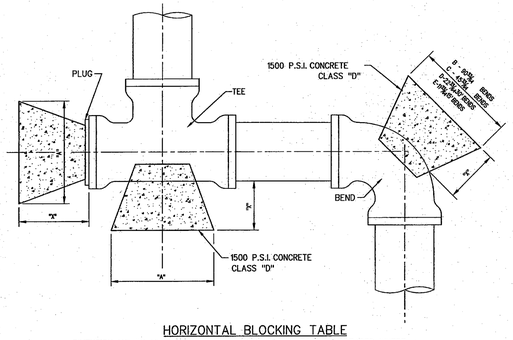



## HORIZONTAL BLOCKING TABLE

DIMENSION "X" TO BE A MINIMUM OF (1) FOOT, BUT IS TO BE INCREASED WHERE NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED TRENCH WALL.

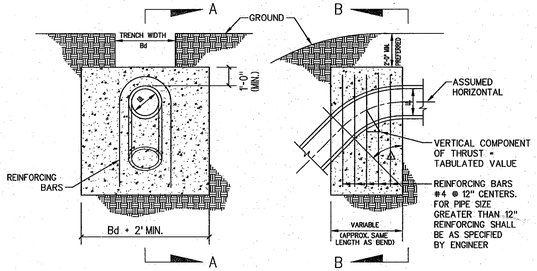
| PIPE SIZE | "X" DIM. | PLUGS & TEES | | | 90 11/16 BENDS | | | 45 11/64 BENDS | | | 22 11/64,30' BENDS | | | 11 15/16,15' BENDS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | "A" | MIN. AREA | MAX. VOL. | "B" | MIN. AREA | MAX. VOL. | "C" | MIN. AREA | MAX. VOL. | "D" | MIN. AREA | MAX. VOL. | "E" | MIN. AREA | MAX. VOL. |
| 4" | 1'-6" | 1'-0" | .83 | .05 | 1'-0" | .83 | .05 | 1'-0" | .83 | .05 | 1'-0" | .83 | .05 | 1'-0" | .83 | .05 |
| 6" | 1'-6" | 1'-0" | 1.06 | .06 | 1'-2" | 1.50 | .09 | 1'-0" | .83 | .05 | 1'-0" | .83 | .05 | 1'-0" | .83 | .05 |
| 8" | 1'-6" | 1'-3" | 1.89 | .11 | 1'-6" | 2.66 | .15 | 1'-3" | 1.44 | .08 | 1'-0" | .83 | .05 | 1'-0" | .83 | .05 |
| 10" | 1'-6" | 1'-9" | 2.95 | .17 | 2'-0" | 4.17 | .24 | 1'-6" | 2.26 | .13 | 1'-3" | 1.15 | .07 | 1'-0" | .83 | .05 |
| 12" | 1'-6" | 2'-0" | 4.25 | .24 | 2'-3" | 6.00 | .34 | 1'-9" | 3.25 | .18 | 1'-3" | 1.65 | .10 | 1'-0" | .83 | .05 |
| 16" | 2'-0" | 2'-7" | 7.54 | .56 | 3'-0" | 10.65 | .79 | 2'-3" | 5.76 | .43 | 1'-8" | 2.94 | .22 | 1'-2" | 1.48 | .11 |
| 18" | 2'-0" | 2'-11" | 7.70 | .57 | 3'-5" | 10.89 | .82 | 2'-6" | 5.89 | .44 | 1'-10" | 3.01 | .22 | 1'-5" | 1.51 | .11 |
| 20" | 2'-0" | 3'-8" | 7.86 | .59 | 3'-9" | 11.12 | .84 | 2'-9" | 6.01 | .45 | 2'-0" | 3.07 | .23 | 1'-7" | 1.54 | .12 |
| 24" | 2'-0" | 3'-8" | 11.33 | .84 | 4'-3" | 16.00 | 1.20 | 3'-2" | 8.65 | .65 | 2'-6" | 4.42 | .33 | 1'-10" | 2.22 | .17 |

NOTE: CALCULATIONS IN MIN. AREA COLUMN ARE IN Sq. Ft., CALCULATIONS IN MAXIMUM VOLUME COLUMN ARE IN Cu. Yd.

## HORIZONTAL BLOCKING DETAIL

1

NOT TO SCALE




ELEVATION "B-B"

SECTION "A-A"

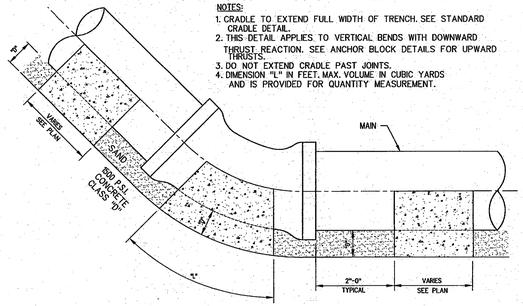
## VERTICAL THRUST BLOCK TABLE

| I.D. (IN.) | 11.25° THRUST (TONS) | 11.25° VOL. (C.Y.) | 22.50° THRUST (TONS) | 22.50° VOL. (C.Y.) | 30.00° THRUST (TONS) | 30.00° VOL. (C.Y.) | 45.00° THRUST (TONS) | 45.00° VOL. (C.Y.) | 67.50° THRUST (TONS) | 67.50° VOL. (C.Y.) | 90.00° THRUST (TONS) | 90.00° VOL. (C.Y.) | I.D. (IN.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4,6,8 | 1.0 | 0.5 | 2.0 | 1.0 | 2.5 | 1.3 | 3.8 | 1.8 | 4.8 | 2.3 | 5.0 | 2.5 | 4,6,8 |
| 10,12 | 2.2 | 1.1 | 4.3 | 2.2 | 5.7 | 2.8 | 8.0 | 4.0 | 10.5 | 5.2 | 11.3 | 5.7 | 10,12 |
| 16,18 | 5.0 | 2.5 | 9.7 | 4.9 | 12.7 | 6.4 | 18.0 | 9.0 | 23.5 | 11.8 | 25.5 | 12.7 | 16,18 |
| 20 | 6.1 | 3.1 | 12.0 | 5.0 | 15.7 | 7.9 | 22.2 | 11.1 | 29.2 | 14.5 | 31.4 | 15.7 | 20 |
| 24 | 8.2 | 4.4 | 17.3 | 8.7 | 22.6 | 11.3 | 32.0 | 16.0 | 41.8 | 20.9 | 45.2 | 22.6 | 24 |
| 30 | 10.5 | 5.2 | 20.3 | 10.1 | 26.5 | 13.3 | 37.5 | 18.8 | 49.0 | 24.5 | 53.1 | 26.5 | 30 |
| 36 | 14.9 | 7.5 | 29.2 | 14.6 | 38.2 | 19.1 | 54.0 | 27.0 | 70.5 | 35.3 | 76.4 | 38.2 | 36 |
| 42 | 20.3 | 10.1 | 39.8 | 19.8 | 52.0 | 26.0 | 73.5 | 36.7 | 96.0 | 48.0 | 104.0 | 52.0 | 42 |
| 48 | 26.5 | 13.2 | 51.9 | 26.0 | 67.9 | 33.9 | 96.0 | 48.0 | 126.0 | 62.7 | 136.0 | 67.9 | 48 |
| 54 | 33.5 | 16.8 | 65.7 | 32.9 | 85.9 | 42.9 | 122.0 | 60.7 | 159.0 | 79.4 | 172.0 | 85.9 | 54 |
| 60 | 41.4 | 20.7 | 81.2 | 40.6 | 106.0 | 53.0 | 150.0 | 75.0 | 196.0 | 98.0 | 212.0 | 106.0 | 60 |
| 66 | 50.1 | 25.0 | 98.2 | 49.1 | 128.0 | 64.2 | 182.0 | 90.7 | 237.0 | 119.0 | 257.0 | 128.0 | 66 |
| 72 | 59.6 | 29.8 | 117.0 | 58.4 | 153.0 | 76.3 | 216.0 | 108.0 | 282.0 | 141.0 | 305.0 | 153.0 | 72 |
| 78 | 69.9 | 35.0 | 137.0 | 68.5 | 179.0 | 90.0 | 254.0 | 127.0 | 331.0 | 166.0 | 358.0 | 179.0 | 78 |
| 84 | 81.1 | 40.5 | 159.0 | 79.5 | 208.0 | 104.0 | 294.0 | 147.0 | 384.0 | 192.0 | 416.0 | 208.0 | 84 |
| 90 | 93.1 | 46.5 | 183.0 | 91.3 | 239.0 | 119.0 | 337.0 | 169.0 | 441.0 | 221.0 | 477.0 | 239.0 | 90 |
| 96 | 106.0 | 53.0 | 208.0 | 104.0 | 272.0 | 136.0 | 384.0 | 192.0 | 502.0 | 251.0 | 543.0 | 272.0 | 96 |

## VERTICAL THRUST BLOCK AT PIPE BEND

2

NOT TO SCALE



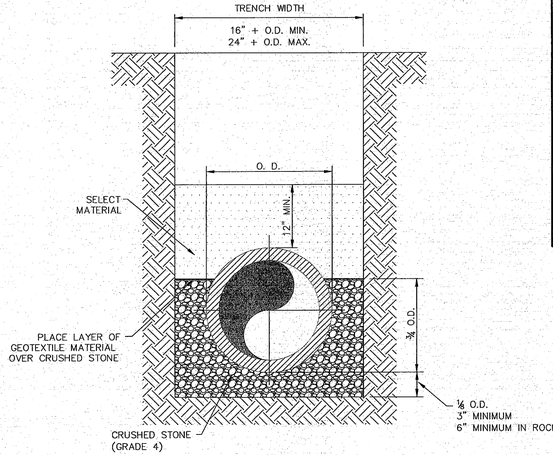

## CONCRETE CRADLE TABLE

| PIPE CLASS | PIPE SIZE | 11 25/64 - 15° "L" | 11 25/64 - 15° MAX. VOL. | 22 31/64 - 30° "L" | 22 31/64 - 30° MAX. VOL. | 45 11/64 "L" | 45 11/64 MAX. VOL. | 90 11/64 "L" | 90 11/64 MAX. VOL. |
|---|---|---|---|---|---|---|---|---|---|
| 150 | 6" | .42 | .02 | .45 | 0.02 | .50 | .02 | 1.00 | .04 |
| 150 | 8" | .42 | .02 | .45 | .02 | .80 | .04 | 1.40 | .06 |
| 150 | 10" | .42 | .03 | .58 | .03 | 1.15 | .06 | 2.03 | .11 |
| 150 | 12" | .42 | .04 | .73 | .05 | 1.43 | .09 | 2.53 | .17 |
| 150 | 16" | .42 | .08 | .74 | .14 | 1.48 | .27 | 2.61 | .48 |
| 150 | 18" | .66 | .14 | 1.30 | .28 | | | | |
| 150 | 20" | .77 | .18 | 1.53 | .36 | | SEE PLAN SHEETS FOR BLOCKING | | SEE PLAN SHEETS FOR BLOCKING |
| 200 | 18" | .88 | .18 | 1.74 | .37 | | | | |
| 200 | 20" | 1.03 | .24 | 2.04 | .48 | | | | |
| 250 | 18" | 1.05 | .22 | 2.03 | .43 | | | | |
| 250 | 20" | 1.20 | .28 | 2.38 | .56 | | | | |

## CONCRETE CRADLE AT VERTICAL BEND

3

NOT TO SCALE



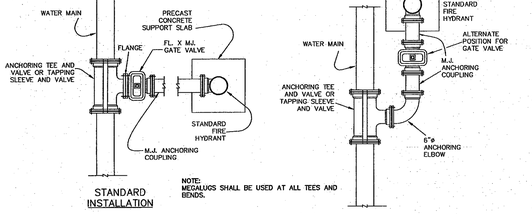

CLASS "B-2" EMBEDMENT

CRUSHED STONE SHALL BE 3/4", PASSING # 4 SIEVE

## TYPICAL BACKFILL WATER MAIN P.V.C. WATER PIPE

4

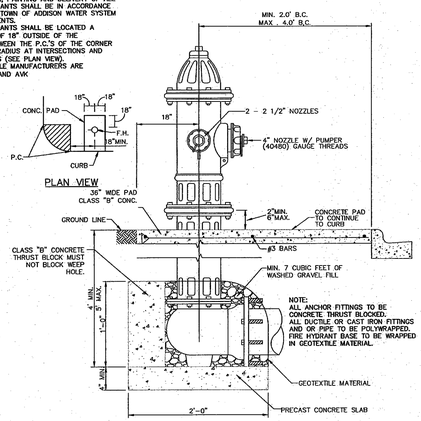
NOT TO SCALE




NOTE: MEGALUGS SHALL BE USED AT ALL TEES AND BENDS.

NOTE:

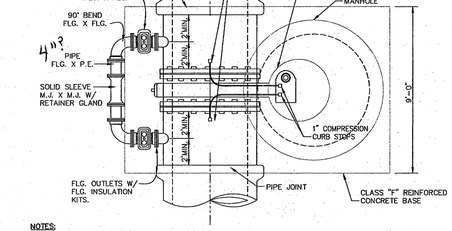
1. DESIGN, SITE REQUIREMENTS, THE GENERAL OPERATION, PAINTING AND DELIVERY OF ALL FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH THE TOWN OF ADDISON WATER SYSTEM REQUIREMENTS.
2. FIRE HYDRANTS SHALL BE LOCATED A MINIMUM OF 18" OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADIUS AT INTERSECTIONS AND DRIVEWAYS (SEE PLAN VIEW).
3. ACCEPTABLE MANUFACTURERS ARE MUELLER AND AVK




## TYPICAL FIRE HYDRANT INSTALLTION

5

NOT TO SCALE

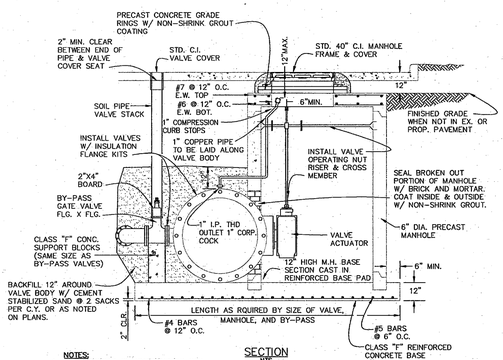



NOTES:

1. PADS POURED ON UNDISTURBED SOIL OR 12" STABILIZED BACKFILL MATERIAL.
2. BYPASS SIZE SPECIFIED BY THE PUBLIC WORKS DEPARTMENT.

PLAN

NTS




NOTES:

1. PADS POURED ON UNDISTURBED SOIL OR 12" STABILIZED BACKFILL MATERIAL.
2. BYPASS SIZE SPECIFIED BY THE PUBLIC WORKS DEPARTMENT.

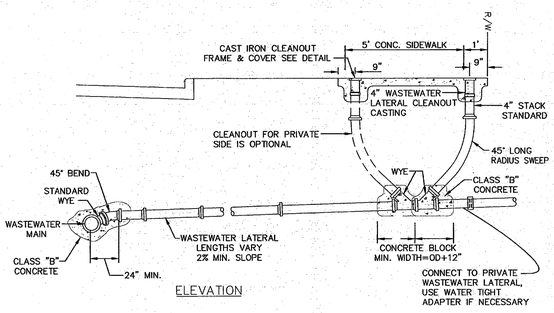
SECTION

NTS

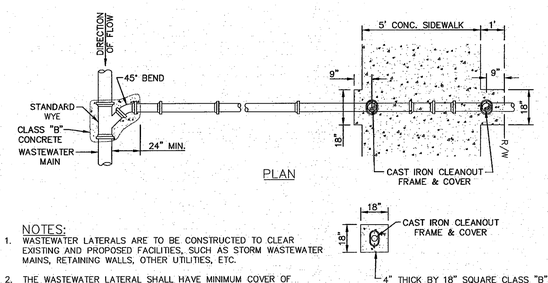
## BUTTERFLY VALVE WITH MANHOLE INSTALLTION

6

NOT TO SCALE




ELEVATION




NOTES:

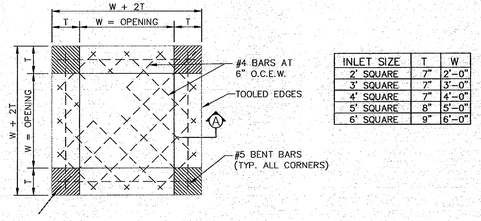
1. WASTEWATER LATERALS ARE TO BE CONSTRUCTED TO CLEAR EXISTING AND PROPOSED FACILITIES, SUCH AS STORM WASTEWATER MAINS, RETAINING WALLS, OTHER UTILITIES, ETC.
2. THE WASTEWATER LATERAL SHALL HAVE MINIMUM COVER OF 4'-0" BELOW THE PROPOSED CURB GRADE AT THE PROPERTY LINE, DETERMINED FROM PAVING GRADE, OR AS REQUIRED TO MAINTAIN A MINIMUM OF 2.00% GRADE, OR AS DIRECTED BY THE OWNER.

4" THICK BY 18" SQUARE CLASS "B" CONCRETE BLOCK AROUND CASTING TOP TO BE HAND FINISHED AND TO BE LEVEL WITH EXISTING GROUND SURFACE

## TWO-WAY CLEANOUT NEW CONSTRUCTION

7

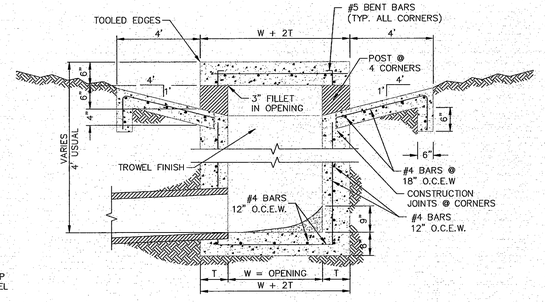
NOT TO SCALE




| INLET SIZE | T | W |
|---|---|---|
| 2' SQUARE | 7" | 2'-0" |
| 3' SQUARE | 7" | 3'-0" |
| 4' SQUARE | 7" | 4'-0" |
| 5' SQUARE | 8" | 5'-0" |
| 6' SQUARE | 9" | 6'-0" |

PLAN OF TOP SLAB

NTS




SECTION A

NTS

## WYE INLET DETAIL

8

NOT TO SCALE

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
RONALD G. KING
81073
LICENSED PROFESSIONAL ENGINEER
1-19-11
FREESE NICHOLS
2220 Sm Jacinto Blvd., Suite 330
Dallas, TX 75201
Phone - (940) 387-1400
Fax - (940) 387-4677
Web - www.freese.com

TOWN OF ADDISON, TEXAS
SURVEYOR 1.5 MG EST
CIVIL
UTILITY DETAILS

| NO. | ISSUES | BY | DATE |
|---|---|---|---|

| F&N JOB NO. | ADD08459 |
|---|---|
| DATE | 01/21/11 |
| DESIGNED | DAT |
| DRAWN | SB |
| REVISED | RJS |
| CHECKED | ROK |
| FILE NAME | CV-EST-DT-TYP05.SHT |

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

0 1"

SHEET DT-05

CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
CV-EST-DT-TYP05.SHT
34Border.dgn
MicroStation V8 User: amr Office: Denton
ADD08459 N:\IF\Drawings\CV-EST-DT-TYP05.SHT
Plot Date: 01\19\2011 - 01:39:13 PM Model Sheet
Plot Scale: 01" = 1' 0" Project: Freese and Nichols, Inc.
Date: 01\19\2011 - 01:39:13 PM