

**HYDROSTATIC TEST**  
**C-900 OR 905 PVC, STEEL OR DUCTILE-IRON WATER MAINS**

GALLONS ALLOWED									
L.F. Pipe	Pipe Diameter								
	4"	6"	8"	10"	12"	14"	16"	18"	20"
5	0.01 6	0.02 4	0.03 2	0.03 9	0.04 7	0.05 5	0.06 3	0.071	0.07 9
10	0.03 2	0.047	0.06 3	0.07 9	0.09 5	0.11 0	0.126	0.142	0.158
20	0.06 3	0.095	0.12 6	0.15 8	0.18 9	0.22 1	0.253	0.284	0.316
30	0.09 5	0.142	0.18 9	0.23 7	0.28 4	0.33 1	0.379	0.426	0.473
40	0.12 6	0.189	0.25 3	0.31 6	0.37 9	0.44 2	0.505	0.568	0.631
50	0.15 8	0.239	0.31 6	0.39 5	0.47 3	0.55 2	0.631	0.710	0.789
60	0.18 9	0.284	0.37 9	0.47 3	0.56 8	0.66 3	0.758	0.852	0.947
70	0.22 1	0.331	0.44 2	0.55 2	0.66 3	0.77 3	0.884	0.994	1.105
80	0.25 3	0.379	0.50 5	0.63 1	0.75 6	0.88 4	1.010	1.136	1.263
90	0.28 4	0.426	0.56 8	0.71 0	0.85 2	0.99 4	1.136	1.278	1.420
100	0.31 6	0.473	0.63 1	0.78 9	0.94 7	1.10 5	1.263	1.420	1.578
200	0.63 1	0.947	1.26 3	1.57 8	1.89 4	2.21 0	2.525	2.841	3.157
300	0.94 7	1.420	1.89 4	2.36 7	2.84 1	3.31 4	3.788	4.261	4.735
400	1.26 3	1.894	2.52 5	3.15 7	3.78 8	4.41 9	5.051	5.682	6.313
500	1.57 8	2.36 7	3.15 7	3.94 6	4.73 5	5.52 4	6.313	7.102	7.891
600	1.89 4	2.841	3.78 8	4.73 5	5.68 2	6.62 9	7.576	8.523	9.470
700	2.21 0	3.314	4.41 9	5.52 4	6.62 9	7.73 4	8.838	9.943	11.04 8
800	2.52 5	3.788	5.05 1	6.31 3	7.57 6	8.83 8	10.10 1	11.364	12.62 6
900	2.84 1	4.261	5.68 2	7.10 2	8.52 3	9.94 3	11.36 4	12.784	14.20 5
1000	3.15 7	4.735	6.31 3	7.89 1	9.47 0	11.04 8	12.62 6	14.205	15.78 3

Maximum allowable water loss in 4 hours at 180 pounds per square inch of pressure for a rate of 25 gallons per inch diameter of pipe per mile over a 24-hour period

**EQUATION THE ABOVE CHART IS BASED ON:**

$$\text{Maximum Loss (Gal.)} = 25 \times \text{Diameter of Pipe in Inches} \times \frac{\text{LF of Pipe}}{5280} \times \frac{4}{24}$$

## HYDROSTATIC TEST

**HYDROSTATIC TEST**  
**CONCRETE CYLINDER WATER MAINS**

GALLONS ALLOWED									
L.F. Pipe	Pipe Diameter								
	4"	6"	8"	10"	12"	14"	16"	18"	20"
5	0.03 1	0.047	0.06 3	0.078	0.095	0.110	0.126	0.142	0.158
10	0.06 3	0.095	0.12 6	0.158	0.189	0.22 1	0.253	0.284	0.315
20	0.12 6	0.189	0.25 3	0.316	0.379	0.442	0.505	0.568	0.631
30	0.18 8	0.284	0.37 9	0.473	0.568	0.663	0.758	0.852	0.947
40	0.25 3	0.379	0.50 5	0.631	0.758	0.884	1.010	1.136	1.263
50	0.31 6	0.473	0.63 1	0.789	0.947	1.105	1.263	1.420	1.578
60	0.37 9	0.568	0.75 8	0.947	1.136	1.32 6	1.515	1.704	1.894
70	0.44 2	0.663	0.88 4	1.105	1.326	1.547	1.768	1.989	2.210
80	0.50 5	0.758	1.01 0	1.263	1.515	1.768	2.020	2.273	2.525
90	0.56 8	0.852	1.13 6	1.420	1.704	1.989	2.273	2.557	2.841
100	0.63 1	0.947	1.26 3	1.578	1.894	2.209	2.525	2.841	3.156
200	1.26 3	1.894	2.52 5	3.156	3.788	4.419	5.050	5.682	6.313
300	1.89 4	2.841	3.78 8	4.735	5.682	6.628	7.575	8.522	9.470
400	2.52 5	3.788	5.05 0	6.313	7.575	8.838	10.10 0	11.36 3	12.62 6
500	3.15 8	4.735	6.31 3	7.891	9.470	11.04 7	12.62 6	14.20 4	15.78 2
600	3.78 8	5.682	7.57 5	9.469	11.363	13.25 7	15.15 1	17.04 5	18.93 8
700	4.41 9	6.628	8.83 8	11.04 7	13.257	15.46 8	17.67 6	19.88 5	22.09 5
800	5.05 0	7.575	10.1 00	12.62 6	15.152	17.67 6	20.20 1	22.72 6	25.25 1
900	5.68 2	8.522	11.3 63	14.20 4	17.044	19.88 6	22.72 6	25.56 7	28.40 5
1000	6.31 3	9.469	12.6 26	15.78 2	18.939	22.09 6	25.25 3	28.40 8	31.56 4

Maximum allowable water loss in 4 hours at 180 pounds per square inch of pressure for a rate of 50 gallons per inch diameter of pipe per mile over a 24-hour period

**EQUATION THE ABOVE CHART IS BASED ON:**

$$\text{Maximum Loss (Gal.)} = 50 \times \text{Diameter of Pipe in Inches} \times \frac{\text{LF of Pipe}}{5280} \times \frac{4}{24}$$

## HYDROSTATIC TEST



ITEM 506.7 PURGING AND DISINFECTION OF WATER

Add the following: On all waterlines installed in the City of Anna the Contractor shall be responsible for Purging, Testing and Sterilization of the completed lines.

DIVISION 800 – MISCELLANEOUS CONSTRUCTION & MATERIALS

ITEM 801.3 RAILING

Reflectorized marking for guard rail and other traffic control used shall meet the requirements of 3M Scotchlite Brand Reflective Sheeting Grade, Series 2800, 3800 or 5800, or equal. The marking shall conform to U.S. Department of Transportation, Federal Highway Administration, STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, 1979 FP-79, Type III A, Sections 633.36 and 718.01 and Federal Supply Service, General Services Administration, LS-300 C, SHEETING AND TAPE REFLECTIVE NON-EXPOSED LENS, Reflectivity 2, Class 4.

ITEM 801.5 WIRE FENCE

801.5.2.1 Wire Fencing Fabric: All chain link fencing shall be No. 9 gage copper bearing open-hearth steel wire.

801.5.2.2 Posts

801.5.2.2.1 Metal: All posts shall be heavily galvanized by the hot-dip process after fabrication and shall be fitted with watertight malleable iron caps. All posts shall be of the following size and shape:

Line Posts: "H" Section hot rolled weighing not less than 4.10 pounds per linear foot or 3-1/2-inch O.D. pipe weighing not less than 3.65 pounds per linear foot.

Terminal Posts: Three-inch (3") steel pipe weighing not less than 5.79 pounds per linear foot.

Gate Posts: Four-inch (4") O.D. steel pipe weighing not less than 9.11 pounds per linear foot.

801.5.2.3 Rails. Gates. Braces and Fittings: Shall be 1-5/8-inch steel pipe weighing not less than 2.27 pounds per linear foot.

ITEM 803.2 GABION STRUCTURES

803.2.2 Materials

Add the sentence: All wire used, including tie and connecting wire, shall be certified by Mill Test Reports showing compliance with specification requirements.

803.2.2.2 Stone

Add the following: Facing stone shall be hand selected, large stone and shall be selected for best appearance. Facing stone shall be an off-white color and prior to laying the stone, samples shall be delivered' to the site and shall be approved 'by the Engineer for gradation and appearance.

ITEM 805      ELECTRICAL COMPONENTS AND CONDUIT

ITEM 805.3    MATERIAL

Add the following: Pull Box. All pull boxes shall be Quazite precast polymer concrete or approved equal. Boxes shall be approximately 17" x 30" x 30" and shall be furnished with a concrete cover.

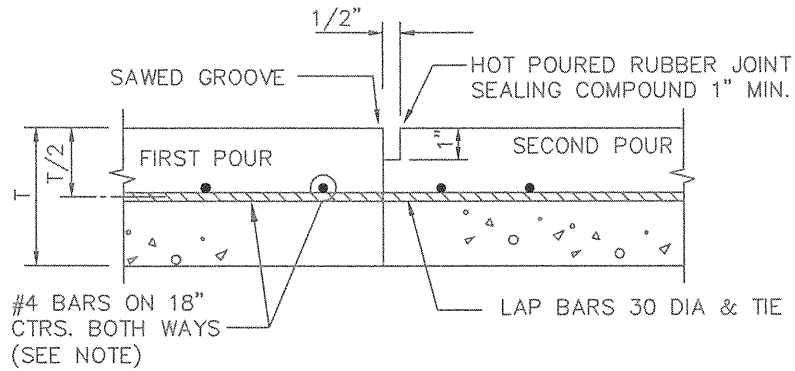
Each change of direction in the conduit run requires a pull box. Max spacing of pull boxes shall be one hundred feet (100').

Section 8. C            STANDARD DRAWINGS

STANDARD DRAWINGS (Note: In the event of any conflicts, the standard drawings that follow in this Section 8.C. shall govern.)

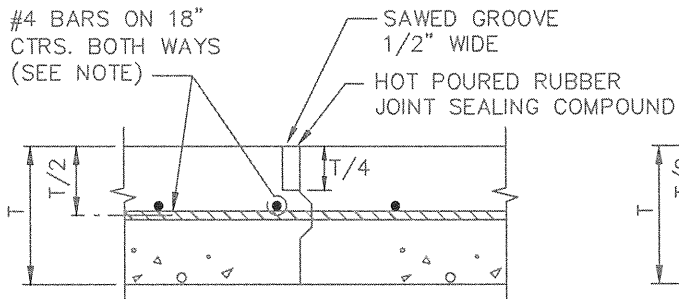
DRAWING NO.	DRAWING TITLE
PAV-01	REINFORCED CONCRETE PAVEMENT - JOINTS
PAV-02	REINFORCED CONCRETE PAVEMENT - TRANSVERSE JOINT SPACING
PAV-03	REINFORCED CONCRETE PAVEMENT - STREET HEADERS
PAV-04	CONCRETE CURBS & CURB WITH GUTTER - INTEGRAL, SEPARATE & DOWELED
PAV-05	MEDIAN ISLAND PAVEMENT - NOSE & LEFT TURN LANE
PAV-06	MEDIAN ISLAND PAVEMENT - MONOLITHIC CONCRETE NOSE
PAV-07	CONCRETE DRIVEWAY APPROACH - RADIUS RETURN
PAV-08	CONCRETE DRIVEWAY APPROACH - RESIDENTIAL
PAV-09	REINFORCED CONCRETE SIDEWALK - JOINTS & SPACING
PAV-10	MID BLOCK BARRIER FREE RAMP - TYPE 'A'
PAV-11	BARRIER FREE RAMP - TYPE 'B' (1 OF 2)
PAV-11A	BARRIER FREE RAMP - TYPE 'B' (2 OF 2)
PAV-12	BARRIER FREE RAMP - TYPE 'C'
PAV-13	TYPICAL UTILITY LOCATION - IN PAVEMENT
PAV-14	HOT MIX ASPHALT PAVEMENT
WAT-01	GATE VALVE 4" TO 12" - BOX & EXTENSION STEM
WAT-02	VAULT CONSTRUCTION PLAN - HORIZONTAL GATE VALVE $\geq 16"$
WAT-03	VAULT CONSTRUCTION PROFILE - HORIZONTAL GATE VALVE $\geq 16"$
WAT-04	VAULT CONSTRUCTION DIMENSIONS - VERTICAL GATE VALVE $\geq 16"$
WAT-05	VAULT CONSTRUCTION SECTION - VERTICAL GATE VALVE $\geq 16"$
WAT-06	VAULT CONSTRUCTION PLAN - BUTTERFLY VALVE $\geq 16"$
WAT-07	VAULT CONSTRUCTION PROFILE - BUTTERFLY VALVE $\geq 16"$
WAT-08	COMBINATION AIR VACUUM VALVE - TYPE "1"
WAT-09	COMBINATION AIR VACUUM VALVE - TYPE "2" SECTION
WAT-10	AIR RELEASE VALVE AIR VENT - TYPE "2"
WAT-11	FLUSH POINT INSTALLATION - TYPE "1"
WAT-12	FIRE HYDRANT - INSTALLATION
WAT-12A	FIRE HYDRANT - REBAR & PLACEMENT
WAT-13	WATER SERVICE INSTALLATION - 1" LINE
WAT-14	WATER SERVICE INSTALLATION - 1-1/2" OR 2" LINE
WAT-15	4" COMBINATION WATER SERVICE - WITH 4" METER
WAT-16	ENCASEMENT PIPE - WATER LINE BY BORE
WAT-17	BLOW OFF VALVE - INSTALLATION
WAT-18	AUTOMATIC FLUSH VALVE
WAT-19	WATER METER LID - METERS UP TO 1"
WAT-19A	WATER METER LID - METERS FROM 1.5" TO 2"
WAT-20	HORIZONTAL THRUST BLOCK - AT PIPE BEND (1 OF 3)

WAT-20A	HORIZONTAL THRUST BLOCK - AT PIPE BEND (2 OF 3)
WAT-20B	HORIZONTAL THRUST BLOCK - AT PIPE BEND (3 OF 3)
WAT-21	HORIZONTAL THRUST BLOCK - AT TEES & PLUGS
WAT-22	VERTICAL THRUST BLOCK - AT PIPE BEND
WAT-23	THRUST BLOCK - GENERAL NOTES
SS-01	WASTEWATER MAIN TIE-IN - AT CLEANOUT OR MANHOLE STUBOUT
SS-02	WASTEWATER MANHOLE - PRECAST
SS-03	WASTEWATER MANHOLE - CAST-IN-PLACE
SS-04	WASTEWATER MANHOLE - PRESSURE MANHOLE
SS-05	WASTEWATER MANHOLE - INTERNAL DROP CONNECTION
SS-06	WASTEWATER MANHOLE - VENTED TYPE 'S'
SS-06A	WASTEWATER MANHOLE - VENTED FLAT TOP
SS-07	WASTEWATER MANHOLE - LINE INTERSECTION
SS-08	WASTEWATER MAIN - CLEANOUT
SS-09	WASTEWATER SERVICES - LATERAL CONNECTION
SS-10	WASTEWATER SERVICES - CLEANOUT FRAME & COVER
SS-11	WASTEWATER SERVICES - DEEP LATERAL CONNECTION
SS-12	RESIDENTIAL LATERAL - WITH CLEANOUT AT PROPERTY LINE
SS-13	ENCASEMENT PIPE - WASTEWATER LINE BY BORE
SS-14	WASTEWATER MANHOLE - STANDARD COVER
SS-14A	WASTEWATER MANHOLE - BOLTED COVER
SS-15	WASTEWATER MANHOLE - FALSE MANHOLE BOTTOM
SS-16	I&I BARRIER & GATOR WRAP - 6" GATOR WRAP
SS-17	MANHOLE & VALVE VAULT - MOW STRIP
EMB-01	EMBEDMENT - CLASS "B+" & CLASS "G"
EMB-02	EMBEDMENT - CLASS "H" & STORM SEWER
EMB-03	PAVEMENT CUT & REPAIR - CONCRETE & PARKWAY
EMB-04	PAVEMENT CUT & REPAIR - ASPHALT
EMB-05	INFILTRATION PROTECTION - CONDUIT UNDER CHANNEL
STM-01	STORMWATER CURB INLET - STANDARD (1 OF 2)
STM-01A	STORMWATER CURB INLET - STANDARD (2 OF 2)
STM-02	STORMWATER CURB INLET - REINFORCING STEEL
STM-03	STORM SEWER - STANDARD INLET COVER
STM-03A	STORM SEWER - BOLTED INLET COVER
STM-04	STORMWATER HEADWALL - TYPE "C"
STM-05	JUNCTION BOX - 4', 5', OR 6' SQUARE (1 OF 2)
STM-05A	JUNCTION BOX - 4', 5', OR 6' SQUARE (2 OF 2)
L-01	TREE PROTECTION - PLAN DETAIL



## CONSTRUCTION JOINT

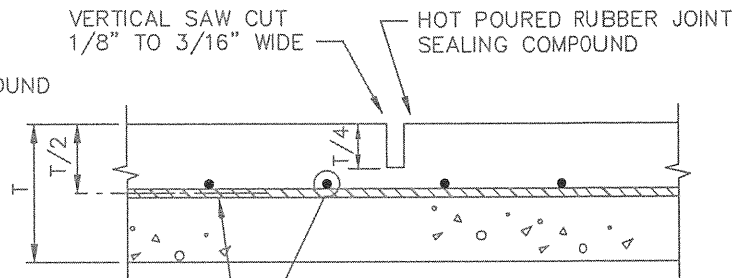
N.T.S.



## KEYWAY JOINT

(FOR PAVEMENT THICKNESS > 6")

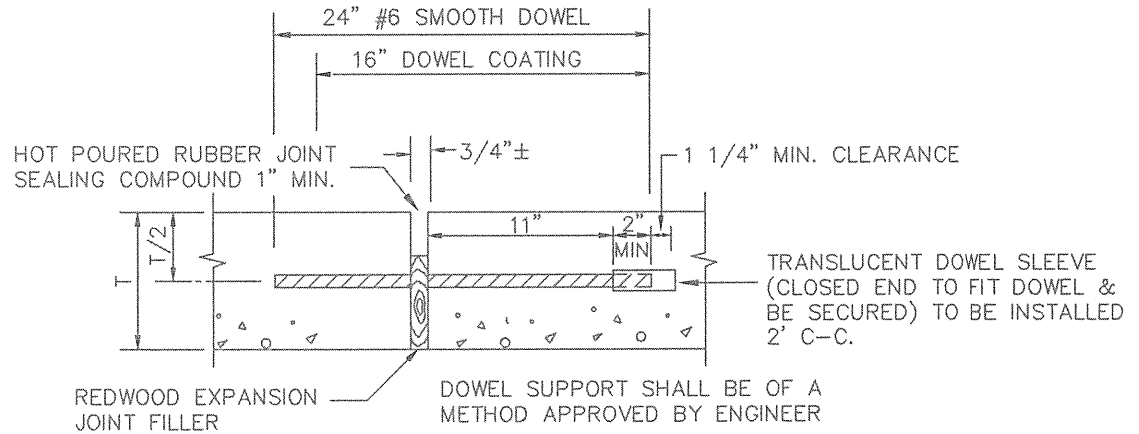
N.T.S.



#4 BARS ON 18" CTRS. BOTH WAYS (SEE NOTE)

## SAWED CONTRACTION JOINT

N.T.S.



## EXPANSION JOINT

(SPACED 400 FT. MAXIMUM; LOCATE AT STRUCTURES AND AT INTERSECTION P.C.'S & P.T.'S)

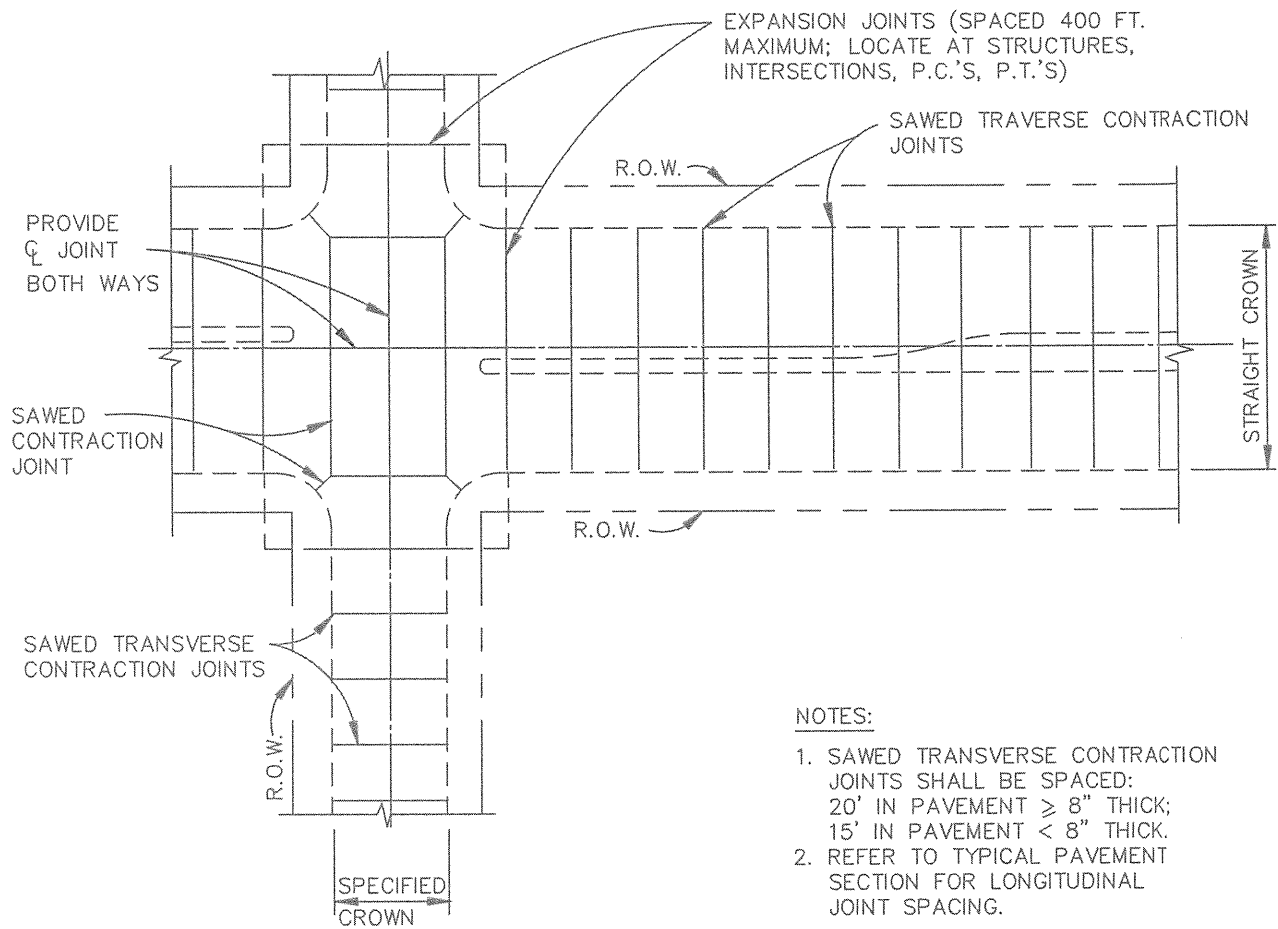
N.T.S.

REINFORCED CONCRETE PAVEMENT

JOINTS

STANDARD DRAWING NO.

PAV-01



## SPACING DIAGRAM FOR TRANSVERSE JOINTS

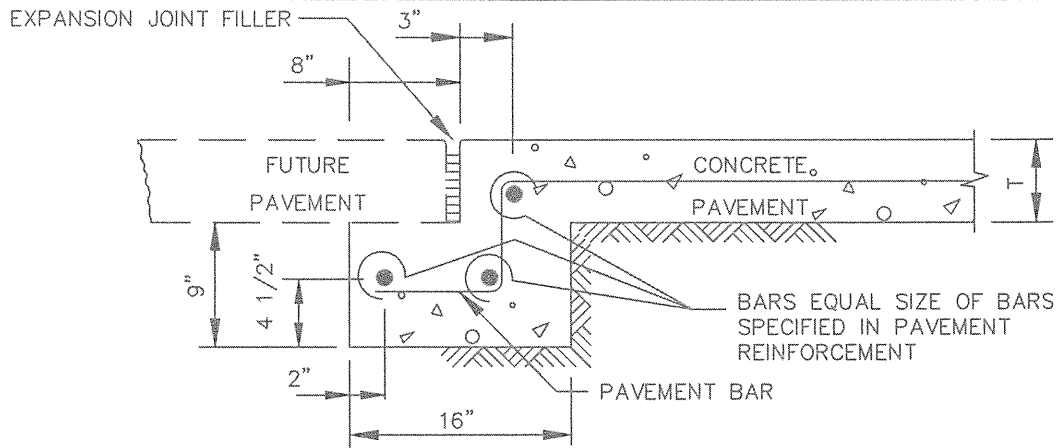
N.T.S.

REINFORCED CONCRETE PAVEMENT

TRANSVERSE JOINT SPACING

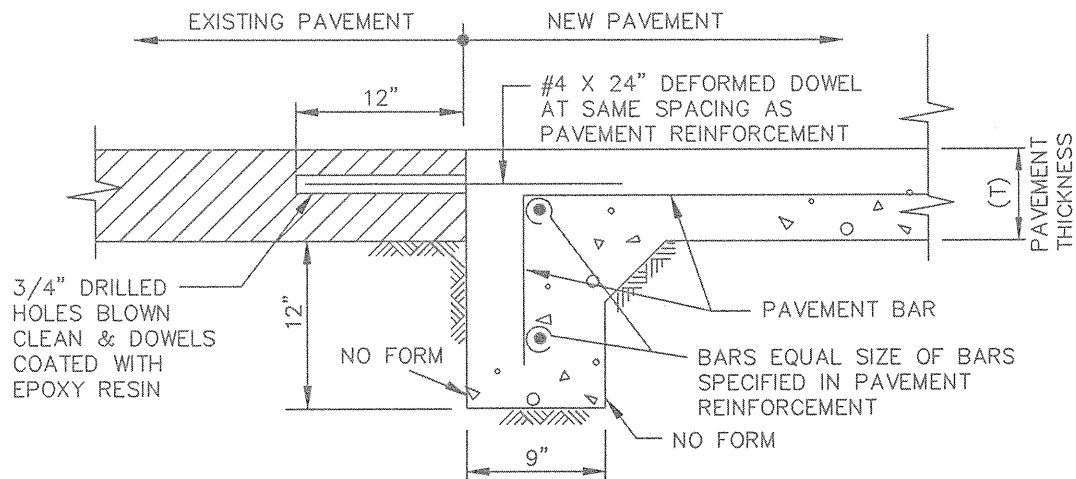
STANDARD DRAWING NO.

PAV-02



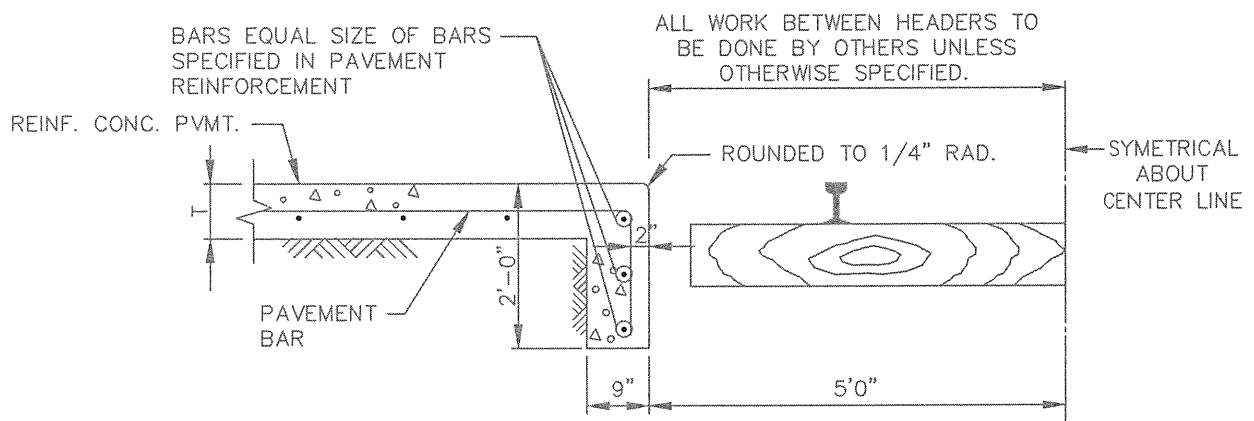
STREET HEADER FOR FUTURE PAVEMENT

N.T.S.



STREET HEADER AT EXISTING PAVEMENT

N.T.S.



NOTES:

1. PAVEMENT BARS TO BE BENT DOWN INTO HEADER.
2. HEADER AND PAVEMENT TO BE MONOLITHIC.

STREET HEADER AT RAILROAD

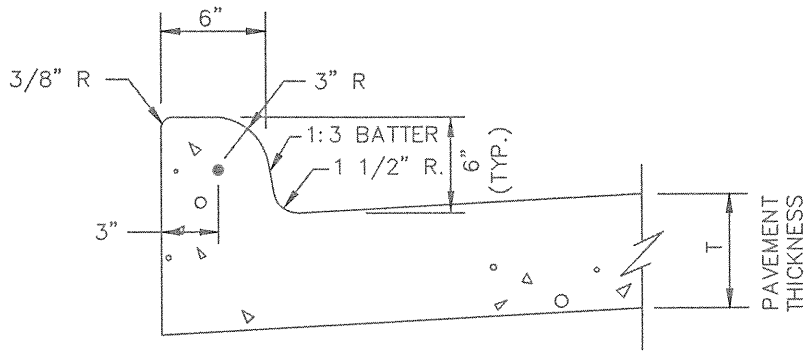
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REINFORCED CONCRETE PAVEMENT

STREET HEADERS

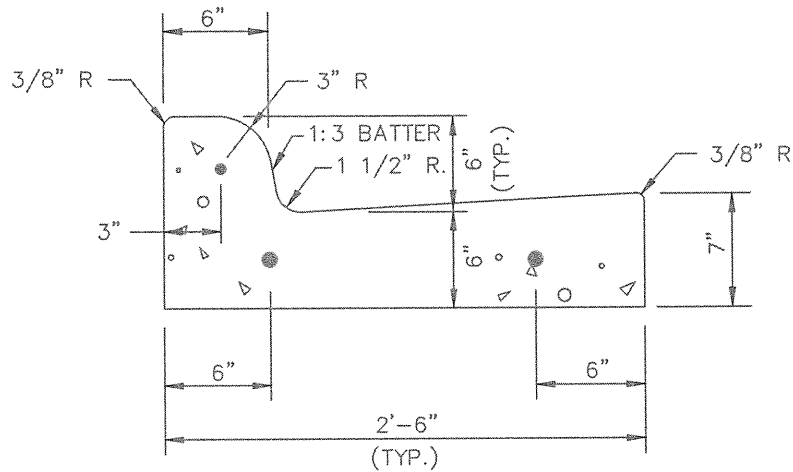
STANDARD DRAWING NO.

PAV-03



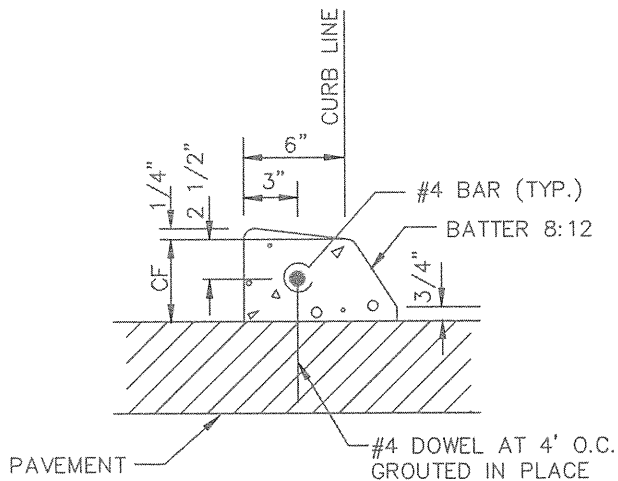
### INTEGRAL CURB & GUTTER

N.T.S.



### SEPARATE CURB & GUTTER

N.T.S.



### DOWELED CURB

N.T.S.

#### NOTES:

1. REINFORCEMENT SHALL BE NO. 4 BARS.
2. CONCRETE SHALL BE CLASS "C".
3. "CF" IS 6" UNLESS OTHERWISE SPECIFIED.
4. ALL CURBS ARE CONSTRUCTED OF PORTLAND CEMENT CONCRETE UNLESS OTHERWISE SHOWN.
5. GRADE SHALL BE MEASURED AT BACK OF CURB.

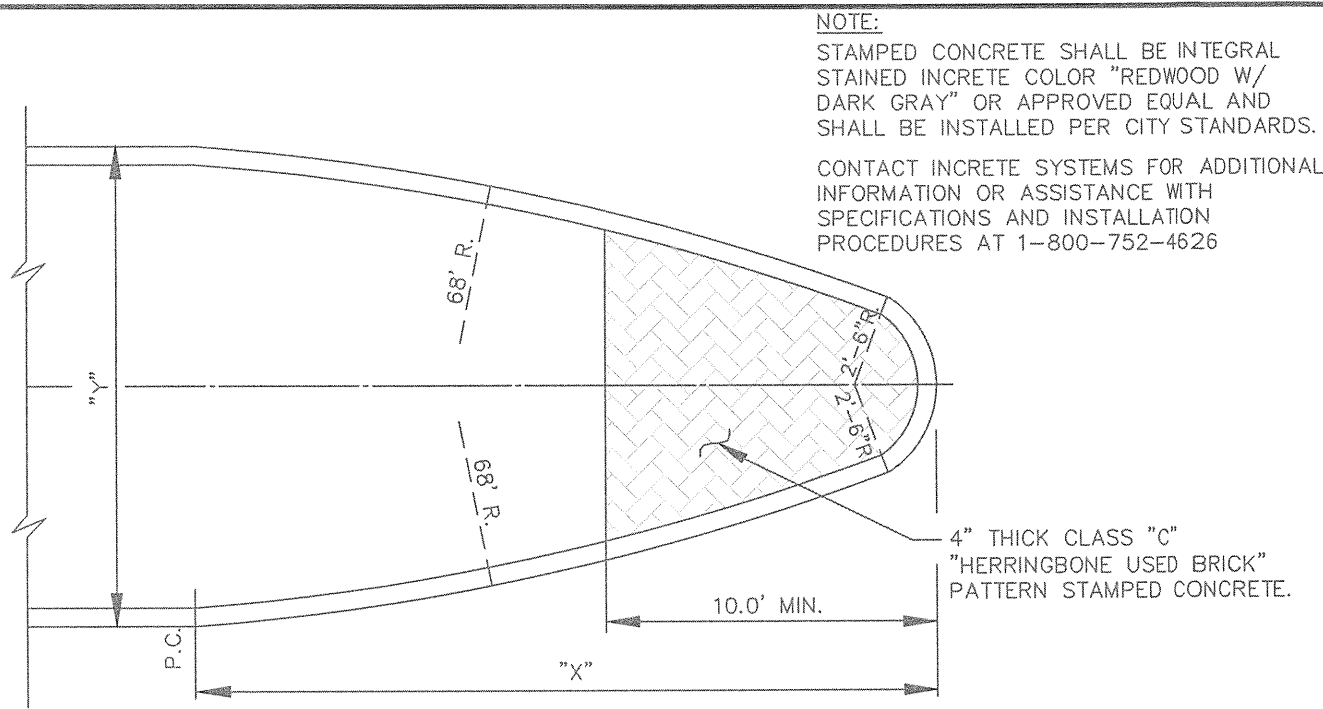
CONCRETE CURBS & CURB WITH GUTTER

INTEGRAL, SEPARATE & DOWELED

STANDARD DRAWING NO.

PAV-04





DIMENSIONS OF MEDIAN NOSE

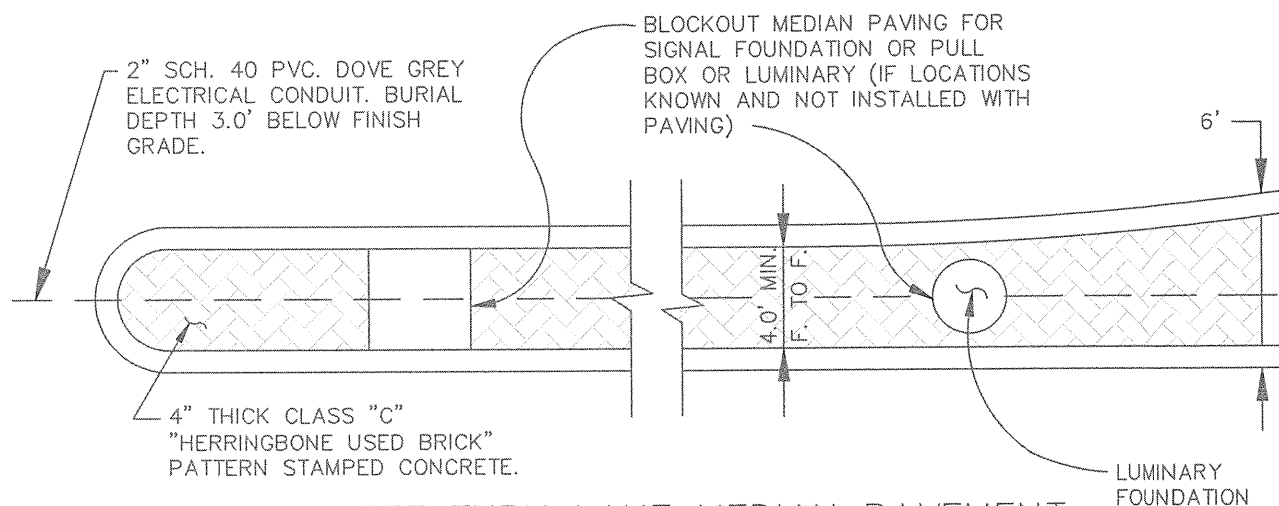
Y = 15'	X = 27.6'
Y = 16'	X = 28.8'
Y = 17'	X = 29.9'
Y = 18'	X = 30.9'

## CONCRETE NOSE FOR MEDIAN ISLAND

N.T.S.

### NOTE:

MEDIAN PAVING SHALL EXTEND TO POINT WHERE MEDIAN IS 6' WIDE. IF MEDIAN IS 6' WIDE, PAVING SHALL EXTEND 15' FROM NOSE. FOR MEDIANS WIDER THAN 6' PAVING SHALL EXTEND 10' FROM NOSE. ALL DISTANCES ARE MINIMUM.



## LEFT TURN LANE MEDIAN PAVEMENT

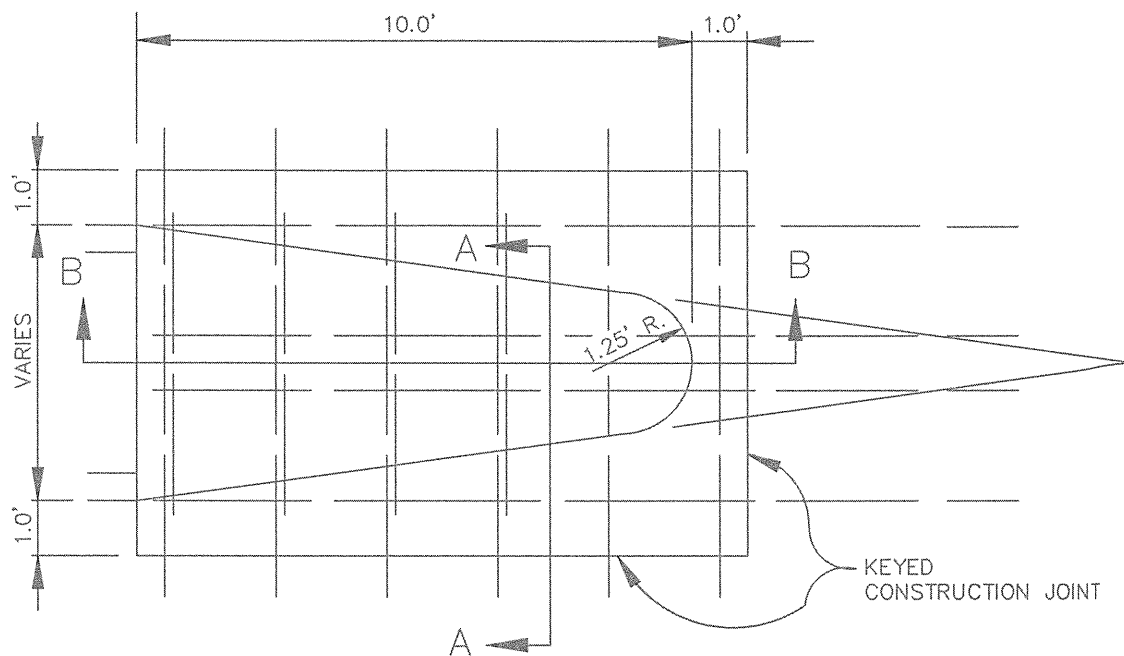
N.T.S.

MEDIAN ISLAND PAVEMENT

NOSE & LEFT TURN LANE

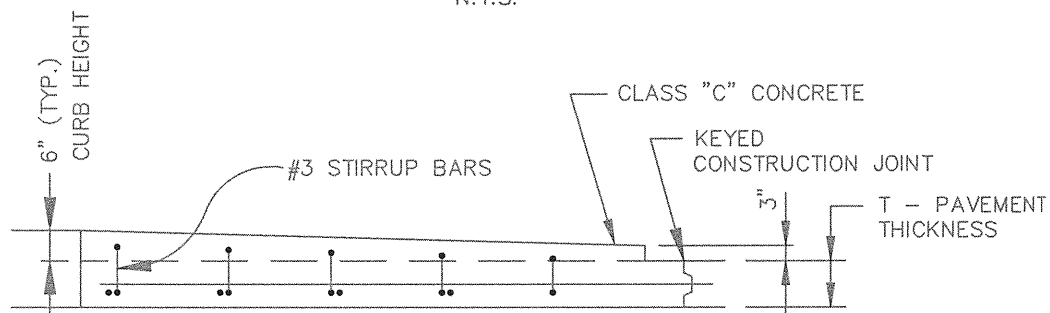
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PAV-05



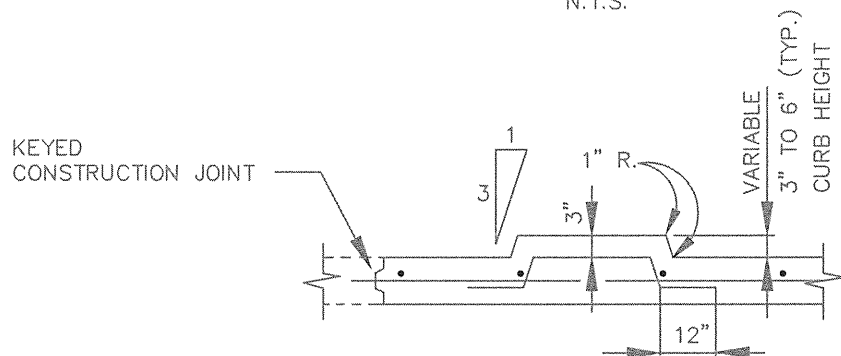
## MONOLITHIC CONCRETE MEDIAN NOSE

N.T.S.



## SECTION B-B

N.T.S.



## SECTION A-A

N.T.S.

### NOTE:

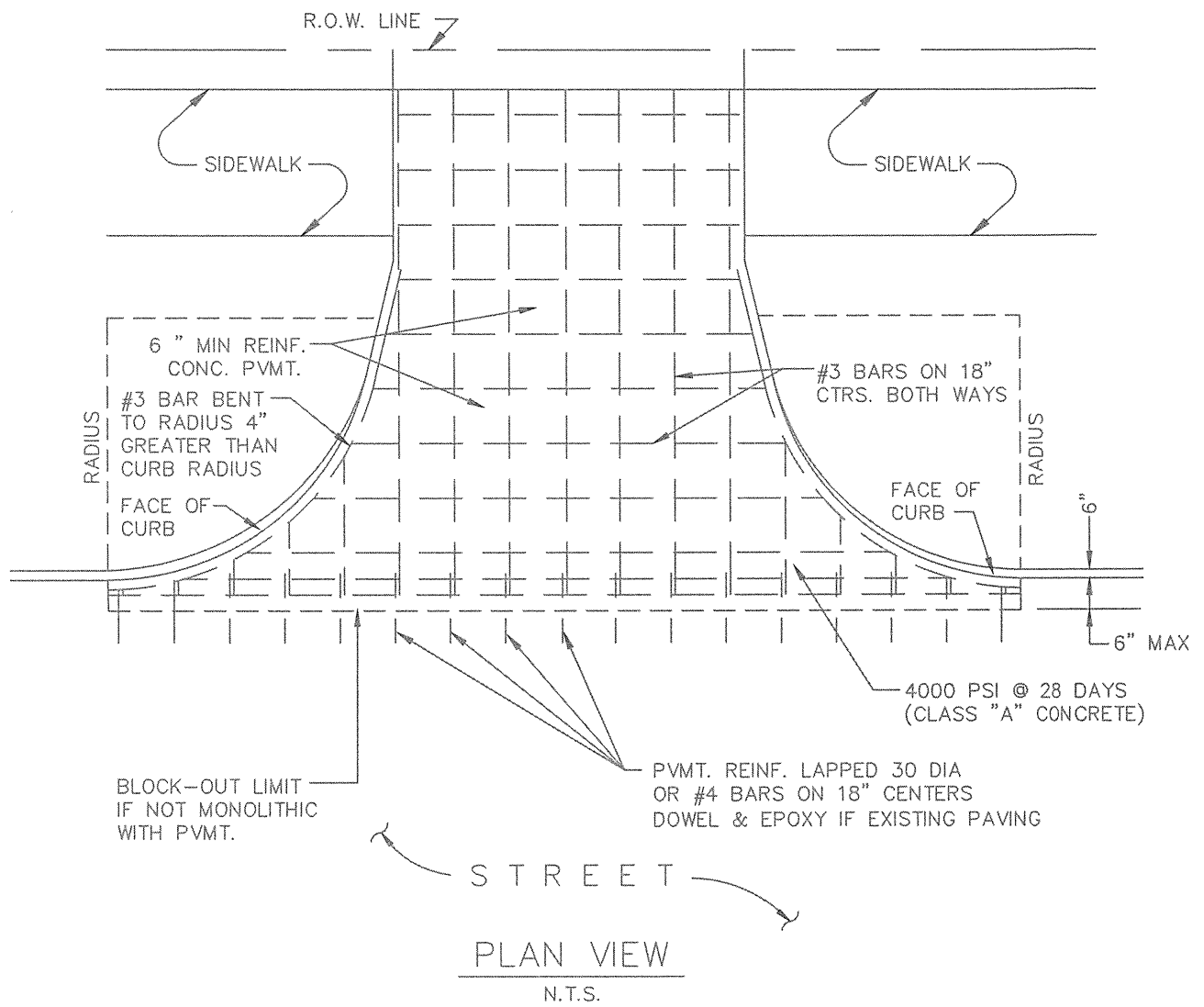
REINFORCEMENT BARS SHALL MATCH THOSE IN PAVEMENT.

MEDIAN ISLAND PAVEMENT

MONOLITHIC CONCRETE NOSE

STANDARD DRAWING NO.

PAV-06

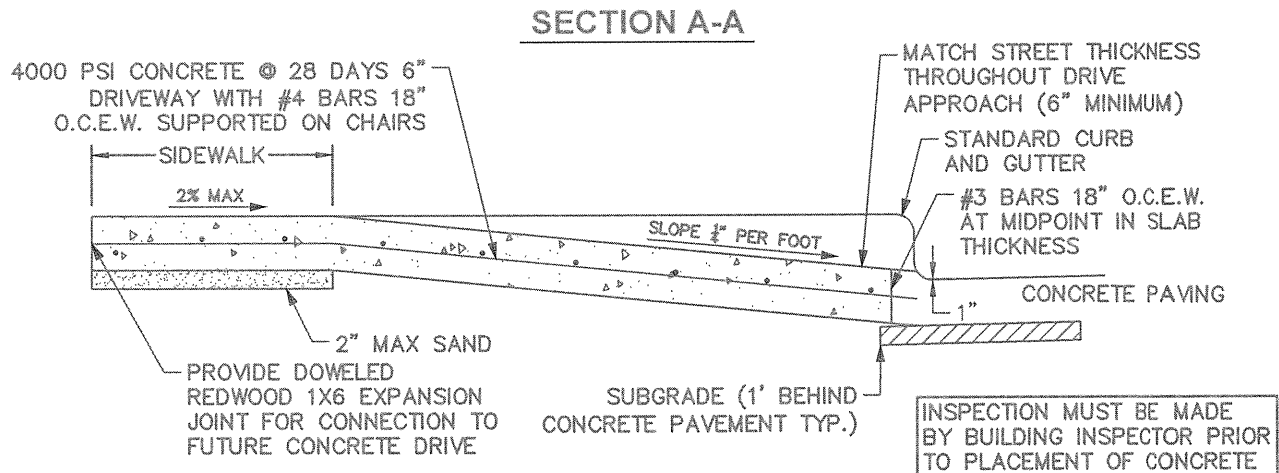
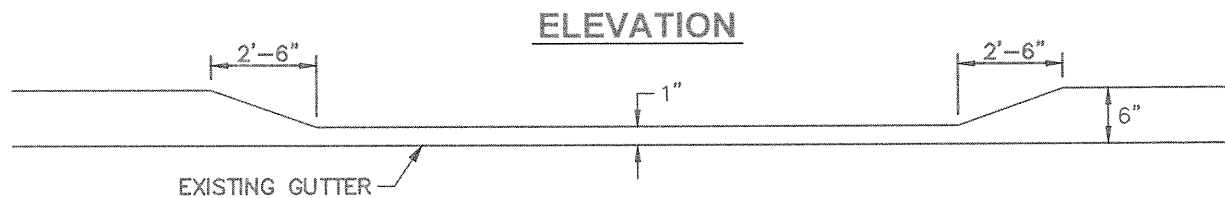
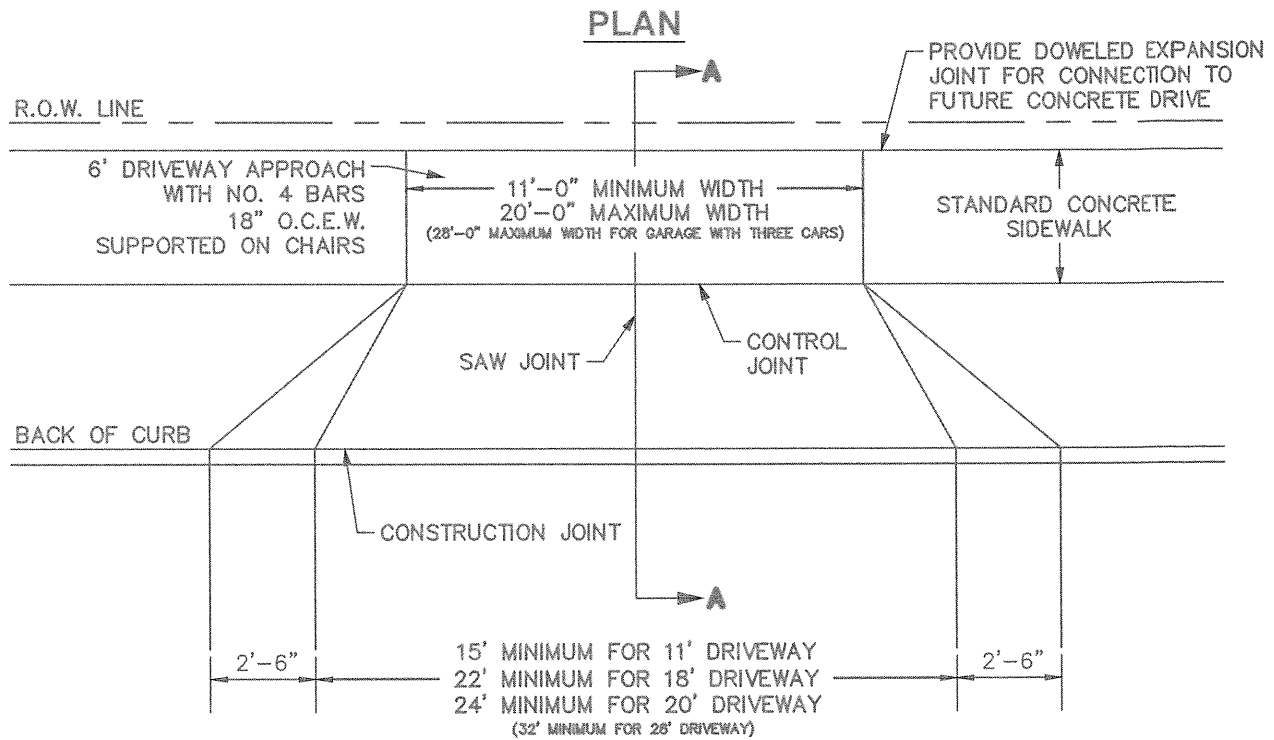


# CONCRETE DRIVEWAY APPROACH

RADIUS RETURN

STANDARD DRAWING NO.

PAV-07



**NOTES:**

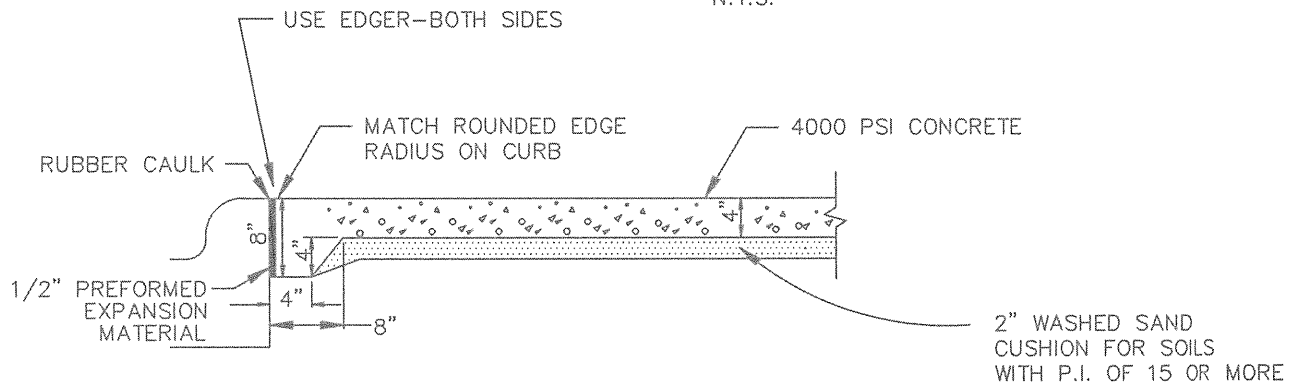
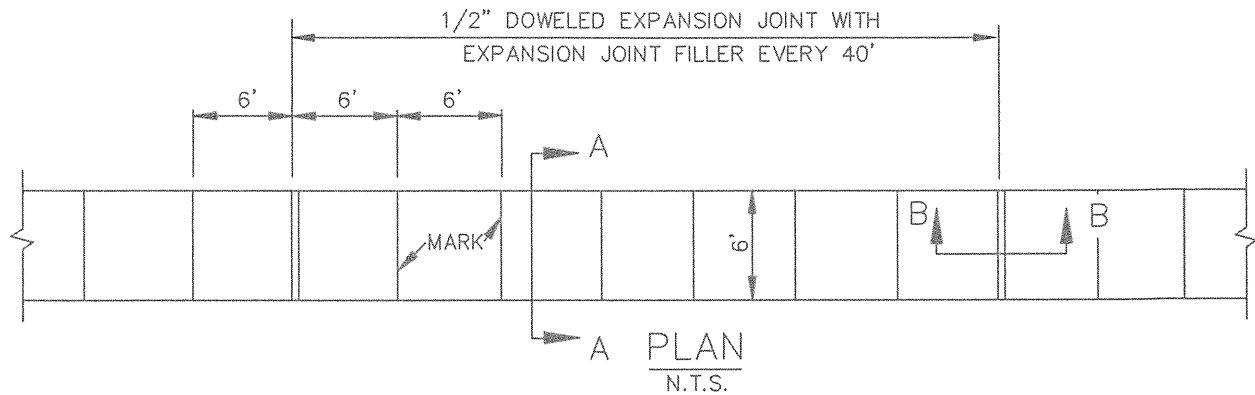
1. EXISTING CURB AND GUTTER, IF ANY MUST BE SAWED AS DIRECTED BY THE CITY ENGINEER, HORIZONTAL CURB CUT SHALL BE AT AN ELEVATION OF 1" ABOVE THE EXISTING GUTTER WITH A MINIMUM LENGTH AS SHOWN. THE TRADITIONAL SAW CUT SHALL HAVE A RUN OF 2'-6" AND SHALL RISE TO MEET THE EXISTING TOP OF CURB. ALL EXPOSED EDGES SHALL BE GROUND TO A 1/4" RADIUS. SAW CUTTING SHALL BE PERFORMED WITH A RIDE-ON SAW EQUIPPED WITH A DIAMOND BLADE.
2. SIDEWALK SECTION THRU DRIVEWAY SHALL BE POURED SAME THICKNESS AS DRIVEWAY APPROACH. (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED AND REPLACED.)
3. THIS WORK SHALL NOT DISRUPT THE DESIGN FLOWLINE OF THE EXISTING GUTTER.

CONCRETE DRIVEWAY APPROACH

RESIDENTIAL

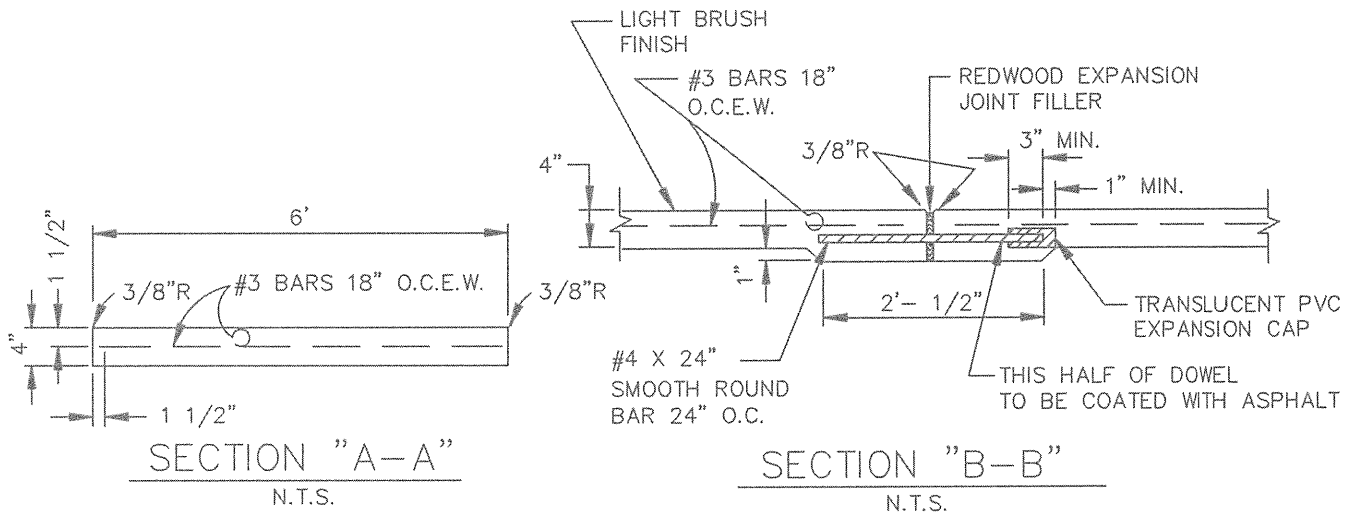
STANDARD DRAWING NO.

PAV-08



### JOINT LUG DETAIL FOR MEDIAN PAVEMENT OR SIDEWALK ADJACENT TO CURB

N.T.S.



#### NOTE:

1. REFER TO STANDARD SPECIFICATION ITEM 8.3. FOR ALTERNATE REINFORCEMENT.
2. CROSS SLOPE OF SIDEWALK SHALL BE  $\pm 1/4"$  PER FT. MIN. TO  $\pm 3/8"$  PER FT. MAX.
3. OTHER THAN 6'-0" SIDEWALK WIDTH MAY BE SPECIFIED BY OWNER.
4. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL-PLASTERED BEFORE POURING SIDEWALK.
5. LUG MAY BE FORMED BY SHAPING SUBGRADE TO APPROXIMATE DIMENSIONS SHOWN.

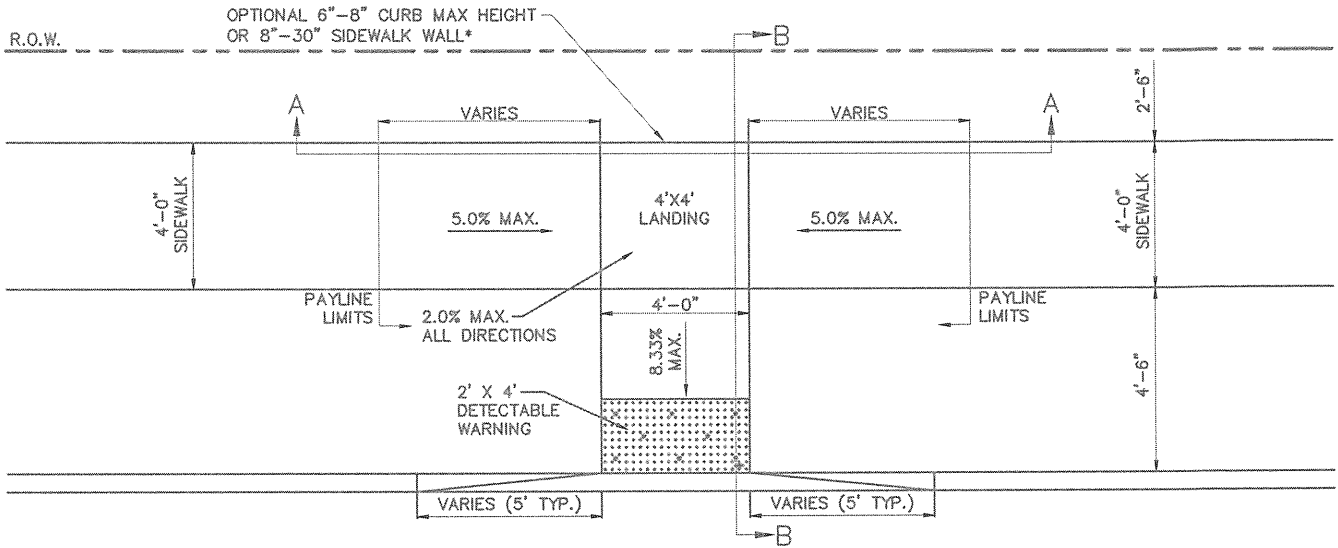
REINFORCED CONCRETE SIDEWALK

JOINTS & SPACING

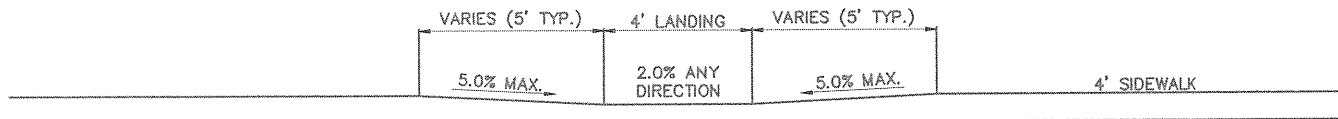
STANDARD DRAWING NO.

PAV-09

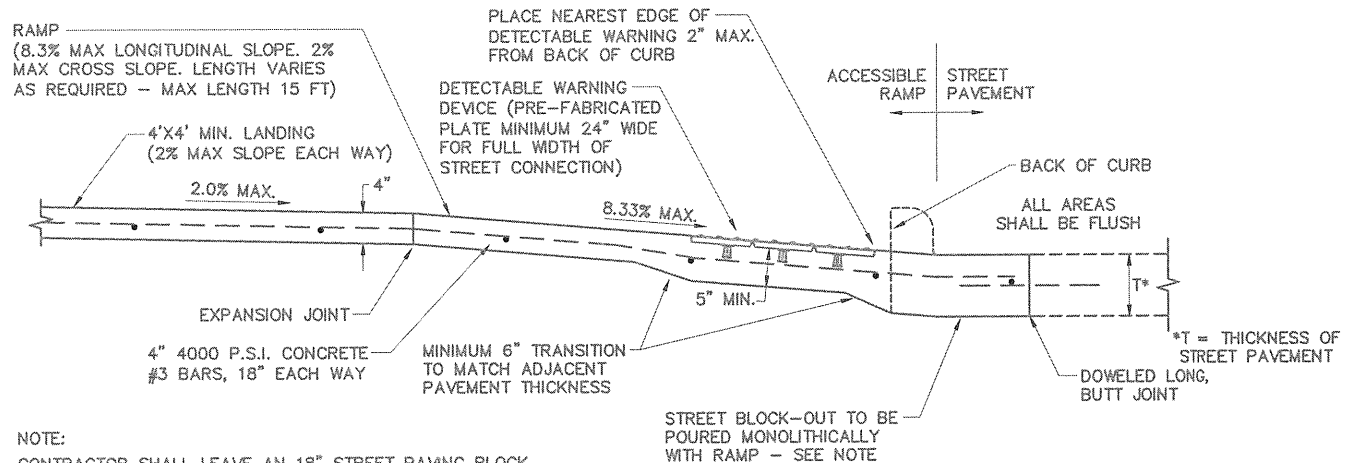
\*SIDEWALK MUST BE 5' WIDE AT  
LANDING IF 6" CURB OR SIDEWALK  
WALL IS REQUIRED



### MID-BLOCK CURB RAMP



### SECTION A-A



NOTE:  
CONTRACTOR SHALL LEAVE AN 18" STREET PAVING BLOCK  
OUT, MEASURED FROM BACK OF CURB, ADJACENT TO  
CURB RAMPS. BLOCK OUT SHALL BE POURED  
MONOLITHICALLY WITH CURB RAMP, DOWELED INTO STREET  
PAVEMENT (18" SMOOTH #3 DOWELS PLACED 18" O.C.)

### SECTION B-B

## MID-BLOCK BARRIER FREE RAMP

## OPPOSITE "T" INTERSECTION

STANDARD DRAWING NO.

PAV-10

ALL NEWLY CONSTRUCTED SIDEWALKS, CURB RAMPS AND CROSSWALKS INSTALLED WITHIN CITY PUBLIC RIGHTS-OF-WAY SHALL BE CONSIDERED A PEDESTRIAN ACCESS ROUTE AND SHALL CONFORM TO THE MOST CURRENT "DRAFT" GUIDELINES FOR PUBLIC RIGHTS-OF-WAY CREATED BY THE UNITED STATES ACCESS BOARD.

1. SLOPES SHALL BE MAXIMUM ALLOWABLE. LESSER SLOPES THAT WILL STILL DRAIN PROPERLY SHOULD BE USED. ADJUST CURB RAMP LENGTH OR GRADE OF APPROACH SIDEWALKS AS DIRECTED.
2. LANDINGS SHALL BE 5' X 5' MINIMUM WITH A MAXIMUM 2% SLOPE IN EACH DIRECTION.
3. CLEAR SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4' X 4' WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
4. MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND CURB RAMP SURFACES IS 2%.
5. ADDITIONAL INFORMATION ON CURB RAMP LOCATION, DESIGN, LIGHT REFLECTIVE VALUE AND TEXTURE MAY BE FOUND IN THE MOST CURRENT EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS) AND 16 TAC 68.102. FEDERAL GUIDELINES SHALL SUPERSEDE ANY CONFLICTS.
6. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, CURB RAMPS AND ACCESSIBLE ROUTES SHALL ALIGN WITH THEORETICAL CROSSWALKS UNLESS OTHERWISE DIRECTED.
7. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS.
8. PROVIDE A FLUSH TRANSITION WHERE THE CURB RAMPS CONNECT TO THE STREET.
9. ACCESSIBLE ROUTES ARE CONSIDERED "RAMPS" WHEN LONGITUDINAL SLOPES ARE BETWEEN 5% AND 8.3% (MAXIMUM ALLOWABLE). SIDEWALKS UNDER 5% LONGITUDINAL SLOPE ARE DEEMED ACCESSIBLE ROUTES AND MUST FOLLOW ALL APPLICABLE GUIDELINES.

W -- FOR SIDEWALK WIDTH SEE

PAV-11

- (A) DETECTABLE WARNING DEVICES (DWD) SHALL BE PRE-MANUFACTURED CAST-IN-PLACE PLATES FROM THE CITY OF ANNA APPROVED VENDOR LIST INSTALLED TO THE MANUFACTURER'S SPECIFICATIONS, AND SHALL MEET ALL ADA REQUIREMENTS. NO BRICK PAVERS ALLOWED. COLOR TO BE BRICK RED OR SIMILAR. DWD SHALL BE 24 INCHES IN LENGTH FOR THE FULL WIDTH OF THE STREET CONNECTION STARTING AT THE BACK OF CURB. A MAXIMUM 2-INCH BORDER SHALL BE ALLOWED ON THE SIDES OF THE DWD FOR PROPER INSTALLATION.
- (B) ALSO KNOWN AS "CLEAR SPACE" PER ADA PROWAG, THE CITY REQUIRES A MINIMUM LANDING SPACE OF 4-FOOT BY 4-FOOT AT THE BOTTOM OF EVERY RAMP. THIS LANDING SPACE SHALL HAVE A CROSS SLOPE IN BOTH DIRECTIONS THAT DOES NOT EXCEED 2.0% AND SHALL BE WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
- (C) THE RAMP COMPONENT OF THE DIRECTIONAL CURB RAMP SHALL HAVE A CONTINUOUS LONGITUDINAL SLOPE MORE THAN 5% AND LESS THAN 8.3%. THE RAMP SHALL ALSO HAVE A CROSS SLOPE OF NO MORE THAN 2.0%. LENGTH OF RAMP CAN VARY, BUT SHALL NOT EXCEED 15 FEET TO ACHIEVE DESIRED ELEVATION CHANGE.
- (D) ALSO KNOWN AS "TURNING SPACE" PER ADA PROWAG, A MINIMUM LANDING SPACE OF 4-FOOT BY 4-FOOT SHALL BE AT THE TOP OF EVERY RAMP. THIS LANDING (TURNING) SPACE SHALL HAVE A CROSS SLOPE IN BOTH DIRECTIONS THAT DOES NOT EXCEED 2.0%. LANDING MUST MATCH WIDTH OF SIDEWALK AND LENGTH SHALL BE THE SAME DISTANCE ("SQUARED" LANDING).
- (E) ALL CURB RAMPS SHALL HAVE GRADE BREAKS AT THE TOP AND BOTTOM THAT ARE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE LESS THAN OR EQUAL TO 5 FEET, THE DWD SHALL BE PLACED WITHIN THE RAMP AT THE BOTTOM GRADE BREAK. WHERE EITHER END OF THE BOTTOM GRADE BREAK IS GREATER THAN 5 FEET, THE DWD SHALL BE PLACED BEHIND THE BACK OF THE CURB.
- (F) PAVING CONTRACTOR SHALL LEAVE BLOCK OUT WITH A KEYWAY JOINT INSTALLED, MINIMUM OF 18 INCHES MEASURED FROM BACK OF CURB. BLOCK OUT SHALL BE POURED MONOLITHICALLY WITH CURB RAMP. CONCRETE SHALL TIE TO STREET PAVING WITH A KEYWAY JOINT PER CITY DETAIL 2050M. NO CURB SHALL BE CONSTRUCTED WHERE A DWD IS PROVIDED. THE CURB ON EITHER SIDE SHALL HAVE A TYPICAL 5 FOOT TAPER TO TRANSITION FROM THE STANDARD 6-INCH CURB HEIGHT TO BE FLUSH WITH RAMP.
- (G) ALL WORK ASSOCIATED WITH ACCESSIBLE ROUTES SHALL BE INSTALLED FLUSH WITH ALL FEATURES TO MINIMIZE VERTICAL SURFACE DISCONTINUITIES. EACH SEGMENT ALONG ACCESSIBLE ROUTE SHALL BE FLUSH WITH NO MORE (ZERO TOLERANCE) THAN A ¼-INCH GRADE SEPARATION (ELEVATION DIFFERENCE), OR ½-INCH GRADE SEPARATION IF BEVELED (BEVEL SLOPE SHALL NOT BE STEEPER THAN 50%).
- (H) A SIDEWALK HEADER SHALL BE CONSTRUCTED AT ENDS OF ALL WORK PERFORMED.
- (I) STREET CROSSINGS SHALL ADHERE TO SAME GUIDELINES AS OTHER ACCESSIBLE ROUTES WITHIN PUBLIC RIGHT-OF-WAY, AND SHALL BE FOR THE FULL WIDTH OF THE IN-LINE ACCESSIBLE ROUTE. CROSS SLOPE SHALL NOT EXCEED 2%. NEW STREET CONSTRUCTION SHALL INCORPORATE ALL ADA DESIGN REQUIREMENTS. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN PROFESSIONAL AND CONTRACTOR TO ENSURE ALL STREET CROSSINGS MEET THE REQUIREMENTS OF PROWAG. STREET ALTERATIONS ON EXISTING STREETS TO BRING TO COMPLIANCE SHALL BE AT THE CITY ENGINEER'S DISCRETION.
- (J) ALL CURBS CONSTRUCTED AS PART OF AN ADA RAMP SHALL MATCH CITY CURB STANDARDS.

\* SEE PROWAG SPECIAL DESIGN CONSIDERATIONS WHEN STREET CROSSING HAS NO STOP OR YIELD CONDITION.

#### DETECTABLE WARNING DEVICE

1. CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH SECTION 705 OF THE TAS. THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACES. FURNISH AND INSTALL AN APPROVED CAST-IN-PLACE DARK RED DETECTABLE WARNING SURFACE MATERIAL ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
2. DETECTABLE WARNING MATERIALS MUST MEET CITY OF ANNA MATERIAL SPECIFICATION (REFER TO TXDOT APPROVED VENDOR LIST) AND BE LISTED ON THE MATERIAL PRODUCER LIST. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DETECTABLE WARNING SURFACES MUST BE SLIP RESISTANT AND NOT ALLOW WATER TO ACCUMULATE.
4. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
5. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS AT THE BACK OF CURB. WHEN PLACED ON THE RAMP, ALIGN THE ROWS OF DOMES TO BE PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP RUN AND THE STREET. WHERE DETECTABLE WARNING SURFACES ARE PROVIDED ON A SURFACE WITH A SLOPE THAT IS LESS THAN 5 PERCENT, DOME ORIENTATION IS LESS CRITICAL. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.

#### SIDEWALKS

6. PROVIDE CLEAR GROUND SPACE AT OPERABLE PARTS, INCLUDING PEDESTRIAN PUSH BUTTONS. OPERABLE PARTS SHALL BE PLACED WITHIN ONE OR MORE REACH RANGES SPECIFIED IN TAS 308.
7. PLACE TRAFFIC SIGNAL OR ILLUMINATION POLES, GROUND BOXES, CONTROLLER BOXES, SIGNS, DRAINAGE FACILITIES AND OTHER ITEMS SO AS NOT TO OBSTRUCT THE PEDESTRIAN ACCESS ROUTE OR CLEAR GROUND SPACE.
8. STREET GRADES AND CROSS SLOPES SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
9. CHANGES IN LEVEL GREATER THAN 1/4 INCH ARE NOT PERMITTED (1/2 INCH WITH BEVEL).
10. WHERE A 4' SIDEWALK IS PROVIDED, A 5'X 5' PASSING AREAS ARE REQUIRED AT INTERVALS NOT TO EXCEED 200'.
11. THE LEAST POSSIBLE GRADE SHOULD BE USED TO MAXIMIZE ACCESSIBILITY. THE RUNNING SLOPE OF SIDEWALKS AND CROSSWALKS WITHIN THE PUBLIC RIGHT OF WAY MAY FOLLOW THE GRADE OF THE PARALLEL ROADWAY. WHERE A CONTINUOUS GRADE GREATER THAN 5% MUST BE PROVIDED, HANDRAILS MAY BE DESIRABLE TO IMPROVE ACCESSIBILITY. HANDRAILS MAY ALSO BE NEEDED TO PROTECT PEDESTRIANS FROM POTENTIALLY HAZARDOUS CONDITIONS. IF PROVIDED, HANDRAILS SHALL COMPLY WITH TAS 505.
12. HANDRAIL EXTENSIONS SHALL NOT PROTRUDE INTO THE USABLE LANDING AREA OR INTO INTERSECTING PEDESTRIAN ROUTES.

	BARRIER FREE RAMP	STANDARD DRAWING NO.  PAV-11A
	TYPE 'B' (2 OF 2)	

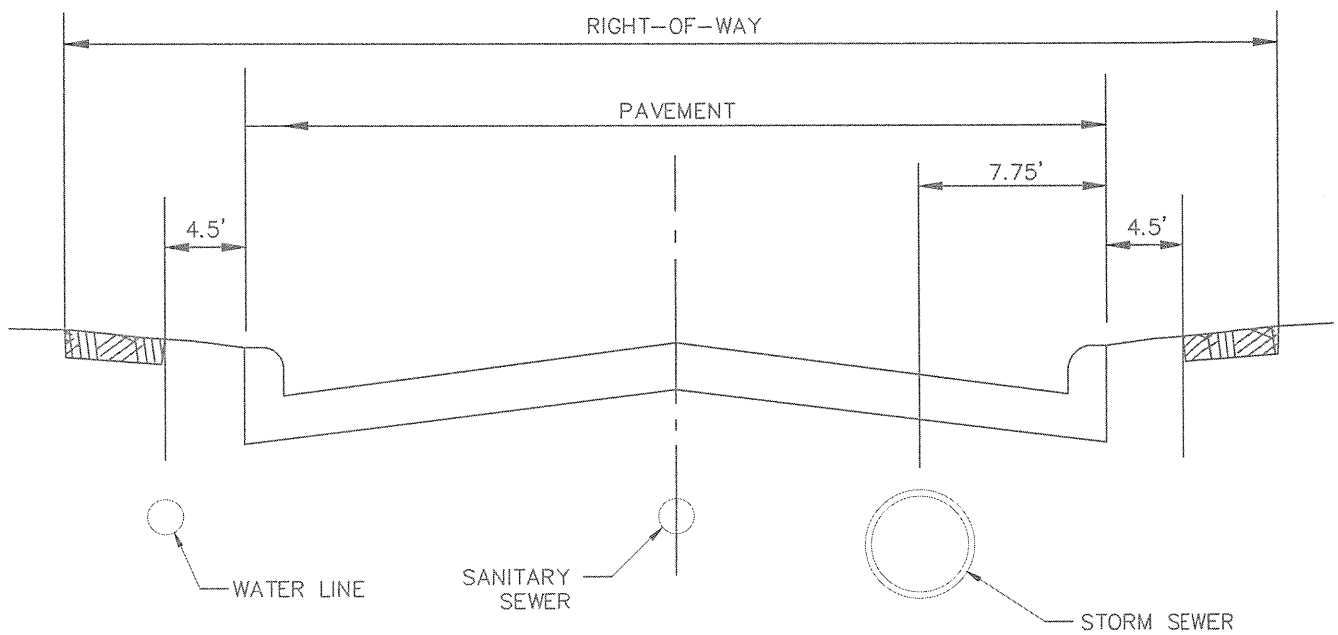


BRICK RED DETECTABLE WARNING SURFACE SHALL BE PROVIDED AS SHOWN BY INSTALLING WET SET ADA REPLACEABLE TACTILE WARNING SURFACE UNIT ADA REP MANUFACTURED BY ADA SOLUTIONS, INC OR APPROVED EQUAL. INSTALL ACCORDING TO MANUFACTURER RECOMMENDATIONS. USE ONLY MANUFACTURED STANDARD SIZES.



## TYPE 'C'

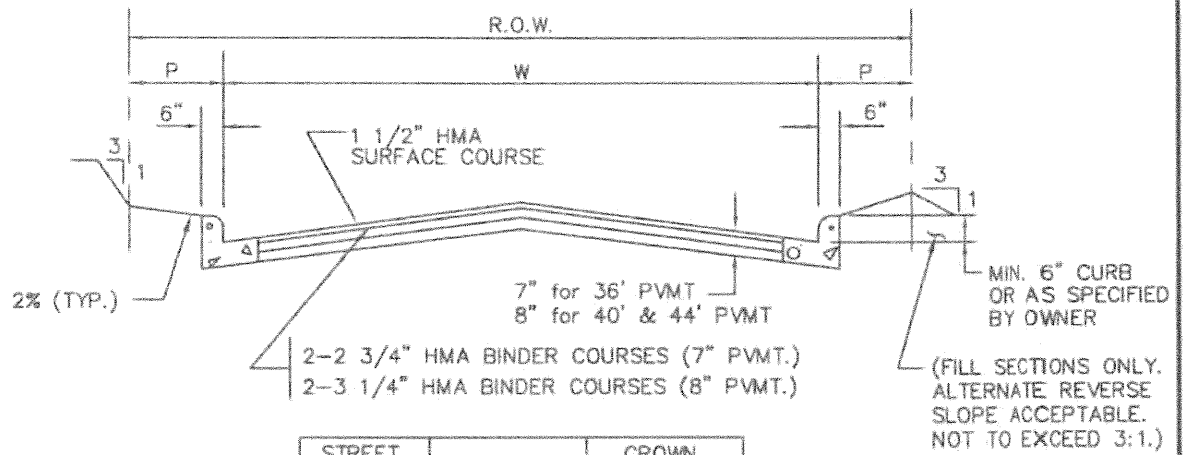
PAV-12



TYPICAL UTILITY LOCATION  
IN PAVEMENT

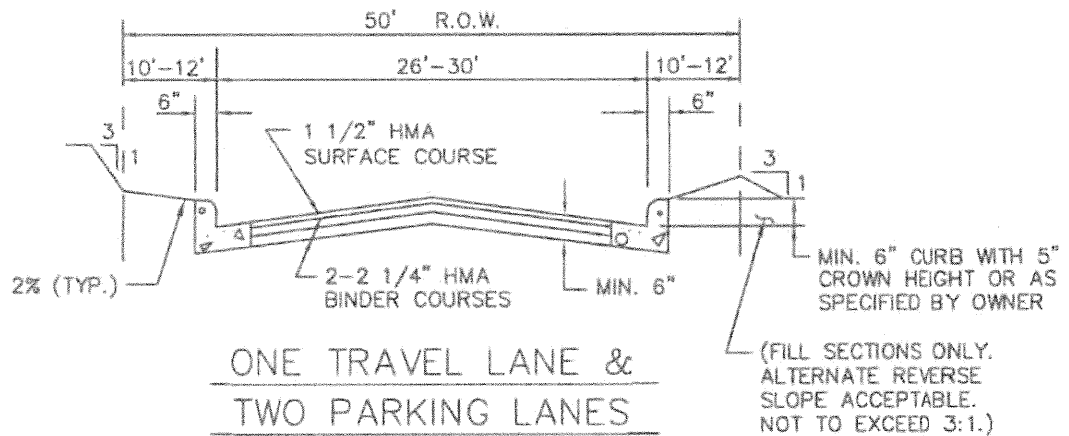
STANDARD DRAWING NO.

PAV-13



FOUR TRAVEL LANES OR  
TWO TRAVEL LANES &  
TWO PARKING LANES

N.T.S.



N.T.S.

NOTES:

1. A SOIL INVESTIGATION FOR SUBGRADE DESIGN SHALL BE CONDUCTED BY THE ENGINEER THIS DESIGN SHALL BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION.
2. WHERE FULL-DEPTH ASPHALT PAVEMENTS ARE BEING CONSIDERED FOR USE, THE ASPHALT PAVEMENT THICKNESS SHALL BE BASED UPON NECESSARY SUBGRADE ANALYSES AND PAVEMENT THICKNESS DESIGN DETERMINATIONS AS APPROVED BY THE OWNER. THICKNESSES SHOWN ARE TYPICAL.
3. TACK COAT BETWEEN COURSES AS REQUIRED.

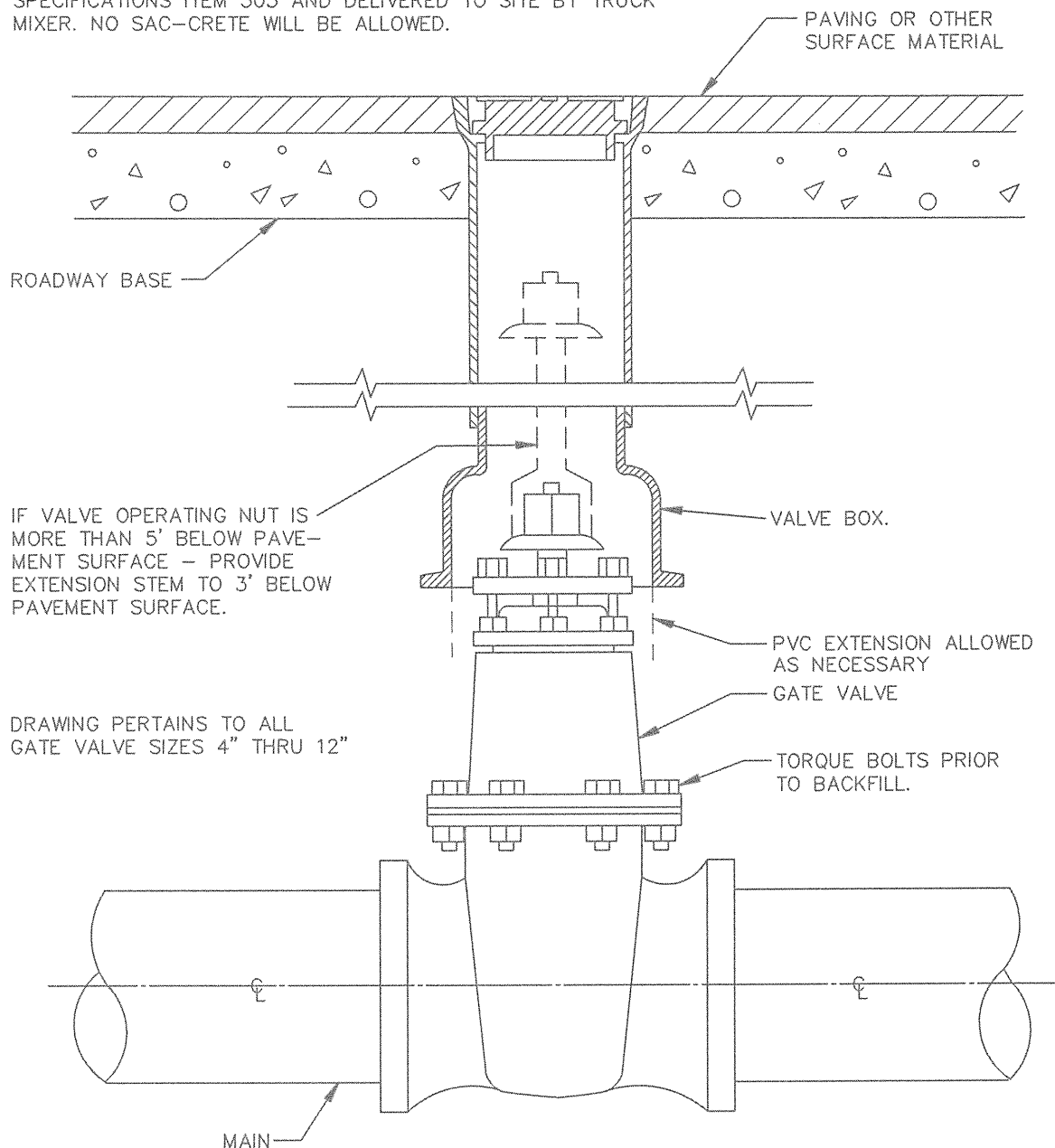
HOT MIX ASPHALT PAVEMENT

2- & 4-LANE UNDIVIDED THOROUGHFARE

PAV-14

NOTE:

IN UNPAVED AREAS, INSTALL 2' x 2' x 6" CONCRETE VALVE PAD FLUSH WITH THE TOP OF VALVE BOX. REINFORCE WITH #3 BARS ON 6" CENTERS BOTH WAYS. CONCRETE SHALL BE IN ACCORDANCE WITH 5TH EDITION NCTCOG STANDARD SPECIFICATIONS ITEM 303 AND DELIVERED TO SITE BY TRUCK MIXER. NO SAC-CRETE WILL BE ALLOWED.



## GATE VALVE BOX AND EXTENSION STEM

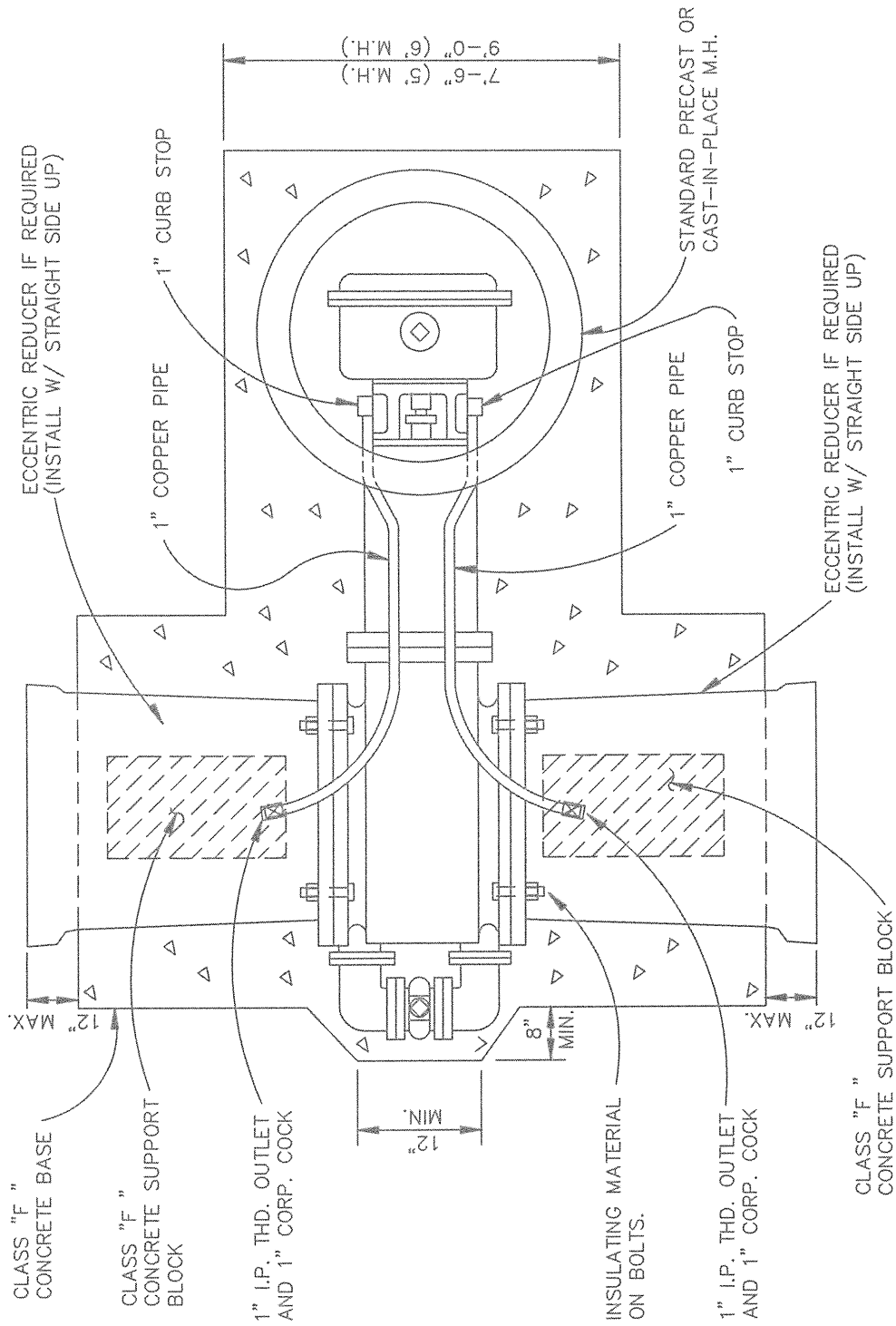
N.T.S.

GATE VALVE 4" TO 12"

BOX & EXTENSION STEM

STANDARD DRAWING NO.

WAT-01

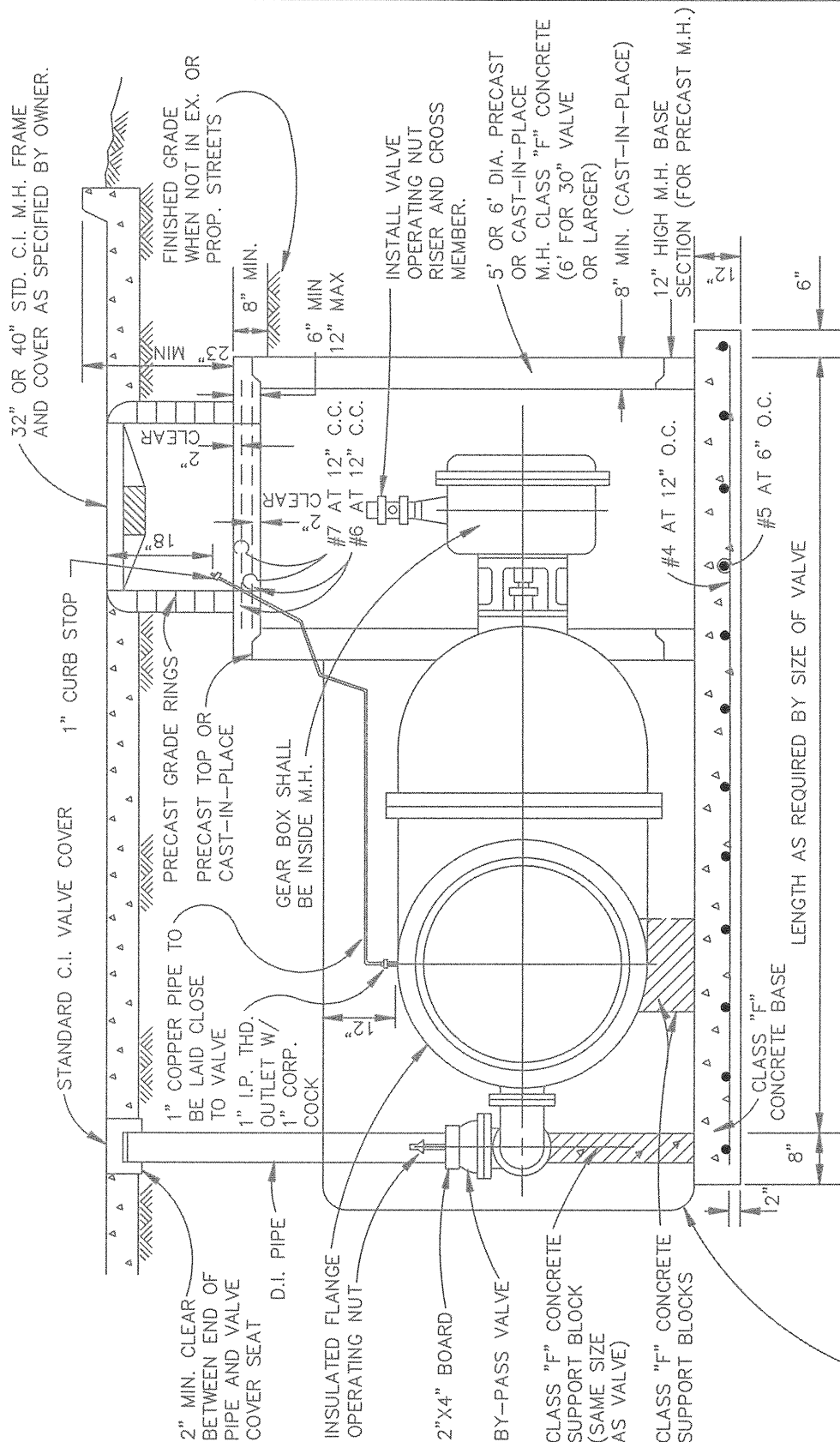


# VAULT CONSTRUCTION PLAN

HORIZONTAL GATE VALVE  $\geq 16"$

STANDARD DRAWING NO.

WAT-02



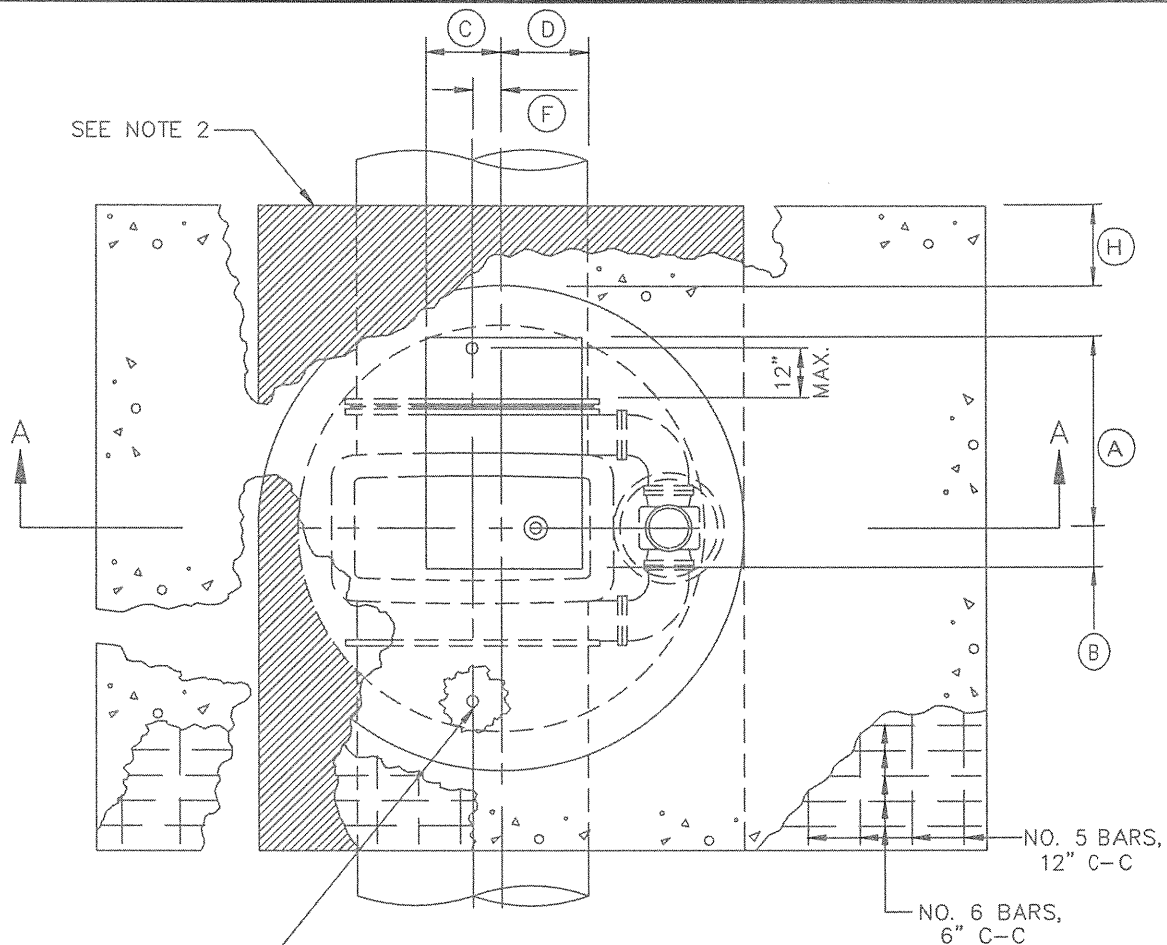
PROFILE  
N.T.S.

# VAULT CONSTRUCTION PROFILE

HORIZONTAL GATE VALVE  $\geq 16"$

STANDARD DRAWING NO.

WAT-03



SEE NOTE 1

PLAN VIEW

(LESS MANHOLE FRAME & COVER INSTALLATION)

N.T.S.

GATE VALVE SIZE	DIMENSION TABLE											
	A	B	C	D	E	F	G	H	J	K	L	M
16"	20"	20"	12"	12"	44 1/2"	1"	48"	12"	10"	24"	12"	16"
18"	20"	20"	12"	12"	51 3/8"	2"	48"	12"	12"	24"	12"	18"
20"	22"	18"	12"	12"	56 5/8"	1"	54"	12"	12"	24"	16"	20"
24"	26"	14"	12"	12"	64 3/8"	1"	60"	18"	14"	30"	18"	24"
30"	28"	12"	12"	12"	80 5/8"	3"	66"	18"	18"	30"	20"	30"
36"	32"	8"	12"	12"	90 1/16"	4"	72"	18"	18"	36"	24"	36"
42"	34"	6"	15"	9"	107 3/4"	5"	78"	24"	20"	36"	30"	42"
48"	36"	4"	14"	10"	121 5/8"	4"	90"	24"	26"	42"	36"	48"
54"	36"	4"	9"	15"	142 1/2"	3"	102"	24"	32"	46"	40"	54"

NOTES:

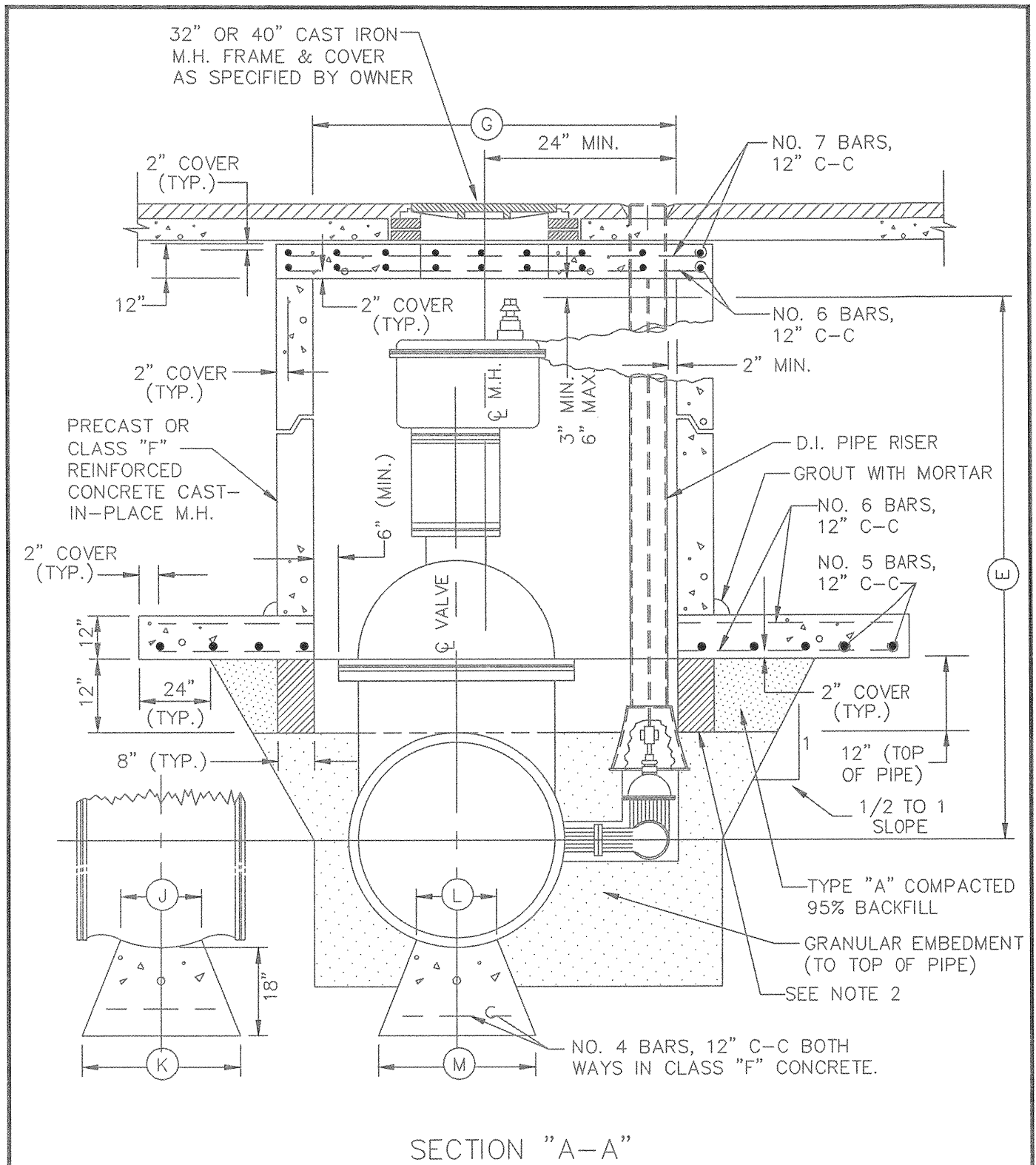
1. PROVIDE CORPORATION AND CURB STOPS A MAXIMUM OF 12" FROM EACH END OF GATE VALVE, AS SHOWN. CORPORATION AND CURB STOP SIZES SHALL BE 1" FOR 16", 20", AND 24" NOMINAL PIPE DIAMETERS; 2" FOR 30" AND LARGER DIAMETERS. 2" TAPS SHALL BE MADE AS A 2" FLANGED OUTLET WITH INSULATED ADAPTOR KIT. COPPER RISERS SHALL BE PROVIDED BETWEEN THE CORPORATION AND CURB STOPS. CURB STOPS SHALL BE INSTALLED AT AN ELEVATION 12" ABOVE THE TOP SURFACE OF VAULT BOTTOM SLAB.
2. POLYURETHANE CUSHION PAD.

VAULT CONSTRUCTION DIMENSIONS

VERTICAL GATE VALVE  $\geq 16"$

STANDARD DRAWING NO.

WAT-04



REFER TO STD. DWG. WAT-04 FOR DIMENSION TABLE AND GENERAL NOTES.

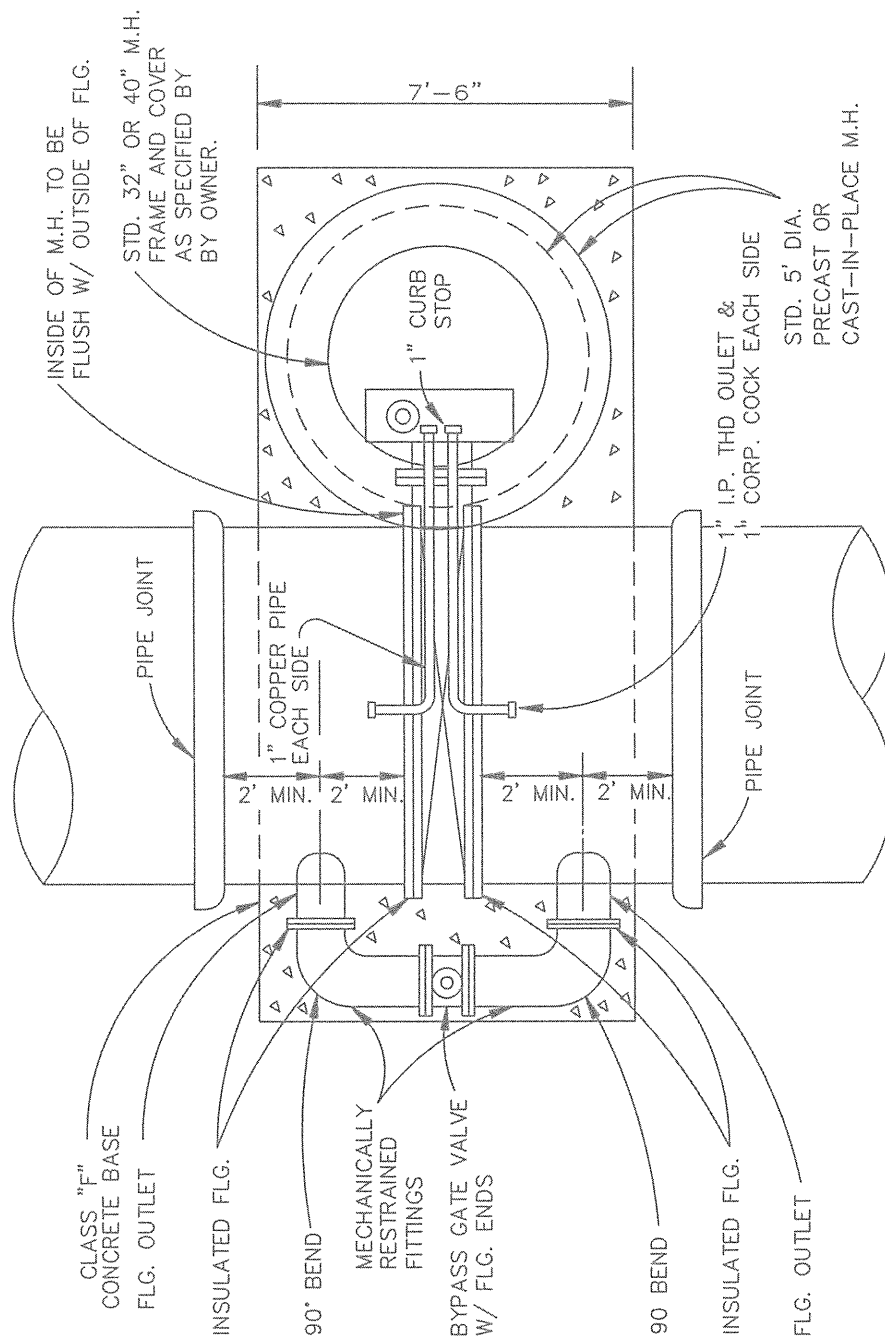
## VAULT CONSTRUCTION SECTION

VERTICAL GATE VALVE  $\geq 16"$

STANDARD DRAWING NO.

WAT-05





PLAN  
N.T.S.

VAULT CONSTRUCTION PLAN

BUTTERFLY VALVE  $\geq 16"$

STANDARD DRAWING NO.

WAT-06

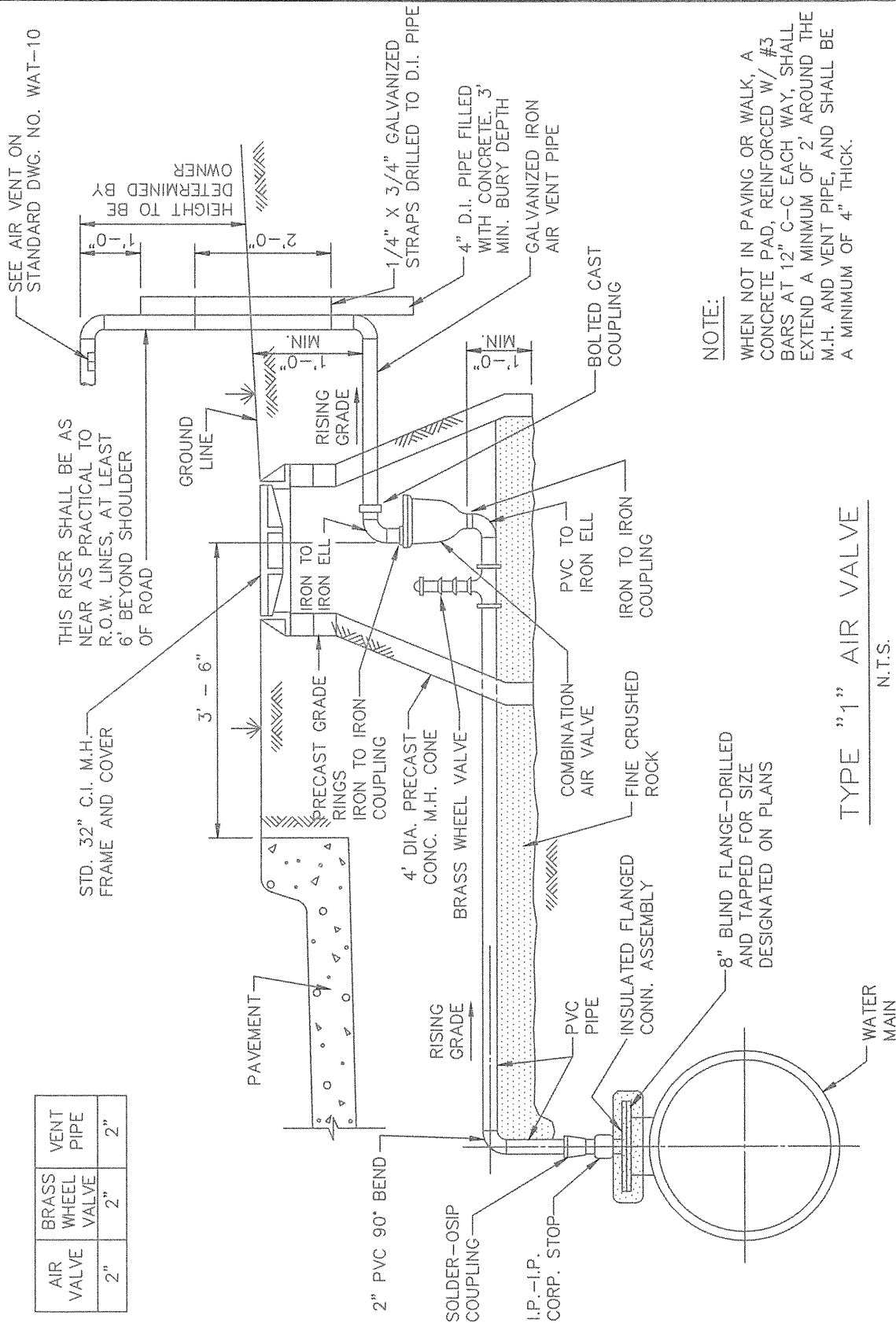


BACKFILL 12" AROUND VALVE  
BODY W/ PORTLAND CEMENT  
STABILIZED SAND 2 SACKS  
PER CUBIC YARD.

## STANDARD DRAWING NO.

WAT-07

AIR VALVE	2"	BRASS WHEEL VALVE	2"	VENT PIPE	2"
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**NOTE:**

WHEN NOT IN PAVING OR WALK, A CONCRETE PAD, REINFORCED W/ #3 BARS AT 12" C-C EACH WAY, SHALL EXTEND A MINIMUM OF 2' AROUND THE M.H. AND VENT PIPE, AND SHALL BE A MINIMUM OF 4" THICK.

TYPE "1" AIR VALVE

N.T.S.

COMBINATION AIR VACUUM VALVE

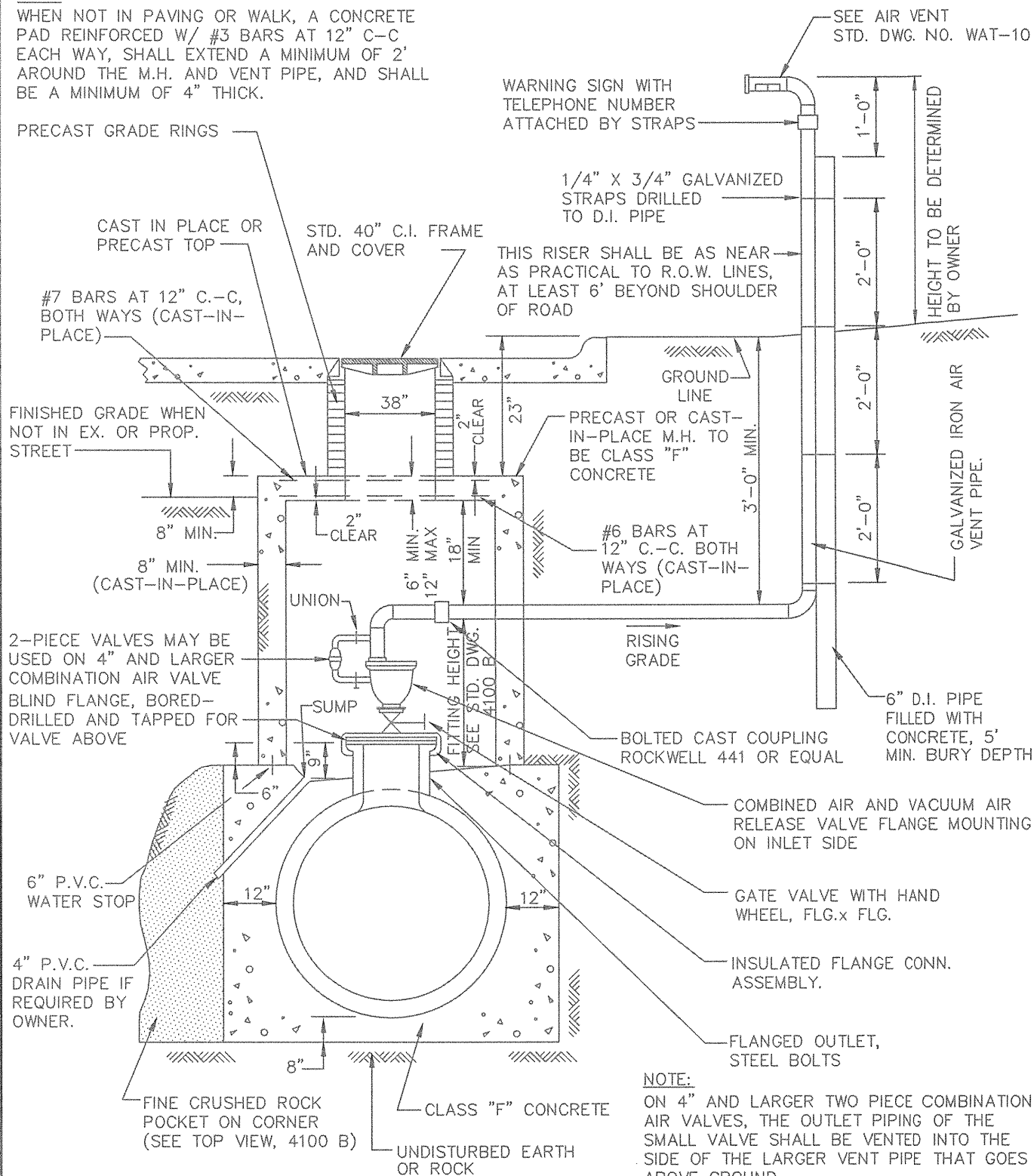
TYPE "1"

STANDARD DRAWING NO.

WAT-08

**NOTE:**

WHEN NOT IN PAVING OR WALK, A CONCRETE PAD REINFORCED W/ #3 BARS AT 12" C-C EACH WAY, SHALL EXTEND A MINIMUM OF 2' AROUND THE M.H. AND VENT PIPE, AND SHALL BE A MINIMUM OF 4" THICK.



**NOTE:**

ON 4" AND LARGER TWO PIECE COMBINATION AIR VALVES, THE OUTLET PIPING OF THE SMALL VALVE SHALL BE VENTED INTO THE SIDE OF THE LARGER VENT PIPE THAT GOES ABOVE GROUND.

**TYPE "2" AIR VALVE**

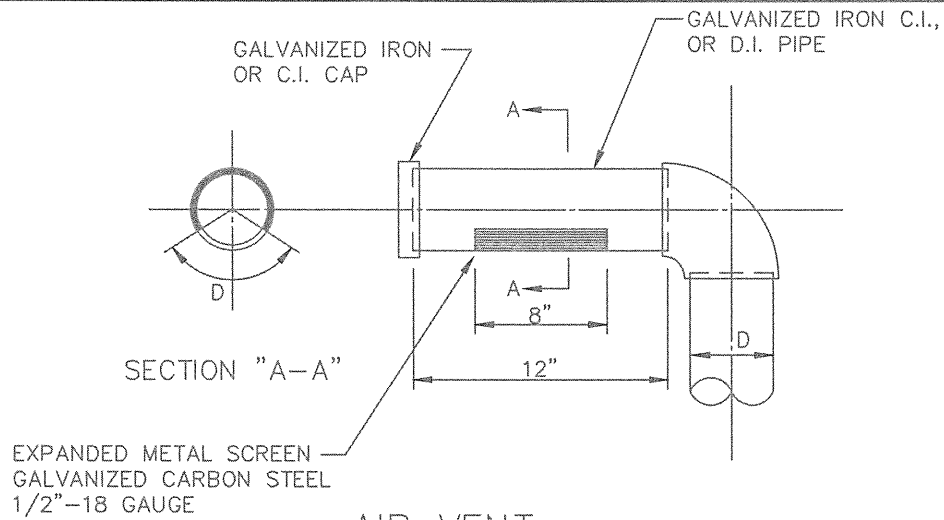
N.T.S.

**COMBINATION AIR VACUUM VALVE**

**TYPE "2" SECTION**

STANDARD DRAWING NO.

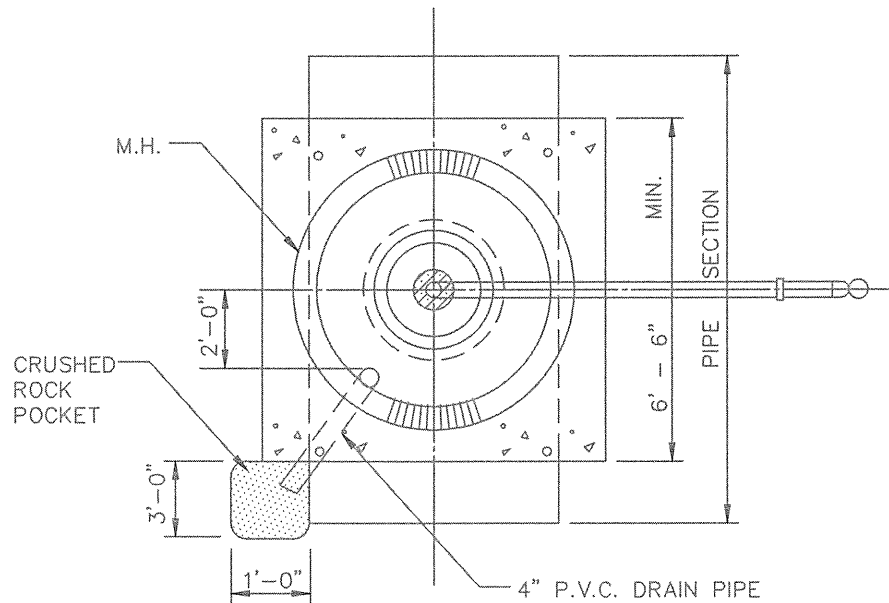
**WAT-09**



## AIR VENT

N.T.S.

AIR VALVE	GATE VALVE	FLG. OUTLET	MIN. FITTING HEIGHT	VENT PIPE D	M.H. DIA.
2"	2"	8"	26"	2"	5'
3"	3"	18"	31"	3"	5'
4"	4"	18"	38"	4"	5'
6"	6"	18"	46"	6"	5'
8"	8"	18"	53"	8"	6'
10"	10"	20"	62"	10"	6'
12"	12"	24"	72"	12"	6'



## PLAN VIEW

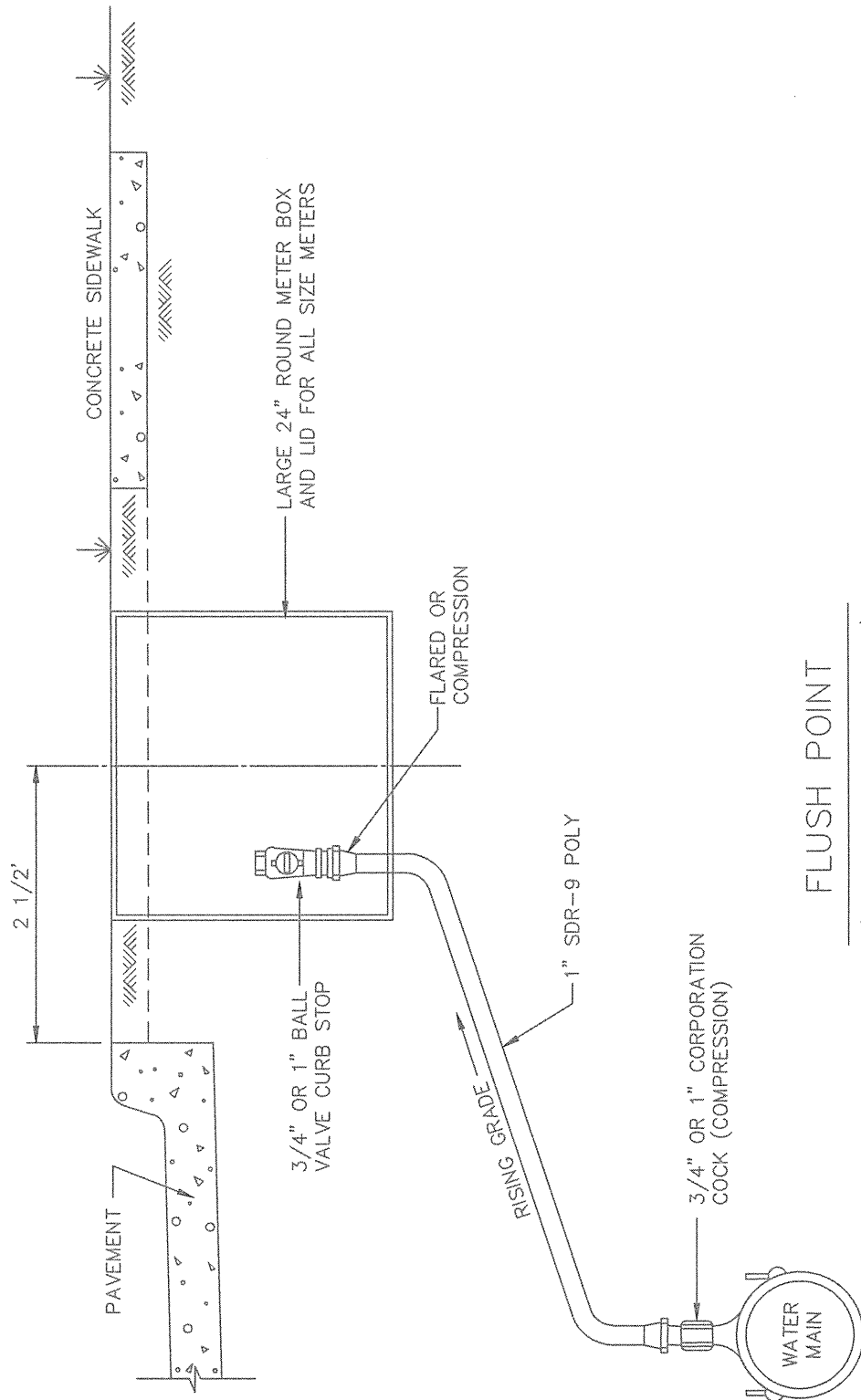
N.T.S.

AIR RELEASE VALVE AIR VENT

TYPE "2"

STANDARD DRAWING NO.

WAT-10



## FLUSH POINT

(SIZE DESIGNATED ON PLANS)  
N.T.S.

FLUSH POINT INSTALLATION

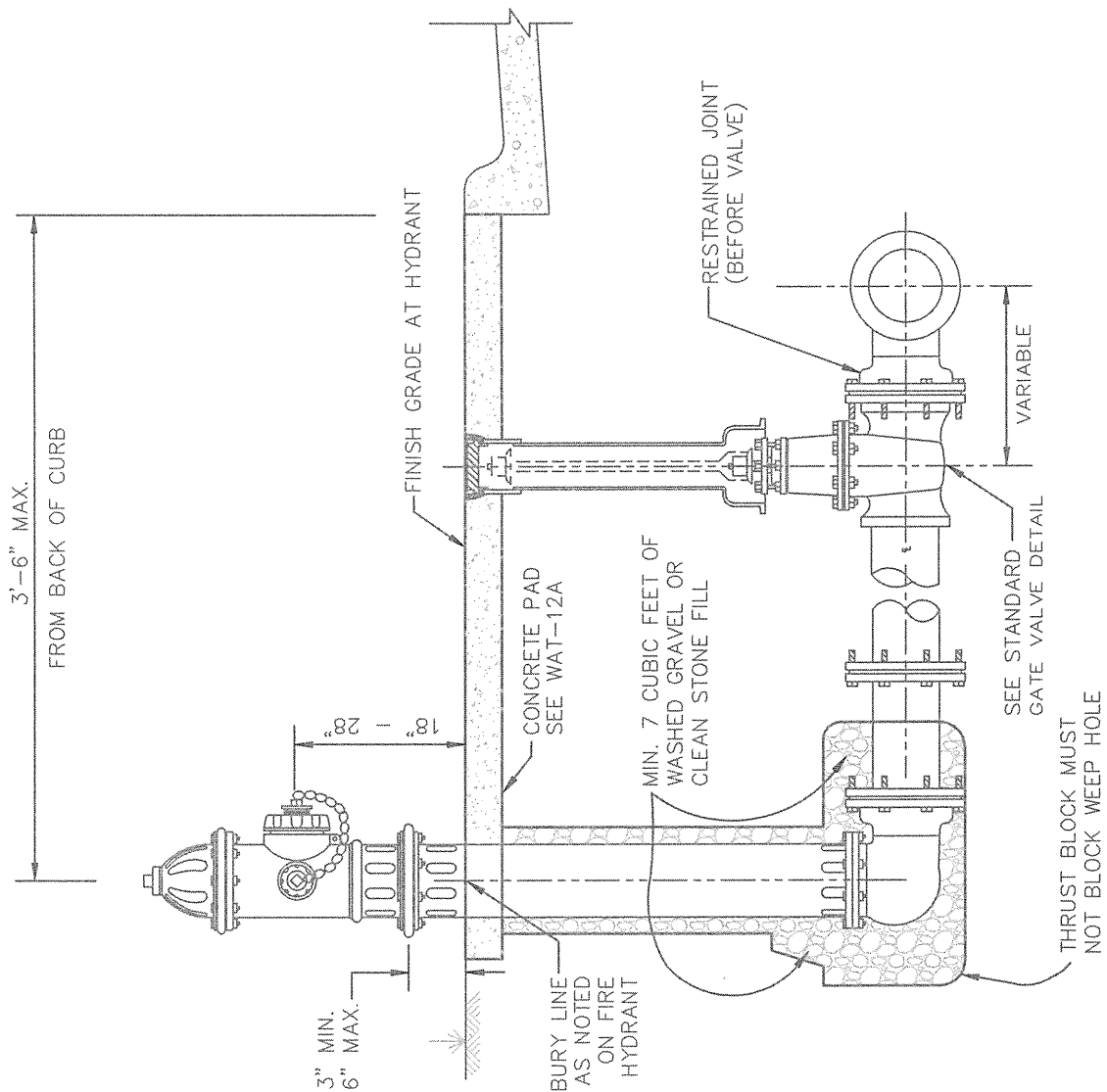
TYPE "1"

STANDARD DRAWING NO.

WAT-11

# NOTES:

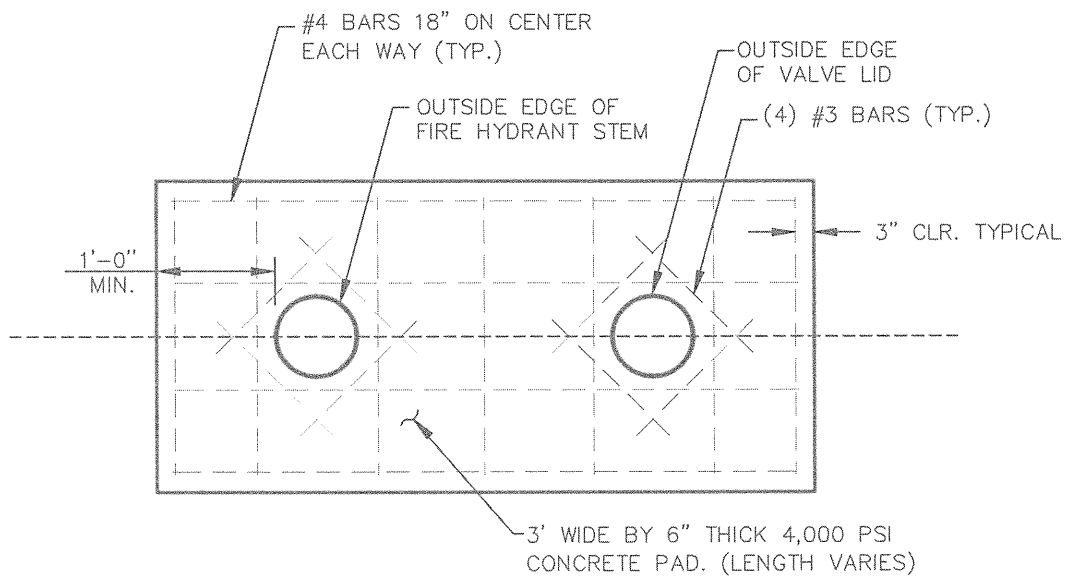
1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
2. ALL JOINTS SHALL BE MECHANICAL JOINTS.
3. TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
4. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
5. STANDARD BURY DEPTH 5' FEET.
6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
7. F.H. SHALL BE LOCATED MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW ON WAT-12A)
8. NO MORE THAN 2 EXTENSIONS SHALL BE PERMITTED.



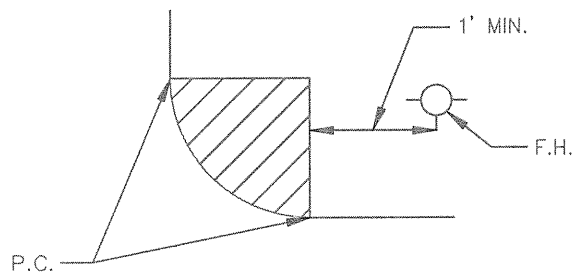
## FIRE HYDRANT INSTALLATION

STANDARD DRAWING NO.

WAT-12



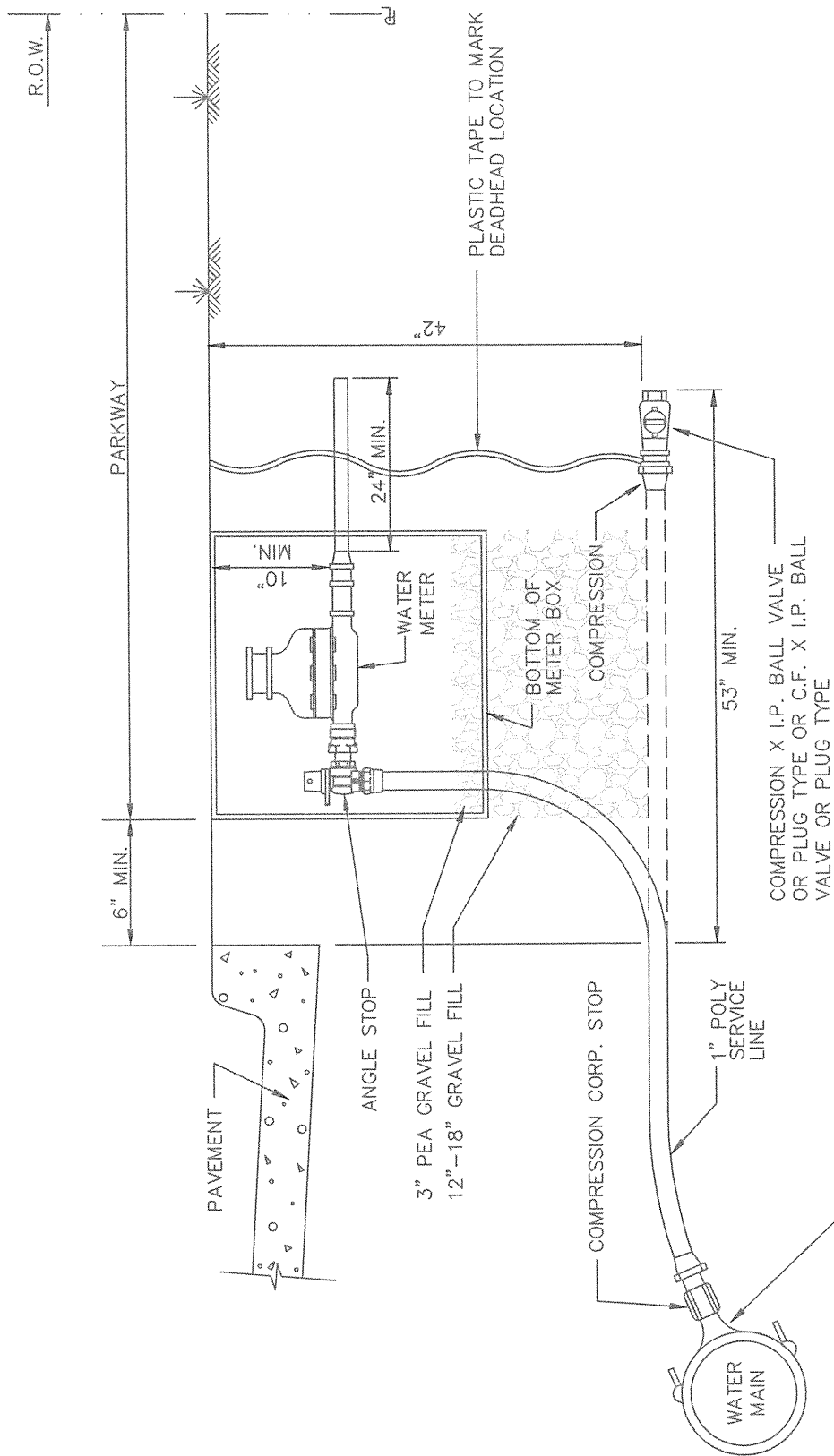
PLAN VIEW — REBAR  
N.T.S.



PLAN VIEW — PLACEMENT  
N.T.S.

	FIRE HYDRANT		STANDARD DRAWING NO.
	REBAR & PLACEMENT		WAT-12A





**NOTES:**

1. LOCATION OF METER BOX SHALL BE SPECIFIED BY THE CITY.
2. WATER SERVICES CROSSING THE STREET SHALL BE ENCASED IN EITHER SDR21 OR SCHEDULE 40 PVC. THE ENDS SHALL BE SEALED WITH EITHER TAPE OR SILICONE. ENCASEMENT PIPE SHALL BE 2" AND SHALL ALLOW FOR ONLY ONE WATER SERVICE TO RUN THROUGH IT.

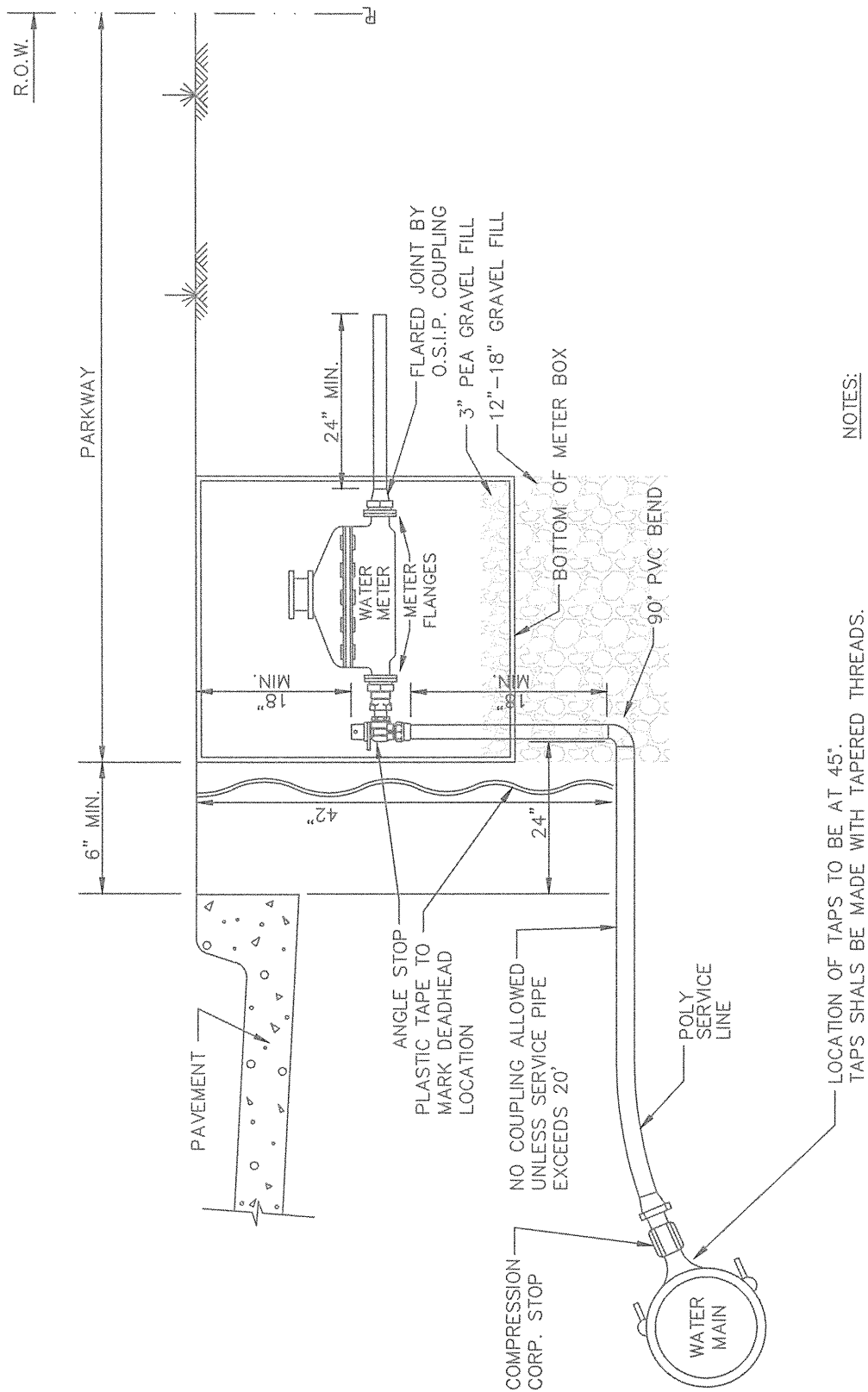
LOCATION OF TAPS TO BE AT 45°. TAPS SHALL BE MADE WITH TAPERED THREADS.

WATER SERVICE INSTALLATION

1" LINE

STANDARD DRAWING NO.

WAT-13



**NOTES:**

1. LOCATION OF METER BOX SHALL BE SPECIFIED BY THE CITY.
2. WATER SERVICES CROSSING THE STREET SHALL BE ENCASED IN EITHER SDR21 OR SCHEDULE 40 PVC. THE ENDS SHALL BE SEALED WITH EITHER TAPE OR SILICONE. ENCASEMENT PIPE SHALL BE 2" AND SHALL ALLOW FOR ONLY ONE WATER SERVICE TO RUN THROUGH IT.

LOCATION OF TAPS TO BE AT 45°. TAPS SHALL BE MADE WITH TAPERED THREADS.

**WATER SERVICE INSTALLATION**

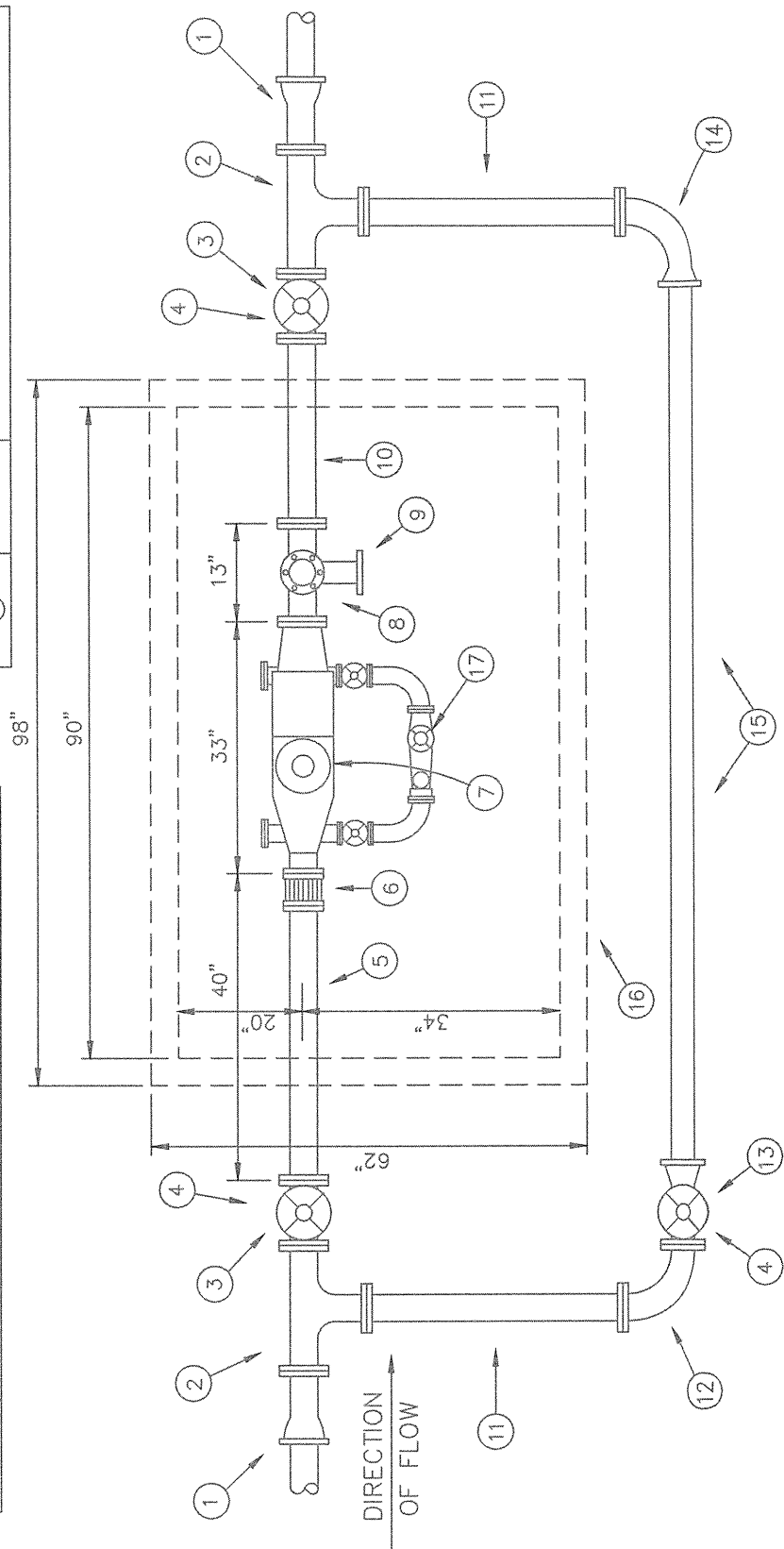
1-1/2" OR 2" LINE

STANDARD DRAWING NO.

WAT-14

MATERIALS LIST	
PART NO.	DESCRIPTION
1	2 EA. 4" X 12" D.I. NIPPLE M.J. X F.
2	2 EA. 4" X 4" D.I. TEE F. X F.
3	2 EA. 4" GATE VALVE F. X F.
4	3 EA. VALVE STACK RISER COVER & LID
5	1 EA. 4" X 40" D.I. NIPPLE F. X SLEEVE
6	1 EA. 4" FLANGED COUPLING ADAPTER
7	1 EA. 4" METER AS SPECIFIED (TYPE F.M. SHOWN)
8	1 EA. 4" X 4" D.I. TEE F. X F. (TEST POINT)
9	1 EA. 4" BLIND FLG.

MATERIALS LIST	
PART NO.	DESCRIPTION
10	1 EA. 4" X 24" D.I. NIPPLE F. X F.
11	2 EA. 4" X 36" D.I. NIPPLE F. X F.
12	1 EA. 4" D.I. 90° BEND F. X F.
13	1 EA. 4" GATE VALVE F. X M.J.
14	1 EA. 4" D.I. 90° BEND M.J. X F.
15	1 EA. 4" D.I. PIPE, CLASS 52, APPROX. 10'
16	PRECAST METER VAULT
17	VAULT FLOOR (NOT SHOWN)
18	ACCESS HATCH (NOT SHOWN)
19	BY-PASS METER



4" COMBINATION WATER SERVICE  
WITH 4" METER

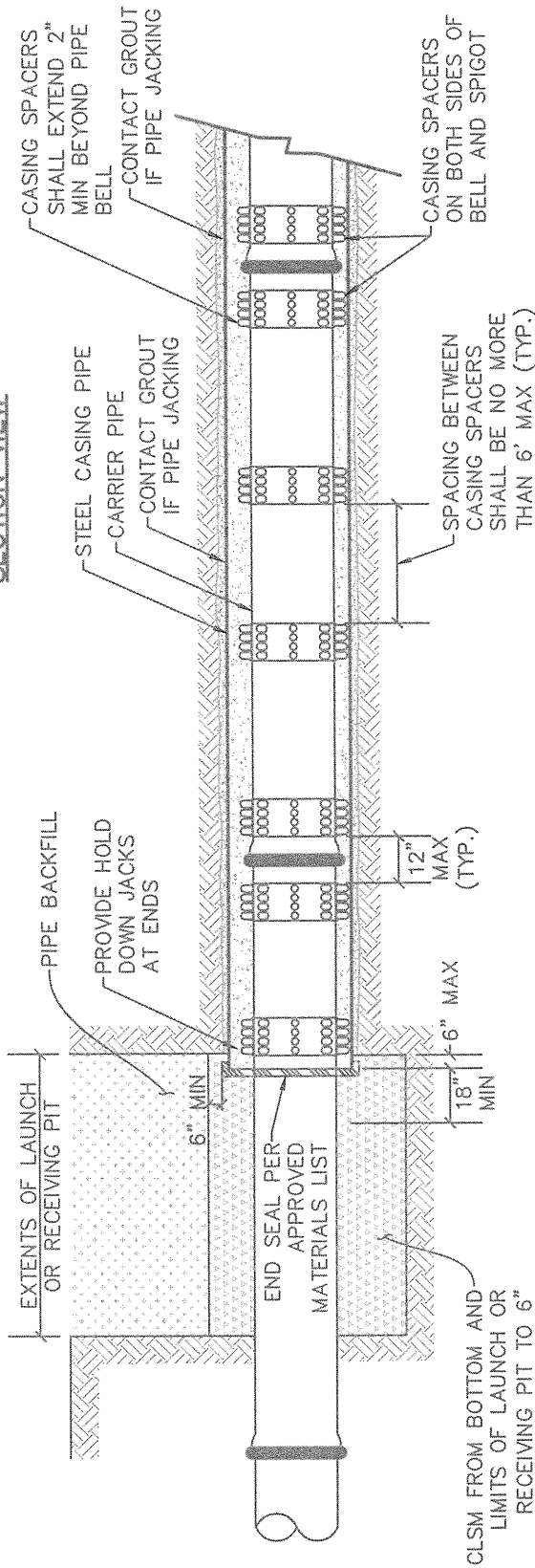
STANDARD DRAWING NO.  
WAT-15

**NOTE:**

PROVIDE THREE (3) CASING SPACERS PER JOINT OF PIPE

PVC CARRIER PIPE  
PROVIDE HOLD DOWN JACKS AT ENDS OF CASING  
CARRIER PIPE  
CACING PIPE  
INSIDE DIAMETER  
CACING PIPE  
OUTSIDE DIAMETER  
STAINLESS STEEL CASING SPACERS  
GROUT BOTTOM FLANGE TO PROVIDE A SMOOTH INSTALLATION SURFACE

**SECTION VIEW**



**NOTES:**

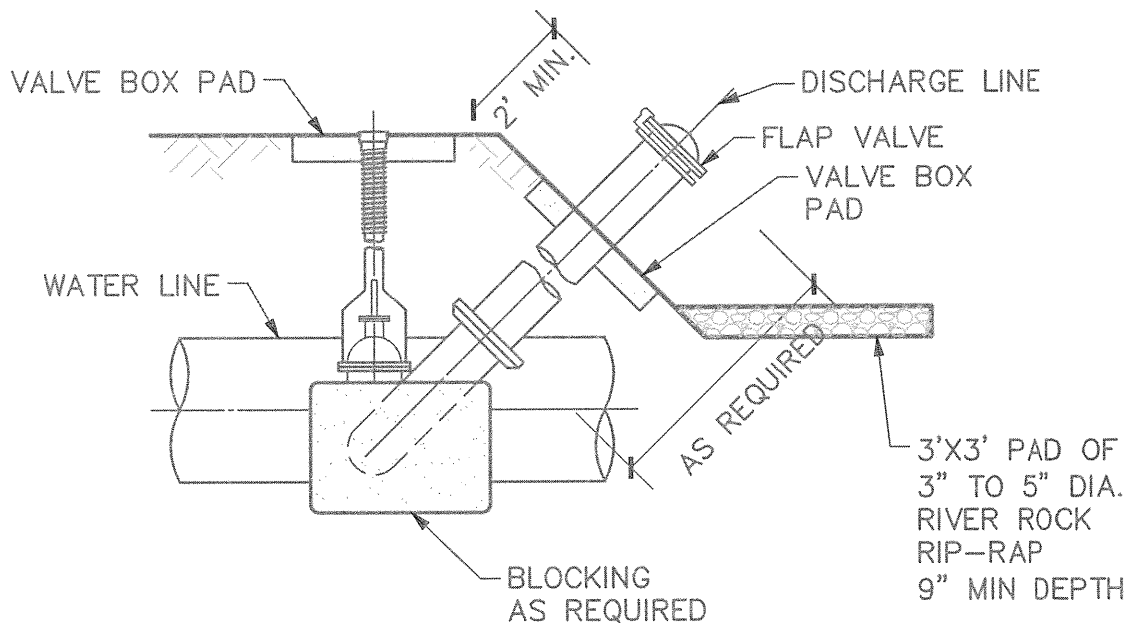
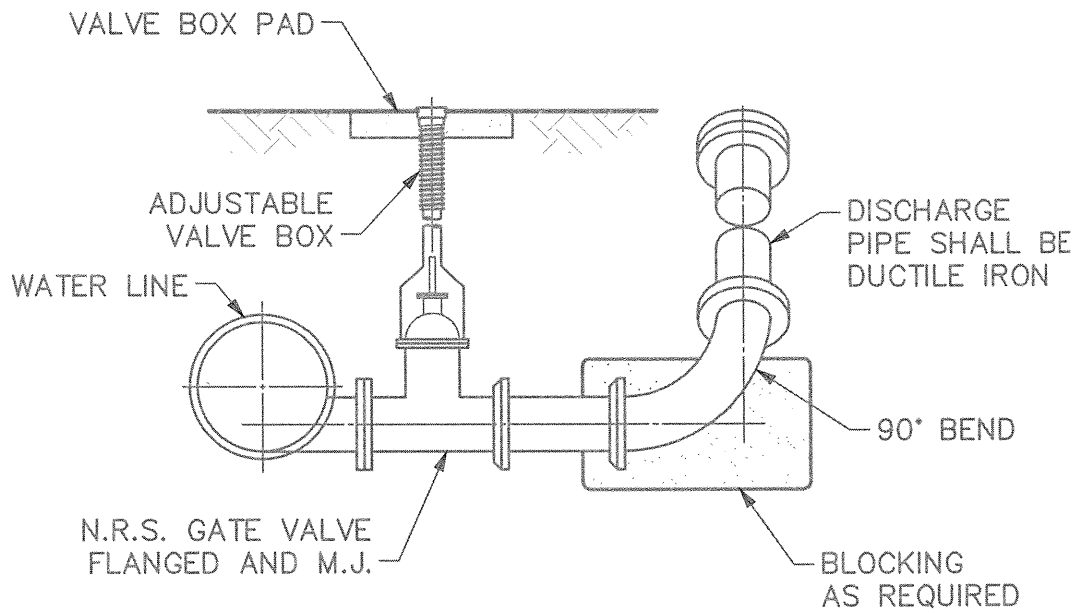
1. PIPE SHALL HAVE UNIFORM ALIGNMENT AND BEARING WHEN INSTALLED AS A CARRIER PIPE IN CASING PIPE. TO PROVIDE STRAIGHT ALIGNMENT AND GRADE, CONCRETE PAVING MAY BE REQUIRED.
2. PRESSURE GROUT SPACE OUTSIDE OF CASING PIPE AFTER TUNNEL IS INSTALLED.
3. WHERE A BORE PIT EXCEEDS 5 FEET IN DEPTH, THE CONTRACTOR SHALL INSTALL SHORING OF THE PIT WALLS AS REQUIRED BY OSHA.
4. FOR BELL AND SPIGOT PIPE, REMOVE ALL SLACK IN LINE PRIOR TO BACKFILL AND PRESSURE TESTING.
5. CASING SPACERS SHALL FIT SNUG OVER THE CARRIER PIPE AND POSITION THE CARRIER PIPE APPROXIMATELY IN THE CENTER OF THE CASING PIPE TO PROVIDE ADEQUATE CLEARANCE BETWEEN THE CARRIER PIPE BELL AND THE CASING PIPE. CASING SPACERS SHALL BE STAINLESS STEEL FOR WATER PIPE.
6. CASING PIPE SHALL BE 1.5 TIMES LARGER THAN THE CARRIER PIPE.

ENCASEMENT PIPE

WATER LINE BY BORE

STANDARD DRAWING NO.

WAT-16



**NOTE:**

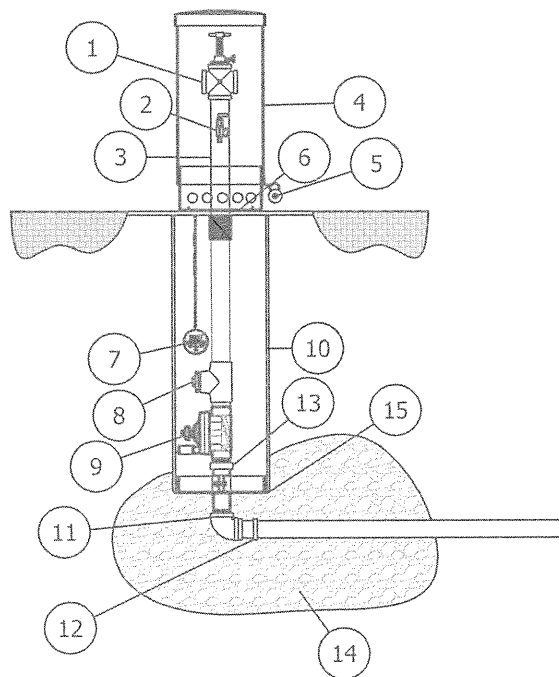
1. MUST BE DISCHARGED INTO STORM SEWER, BRIDGE OR CULVERT.

BLOW OFF VALVE

INSTALLATION

STANDARD DRAWING NO.

WAT-17



ITEM	ITEM / DESCRIPTION	OPTIONAL	BY OTHERS
1	2" WATER FLOW RESTRICTOR		
2	SAMPLING POINT		
3	2" PVC PIPE		
4	UV RESISTANT LOCKABLE DOME ENCLOSURE		
5	LOCKING POINT		
6	REMOVABLE ACCESS PLATE		
7	CONTROLLER		
8	AUTOMATIC DRAIN		
9	2" AUTOMATIC VALVE		
10	SDR 35 SEWER PIPE		
11	2" SS MIP INLET	X	X
12	2" MIP x COMPRESSION ADAPTER		X
13	O-RING CONNECTOR		
14	1" CLEAN ROCK		X
15	DEBRIS PLATE		

**NOTES:**

1. AUTOMATIC FLUSHING DEVICE SHALL HAVE A 2" STAINLESS STEEL MIP INLET, THAT WILL LEAD VERTICALLY TO THE BOTTOM INTO A 2" AUTOMATIC FLUSHING VALVE.
2. THE FLUSHING VALVE SHALL CONTROL THE FLOW OF WATER THROUGH THE HYDRANT AND ITS DIAPHRAGM WITH THE EXTENSION AND RETRACTION OF A DC LATCHING SOLENOID AND HAVE A 220 PSI RATING.
3. EACH UNIT SHALL BE FURNISHED WITH A STAND-ALONE VALVE CONTROLLER. VALVE CONTROLLER WILL NOT REQUIRE A SECOND HAND-HELD DEVICE FOR PROGRAMMING. CONTROLLER MUST HAVE MINIMUM OF 12 POSSIBLE FLUSHING CYCLES PER DAY.
4. SHALL BE SUBMERSIBLE TO 12 FEET, OPERATE WITH A 9 VOLT BATTERY AND HAVE RESIN-SEATED ELECTRICAL COMPONENTS.
5. SOLENOID SHALL HAVE NO LOOSE PARTS WHEN REMOVED FROM VALVE. REMOVAL OF 2" SOLENOID VALVE SHALL BE POSSIBLE VIA AN O-RING CONNECTOR LOCATED UNDER THE VALVE AFTER REMOVAL OF STAINLESS STEEL ACCESS PLATE.
6. VALVE ASSEMBLY SHALL BE CONTAINED WITHIN A UV-RESISTANT LOCKING COVER.
7. UNIT MODEL # SHALL BE 9400 AS MANUFACTURED BY KUPFERLE FOUNDRY COMPANY. MODEL #9400 ST. LOUIS, MO. 1-800-231-3990, OR APPROVED EQUAL.
8. FLUSH WATER LINES FREE OF DEBRIS BEFORE INSTALLATION

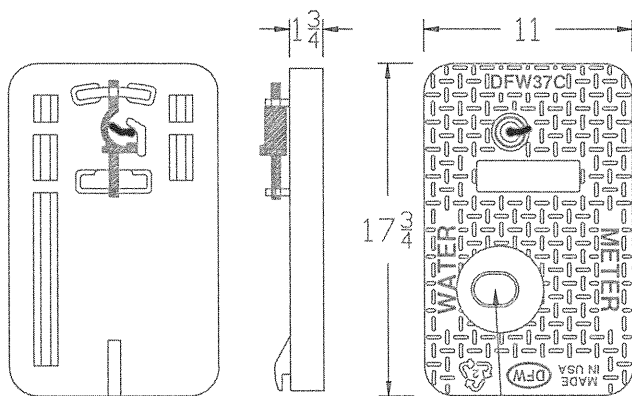
**AUTOMATIC FLUSHING DEVICE**

N.T.S.

**AUTOMATIC FLUSH VALVE**

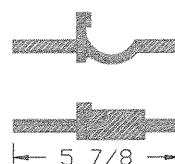
STANDARD DRAWING NO.

**WAT-18**

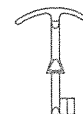


Ø4 5/8" x 1/4" DEEP RECESS  
W/ Ø1.88 x 2.50  
KNOCKOUT FOR ENDPOINT

**DFW37C-1KFDEEP -LID**

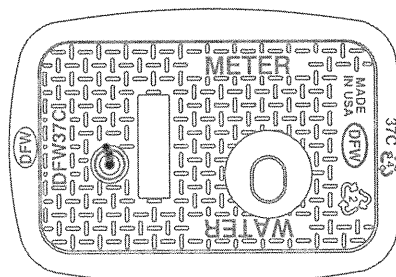
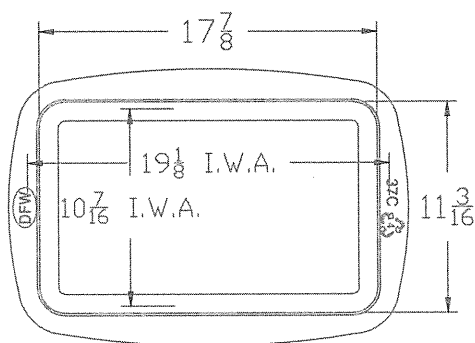


**DFW-PLOCK**

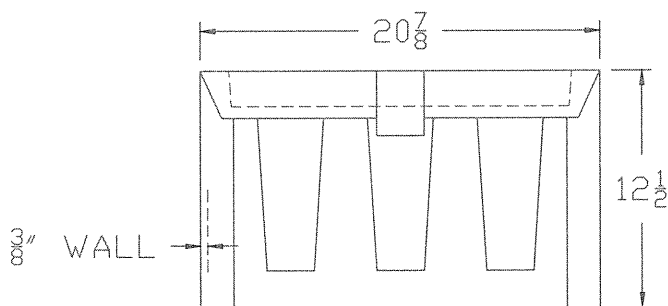


**DFW-KEY**

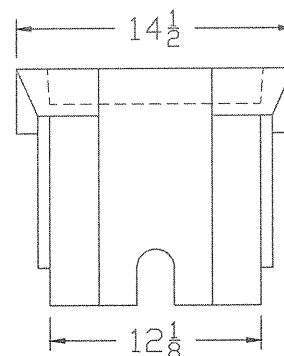
LID KEY	
1	BLACK COLOR
K	PLASTIC LOCK
F	KNOCKOUT
DEEP	DEEP RECESS



**DFW37C-12-1KFDEEP**



**DFW37C-12-BODY**



**NOTES**

- 1) DIM'S ± 1/8" U.N.O.
- 2) LID MATERIAL: HDPE
- 3) BODY MATERIAL: LLDPE
- 4) WALL THICKNESS: 3/8" MINIMUM
- 5) I.W.A. = INSIDE WORK AREA

DFW PLASTICS, INC. ENGAGES IN ONGOING RESEARCH AND DEVELOPMENT TO IMPROVE AND ENHANCE ITS PRODUCTS. THEREFORE, DFW PLASTICS, INC. RESERVES THE RIGHT TO CHANGE PRODUCT OR SYSTEM SPECIFICATIONS WITHOUT NOTICE.



DFW PLASTICS, INC.  
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(817) 439-3700 (f)  
www.dfwplasticsinc.com

**DFW37C-12-1KFDEEP**

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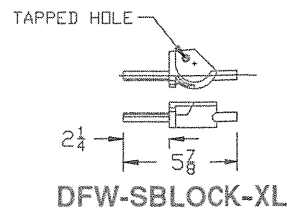
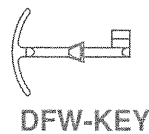
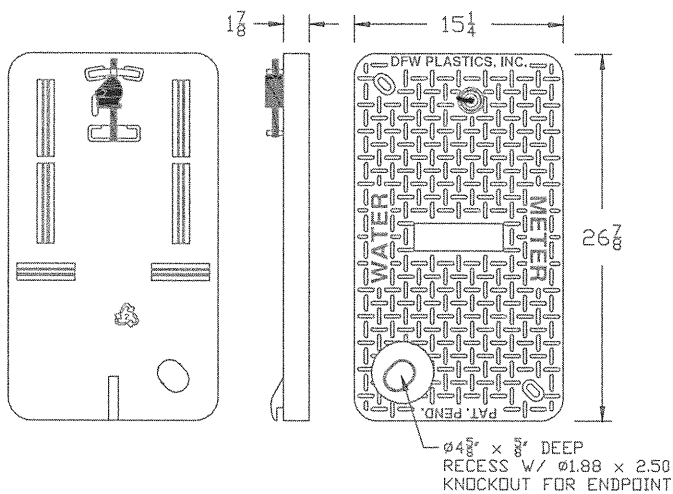
PLOT SCALE: NTS

**WATER METER LID**

**METERS UP TO 1"**

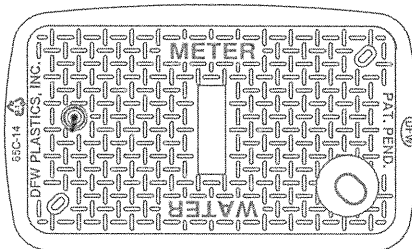
STANDARD DRAWING NO.

**WAT-19**

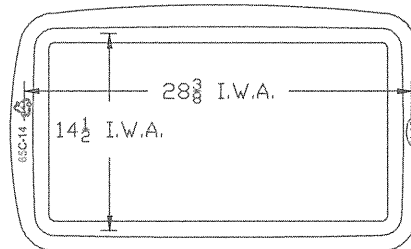


LID KEY	
1	BLACK COLOR
S	SECURITY BRASS LOCK
F	KNOCKOUT
DEEP	DEEP RECESS

### DFW65C-1SFDEEP ANNA-LID

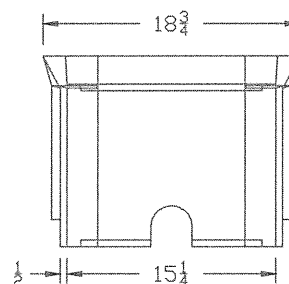
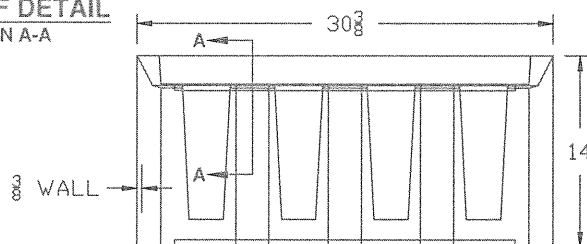


### DFW65C-14-1SFDEEP

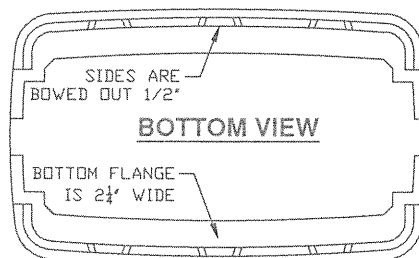


### KISS OFF DETAIL

SECTION A-A



### DFW65C-14-BODY



### BOTTOM VIEW

SIDES ARE BOWED OUT 1/2"

BOTTOM FLANGE IS 2 1/4" WIDE

#### NOTES

- 1) DIM'S ± 1/8" U.N.O.
- 2) LID MATERIAL: HDPE
- 3) BODY MATERIAL: LLDPE
- 4) WALL THICKNESS: 3/8" MINIMUM
- 5) I.W.A. = INSIDE WORK AREA

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DFW65C-14-1SFDEEP

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PLOT SCAL

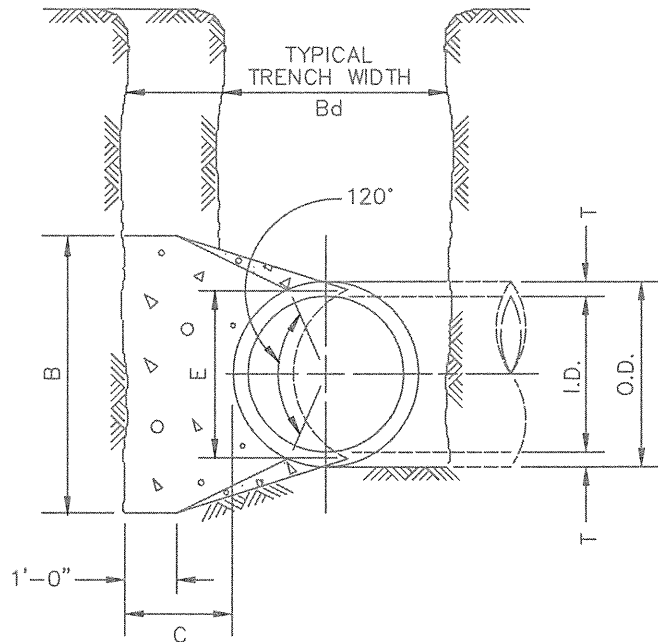
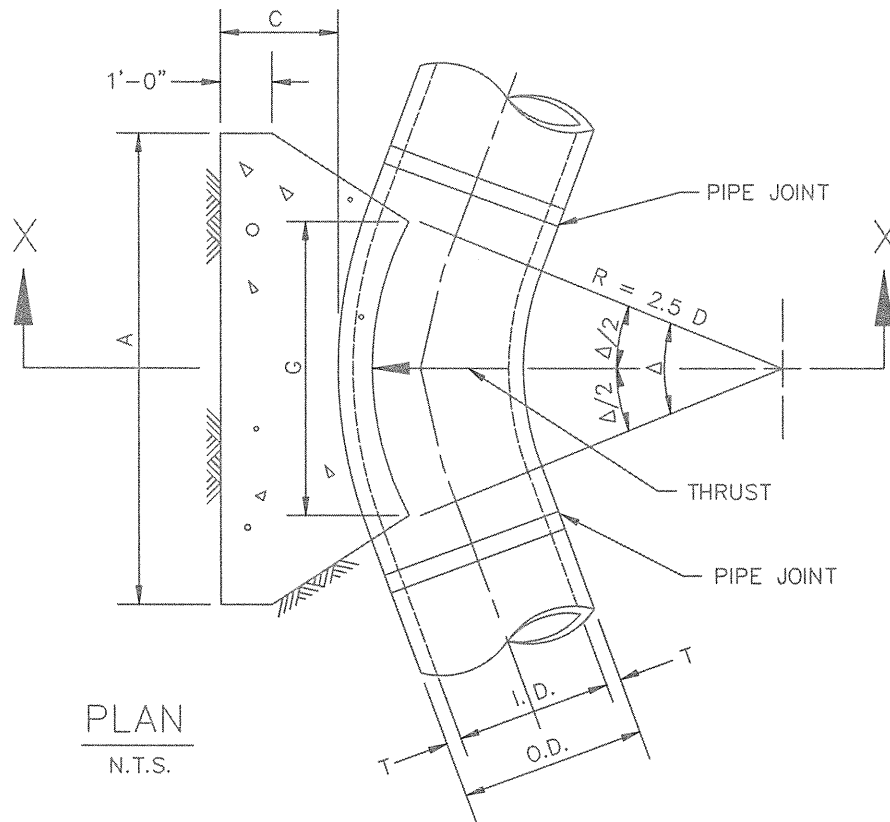
WATER METER LID

METERS FROM 1.5" TO 2"

STANDARD DRAWING NO.

WAT-19A





HORIZONTAL THRUST BLOCK

AT PIPE BEND (1 OF 3)

STANDARD DRAWING NO.

WAT-20

I.D. (IN.)	T (IN.)	$\Delta =$ 11.25° (FT.)	$\Delta \geq$ 22.50° (FT.)	E (FT.)
4,6,8	0.4	1.5	1.5	0.9
10,12	0.5	1.5	1.5	1.2
16,18	0.6	1.5	1.5	1.6
20	0.7	1.5	1.5	1.8
24	0.9	1.5	1.5	2.1
30	2.9	1.5	1.9	2.6
36	4.5	1.5	2.3	3.3
42	5.0	1.8	2.6	3.8
48	5.5	2.0	3.0	4.3
54	6.0	2.3	3.4	4.8
60	6.5	2.5	3.8	5.3
66	6.8	2.8	4.1	5.7
72	7.5	3.0	4.5	6.3
78	7.5	3.3	4.9	6.7
84	8.0	3.5	5.3	7.2
90	8.5	3.8	5.6	7.7
96	9.0	4.0	6.0	8.2

I.D. (IN.)	Δ = 11.25°								I.D. (IN.)	Δ= 22.50°							
	G (FT.)	THRUST (TONS)	EARTH			ROCK				G (FT.)	THRUST (TONS)	EARTH			ROCK		
			A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)				A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	4,6,8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	16,18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	20	1.8	12.3	3.5	3.5	0.7	2.0	3.0	0.4
24	1.1	8.9	3.0	3.5	0.5	1.5	3.0	0.3	24	2.2	17.7	4.0	4.5	1.0	3.0	3.5	0.5
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8
36	1.7	15.0	3.5	4.5	0.9	2.0	4.0	0.5	36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3
42	1.9	20.4	4.5	5.0	1.5	2.5	5.0	0.8	42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4	54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4.1
60	2.7	41.6	6.0	7.0	3.8	3.0	7.0	1.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.3	72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7
84	3.8	81.5	8.5	10.0	10.3	4.5	10.0	5.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8

## TABLES OF DIMENSIONS AND QUANTITIES

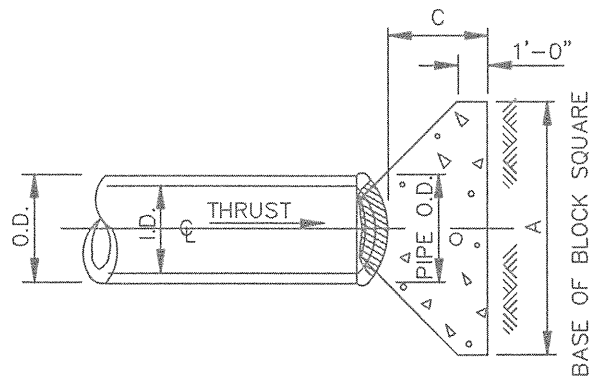
	HORIZONTAL THRUST BLOCK	STANDARD DRAWING NO.
	AT PIPE BEND (2 OF 3)	WAT-20A

I.D. (IN.)	Δ = 30°								I.D. (IN.)	Δ = 45°							
	G (FT.)	THRUST (TONS)	EARTH			ROCK				G (FT.)	THRUST (TONS)	EARTH			ROCK		
			A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)				A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2	10,12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4	16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1
30	3.6	27.5	6.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6
42	5.1	53.8	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2
48	5.8	70.3	9.0	8.0	7.4	6.0	6.0	3.7	48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3
54	6.5	89.0	10.0	9.0	10.3	7.0	6.5	5.3	54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5	84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9	90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6
96	11.6	281.2	18.0	16.0	55.5	12.5	11.5	28.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5

I.D. (IN.)	Δ = 67.50°								I.D. (IN.)	Δ = 90°							
	G (FT.)	THRUST (TONS)	EARTH			ROCK				G (FT.)	THRUST (TONS)	EARTH			ROCK		
			A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)				A (FT.)	B (FT.)	VOL. (C.Y.)	A (FT.)	B (FT.)	VOL. (C.Y.)
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2
10,12	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4	10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5
16,18	4.7	28.3	7.5	4.0	1.9	5.5	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.6	44.4	10.0	4.5	3.1	6.0	4.0	1.5
24	6.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6	24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2	30	9.9	75.0	15.0	5.0	6.7	10.0	4.0	3.3
36	9.4	84.9	14.5	6.0	8.2	9.5	4.5	3.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3
42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3	42	13.9	147.0	21.0	7.0	17.8	14.0	5.5	8.7
48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2	48	15.9	192.0	24.0	8.0	26.2	16.0	6.0	12.4
54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9	54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1
60	15.6	235.8	24.0	10.0	35.6	16.0	7.5	17.6	60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	24.0
66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0	66	21.8	362.8	33.0	11.0	66.2	22.0	8.5	32.5
72	18.7	339.5	28.5	12.0	57.8	19.0	9.0	28.4	72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0
78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4	78	25.7	506.7	39.0	13.0	108.2	26.0	10.0	53.2
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5	84	27.7	587.7	42.0	14.0	134.4	28.0	10.5	64.8
90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2	90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2
96	24.9	603.6	38.0	16.0	138.9	25.5	12.0	70.0	96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1

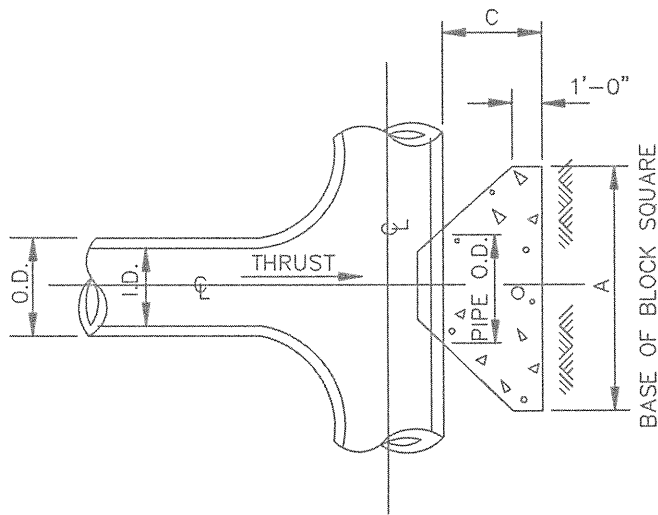
## TABLES OF DIMENSIONS AND QUANTITIES

	HORIZONTAL THRUST BLOCK	STANDARD DRAWING NO.
	AT PIPE BEND (3 OF 3)	WAT-20B



PLAN OF PLUG THRUST BLOCK

N.T.S.



PLAN OF TEE THRUST BLOCK

N.T.S.

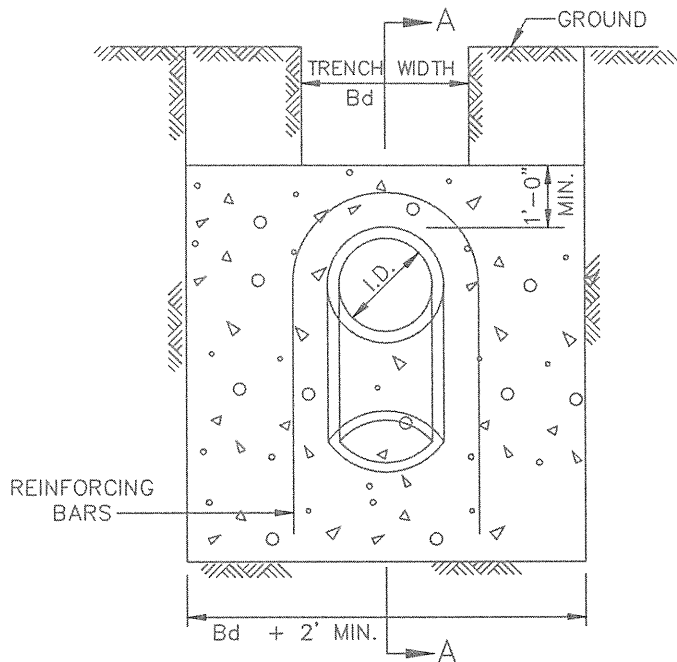
I.D. (IN.)	THRUST (TONS)	C (FT.)	EARTH		ROCK	
			A (FT.)	VOL. (C.Y.)	A (FT.)	VOL. (C.Y.)
4,6,8	5.1	1.5	2.5	0.3	2.0	0.2
10,12	11.3	1.5	3.5	0.6	2.5	0.3
16,18	25.5	2.0	5.5	1.6	4.0	0.9
20	31.5	2.0	6.0	1.9	4.0	0.9
24	45.2	2.5	7.0	3.1	5.0	1.7
30	53.0	3.0	7.5	4.1	5.5	2.4
36	76.3	4.0	9.0	7.3	6.5	4.2
42	104.0	4.5	10.5	11.0	7.5	6.2
48	136.0	5.0	12.0	15.6	8.5	8.7
54	172.0	5.5	13.5	21.4	9.5	11.9
60	212.0	6.0	15.0	28.4	10.5	15.7
66	257.0	6.5	16.5	36.8	11.5	20.5
72	305.0	7.5	17.5	47.2	12.5	27.2
78	358.0	8.0	19.0	58.9	13.5	33.7
84	416.0	8.5	20.5	72.3	14.5	41.2
90	477.0	9.0	22.0	87.7	15.5	49.7
96	543.0	9.5	23.5	104.8	16.5	61.0

HORIZONTAL THRUST BLOCK

AT TEES & PLUGS

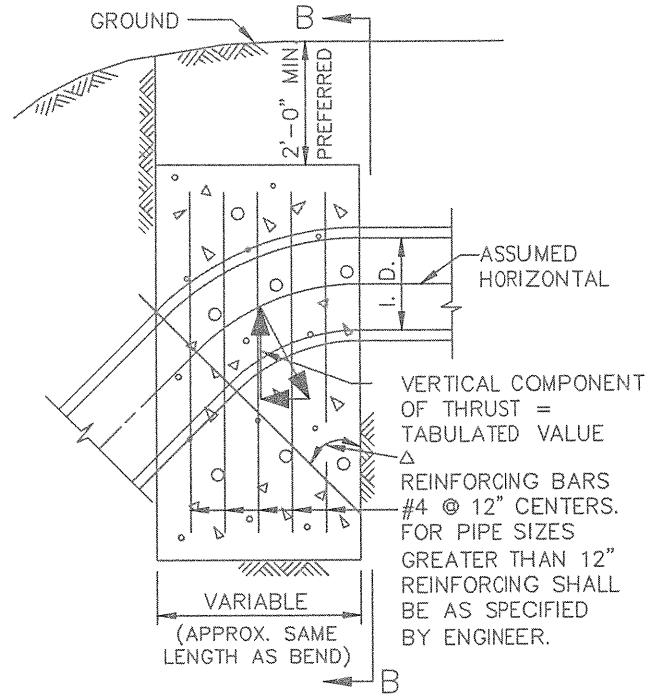
STANDARD DRAWING NO.

WAT-21



ELEVATION "B-B"

N.T.S.



SECTION "A-A"

N.T.S.

Δ →	11.25°		22.50°		30°		45°		67.50°		90°		← Δ
I.D. (IN.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	THRUST (TONS)	VOL. (C.Y.)	I.D. (IN.)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	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	6.0	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	19.9	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	68.6	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

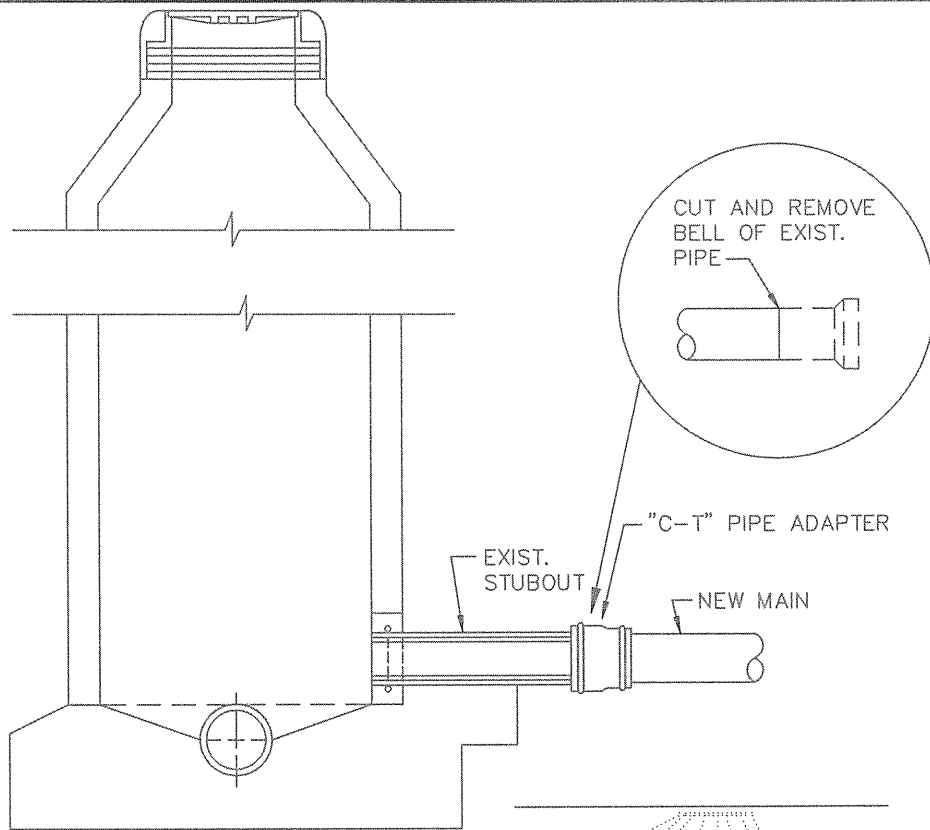
STANDARD DRAWING NO.

WAT-22

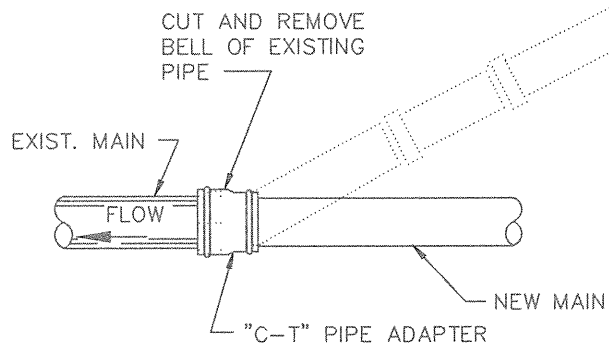
GENERAL NOTES FOR ALL THRUST BLOCKS:

1. CONCRETE FOR BLOCKING SHALL BE CLASS "B".
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR DUCTILE IRON, P.V.C., AND 150 PSI FOR CONCRETE PIPE.
3. VOLUMES OF THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (CLASS "B") IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THE THRUST ON THE VERTICAL BEND.
4. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
5. POUR CONCRETE FOR BLOCK AGAINST UNDISTURBED EARTH.
6. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
7. THE SOIL BEARING PRESSURES ARE BASED ON 1000 LBS./S.F. IN SOIL AND 2000 LBS./S.F. IN ROCK.
8. USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BEND, TEE, OR PLUG TO PREVENT THE CONCRETE FROM STICKING TO IT.
9. CONCRETE SHALL NOT EXTEND BEYOND JOINTS.

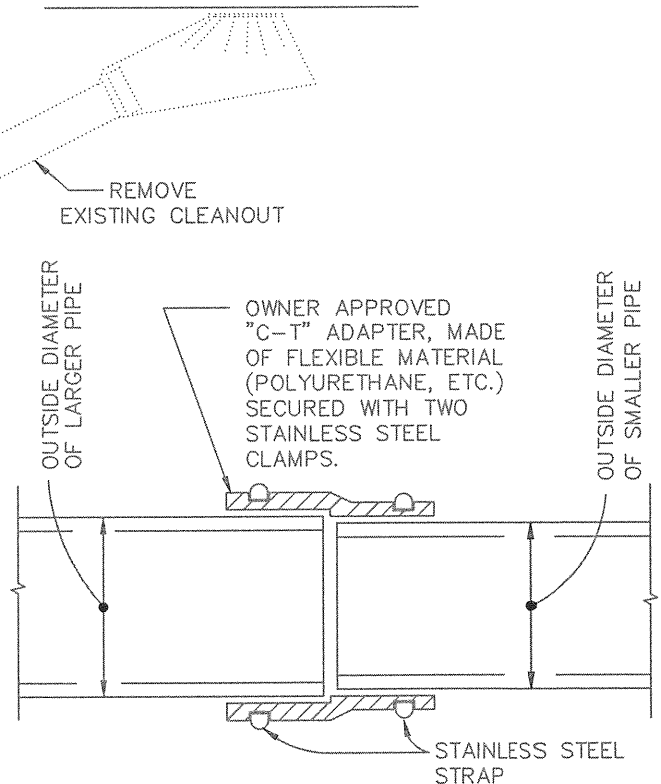
	THRUST BLOCK	STANDARD DRAWING NO.  WAT-23
	GENERAL NOTES	



AT STUBOUT  
N.T.S.



AT CLEANOUT  
N.T.S.



"C-T" PIPE ADAPTER  
N.T.S.

NOTE:

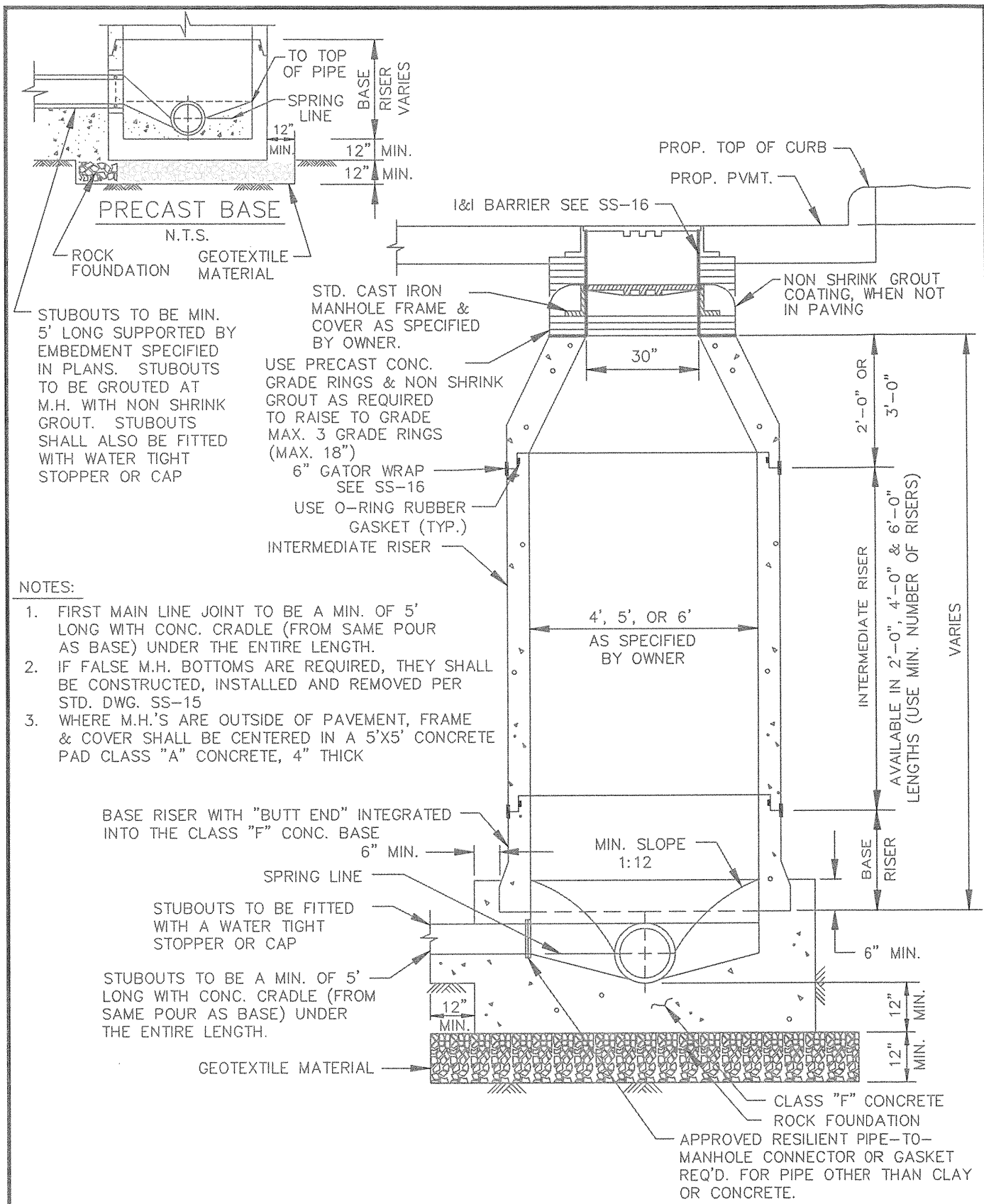
THIS DETAIL FOR USE ONLY WHEN NEW MAIN WILL NOT MATE WITH EXISTING MAIN JOINT DUE TO DIFFERENT DIMENSIONS OR MATERIALS AND A MANHOLE IS NOT REQUIRED.

WASTEWATER MAIN TIE-IN

AT CLEANOUT OR MANHOLE STUBOUT

STANDARD DRAWING NO.

SS-01



NOTES:

1. FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG WITH CONC. CRADLE (FROM SAME POUR AS BASE) UNDER THE ENTIRE LENGTH.
2. IF FALSE M.H. BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED PER STD. DWG. SS-15
3. WHERE M.H.'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN A 5'X5' CONCRETE PAD CLASS "A" CONCRETE, 4" THICK

WASTEWATER MANHOLE

PRECAST

STANDARD DRAWING NO.

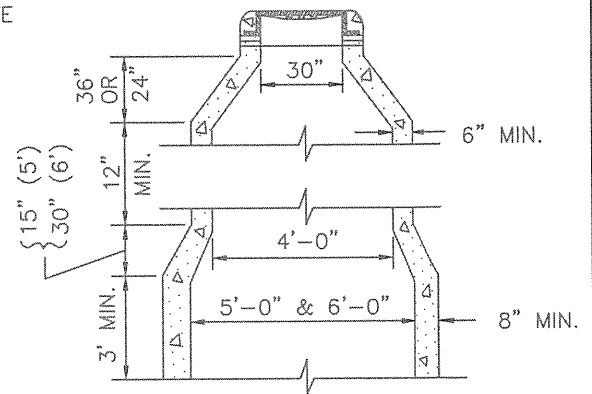
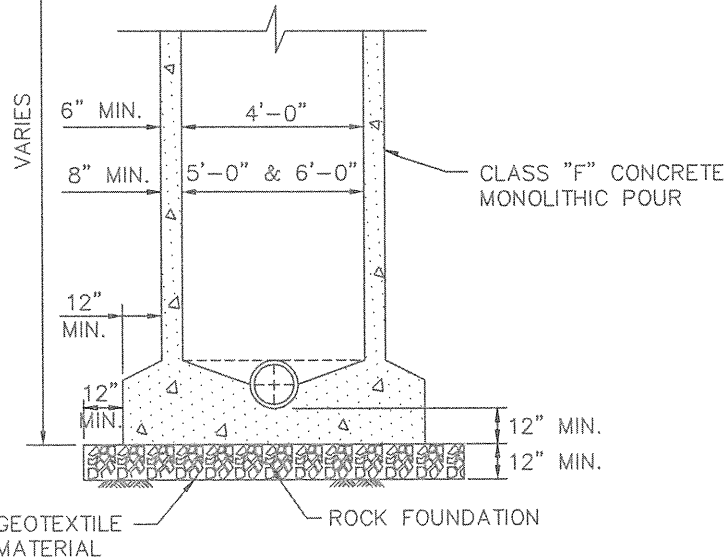
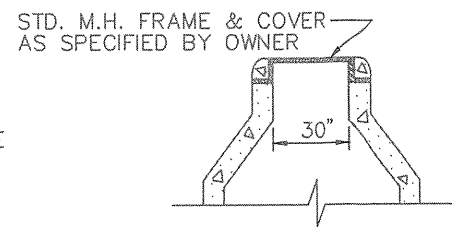
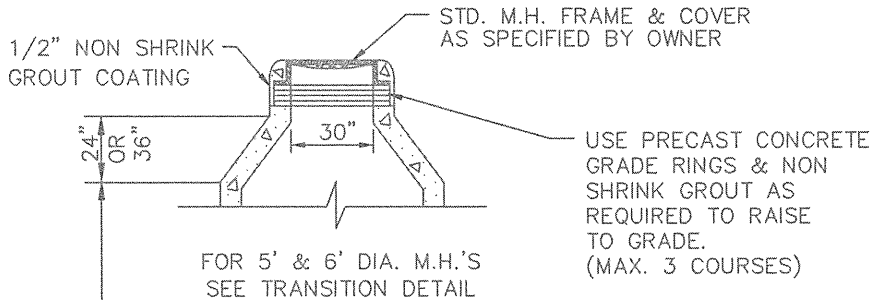
SS-02



ADJUSTABLE FRAME

← ROOF OPTIONS →  
N.T.S.

FRAME CAST IN CONC.



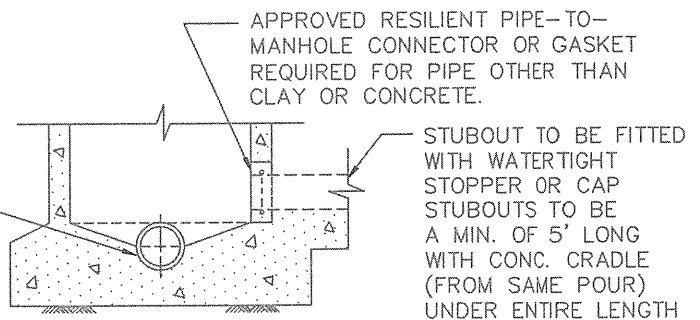
TRANSITION DETAIL FOR  
5' & 6' DIA. M.H.'S

N.T.S.

#### NOTES

1. WHERE M.H.'S ARE IN "PROPOSED" PAVING, FRAME & COVER SHALL BE SET 23" BELOW THE PROPOSED PAVEMENT GRADE.
2. IF FALSE M.H. BOTTOMS ARE REQUIRED THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED. PER STD. DWG. SS-15
3. WHERE M.H.'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN A 5'X5' CONCRETE PAD CLASS "A" CONCRETE, 4" THICK

FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG WITH CONC. CRADLE (FROM SAME POUR AS BASE) UNDER ENTIRE LENGTH.



STUBOUT CONNECTION

N.T.S.

WASTEWATER MANHOLE

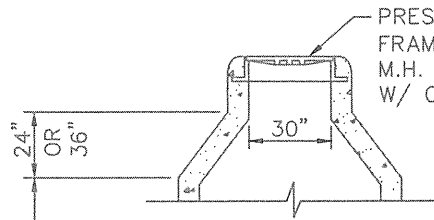
CAST-IN-PLACE

STANDARD DRAWING NO.

SS-03

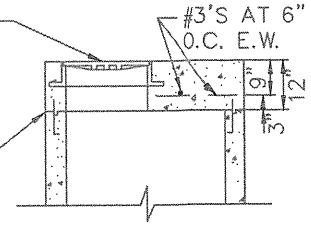
CONCRETE CONE ← ROOF OPTIONS → REINFORCED CONCRETE SLAB

N.T.S.



PRESSURE-TYPE M.H. FRAME & COVER AS SPECIFIED BY OWNER. M.H. FRAME CAST IN ROOF W/ CONTINUOUS POUR FROM BASE.

CONSTRUCTION JOINT WITH KEY WAY WATERSTOP, AND #3'S AT 12" O.C. EXTENDING 9" INTO WALL (NOT REQ'D FOR CONTINUOUS POUR)

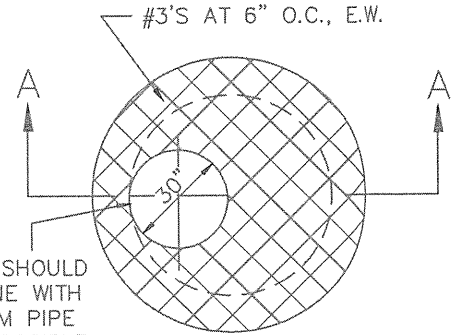
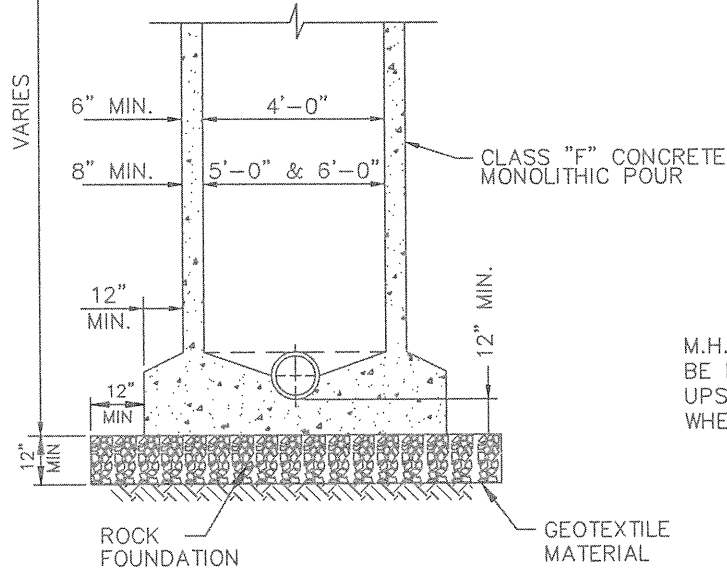


#3'S AT 6" O.C. E.W.

FOR 5' & 6' DIA. M.H.'S SEE TRANSITION DETAIL

SECTION A - A

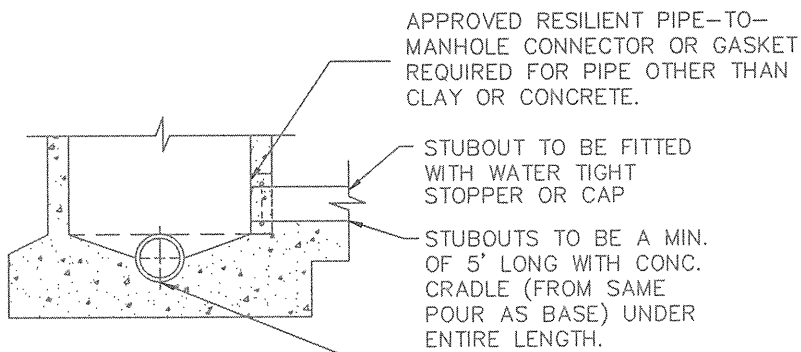
N.T.S.



M.H. LID SHOULD BE IN LINE WITH UPSTREAM PIPE WHERE POSSIBLE

ROOF STEEL LAYOUT

N.T.S.



STUBOUT CONNECTION

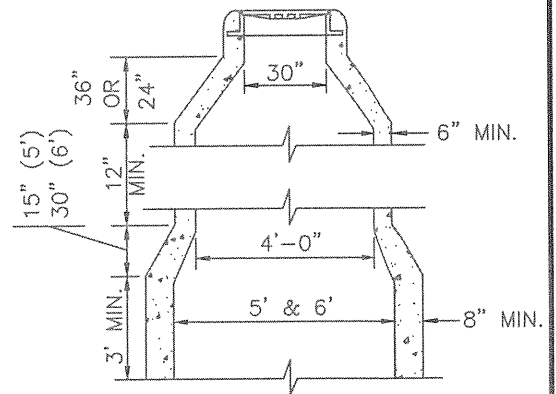
N.T.S.

APPROVED RESILIENT PIPE-TO-MANHOLE CONNECTOR OR GASKET REQUIRED FOR PIPE OTHER THAN CLAY OR CONCRETE.

STUBOUT TO BE FITTED WITH WATER TIGHT STOPPER OR CAP

STUBOUTS TO BE A MIN. OF 5' LONG WITH CONC. CRADLE (FROM SAME POUR AS BASE) UNDER ENTIRE LENGTH.

FIRST MAIN LINE JOINT TO BE A MIN. OF 6' LONG WITH CONC. CRADLE (FROM SAME POUR AS BASE) UNDER THE ENTIRE LENGTH.



TRANSITION DETAIL FOR 5' & 6' DIA. M.H.'S

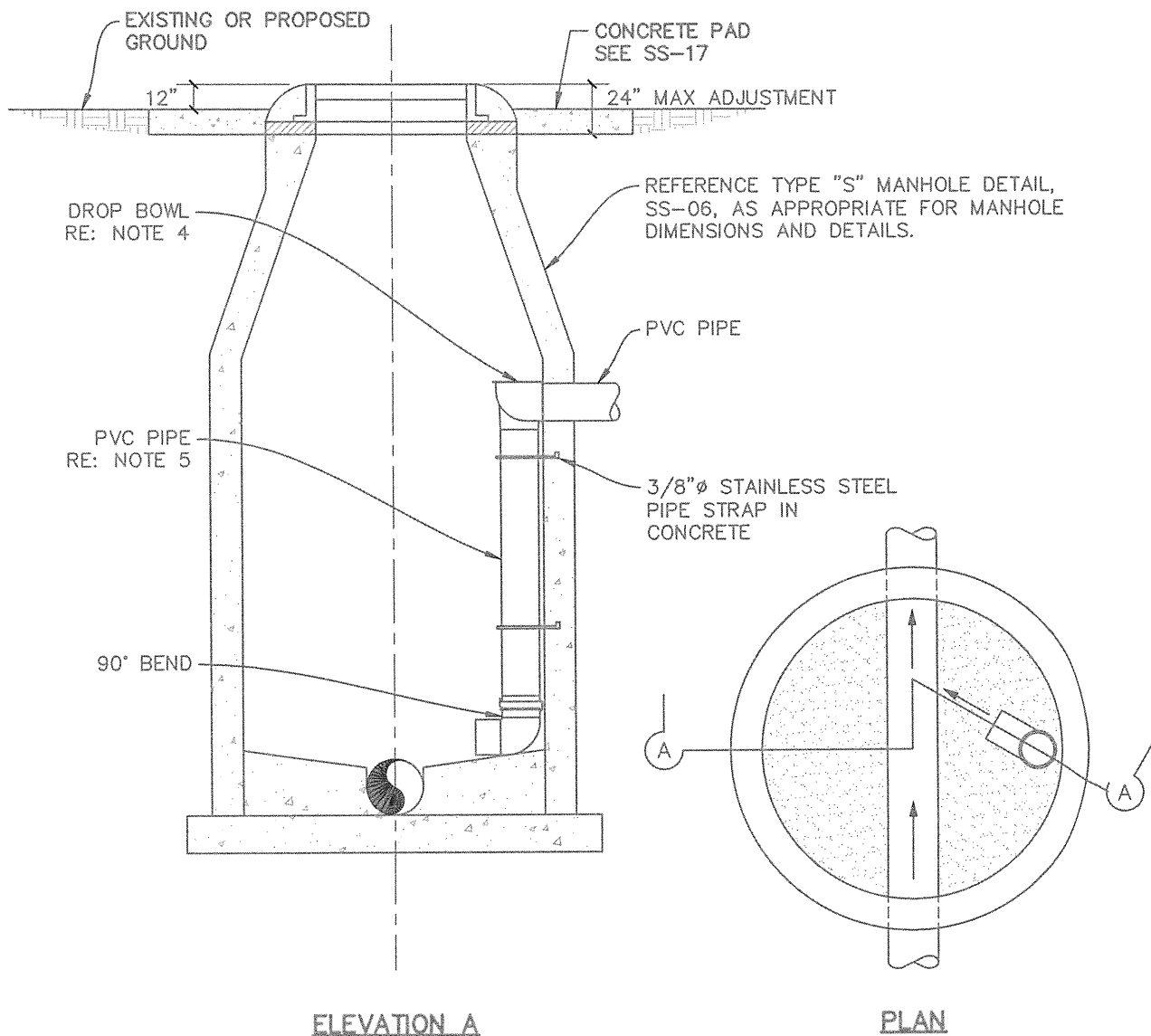
N.T.S.

WASTEWATER MANHOLE

PRESSURE MANHOLE

STANDARD DRAWING NO.

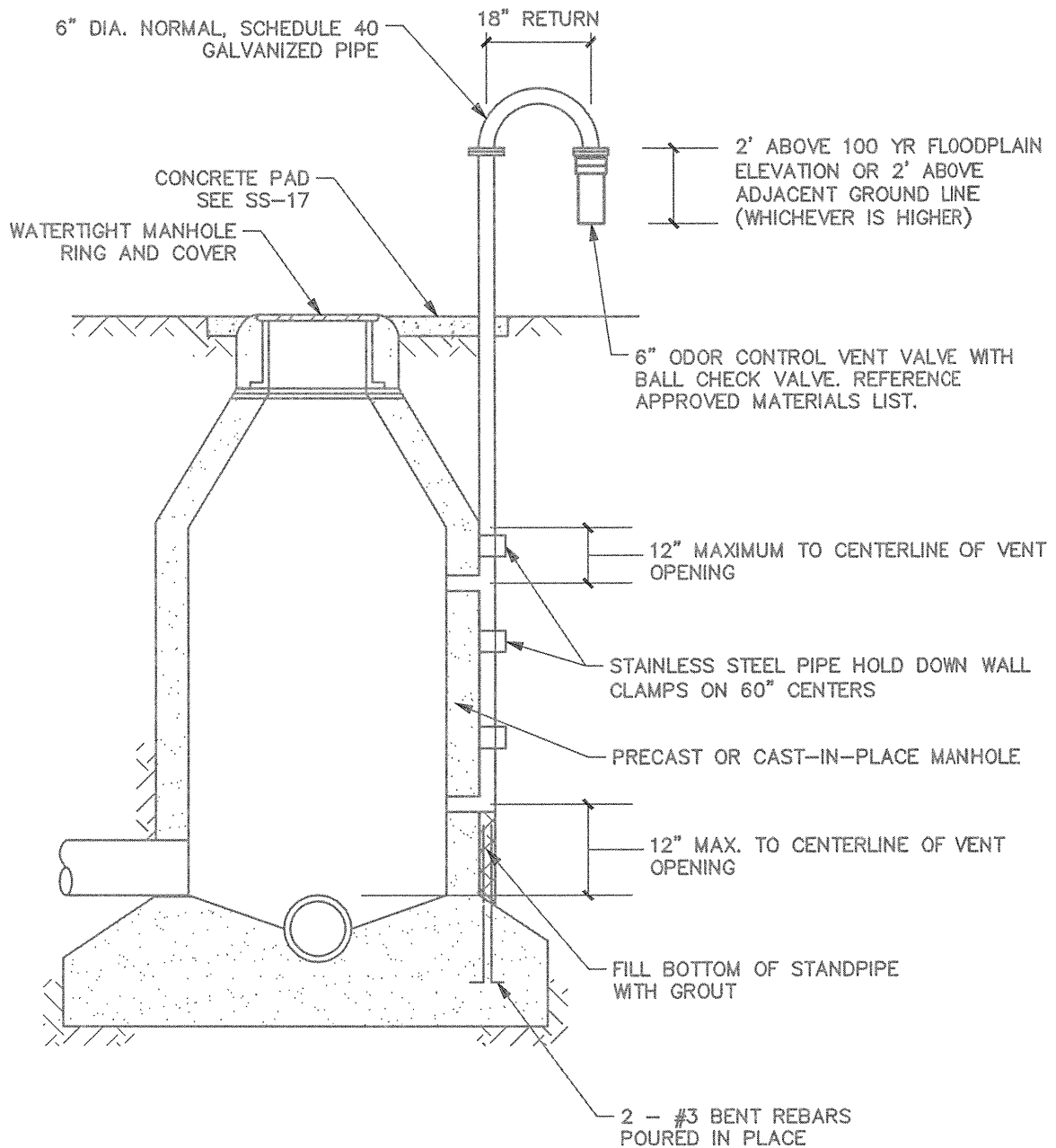
SS-04



**NOTES:**

1. PVC PIPE WITHIN MANHOLE SHALL BE SDR-35 FOR DEPTHS LESS THAN 10 FEET.
2. PVC PIPE WITHIN MANHOLE SHALL BE SDR-26 FOR DEPTHS 10 FEET AND GREATER.
3. INSIDE PIPE SHALL NOT BE PLACED IN CONE AREA.
4. DROP BOWL SHALL BE RELINER PRODUCT AS MANUFACTURED BY DURAN INC., OR APPROVED EQUAL.
5. DROP PIPE SIZE SHALL MATCH INCOMING SEWER LINE SIZE.

	WASTEWATER MANHOLE	STANDARD DRAWING NO. SS-05
	INTERNAL DROP CONNECTION	



# WASTEWATER MANHOLE

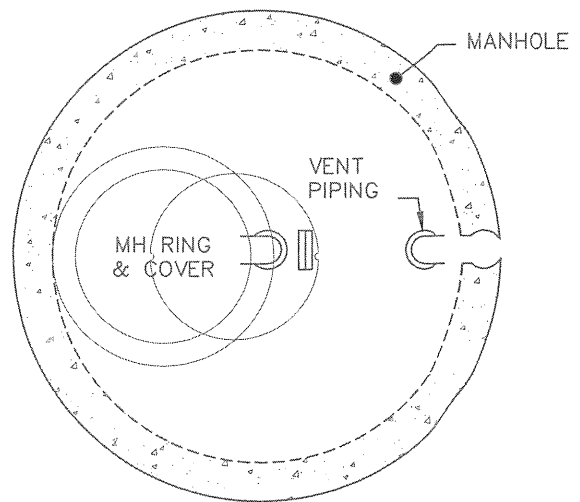
VENTED TYPE 'S'

STANDARD DRAWING NO.

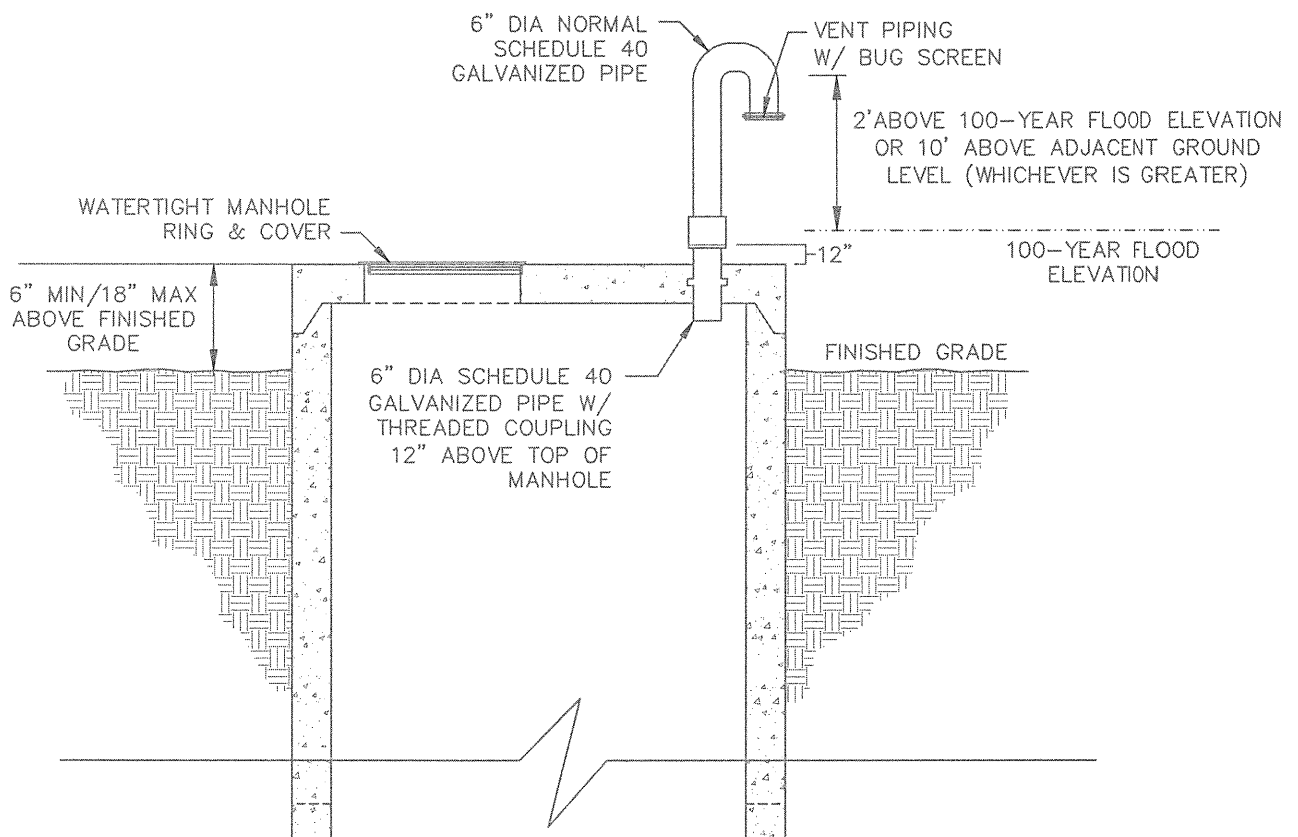
SS-06

# NOTES:

1. VENT PIPE OPENING IN PRECAST POLYMER CONCRETE MANHOLE WALL SHALL BE PRECAST BY MANHOLE MANUFACTURER.
2. LOCATION OF VENT PIPE SHALL BE OPPOSITE THE MANHOLE OPENING WITH WATERTIGHT RING AND COVER VENT TOP TO BE ELEVATED AT LEAST 24 INCHES ABOVE THE 100 YEAR FLOOD PLAIN ELEVATION OR 10' ABOVE ADJACENT GROUND LEVEL (WHICHEVER IS GREATER).



PLAN VIEW



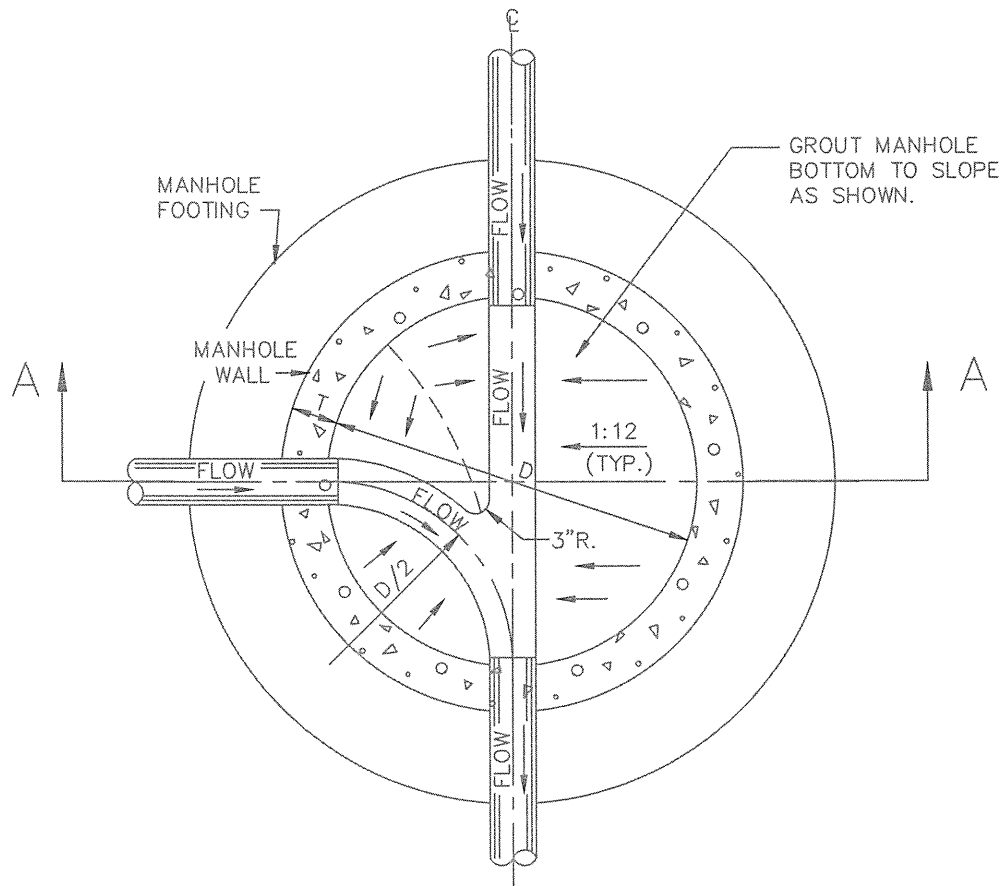
ELEVATION VIEW

WASTEWATER MANHOLE

VENTED FLAT TOP

STANDARD DRAWING NO.

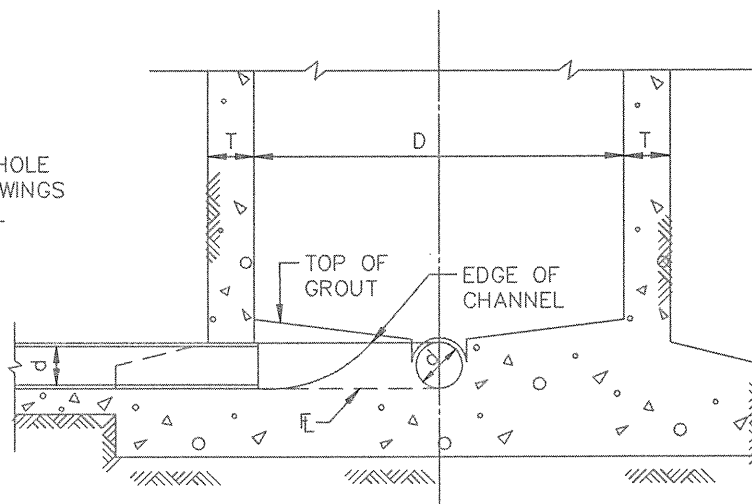
SS-06A



PLAN  
N.T.S.

T = WALL THICKNESS  
D = MANHOLE DIAMETER  
d = PIPE DIAMETER

NOTE:  
REFER TO MANHOLE  
STANDARD DRAWINGS  
FOR ADDITIONAL  
DETAIL OF M.H.



SECTION A-A  
N.T.S.

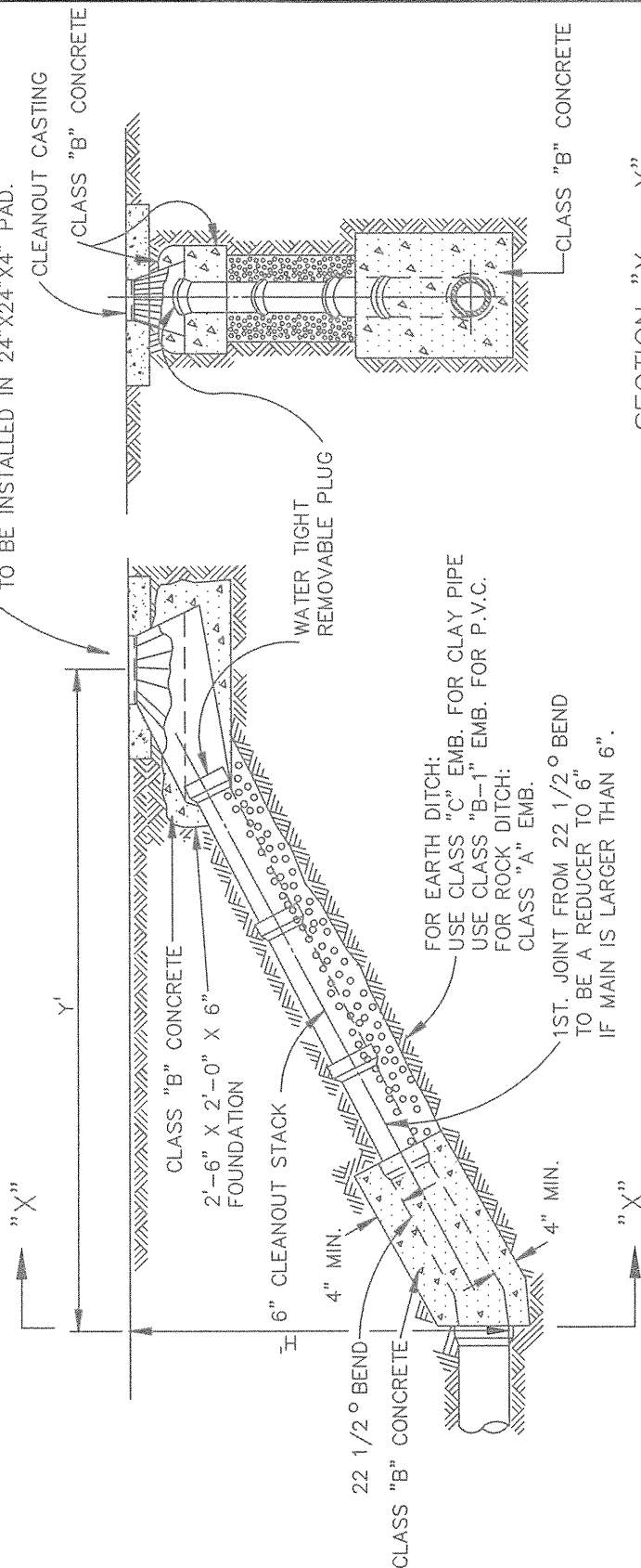
WASTEWATER MANHOLE

LINE INTERSECTION

STANDARD DRAWING NO.

SS-07

H'	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	H'
Y'	10	12	14	17	19	22	24	27	29	31	34	36	39	41	43	46	48	Y'



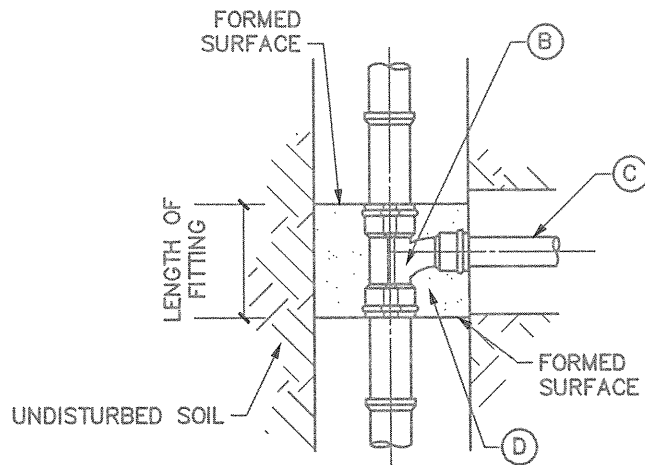
PROFILE VIEW  
N.T.S.

SECTION "X - X"  
N.T.S.

WASTEWATER MAIN  
CLEANOUT

STANDARD DRAWING NO.

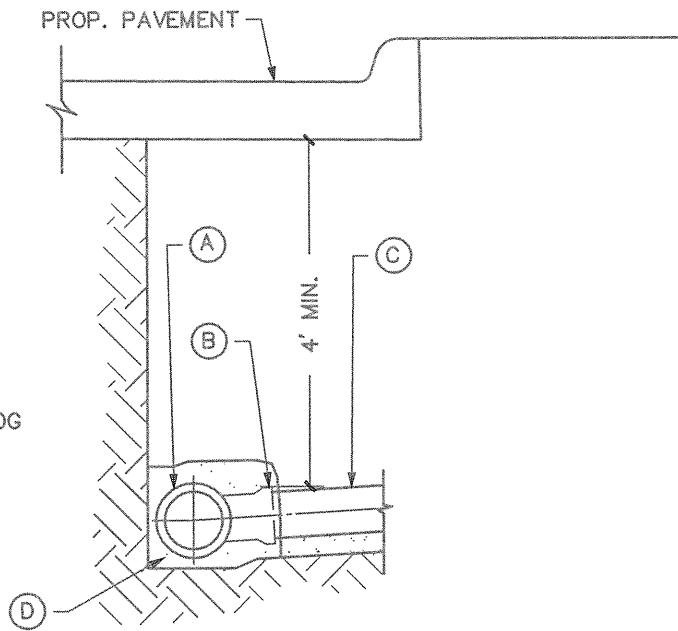
SS-08



**PLAN VIEW**

**KEY:**

- (A) WASTEWATER MAIN
- (B) 4" WYE
- (C) 4" WASTEWATER LAT.  
(LENGTH VARIES)
- (D) CLASS B CONCRETE  
2,000 PSI CONCRETE PER NCTCOG  
702.2.4.2



**SECTION VIEW**

**NOTES:**

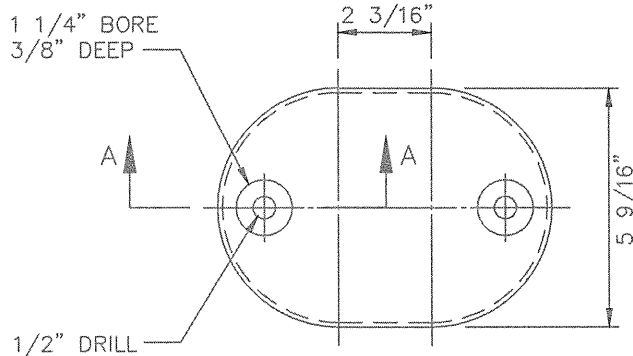
1. THE CLEANOUT MAY BE PLACED IN THE PARKWAY OR SIDEWALK, IF NECESSARY.
2. REFERENCE TECHNICAL SPECIFICATION 333109.

WASTEWATER SERVICES  
LATERAL CONNECTION

STANDARD DRAWING NO.

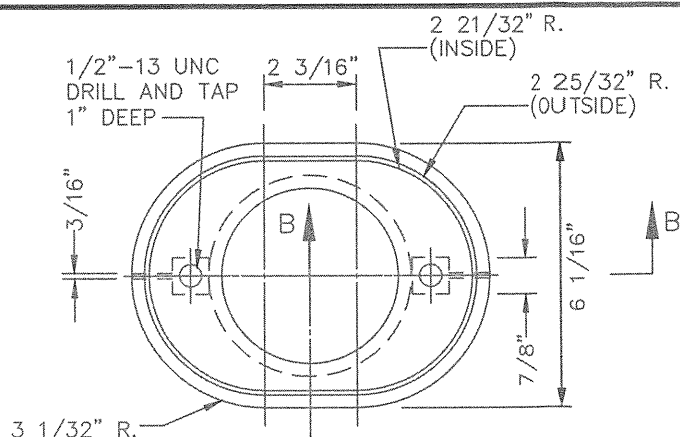
SS-09





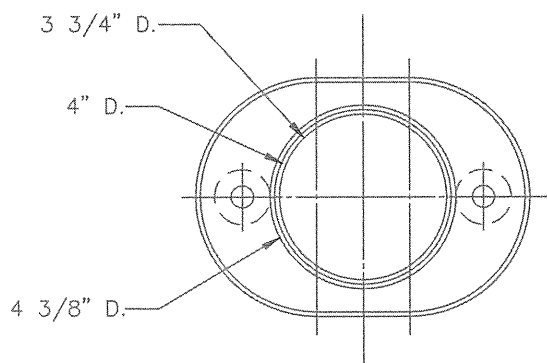
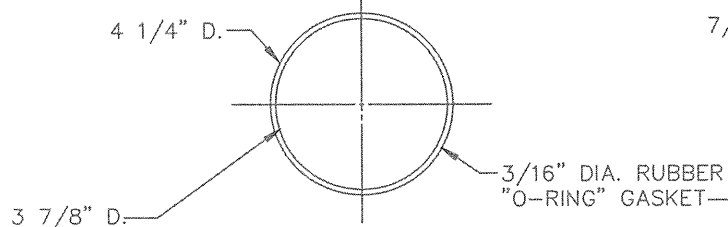
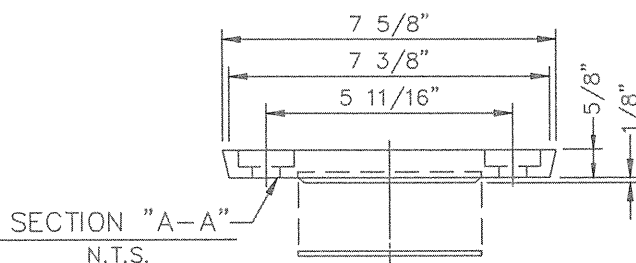
COVER

N.T.S.



CLEANOUT FRAME TOP

N.T.S.

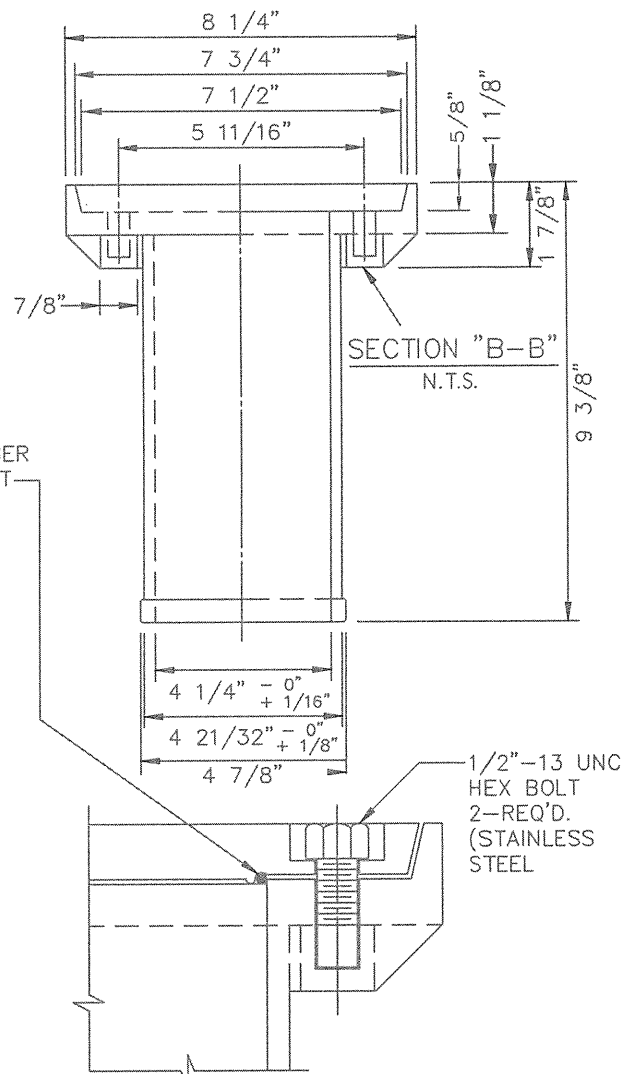


CLEANOUT FRAME BOTTOM

N.T.S.

NOTES:

1. THE WORDS "WASTEWATER LATERAL CLEANOUT" SHALL BE CAST INTO TOP OF COVER.
2. MATERIALS TO BE CAST IRON, P.V.C. OR ABS PLASTIC.



ASSEMBLY VIEW

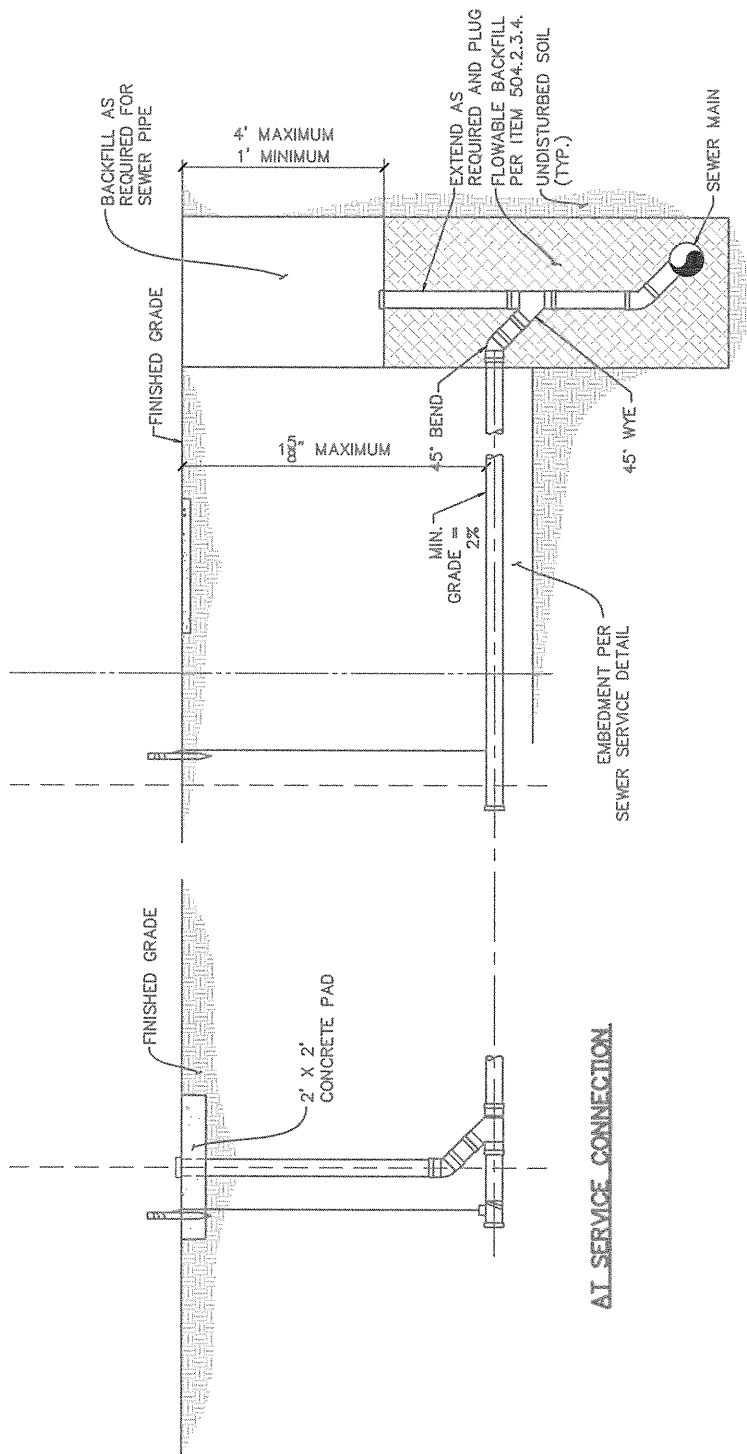
N.T.S.

WASTEWATER SERVICES

CLEANOUT FRAME & COVER

STANDARD DRAWING NO.

SS-10

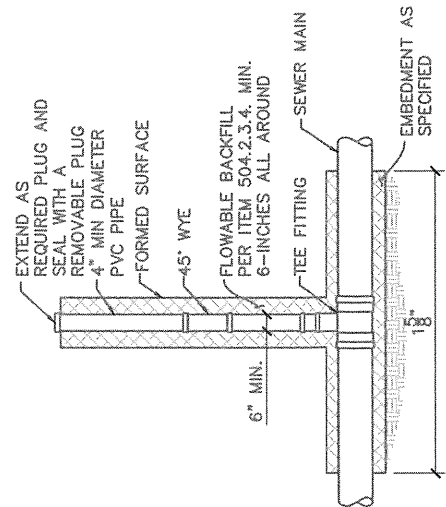


#### AT SERVICE CONNECTION

#### NOTES:

1. FOR SEWER MAINS DEEPER THAN 9 FEET, A DEEP SEWER SERVICE SHALL BE USED.
2. SERVICE LINE SHALL BE 4-INCH WHEN SEWER MAIN IS DEEPER THAN 12 FEET.
3. SANITARY SEWER SERVICE SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD SANITARY SEWER EMBEDMENT AND BACKFILL DETAIL.
4. WHERE THE CLEAN-OUT HOUSING IS LOCATED INSIDE THE SIDEWALK, THE HOUSING SHALL BE LOCATED FLUSH WITH THE FINISHED SURFACE.
5. WHERE THE CLEAN-OUT HOUSING IS LOCATED OUTSIDE OF THE SIDEWALK, THE HOUSING SHALL BE AT FINISHED GRADE.
6. AT SUBDIVISION FINAL, THE SEWER SERVICE SHALL BE EXTENDED TO THE OUTSIDE OF THE UTILITY EASEMENT, IF ONE EXISTS ADJACENT TO THE RIGHT-OF-WAY; IF NOT TO THE OUTSIDE OF THE RIGHT-OF-WAY, AND A LINE AND STAKE LOCATOR INSTALLED AS SHOWN.
7. THE RESIDENTIAL BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING THE CLEAN-OUT AT THE EASEMENT LINE, OR RIGHT-OF-WAY LINE IF NO EASEMENT EXISTS, WHEN EXTENDING THE SERVICE TO THE STRUCTURE, AND SETTING CLEAN-OUT AT FINAL GRADE, INSTALLING 2' X 2' PAD WITH CAST IRON CLEAN OUT BOX AND RUBBER GEM CAP ON STAND PIPE.

#### AT SUBDIVISION FINAL

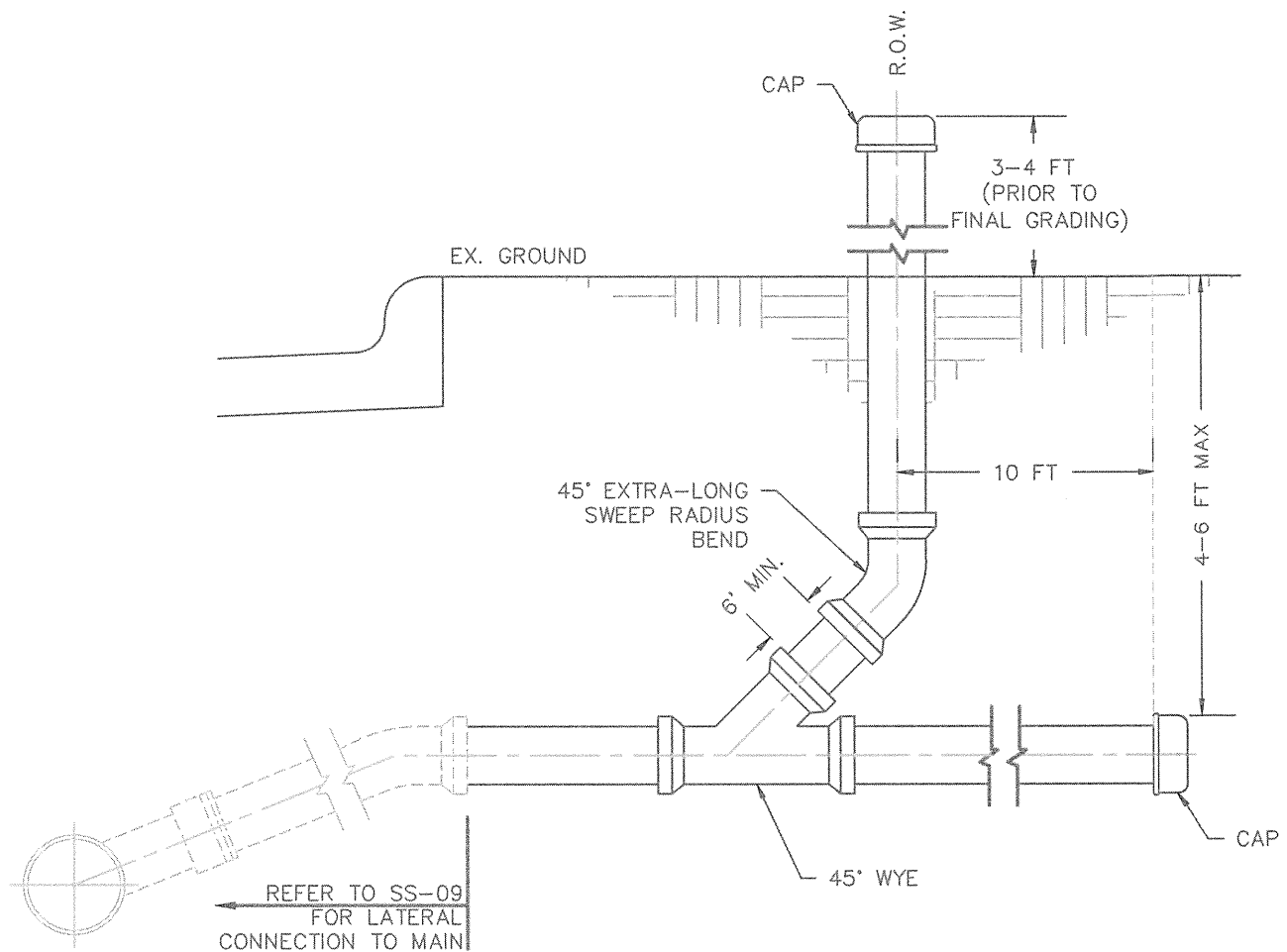


## WASTEWATER SERVICES

### DEEP LATERAL CONNECTION

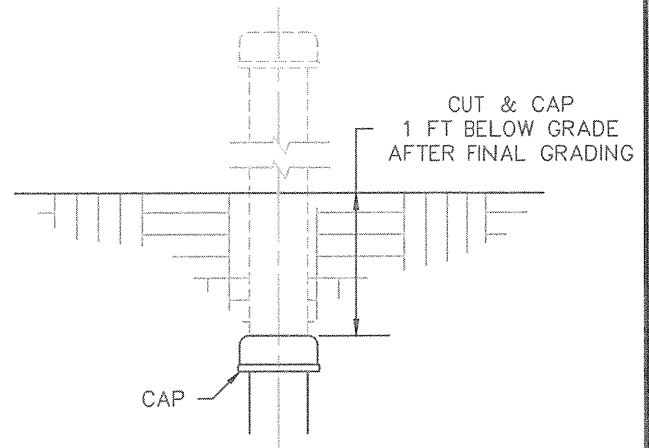
STANDARD DRAWING NO.

SS-11



NOTES:

1. RESIDENTIAL SEWER LATERAL SHALL BE MINIMUM 4" PVC SDR 35 AT A 2% MINIMUM GRADE.
2. SEWER LATERALS SHALL EXTEND TO A POINT 10 FT BEYOND RIGHT-OF-WAY LINE AND SHALL BE A MAXIMUM OF 5 FT DEEP.
3. SEWER LATERALS SHALL BE PLACED AT THE CENTERLINE OF EACH LOT.
4. DURING INITIAL LATERAL INSTALLATION, A 4" CLEANOUT SHALL BE BROUGHT 3-4 FT ABOVE GRADE AT THE R.O.W. LINE.
5. PRIOR TO FINAL GRADING, LATERAL LOCATION SHALL BE MARKED ON CURB AND CLEANOUT TO BE CUT 1 FOOT BELOW GRADE.
6. CONNECTION TO THE MAIN SHALL BE MADE WITH A COMBO WYE & EXTRA-LONG SWEEP  $\frac{1}{8}$  BEND.

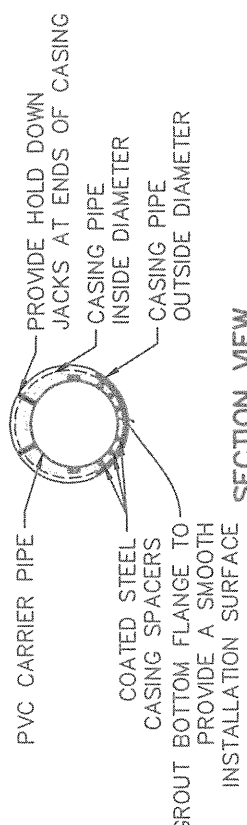


RESIDENTIAL LATERAL

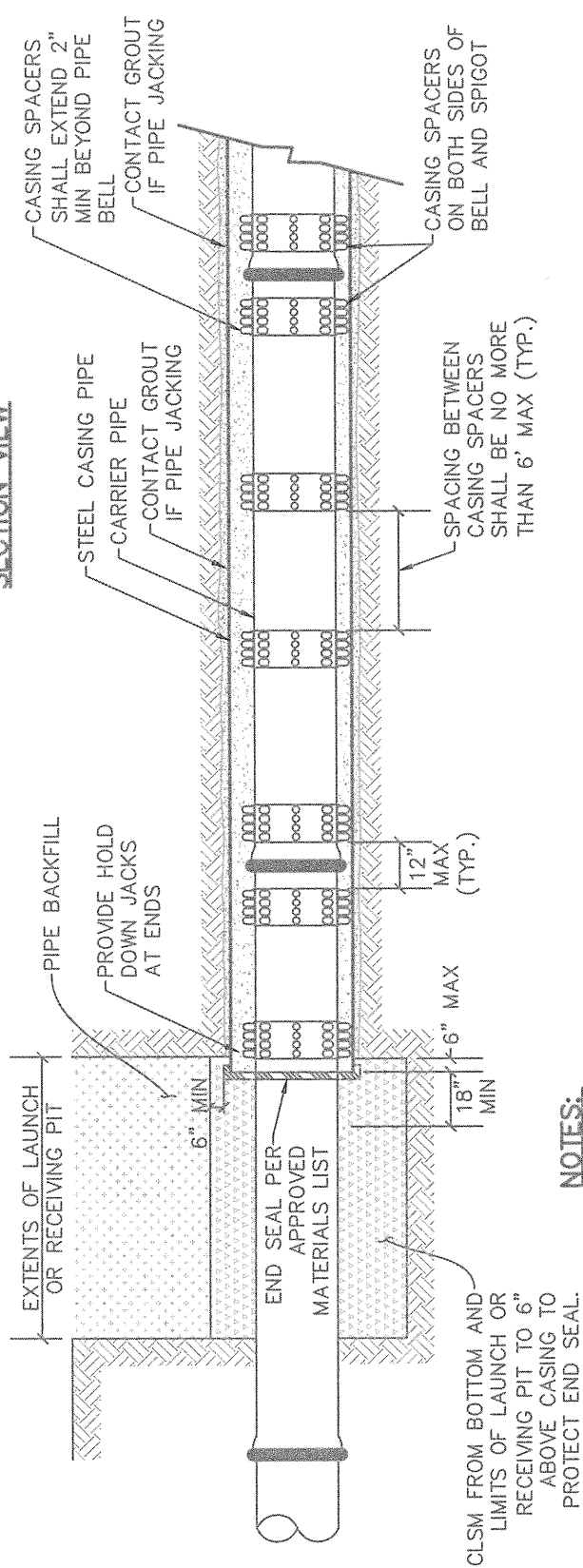
WITH CLEANOUT AT PROPERTY LINE

STANDARD DRAWING NO.

SS-12



**NOTE:**  
 PROVIDE THREE (3)  
 CARRYING SPACERS  
 PER JOINT OF PIPE



**NOTES:**

1. PIPE SHALL HAVE UNIFORM ALIGNMENT AND BEARING WHEN INSTALLED AS A CARRYING PIPE IN CARRYING PIPE. TO PROVIDE STRAIGHT ALIGNMENT AND GRADE, CONCRETE PAVING MAY BE REQUIRED.
2. PRESSURE GROUT SPACE OUTSIDE OF CARRYING PIPE AFTER TUNNEL IS INSTALLED.
3. WHERE A BORE PIT EXCEEDS 5 FEET IN DEPTH, THE CONTRACTOR SHALL INSTALL SHORING OF THE PIT WALLS AS REQUIRED BY OSHA.
4. FOR BELL AND SPIGOT PIPE, REMOVE ALL SLACK IN LINE PRIOR TO BACKFILL AND PRESSURE TESTING.
5. CARRYING SPACERS SHALL FIT SNUG OVER THE CARRYING PIPE AND POSITION THE CARRYING PIPE APPROXIMATELY IN THE CENTER OF THE CARRYING PIPE TO PROVIDE ADEQUATE CLEARANCE BETWEEN THE CARRYING PIPE BELL AND THE CARRYING PIPE. CARRYING SPACERS SHALL BE COATED STEEL FOR SANITARY SEWER PIPE.
6. CARRYING PIPE SHALL BE 1.5 TIMES LARGER THAN THE CARRYING PIPE.

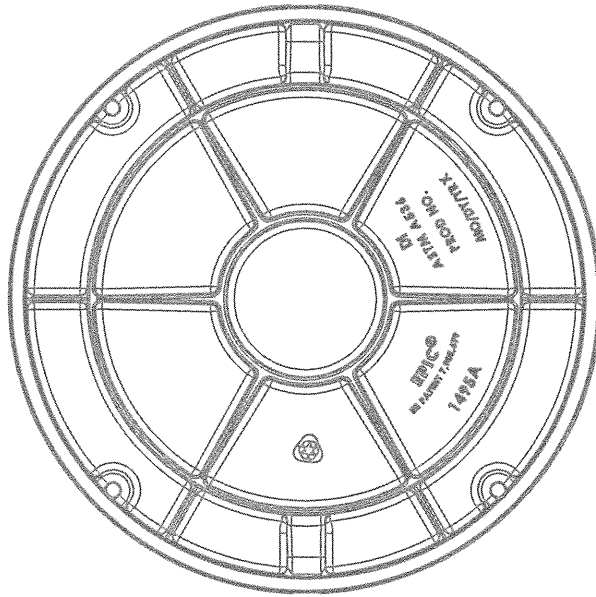
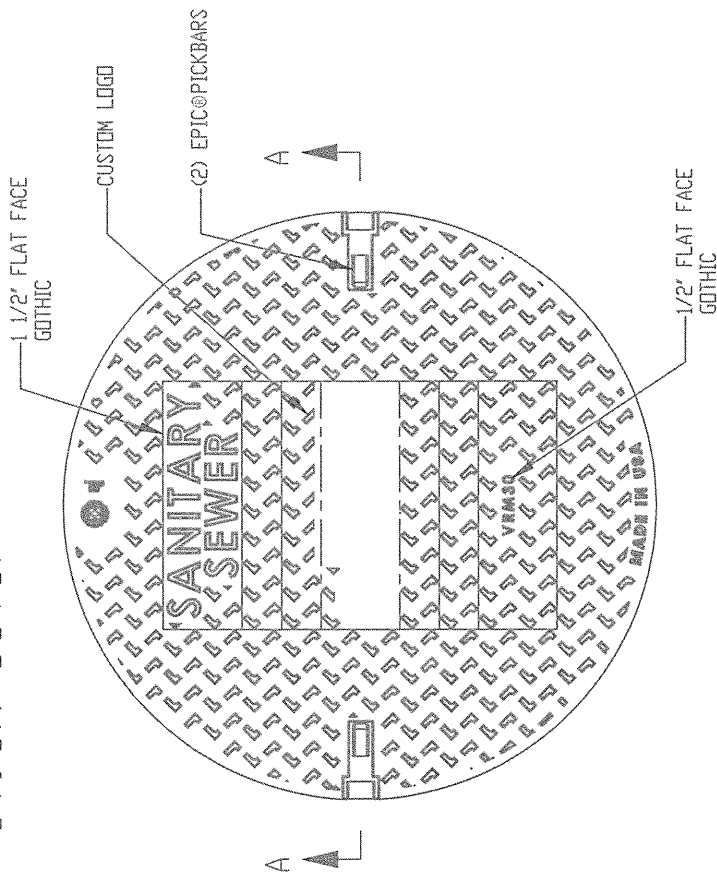
ENCASEMENT PIPE

WASTEWATER LINE BY BORE

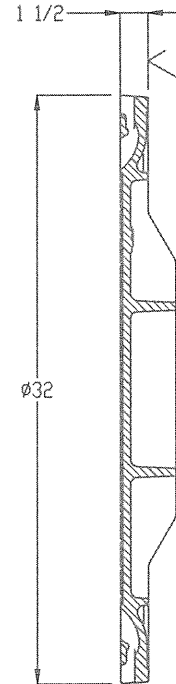
STANDARD DRAWING NO.

SS-13

# 1495A Cover



BOTTOM VIEW



Product Number

001495024

Design Features

-Materials

Ductile Iron (70-50-05)

-Design Load

Heavy Duty

-Open Area

n/a

-Coating

Unpainted

-✓ Designates Machined Surface

Certification

-ASTM A536

-Country of Origin: USA

Disclaimer

Weights (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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Contact

800 636 4653

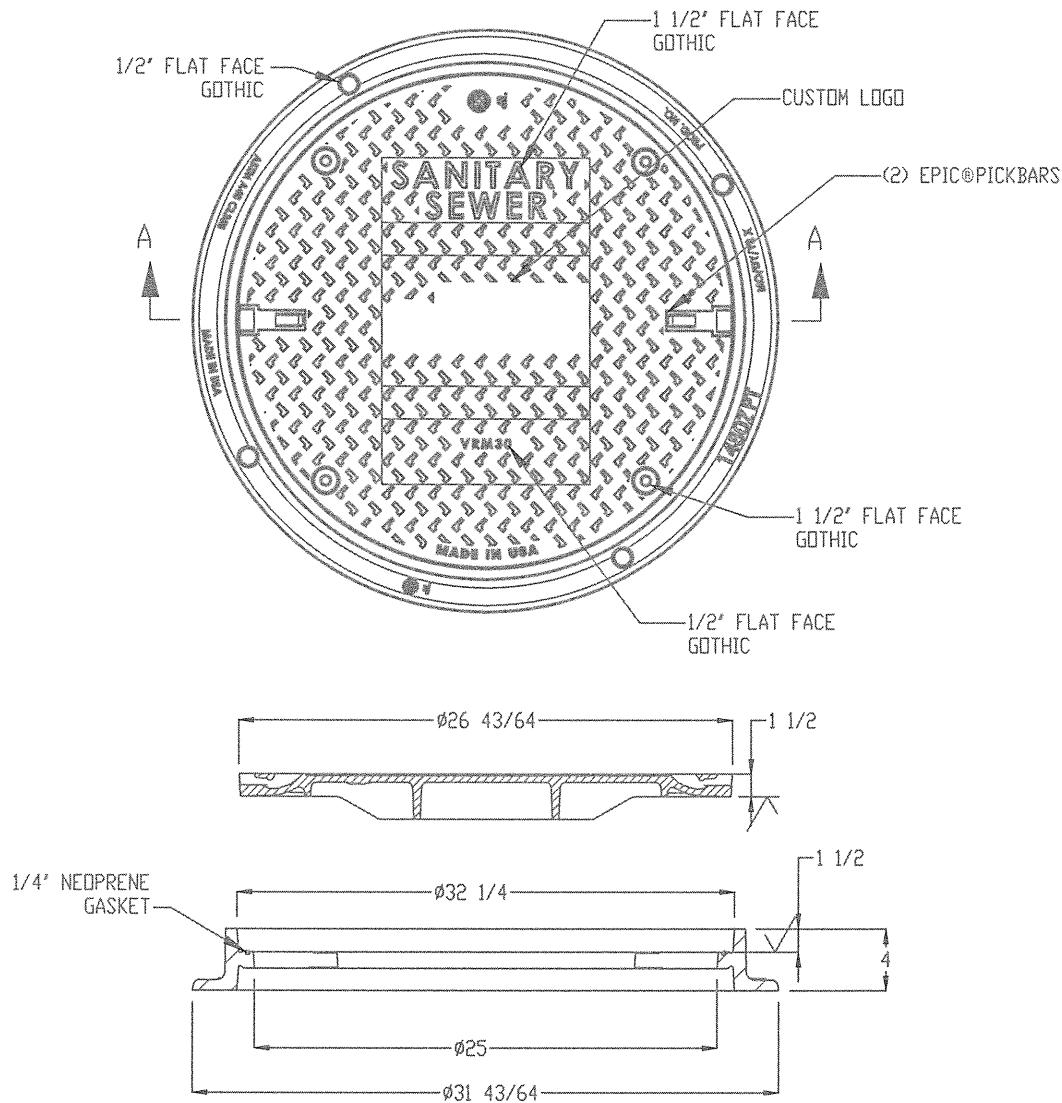
ej.com

WASTEWATER MANHOLE  
STANDARD COVER

STANDARD DRAWING NO.

SS-14

# 1480ZPT 1495APT Assembly



SECTION A-A

Product Number  
001495023V01

Design Features

- Materials
- Frame  
Gray Iron (CL35B)
- Cover  
Ductile Iron (70-50-05)
- Design Load  
Heavy Duty
- Open Area  
n/a
- Coating  
Undipped
- ✓ Designates Machined Surface

Major Components  
00148019  
001495023

Certification  
-ASTM A536  
-Country of Origin: USA

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WASTEWATER MANHOLE  
BOLTED COVER

STANDARD DRAWING NO.

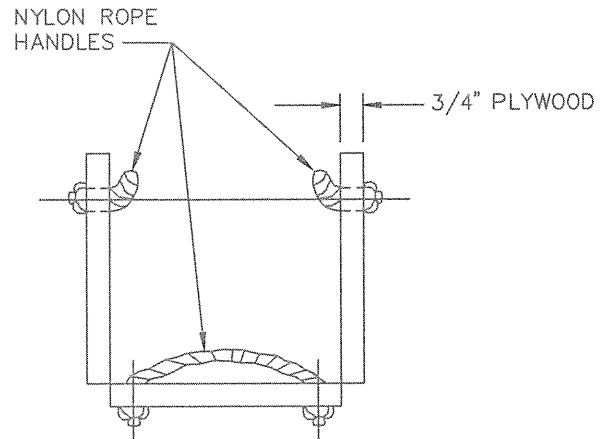
SS-14A

## INSTALLATION

FALSE MANHOLE BOTTOM SHALL BE FURNISHED AND INSTALLED IN ALL MANHOLES CONSTRUCTED IN ADVANCE OF PAVING. THESE FALSE MANHOLE BOTTOMS WILL BE INSTALLED AT A TIME DIRECTED BY THE ENGINEER BUT WILL USUALLY BE AFTER ALL WORK IS COMPLETED ON THE WASTEWATER SYSTEM INCLUDING THE AIR TEST, BUT PRIOR TO THE FINAL INSPECTION.

## REMOVAL

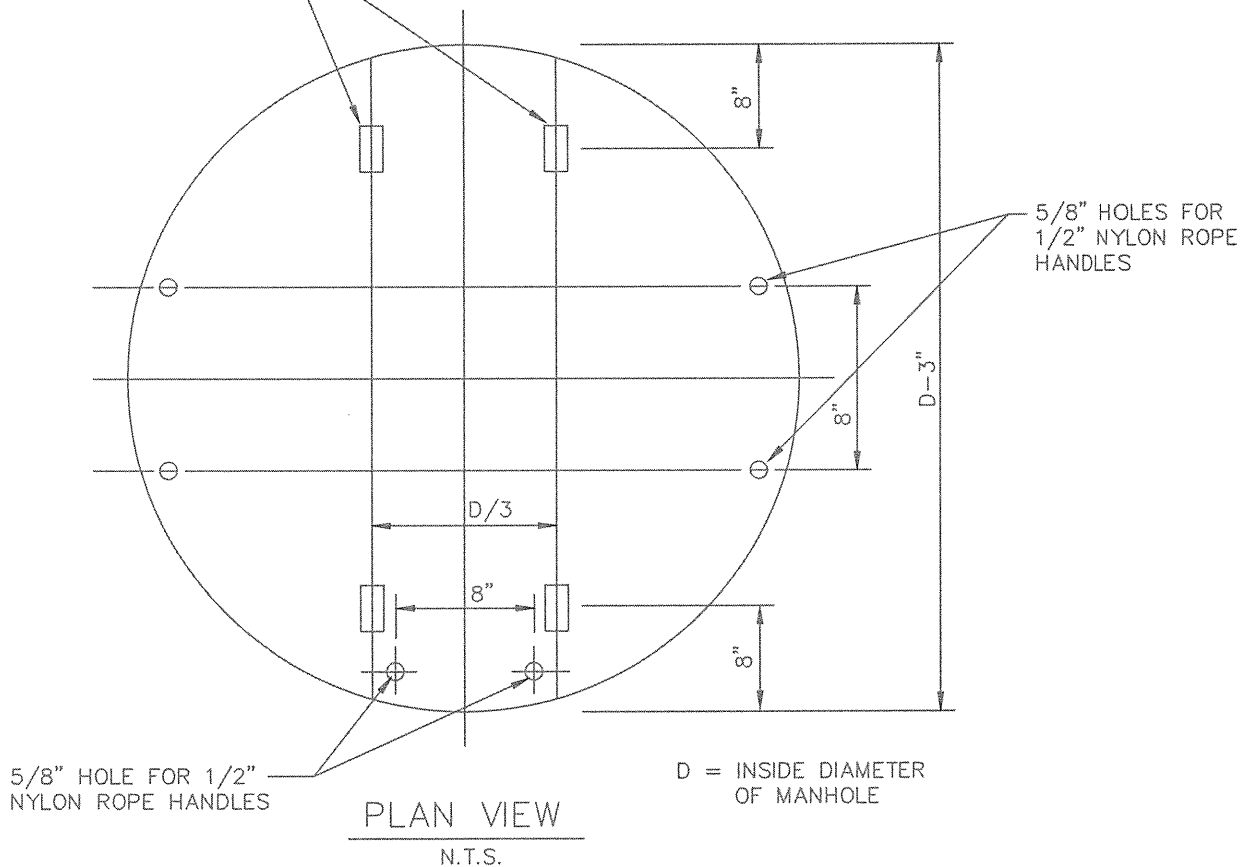
FALSE MANHOLE BOTTOM SHALL BE REMOVED AFTER THE FINAL APPURTENANCE ADJUSTMENT INSPECTION. THE PAVING CONTRACTOR AND OWNER'S REPRESENTATIVE WILL COORDINATE THE REMOVAL OF THE FALSE MANHOLE BOTTOMS.



## INSTALLATION AND REMOVAL POSITION

N.T.S.

METAL STRAP HINGES  
(MIN. 3" LONG) W/BOLTS



WASTEWATER MANHOLE

FALSE MANHOLE BOTTOM

STANDARD DRAWING NO.

SS-15

# INFI-SHIELD 6" GATOR WRAP SPECIFICATION

Each manhole, catch basin or pipe joint shall be sealed with external rubber sleeve similar to the Infi-Shield Gator Wrap as manufactured by Sealing Systems, Inc. (763-478-2057). The seal shall be made of a Stretchable, Self-Shrinking, Intra-Curing Halogenated Based Rubber with a minimum thickness of 30 mils. The back side of each until shall be coated with a cross-linked re-enforced butyl adhesive. The butyl adhesive shall be non-hardening sealant, with a minimum thickness of 30 mils. The seal shall be designed to stretch around the substrate then overlapped creating a cross-link and fused bond between the rubber and butyl adhesive. The application shall form a continuous rubber seal that applies inward pressure on the protected area for the life of application. The butyl adhesive and the inward pressure exerted on the substrate will prevent the intrusion of water and soil through the joint sections of a manhole, catch basin or concrete pipe.

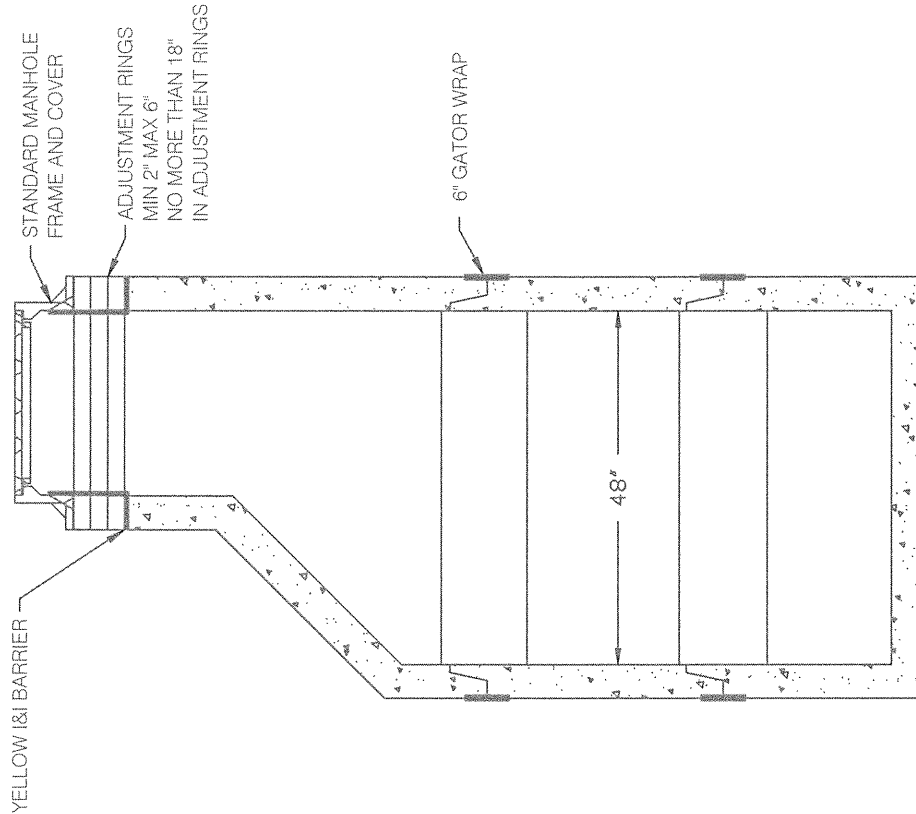
## Gator Wrap 6"

Height	6 inches
Length	16 or 50 foot rolls
Thickness	50 mils
Height tolerance	6 inches +/- .188"
Length tolerance	+/- 3"
Rubber Thickness tolerance	30 mils
Butyl Adhesive Thickness	30 mils

## I&I BARRIER

SPECIFICATION  
Patent Pending

The bottom surface of the I/I BARRIER flange shall be sealed to the manhole cone top surface using a butyl sealant as specified by the manufacture of the I/I BARRIER. The sealant shall be applied to the top surface of the manhole cone section only. Sufficient sealant must be used to accommodate flaws in the cone surface and "out-of-flat" conditions. The amount of sealant and its placement will be determined by the condition of the cone. This determination will be the responsibility of the contractor installing the I/I BARRIER. The I/I BARRIER is then centrally seated on the cone against the sealant. The bottom adjustment ring is then centrally placed on the top surface of the I/I BARRIER flange using no sealant. If plastic adjustment rings with a vertical tongue are being used, the tongue must be cut off to allow the bottom ring to set flush on the I/I BARRIER flange. This removal should be done per instructions from the adjustment ring manufacturer. The chimney section is then completed based on the type of adjustment rings being utilized.



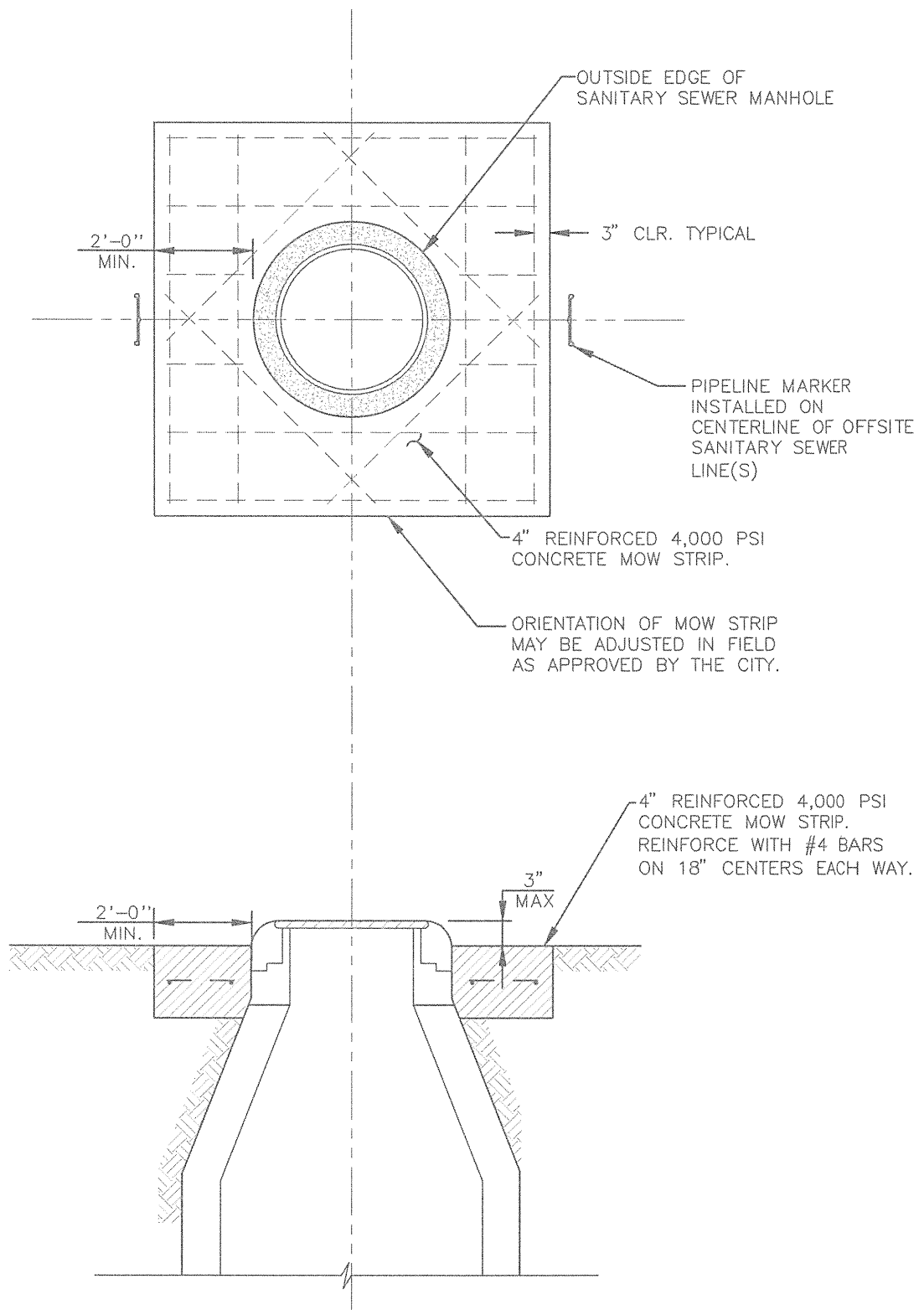
I&I BARRIER & GATOR WRAP

6" GATOR WRAP

STANDARD DRAWING NO.

SS-16



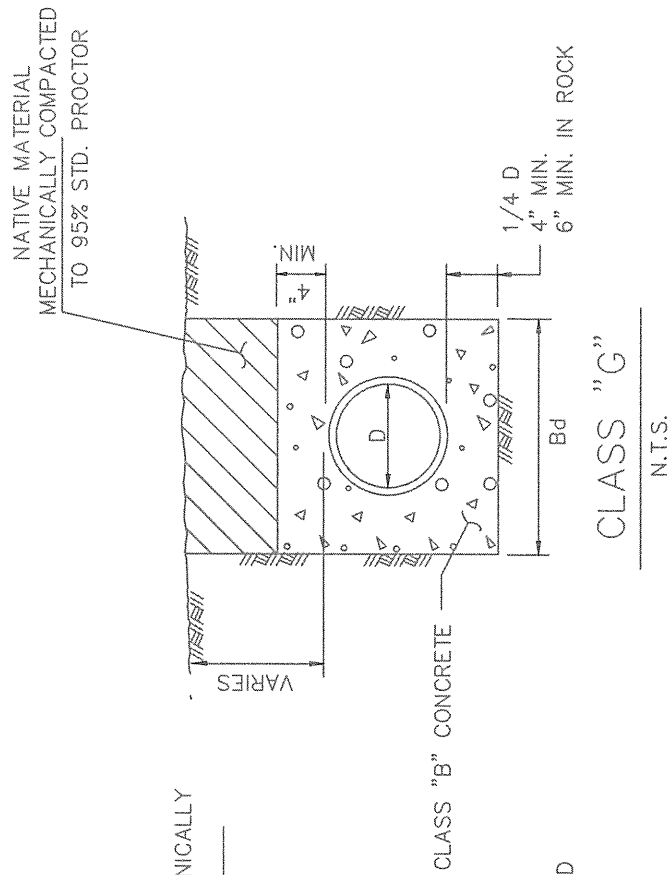
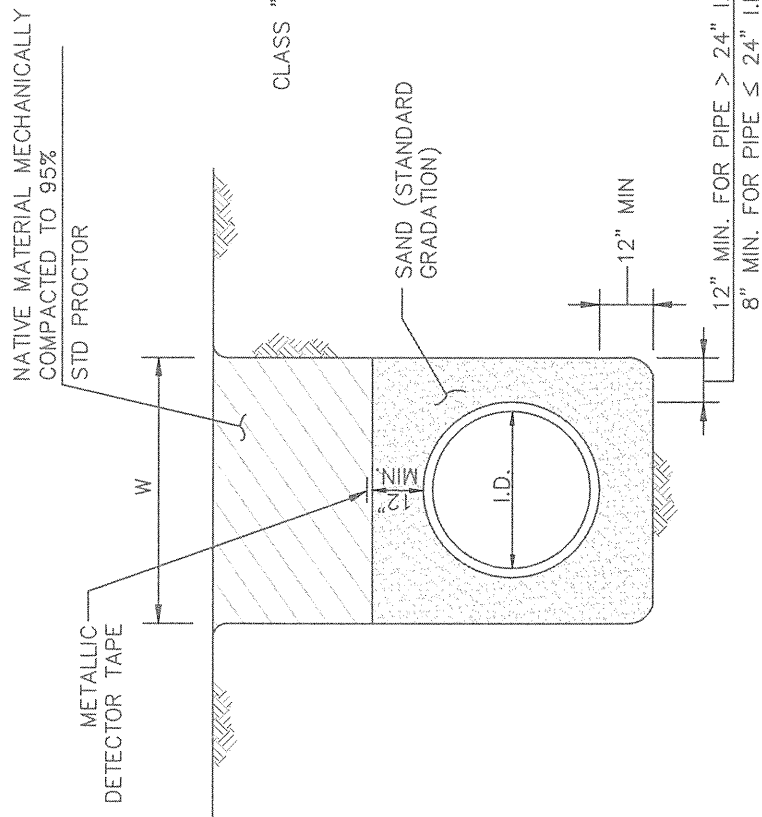


MANHOLE & VALVE VAULT

MOW STRIP

STANDARD DRAWING NO.

SS-17



- NOTES:
1. D = INSIDE DIAMETER OF PIPE
  2. Bd = TRENCH WIDTH

## WATER LINE EMBEDMENT

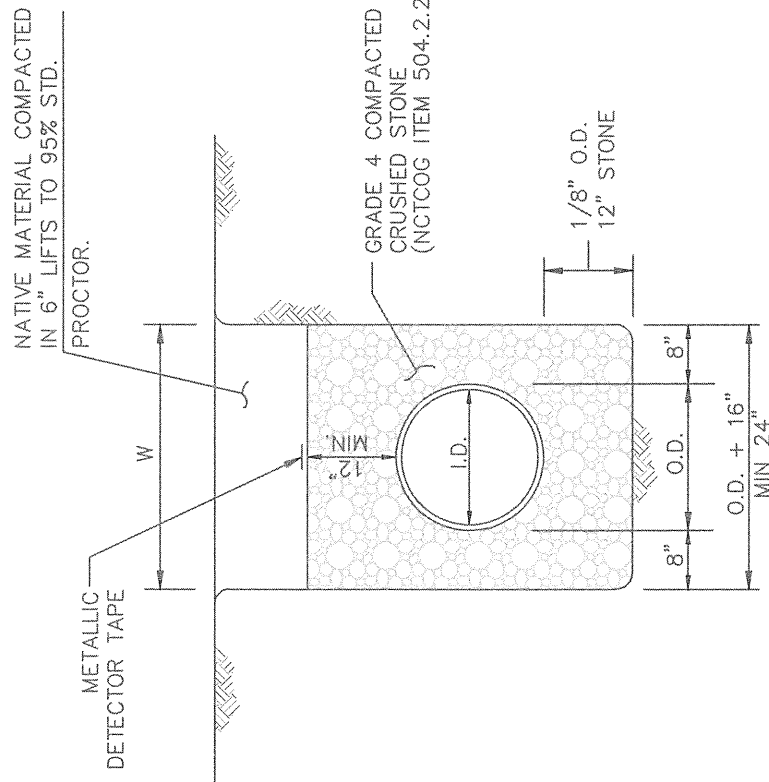
NO SCALE

EMBEDMENT

CLASS "B+" & CLASS "G"

STANDARD DRAWING NO.

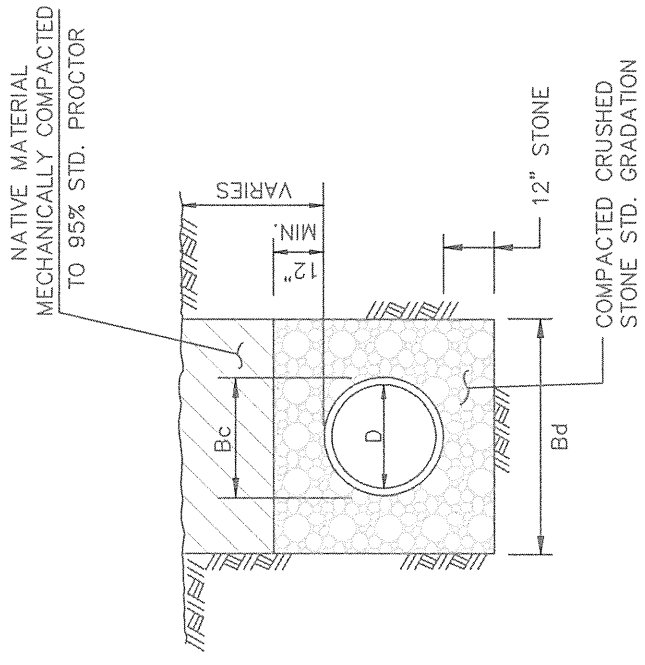
EMB-01



# CLASS H EMBEDMENT

P.V.C. PIPE ONLY  
STD. P.V.C. SEWER

- NOTES:
1. UTILIZE CLASS "H" EMBEDMENT FOR PVC (SDR 35) WASTEWATER LINE.
  2. BEDDING DEPTH MEASURED FROM OUTSIDE OF PIPE BELL.



# STORM SEWER EMBEDMENT

N.T.S.

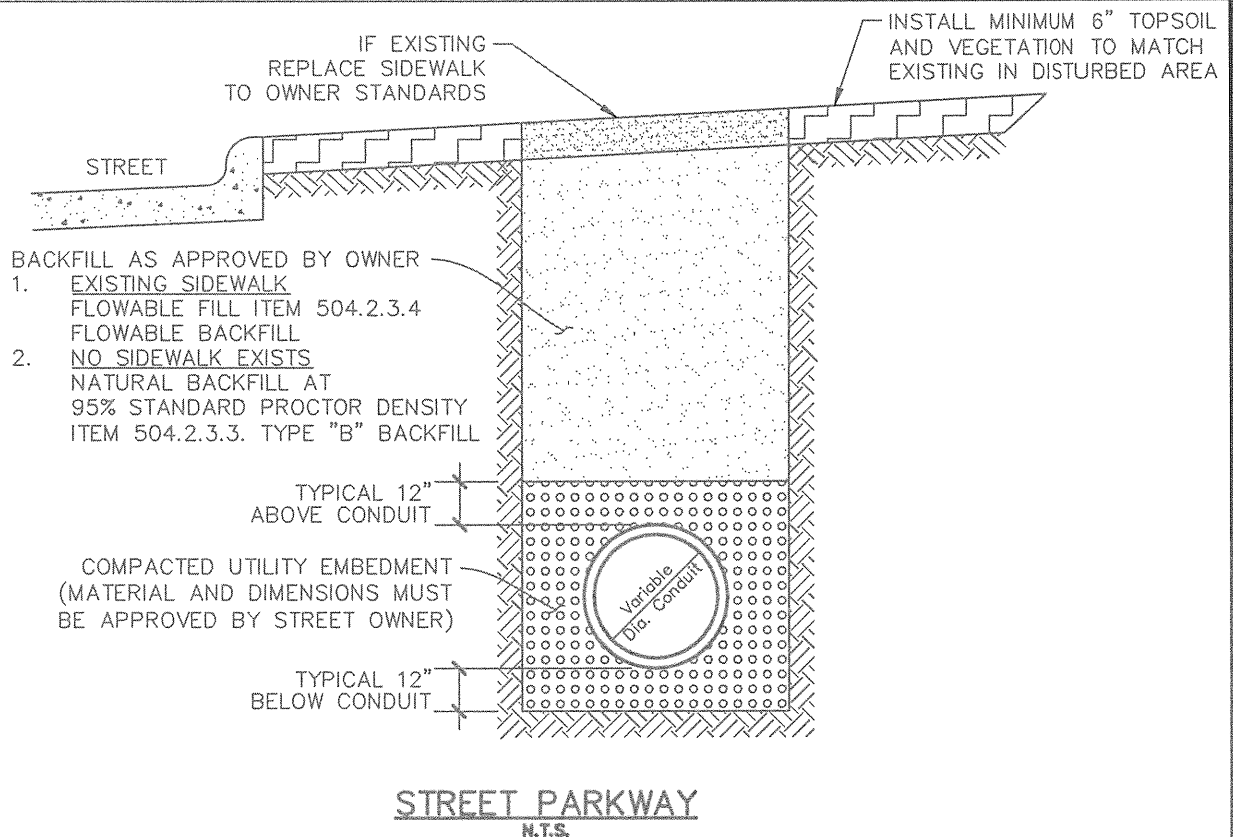
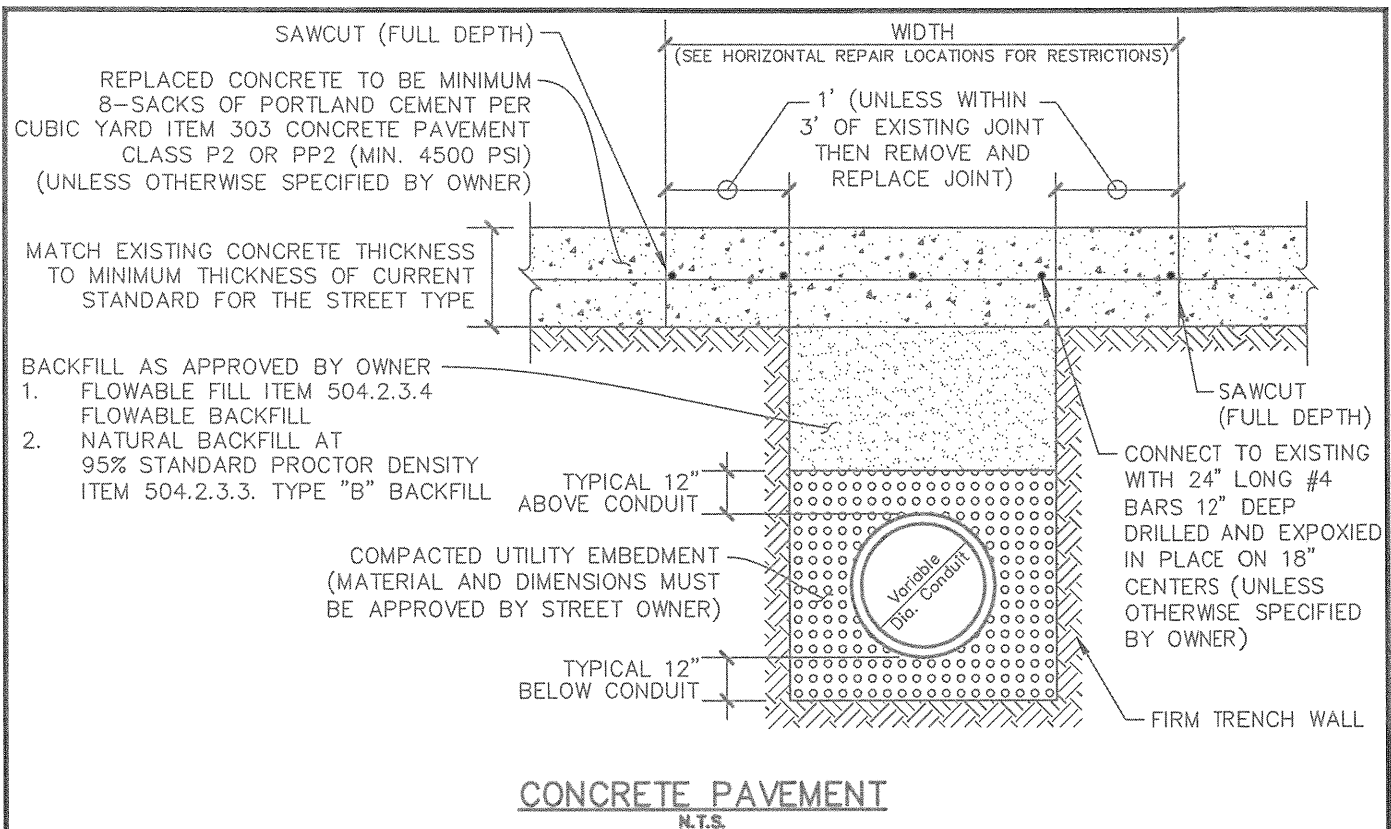
- NOTES:
1. D = INSIDE DIAMETER OF PIPE
  2. Bd = TRENCH WIDTH
  3. Bc = OUTSIDE DIAMETER OF PIPE

EMBEDMENT

CLASS "H" & STORM SEWER

STANDARD DRAWING NO.

EMB-02

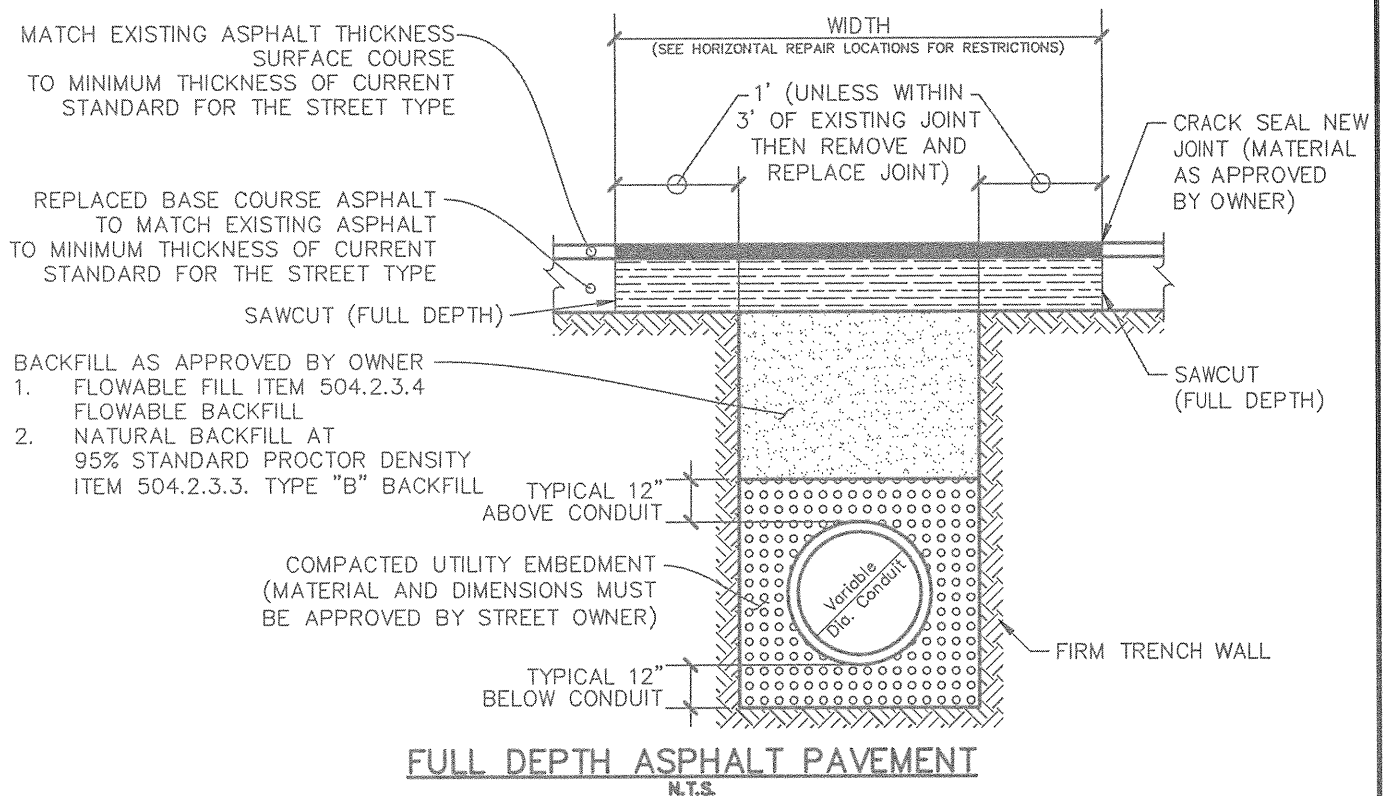
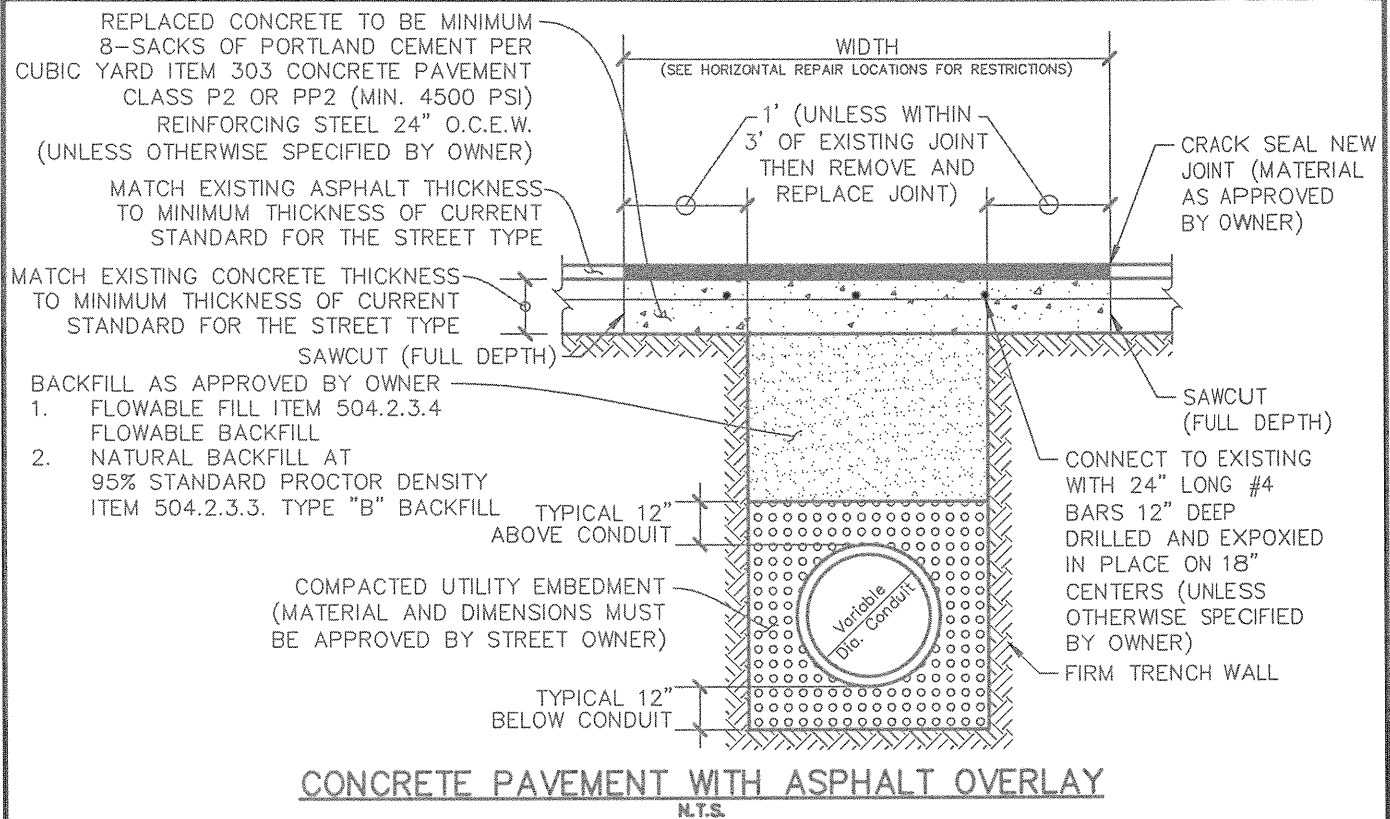


PAVEMENT CUT & REPAIR

CONCRETE & PARKWAY

STANDARD DRAWING NO.

EMB-03

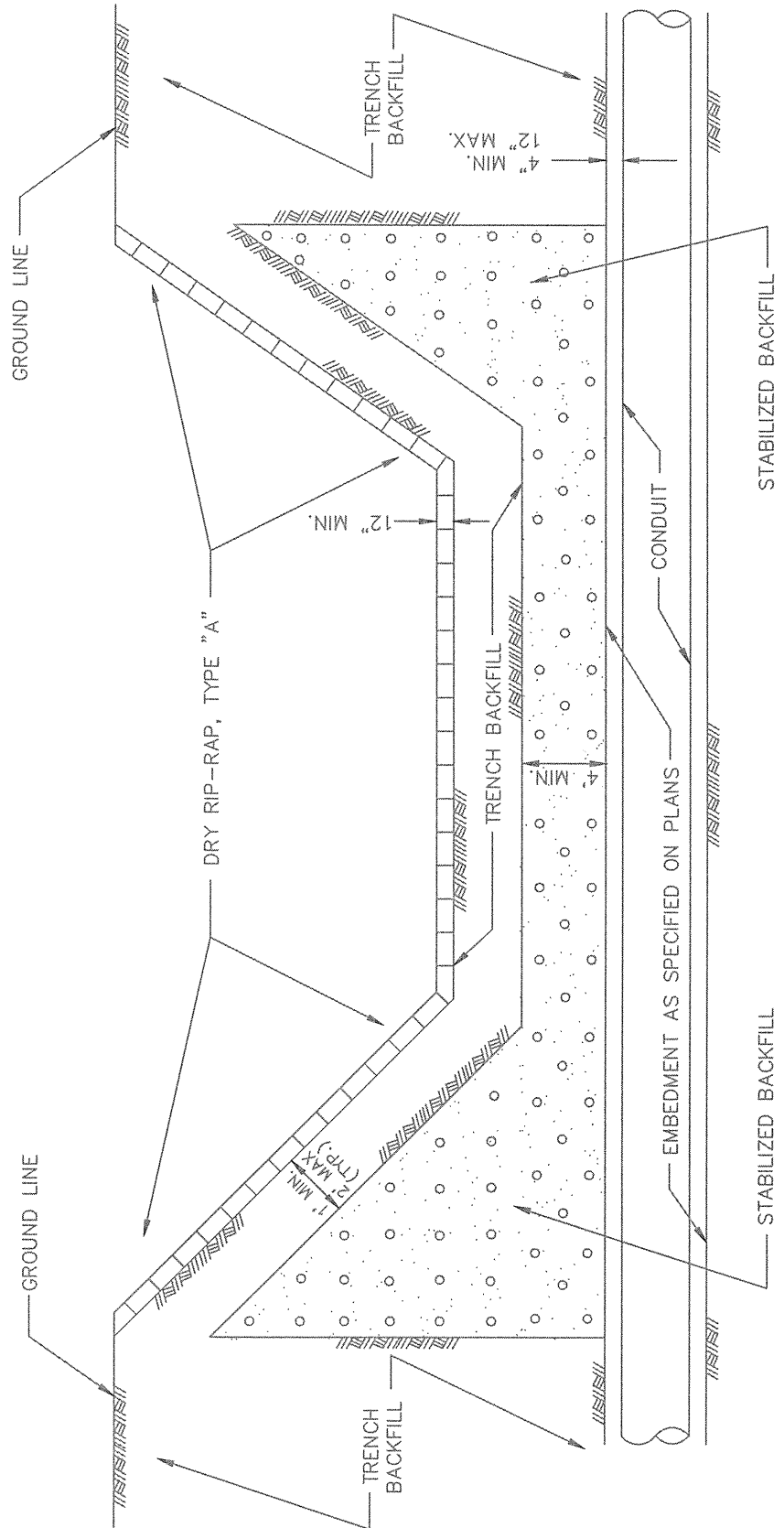


PAVEMENT CUT & REPAIR

ASPHALT

STANDARD DRAWING NO.

EMB-04

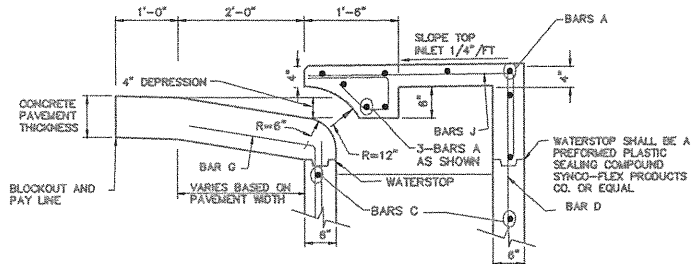
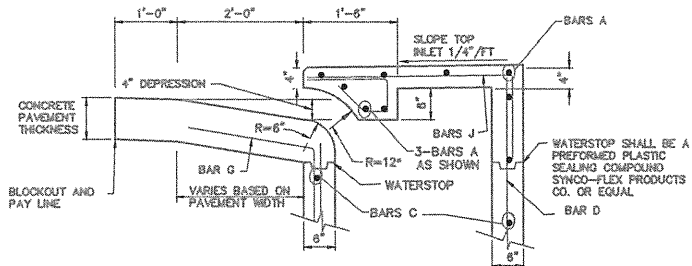
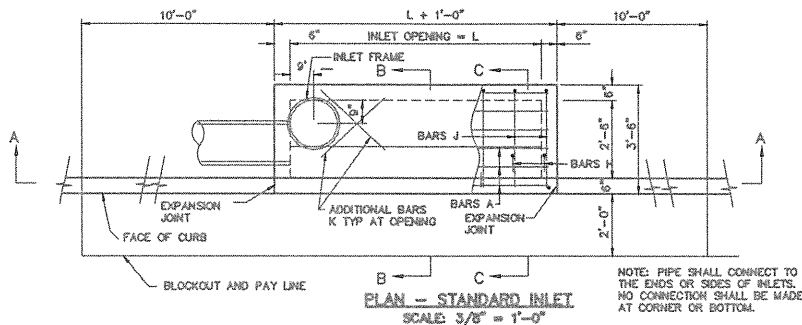


INFILTRATION PROTECTION  
CONDUIT UNDER CHANNEL

STANDARD DRAWING NO.

EMB-05





REINFORCING STEEL SCHEDULE					REINFORCING STEEL SCHEDULE				
INLET OPENING L	BAR	BAR SIZE	NO. REQ'D	BAR LENGTH	INLET OPENING L	BAR	BAR SIZE	NO. REQ'D	BAR LENGTH
6'-0"	A	#4	11	13'-4"	5'-0"	A	#4	9	5'-0"
	B	#4	6	13'-4"		B	#4	8	5'-0"
	C	#4	18	13'-4"		C	#4	12	5'-0"
	D	#5	1	5'-0"		D	#5	7	4'-0"
	E	#5	1	5'-3"		F	#5	7	3'-3"
	F	#4	15	3'-6"		G	#4	7	3'-6"
	H	#4	15	2'-8"		H	#4	9	2'-6"
	J	#3	15	4'-8"		J	#3	7	4'-8"
	K**	#4	4	3'-0"		K**	#4	4	3'-0"
	L	#5	24	3'-0"		L	#4	24	3'-0"
	M**	#4	2	4'-0"		M**	#4	2	4'-0"
	N	#5	15	6'-2"		N	#5	7	6'-2"
	U	#4	4	3'-4"					
7'-6"	A	#4	11	16'-4"	8'-0"	A	#4	9	7'-0"
	B	#4	6	16'-4"		B	#4	6	7'-0"
	C	#4	18	16'-4"		C	#4	12	7'-0"
	D	#5	18	4'-0"		D	#5	10	4'-0"
	E	#5	18	3'-3"		F	#5	10	3'-3"
	F	#4	18	3'-6"		G	#4	10	3'-6"
	H	#4	18	2'-6"		H	#4	14	2'-6"
	J	#3	18	4'-8"		J	#5	10	4'-8"
	K**	#4	4	3'-0"		K**	#4	4	3'-0"
	L	#4	24	3'-0"		L	#4	24	3'-0"
	M**	#5	16	4'-0"		M**	#4	2	4'-0"
	N	#4	4	3'-4"		N	#5	10	6'-2"
	U	#4	4	3'-4"					
10'-0"	A	#4	11	21'-4"	10'-0"	A	#4	9	8'-0"
	B	#4	6	21'-4"		B	#4	6	9'-0"
	C	#4	18	21'-4"		C	#4	12	9'-0"
	D	#5	23	4'-0"		D	#5	12	4'-0"
	E	#5	23	3'-3"		F	#5	12	3'-3"
	F	#4	23	3'-6"		G	#4	12	3'-6"
	H	#4	23	2'-6"		H	#4	17	2'-6"
	J	#5	23	4'-8"		J	#5	12	4'-8"
	K**	#4	4	3'-0"		K**	#4	4	3'-0"
	L	#4	24	3'-0"		L	#4	24	3'-0"
	M**	#4	2	4'-0"		M**	#4	2	4'-0"
	N	#5	23	6'-2"		N	#5	12	6'-2"
	U	#4	4	3'-4"					

\* BAR QUANTITIES AND LENGTHS SHOWN ARE FOR MAX HEIGHT INLETS. VALUES SHALL BE ADJUSTED FOR USUAL HEIGHT INLETS.  
\*\* NUMBER AND DIMENSIONS SHOWN FOR TOP SLAB OPENINGS AS SHOWN IN THE DETAILS. ADDITIONAL BARS SHALL BE PROVIDED AT ALL PIPE OPENINGS AS SHOWN IN THE DETAILS. NUMBER AND DIMENSIONS TO BE MODIFIED AS NEEDED.

### NOTES FOR PRECAST INLET

1. PRECAST INLETS MUST BE APPROVED BY ENGINEER.
2. THE FLOOR OF THE EXCAVATION MUST PROVIDE A FIRM, LEVEL BED FOR THE BASE SECTION TO REST UPON.
3. A MINIMUM OF 6 INCHES OF 1" DIAMETER (MAXIMUM ROCK OR GRAVEL SHALL BE USED TO PREPARE THE BEDDING TO FINAL GRADE OR IN LIEU OF THIS, AT LEAST 6 INCHES OF 2-SACK CEMENT STABILIZED SAND SHALL BE USED TO PREPARE THE BEDDING TO GRADE. CEMENT STABILIZED-SAND SHALL BE ALLOWED TO SET BY KEEPING HOLE PUMPED DRY.
4. AFTER CASTING HAS BEEN INSTALLED ON THE PROPER BEDDING, THE BACKFILL MATERIAL, WHICH IS FREE FLOWING AND CLEAR OF ROCKS, IN EXCESS OF 4" DIAMETER AND OTHER LUMPS WHICH WOULD PROHIBITED PROPER COMPACTION, SHALL BE COMMENCED IN LIFTS OF NO MORE THAN 18". THE MATERIAL USED FOR BACKFILL SHOULD BE OF TYPE A SUITABLE TO OBTAIN THE DENSITY REQUIREMENTS FOR THE SPECIFIC JOB.
5. CONCRETE TO BE 4000 PSI.
6. LOCKING DEVICE IS REQUIRED ON ALL STORM SEWER LIDS.
7. "NO DUMPING" WARNING PLAQUE TO BE INSTALLED ON ALL STANDARD AND RECESSED INLETS.

STORMWATER CURB INLET

STANDARD (2 OF 2)

STANDARD DRAWING NO.

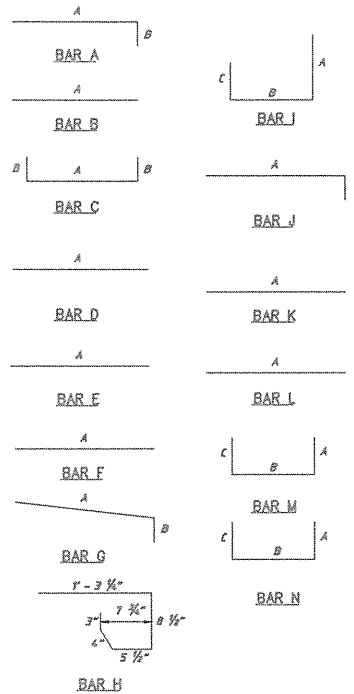
STM-01A



DIMENSIONS SHOWN ARE FOR MAXIMUM SIZE INLETS

INLET LENGTH	BAR TYPE	BAR DIA. (# IN.)	NO. REQ'D	BAR DIMENSIONS		
				A	B	C
4	A	3	6	3'-2"	0'-3"	-
	B	3	1	2'-10"	-	-
	C	4	15	4'-8"	0'-6"	-
	D	4	5	4'-8"	-	-
	F	4	1	3'-2"	-	-
	G	3	5	2'-0"	1'-3"	-
	H	3	3	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
6	A	3	9	3'-2"	0'-3"	-
	B	3	1	4'-10"	-	-
	C	4	15	6'-8"	0'-6"	-
	D	4	5	4'-8"	-	-
	F	4	1	3'-2"	-	-
	G	3	5	2'-0"	1'-3"	-
	H	3	3	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
8	A	3	12	3'-2"	0'-3"	-
	B	3	1	6'-10"	-	-
	C	4	15	8'-8"	0'-6"	-
	D	4	5	4'-8"	-	-
	F	4	1	3'-2"	-	-
	G	3	5	2'-0"	1'-3"	-
	H	3	4	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
10	A	3	10	3'-2"	0'-3"	-
	B	3	2	8'-10"	-	-
	C	4	16	10'-8"	0'-6"	-
	D	4	4	4'-8"	-	-
	E	5	6	10'-8"	-	-
	G	3	5	2'-0"	1'-3"	-
	H	3	15	*	*	*
	I	4	8	4'-8"	3'-2"	3'-2"
	L	4	5	4'-3"	-	-
12	A	3	12	3'-2"	0'-3"	-
	B	3	2	10'-10"	-	-
	C	4	16	12'-8"	0'-6"	-
	D	4	4	4'-8"	-	-
	E	5	6	12'-8"	-	-
	G	3	5	2'-0"	1'-3"	-
	H	3	18	*	*	*
	I	4	10	4'-8"	3'-2"	3'-2"
	J	5	9	3'-2"	1'-3"	-
	K	4	5	2'-3"	-	-
	L	4	5	4'-3"	-	-
	M	5	9	4'-3"	3'-2"	3'-9"
14	A	3	14	3'-2"	0'-3"	-
	B	3	2	10'-10"	-	-
	C	4	16	14'-8"	0'-6"	-
	D	4	4	4'-8"	-	-
	E	5	6	14'-8"	-	-
	G	3	5	2'-0"	1'-3"	-
	H	3	21	*	*	*
	I	4	12	4'-8"	3'-2"	3'-2"
	J	5	9	3'-2"	1'-3"	-
	K	4	5	2'-3"	-	-
	L	4	5	4'-3"	-	-
	M	5	9	4'-3"	3'-2"	3'-9"

\*SEE DIAGRAM FOR DIMENSIONS. 4', 6', 8', 12' AND 14' INLETS.



BAR DIAGRAMS

## REINFORCING STEEL SCHEDULE

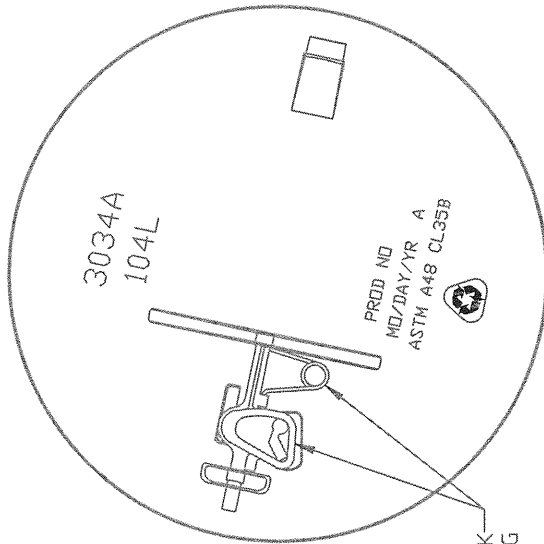
STORMWATER CURB INLET

REINFORCING STEEL

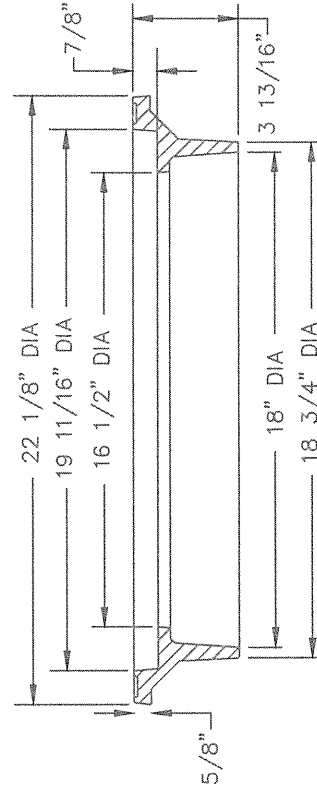
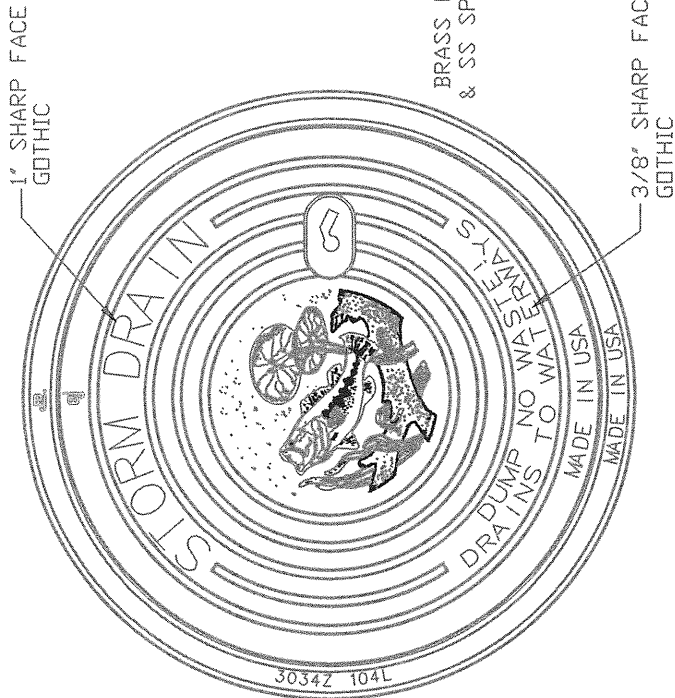
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STM-02

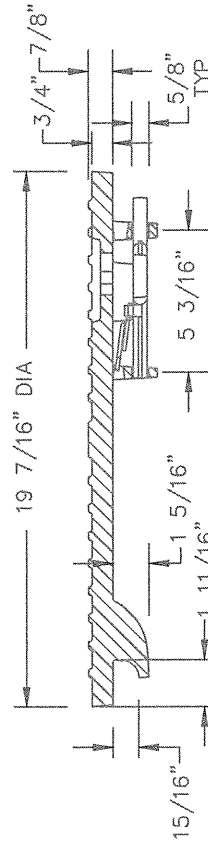
# 3034Z 3034A Assembly



BOTTOM VIEW



FRAME SECTION



COVER SECTION

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Weights (lbs/kg) dimensions (inches/mm)  
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Drawing Revision  
01/19/2007 Designer: BEV  
12/22/2014 Revised By: BEV  
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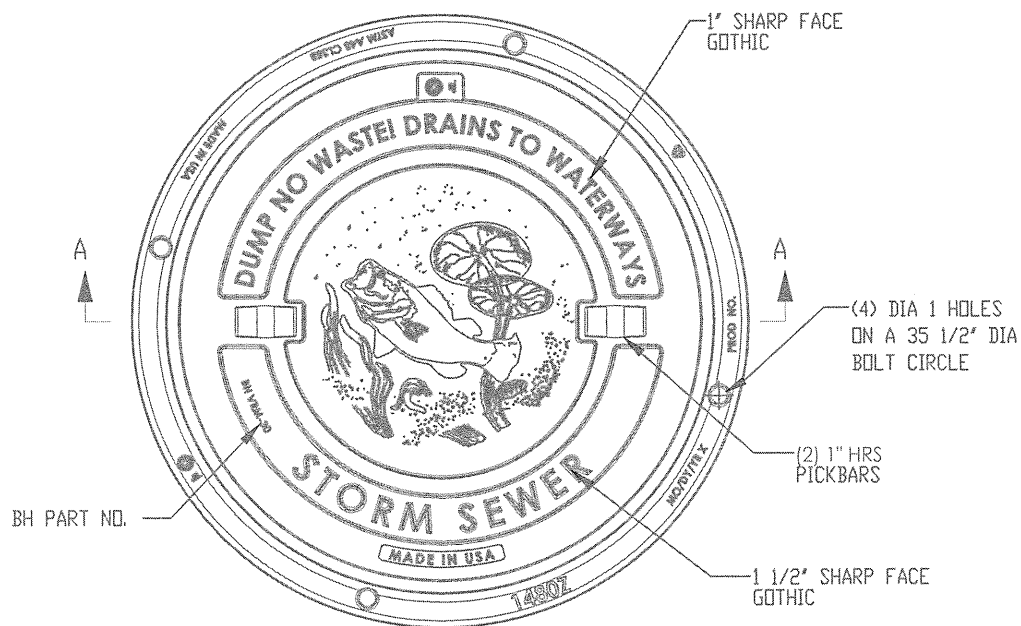
STORM SEWER

STANDARD INLET COVER

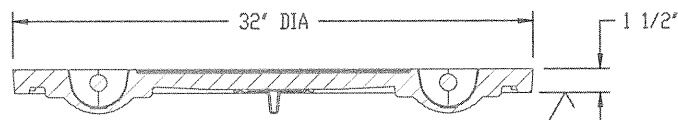
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STM-03

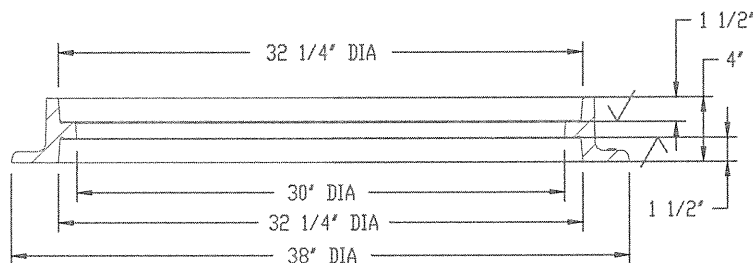
# 1480A 1480Z Assembly



PLAN VIEW



COVER SECTION



SECTION A-A

Product Number

00147987A01

Design Features

-Materials

Cover

Gray Iron (CL35B)

Frame

Gray Iron (CL35B)

-Design Load

Heavy Duty

-Open Area

n/a

-Coating

Undipped

-✓ Designates Machined Surface

Certification

-ASTM A48

-Country of Origin: USA

Major Components

00147987

00148015

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Contact

800 626 4653

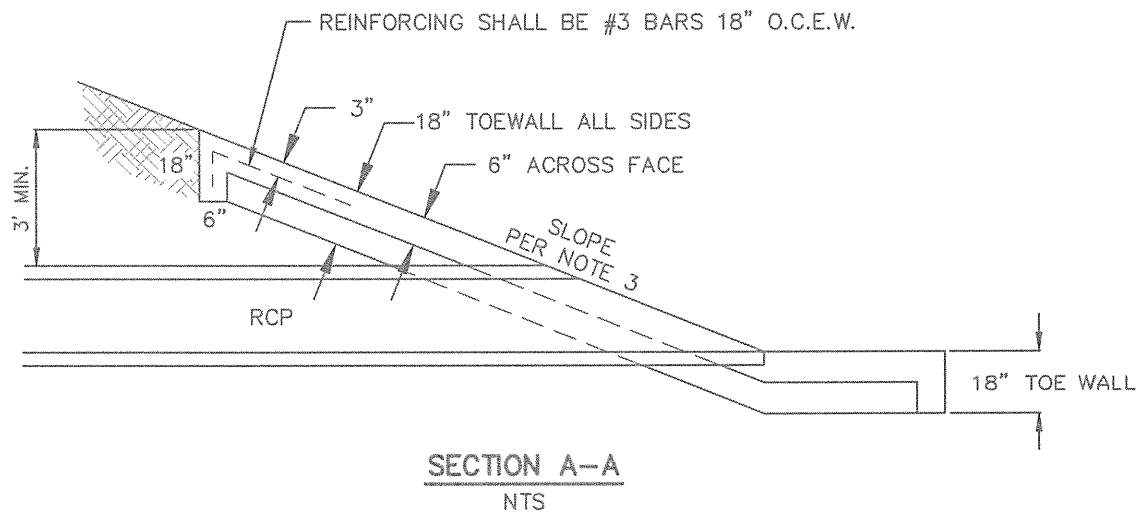
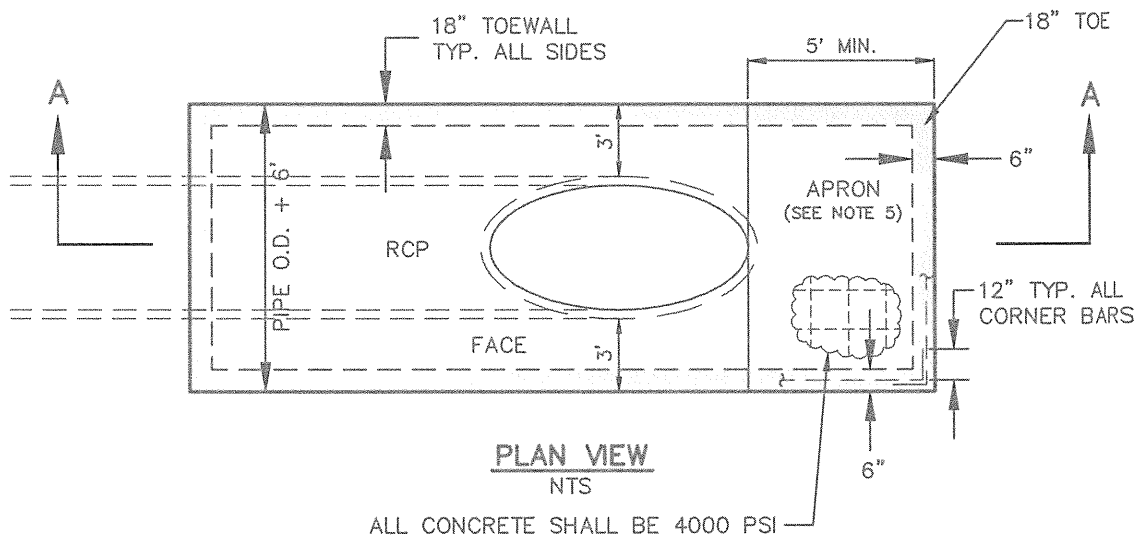
ejco.com

STORM SEWER

BOLTED INLET COVER

STANDARD DRAWING NO.

STM-03A



**NOTES:**

1. ROCK RIPRAP PROVIDED BEYOND APRON SHALL BE AS SPECIFIED IN PLANS BY DESIGN ENGINEER.
2. POSITIVE DRAINAGE MUST BE PROVIDED BEYOND CONCRETE APRON.
3. HEADWALL SLOPE SHALL BE SPECIFIED IN PLANS BY DESIGN ENGINEER (MAX. 3:1)
4. CONCRETE SHALL BE 4000 PSI.
5. CONCRETE APRON OR APPROVED EQUAL.

STORMWATER HEADWALL

TYPE "C"

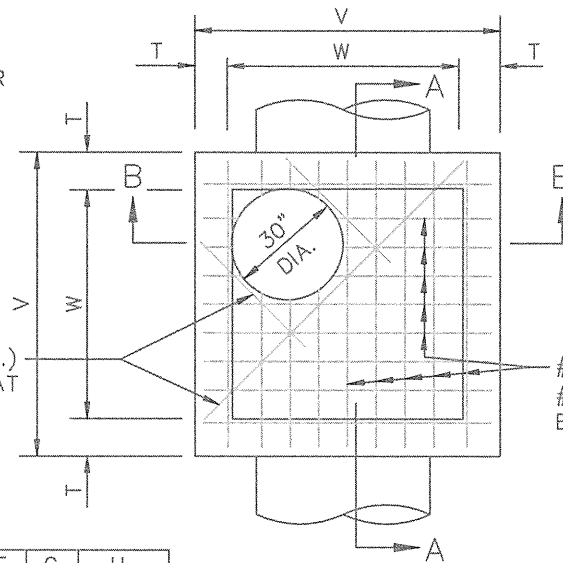
STANDARD DRAWING NO.

STM-04

**NOTE:**

PROVIDE AN ALUMINUM LADDER  
FOR JUNCTION STRUCTURES  
DEEPER THAN 7'

3-#4 BARS (4' & 5'M.H.)  
OR #5 BARS (6' M.H.) AT  
OPENING AS SHOWN.



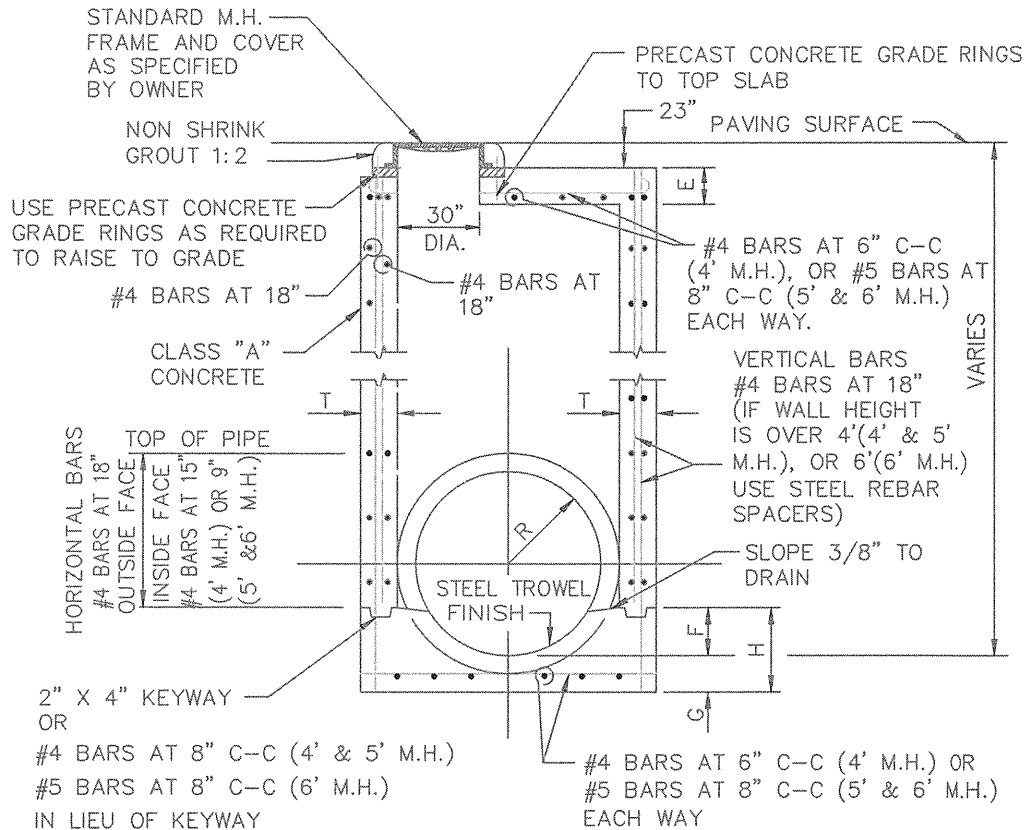
#4 BARS AT 6" C-C (4' M.H.) OR  
#5 BARS AT 8" C-C (5" & 6" M.H.)  
EACH WAY. HOOK EACH END

M.H. SIZE(W)	V	T	E	F	G	H
4'	5'-4"	8"	6"	9"	6"	1'-3"
5'	6'-4"	8"	6"	12"	8"	1'-8"
6'	7'-6"	9"	9"	16"	10"	2'-2"

**PLAN**  
N.T.S.

**TABLE OF DIMENSIONS**

N.T.S.



**SECTION B-B**

N.T.S.

**JUNCTION BOX**

4', 5', OR 6' SQUARE (1 OF 2)

STANDARD DRAWING NO.

**STM-05**

#4 BARS AT 6" C-C (4' M.H.), OR  
#5 BARS AT 8" C-C (5' & 6' M.H.)  
EACH WAY HOOKED  
EACH END

#4 BARS  
AT 18"  
OUTSIDE FACE

#4 BARS  
AT 18" INSIDE FACE

#4 BARS  
AT 18"  
OUTSIDE FACE

#4 BARS AT 15"  
(4' M.H.) OR 9" (5'  
& 6' M.H.) INSIDE FACE.

#4 DOWELS AT 18"  
ALL AROUND EXCEPT  
IN WAY OF PIPE

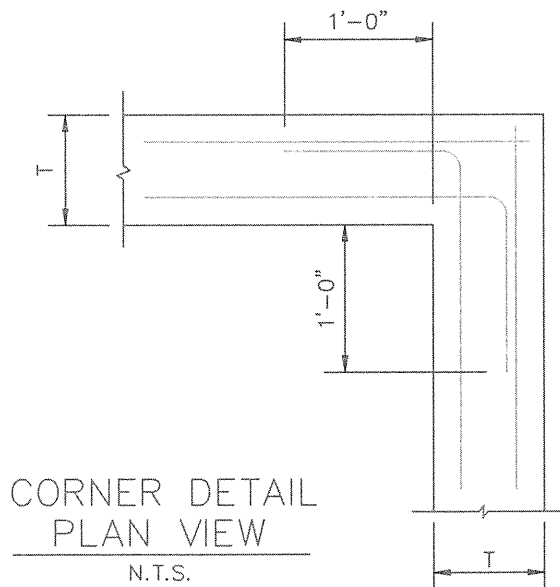
#4 BARS AT 6" C-C  
(4' M.H.), OR #5 BARS AT  
8" C-C (5' & 6' M.H.)  
EACH WAY

G

5" MIN.

### SECTION A-A

N.T.S.



#### NOTES:

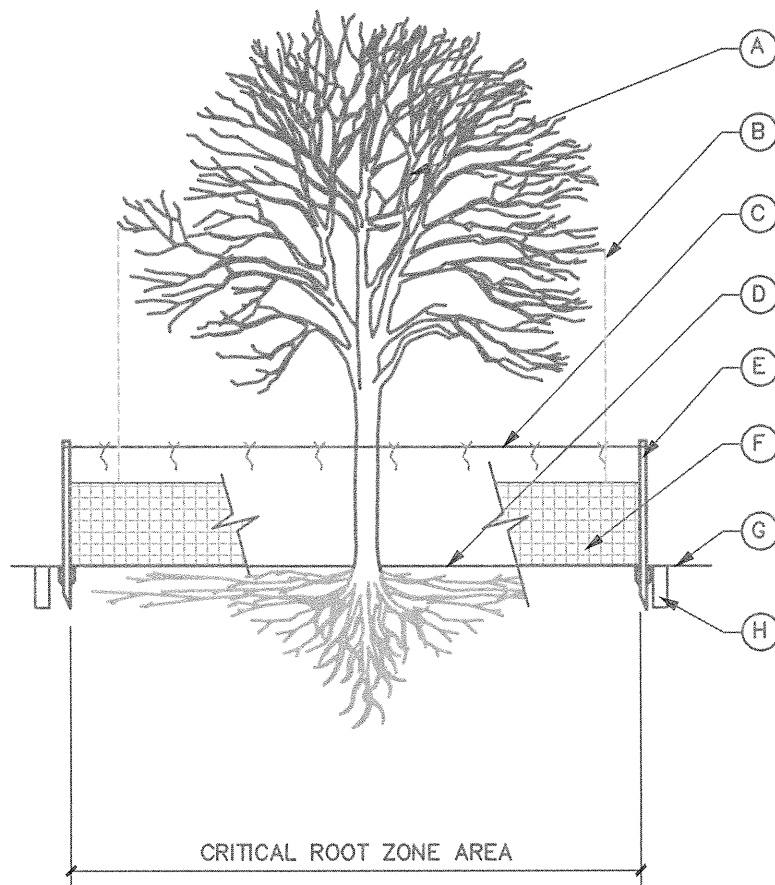
1. SLOPE INVERT OF MANHOLE AS INDICATED ON PLAN-PROFILE SHEET.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. CONCRETE SHALL BE CLASS "A".

JUNCTION BOX

4', 5', OR 6' SQUARE (2 OF 2)

STANDARD DRAWING NO.

STM-05A



# LEGEND:

- (A) EXISTING TREE(S) TO REMAIN
- (B) DRIP LINE OF EXISTING TREE (TYP.)
- (C) CONTINUOUS NYLON TIE STRING TIED TO STAKE TOPS W/ 2' TUNDRA WEIGHT ORANGE STREAMERS AT 3' O.C.
- (D) EXISTING GRADE TO REMAIN
- (E) 2"x2"x8' STEEL POST T-STAKES, 8' O.C. MIN., DRIVEN 2' INTO GROUND AT (OR OUTSIDE) TREE DRIP LINE
- (F) 4' MIN HEIGHT ORANGE PLASTIC FENCING INSTALLED PER CITY-APPROVED MANUFACTURER'S SPECIFICATIONS
- (G) EXISTING GRADE TO BE DISTURBED
- (H) ROOT PRUNING TRENCH 12" OUTSIDE FENCE

## NOTES:

1. PERFORM ROOT PRUNING ON ALL EXISTING TREES TO REMAIN WHERE CONSTRUCTION ACTIVITY FALLS WITHIN DRIP LINE OF EXISTING TREES.
2. NO GRADING, PARKING, STORAGE OR ANY OTHER CONSTRUCTION ACTIVITY WITHIN FENCED AREA.
3. REFER TO TECHNICAL SPECIFICATION 329600.
4. TREE PRUNING BY CERTIFIED TREE TRIMMER OR ARBORIST.

TREE PROTECTION

PLAN DETAIL

STANDARD DRAWING NO.

L-01

Section 9. GENERAL CONSTRUCTION NOTES

(See following page)





## Section 10. APPROVED MATERIALS LIST

(See following page)

## WATER

Overview Category	Basic Product Category	Use Specifications	Manufacturer	Model, Type, or Approved Style
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### Service Connections

Angle Meter Valve	1"			
Angle Meter Valve	1"		Mueller	
Angle Meter Valve	1" to 2"			
Angle Meter Valve	1" to 2"		Mueller	
Corporation Stop	1" to 1 1/2"			
Corporation Stop	1" to 1 1/2"		Mueller	
Curb Stop	1" to 2"			
Curb Stop	1" to 2"		Mueller	
Service Saddle	1" to 1.5"			Bronze Double Strap
Service Saddle	1" to 1.5"		Mueller	Bronze Double Strap
Service Saddle	1" to 1.5"		A.Y. McDonald	Bronze Double Strap
Service Line	1" to 2"		Various Manufacturers	Poly Tubing
Casing for Service Lines	2" to 4" Schudel 40 or SDR 21		Various Manufacturers	PVC Piping for service lines
Inserts	1" to 2"		Various Manufacturers	Insert stiffeners for poly tubing
Water Meters	1" to 2"		Master Meter	Harmony AMI 4G
Water Meters	Larger than 2"		Master Meter	Octave AMI 4G
Meter Box and Lid	Up to 1"		DFW Plastics	37A
Meter Box and Lid	1 1/2" to 2"		DFW Plastics	65A
Meter Box and Lid	Larger than 2" meters will require vault			

### Distribution System

Tapping Sleeve	2" and larger		Smith-Blair	Stainless Steel
Tapping Sleeve	2" and larger		Mueller	Stainless Steel
Tapping Sleeve	2" and larger		U.S. Pipe	Stainless Steel
Valve, Resilient Wedge Gate	2" and larger		Clow	Resilient Wedge Gate Valve
Valve, Resilient Wedge Gate	2" and larger		Mueller	Resilient Wedge Gate Valve
Valve, Resilient Wedge Gate	2" and larger		American Flow Control	Resilient Wedge Gate Valve
Valve, Resilient Wedge Gate	2" and larger		East Jordan EJ Valve	Resilient Wedge Gate Valve
Valve, Resilient Wedge Gate	2" and larger		M&H Valve	Resilient Wedge Gate Valve
Valve, Butterfly	16" and larger		Clow	Butterfly Valve
Valve, Butterfly	16" and larger		Mueller	Butterfly Valve
Valve, Butterfly	16" and larger		M&H Valve	Butterfly Valve
Valve, Butterfly	16" and larger		American Flow Control	Butterfly Valve
Valve, Butterfly	16" and larger		ValMatic	Butterfly Valve
Valve, Butterfly	16" and larger		Pratt	Butterfly Valve
Valve, Butterfly	16" and larger		DeZurik	Butterfly Valve
Valve, Check	2" and larger		ValMatic	Check Valve
Valve, Air/Vacuum	2" and larger		Vent-O-Mat	RBX Series
Valve, Air/Vacuum	2" and larger		A.R.I.	D-060
Valve, Flap	Blow-Off Valve		Waterman	
Valve Box & Lid			East Jordan	Adjustable
Valve Box & Lid			Tyler Union	Adjustable
Valve Box & Lid			Bass & Hays	Adjustable
Fire Hydrants			East Jordan	WaterMaster 5CD250
Flush Hydrant			The Kupferle Foundry	Mainguard #77
Fire Hydrant Reflector	Blue Reflector		Centerline Supply	3M Raised
Fire Hydrant Reflector	Blue Reflector		Econosigns	3M Raised
Fire Hydrant	Integral Quick Connect		Mueller	Integral Storz Connection
Automatic Flush Valve			Kupferle	Eclipse 9400
Casing Spacers			Raci	
Casing Spacers			Power Seal	
Casing Spacers			Pipeline Seal and Insulator	
End Seal	Casing Pipe, Bore		LinkSeal	
Coupling, Adapter			Ford	
Coupling, Adapter			Power Seal	
Coupling, Adapter			Hymax	
Coupling, Adapter			JCM	
Coupling, Adapter			Romac	
Coupling, Adapter			Smith-Blair	
Ductile Iron Fittings	Domestic		Tyler Union	AWWA C110/C153
Ductile Iron Fittings	Domestic		Star	AWWA C110/C153
Mechanical Restraints			EBAA	Megalug
Water Meter Vault			Park	Precast Concrete
Fire line valve box			Park	Precast Concrete
Pipeline Marker	Blue		Rhino	Triview 400 66"

### Other

Bolts			Stainless Steel
Paint		Tnemec	
Paint		Sherwin Williams	
Polywrap	All DI Pipe and Fittings		

## WASTEWATER

### Overview Category

### Basic Product Category

### Use Specifications

### Manufacturer

### Model, Type, or Approved Style

### Collection System

Cleanout Castings & Lids		Bass & Hays	
Cleanout Castings & Lids		East Jordan	
Cleanout Castings & Lids		Tyler Union	
Corrosion Protection	Concrete Admixture	ConShield Technologies	
Polymer Concrete Manhole		Armorock	
Chimney Seal		Strike Products	
Chimney Seal		CreTex	
Rain Pans		CreTex	
Manholes	Precast Manhole	Forterra	
Manholes	Precast Manhole	Old Castle	
Manhole Frame and Cover	Standard	EJ	NPR19-002876011628
Manhole Frame and Cover	Bolted	EJ	NPR19-002876-11629
Manholes	Pipe Connectors	A-Lok	
Manholes	Pipe Connectors	Kor-N-Seal	
Manholes	Pipe Connectors	Fernco	
Manholes	Pipe Connectors	PSX	
Manholes	I&I Barrier	Strike Products	
End Seal	Casing Pipe, Bore	LinkSeal	
Combination Air Valves	Force Main ARV's	Vent-O-Mat	Series RGX, Stainless Steel
Combination Air Valves	Force Main ARV's	ARI	Stainless Steel
Valve, Plug	2" and larger	Pratt	Plug Valve Internal coating to be lined with Tnemec Series 431 Permashield PL applied at a thickness of 40 mils DFT
Valve, Plug	2" and larger	Dezurik	Plug Valve Internal coating to be lined with Tnemec Series 431 Permashield PL applied at a thickness of 40 mils DFT
Pipeline Marker	Green Sewer Main Marker	Rhino	TriView 400
Service Taps		Fernco	

### Lift Station

Pump	Submersible Pump	Flygt	At least one Cutter Pump in Lift Station
Pump	Submersible Pump	KSB	At least one Cutter Pump in Lift Station
Air-Powered Mixer	Grease Control	Medora / GridBee	GridBee AP500 Mixer
Pressure Transducer		Wika	
Pressure Transducer		KPSI	
Wet Well Piping			Stainless Steel
Guide Rails			Stainless Steel
Electromagnetic Meter	Force Main Flow Meter	Badger	
Electromagnetic Meter	Force Main Flow Meter	Endress Hauser	
Level Transmitter		Echo	Echo Plus 6R30

### Other

Bolts			Stainless Steel
Paint		Tnemec	
Paint		Sherwin Williams	
Ductile Iron Pipe & Fittings		Lined with Protecto 401	
Polywrap	All DI Pipe and Fittings		
Odor Control	Odor Control Vent Check Valve	Wager	Model 1850
Odor Control		Purafil	
Sump Pump		Hydromatic	

## STORM

Overview Category	Basic Product Category	Use Specifications	Manufacturer	Model, Type, or Approved Style
Curb inlet	Inlet filters		Forterra	Bio Clean
	Grate inlet filters		Forterra	Bio Clean
	Inlet access lid		East Jordan Ironworks	
	Inlet access lid		Bass & Hays Foundry	
Manholes	Manhole frame and cover	Standard	EJ	303461
	Manhole frame and cover	Bolted	EJ	00147987A01
Pipe	Concrete Pipe		Forterra	RCP
	Concrete Box		Forterra	RCB

## APPENDIX C - FORMS

1. Form "A" (to be used prior to the sale of any lot).

### **FORM—"A"** **VACATING DECLARATION**

STATE OF TEXAS    XX

COUNTY OF BLANCO    XX

VACATING DECLARATION FOR \_\_\_\_\_ SUBDIVISION PLAT.

Know all men by these presents that I (we) the undersigned, acknowledge that I am (we are) the proprietor (s) of the land embraced by the plat known as \_\_\_\_\_ (a copy of which is attached hereto) approved by the City of Johnson City Council on \_\_\_\_\_, and recorded in Volume \_\_\_\_\_, Page \_\_\_\_\_, Blanco County Deed and Plat Records.

In accordance with Section 212.013, Local Government Code and Ordinance \_\_\_\_\_, Section 4, Article II, the undersigned hereby declare such plat known as \_\_\_\_\_ to be vacated. It is the intent of the undersigned to nullify the force and effect of the recordation of the above referenced plat by filing this vacation instrument in the Blanco County Deed and Plat Records. It is understood by the undersigned that the filing of this instrument in the Blanco County Deed and Plat Records shall cause the Blanco County Clerk to write the word "Vacated" in plain, legible, letters across the plat so vacated.

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Owner's Duly Authorized Agent

STATE OF TEXAS    XX

COUNTY OF BLANCO    XX

BEFORE ME, the undersigned authority, a Notary Public for the State of Texas, on this day personally appeared \_\_\_\_\_, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL AND SEAL OF OFFICE, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public in and for the State of Texas  
My commission expires: \_\_\_\_\_

(There shall be a signature space for each proprietor; there shall be an acknowledgement for each signature; if there is more than one page, the pages shall be numbered page \_\_\_\_ of \_\_\_\_ (Vacating Declaration for \_\_\_\_\_ Subdivision Plat))

This Vacating Declaration for \_\_\_\_\_ Subdivision Plat has been submitted to and considered by the City Council of the City of Johnson City, Texas, and is hereby approved by such Council.

Dated this day \_\_\_\_\_ of \_\_\_\_\_, A.D., 20\_\_\_\_.

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
City Secretary

2. Form "B" (to be used after to the sale of any lot).

**FORM—"B"**  
**VACATING DECLARATION**

STATE OF TEXAS    XX

COUNTY OF BLANCO    XX

VACATING DECLARATION FOR \_\_\_\_\_ SUBDIVISION PLAT.

Know all men by these presents that I (we) the undersigned, acknowledge that I am (we are) the owners of the lots embraced by the plat known as \_\_\_\_\_ (a copy of which is attached hereto) approved by the City of Johnson City Council on \_\_\_\_\_, and recorded in Volume \_\_\_\_, Page \_\_\_\_\_, Blanco County Deed and Plat Records.

In accordance with Section 212.013, Local Government Code and Division II, Article II of the City of Johnson City Subdivision Regulations, the undersigned hereby declare such plat known as \_\_\_\_\_ to be vacated.

It is the intent of the undersigned to nullify the force and effect of the recordation of the above referenced plat by filing this vacation instrument in the Blanco County Deed and Plat Records. It is understood by the undersigned that the filing of this instrument in the Blanco County Deed and Plat Records shall cause the Blanco County Clerk to write the word "Vacated" in plain, legible, letters across the plat so vacated.

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
TITLE  
(Owner or Owner's duly authorized representative)  
LOT: \_\_\_\_\_

\_\_\_\_\_  
TITLE  
(Owner or Owner's duly authorized representative)  
LOT: \_\_\_\_\_

STATE OF TEXAS    XX

COUNTY OF BLANCO    XX

BEFORE ME, the undersigned authority, a Notary Public for the State of Texas, on this day personally appeared \_\_\_\_\_, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration therein expressed.



GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public in and for the State of Texas

My commission expires: \_\_\_\_\_

(There shall be a signature space for each lot owner; there shall be an acknowledgement for each signature; if there is more than one page, the pages shall be numbered page \_\_\_\_ of \_\_\_\_ (Vacating Declaration for \_\_\_\_\_ Subdivision Plat))

This Vacating Declaration for \_\_\_\_\_ Subdivision Plat has been submitted to and considered by the City Council of the City of Johnson City, Texas, and is hereby approved by such Council.

Dated this day \_\_\_\_\_ of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
City Secretary

3. Form "C"  
**FORM—"C"**

STATE OF TEXAS    XX

COUNTY OF BLANCO    XX

I, (we) the owner (s) of the land shown on this re-plat hereby certify that this re-plat does not alter, amend, or remove any covenants or restrictions.

\_\_\_\_\_  
Owner

\_\_\_\_\_  
Owner's Duly Authorized Agent

Sworn to and subscribed before me this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

SEAL

\_\_\_\_\_  
Notary Public in and for the State of Texas  
My commission expires: \_\_\_\_\_

4. Form "D"  
**FORM—"D"**

STATE OF TEXAS     XX

COUNTY OF BLANCO     XX

I, (we) the owner (s) of the land shown on this re-plat hereby certify that this re-plat does not alter, amend, or remove any covenants or restrictions; I (we) further certify that no portion of the proposed area to be re-platted was limited within the immediate preceding five (5) years by any interim or permanent zoning classification to residential use for not more than two residential units per lot; I (we) further certify that no lot covered by \_\_\_\_\_ plat, approved by the Johnson City Council on \_\_\_\_\_, was limited by deed restriction to residential use for not more than two residential units per lot.

\_\_\_\_\_  
Owner

\_\_\_\_\_  
Owner's Duly Authorized Agent

Sworn to and subscribed before me this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

SEAL

\_\_\_\_\_  
Notary Public in and for the State of Texas  
My commission expires: \_\_\_\_\_

5. Form "E"  
**FORM—"E"**

STATE OF TEXAS     XX

COUNTY OF BLANCO     XX

I, (we) the owner (s) of the land shown on this re-plat hereby certify that this re-plat does not alter, amend, or remove any covenants or restrictions. I, (we) further certify that all of the proposed area sought to be re-platted or re-subdivided was designated or reserved for usage by notation on the last legally recorded plat or I the legally recorded restrictions applicable to such plat.

\_\_\_\_\_  
Owner

\_\_\_\_\_  
Owner's Duly Authorized Agent

Sworn to and subscribed before me this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

SEAL

\_\_\_\_\_  
Notary Public in and for the State of Texas  
My commission expires: \_\_\_\_\_

**PERFORMANCE BOND FORM**

STATE OF TEXAS     XX

COUNTY OF BLANCO     XX

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_, the undersigned sub-divider, as Principal, and \_\_\_\_\_, as Surety, do hereby acknowledge ourselves to be held and firmly bound unto the City of Johnson City, a municipal corporation of the County of Blanco and State of Texas, in the full and just sum of \$\_\_\_\_\_, for the payment of which will and truly to be made, we hereby bind ourselves and our respective heirs, administrators, executors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has petitioned the City Council of the City of Johnson City for permission to develop a subdivision within the jurisdiction of the City of Johnson City more particularly described as follows to wit:

\_\_\_\_\_

which is shown on a subdivision plat, entitled \_\_\_\_\_ Subdivision, heretofore conditionally approved by the Chief Administrative Officer of the City of Johnson City on \_\_\_\_\_ 20\_\_\_\_; and

**WHEREAS**, under the provisions of the City of Johnson City Subdivision Regulations, the City Council of the City of Johnson City requires, as a condition precedent to the granting of such petition, that the Principal furnish a guarantee that he will construct, or cause to be constructed, according to the requirements of such subdivision ordinance, the following site improvements within two (2) years after final approval of the plat of said subdivision.

**NOW, THEREFORE**, the condition of this obligation is such that if the Principal shall, or on or before the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, construct, or cause to be constructed, the above mentioned improvements in accordance with the requirements of the City of Johnson City Subdivision Ordinance, and the amendments thereto, if any, then this obligation shall be void; otherwise, the obligation made under this bond will remain in full force and effect.

**IN TESTIMONY WHEREOF, WITNESS OUR HANDS AND SEAL**, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Subdivider and Principal

\_\_\_\_\_  
Surety by: \_\_\_\_\_

\_\_\_\_\_  
Attorney in Fact

**APPROVED AND ACCEPTED**, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Title: \_\_\_\_\_

**MAINTENANCE BOND**

STATE OF TEXAS     XX

COUNTY OF BLANCO     XX

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_, the undersigned sub-divider, as Principal, and \_\_\_\_\_, as Surety, do hereby acknowledge ourselves to be held and firmly bound unto the City of Johnson City, a municipal corporation of the County of Blanco and State of Texas, in the full and just sum of \$\_\_\_\_\_, (being 10% of the estimated cost of the hereinafter enumerated site improvements) for the payment of which will and truly to be made, we hereby bind ourselves and our respective heirs, administrators, executors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has petitioned the City Council of the City of Johnson City for permission to develop a subdivision within the jurisdiction of the City of Johnson City more particularly described as follows to wit:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

which is shown on a subdivision plat, entitled \_\_\_\_\_ Subdivision, heretofore conditionally approved by the Chief Administrative Officer of the City of Johnson City on \_\_\_\_\_, 20\_\_\_\_; and

**WHEREAS**, under the provisions of the City of Johnson City Subdivision Regulations, the City Council of the City of Johnson City require, as a condition precedent to the granting of such petition, that the Principal furnish a maintenance guarantee according to the requirements of such Subdivision Regulations, the listed site improvements will be maintained by and be the responsibility of said sub-divider until the date of final completion and acceptance by City of the required public and private improvements from and after the date of construction approval by the City Engineer:

**NOW, THEREFORE**, the condition of this obligation is such that if the Principal shall maintain, and cause to be maintained, the above mentioned improvements in accordance with the requirements of the City of Johnson City Subdivision Regulations, and the amendments thereto, if any, for the specified period of time after construction approval by the City's Engineer until the final approval and acceptance of said Engineer and the Chief Administrative Officer at which time this surety obligation shall be void; otherwise, the obligations made under this bond shall be irrevocable and remain in full force and effect in the manner prescribed by law.

**IN TESTIMONY WHEREOF, WITNESS OUR HANDS AND SEAL,** this the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Subdivider and Principal

Surety by: \_\_\_\_\_

Attorney in Fact

**APPROVED AND ACCEPTED,** this the \_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

\_\_\_\_\_  
Title: \_\_\_\_\_



## IRREVOCABLE LETTER OF CREDIT IN LIEU OF PERFORMANCE BOND

TO: CITY OF JOHNSON CITY

JOHNSON CITY, TEXAS

Gentlemen:

We have established this date a commitment to lend sums to our customer, \_\_\_\_\_ (Customer) to cover the entire cost of installing the subdivision improvements in \_\_\_\_\_ subdivision. Said funds as estimated by the City Engineer are to be in the amount of:

a.	\$ _____	for storm drainage improvements.
b.	\$ _____	for approved domestic and fire protection water improvements.
c.	\$ _____	for approved sanitary sewer improvements.
d.	\$ _____	for sidewalks.
e.	\$ _____	for street improvements and all other subdivision improvements.
f.	\$ _____	TOTAL

provided, however, that the sums Stated above shall be subject to reductions as follows:

1. At such time as each construction contract in a form approved by the City is entered into for the construction of the Facilities, or any part thereof, the commitment evidenced hereby shall be reduced by the amount by which the City's estimated costs for the work to be done under such contract exceeds 110%. of the contract price for the work to be done under such contract.

2. During construction, the commitment evidenced hereby shall be reduced periodically, upon receipt by the City, no more often than monthly, of certified Statements from us as to the amounts paid out for work done, by the amount of such payments; provided, however, that if the contract price under any construction contract for the construction of any part of the Facilities exceeds the City's estimated costs for the work to be done under such contract then no reduction shall be permitted until such time as 110%. of the remaining contract price for the work remaining to be done under such contract is less than the City's estimated costs for the work remaining to be done under such contract.

3. Regardless of anything contained herein to the contrary, the sum allocated for construction of these improvements shall not be reduced to less than twenty-five percent (25%) of the contract price until such time that:

(a) said facilities have been completed and approved by the City as being installed in accordance with plans and specifications, and

(b) a one (1) year warranty bond or substitute letter of credit has been filed with, and accepted by, the City in the amount of twenty-five percent (25%.) of actual contract price of the facilities.

4. At such time as all of the subdivision improvements in said Subdivision have been completed and accepted by the City for maintenance or either a warranty bond or substitute letter of credit

has been filed as required above, the commitment evidenced hereby shall automatically terminate, and this letter of credit shall forthwith be returned to the issuer.

This commitment is made with the understanding that the City can draw any part of the total amount Stated herein above, subject to the terms and conditions hereof, if necessary to provide for any or all of the facilities or maintenance thereof, and that any part or all of the total amount of this credit may be applied by the City to any one or more, separately or jointly, of the Facilities, or maintenance thereof.

We also understand and agree that the only requirement necessary for drawing any part or all of the total amount of this credit is receipt by us, at least ten (10) days in advance of the date on which funds are requested, of a letter request from the City of Johnson City, signed by the Mayor, stating that one or more of the following conditions exists:

(a) All of the following have occurred:

- 1) two years have elapsed since the date of the City's approval of the subdivision plat;
- 2) the Facilities have not been completed, the failure to complete such Facilities is not due to weather, acts of God, strikes, or other reasons beyond the Customer's control, and due diligence is not then being used in efforts to complete; and
- 3) we have not, after receipt of written notice to us of our Customer's default, assumed in writing the obligation to complete such Facilities to the extent of the remaining balance of the letter of credit, or, having assumed such obligation, have not, within sixty (60) days thereafter, commenced efforts to complete such Facilities as provided hereinafter.

or,

(b) All of the following have occurred: the City has given written notice, at least thirty (30) days prior to the expiration of this credit, to us and to our Customer, at our respective last-known mailing address, sent by certified mail, return receipt requested, that this credit is about to expire and that the Facilities have not been completed, and that the City intends to draw upon this credit and that the City considers such a drawing on this credit amount necessary in order to complete any part or all of the Facilities. No further substantiation of the necessity of the draw is required by this credit. At the option of the City, a substitute Letter of Credit, in this same form in an amount equal to the total sum Stated herein above, subject to any reductions, if any, which have been made hereunder, may be substituted at least fifteen (15) days prior to the expiration date of this credit;

In addition, if subparagraph (b) of paragraph 3 has not been complied with, the only requirement necessary for drawing any part or all of the total amount of the twenty-five percent (25%) retainage is receipt by us, at least ten (10) days in advance of the date on which funds are requested, of a letter request from the City of Johnson City signed by the Mayor, stating that the following condition exists:

(a) the Facilities or portions thereof have failed within one (1) year of acceptance by the City for maintenance, due to a defect in materials or workmanship as determined by the City.

Notwithstanding anything herein to the contrary, before requesting a draw of any part or all of this credit because of default by the customer, the City shall be required to give written notice to us of such default and sixty (60) days to assume the obligations of our Customer for completion or maintenance of the Facilities, to the extent of the remaining balance of this credit, and if we assume such obligations, to the extent of the remaining balance of this credit, in writing within sixty (60) days after receipt of such notice, then the City shall not be allowed to request a draw on this credit, unless we fail to commence within sixty (60) days thereafter efforts to complete or maintain the Facilities and to complete this work within a reasonable period of time thereafter but not to exceed six (6) months unless an emergency is declared by the City. Request for the draw of funds under this credit must be received prior to the expiration of two (2) years following the date of this credit, except that in the event subparagraph (b) of paragraph 3 have not been complied with, then this commitment shall remain open as to the twenty-five percent (25%) retainage of each Facility until one year has elapsed from the final acceptance of the Facilities by the City for maintenance.

This letter of credit shall be subject to and construed in accordance with the laws of the State of Texas and particularly the Texas Business and Commerce Act.

We further state that this credit is irrevocable prior to the expiration date unless all parties, including for all purposes the City of Johnson City, consent to such revocation in writing. We further agree to provide written notification at least ninety (90) days prior to the expiration of this credit, to the City of Johnson City, sent by certified mail, return receipt requested, that his credit is about to expire.

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Lender's Name

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Authorized Officer's Signature

Attested By:

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## TRUST AGREEMENT IN LIEU OF PERFORMANCE BOND

This agreement is between \_\_\_\_\_, subdivider, \_\_\_\_\_, trustee, and the City of Johnson City, Texas.

Subdivider has deposited (or herewith deposits) subject to the \_\_\_\_\_ (name and location of the bank, trust company or qualified escrow agent), Texas, the sum of \$\_\_\_\_\_ for the purpose of constructing site improvements in \_\_\_\_\_ subdivision in Blanco County, Texas for the benefit of the public represented by the City of Johnson City, more particularly described as follows:

(TYPE OF SITE IMPROVEMENT)

(water, gas, and electric lines not included)

	Estimated Cost
Streets	\$ _____
Sidewalks	_____
Alleys	_____
Storm Drainage	_____
Utility Easements	_____
Other (Specify)	_____
TOTAL:	\$ _____

Trustee agrees to authorize expenditures from such trust account, execute checks, drafts and other orders of withdrawal only for the purpose of paying for the cost of constructing such site improvements and such orders shall show thereon the purpose of the withdrawals. The expenditures for each type of site improvements within five (5) days of their authorization.

Subdivider shall, within five (5) days after any single withdrawal of \$1,000.00 or more, or a combination of withdrawals of \$1,000.00 or more has been made, furnish an affidavit showing that the sums of money so withdrawn were expended by subdivider on prescribed site improvements completion and estimating the date of site-improvements completion. Said affidavit shall be submitted substantially in the following form:

### AFFIDAVIT

STATE OF TEXAS     XX

COUNTY OF BLANCO     XX

Before me, the undersigned authority in and for the State and County aforesaid, on this day personally appeared \_\_\_\_\_ who, being by me first duly sworn, upon his oath deposed and says:

"I, \_\_\_\_\_ subdivider of the \_\_\_\_\_ subdivision under date(s) of \_\_\_\_\_ 20\_\_\_\_ withdrew the sum(s) of \$ \_\_\_\_\_ from the trust account heretofore deposited with \_\_\_\_\_, trustee, and created for such use and purpose, and expended said funds so withdrawn on prescribed site improvements to said \_\_\_\_\_ subdivision as follows:

Site Improvement	Amount	Percentage of Completion
_____	_____	_____
_____	_____	_____
_____	_____	_____

With the expenditure of these funds, it is estimated that the prescribed site improvements will be completed by \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Subdivider

SWORN TO AND SUBSCRIBED BEFORE ME this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public in and for the State of Texas

Until this affidavit is accomplished, no further withdrawals shall be made from said trust account. The trustee shall be authorized to release further funds to the subdivider only after receipt of written notification therefor from the designated City Official so to do.

Subdivider agrees to construct all site improvements within two (2) years from the date of final approval of the plat of said subdivision. Upon the failure of the subdivider to provide such site improvements in such subdivision. A resolution of the City Council of the City of Johnson City declaring that such site improvements have not been completed as required by applicable subdivision regulations shall be final and conclusive on the parties to this agreement. Payment to the City shall be made on the order of the trustee without the necessity of joinder by the subdivider.

A certificate that the sum required herein is on deposit in the above-named bank, trust company or qualified escrow agent, subject to withdrawal only as provided herein, signed by and authorized official thereof, is attached hereto.

A copy of this contract has been supplied to the bank, trust company or qualified escrow agent named by the undersigned trustee.

\_\_\_\_\_  
Subdivider

\_\_\_\_\_  
Trustee

Date of Execution: \_\_\_\_\_

---

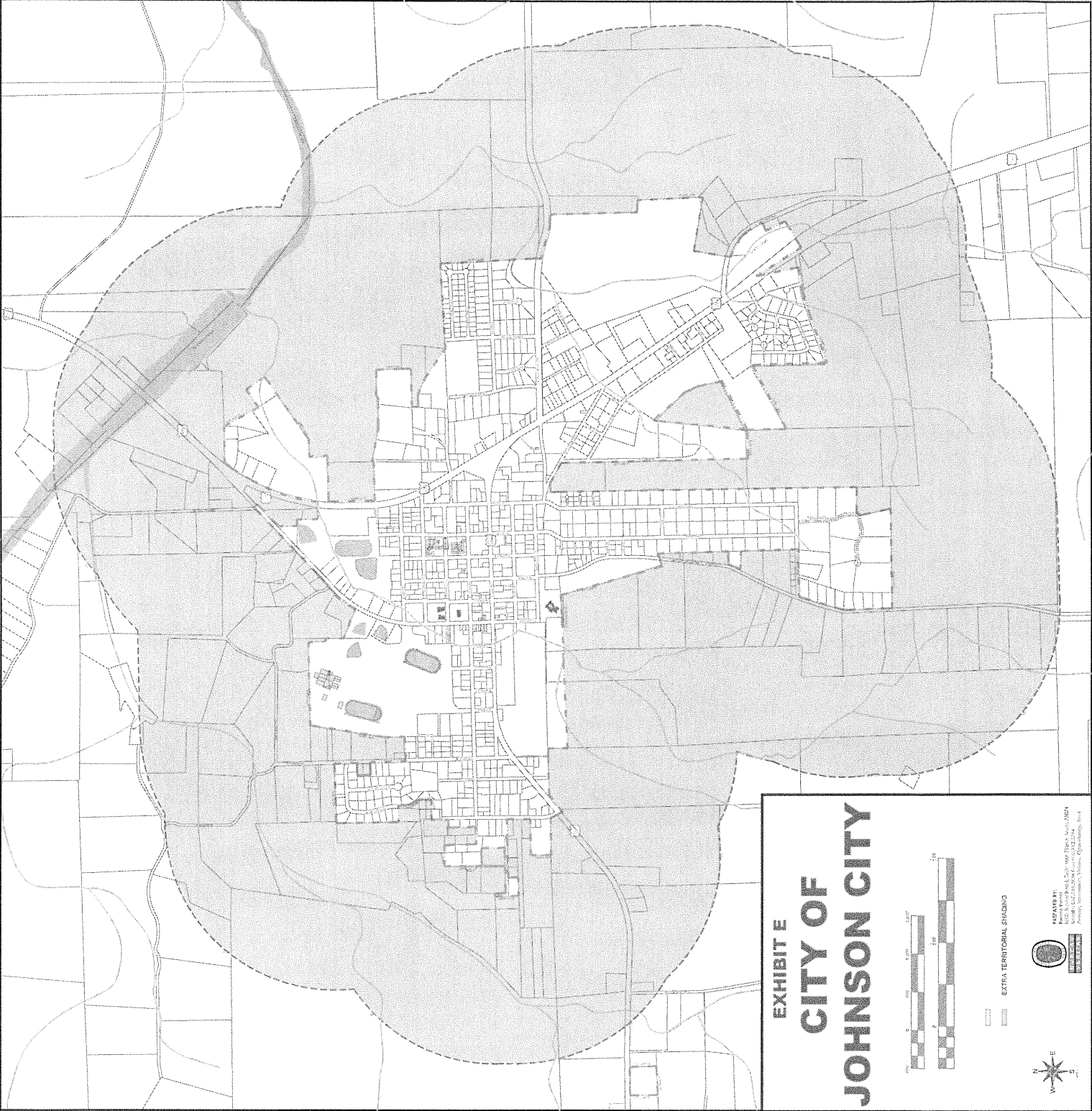
Title: \_\_\_\_\_

Date of Execution: \_\_\_\_\_

## **APPENDIX D - MAJOR THOROUGHFARE PLAN**

## APPENDIX E – TERRITORY MAP





**EXHIBIT E**  
**CITY OF**  
**JOHNSON CITY**



EXTRA TERRITORIAL SHADING



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