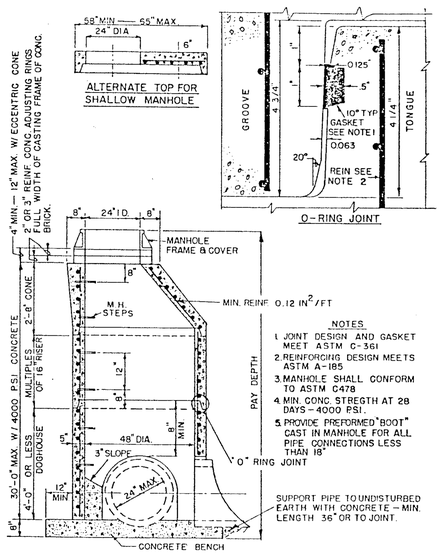
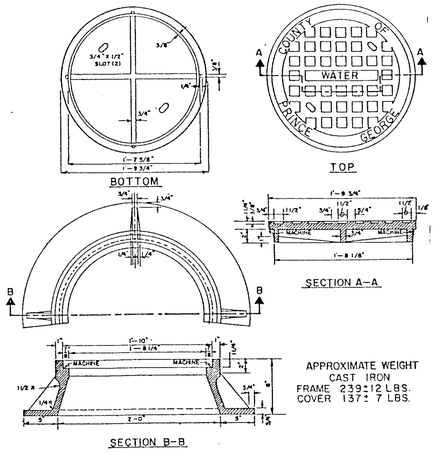



NOTES

1. JOINT DESIGN AND GASKET MEET ASTM C-361
2. REINFORCING DESIGN MEETS ASTM A-185
3. MANHOLE SHALL CONFORM TO ASTM C478
4. MIN. CONC. STREGTH AT 28 DAYS - 4000 PSI.
5. PROVIDE PREFORMED "BOOT" CAST IN MANHOLE FOR ALL PIPE CONNECTIONS LESS THAN 18"

## PRE-CAST CONCRETE MANHOLE

NOT TO SCALE




APPROXIMATE WEIGHT
CAST IRON
FRAME 239±12 LBS.
COVER 137± 7 LBS.

## MANHOLE FRAME AND COVER

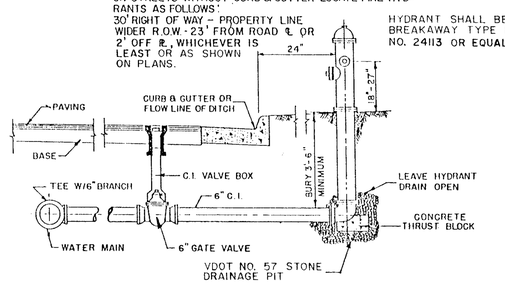
NOT TO SCALE

NOTE

HYDRANTS SHALL BE PLACED 24" BEHIND FACE OF CURB UNLESS INDICATED OTHERWISE. WHERE WALKS ABUT THE CURB, THE HYDRANT SHALL BE 24" BEHIND THE WALK.

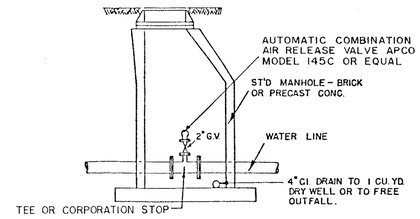
ON STREETS WITHOUT CURB & GUTTER LOCATE FIRE HYDRANTS AS FOLLOWS:
30' RIGHT OF WAY - PROPERTY LINE
WIDER R.O.W. - 23' FROM ROAD ℄ OR 2' OFF ℄, WHICHEVER IS LEAST OR AS SHOWN ON PLANS.

HYDRANT SHALL BE OF THE BREAKAWAY TYPE MUELLER NO. 24113 OR EQUAL



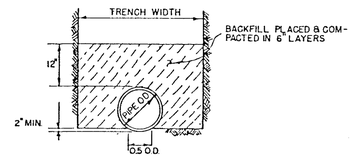

## FIRE HYDRANT SETTING

NOT TO SCALE



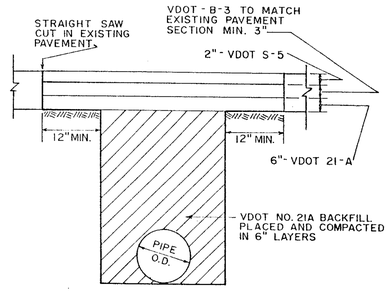

## AUTOMATIC COMBINATION AIR RELEASE VALVE

NOT TO SCALE




## STANDARD TRENCH - WATER MAINS

(CLASS C)
(LAYING CONDITION B)
NOT TO SCALE

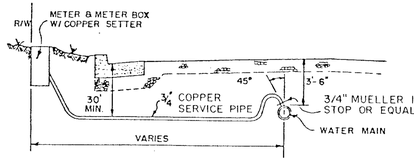



## PAVEMENT REPAIR

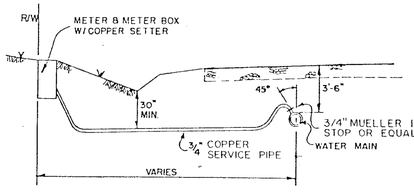
NOT TO SCALE

NOTE

THREE-QUARTER INCH SERVICE PIPE IS MINIMUM. PROVIDE LARGER SIZE WHERE SHOWN ON PLANS.




CURB & GUTTER STREETS



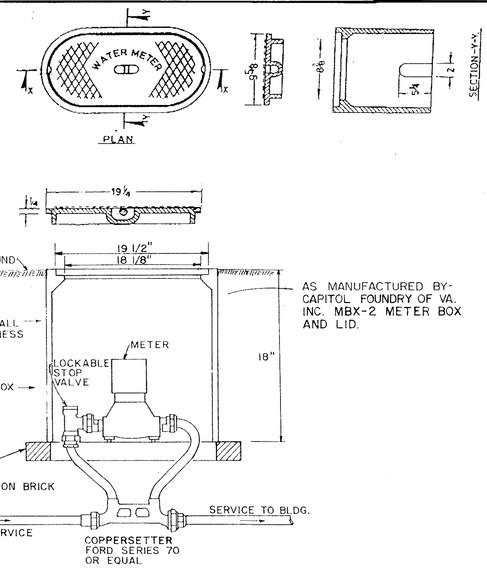

ROADSIDE DITCH

NOTE

METER BOXES SHALL BE LOCATED BEYOND THE RIGHT-OF-WAY LINE WHEN REQUIRED TO PLACE BOXES ON RELATIVELY FLAT SLOPES (NO STEEPER THAN 4:1)

## WATER SERVICE CONNECTIONS

NOT TO SCALE

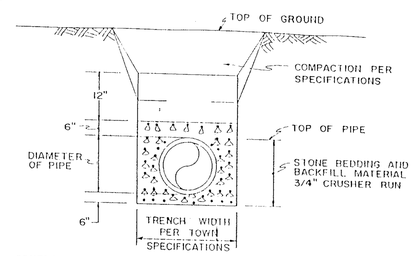



NOTE: DETAIL IS FOR 5/8" THRU 1" DISC METERS

SECTION -XX

## 18" CAST IRON METER BOX & METER SETTING DETAIL

NOT TO SCALE

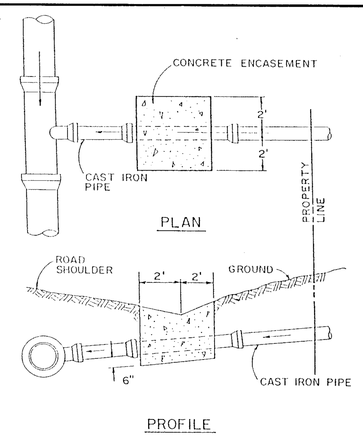



NOTE: CONTRACTOR MUST INSURE THE STONE IS PROPERLY COMPACTED, ESPECIALLY UNDER THE HAUNCHES OF THE PIPE.

THOROUGHLY COMPACTED FILL AREA TO BE FREE OF CLODS, DEBRIS, ETC.

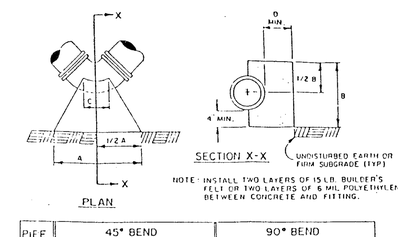
## BEDDING AND BACKFILL DETAIL FOR PVC PIPE

NOT TO SCALE




## CONCRETE DITCH APRON

NOT TO SCALE

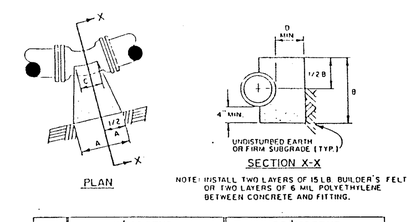



NOTE: INSTALL TWO LAYERS OF 15 LB. BUILDER'S FELT OR TWO LAYERS OF 6 MIL POLYETHYLENE BETWEEN CONCRETE AND FITTING.

| PIPE DIAM. | 45° BEND | | | | | 90° BEND | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | A | B | C | D | E |
| 3" | 9" | 12" | 6" | 6" | 4" | 12" | 12" | 6" | 12" | 6" |
| 4" | 9" | 12" | 6" | 6" | 4" | 16" | 12" | 6" | 12" | 6" |
| 6" | 12" | 14" | 6" | 8" | 4" | 21" | 14" | 6" | 18" | 6" |
| 8" | 18" | 16" | 8" | 9" | 6" | 30" | 16" | 8" | 18" | 9" |
| 10" | 24" | 18" | 8" | 10" | 6" | 36" | 24" | 10" | 18" | 9" |
| 12" | 30" | 20" | 12" | 12" | 9" | 48" | 24" | 12" | 18" | 12" |
| 16" | 42" | 30" | 12" | 15" | 9" | 60" | 30" | 16" | 21" | 12" |
| 20" | 56" | 30" | 12" | 16" | 16" | 72" | 40" | 20" | 21" | 24" |
| 24" | 60" | 36" | 12" | 21" | 24" | 84" | 48" | 24" | 24" | 30" |
| 30" | 72" | 48" | 16" | 27" | 24" | 108" | 60" | 30" | 24" | 36" |

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

E* ADDITIONAL LENGTH TO BE ADDED TO DIMENSION A FOR EACH ADDITIONAL 50 PSI PRESSURE UP TO 300 PSI

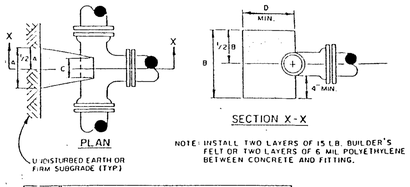



NOTE: INSTALL TWO LAYERS OF 15 LB. BUILDER'S FELT OR TWO LAYERS OF 6 MIL POLYETHYLENE BETWEEN CONCRETE AND FITTING.

| PIPE DIAM. | 11 1/4° BEND | | | | | 22 1/2° BEND | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | A | B | C | D | E |
| 3" | 4" | 12" | 4" | 6" | 2" | 6" | 12" | 6" | 7" | 2" |
| 4" | 4" | 12" | 4" | 6" | 2" | 6" | 12" | 6" | 7" | 2" |
| 6" | 6" | 14" | 6" | 7" | 2" | 8" | 14" | 6" | 8" | 2" |
| 8" | 8" | 16" | 8" | 7" | 2" | 12" | 16" | 8" | 8" | 4" |
| 10" | 9" | 18" | 8" | 8" | 4" | 15" | 18" | 8" | 10" | 4" |
| 12" | 12" | 20" | 12" | 9" | 4" | 18" | 20" | 12" | 12" | 6" |
| 16" | 15" | 24" | 12" | 9" | 6" | 24" | 24" | 12" | 15" | 6" |
| 20" | 30" | 12" | 10" | 10" | 6" | 30" | 30" | 12" | 18" | 9" |
| 24" | 18" | 36" | 12" | 12" | 6" | 36" | 36" | 12" | 18" | 9" |
| 30" | 24" | 42" | 16" | 14" | 9" | 48" | 42" | 16" | 21" | 12" |

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

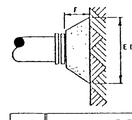
E* ADDITIONAL LENGTH TO BE ADDED TO DIMENSION "A" FOR EACH ADDITIONAL 50 PSI PRESSURE UP TO 300 PSI




NOTE: INSTALL TWO LAYERS OF 15 LB. BUILDER'S FELT OR TWO LAYERS OF 6 MIL POLYETHYLENE BETWEEN CONCRETE AND FITTING.

| TEE | BRANCH DIAMETER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3" | 4" | 6" | 8" | 10" | 12" | 16" | 20" | 24" | 30" |
| A | 12" | 12" | 16" | 18" | 26" | 30" | 40" | 48" | 60" | 80" |
| B | 12" | 16" | 20" | 30" | 32" | 42" | 56" | 72" | 80" | 96" |
| C | 8" | 8" | 12" | 12" | 12" | 12" | 16" | 24" | 24" | 24" |
| D | 6" | 6" | 8" | 9" | 10" | 12" | 14" | 18" | 20" | 24" |

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI



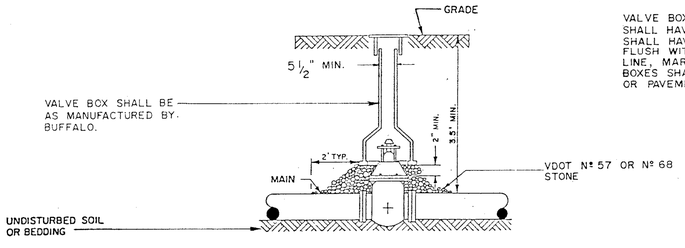

NOTE: INSTALL TWO LAYERS OF 15 LB. BUILDER'S FELT OR TWO LAYERS OF 6 MIL POLYETHYLENE BETWEEN CONCRETE AND FITTING.

| PLUG | PIPE DIAMETER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 3" | 4" | 6" | 8" | 10" | 12" | 16" | 20" | 24" | 30" |
| E | 14" | 16" | 21" | 29" | 36" | 41" | 54" | 64" | 75" | 88" |
| F | 8" | 8" | 10" | 10" | 12" | 14" | 16" | 18" | 20" | 24" |

BASED ON NORMAL OPERATING PRESSURE UP TO 150 PSI

## TYPICAL CONCRETE THRUST BLOCKING FOR WATER LINES DETAILS

NOT TO SCALE




VALVE BOXES WITHIN STATE RIGHTS-OF-WAYS SHALL HAVE 6" OF COVER. THE VALVE BOX SHALL HAVE A 6"x6" CONCRETE MARKER, FLUSH WITH THE GROUND AT THE RIGHT-OF-WAY LINE, MARKED WITH A "W". ALL OTHER VALVE BOXES SHALL BE FLUSH WITH EXISTING GROUND OR PAVEMENT.

## TYPICAL VALVE BOX INSTALLATION

NOT TO SCALE

COMMONWEALTH OF VIRGINIA
FREDERICK T. M. PRIBBLE
No. 10055
PROFESSIONAL ENGINEER

| | | | | | |
|---|---|---|---|---|---|
| DRAPER - ADEN ASSOCIATES, INC.<br>CONSULTING ENGINEERS<br>RICHMOND, VIRGINIA | DESIGNED FTP<br>DRAWN NJH<br>CHECKED JNL<br>DATE 2/26/89 | COMMONWEALTH ACRES<br>WATER MAINS<br>PRINCE GEORGE COUNTY, VIRGINIA | WATER DETAILS | REVISIONS:<br>8-15-95 | SCALE: AS NOTED<br>PLAN Nº T-21511 | SHEET 13 OF 14 |

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