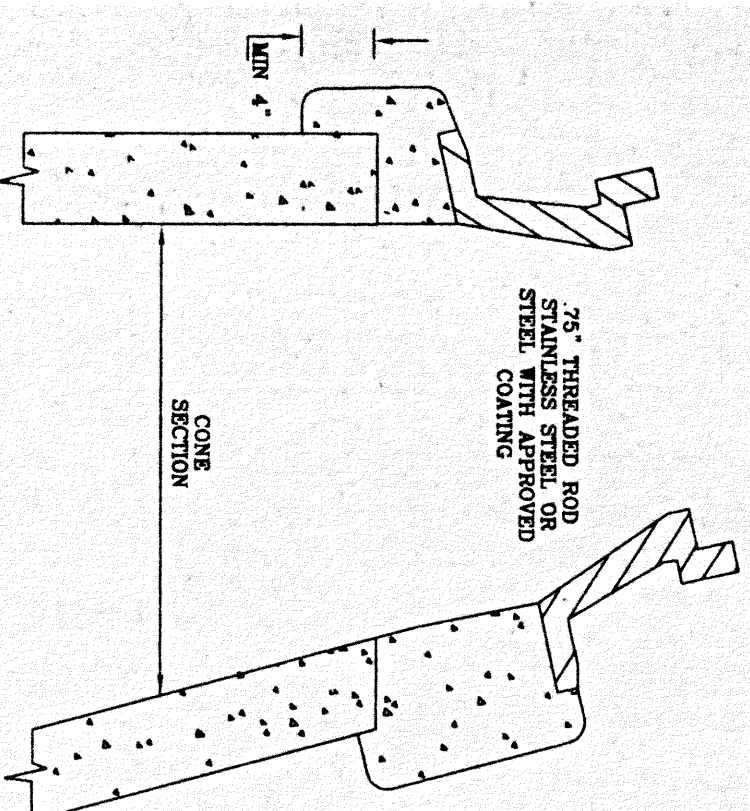




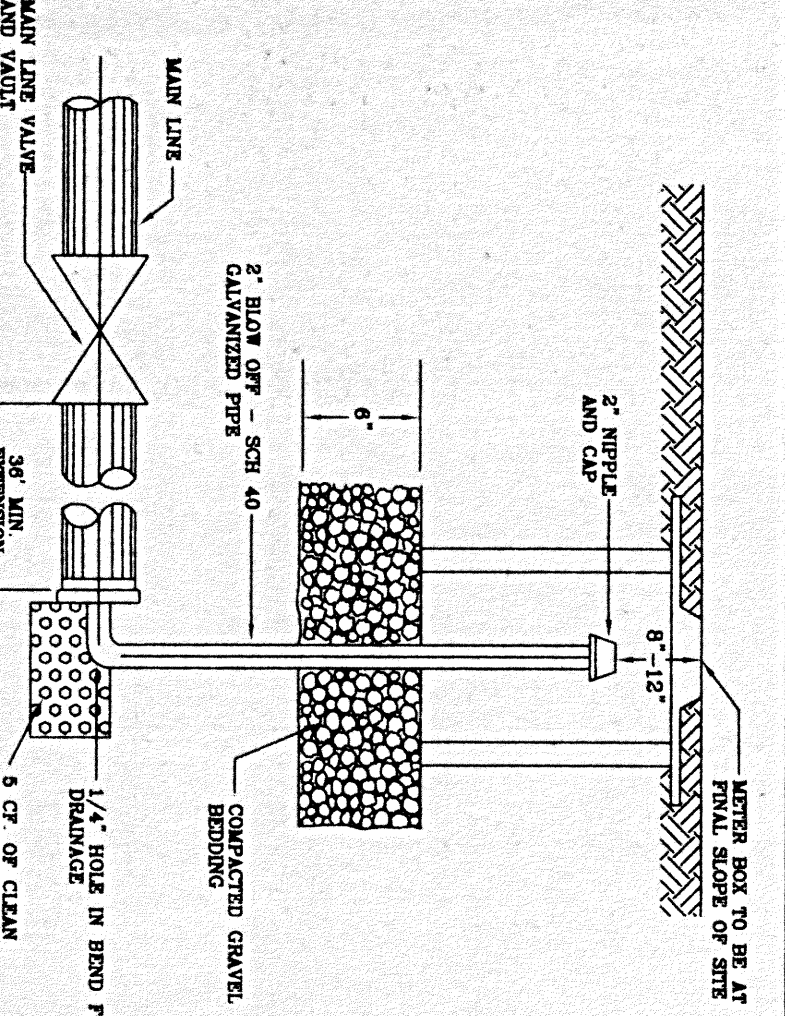
PIPE	90° BEND	45° BEND	2 1/2° BEND	1 1/4° BEND	TEE	FLANGE
1/2"	10	10	10	10	10	10
3/4"	10	10	10	10	10	10
1"	10	10	10	10	10	10
1 1/4"	10	10	10	10	10	10
1 1/2"	10	10	10	10	10	10
2"	10	10	10	10	10	10
2 1/2"	10	10	10	10	10	10
3"	10	10	10	10	10	10
3 1/2"	10	10	10	10	10	10
4"	10	10	10	10	10	10
4 1/2"	10	10	10	10	10	10
5"	10	10	10	10	10	10
5 1/2"	10	10	10	10	10	10
6"	10	10	10	10	10	10
6 1/2"	10	10	10	10	10	10
7"	10	10	10	10	10	10
7 1/2"	10	10	10	10	10	10
8"	10	10	10	10	10	10
8 1/2"	10	10	10	10	10	10
9"	10	10	10	10	10	10
9 1/2"	10	10	10	10	10	10
10"	10	10	10	10	10	10
10 1/2"	10	10	10	10	10	10
11"	10	10	10	10	10	10
11 1/2"	10	10	10	10	10	10
12"	10	10	10	10	10	10
12 1/2"	10	10	10	10	10	10
13"	10	10	10	10	10	10
13 1/2"	10	10	10	10	10	10
14"	10	10	10	10	10	10
14 1/2"	10	10	10	10	10	10
15"	10	10	10	10	10	10
15 1/2"	10	10	10	10	10	10
16"	10	10	10	10	10	10
16 1/2"	10	10	10	10	10	10
17"	10	10	10	10	10	10
17 1/2"	10	10	10	10	10	10
18"	10	10	10	10	10	10
18 1/2"	10	10	10	10	10	10
19"	10	10	10	10	10	10
19 1/2"	10	10	10	10	10	10
20"	10	10	10	10	10	10
20 1/2"	10	10	10	10	10	10
21"	10	10	10	10	10	10
21 1/2"	10	10	10	10	10	10
22"	10	10	10	10	10	10
22 1/2"	10	10	10	10	10	10
23"	10	10	10	10	10	10
23 1/2"	10	10	10	10	10	10
24"	10	10	10	10	10	10
24 1/2"	10	10	10	10	10	10
25"	10	10	10	10	10	10
25 1/2"	10	10	10	10	10	10
26"	10	10	10	10	10	10
26 1/2"	10	10	10	10	10	10
27"	10	10	10	10	10	10
27 1/2"	10	10	10	10	10	10
28"	10	10	10	10	10	10
28 1/2"	10	10	10	10	10	10
29"	10	10	10	10	10	10
29 1/2"	10	10	10	10	10	10
30"	10	10	10	10	10	10

THRUST BLOCK CONSTRUCTION
NO SCALE

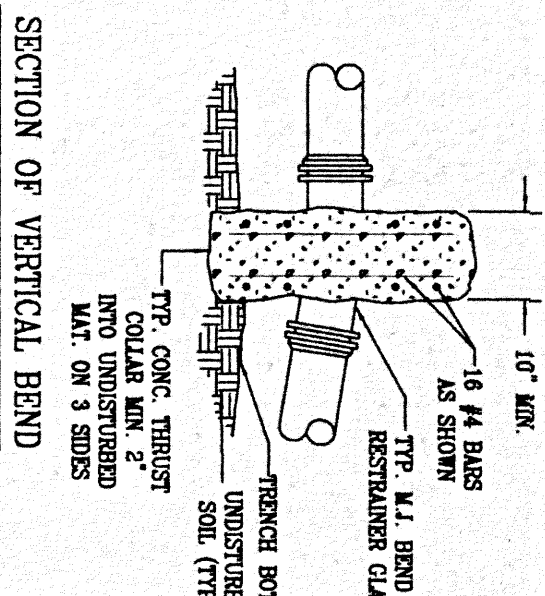


- NOTE:
- USE APPROPRIATE SIZE AND STRENGTH CONCRETE. SAND AND 1/2" MAX DIAMETER GRAVEL WITH 28 DAYS STRENGTH AT 3000 PSI.
 - MIX IS TO BE FORCED INTO ALL GROOVES AND UNDER FLANGE OF FRAME AND LEFT AT OR ABOVE TOP OF MAX OF 4 BLOCK OR CONCRETE BLOCKS TO BE USED FOR GRADE CONTROL.
 - DO NOT BACKFILL AROUND FRAME AND COVER FOR 48 HOURS.
 - DO NOT BACKFILL AROUND FRAME AND COVER FOR 48 HOURS.
 - RESTRICT TRAFFIC LOAD FOR MIN. 24 HOURS.

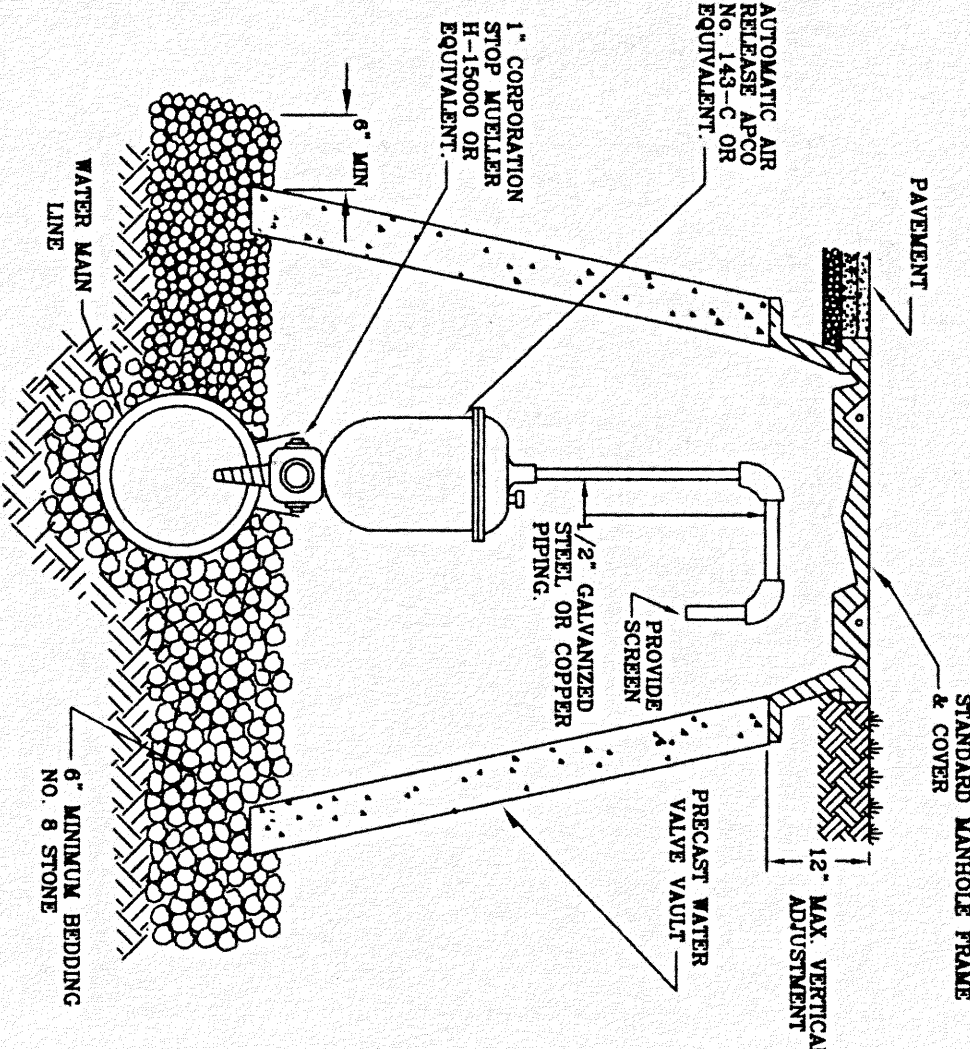
INSTALLATION DETAIL
FOR ALL FRAMES AND COVERS



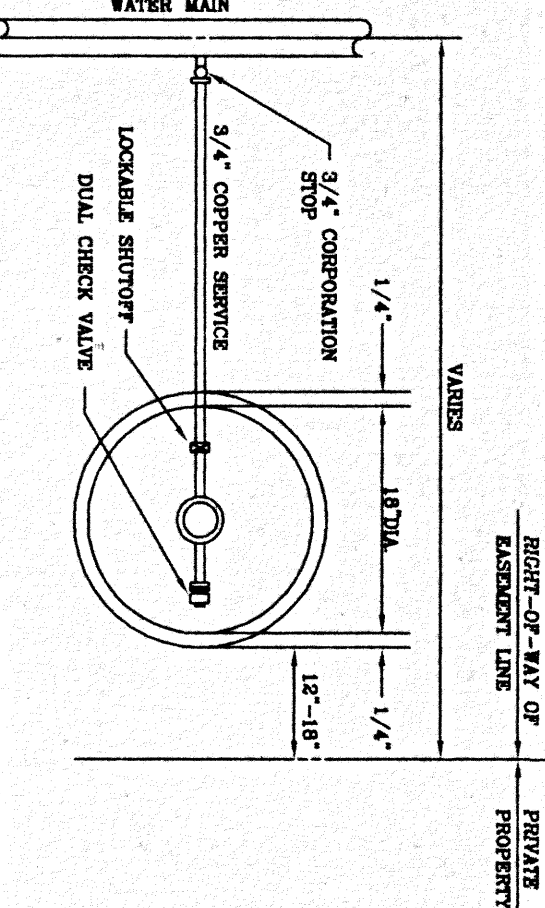
BLOW OFF ASSEMBLY FOR MAIN LINE
TEMPORARY TERMINATION



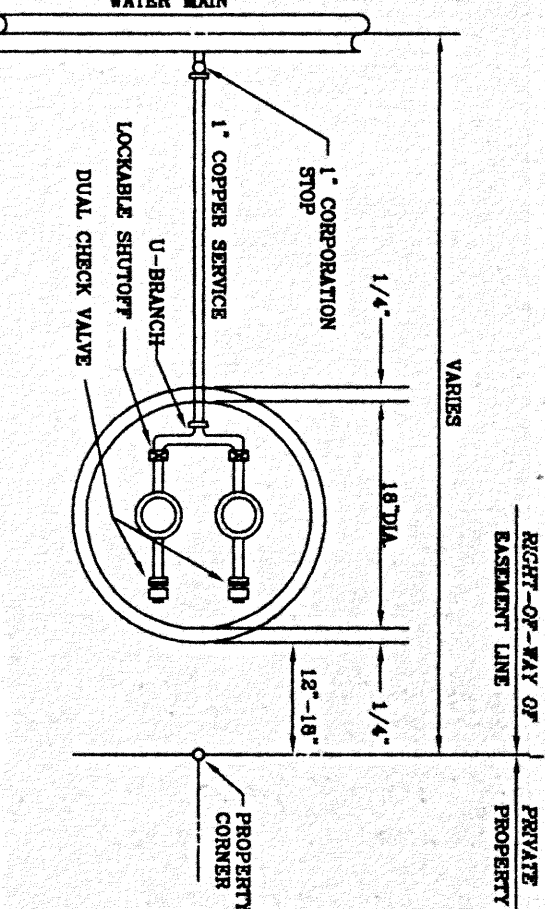
- NOTES:
- FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
 - FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
 - CLAMPS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
 - ALL THRUST BLOCK & SURROUND CONC. SHALL BE 3000 PSI READY MIX CONC.
 - THRUST BLOCKS ARE TO BE DIMENSIONED TO BE 12" MAX. VERTICAL ADJUSTMENT MINIMUM OF 4" OF COVER.
- PRESSURE = 200 PSI
BRIDGING = 2000 PSI
FACTOR OF SAFETY = 1.5



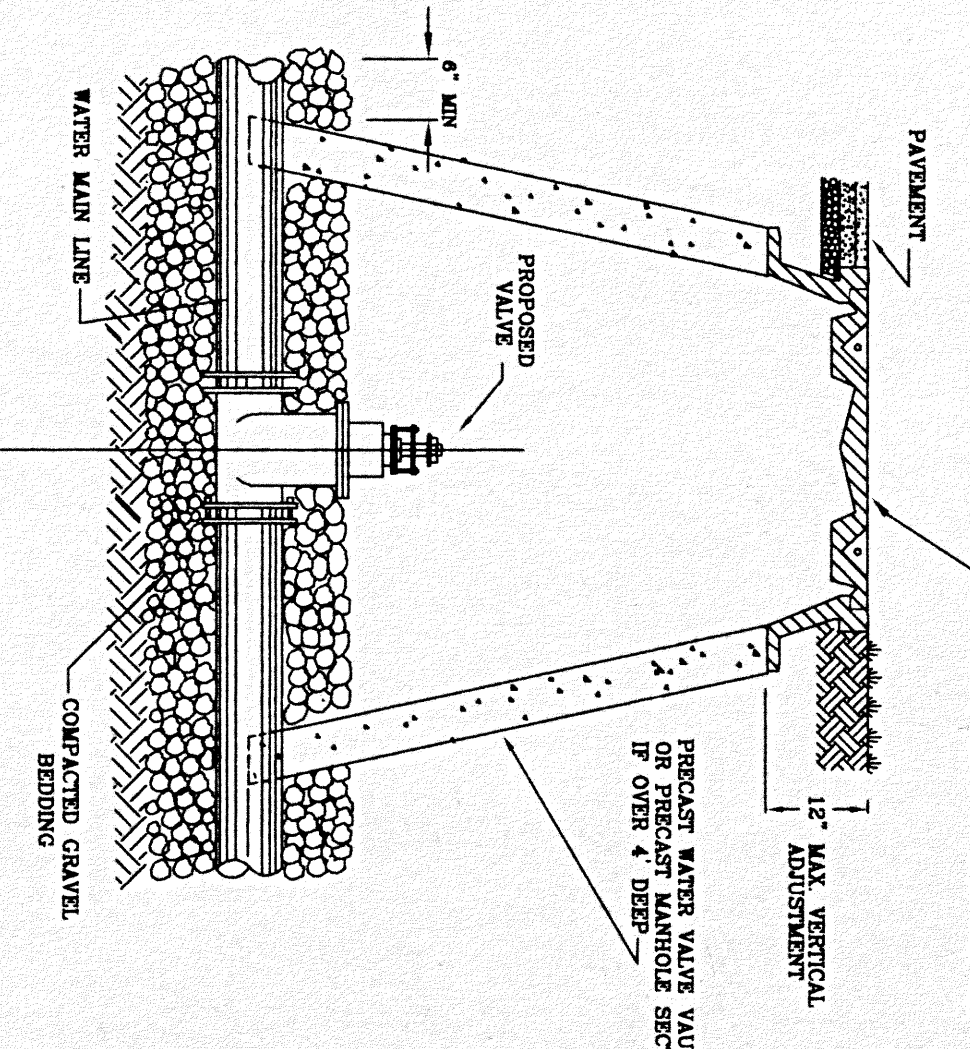
AUTOMATIC AIR
RELEASE ASSEMBLY



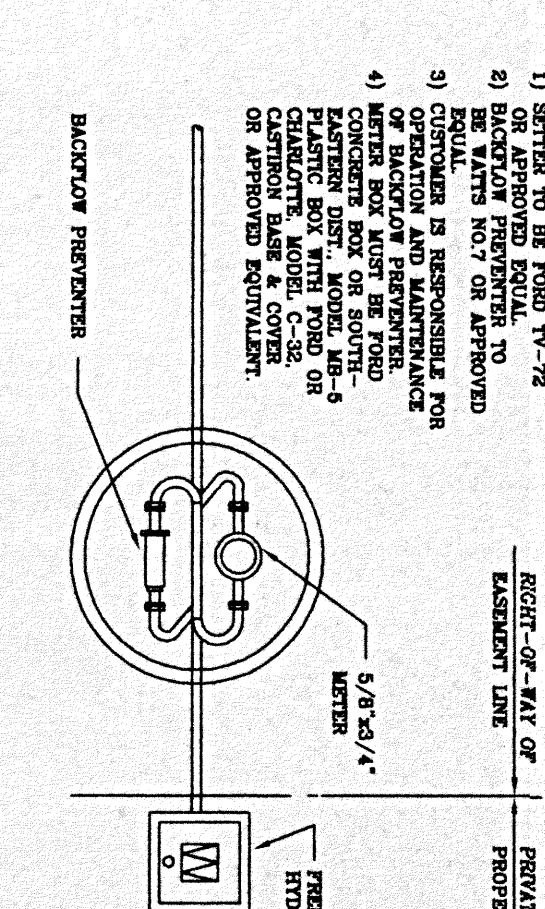
SINGLE RESIDENTIAL
WATER SERVICE



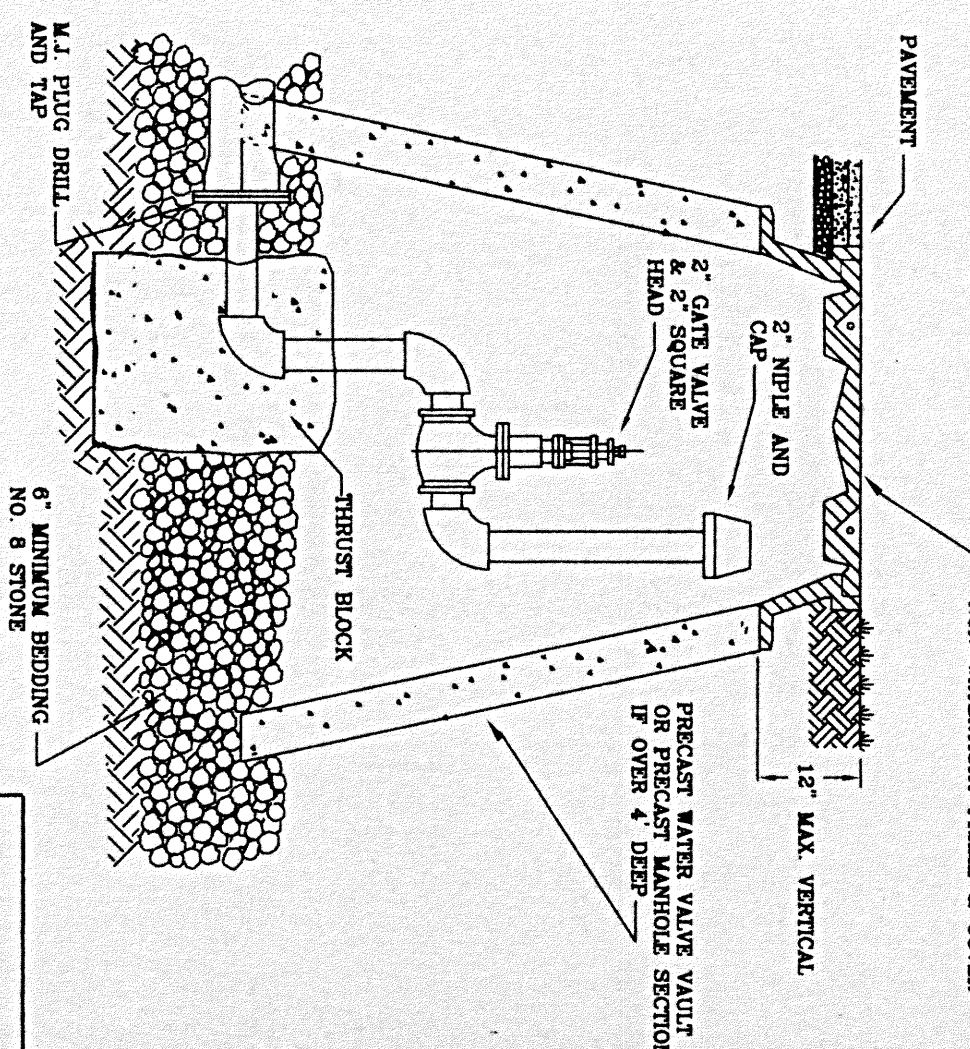
DOUBLE RESIDENTIAL
WATER SYSTEM



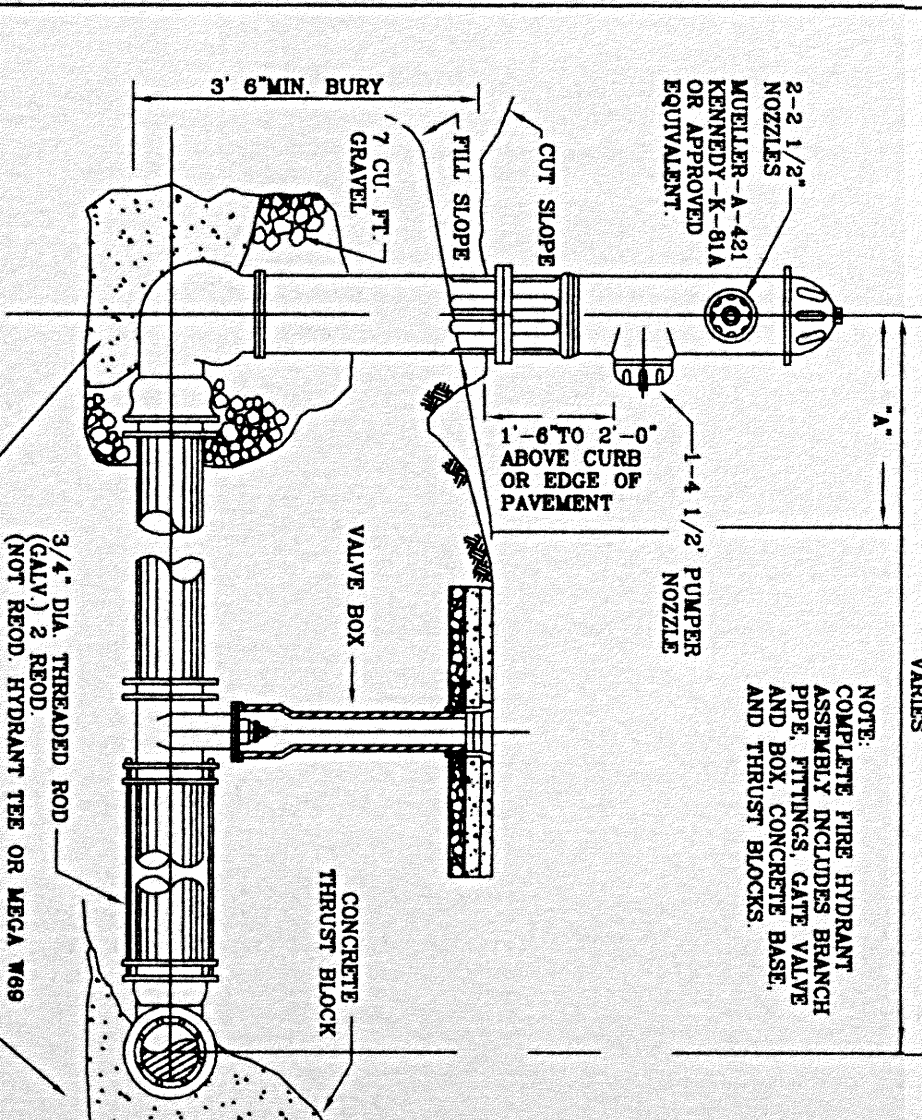
WATER LINE VALVE
INSTALLATION



TYPICAL SPRINKLER SERVICE



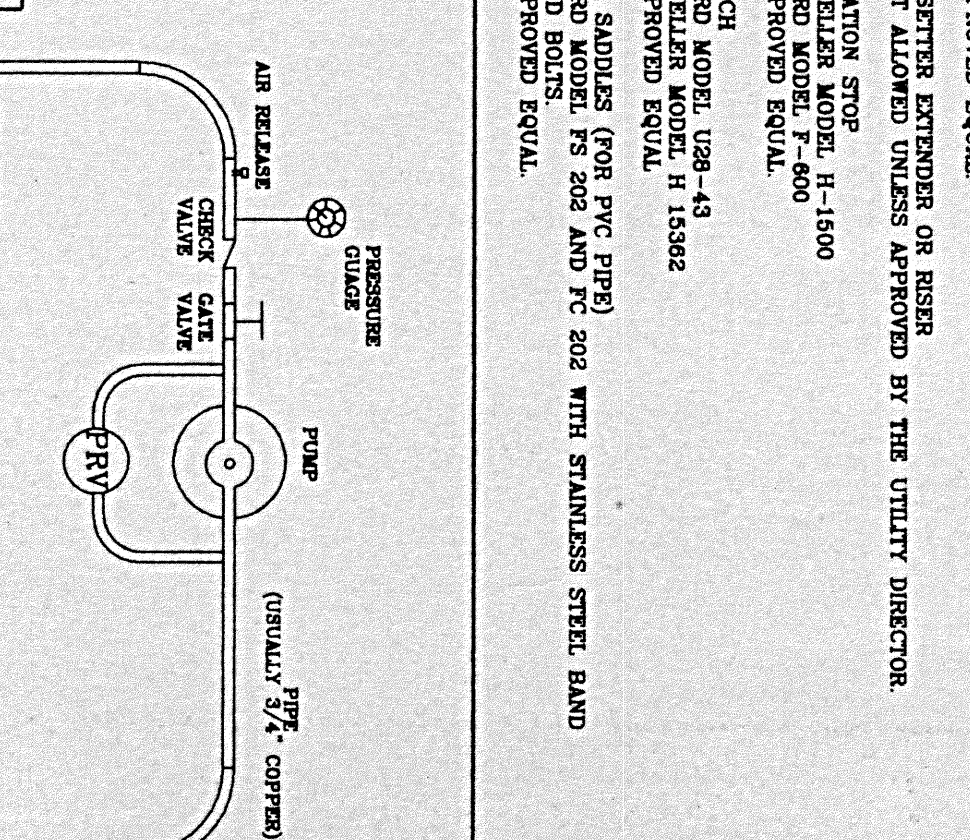
PERMANENT END OF LINE



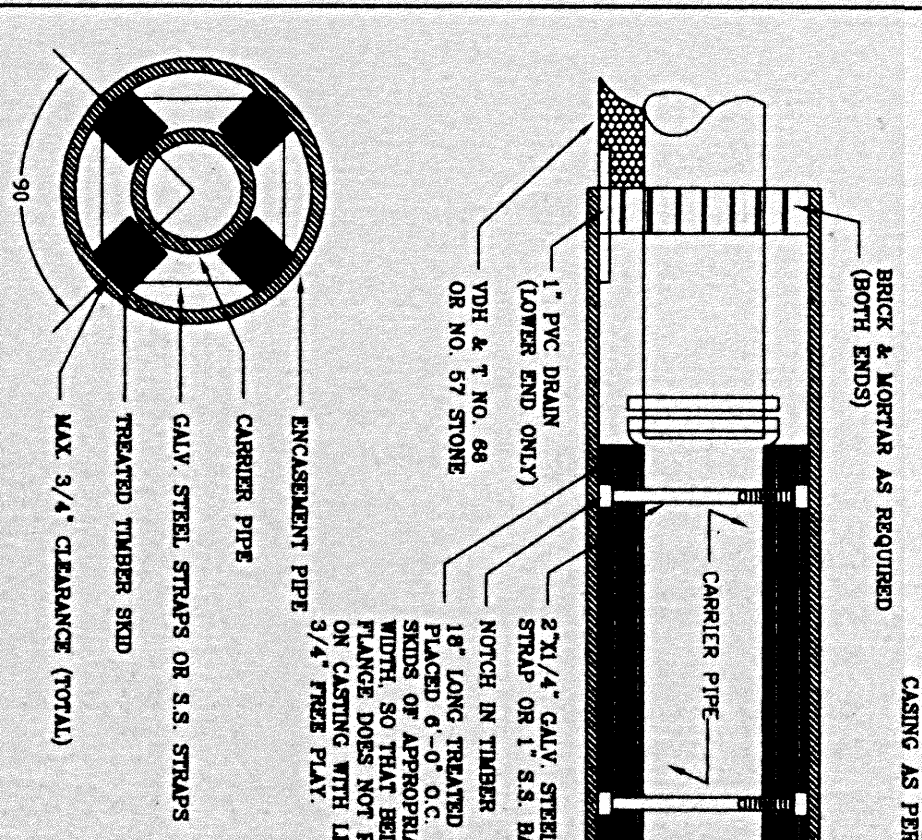
FIRE HYDRANT ASSEMBLY

- 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 603.
 - 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 1.0' GRADE RINGS AND FRAME AND COVER ADJUSTMENT ARE ALLOWABLE.
 - FINAL ADJUSTMENT OF FRAME AND COVER SHALL BE IN ACCORDANCE WITH MAXIMUM OF 4" BRICKS OR CONCRETE BLOCKS FOR GRADE CONTROL. FRAME AND COVER ARE TO BE SET AT FINISH GRADE OR 1 1/4" 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 WATER-TIGHT BY USING BUTYL SEALANTS, "O" RING GASKETS OR MAINT. THE CONCRETE SURFACE SHALL BE CLEANED PRIOR TO USE OF SEALANT.
 - FRAME AND COVERS:
 - DENEY BROTHERS INC. SERIES 2000 OR 2001.
 - 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 COLLARS OR OTHER APPROVED METHODS.
 - AREA AROUND WATER BOX AT A RADIUS OF 4' TO BE ON FINISH GRADE AND UNOBSTRUCTED.

- APPROVED MATERIALS
- WATER BOXES
 - APPROVED EQUAL.
 - SOUTHEASTERN DISTRIBUTOR MODEL NO. 6 PLASTIC BOX WITH APPROVED FOR ROADWAY AREA.
 - APPROVED EQUAL.
 - WATER SETTERS (INCLUDING INLET RISER VALVE AND DOUBLE CHECK VALVE ON OUTLET)
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - LETTER SETTING BOXES OR RISER
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - CORROSION STOP
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - U-BRANCH NOBEL USB-43
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - SERVICE SADDLES (FOR PVC PIPE)
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - AND BOLTS
 - APPROVED EQUAL.
 - APPROVED EQUAL.
 - APPROVED EQUAL.



TYPICAL WATER PRESSURE TEST RIG



PIPE SUPPORT IN CASING PIPE

DEPARTMENT
OF
ENGINEERING AND INSPECTIONS

1	05-22-95
2	
3	
4	
5	
6	
NO.	REVISIONS
	DATE

COUNTY OF ROANOKE

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

WATER DETAILS