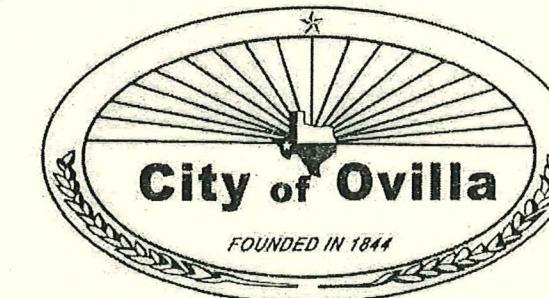


# CITY OF OVILLA, TEXAS

## STANDARD CONSTRUCTION DETAILS



### PUBLIC WORKS

SEPTEMBER 2016

APPROVED FOR USE

DENNIS BURN, P.E.  
CITY MANAGER

*D. Burn* 9.12.2016  
DATE

*ADOPTED BY ORD. NO. 2016-18*

DESCRIPTION	SHEET NO.	DESCRIPTION	SHEET NO.	DESCRIPTION	SHEET NO.
COVER	SD-0	CHANNELS - CONCRETE	SD-13	TEMP. STONE CONSTRUCTION ENTRANCE-EXIT	SD-26
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## PAVING NOTES

1. CONCRETE FOR ALL STREETS, ALLEYS AND PARKING LOTS SHALL BE IN ACCORDANCE WITH NCTCOG CLASS "C" CONCRETE (3,600 P.S.I. COMPRESSIVE STRENGTH @ 28 DAYS). ALL CONCRETE FOR PAVING SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 303.3.3. CONCRETE CYLINDERS FOR TESTING SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 303.8.3
2. REINFORCING STEEL SHALL BE DEFORMED BARS NO. 3 ON 18-INCH CENTERS OR NO. 4 DEFORMED BARS ON 24-INCH CENTERS. REINFORCING SHALL BE IN BOTH DIRECTIONS ON CENTER. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM 615, 616 AND 617.
3. ALL REINFORCING STEEL SHALL BE TIED (100%). REINFORCING STEEL SHALL BE SET ON PLASTIC CHAIRS. BAR LAPS BE MINIMUM 30 DIAMETERS.
4. EXPANSION JOINTS SHALL BE SPACED EVERY 200 FEET AND AT ALL INTERSECTIONS. ALLEYS SHALL HAVE A MINIMUM OF TWO EXPANSION JOINTS.
5. SAWED TRANSVERSE DUMMY JOINTS SHALL BE SPACED EVERY 20 FEET ON PAVING 8 INCHES OR THICKER AND EVERY 15 FEET FOR PAVING THICKNESS LESS THAN 8 INCHES. SAWING SHALL OCCUR WITHIN 5 TO 12 HOURS AFTER THE POUR INCLUDING SEALING. OTHERWISE, THE SECTION SHALL BE REMOVED AND LONGITUDINAL BUTT JOINTS CONSTRUCTED.
6. SUBGRADE UNDER PAVEMENTS SHALL BE A MINIMUM OF 6 INCHES OF LIME TREATED SUBGRADE. ONLY HYDRATED LIME SHALL BE UTILIZED. OPTIMUM LIME SHALL BE APPLIED. OPTIMUM LIME CONTENT SHALL BE DETERMINED DURING THE EXCAVATION BY THE USE OF A LIME SERIES TEST. LIME SERIES TEST SHALL BE TAKEN ALONG THE EXCAVATION AT ALL CHANGES IN SOIL AND A MINIMUM OF 300 FEET LIME SERIES SHALL BE COMPLETED BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY.
7. LIME TREATED SUBGRADE SHALL BE COMPAKTED TO A DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D-698. MOISTURE CONTENT SHALL BE WITHIN +4 OF OPTIMUM. DENSITY TEST RESULTS SHALL BE COMPLETED BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY. ALL RESULTS SHALL BE PROVIDED TO THE CITY. IF SUBGRADE IS IN LIMESTONE, FINAL CUT TO GRADE IN LIMESTONE SHALL BE KEPT MOIST AND CONCRETE PLACED WITHIN 48 HOURS OF REACHING FINAL GRADE. LIMESTONE SHALL BE SPRINKLED PRIOR TO PLACING CONCRETE. EXPOSED LIMESTONE AT FINAL GRADE SHALL BE COVERED TO ELIMINATE MOISTURE LOSS.
8. LIME TRIMMINGS ARE NOT ACCEPTABLE FOR ANY USE.
9. ALL FILL SHALL BE COMPAKTED BY MECHANICAL METHODS. MAXIMUM LOOSE LIFT FOR COMPAKTION SHALL BE 8 INCHES. ALL LIFTS SHALL BE TESTED FOR DENSITY BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY. DENSITY REQUIREMENT SHALL BE AS SHOWN ON THE PLANS FOR THE TYPE OF MATERIAL CALLED FOR IN THE PLANS.
10. ALL DISTURBED AREAS OF ROADWAY WORK SHALL HAVE GRASS ESTABLISHED IMMEDIATELY. GRASS SHALL MEET THE REQUIREMENTS ESTABLISHED. NCTCOG. ITEM 202.
11. ALL AREAS TO BE EXCAVATED OR FILLED SHALL HAVE EROSION CONTROL PLACED PRIOR TO COMMENCING EARTHWORK. EROSION CONTROL DEVICES SHALL BE MAINTAINED THROUGHOUT THE PROJECT IN ACCORDANCE WITH NCTCOG ITEM 201.
12. ALL SIDEWALKS SHALL INCLUDE BARRIER FREE RAMPS AT INTERSECTING STREETS, ALLEYS, DRIVEWAYS, ETC. BARRIER FREE RAMPS SHALL MEET CURRENT ADA REQUIREMENTS AND BE APPROVED BY THE TEXAS LICENSING BOARD (TDLR).
13. SIDEWALKS SHALL BE DOWELED INTO PAVEMENT WHERE IT ABUTS DRIVEWAYS. EXPANSION JOINT MATERIAL SHALL BE USED AT THESE LOCATIONS.
14. NO VEHICLES SHALL BE PERMITTED ON CONCRETE PAVEMENT WITHOUT APPROVAL FROM THE CITY. THE CITY WILL MAKE DETERMINATION BASED ON CONCRETE BREAK REPORT.
15. DRIVEWAYS AND STREET INTERSECTION SHALL PROVIDE A WALK FOUR FEET IN WIDTH WITH A MINIMUM CROSS FALL SLOPE OF TWO PERCENT.

## LINED CHANNELS

1. CONSTRUCTION JOINT SHOWN IN DETAILS FOR CONVENIENCE ONLY, MONOLITHIC CONSTRUCTION MAY BE USED.
2. ALL VISIBLE SURFACES SHALL BE A TROWEL FINISH.
3. ALL REINFORCING STEEL SHALL BE NO. 3 DEFORMED BARS SPACED 12" CENTER TO CENTER BOTH WAYS UNLESS OTHERWISE SPECIFIED.
4. IF WOOD FORMS ARE USED WITH CONSTRUCTION JOINT, THEY SHALL BE TWO, 2"x4", AND SHALL NOT BE REMOVED UNTIL CONCRETE ON SLOPES IS READY TO BE PLACED.
5. ALL CONCRETE IN LINED CHANNEL SHALL BE NCTCOG CLASS "A" (MINIMUM 3,000 P.S.I.) CONCRETE. NCTCOG ITEM 700.
6. FLAT BOTTOM TO BE CONSTRUCTED WHEN CHANNEL WIDTH IS LESS THAN 12 FEET.
7.  $\frac{1}{4}$ " CHAMFER ON ALL CONCRETE CORNERS.

## STORM SEWER

1. THE FLOOR OF THE EXCAVATION FOR INLET BOX MUST PROVIDE A FIRM, LEVEL BED FOR THE BASE SECTION TO REST UPON 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.
2. AFTER PIPE HAS BEEN LAID ON PROPER BEDDING, BACKFILLING TO COMMENCE WITH 8" MAXIMUM LOOSE LIFTS MECHANICALLY COMPAKTED TO 95% STANDARD PROCTOR UNDER ROADWAY, 90% OUTSIDE PAVEMENT. MAXIMUM SIZE ROCK IN BACKFILL SHALL NOT EXCEED 4 INCHES IN DIAMETER.
3. PRECAST INLETS MUST BE APPROVED BY THE CITY.
4. LOCKING DEVICE IS REQUIRED ON ALL STORM SEWER LIDS.
5. CONCRETE CAST-IN-PLACE INLETS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,200 P.S.I. @ 28 DAYS. NCTCOG CLASS F CONCRETE. STRUCTURAL CONCRETE SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 702.
6. EXISTING STORM SEWER PIPE AND / OR LATERALS SHALL BE LOCATED PRIOR TO SETTING OF CONSTRUCTING INLET BOXES. IF ADJUSTMENT IN GRADE OF LATERAL IS REQUIRED, A REVISED DESIGN BY THE ENGINEER OF RECORD SHALL BE SUBMITTED TO THE CITY FOR APPROVAL.
7. REINFORCED CONCRETE PIPE SHALL BE CLASS III MINIMUM.
8. ALL STORM SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE NCTCOG ITEM 508.
9. STANDARD EMBEDMENT SHALL BE AS SHOWN IN THE PLANS FOR THE SELECTED PIPE SHOWN IN THE PLANS. BACKFILL WITHIN THE LIMITS OF EXISTING AND PROPOSED PAVEMENT SHALL BE COMPAKTED TO 95% STANDARD PROCTOR OUTSIDE PAVEMENT (EXISTING OR PROPOSED) SHALL BE COMPAKTED TO MINIMUM OF 90% STANDARD PROCTOR. ALL COMPAKTION SHALL BE BY MECHANICAL METHODS. MOISTURE CONTENT SHALL BE AT OPTIMUM +4 POINTS.

## SANITARY SEWER

1. ALL SEWER LINES CROSSING POTABLE WATERLINES SHALL BE AS SHOWN IN THE PLANS AND MEET TCEQ REQUIREMENTS.
2. PIPES 6 INCHES THROUGH 15 INCHES SHALL BE IN ACCORDANCE WITH ASTM D3034 WITH A MINIMUM SDR OF 26 OR ASTM D3350 AND DE-345434-C.
3. PIPES LARGER THAN 12 INCHES THROUGH 48 INCHES SHALL BE IN ACCORDANCE WITH ASTM STANDARDS F679, F794, F949 AND D3350 / DE-345434-C.
4. MANHOLES SHALL BE CAST-IN-PLACE OR PRECAST. ALL MANHOLES SHALL BE WATER TIGHT. ALL RING AND COVERS SHALL INCLUDE AN INTERNAL CHIMNEY SEAL AND BE 30 INCHES IN DIAMETER.
5. ALL PIPE OPENINGS IN MANHOLES SHALL INCLUDE COUPLINGS WITH "0" RING RUBBER GASKETS.
6. STUBOUTS OUT OF MANHOLES SHALL BE FITTED WITH A STOPPER AND CAP. STUBOUTS SHALL BE A MINIMUM OF 5 FEET FROM MANHOLE AND BE SUPPORTED BY A CONCRETE CRADLE.
7. MANHOLES SHALL BE VENTED IN ACCORDANCE WITH TCEQ REQUIREMENTS.
8. SEWER LINES SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH NCTCOG ITEM 507. TESTING SHALL INCLUDE PRESSURE TESTING, MANDREL TEST AND COLOR TV INSPECTION. COLOR TV INSPECTION SHALL BE COMPLETED IN PRESENCE OF CITY REPRESENTATIVE AND THE ORIGINAL MEDIA SHALL BE GIVEN TO THE CITY AT THE COMPLETION OF THE INSPECTION.
9. MANHOLES SHALL BE VACUUM TESTED IN THE PRESENCE OF THE CITY REPRESENTATIVE. IN ACCORDANCE WITH NCTCOG ITEM 502.1.5
10. ONLY CAST IN PLACE CONCRETE AND PRE CAST CONCRETE MANHOLES ARE ALLOWED.
11. STANDARD EMBEDMENT SHALL BE AS SHOWN IN THE PLANS FOR THE SELECTED PIPE SHOWN IN THE PLANS. BACKFILL WITHIN THE LIMITS OF EXISTING AND PROPOSED PAVEMENT SHALL BE COMPAKTED TO 95% STANDARD PROCTOR OUTSIDE PAVEMENT (EXISTING OR PROPOSED) SHALL BE COMPAKTED TO MINIMUM OF 90% STANDARD PROCTOR. ALL COMPAKTION SHALL BE BY MECHANICAL METHODS. MOISTURE CONTENT SHALL BE AT OPTIMUM +4 POINTS.
12. ALL DROP MANHOLES AND MANHOLES GREATER THAN 6 FOOT IN DIAMETER SHALL BE LINED WITH RAVEN COAT OR APPROVED EQUAL.

## DETAILS

SPECIAL DETAILS OR MODIFICATIONS TO THESE STANDARD DETAILS TO BE UTILIZED ON ANY GIVEN PROJECT SHALL BE SUBMITTED TO THE CITY FOR APPROVAL FOR USE.

## COMPACTION

ALL COMPAKTION SHALL BE BY MECHANICAL METHODS. MATERIAL SHALL BE MECHANICALLY COMPAKTED IN 8 IN. LOOSE LIFTS TO 95% STD PROCTOR UNDER PAVEMENT AND 90% STD PROCTOR ELSEWHERE. MOISTURE IN CLAY SHALL BE OPTIMUM MOISTURE PLUS 4 POINTS OR GREATER. IN LIMESTONE THE MOISTURE SHALL BE AT OPTIMUM MOISTURE OR HIGHER.

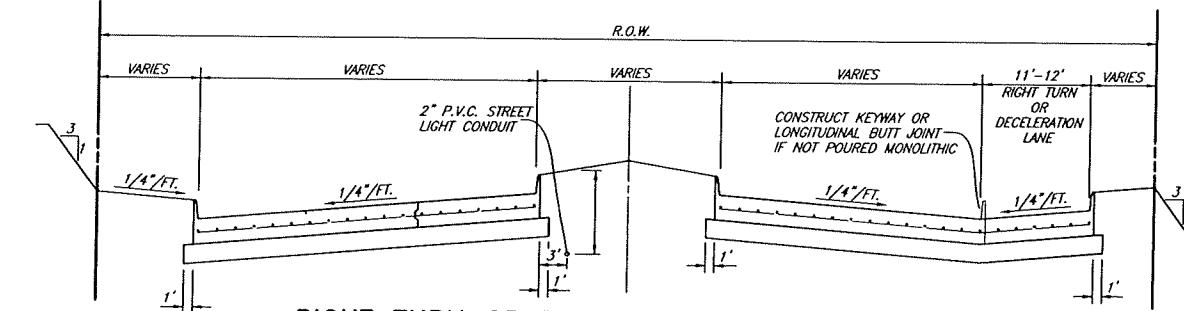
## WATER

1. ALL WATER LINE CROSSINGS OF SANITARY SEWER LINES SHALL BE AS SHOWN IN THE PLANS AND MEET TECQ REQUIREMENTS. (CHAPTER 217 AND CHAPTER 290)
2. PIPES 12 INCHES IN DIAMETER AND SMALLER SHALL BE POLYVINYL CHLORIDE (P.V.C.) MEETING THE REQUIREMENTS OF AWWA C900 DR-18 OR DUCTILE IRON PIPE (D.I.P.) MEETING THE REQUIREMENTS OF AWWA C151 CLASS 50 PIPE. ALL D.I.P. SHALL BE WRAPPED WITH A POLYETHYLENE LINER.
3. FOR PIPES LARGER THAN 12 INCHES IN DIAMETER, THE PIPE SHALL BE REINFORCED CONCRETE CYLINDER PIPE (AWWA C301 OR AWWA C303), DUCTILE IRON PIPE (AWWA C151 CLASS 50) OR POLYVINYL CHLORIDE PIPE UP TO 18 INCHES MEETING THE REQUIREMENTS OF AWWA C905 DR18-235 P.S.I. RATED PIPE.
4. ALL VALVES ON PIPES 12 INCHES AND SMALLER SHALL BE RESILIENT SEATED WEDGE GATE VALVES (AWWA C509).
5. ALL VALVES ON PIPES LARGER THAN 12 INCHES BUT SMALLER THAN 30 INCHES SHALL BE BUTTERFLY VALVES (AWWA C504) OR RESILIENT SEATED WEDGE GATE VALVES (AWWA C509).
6. STANDARD EMBEDMENT SHALL BE AS SHOWN IN THE PLANS FOR THE SELECTED PIPE SHOWN IN THE PLANS. BACKFILL WITHIN THE LIMITS OF EXISTING AND PROPOSED PAVEMENT SHALL BE COMPAKTED TO 95% STANDARD PROCTOR OUTSIDE PAVEMENT (EXISTING OR PROPOSED) SHALL BE COMPAKTED TO MINIMUM OF 90% STANDARD PROCTOR. ALL COMPAKTION SHALL BE BY MECHANICAL METHODS. MOISTURE CONTENT SHALL BE AT OPTIMUM +4 POINTS. SEE PG SD-23.
7. WATER LINES SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH NCTCOG ITEM 506.
8. PURGING AND DISINFECTION OF WATER LINES SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 506.7. ALL WASTE AND BLOW OFF WATER SHALL BE DECHLORINATED. DECHLORINATION PLAN SHALL BE SUBMITTED TO THE CITY 48 HOURS PRIOR TO DISCHARGE. ALL DISCHARGE SHALL MEET ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
9. ALL HORIZONTAL AND VERTICAL BENDS SHALL BE MECHANICALLY RESTRAINED.
10. FIRE HYDRANTS SPACING SHALL BE MAXIMUM 500 FEET IN RESIDENTIAL AREAS AND MAXIMUM 300 FEET IN NON RESIDENTIAL AREAS AND ALONG FIRE LANES

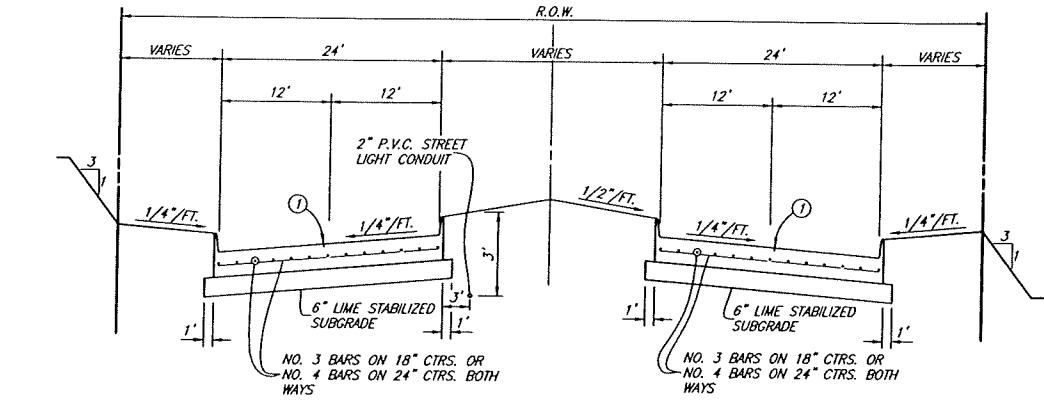
## SCREENING WALLS

1. CONCRETE -- MINIMUM COMPRESSIVE STRENGTH OF 3,600 P.S.I. @28 DAYS. NCTCOG CLASS "C" CONCRETE. STRUCTURES CONCRETE SHALL BE IN ACCORDANCE WITH NCTCOG ITEM 702
2. REINFORCEMENT -- ASTM A-36.
3. MASONRY -- COMPRESSIVE STRENGTH SHALL BE PRESCRIBED IN ITEM 2.3.6 SPECIAL PROVISIONS.
4. WIND LOAD FOR DESIGN -- 20 P.S.F.
5. PIER BEARING STRESSES -- SEE BRICK SCREENING WALL NOTES.
6. MORTAR -- TYPE "S".
7. PROVIDE CONTROL JOINTS AT 50 FEET.
8. PROVIDE EXPANSION JOINTS AT 200 FEET CENTER MAXIMUM.
9. PROVIDE PIER WITH MINIMUM 9-FOOT WITH 24-INCH DIAMETER BELL IN CLAY OR OTHER MATERIAL EXCEPT BLUE SHALE, 6-FOOT MINIMUM WITH 3-FOOT MINIMUM INTO BLUE SHALE.
10. ALL EXPOSED CONCRETE SHALL BE CLASS 2 RUBBED FINISHED SURFACE.
11. SIDEWALKS ADJACENT TO WALLS MUST BE 5-FOOT MINIMUM WIDTH FROM ALL PORTIONS OF THE WALL (INCLUDING PILASTERS, COLUMNS, ETC...).
12. MAXIMUM PILASTER SPACING 40 FEET. MAXIMUM HEIGHT OF WALL 8 FEET.
13. WALLS SHALL NOT BE PLACED IN THE VISIBILITY EASEMENT OR STREET RIGHT-OF-WAY.
14. THE WALL SHALL NOT EXCEED OF EIGHT FEET IN HEIGHT AS MEASURED FROM THE NEAREST ALLEY EDGE OR SIDEWALK GRADE, WHICHEVER IS THE HIGHER. THE COLOR OF THE WALL SHALL BE LIMITED TO EARTH-TONE COLORS, EXCLUDING GRAY, GREEN AND WHITE. THE COLOR OF THE WALL SHALL BE UNIFORM ON EACH SIDE OF A THOROUGHFARE FOR THE ENTIRE LENGTH BETWEEN INTERSECTING THOROUGHFARES, UNLESS OTHERWISE APPROVED BY THE CITY. THE FINISH OF THE WALL SHALL BE CONSISTENT ON ALL SURFACES.
15. IF WROUGHT IRON FENCING IS TO BE UTILIZED ON REQUIRED SCREENING, ALL WROUGHT IRON MUST BE SOLID STOCK. ALTERNATIVE IS ALUMINUM ORNAMENTAL FENCING, ULTRA FENCE OR EQUAL.

NO.	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
<b>STANDARD CONSTRUCTION DETAILS</b>			
<b>GENERAL NOTES</b>			
DATE:	SEPTEMBER 2016	SD-00	

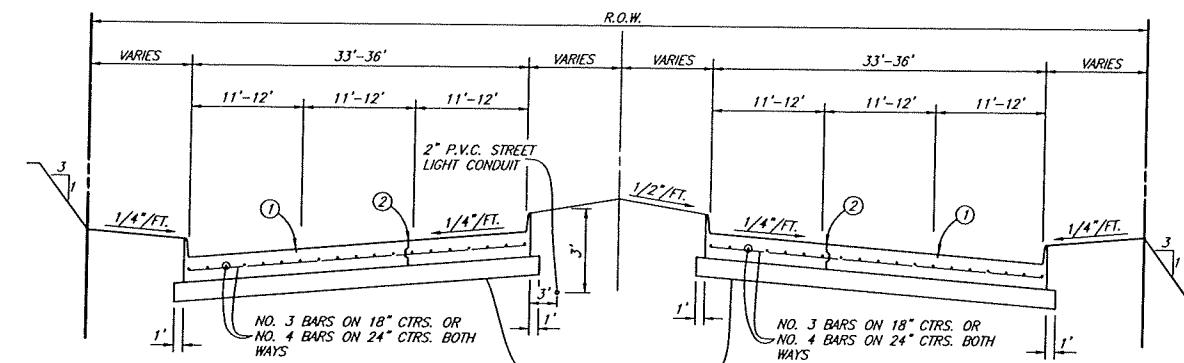


**RIGHT TURN OR DECELERATION LANE SECTION**



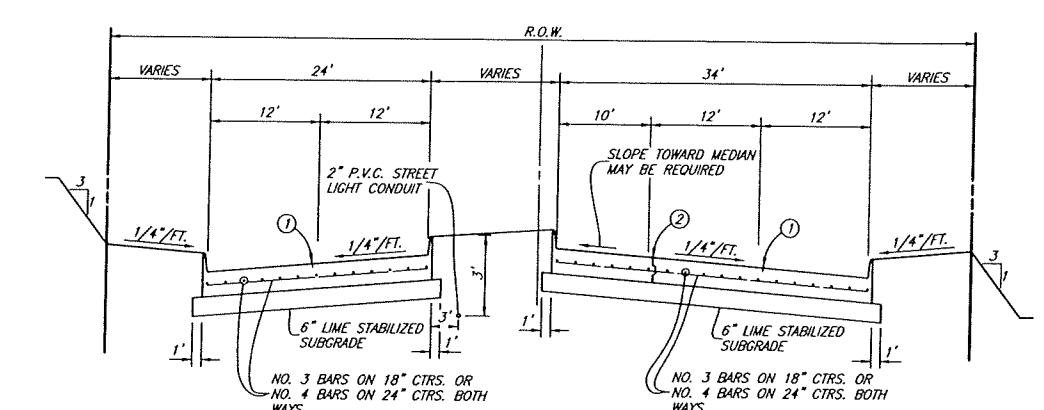
**REGULAR SECTION**

P4D & M4D



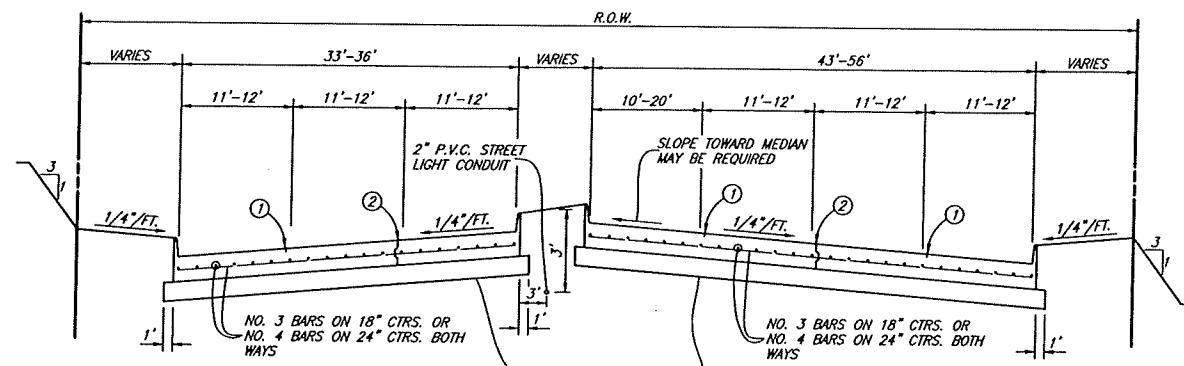
**REGULAR SECTION**

P6D



**LEFT TURN SECTION**

P4D & M4D

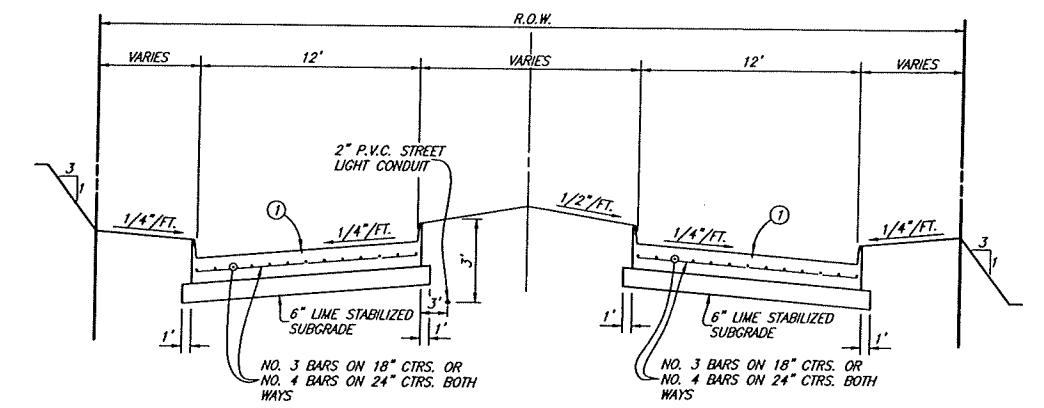


**LEFT TURN SECTION**

P6D

### LEGEND

- ① - SAWED LONGITUDINAL DUMMY JOINT
  - A. CONSTRUCTION JOINT (FULL WIDTH PAVMT. IS ALLOWED WHERE APPROVED BY CITY).
  - B. DELETE IT WHEN PAVING IS 25 FT. WIDTH TO BE WIDENED IN FUTURE.
  - C. INSTALL CURB IF PAVING IS LESS THAN FULL WIDTH OF 33'-36'.



**REGULAR SECTION**

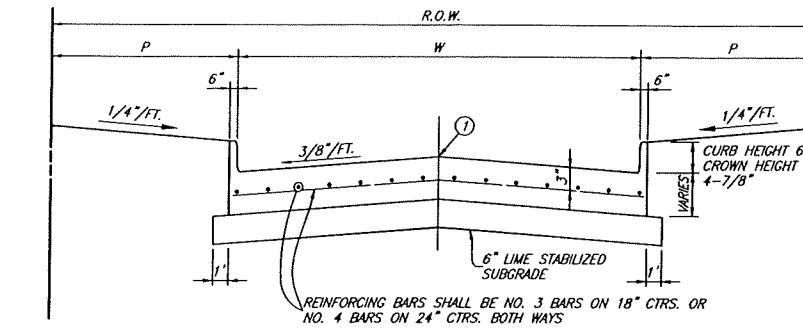
M2D

(REG\_SECT2)

### NOTES:

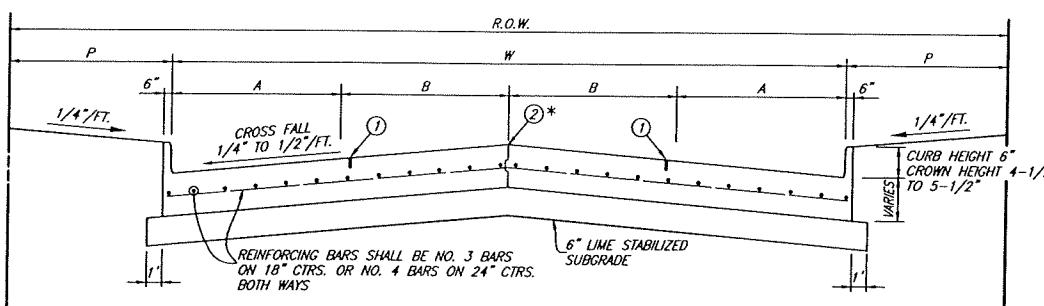
1. M60, P60, M40, P40 & M20 SECTIONS SHALL HAVE MINIMUM PAVEMENT THICKNESS OF 8 INCHES.
2. FOR RETROFIT TURN LANES AND MEDIAN OPENINGS. TWO ADDITIONAL INCHES OF CONCRETE CAN BE PLACED IN LIEU OF LIME STABILIZATION.
3. SIDE SLOPES WITHIN SUBDIVISIONS SHALL BE 4:1 MAX.
4. SIDEWALKS TO BE LOCATED WITHIN PARKWAYS.
5. CONCRETE NTCOG CLASS "A" NTCOG ITEM 303
6. LIME SHALL BE HYDRATED LIME NTCOG ITEM 301.2
7. CRUSHED STONE NTCOG ITEM 301.5 GRADE 1
8. ASPHALT NTCOG ITEM 302
9. ALL PAVEMENT SECTIONS SHALL BE DESIGN AND SUPPORTED BY GEOTECHNICAL INVESTIGATION AND REPORT PROVIDED TO THE CITY
10. LIME SERIES TESTING COMPLETED EVERY 300 FEET AND AT CHANGE IN MATERIAL, TO ACHIEVE OPTIMUM LIME APPLICATION.

NO.	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
<b>STANDARD CONSTRUCTION DETAILS</b>			
<b>PAVING - SECTIONS</b>			
DATE:	SEPTEMBER 2016	SD-01	Sheet



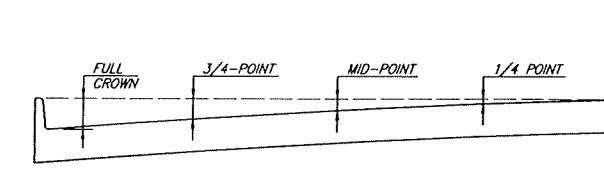
**REGULAR SECTION**

R2U & C2U



**REGULAR SECTION**

C4U & M4U



CLASSIFICATION	ROADWAY WIDTH (W)	TOTAL CROWN HEIGHT	3/4 POINT	MID-POINT	1/4 POINT
C2U	30'	6"	3-3/8"	1-1/2"	3/8"
R2U	40'	6"	3-3/8"	1-1/2"	3/8"

**TABLE OF CROWN HEIGHTS AND ORDINATES  
FOR PARABOLIC SECTIONS (R2U & C2U)**

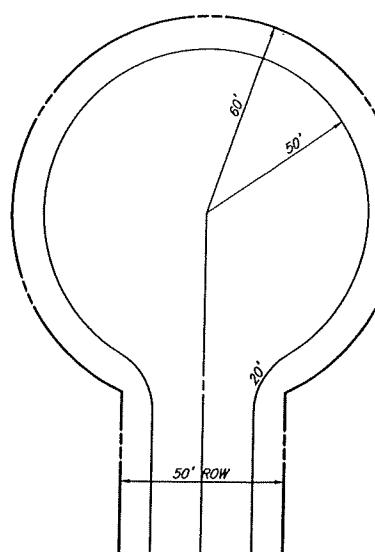
SLIP-FORM PAVEMENT MUST MEET CROWN GRADES AT GUTTERS, AT MID-POINTS &  $\frac{1}{4}$  POINT.  
PARABOLIC ROADS ONLY TO BE CONSTRUCTED WITH SLIP FORM PAVERS

**LEGEND**

① - SAWED LONGITUDINAL DUMMY JOINT  
CONSTRUCTION JOINT (FULL WIDTH PVT.)  
② - IS ALLOWED WHERE APPROVED BY CITY

**NOTES:**

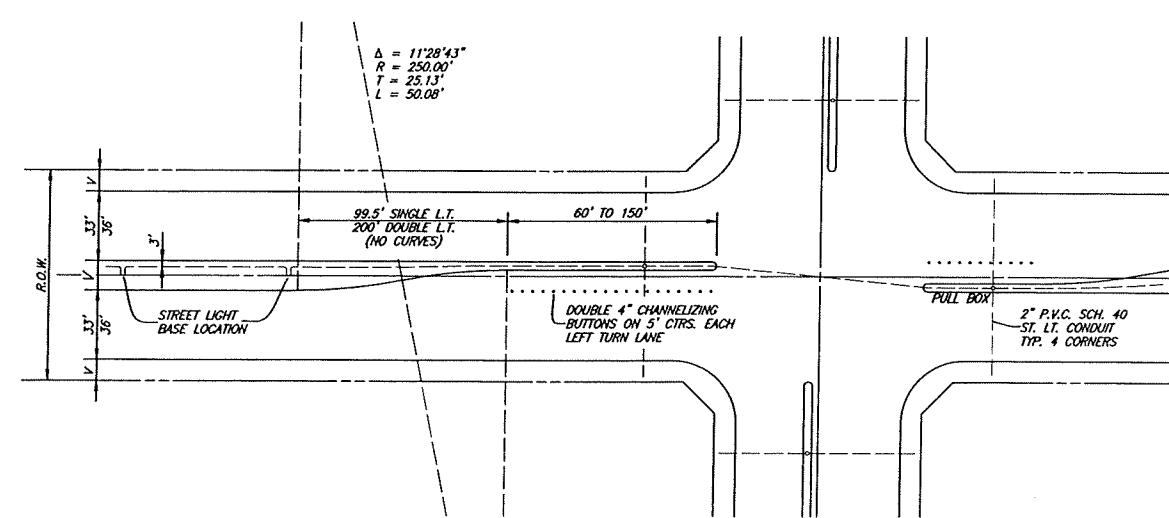
1. R2U, C2U, C4U, & M4U PAVING SECTIONS SHALL HAVE A MINIMUM PAVEMENT THICKNESS OF 6 INCHES.
2. SIDE SLOPES OUTSIDE ROW SHALL BE 4:1 MAX WITHIN SUBDIVISIONS.
3. SIDEWALKS TO BE LOCATED WITHIN PARKWAY.
4. CONCRETE NCTCOG CLASS "A" NCTCOG ITEM 303
5. LIME SHALL BE HYDRATED LIME NCTCOG ITEM 301.2
6. CRUSHED STONE NCTCOG ITEM 301.5 GRADE 1
7. ASPHALT NCTCOG ITEM 302
8. ALL PAVEMENT SECTIONS SHALL BE DESIGN AND SUPPORTED BY GEOTECHNICAL INVESTIGATION AND REPORT PROVIDED TO THE CITY.
9. LIME SAMPLE TESTING COMPLETED EVERY 200 FEET AND AT CHANGE IN MATERIAL, TO ACHIEVE OPTIMUM LIME APPLICATION.



**CUL DE SAC**

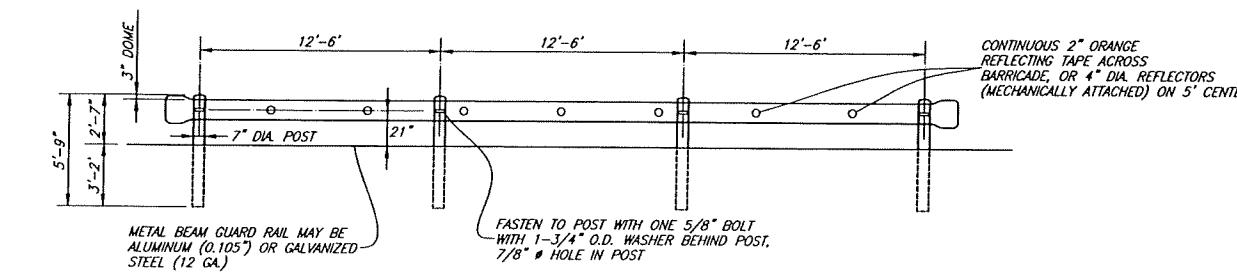
**CUL-DE-SAC NOTES:**

1. CENTER AT CUL-DE-SAC SHALL BE HIGH POINT.
2. PAVEMENT SECTION SHALL MATCH SECTION OF APPROACHING STREET.



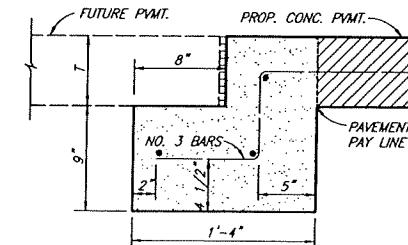
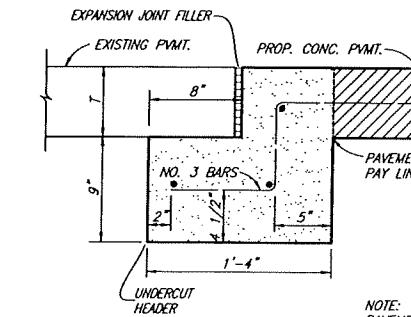
**LEFT TURN PLAN**

NO.	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
<b>STANDARD CONSTRUCTION DETAILS</b>			
<b>UNDIVIDED PAVING SECTION-CUL DE SAC-LEFT TURN</b>			
DATE:	SEPTEMBER 2016	SHEET	
			SD-02

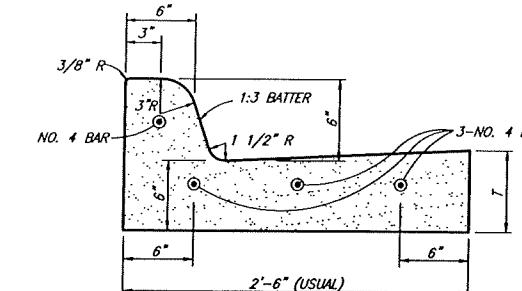


NON CONSTRUCTION BARRICADES (PERMANENT BARRICADES) SHALL CONSIST OF TDOT GFTD-87 METAL BEAM GUARD FENCE WITH TERMINAL CONNECTOR SECTIONS AT EACH END. PERMANENT BARRICADES SHALL BE MANUFACTURED AND CONSTRUCTED IN ACCORDANCE WITH TDOT DETAILS. BARRICADE SHALL EXTEND FROM OUTSIDE CURB TO OUTSIDE CURB.

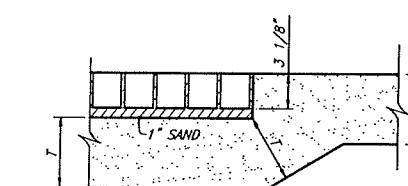
### TYPICAL PERMANENT BARRICADE



### STREET HEADER

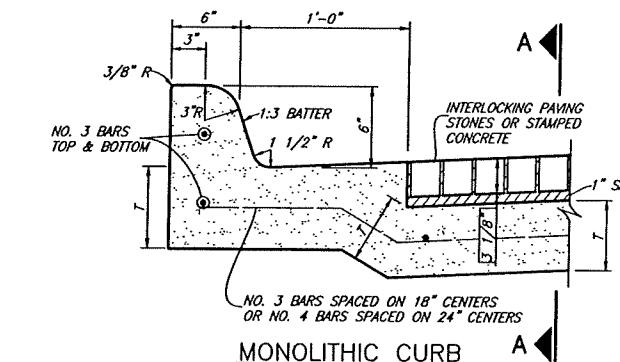


### SEPARATE CURB AND GUTTER



### SECTION A-A

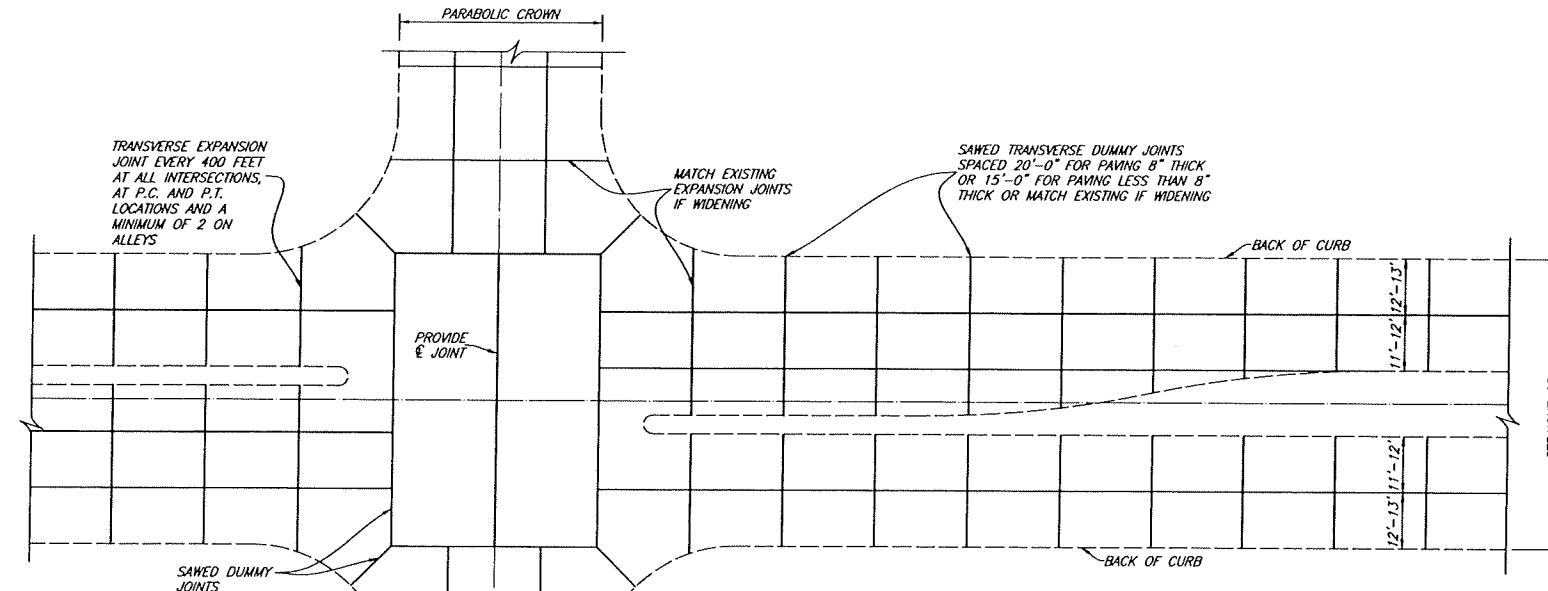
PAVING STONES SHALL BE PER NTCOG ITEMS 2.3.7 AND 5.8 OF SPECIAL PROVISIONS



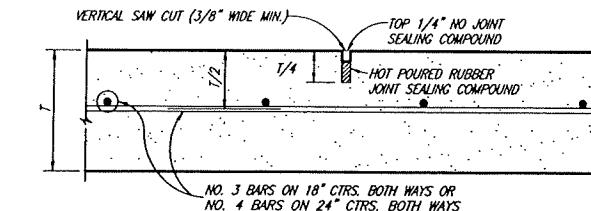
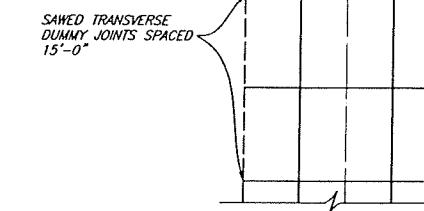
### CURB AND CURB AND GUTTER

NOTES:  
REFLEX EXPANSION JOINT MATERIAL SHALL BE PLACED BETWEEN BACK OF CURB AND SIDEWALK. ALL EXPANSION JOINT MATERIAL SHALL BE RECYCLED RUBBER AS PRODUCED BY THE JD RUSSELL COMPANY (JDRUSSELLCO.COM) OR EQUAL

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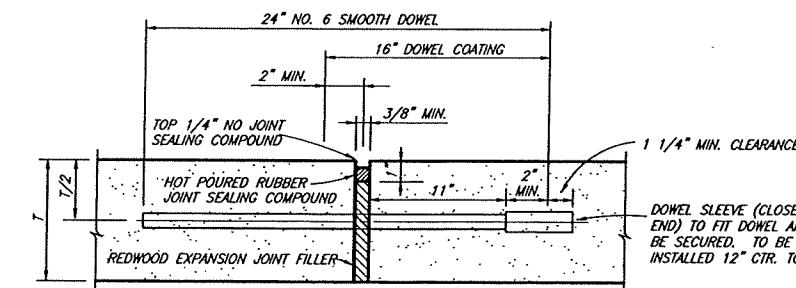


**SPACING DIAGRAM FOR TRANSVERSE JOINTS**  
(ROADWAYS AND ALLEYS)



TRANSVERSE JOINTS SPACED 15 FT. C-C. (MAX.)  
LONGITUDINAL JOINTS SPACED 20 FT. C-C. (MAX.)

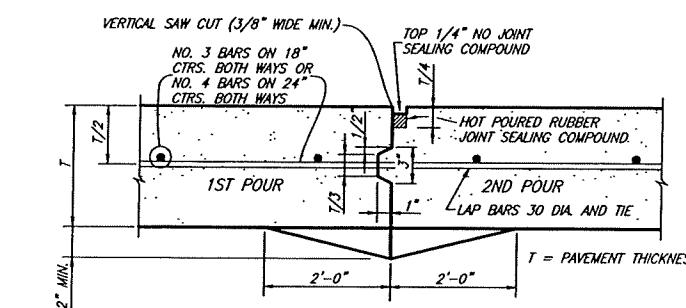
**SAWED DUMMY JOINT**



TRANSVERSE EXPANSION JOINT NOTES:

1. DOWELS AND REINFORCING BARS SHALL BE SUPPORTED BY AN APPROVED DEVICE.
2. TRANSVERSE EXPANSION JOINTS SHALL BE SPACED AT 400 FT. MAXIMUM AND AT ALL INTERSECTIONS.

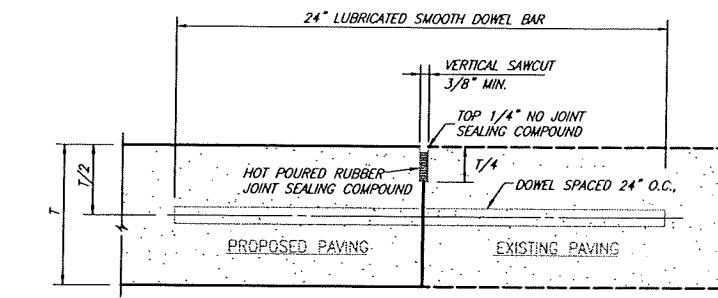
**TRANSVERSE EXPANSION JOINT**



CONSTRUCTION JOINT NOTES:

1. CONTRACTOR SHALL PROTECT KEYWAY PRIOR TO SECOND POUR. IF LONGITUDINAL KEYWAY IS DAMAGED, CONTRACTOR SHALL REPAIR WITH THE USE OF LONGITUDINAL BUTT JOINT (DRILL DOWELS INTO FIRST POUR).
2. THICKENED EDGES ARE REQUIRED FOR FUTURE WIDENING ONLY.

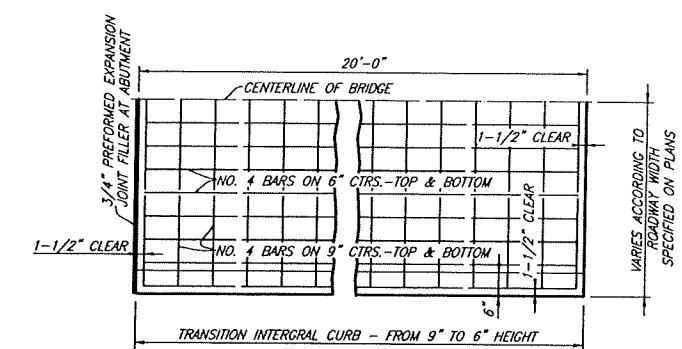
**CONSTRUCTION JOINT**



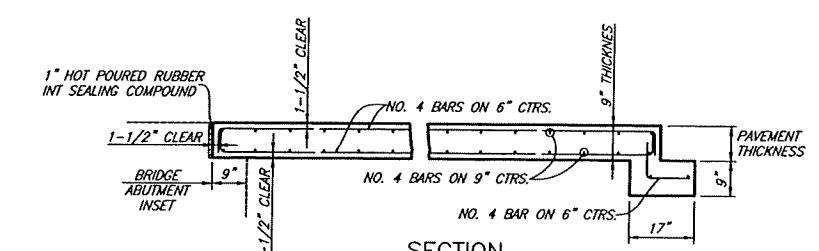
NOTE:

1. 1-8" AND GREATER NO. 6 BAR, 1-6" AND LESS NO. 5 BAR
2. LONGITUDINAL BUTT CONSTRUCTION MAY BE UTILIZED IN PLACE OF LONGITUDINAL HINGED (KEYWAY) JOINT AT CONTRACTOR'S OPTION.
3. DOWEL BARS SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY BY USE OF A MECHANICAL RIG. HAND DRILLING NOT ACCEPTABLE. DAMAGE TO EXISTING PAVEMENT SHALL BE REMOVED BY CONTRACTOR AND JOINT CONSTRUCTED AT CONTRACTOR'S EXPENSE.
4. TIE BARS SHALL BE NO. 5 BAR DEFORMED. TIE BAR SHALL HAVE A LENGTH OF 24 INCHES.

**LONGITUDINAL BUTT JOINT**



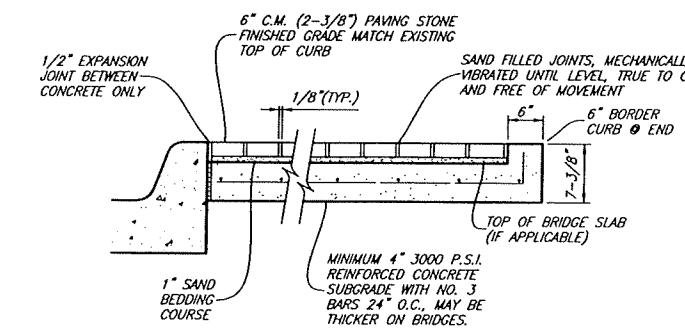
**PLAN**



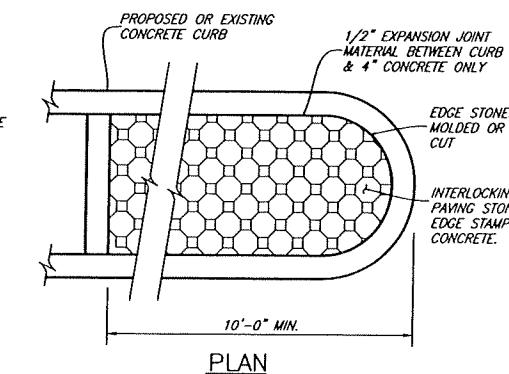
**SECTION**

**BRIDGE APPROACH SLAB**

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<b>STANDARD CONSTRUCTION DETAILS</b>			
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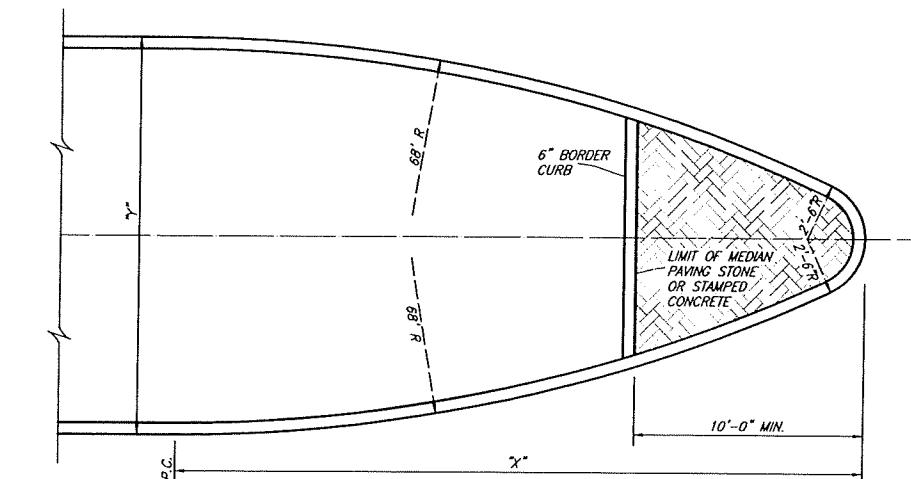
TYPICAL CROSS SECTION



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

STAMPED CONCRETE OR INTERLOCKING PAVING STONE

COLOR AND STYLE TO BE SELECTED BY CITY



DETAIL OF NOSE FOR MEDIAN ISLAND

DIMENSIONS OF MEDIAN NOSE

X = 13.90'	Y = 7.0'	X = 26.36'	Y = 14.0'
X = 16.44'	Y = 8.0'	X = 29.89'	Y = 17.0'
X = 18.06'	Y = 9.0'	X = 32.93'	Y = 20.0'
X = 20.42'	Y = 10.0'	X = 36.47'	Y = 24.0'

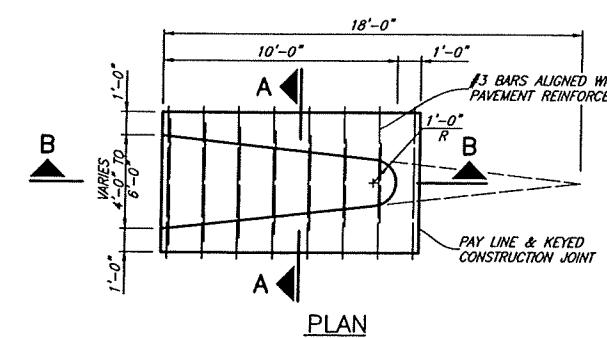
2" SCH. 40 P.V.C. DOVE GRAY ELECTRICAL CONDUIT BURIAL DEPTH 3'-0" BELOW FINISH GRADE

BLOCKOUT MEDIAN PAVING FOR SIGNAL FOUNDATION OR PULL BOX OR LUMINARY (IN LOCATIONS KNOWN AND NOT INSTALLED WITH PAVING)

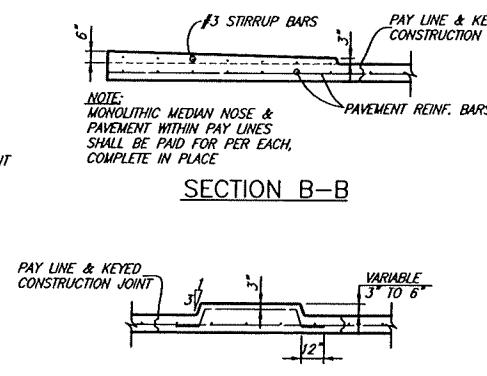
6'-0" MAX  
LUMINARY FOUNDATION

INTERLOCKING PAVE STONES OR STAMPED CONCRETE. STAMPED CONCRETE SHALL BE DYED FULL DEPTH. COLOR TO BE SELECTED BY THE CITY

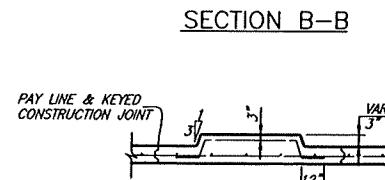
DETAIL OF MEDIAN PAVEMENT



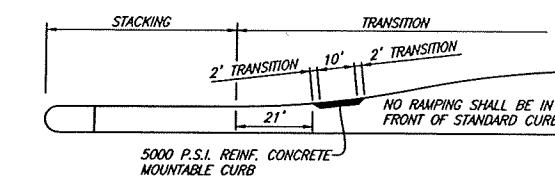
MONOLITHIC MEDIAN NOSE



SECTION A-A



SECTION B-B

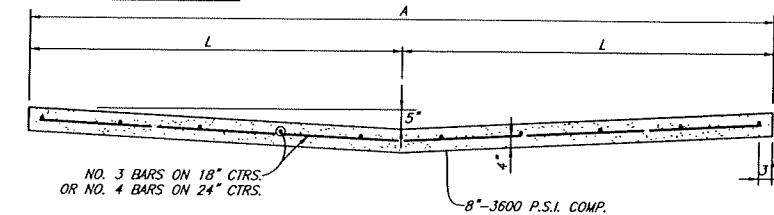


MONTABLE CURB DETAIL-PLAN VIEW

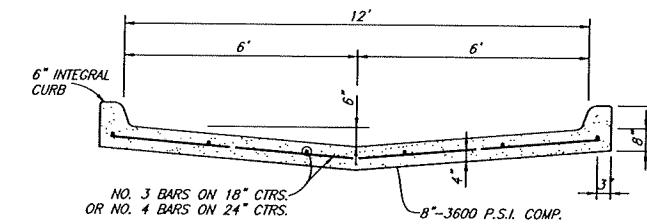
LANDSCAPE MAINTENANCE RAMP

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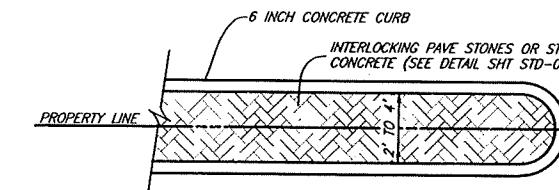
ALLEY WIDTH (A)	HALF WIDTH (L)
12'	6'
16'	8'
20'	10'



**STANDARD 12, 16' & 20' ALLEY SECTION**

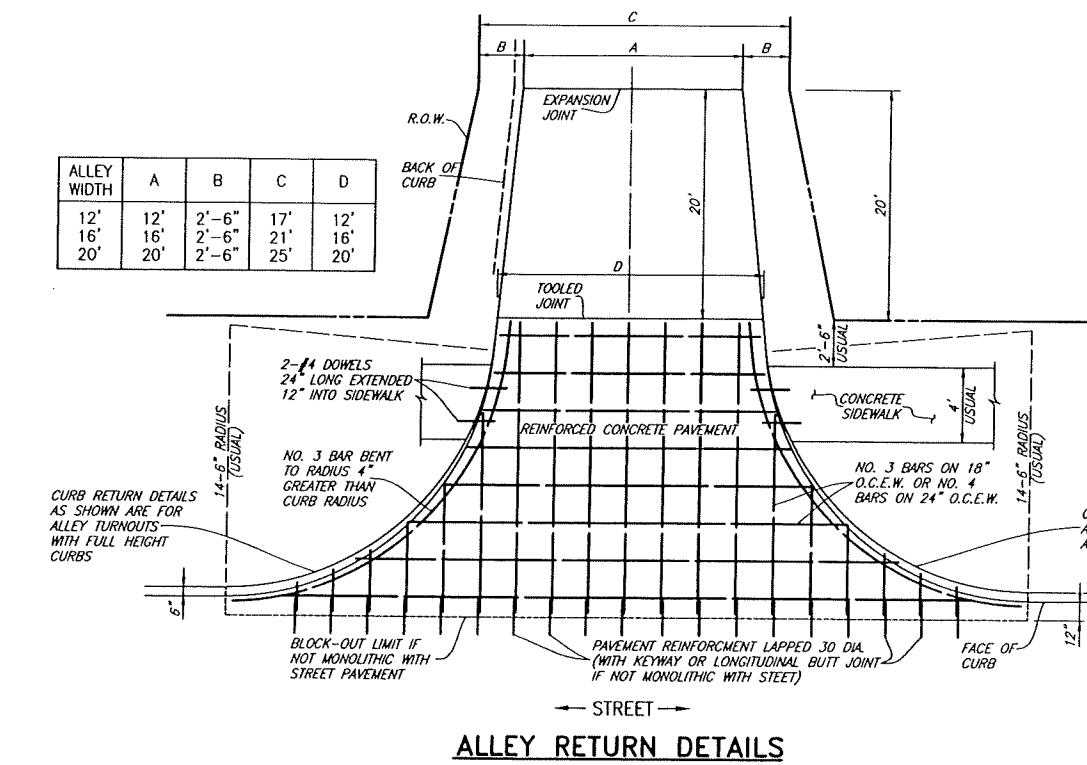


**STANDARD ALLEY SECTION WITH CURBS**

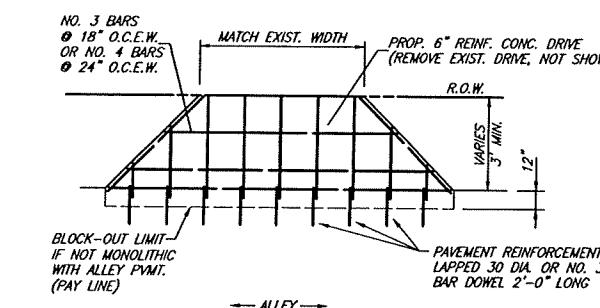


**MEDIAN AT DRIVEWAYS SPLIT BY PROPERTY LINE**

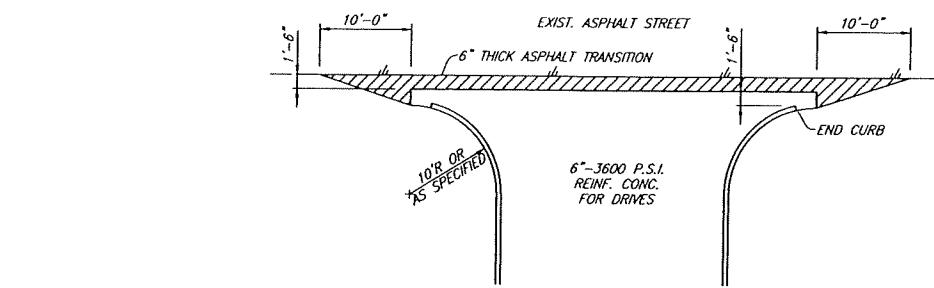
NOTE: STAMPED CONCRETE SHALL BE DYED FULL DEPTH, COLOR SELECTED BY THE CITY



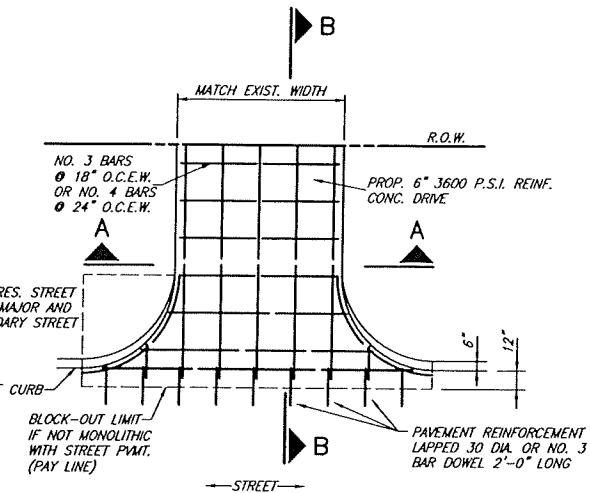
**ALLEY RETURN DETAILS**



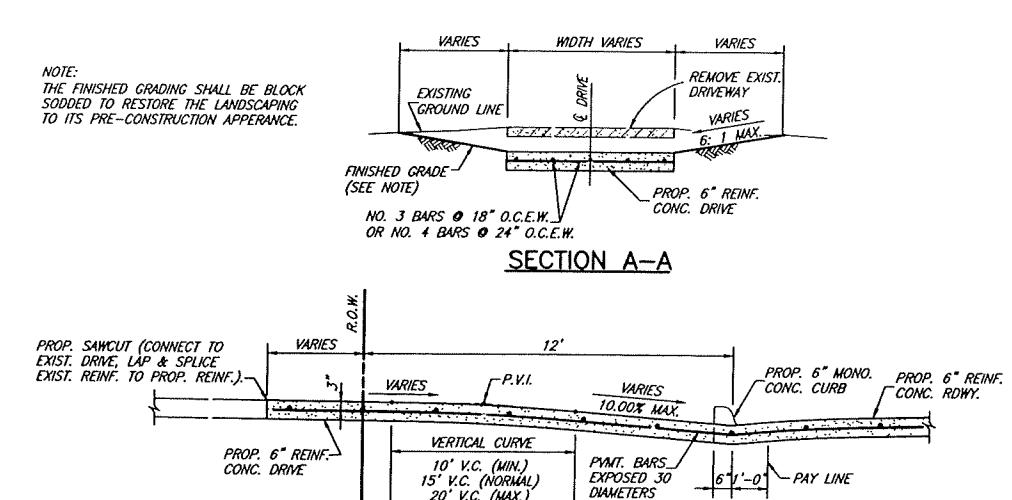
**DRIVEWAY RETURN TO ALLEY**



**TYPICAL DRIVE OR STREET CONNECTION TO EXISTING ASPHALT STREET**

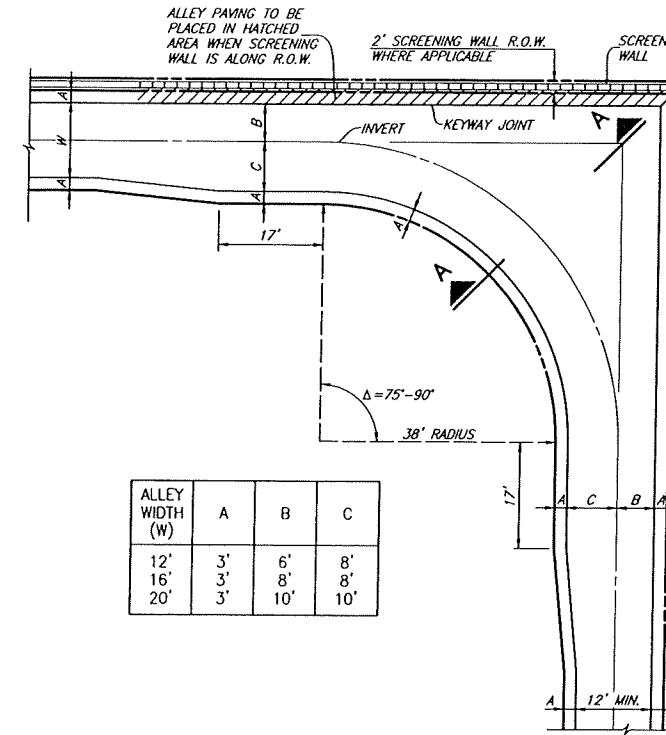


**DRIVEWAY RETURN TO STREET**



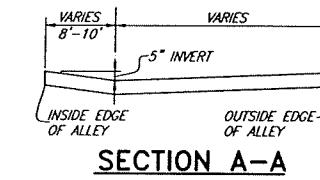
**SECTION A-A**  
**SECTION B-B**  
**DRIVEWAY RETURN SECTIONS**

NO	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
<b>STANDARD CONSTRUCTION DETAILS</b>			
<b>PAVING / ALLEY / DRIVEWAYS</b>			
DATE:	SEPTEMBER 2016	SHEET	SD-06

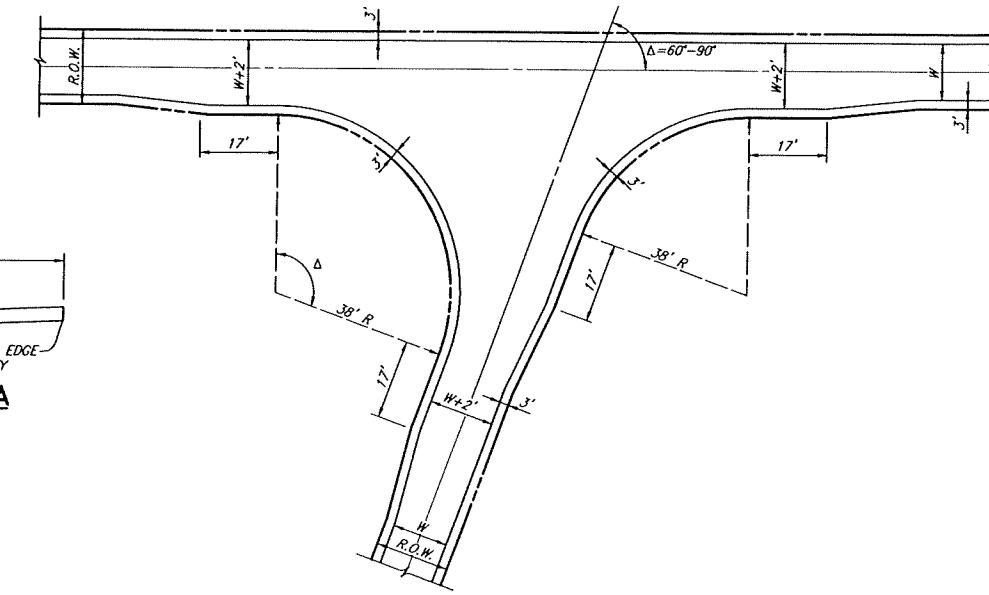


ALLEY TURN FOR  $\Delta = 75^\circ - 9$

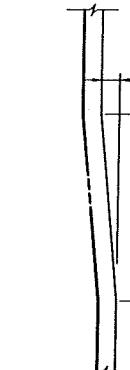
ALLEY WIDTH (W)	A	B	C
12'	3'	6'	8'
16'	3'	8'	10'
20'	3'	10'	12'



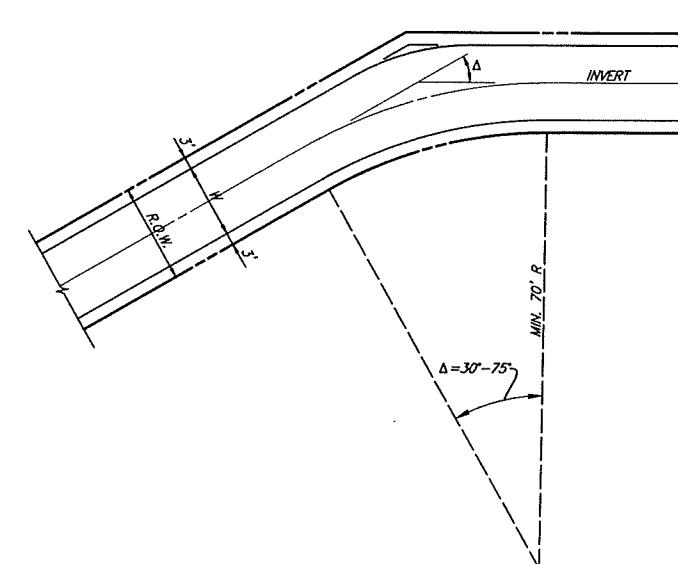
**SECTION A**



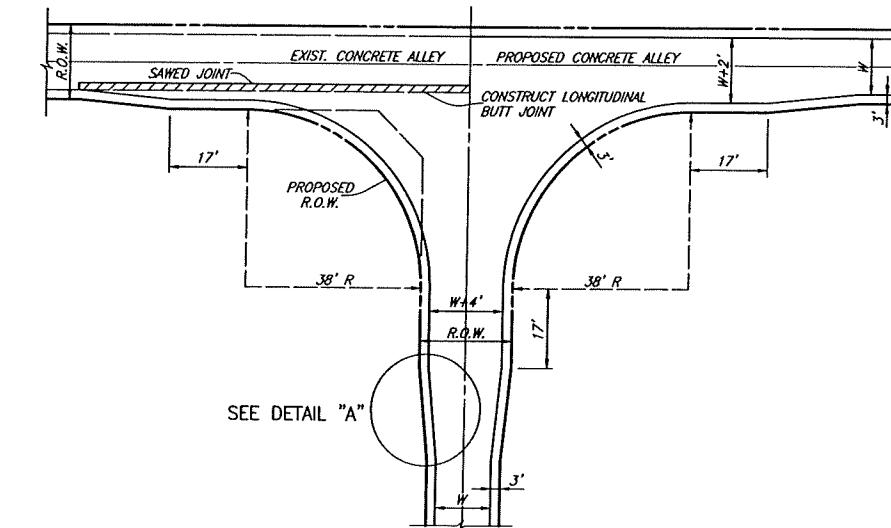
### ALLEY TURN FOR $\Delta > 90$



DETAIL "A"

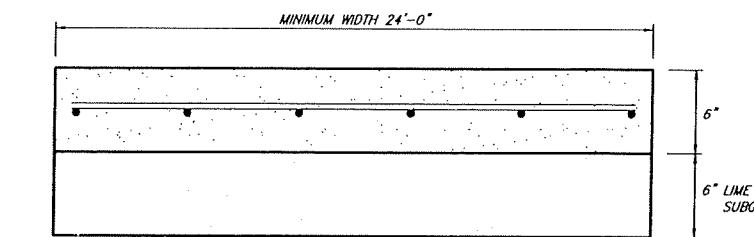


ALLEY TURN FOR  $\Delta = 30^\circ - 7$



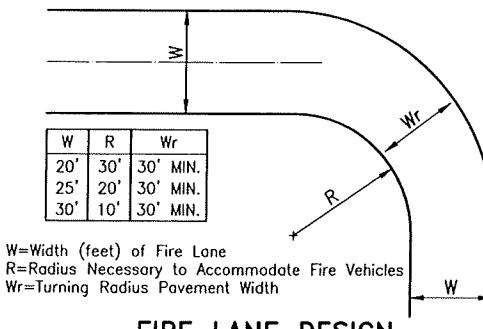
ALLEY INTERSECTING ALLEY

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<b>PAVING - RADIUS</b>			
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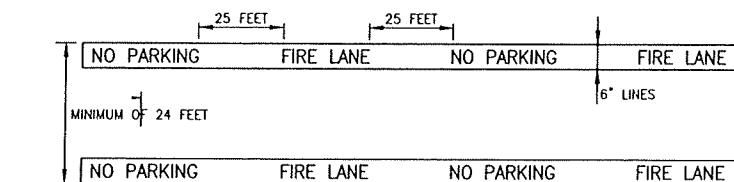
1. ALL FIRE LANES SHALL BE PAVED WITH A MINIMUM OF 8 INCHES OF REINFORCED CONCRETE PAVEMENT (3600 PSI NCTCOG CLASS C CONCRETE) WITH #3 REBAR PLACED ON 18 INCH CENTERS EACH WAY ON A 6 INCH LIME STABILIZED SUBGRADE. THE SUBGRADE SHALL BE STABILIZED WITH HYDRATED LIME IN SUFFICIENT AMOUNT TO REDUCE THE PLASTICITY INDEX BELOW FIFTEEN (15). LIME SERIES TEST SHALL BE RAN IN THE FIELD EVERY 500 FEET AND AT CHANGE IN MATERIAL TO DETERMINE LIME APPLICATION TO ACHIEVE OPTIMUM LIME.  
ALTERNATE SECTION 8" THICK REINFORCED CONCRETE (3600 PSI NCTCOG CLASS C CONCRETE) ON COMPAKTED SUBGRADE OR 8" INCH CLASS C (NCTCOG ITEM 301.1)

#### FIRE LANE PAVING & JOINT DETAIL



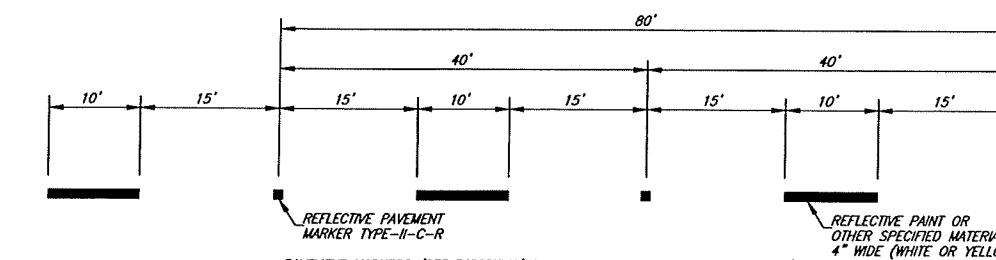
W=Width (feet) of Fire Lane  
R=Radius Necessary to Accommodate Fire Vehicles  
Wr=Turning Radius Pavement Width

#### FIRE LANE DESIGN



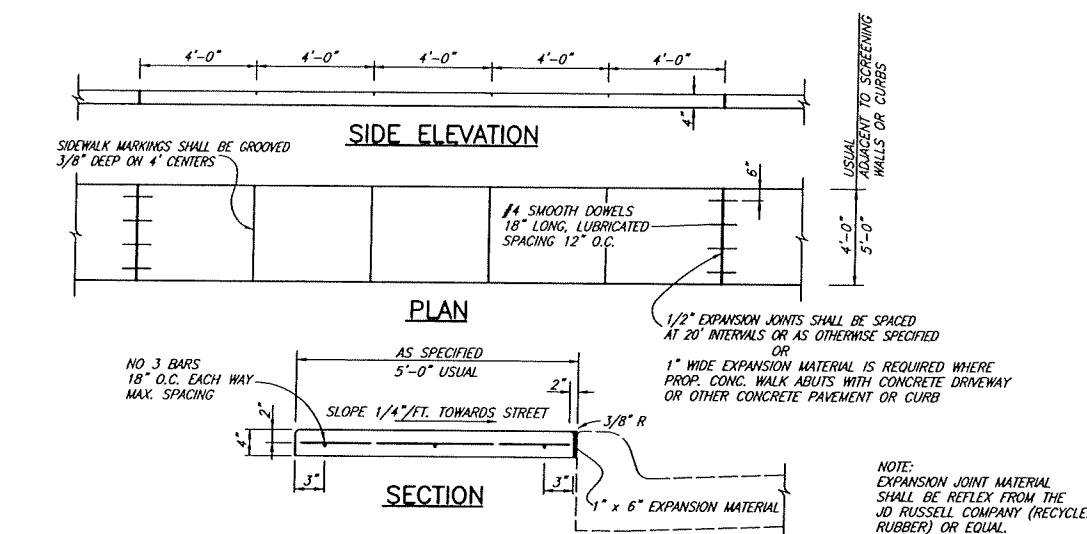
1. THE FIRE CHIEF IS AUTHORIZED TO DESIGNATE FIRE LANES.
2. FIRE LANES SHALL BE MARKED BY SIX INCH (6") WIDE LINES USING RED TRAFFIC PAINT, WITH THE WORDING "NO PARKING" AND "FIRE LANE" PAINTED ON THE LINES AT INTERVALS OF TWENTY-FIVE (25'). THE LETTERING WILL BE FOUR INCHES (4") HIGH WITH A ONE INCH (1") WIDE STROKE PAINTED WITH WHITE TRAFFIC PAINT.
3. FIRE LANES SHALL BE A MINIMUM OF TWENTY FOUR FEET (24') IN WIDTH.
4. ANY DEAD-END FIRE LANE MORE THAN ONE HUNDRED FIFTY FEET (150') LONG SHALL PROVIDE A TURN AROUND OF ONE HUNDRED FEET (100') IN DIAMETER AT THE CLOSED END, IN ACCORDANCE WITH THE CITY OF OVILLA

#### FIRE LANE MARKING



#### LANE LINE PAVEMENT MARKING

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<b>PAVEMENT MARKINGS</b>			
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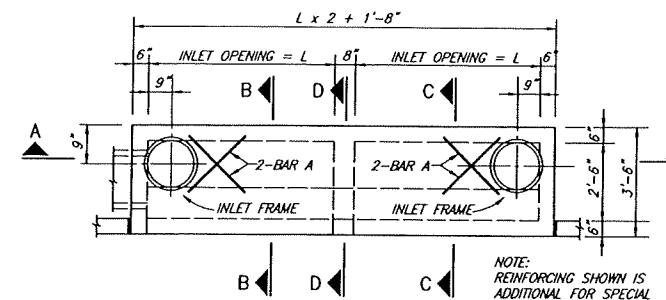


### REINFORCED CONCRETE SIDEWALK

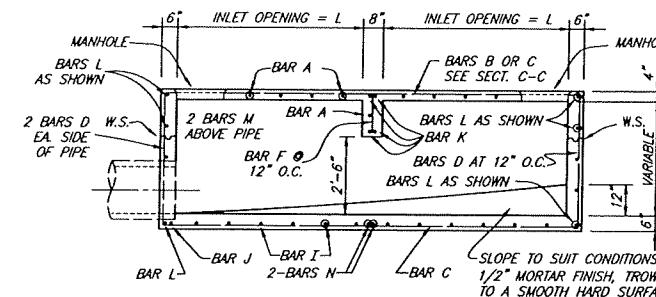
NOTES:

1. ALL SIDEWALKS SHALL MEET CURRENT ADA STANDARDS AND DETAILS. ALL DRIVEWAYS, STREET INTERSECTION SHALL MEET CURRENT ADA BARRIER FREE RAMP STANDARDS & DETAILS.
2. ALL SIDEWALK CONSTRUCTION SHALL MEET LATEST ADA REQUIREMENTS. ALL BARRIER FREE RAMP CONSTRUCTION SHALL MEET CURRENT ADA REQUIREMENTS.

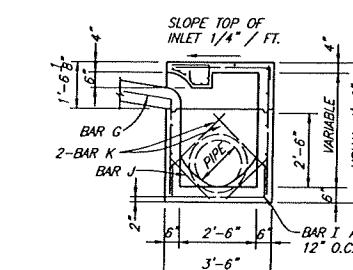
NO.	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
<b>STANDARD CONSTRUCTION DETAILS</b>			
<b>PAVING – SIDEWALKS</b>			
DATE:	SEPTEMBER 2016	SHEET	SD-09



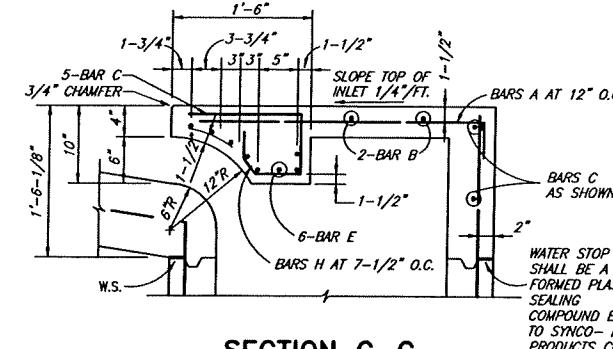
PLAN  
20 FOOT INLETS



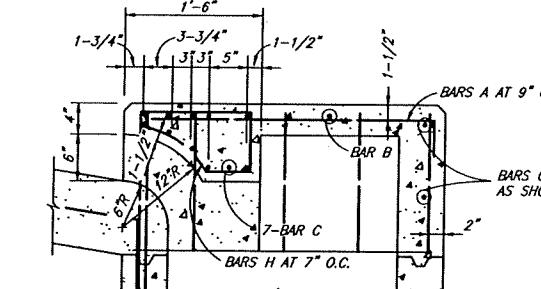
12, 14, 16 AND 20 FOOT INLETS



SECTION B-B



SECTION C-C



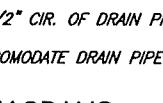
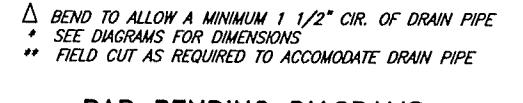
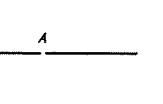
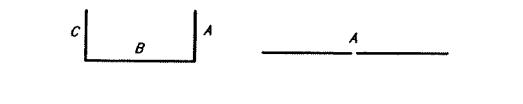
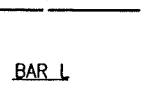
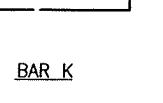
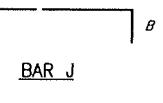
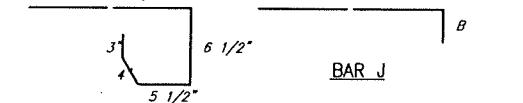
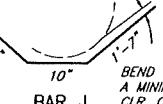
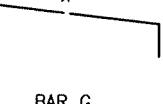
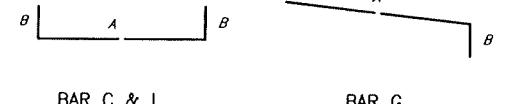
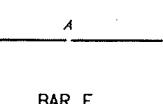
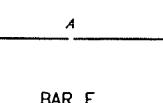
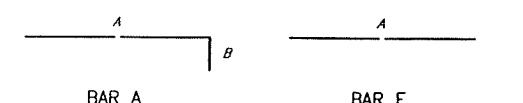
NOTE: FOR ADDITIONAL INFORMATION SEE SECTION C-C

**DOUBLE INLETS**  
DIMENSIONS SHOWN ARE FOR MAXIMUM SIZE INLETS

INLET LENGTH	BAR TYPE	BAR DIA (1/8 IN.)	NO. REQ'D	BAR DIMENSIONS		
				A	B	C
6 FT.	A	3	15	3'-2"	0'-6"	-
	B	3	2	11'-6"	-	-
	C	4	16	13'-4"	0'-6"	-
	D	4	9	4'-8"	-	-
	E	5	6	13'-4"	-	-
	F	4	5	1'-2"	-	-
	G	3	12	2'-0"	1'-3"	-
	H	3	26	*	*	*
	I	4	12	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	-
	L	4	11	3'-2"	0'-6"	-
	M	4	2	3'-0"**	-	-
	N	4	2	4'-8"	3'-2"	4'-8"
7 FT.	A	3	17	3'-2"	0'-6"	-
	B	3	2	13'-6"	-	-
	C	4	16	15'-4"	0'-3'	-
	D	4	9	4'-8"	-	-
	E	5	6	15'-4"	-	-
	F	4	5	1'-2"	-	-
	G	3	15	2'-0"	1'-3"	-
	H	3	32	*	*	*
	I	4	14	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	-
	L	4	11	3'-2"	0'-6"	-
	M	4	2	3'-0"**	-	-
	N	4	2	4'-8"	3'-2"	4'-8"
8 FT.	A	3	19	3'-2"	0'-6"	-
	B	3	2	15'-6"	-	-
	C	4	16	17'-4"	0'-6"	-
	D	4	9	4'-8"	-	-
	E	5	6	17'-4"	-	-
	F	4	5	1'-2"	-	-
	G	3	12	2'-0"	1'-3"	-
	H	3	26	*	*	*
	I	4	16	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	-
	L	4	11	3'-2"	0'-6"	-
	M	4	2	3'-0"**	-	-
	N	4	2	4'-8"	3'-2"	4'-8"
10 FT.	A	3	23	3'-2"	0'-6"	-
	B	3	2	19'-6"	-	-
	C	4	16	21'-4"	0'-6"	-
	D	4	9	4'-8"	-	-
	E	5	6	21'-4"	-	-
	F	4	5	1'-2"	-	-
	G	3	15	2'-0"	1'-3"	-
	H	3	32	*	*	*
	I	4	20	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	-
	L	4	11	3'-2"	0'-6"	-
	M	4	2	3'-0"**	-	-
	N	4	2	4'-8"	3'-2"	4'-8"

\* SEE DIAGRAM FOR DIMENSIONS.  
\*\* FIELD CUT AS REQUIRED TO ACCOMMODATE DRAIN PIPE

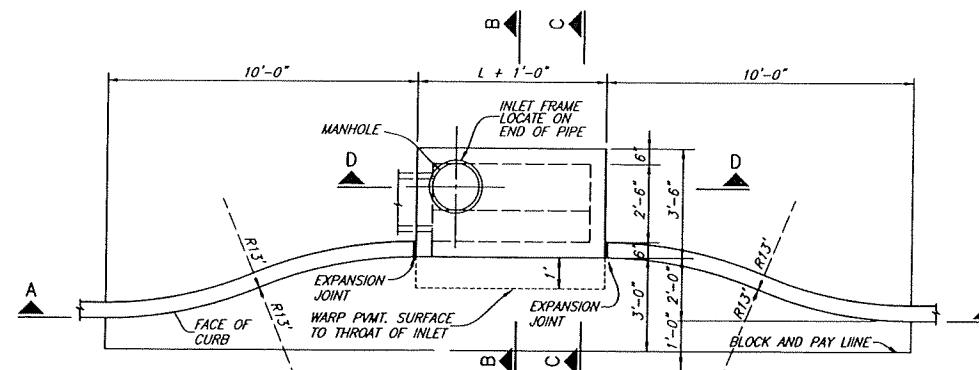
**REINFORCING STEEL SCHEDULE**



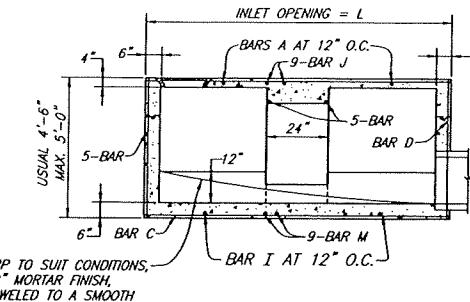
△ BEND TO ALLOW A MINIMUM 1 1/2" CIR. OF DRAIN PIPE  
\* SEE DIAGRAMS FOR DIMENSIONS  
\*\* FIELD CUT AS REQUIRED TO ACCOMMODATE DRAIN PIPE

**BAR BENDING DIAGRAMS**

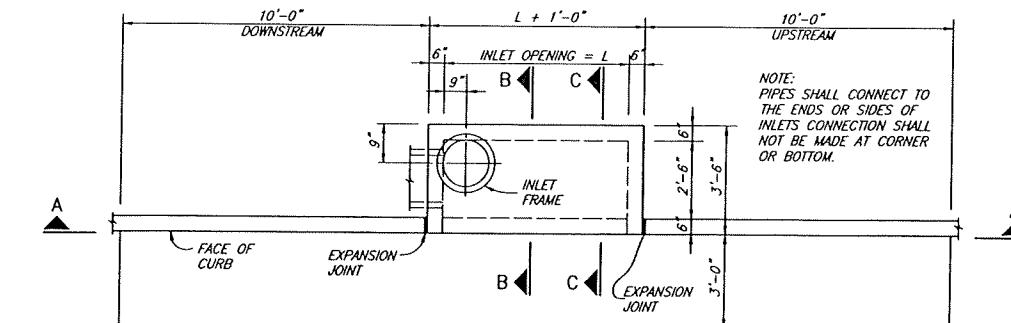
NO.	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
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<b>STORM SEWER - INLET</b>			
DATE:	SEPTEMBER 2016	SHEET	SD-11



PLAN - RECESSED INLET

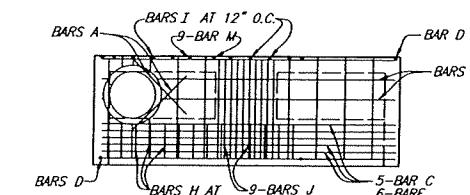
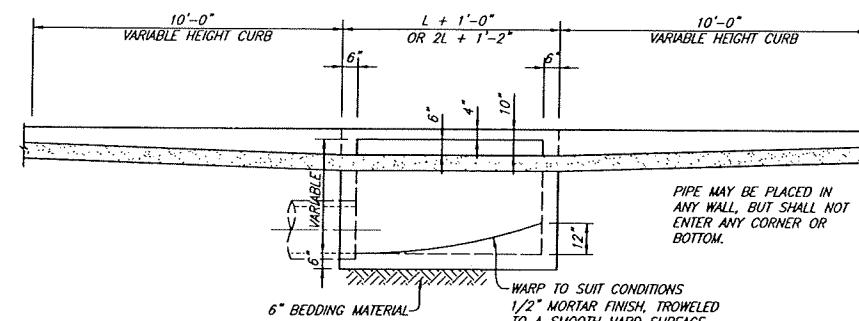


SECTION A-A - STANDARD AND RECESSED INLETS



PLAN - STANDARD INLET

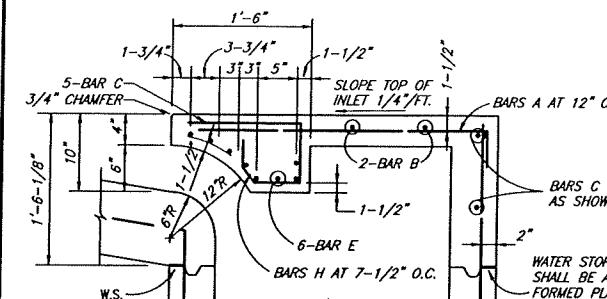
4, 6, 8 AND 10 FOOT INLETS



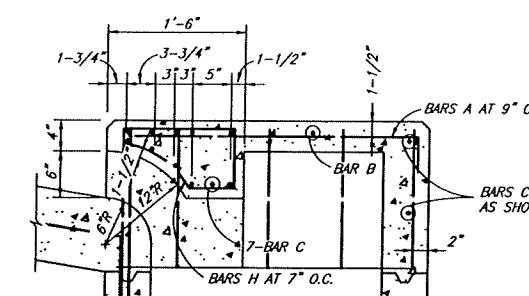
PLAN - STANDARD INLET

SECTION A-A-RECESSED AND STANDARD INLETS

4, 6, 8, AND 10 FOOT INLETS



SECTION C-C



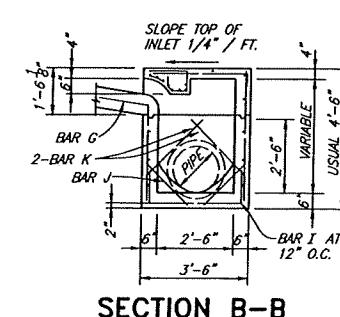
SECTION E-E

NOTES:

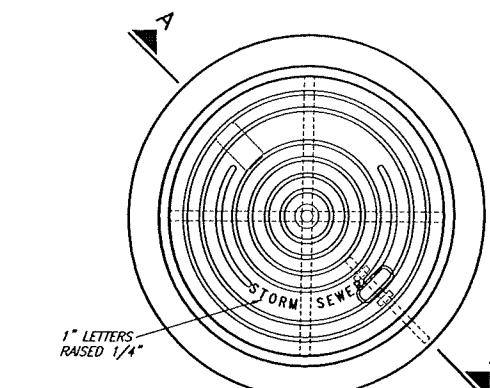
1. THE FLOOR OF THE EXCAVATION FOR INLET BOX MUST PROVIDE A FIRM, LEVEL BED FOR THE BASE SECTION TO REST UPON.

2. A MINIMUM OF 6 INCHES OF 1" DIAMETER (MAXIMUM) ROCK OR GRAVEL SHALL BE USED TO PREPARE THE BEDDING TO FINAL GRADE OR 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.

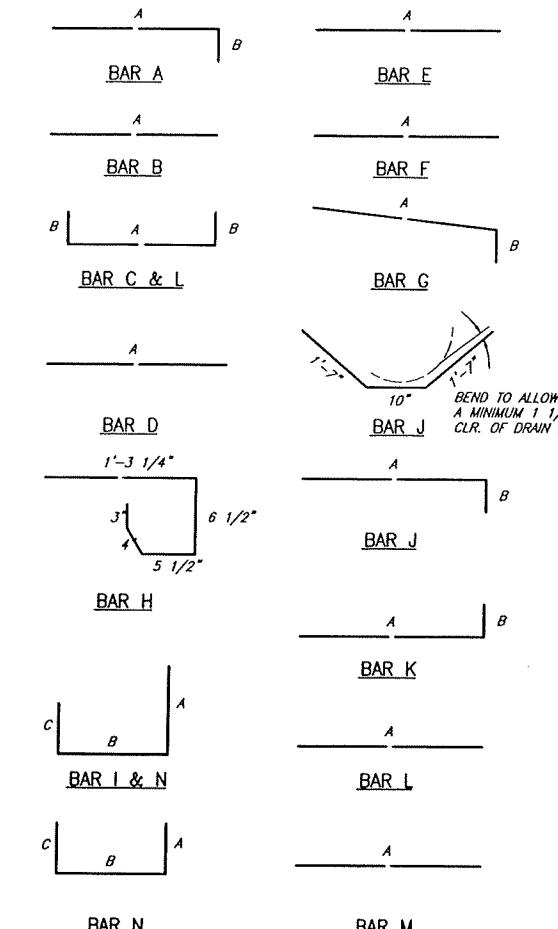
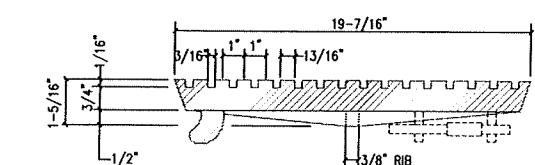
3. AFTER CASING HAS BEEN INSTALLED ON THE PROPER BEDDING, THE BACKFILL MATERIAL, WHICH IS FREE FLOWING AND CLEAR OF ROCKS, IN EXCESS OF 4" DIAMETER AND OTHER LUMPS WHICH WOULD PROHIBIT PROPER COMPACTION, SHALL BE COMMENCED IN LIFTS OF NO MORE THAN 18". THE MATERIAL USED FOR BACKFILL SHOULD BE A TYPE SUITABLE TO OBTAIN THE DENSITY REQUIREMENTS FOR THE SPECIFIC JOB.



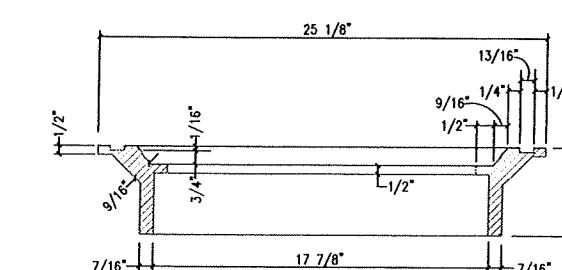
SECTION B-B



PLAN OF COVER



BAR DIAGRAMS



SECTION OF FRAME AND COVER SECTION A-A

INLET FRAME AND COVER

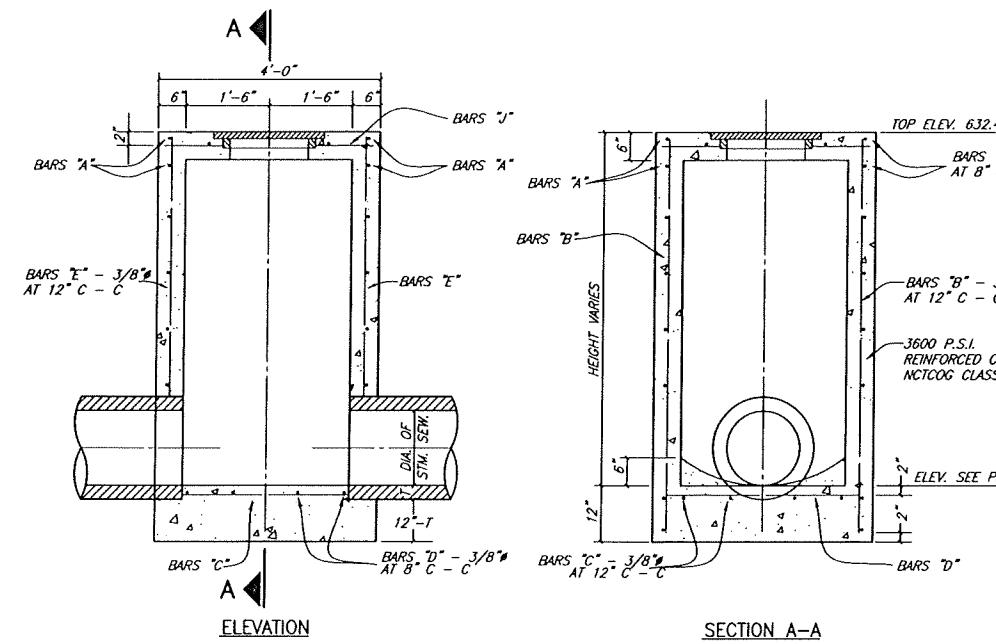
BASS & HAYS COVER 55#, FRAME 45# OR EQUAL

REINFORCING STEEL SCHEDULE

INLET LENGTH	BAR TYPE	BAR Dia. (1/8 IN.)	BAR NO. REQ'D	DIMENSIONS SHOWN ARE FOR MAXIMUM SIZE INLETS		
				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	6	*	*	*
	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	9	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
8	A	3	12	3'-2"	0'-3"	-
	B	4	1	6'-10"	-	-
	C	4	15	8'-0"	0'-6"	-
	D	4	5	4'-8"	-	-
	F	4	1	3'-2"	-	-
	G	3	5	2'-0"	1'-3"	-
	H	3	12	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
10	A	3	13	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	14	*	*	*
	I	4	8	4'-8"	3'-2"	3'-2"
	L	4	5	4'-3"	-	-

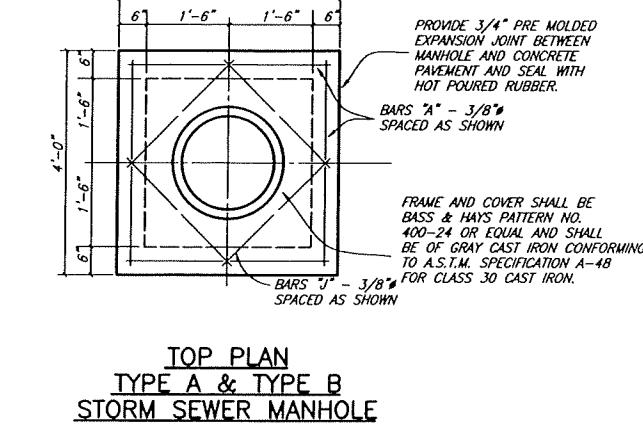
\* SEE DIAGRAM FOR DIMENSIONS.  
4', 6', 8' AND 10' INLETS

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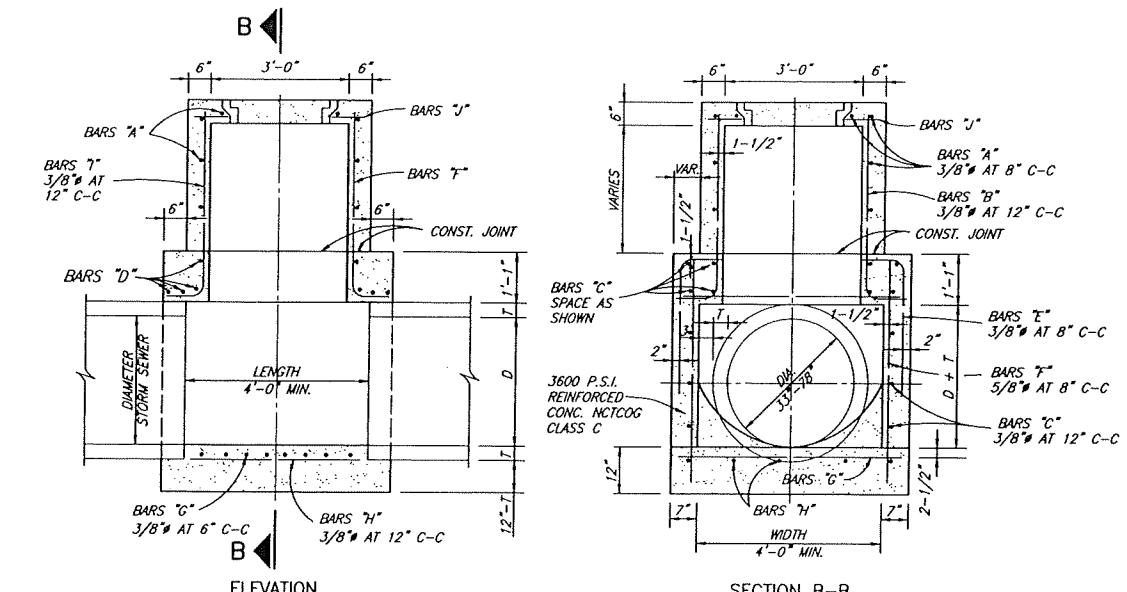


STORM SEWER TYPE A MANHOLE

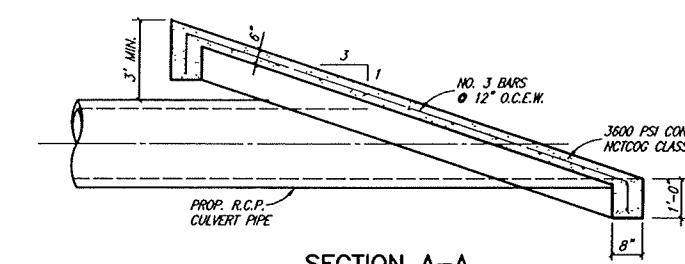
MAX. PIPE SIZE 30"



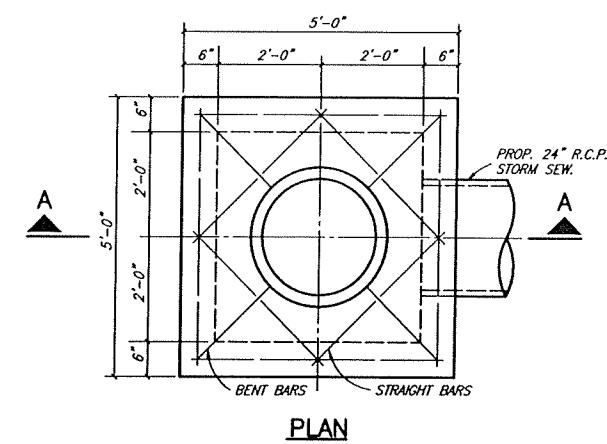
TOP PLAN  
TYPE A & TYPE B  
STORM SEWER MANHOLE



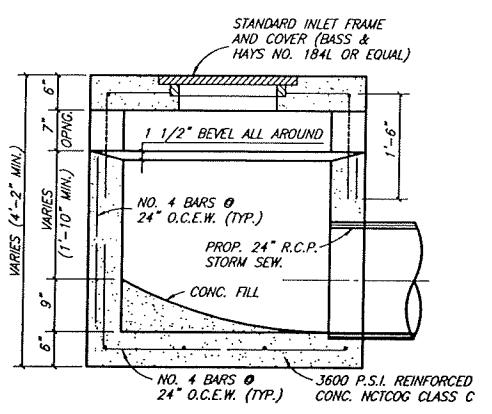
TYPE B STORM SEWER MANHOLE  
MAX. PIPE SIZE 78"



SECTION A-A

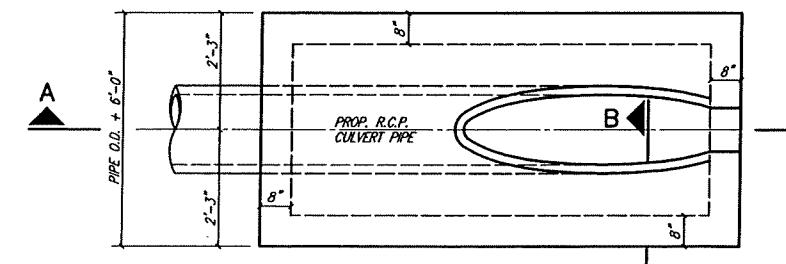


PLAN



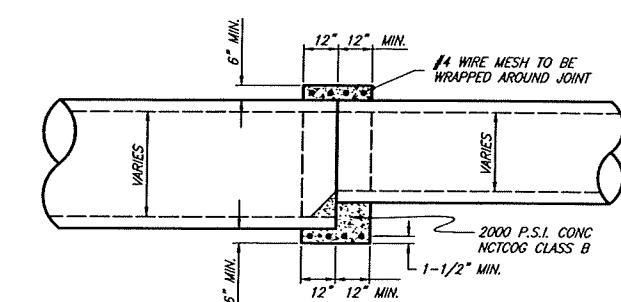
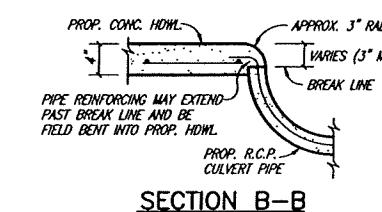
SECTION A-A

STANDARD DROP INLET



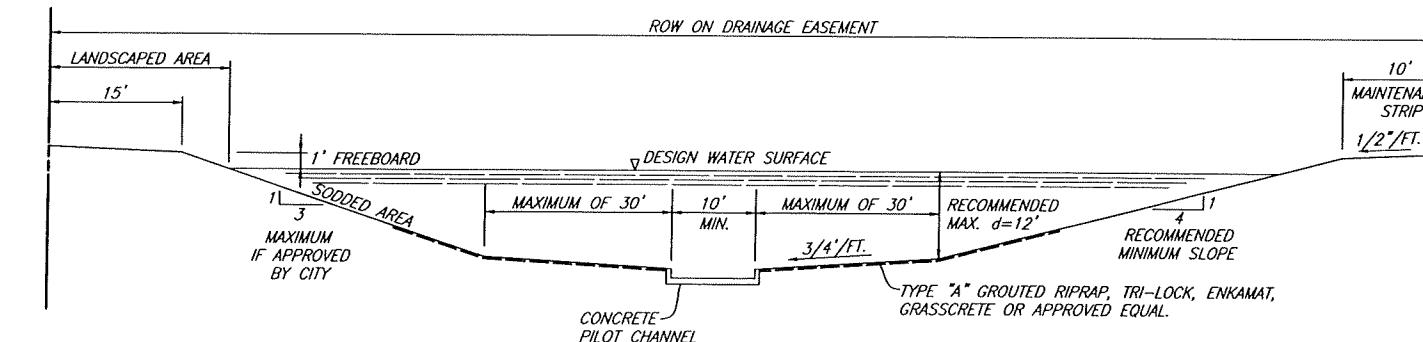
PLAN  
SECTION B-B

SLOPED CONCRETE HEADWALL

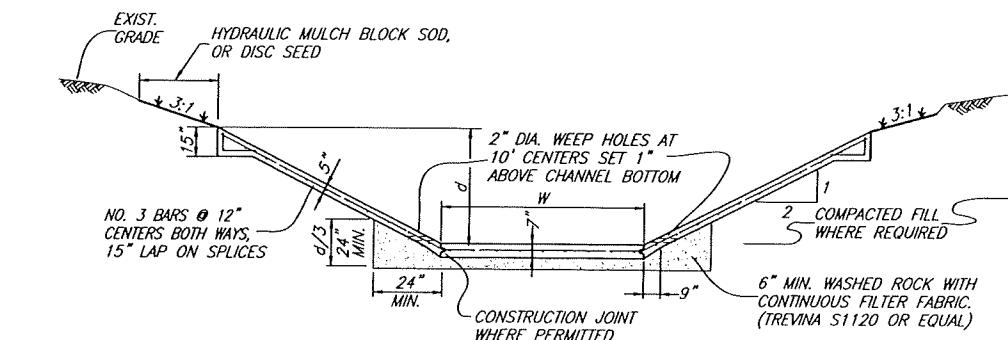


DETAIL OF CONCRETE COLLAR  
FOR R.C.P. OR R.C.A.P. CONNECTIONS  
INSIDE JOINT SHALL BE CONCRETE MORTAR

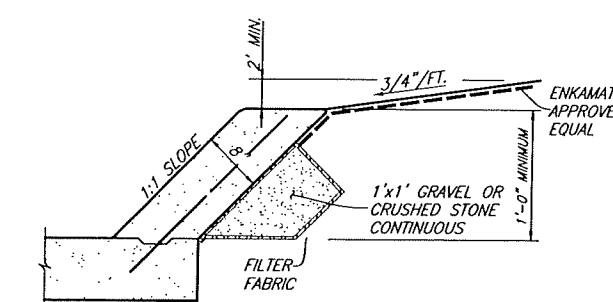
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STORM SEWER - MANHOLE - INLET - DETAILS			
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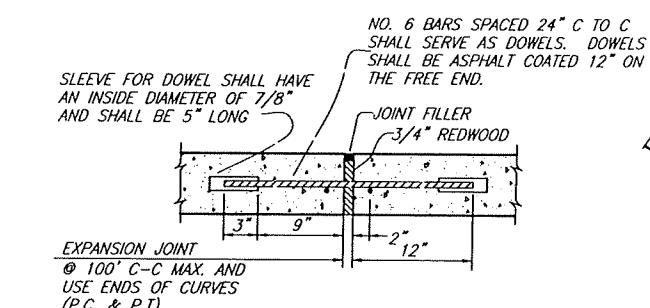
## TYPICAL CHANNEL WITH REINFORCED CONCRETE LINED PILOT CHANNEL



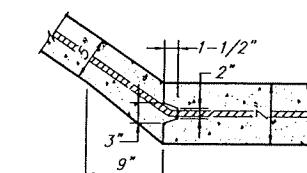
## TYPICAL REINFORCED CONCRETE CHANNEL



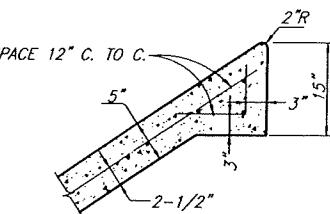
OPTIONAL (SLOPED WALL)



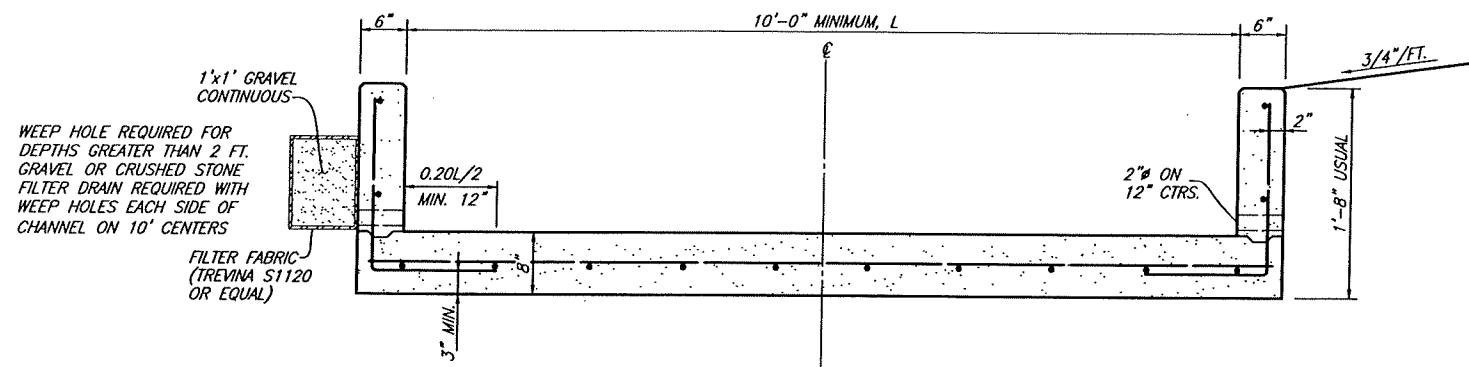
#### TRANSVERSE EXPANSION JOINT



CONSTRUCTION JOINT  
OPTIONAL



### SLAB EDGE = DETAIL "A"

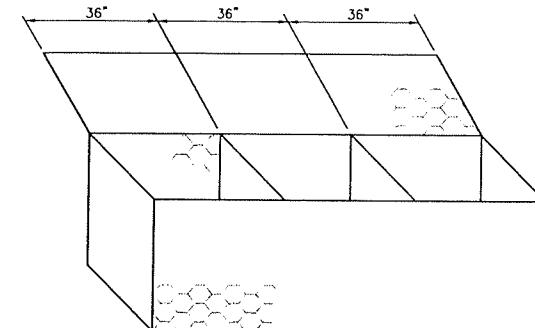


## REINFORCED CONCRETE PILOT CHANNEL (VERTICAL WALL)

#### GENERAL NOTES FOR LINED CHANNELS

1. CONSTRUCTION JOINT SHOWN FOR CONVENIENCE ONLY, MONOLITHIC CONSTRUCTION MAY BE USED.
2. ALL VISIBLE SURFACES SHALL BE A TROWEL FINISH.
3. ALL REINFORCING STEEL SHALL BE  $3/8$ " DIA. AND SPACED 12" CENTER TO CENTER BOTH WAYS UNLESS OTHERWISE SPECIFIED.
4. IF WOOD FORMS ARE USED WITH CONSTRUCTION JOINT, THEY SHALL BE TWO,  $2 \times 4$ ", AND SHALL NOT BE REMOVED UNTIL CONCRETE ON SLOPES IS READY TO BE PLACED.
5. ALL CONCRETE IN LINED CHANNEL SHALL BE NCTCOG CLASS "C" (MIN. 3600 P.S.I.) CONCRETE.
6. FLAT BOTTOM TO BE CONSTRUCTED WHEN CHANNEL WIDTH IS LESS THAN 12 FOOT.
7.  $3/4$ " CHAMFER ON ALL CONCRETE CORNERS.

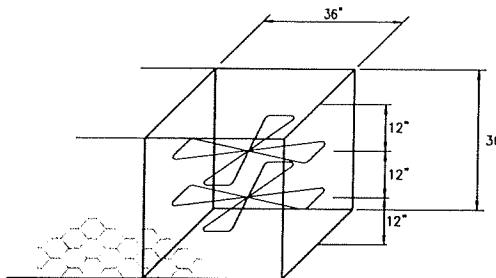
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<b>CHANNELS - CONCRETE</b>			
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### GABION CONTAINER

N.T.S.

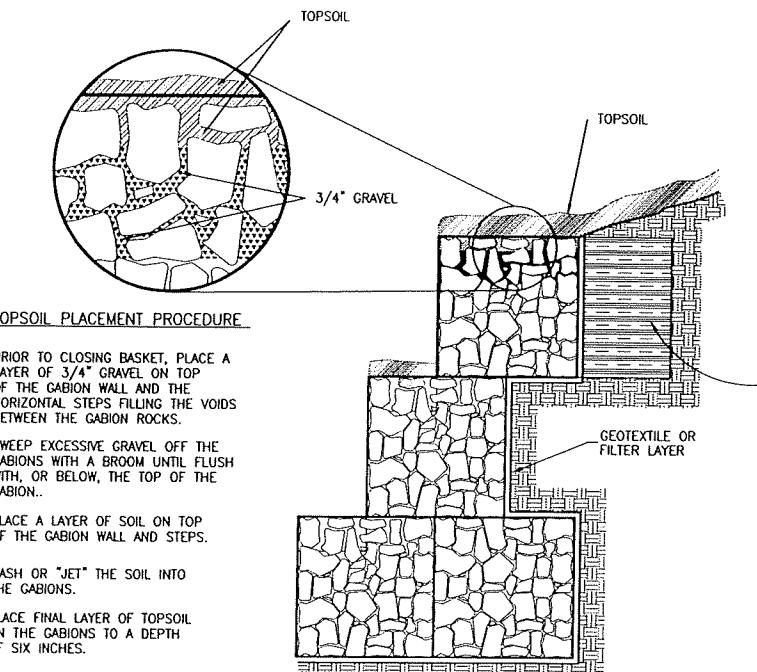
NOTE:  
GABION MAY BE CUT BUT SHALL BE RETIED  
IN A MANNER TO PRODUCE A CLOSED CELL  
AND ALL TIES SHALL BE IN CONFORMANCE  
WITH DETAILS



### GABION TIE

N.T.S.

NOTE:  
ALL TIEING OF GABIONS SHALL BE AS SHOWN



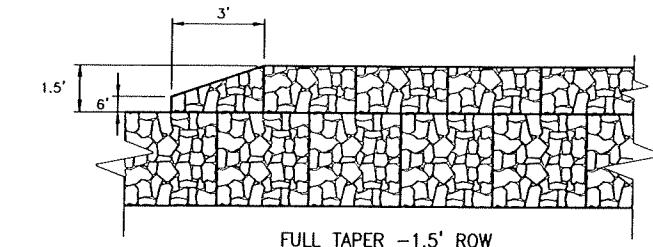
#### TOPSOIL PLACEMENT PROCEDURE

- PRIOR TO CLOSING BASKET, PLACE A LAYER OF 3/4" GRAVEL ON TOP OF THE GABION WALL AND THE HORIZONTAL STEPS FILLING THE VOIDS BETWEEN THE GABION ROCKS.
- SWEET EXCESSIVE GRAVEL OFF THE GABIONS WITH A BROOM UNTIL FLUSH WITH, OR BELOW, THE TOP OF THE GABION.
- PLACE A LAYER OF SOIL ON TOP OF THE GABION WALL AND STEPS.
- WASH OR "JET" THE SOIL INTO THE GABIONS.
- PLACE FINAL LAYER OF TOPSOIL ON THE GABIONS TO A DEPTH OF SIX INCHES.

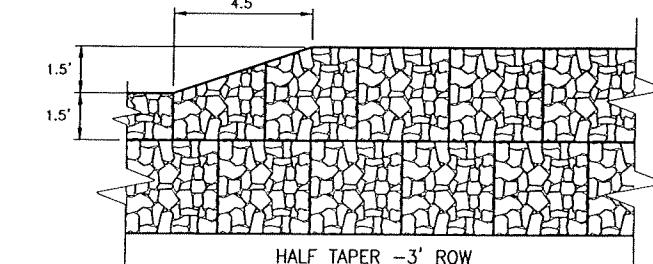
#### SECTION

NOTE:  
DO NOT USE SHARP TOOLS WHEN SPREADING TOPSOIL ON GABIONS

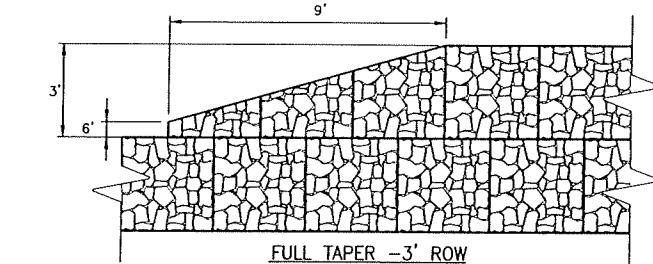
### VEGETATED GABION WALL TOPSOIL PLACEMENT



FULL TAPER -1.5' ROW



HALF TAPER -3' ROW

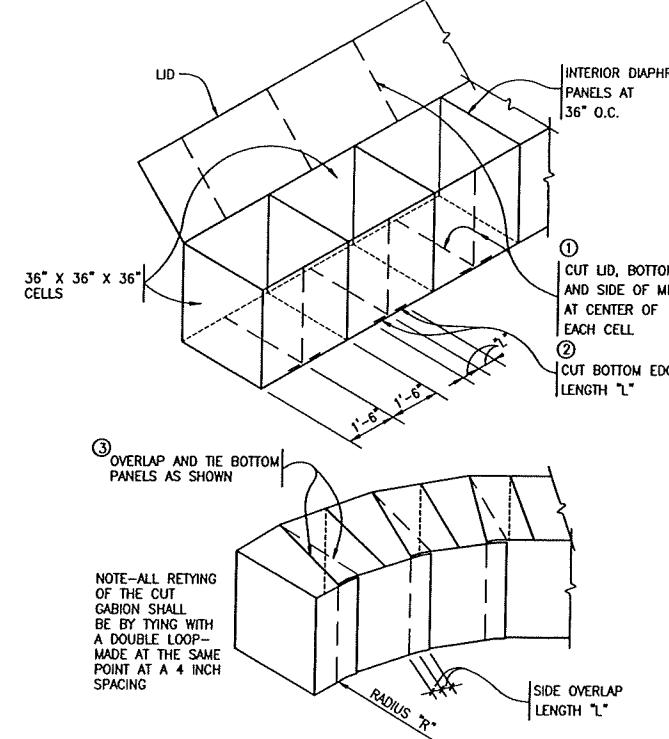


FULL TAPER -3' ROW

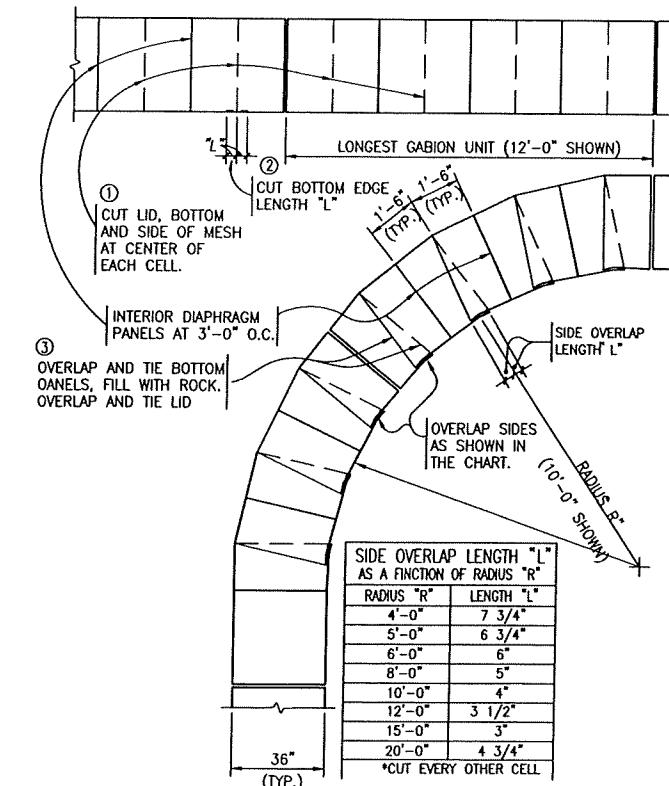
### TAPERED WALL HEIGHT TRANSITION

### INNER TIE WIRE

N.T.S.



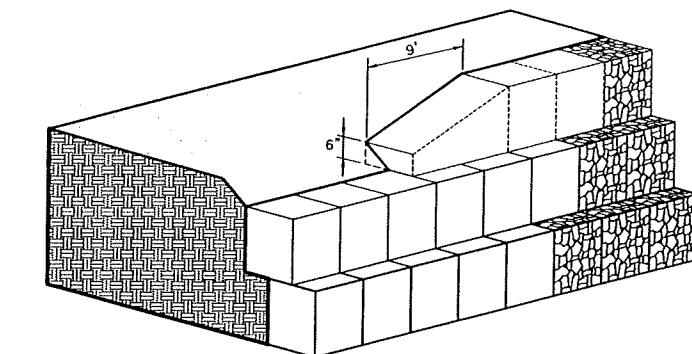
### GABION RADIUS PROCEDURE



### GABION RADIUS PROCEDURE

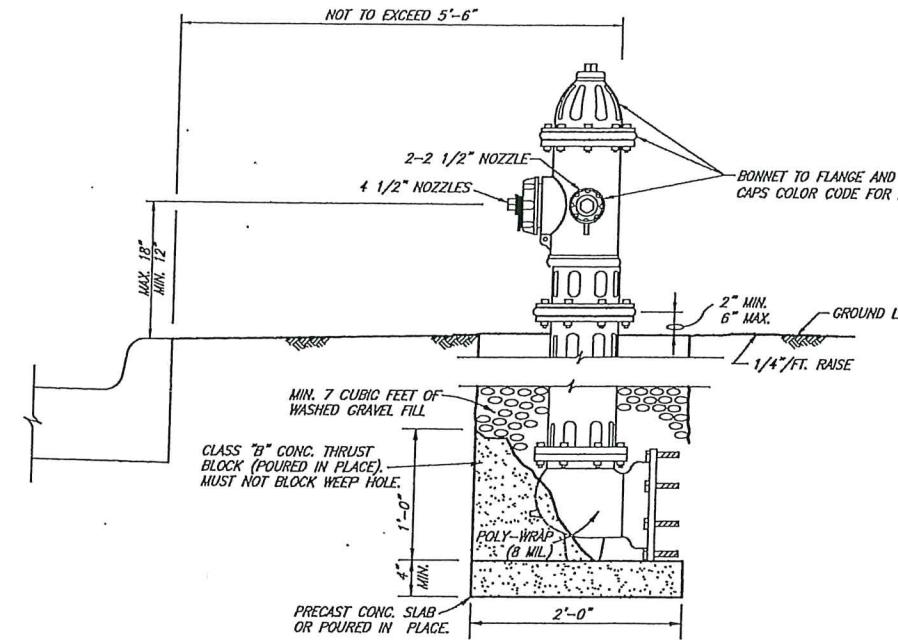
RADIUS "R"	LENGTH "L"
4'-0"	7 3/4"
5'-0"	6 3/4"
6'-0"	6"
8'-0"	5"
10'-0"	4"
12'-0"	3 1/2"
15'-0"	3"
20'-0"	4 3/4"

\*CUT EVERY OTHER CELL



### STANDARD TAPER FOR WALL HEIGHTS TRANSITIONS

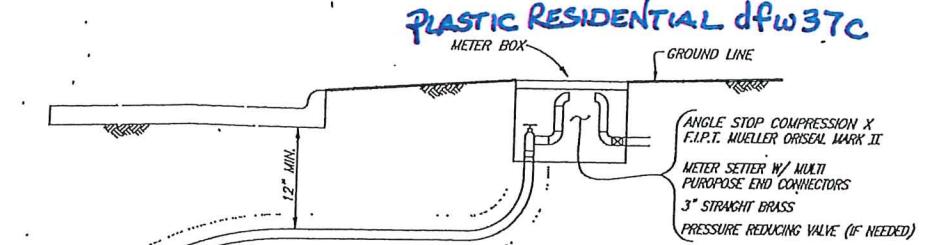
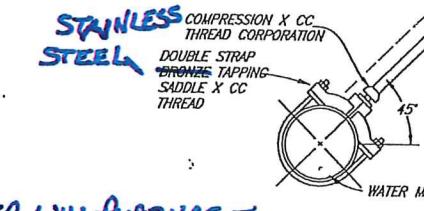
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## FIRE HYDRANT NOTES:

1. IN GENERAL ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARDS SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE FOR WATER AND SANITARY SEWER IMPROVEMENTS. FIRE HYDRANTS SHALL HAVE A 5-1/4" MINIMUM VALVE OPENING AND WITH A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE. ALL HYDRANTS SHALL BE APPROVED BY THE CITY.
2. BONNET COLOR  
WATER MAIN CAP  
LESS THAN 500 G.P.M.  
500-999 G.P.M.  
1,000-1,499 G.P.M.  
1,500 & GREATER G.P.M.  
COLOR  
RED  
ORANGE  
GREEN  
BLUE

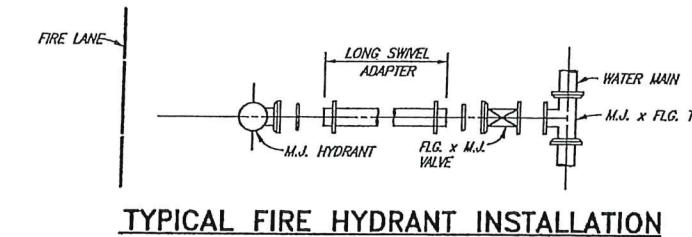
DEVELOPER WILL PURCHASE METERS FROM CITY.  
DEVELOPER WILL REPLACE ANY DAMAGED METER



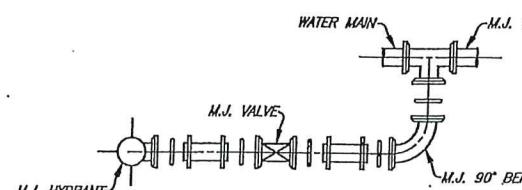
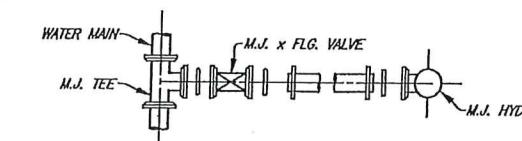
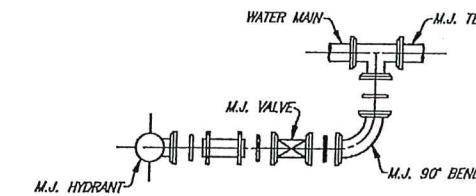
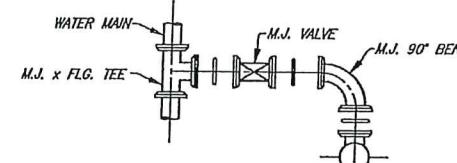
## SERVICE CONNECTION NOTES:

1. ALL METER BOXES SHALL BE BASS & HAYS #34 GALVANIZED BOX OR EQUAL.
2. DOUBLE STRAP BRONZE TAPPING SADDLE (6x3/4" C.C. THREADS) REQUIRED FOR CONNECTION.
3. MUELLER BRASS, FORD BRASS, OR AS APPROVED BY THE CITY.
4. WATER SERVICES SHALL NOT BE CONNECTED TO FIRE HYDRANT LINES.
5. EMBANKMENT FOR SERVICE LINE SHALL BE 6" ALL AROUND OF NATURAL GRAVEL NCTCOG ITEM 2.1.8 (6).

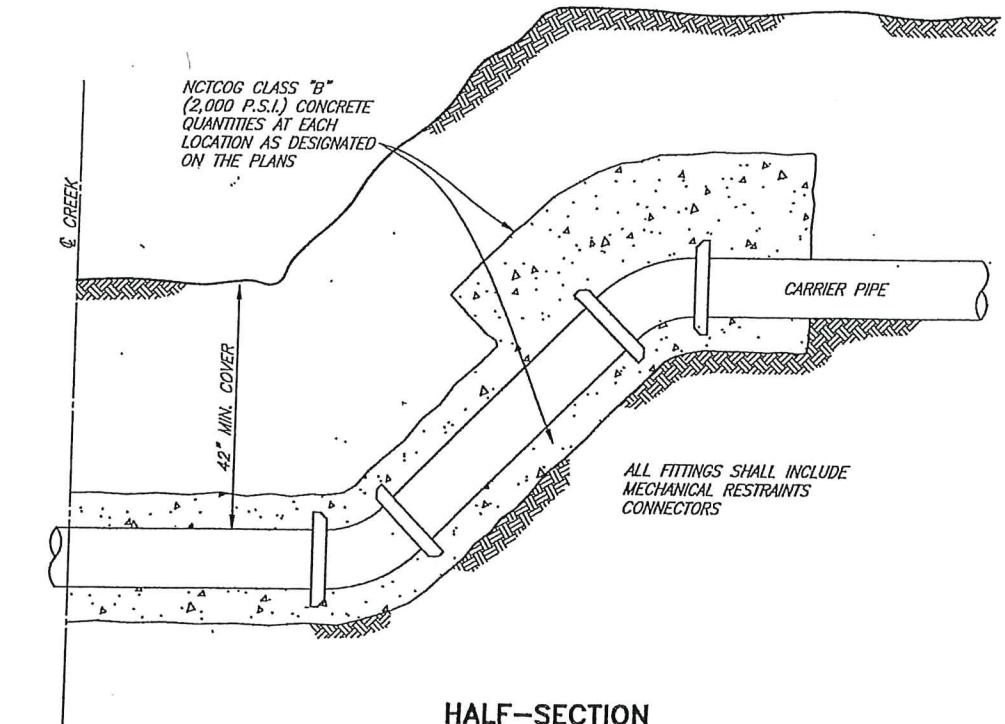
TYPICAL SERVICE CONNECTION WITH METER BOX  
\* COMMERCIAL METER BOX 55425 TRAFFIC RATED  
\* ALL METERS WILL BE OF THE CITY'S SELECTION



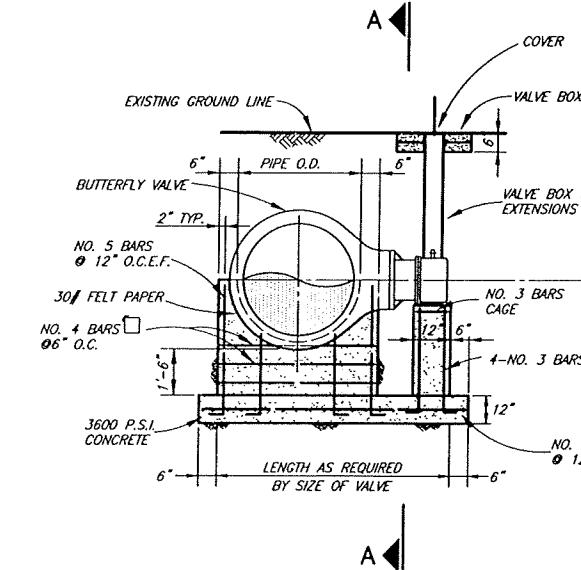
TYPICAL FIRE HYDRANT INSTALLATION



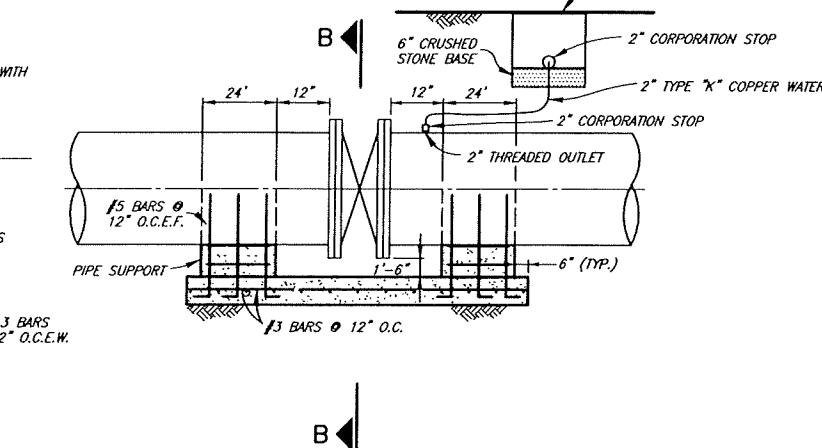
TYPICAL FIRE HYDRANT INSTALLATION PLANS

HALF-SECTION  
TYPICAL CREEK CROSSING

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WATER			
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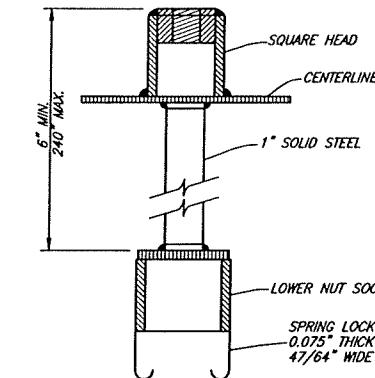


SECTION B-B

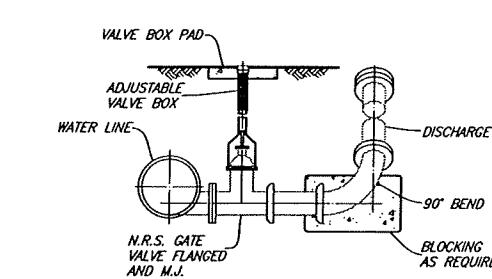


SECTION A-A

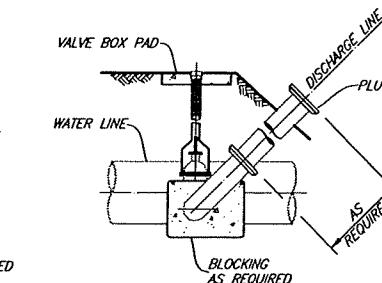
BUTTERFLY VALVE INSTALLATION



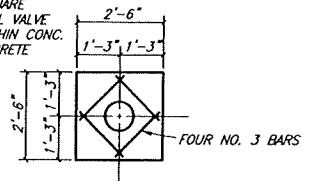
SPRING LOCK VALVE EXTENSION



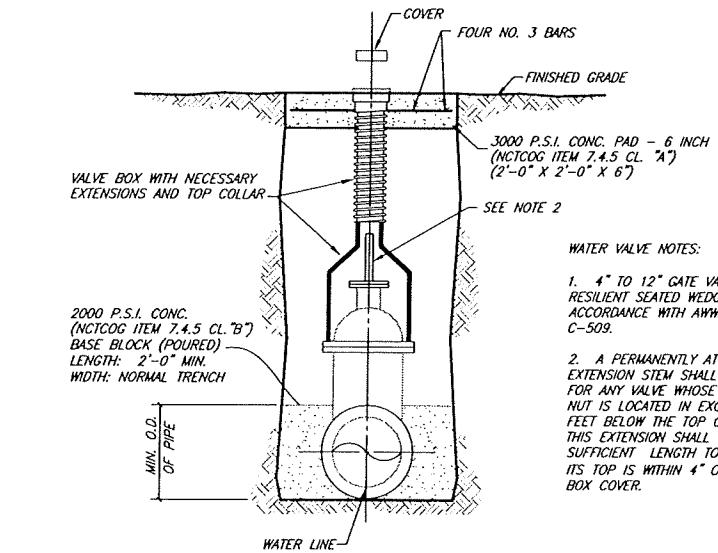
BLOW OFF VALVE



CONCRETE PAD 30" SQUARE  
BE Poured AROUND ALL VALVE  
BOXES NOT PLACED WITHIN CONC.  
PVT. 3000 P.S.I. CONCRETE



VALVE BOX PAD PLAN

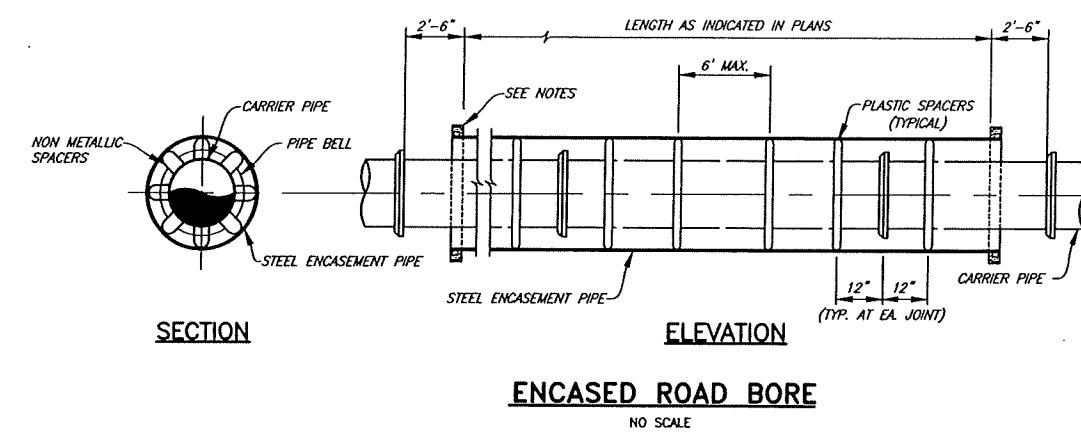
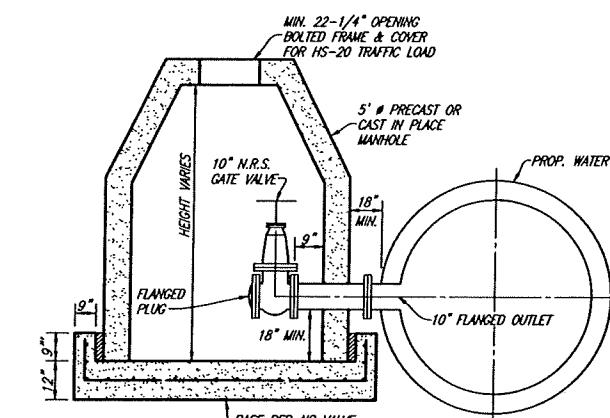
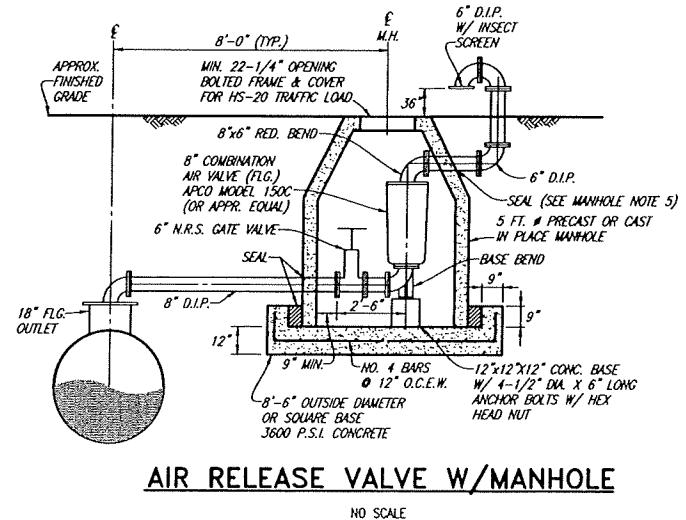
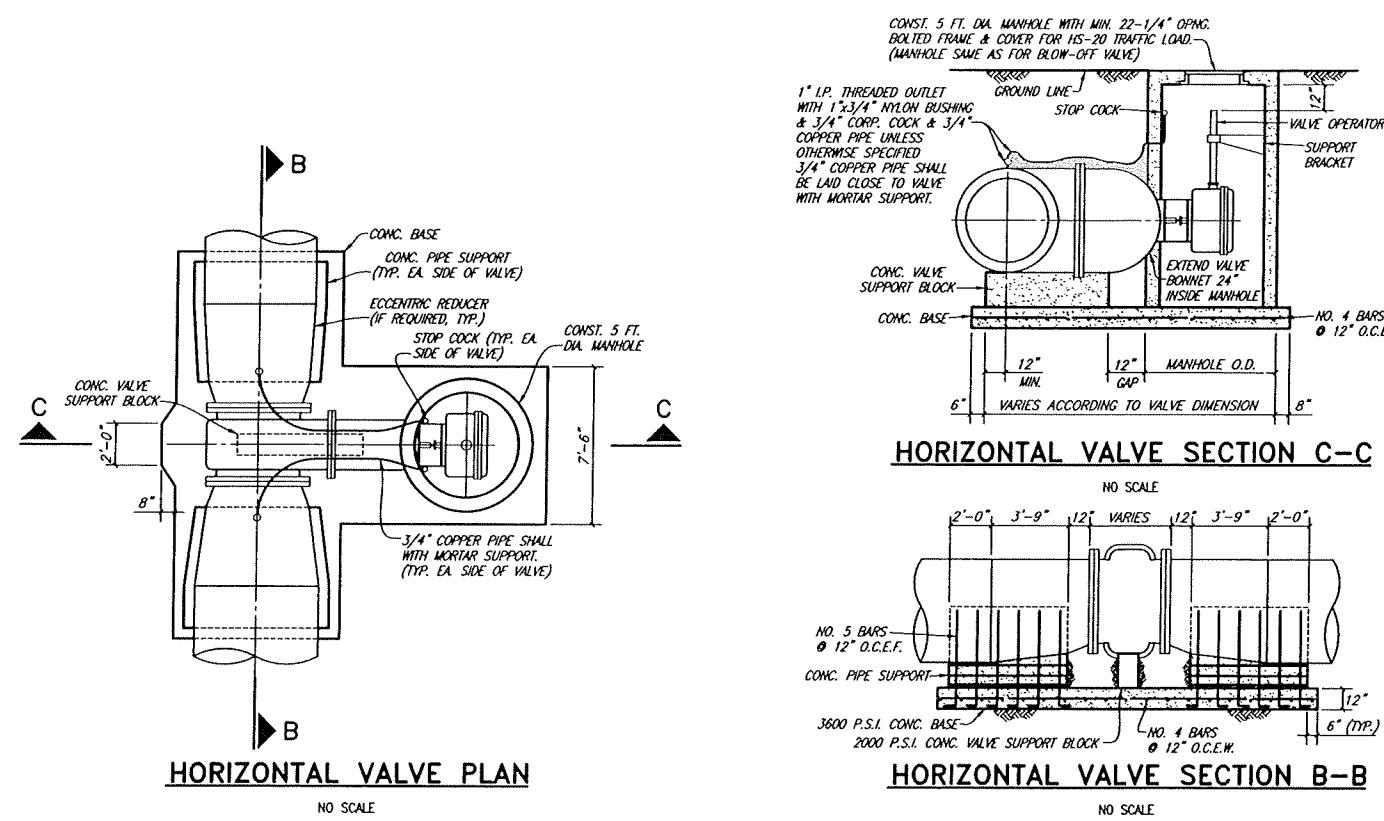


VALVE SETTING & BOX

VALVE BOX WITH EXTENSION

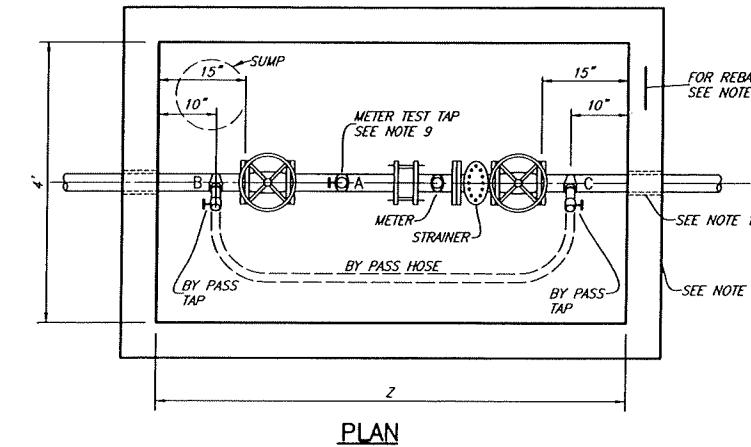
GATE VALVE INSTALLATION

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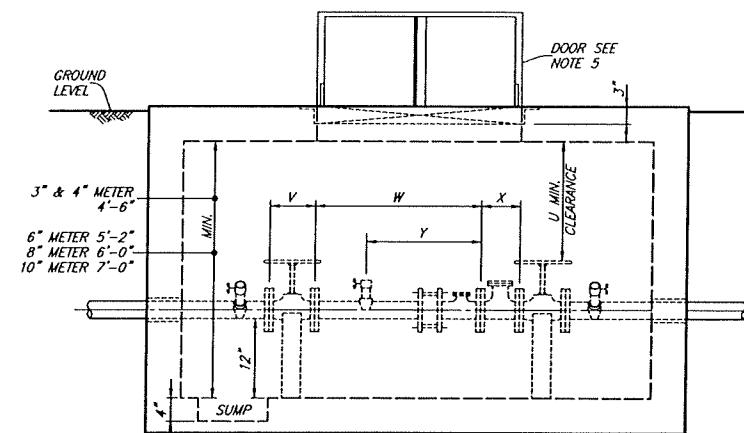


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## METER VAULT & BY-PASS SPECIFICATIONS



PLAN



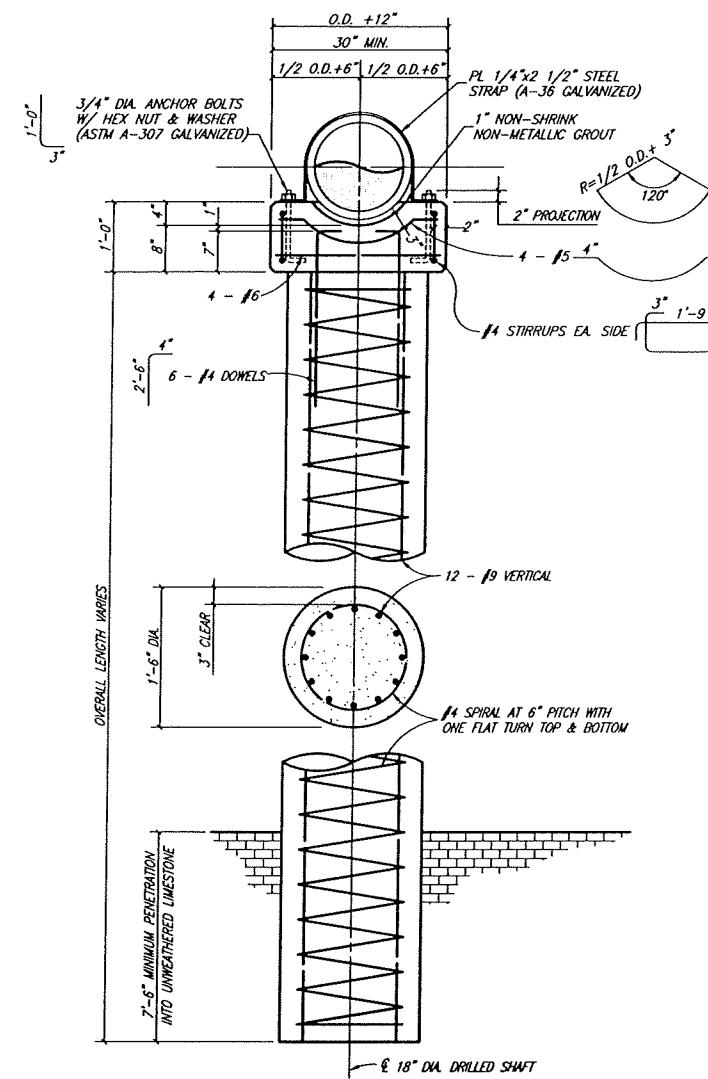
ELEVATION

METER VAULT

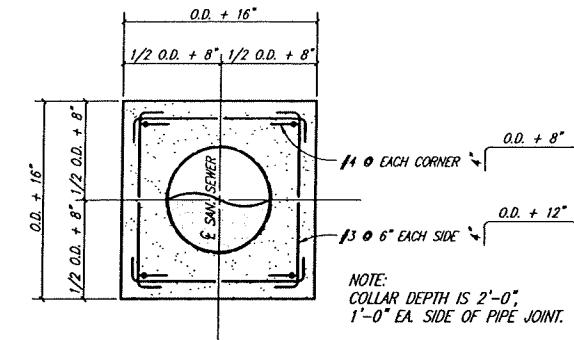
METER VAULT											
DOMESTIC					IRRIGATION						
METER SIZE	U	V	W	Y	Z	METER SIZE	U	V	W	Y	Z
3"	25"	8"	11-1/2"	-	6'-10"	3"	25"	8"	16-1/2"	9"	6'-10"
4"	22"	9"	13-1/2"	-	7'-7"	4"	22"	9"	19-1/2"	10"	7'-7"
6"	26"	10-1/2"	13-1/2"	-	8'-2"	6"	26"	10-1/2"	19-1/2"	13"	8'-2"
						8"	31"	11-1/2"	25-1/2"	17"	9'-1"
						10"	37"	13"	29-1/2"	21"	10'-7"

1. NOTIFY THE UTILITY OPERATIONS DEPARTMENT PRIOR TO CONSTRUCTION OF METER VAULT OR BY-PASS ASSEMBLY.
2. THE METER VAULT CAN BE EITHER Poured IN PLACE OR PRE-FABRICATED. ALL WALLS, EITHER Poured IN PLACE OR PRE-FABRICATED, SHALL BE MONOLITHIC POUR. NO SEAMS OR EXTENSIONS WILL BE ALLOWED. CONCRETE SHALL BE 6" THICK-3,000 P.S.I., REINFORCED WITH #4 STEEL BARS ON 12" CENTERS EACH WAY, ON Poured IN PLACE VAULTS. PRE-FABRICATED VAULTS SHALL BE 4" THICK-4,500 P.S.I. CONCRETE, REINFORCED WITH #4 STEEL BARS ON 8" CENTERS BOTH WAYS. THESE ARE MINIMUM SPECIFICATIONS.
3. THE BOTTOM OF THE VAULT SHALL BE 6" THICK-3,000 P.S.I. CONCRETE, REINFORCED WITH #4 STEEL BARS ON 12" CENTERS BOTH WAYS. A 4" DEEP x 12" DIAMETER SUMP SHALL BE INSTALLED TO ONE SIDE AND IN EITHER CORNER OF THE BOTTOM OF THE SLAB. A 4" CUSHION OF SAND SHALL BE INSTALLED UNDER THE SLAB. IF A PRE-FABRICATED VAULT IS TO BE USED, A LAYER OF RAM-NEX SHALL BE INSTALLED BETWEEN THE WALLS AND BOTTOM SLAB.
4. THE VAULT SHALL NOT BE INSTALLED IN ANY DRIVE OF PARKING AREA AND MUST BE LOCATED IN A UTILITY EASEMENT DEDICATED TO THE CITY. ALL PIPING INSIDE THE VAULT AND THE VAULT ITSELF MUST BE INSPECTED AND APPROVED BY THE UTILITY OPERATIONS DEPARTMENT.
5. THE VAULT LID SHALL BE BILCO TYPE Q-4 LEAF DESIGN LID. ANGLE FRAME IS 1/4" STEEL WITH STRAP ANCHORS BOLTED TO THE EXTERIOR. THE LEAF IS 1/4" STEEL DIAMOND PATTERN PLATE, PIVOTING ON TORSION BARS FOR EASY OPERATIONS. THE MINIMUM LIVE LOAD CAPACITY IS 150 LBS. PER SQUARE FOOT. THE LID SIZE SHALL BE 3x3'. THE LID SHALL BE PAINTED WITH 43-38 TNEMEC DIFFUSED ALUMINUM PAINT OR APPROVED EQUAL.
6. ALL PIPING INSIDE THE VAULT SHALL BE DUCTILE IRON PIPE WITH FLANGED FITTINGS. THE OUTSIDE DIMENSION OF THE PIPING SHALL BE WITHIN THE FOLLOWING RANGES: 3" PIPE - 3.74" TO 3.86"; 4" PIPE - 4.74" TO 4.90"; 6" PIPE - 6.81" TO 6.96"; 8" PIPE - 8.98" TO 9.20"; 10" PIPE - 11.04" TO 11.61". VARIATION FROM THESE DIMENSIONS WILL RESULT IN THE VAULT BEING REJECTED.
7. THE STRAINER, METER AND FLANGED ADAPTER COUPLING WILL BE PROVIDED AND INSTALLED BY THE CITY AT THE CONTRACTORS EXPENSE.
8. THE STRAINER, METER AND FLANGED ADAPTER COUPLING WILL NOT BE INSTALLED UNTIL THE METER VAULT AND PIPING ARE ACCEPTED BY THE CITY UTILITY OPERATIONS DEPARTMENT. ALL UTILITIES MUST ALSO HAVE BEEN ACCEPTED AND RELEASED BY THE CITY ENGINEERING OFFICE PRIOR TO METER INSTALLATION.
9. THE CONTRACTOR SHALL MAKE THE BY-PASS AND METER TEST TAP INSIDE THE VAULT. IF THE SERVICE IS TO BE USED STRICTLY AS A DOMESTIC OR DOMESTIC / IRRIGATION COMBINATION, TAP A ON THIS DRAWING IS NOT NECESSARY. IF THE SERVICE IS USED STRICTLY FOR IRRIGATION TAP A IS REQUIRED. TAP A MUST BE AT LEAST TWO PIPE DIAMETERS DOWN-STREAM OF THE METER. TAPS B & C MUST BE MADE AT AN APPROXIMATE 45% ANGLE ON EACH END OF THE PIPE AND CENTERED 10 INCHES AWAY FROM THE WALL. ALL TAPS SHALL BE 2" AND THE CONTRACTOR SHALL INSTALL APPROVED SERVICE SADDLES WITH BRASS NIPPLES AND NO. 7550 OHIO BRASS OR APPROVED EQUAL GATE VALVES.
10. THE MAIN LINE GATE VALVES SHALL BE RESILIENT WEDGE DESIGN, NON-RISING STEM VALVES, WHICH HAVE RECEIVED FORMAL APPROVAL FROM THE CITY. ALL VALVES SHALL BE FLANGED BOTH ENDS AND HAVE HAND WHEELS.
11. CONTRACTOR SHALL HAVE A CHOICE OF EITHER HAVING A LINK SEAL WALL SLEEVE MODEL WS-6-28-S-6 FOR 3" PIPE; MODEL WS-8-32-S-8 FOR 4" PIPE; MODEL WS-10-36-S-6 FOR 6" PIPE; MODEL WS-12-37-S-6 FOR 8" PIPE; MODEL WS-14-37-S-6 FOR 10" PIPE, CAST IN THE WALL VAULT. THE ABOVE MENTIONED WALL SLEEVES SHALL USE THE FOLLOWING LINK SEALS: FOR 3" PIPE - 5#LS325-C; FOR 4" PIPE - 5 - #LS400-C; FOR 6" PIPE 7 - #LS400-C; FOR 8" PIPE - 9 #LS400C; FOR 10" PIPE - 12 - #LS325-C. THE CONTRACTOR MAY HAVE THE WALL CORED BEFORE INSTALLATION OF VAULT AND PIPING. IF THE WALL IS CORED THE FOLLOWING SPECIFICATIONS SHALL BE USED: FOR 3" PIPE CORE SIZE SHALL BE 6" AND USE 5 - #LS325-C LINK SEALS; FOR 4" PIPE CORE SIZE SHALL BE 8" AND USE 5 - #LS400-C LINK SEALS; FOR 6" PIPE CORE SIZE SHALL BE 10" AND USE 7 - #LS400-C LINK SEALS; FOR 8" PIPE CORE SIZE SHALL BE 12" AND USE 9 - #LS400-C LINK SEALS; FOR 10" PIPE CORE SIZE SHALL BE 14" AND USE 11 - LS425-C LINK SEALS. BREAKING OF THE WALL WITH A JACKHAMMER OR USING PRE-CAST KNOCKOUT PANELS IS NOT PERMITTED.
12. THERE WILL BE A CONCRETE SUPPORT UNDER EACH GATE VALVE.
13. MINIMUM DEPTH OF ANY VAULT SHALL BE 4'-6".
14. IF ELEVATION ADJUSTMENTS ARE NEEDED ON THE ACCESS LID, CONTRACTOR SHALL CONTRACT UTILITY OPERATIONS DEPARTMENT FOR APPROVAL PRIOR TO IMPLEMENTATION OF ADJUSTMENTS.

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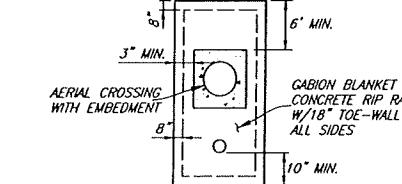
AERIAL CROSSING PIER & PIER CAP



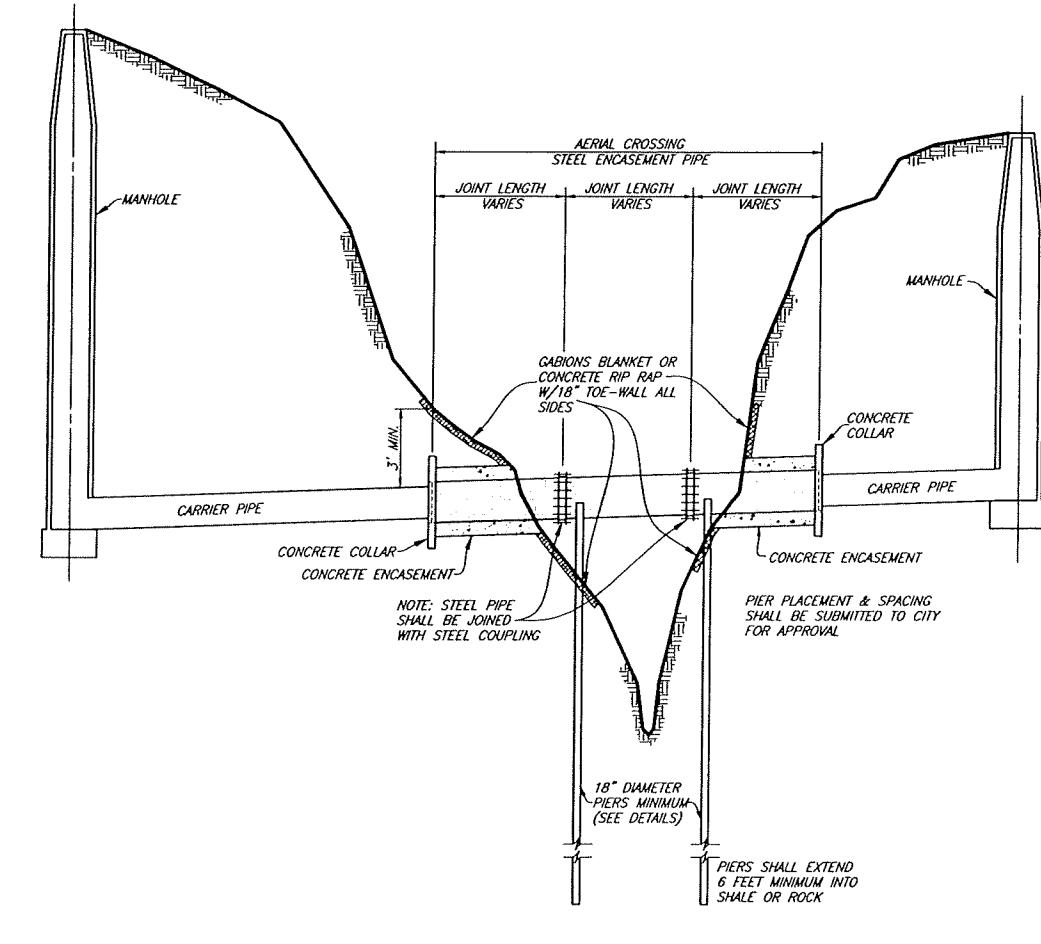
AERIAL CROSSING CONCRETE COLLAR

STEEL PIPE SHALL BE OF THE TYPE SHOWN IN THE ENGINEER'S DESIGN. STEEL PIPE SHALL HAVE A THICKNESS REQUIRED FOR SIZE AND SPAN WITH MINIMUM WALL THICKNESS OF  $3/8$  INCHES.

PIPE COUPLINGS SHALL BE PLACED A MAXIMUM OF 5 FEET FROM CENTERLINE OF PIERS.



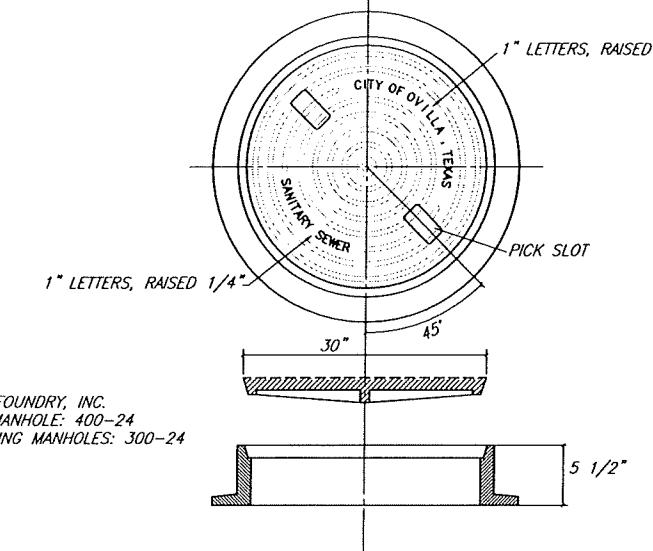
BANK PROTECTION (TYP.)



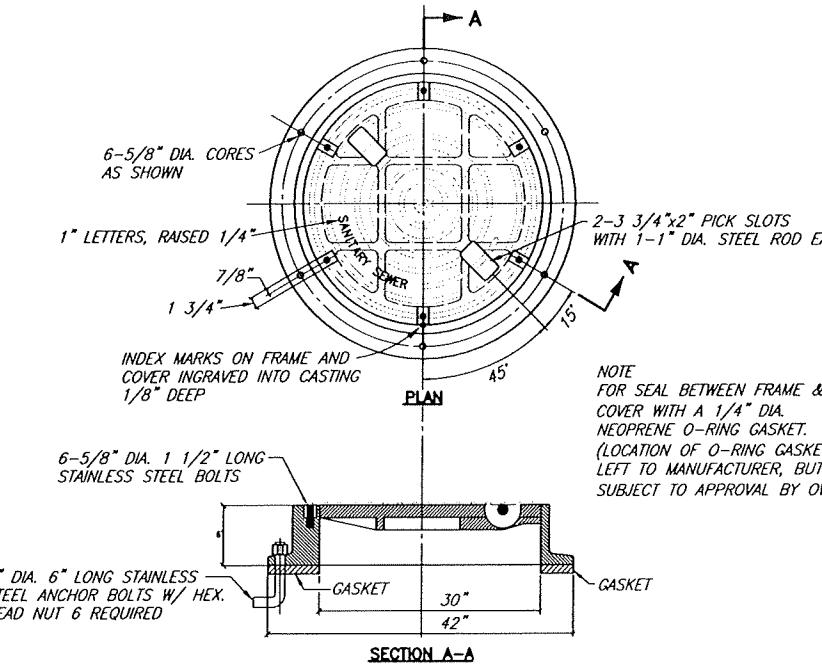
AERIAL CROSSING

**NOTE:**  
ENGINEERING DESIGN SHALL BE SUBMITTED TO CITY FOR APPROVAL FOR USE FOR EACH CROSSING. PIERS SHALL BE PLACED AT MAXIMUM SPAN DISTANCE AS DICTATED BY ENGINEER'S DESIGN.  
ALL DESIGNS SHALL BE COMPLETED BY A PROFFESIONAL ENGINEER LICENSED IN THE STATE OF TEXAS.  
GEOTECHNICAL BORES AND REPORT SHALL BE PART OF DESIGN SUBMITED TO THE CITY.

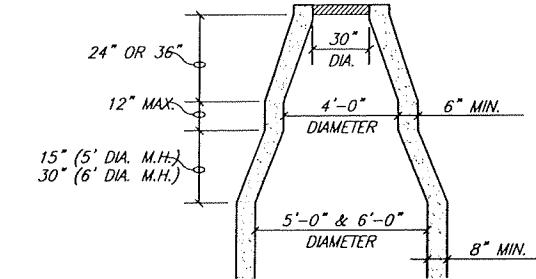
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<b>SANITARY SEWER</b>			
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**MANHOLE RING AND COVER**  
WITH LOCKING DEVICE & PICK SLOTS



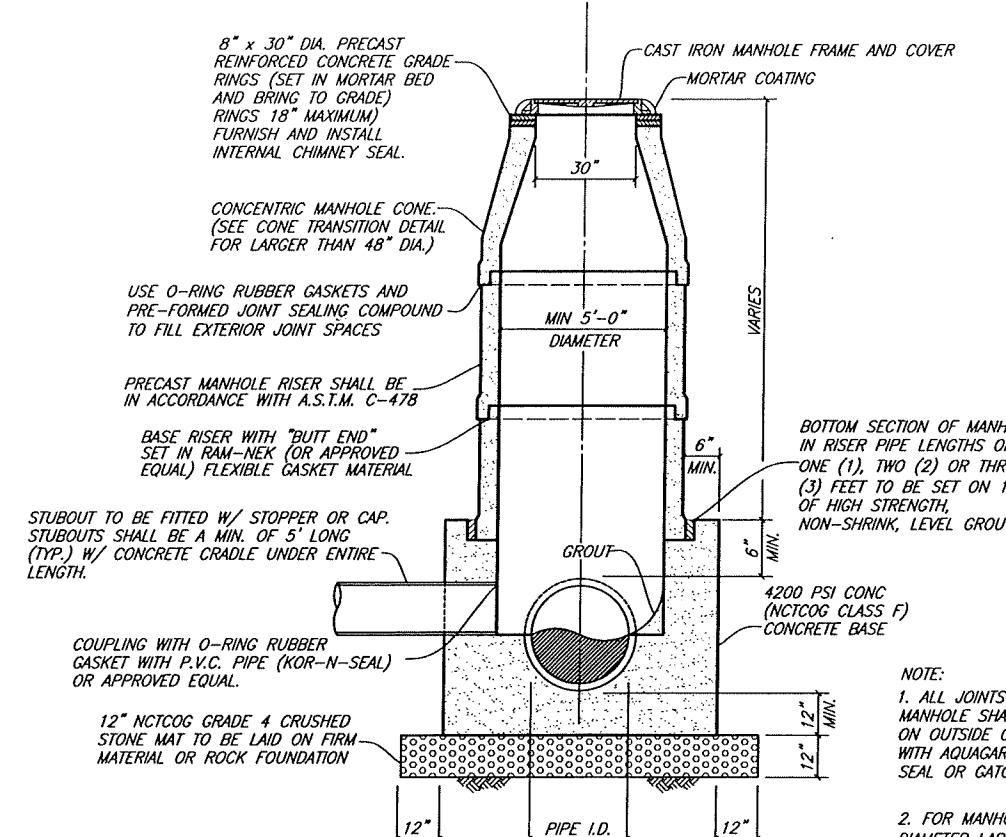
**PRESSURE TYPE MANHOLE FRAME AND COVER**



**CONE TRANSITION**

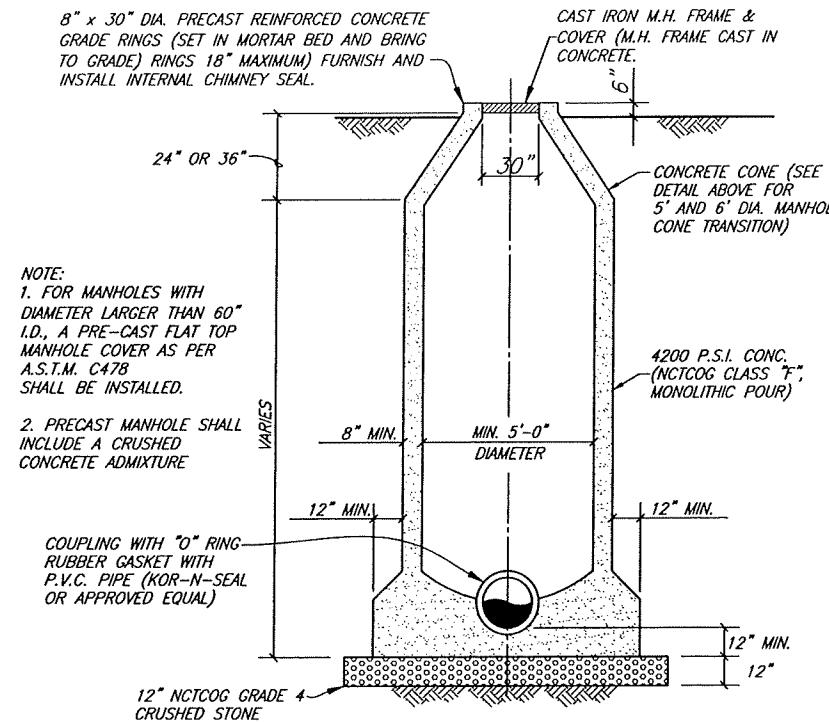
5' & 6' DIAMETER MANHOLES ONLY

MANHOLE CONE NOTE:  
FOR MANHOLES WITH DIAMETER LARGER THAN 48" I.D., A PRE-CAST FLAT TOP MANHOLE COVER AS PER A.S.T.M. C478 SHALL BE INSTALLED.



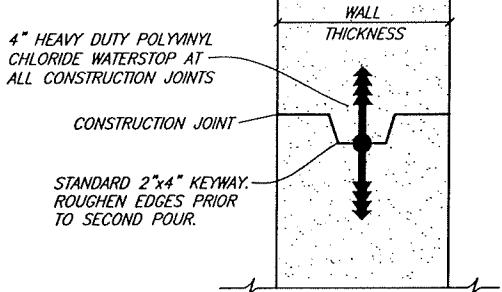
**PRECAST CONCRETE MANHOLE**

5' & 6' DIAMETER MANHOLES



**CAST IN PLACE CONCRETE MANHOLE**

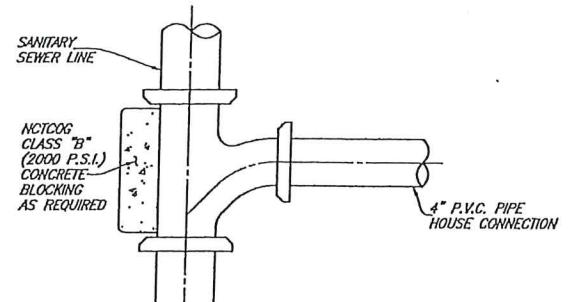
5' & 6' DIAMETER MANHOLES



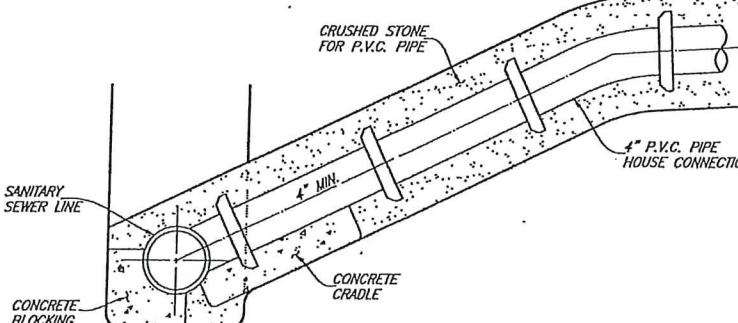
**MANHOLE CONSTRUCTION JOINT**

KEYWAY WITH WATERSTOP

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<b>SANITARY SEWER - MANHOLES</b>			
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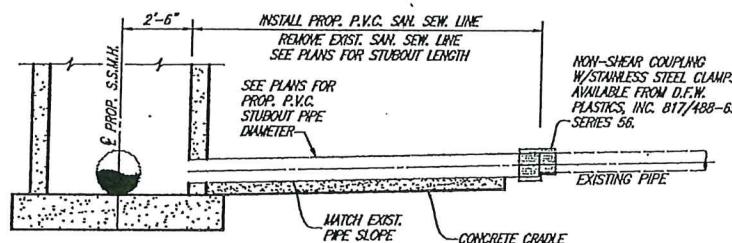
PLAN



SECTION

### TYPICAL SEWER HOUSE SERVICE CONNECTION

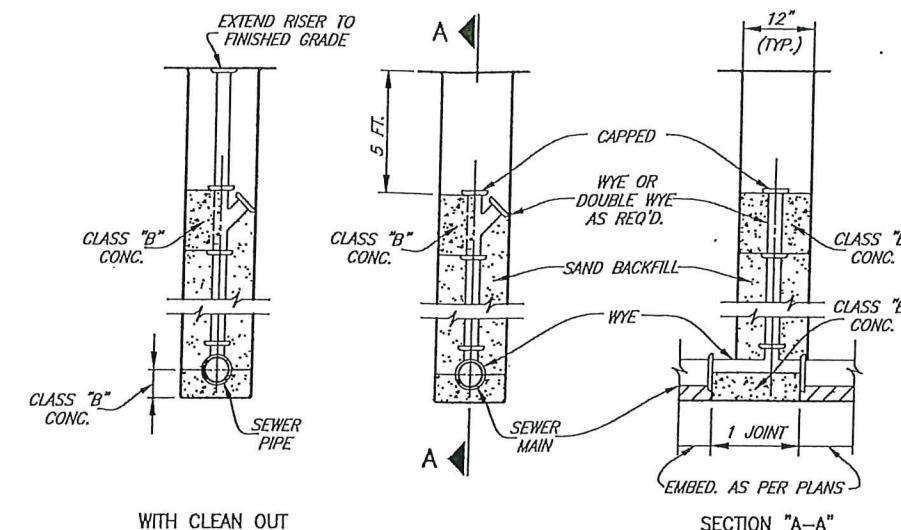
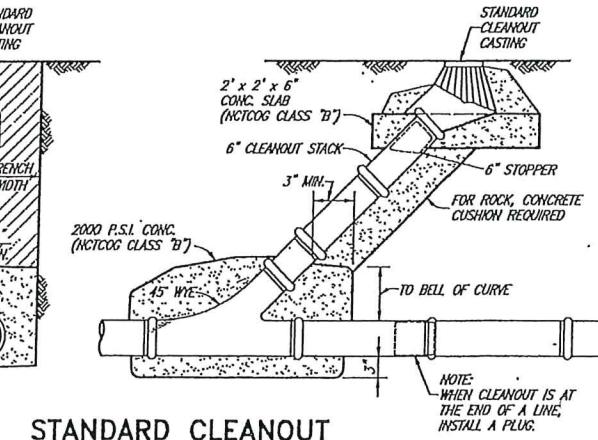
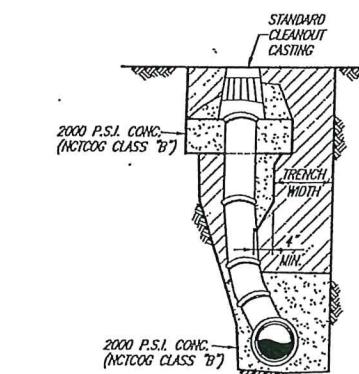
SANITARY SEWER CLEANOUT BOOTS SHALL BE  
BASS & HAYS # 339 OR APPROVED EQUAL.



TYPICAL STUBOUT CONNECTION

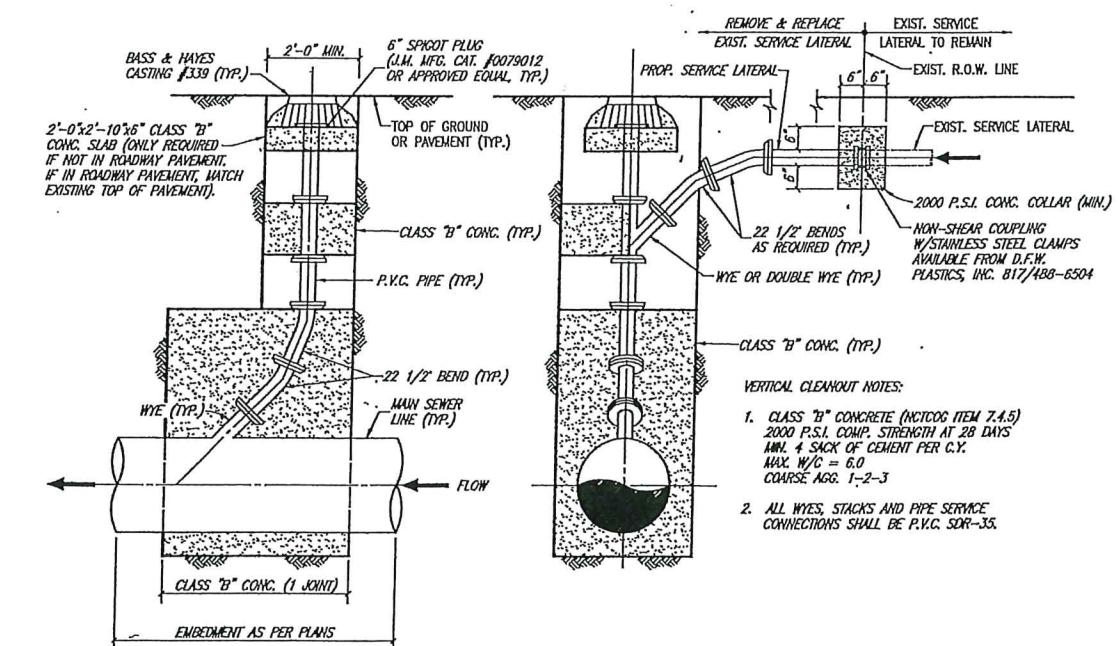
NO SCALE

NOTE:  
MATCH SOFFITS UPSTREAM OF MANHOLE  
MATCH FLOW LINES DOWNSTREAM OF MANHOLE

DEEP CUT CLEANOUT  
GREATER THAN 10 FEET

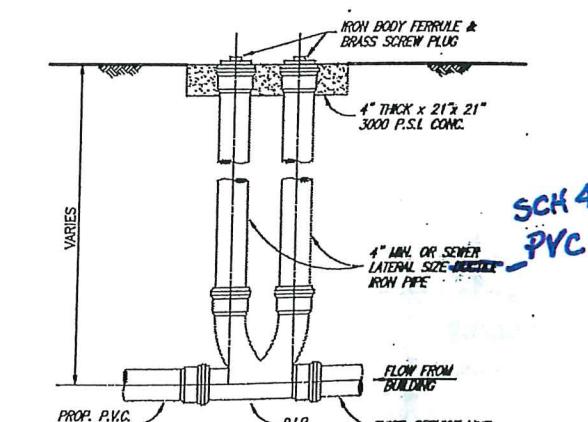
STANDARD CLEANOUT

NO SCALE



VERTICAL CLEANOUT CONNECTION

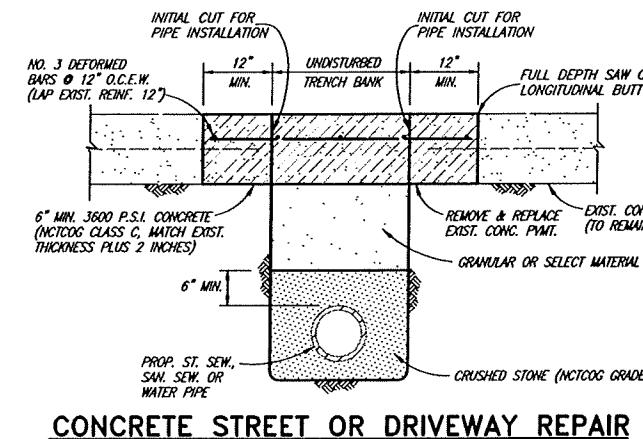
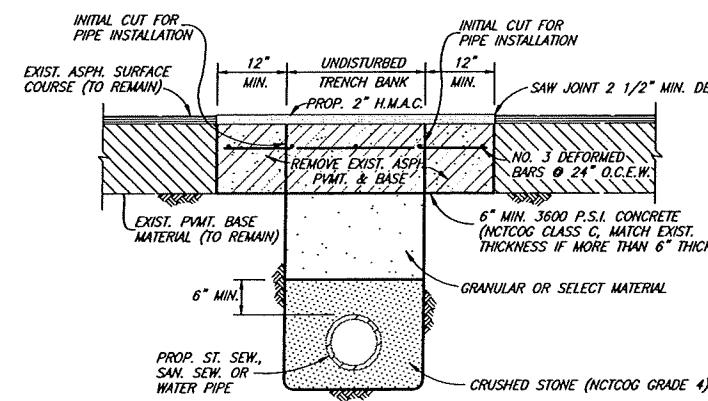
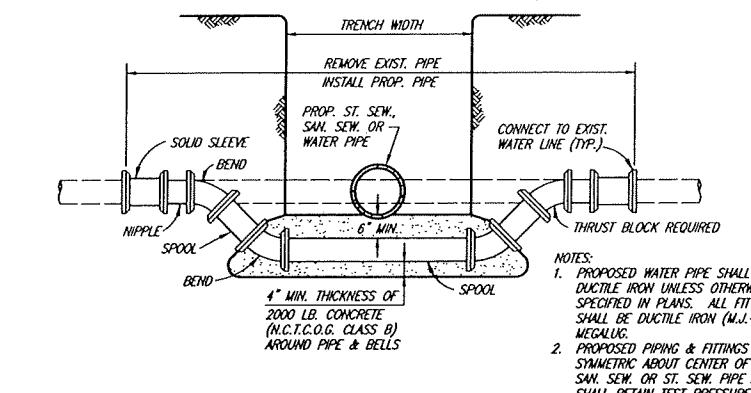
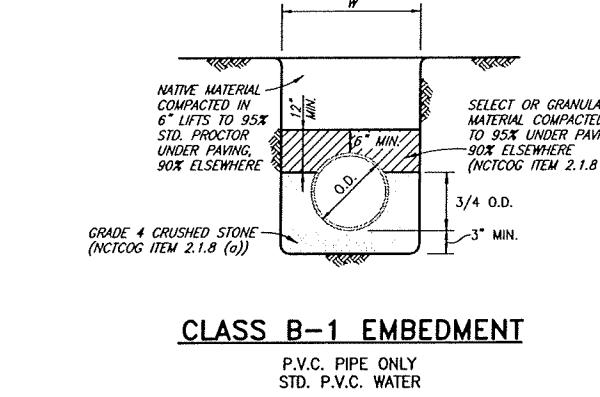
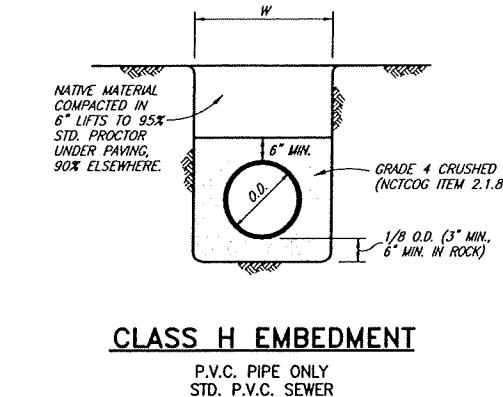
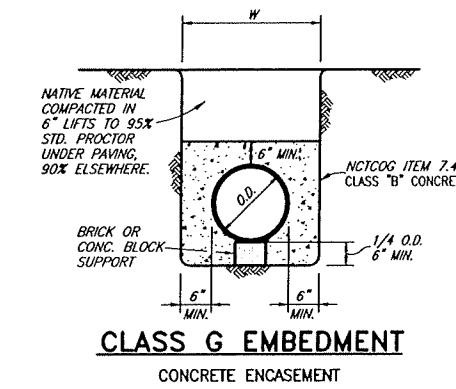
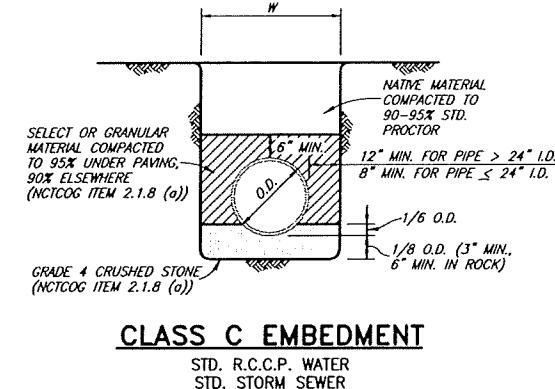
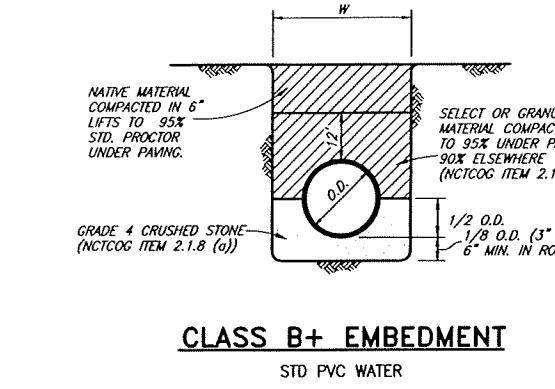
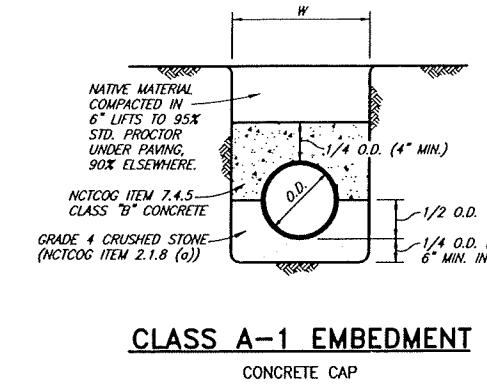
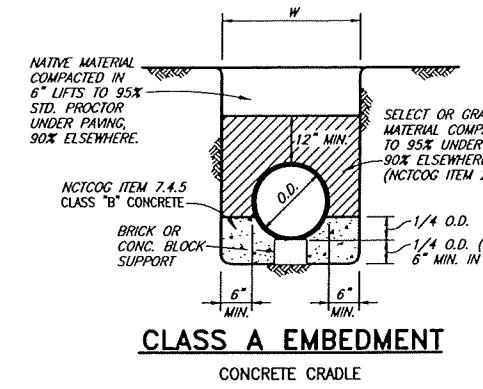
(CONNECTION, WYE, CONCRETE, BENDS, CASTING, ETC. ALL SUBSIDIARY TO CLEANOUT)



TYPICAL TWO WAY CLEANOUT

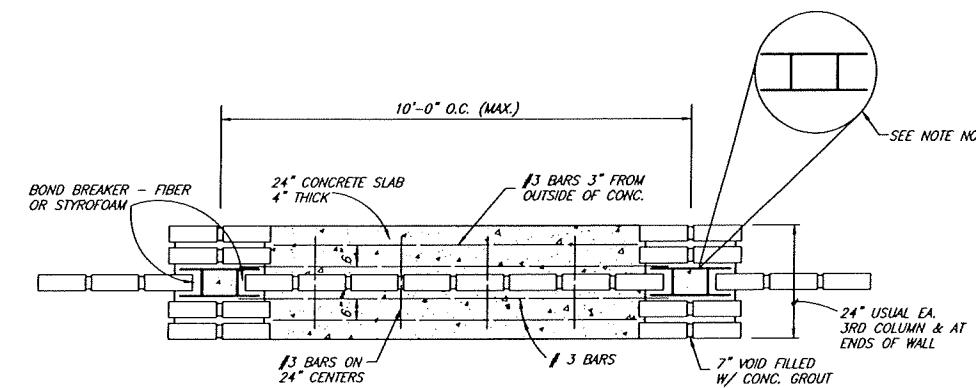
NO SCALE

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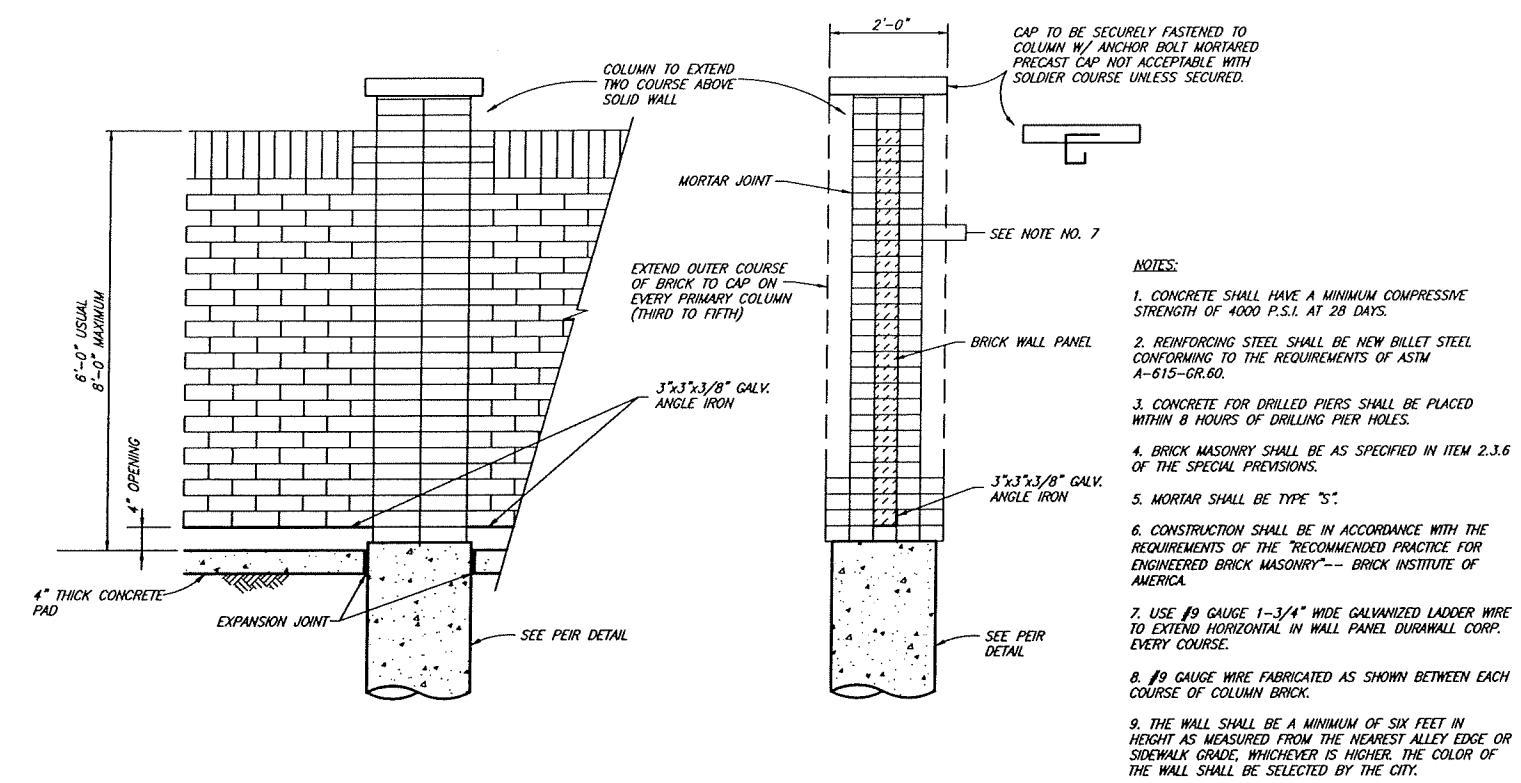


GRADE 4 CRUSHED STONE GRADATION	
SIEVE SIZE	% RETAINED
1-1/2 INCH	0
1 INCH	0-5
1/2 INCH	40-75
NO. 4	90-100
NO. 8	95-100

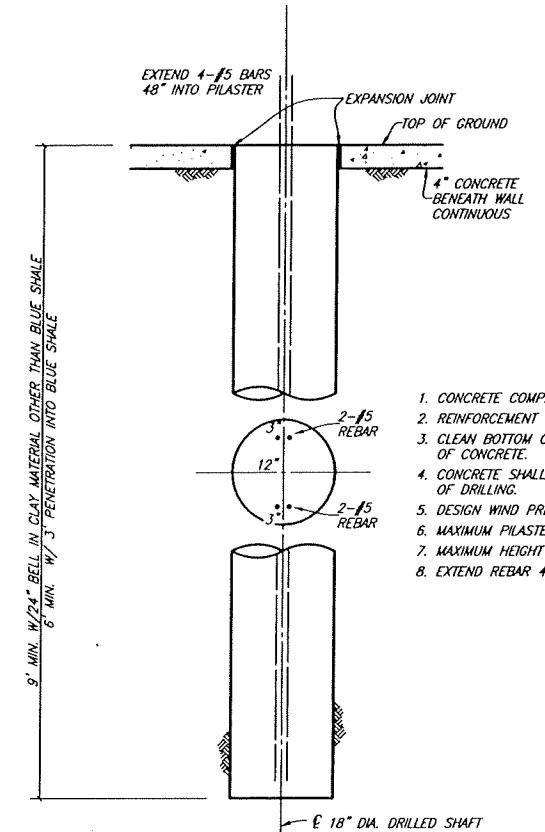
NO.	REVISION	BY	DATE
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<b>TYPICAL EMBEDMENTS</b>			
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TYPICAL WALL & COLUMN LAYOUT PLAN

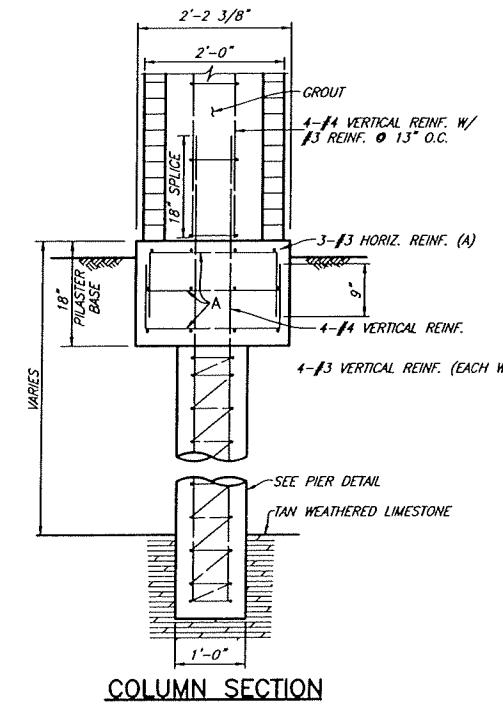


THIN WALL BRICK SCREENING WALL ELEVATION

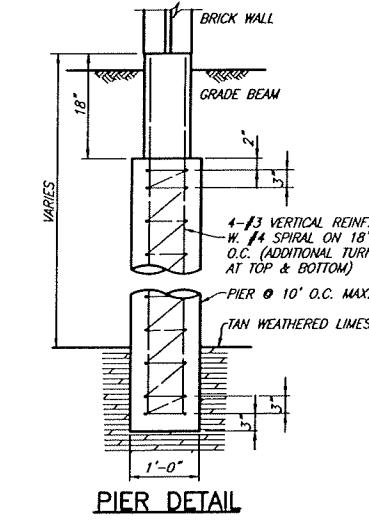


PIER DETAIL

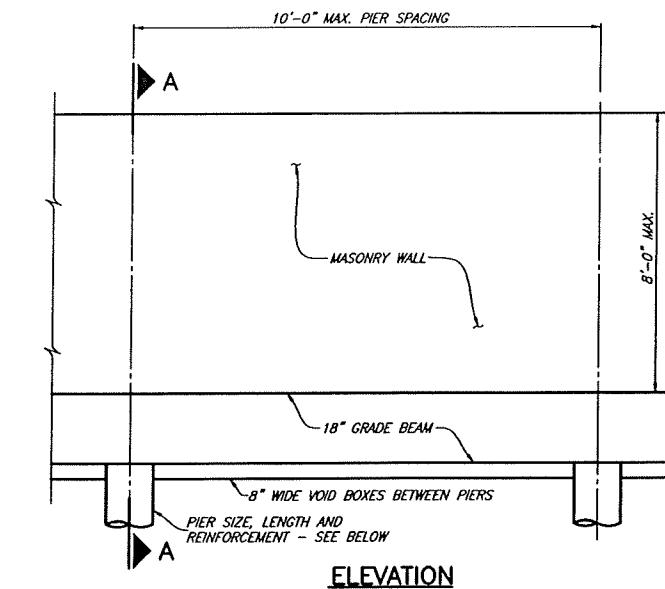
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THIN BRICK SCREENING WALL			
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COLUMN SECTION



PIER DETAIL



ELEVATION

DRILLED PIERS 12" DIA. REINF. W/ 4-#5 VERT. & #4 REINF. @ 18" O.C. MINIMUM LENGTH OF PIER IS 6'-0". \*PIER BOTTOM MAY BE EITHER OF THE TWO ALTERNATES:

1. 12" DIA. SHAFT EMBEDDED MINIMUM 3'-0" INTO BLUE SHALE. RESULTING BEARING STRESS IS 8.0 KIPS PER SQUARE FOOT.
2. 12" DIA. SHAFT W/ 24" DIA. BELL IN CLAY. RESULTING BEARING STRESS IN 2.0 KIPS PER SQUARE FOOT.

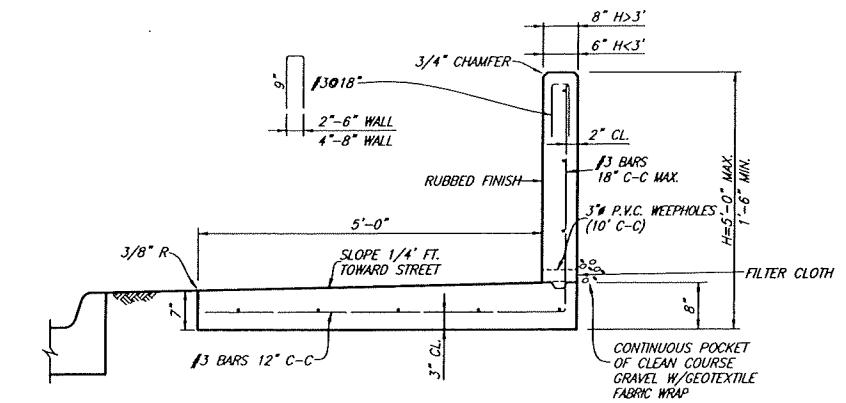
\* SEE GENERAL NO. 9

### BRICK SCREENING WALL

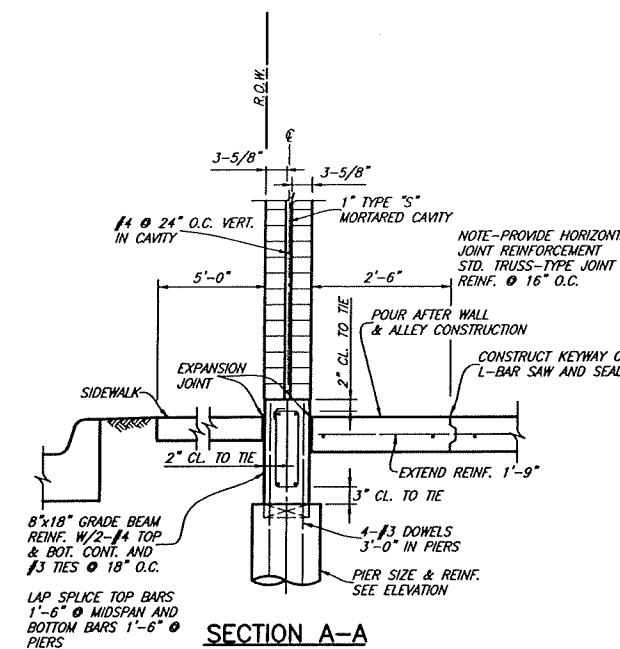
### SCREENING WALL

#### GENERAL NOTES:

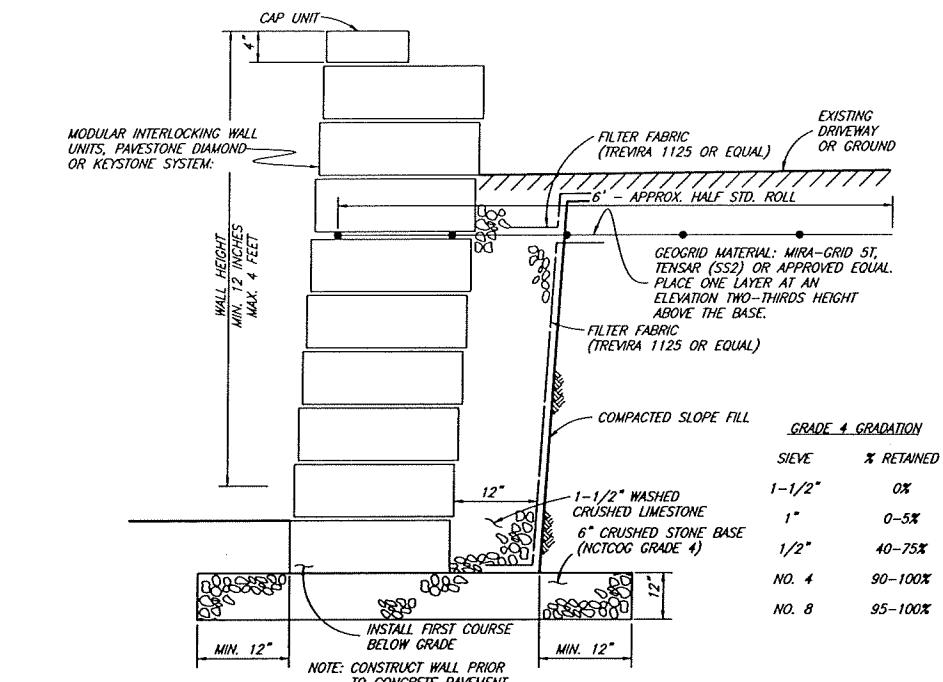
1. CONCRETE - MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. AT 28 DAYS.
2. REINFORCEMENT - ASTM A 36
3. MASONRY - COMPRESSIVE STRENGTH SHALL BE AS PRESCRIBED IN ITEM 2.3.6 SPECIAL PROVISIONS.
4. WIND LOAD - 20 P.S.F.
5. PIER BEARING STRESSES - SEE BRICK SCREENING WALL NOTES.
6. MORTAR - TYPE "S"
7. PROVIDE CONTROL JOINTS AT 50 FT.
8. PROVIDE EXPANSION JOINTS AT 200 FT. CENTER MAXIMUM.
9. PROVIDE MIN. 9' FT. W/ 24" DIA. BELL IN CLAY OR OTHER MATERIAL EXCEPT BLUE SHALE; 6' MIN. WITH 3' MIN. INTO BLUE SHALE.
10. ALL EXPOSED CONCRETE SHALL BE RUBBED FINISHED SURFACE.
11. SIDEWALKS ADJACENT TO WALLS MUST BE 5'-0" MIN. WIDTH FROM ALL PORTIONS OF THE WALL (INCLUDING PILASTERS, COLUMNS, ETC.).
12. MAX. PILASTER SPACING 40 FT.
13. WALLS SHALL NOT BE PLACED IN THE VISIBILITY EASEMENT OR STREET R.O.W.
14. THE WALL SHALL BE A MINIMUM OF SIX FEET IN HEIGHT AS MEASURED FROM THE NEAREST ALLEY EDGE OR SIDEWALK GRADE, WHICHEVER IS THE HIGHER. THE COLOR OF THE WALL SHALL BE LIMITED TO EARTH-TONE COLORS, EXCLUDING GRAY, GREEN AND WHITE. THE COLOR OF THE WALL SHALL BE UNIFORM ON EACH SIDE OF A THOROUGHFARE FOR THE ENTIRE LENGTH BETWEEN INTERSECTING THOROUGHFARES, UNLESS OTHERWISE APPROVED BY THE ENGINEERING DEPARTMENT. THE FINISH OF THE WALL SHALL BE CONSISTENT ON ALL SURFACES.
15. IF WROUGHT IRON FENCING IS TO BE UTILIZED ON REQUIRED SCREENING, ALL WROUGHT IRON MUST BE SOLID STOCK, NO TUBULAR STEEL WILL BE ALLOWED.



### TYPE 6 RETAINING WALL



SECTION A-A



TYPICAL STONE RETAINING WALL

NO SCALE

NOTE: DESIGN ENGINEER TO PROVIDE DESIGN BASED ON ACTUAL FIELD CONDITIONS, TO THE CITY. DESIGN SHALL INCLUDE FACTOR SAFETY CALCULATIONS TO DEMONSTRATE COMPLIANCE WITH BUILDING CODES. DESIGN SHALL CONSIDER SLIDING, OVERTURNING, VEHICLE LOADING, SURCHARGES AND STABILITY. MINIMUM FACTOR OF SAFETY SHALL BE GREATER THAN 1.50

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#### 4. TEMPORARY STONE CONSTRUCTION ENTRANCE/EXIT

A. Description: An aggregate area or pad located where vehicles enter and leave a construction site.

B. Purpose: To provide an area where vehicles can remove mud and sediment from their tires prior to driving on public streets. If used properly, it reduces the requirement to remove sediment from public streets, directs the majority of traffic to a single location, and provides protection for other BMPs on site through traffic control.

C. Applications: Use wherever traffic will be leaving a construction site and moving directly onto a public road or an off-site paved surface. Primary installations include exits from storage areas, staging areas, truck haul routes, and borrow/spoil areas.

D. Limitations: Selection of the stone construction exit/entrance location is critical, since to be effective all traffic must use the area(s) to exit a site. The device is not suitable for use on long, linear projects unless there are designated points for controlled access. Contractors shall clean-up excessive stone from existing paved streets during the construction process.

#### E. Design Criteria:

1) Minimum Pad Dimensions: Width = 15 feet or total width of vehicle access, whichever is greater.

Length = 50 feet (Residential lots use 20')

Depth = 6 inches

2) Grade: Avoid grades steeper than 5% and grade to drain back on to the site or to another BMP to control off-site sedimentation.

3) Location: Locate the construction entrance/exit to limit the amount of sediment that leaves the construction site and to provide for maximum use by vehicles leaving the site. Do not place along curves in the public roadway.

4) Filter Fabric: Shall be used for installations with a construction period of more than 6 months, where heavy truck traffic is anticipated daily, or very weak sub-grade soils are present.

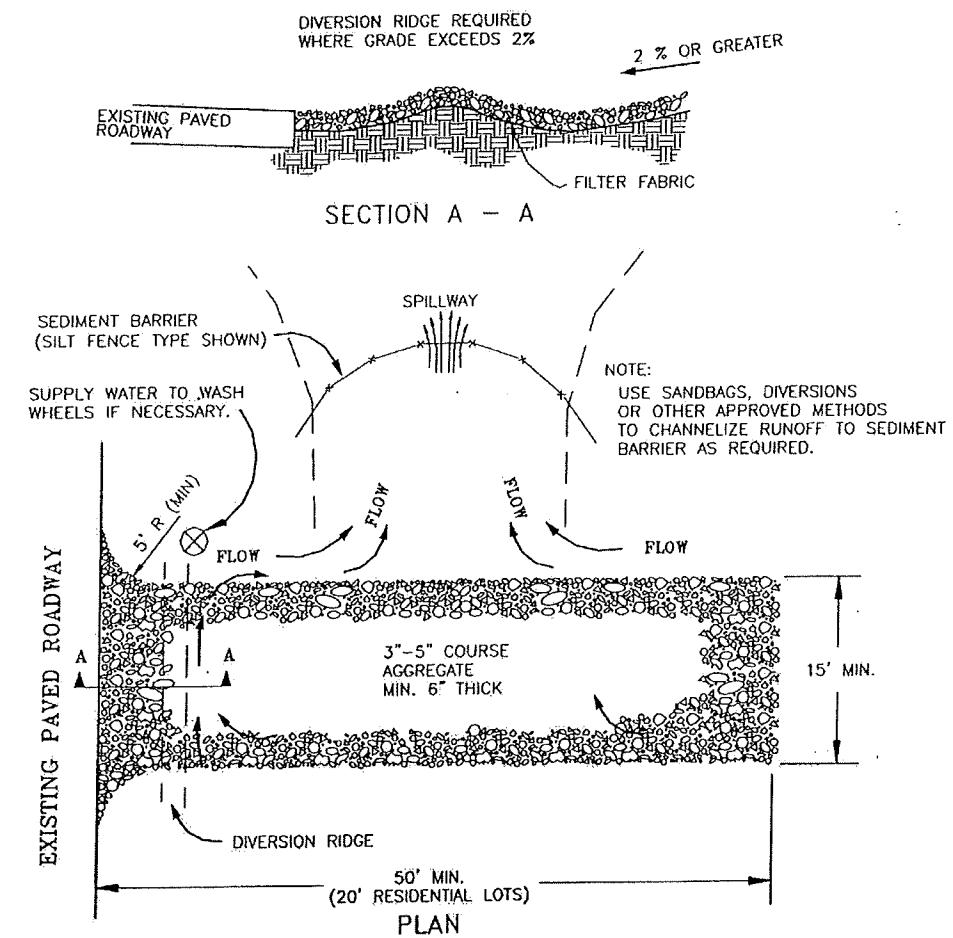
#### F. Material Specifications

1) Aggregate: Natural stone or re-cycled concrete meeting the gradation requirements

- Passing 5-inch Sieve 100%
- Retained 2-inch Sieve 100%

#### 2) Filter Fabric: NCTCOG Item 201.5.2.1

Maintenance Requirements: Inspections should be made weekly and after rain storm events to ensure that the device is functioning properly. When sediment or mud has clogged the void spaces between the stones or mud is being tracked onto the public roadway the aggregate pad must be washed down or replaced. Runoff from the wash-down operation shall not be allowed to drain directly off site without first flowing through another BMP to control off-site sedimentation. Periodic re-grading or the addition of new stone may be required to maintain the efficiency of the installation.



TEMPORARY STONE CONSTRUCTION  
ENTRANCE / EXIT  
N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
TEMP. STONE CONSTRUCTION ENTRANCE-EXIT			
DATE:	SEPTEMBER 2016	SHEET	SD-26

## 5. TEMPORARY DIVERSIONS

A. Description: A ridge, excavated channel, or combination ridge and channel which redirects on-site or off-site runoff to a desired location, during the construction or land disturbing activity.

B. Purpose: To protect disturbed ground areas from up-slope runoff and to divert sediment laden on-site runoff to installed BMPs for sediment removal.

C. Applications: Typical applications include:

- 1) Installation above cut or fill slopes to intercept runoff before it flows down a steep slope.
- 2) Installations to intercept runoff from undisturbed areas to divert the flow around the construction site.
- 3) Across unprotected slopes, as a slope break, to reduce the slope length.
- 4) Around the perimeter of the site to prevent sediment laden runoff from leaving the site and to direct the runoff to an appropriate BMP.
- 5) Within the construction site to divert runoff to the appropriate BMP or to isolate an area from sedimentation damage.

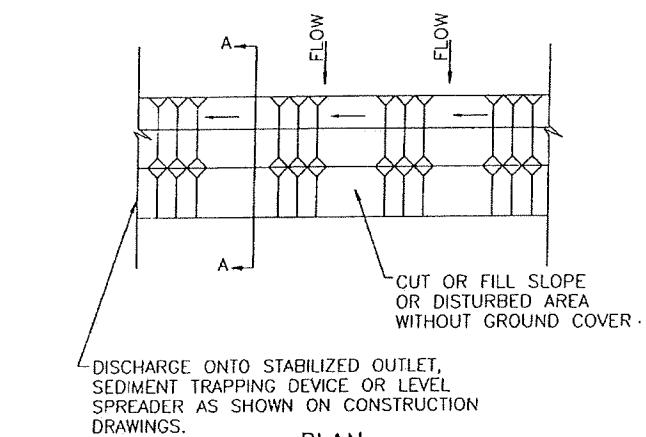
D. Limitations: Diversions must not be constructed at a steep grade. They must be sized to be able to convey the flow from the drainage area entering the diversion. The locations of diversions should be carefully planned since they may limit the movement of construction vehicles across the site.

E. Design Criteria:

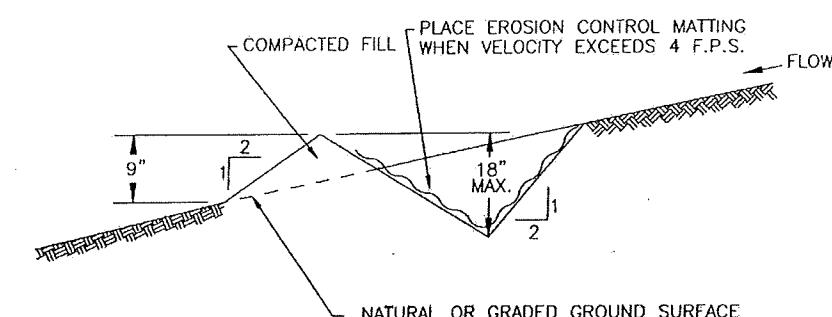
- 1) Drainage Area - 5 acres or less.
- 2) Design Capacity - Peak runoff from a 10 year storm.
- 3) Design Velocity - 6 feet per second or less at design capacity.
- 4) Side Slopes - 2H:IV or flatter.
- 5) Freeboard - 0.5 feet between top of ridge and water surface at design flow.

F. Material Specifications: Erosion Control Matting - TxDOT approved Specification Item 169, Class 2.

G. Maintenance Requirements: Inspect diversions weekly or immediately after rainfall events. Particular attention must be paid to areas where sediment builds up in the channel, areas where vehicles have crossed or caused damage, areas where the ridge begins to erode, and any areas where flow overtops the ridge. Sediment in the channel shall be promptly removed and damaged areas of the ridge shall be stabilized by appropriate methods. Methods of stabilization may include the following or any combination of the following; netting, mulching, temporary seeding, or the flattening of the side slopes. Diversions to be left in place for more than 30 days should be stabilized by establishing temporary ground cover.



PLAN



SECTION A-A

## TEMPORARY DIVERSION N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
TEMPORARY DIVERSION			
DATE:	SEPTEMBER 2016	SD-27	

## 6. SILT FENCE

**A. Description:** A temporary sediment barrier consisting of filter fabric stretched between and attached to metal or wooden posts, with the bottom of the fabric firmly embedded in the soil. At installations draining larger areas the filter fabric will be attached to a hog wire support that is attached to the fence posts.

**B. Purpose:** To slow the flow of sediment laden water from small disturbed areas to allow sedimentation to occur and to filter out larger sediment particles as the water flows through the filter fabric.

**C. Applications:** Silt fence is normally used as a perimeter control immediately downstream of small disturbed areas. It can also be used as a flow diversion for very small drainage areas, but does not function as well as a normal diversion channel and is usually much more expensive.

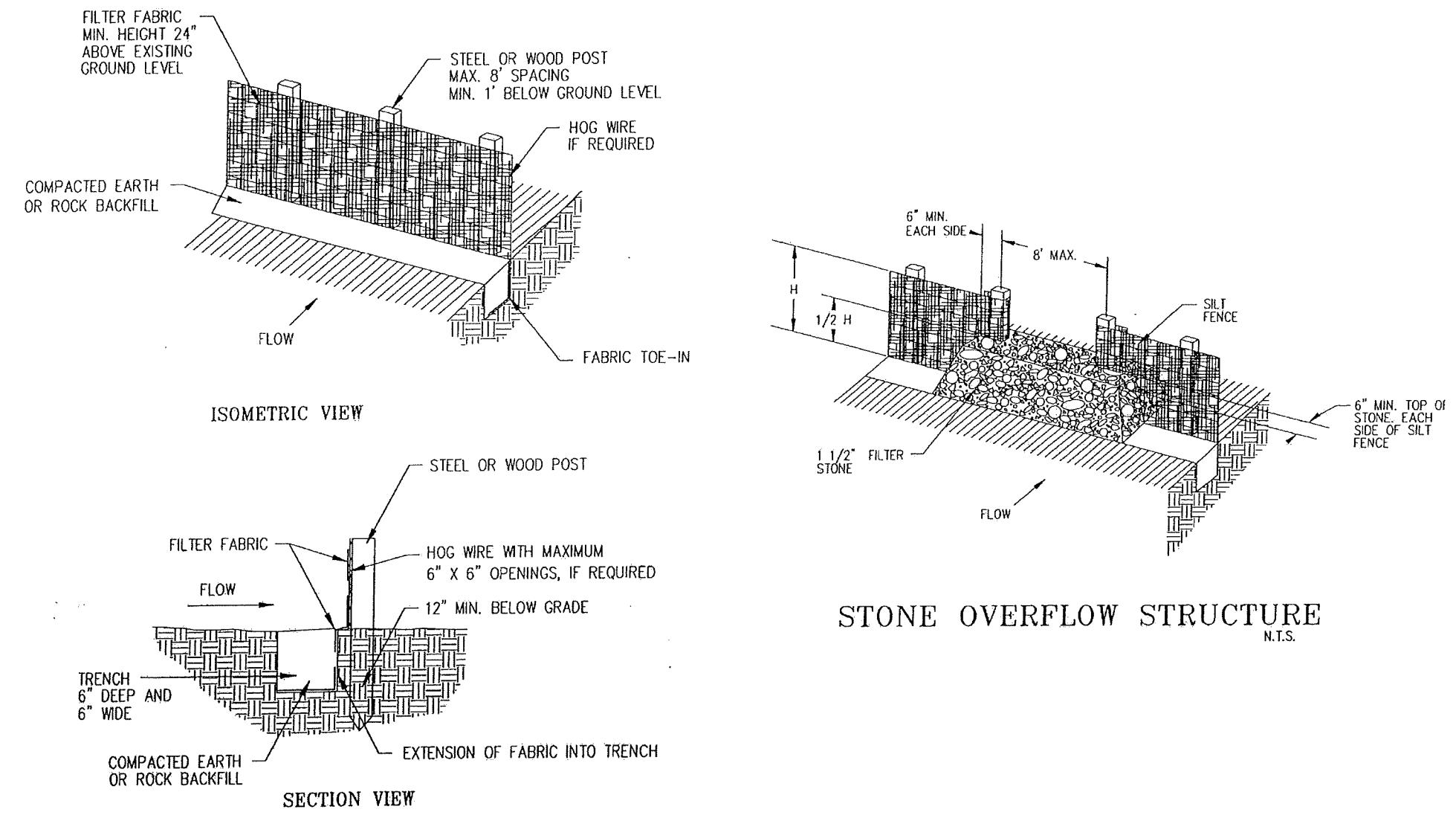
**D. Limitations:** Do not install silt fences across channels, ditches, streams, pipe outlets, or areas of concentrated water flow. Silt fence locations can limit construction vehicle access so the locations should be well planned to prevent obstructions. Water will pond behind the silt fence, resulting in localized flooding during major rain events.

**E. Design Criteria:** Place silt fence along perimeter of site where disturbed area sheet runoff must be controlled. Limit the drainage area to 0.25 acres per 100 lineal feet of fence. Provide wire support backing whenever the drainage area exceeds 0.10 acres per 100 lineal feet of fence. Maximum post spacing shall not exceed 8 feet. Stone overflow structures or other outlet device shall be installed at all low points along the fence or every 300 feet if there is no apparent low point.

### F. Material Specifications:

- 1) Filter Fabric: NCTCOG Item 201.5.2.1
- 2) Stone Overflow: NCTCOG Item 201.5.2.4
- 3) Wire Support: NCTCOG Item 201.5.2.3
- 4) Fence Posts: NCTCOG Item 201.5.2.2

**Maintenance Requirements:** Silt fence should be inspected weekly and after major rain events to ensure that the device is functioning properly. Remove sediment from behind fence when the depth of sediment has built up to one-third the height of the fence above grade. Inspect the base of the fence to ensure that no gaps have developed and re-trench as necessary. Inspect fence posts to ensure that they are properly supporting the fence. Straighten, reset and add posts if necessary. If filter fabric is ripped, damaged or deteriorated, replace it in accordance with the original specifications and details.



## SILT FENCE

N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
SILT FENCE – STONE OVERFLOW STRUCTURE			
DATE:	SEPTEMBER 2016	SHEET	SD-28

## 7. ROCK CHECK DAMS

**A. Description:** A small temporary dam made of stone or re-cycled concrete constructed across a swale, ditch, or channel.

**B. Purpose:** Reduces the velocity of flow and thus the erosion potential of the flowing water. Also provides minimal sediment storage behind the dam.

**C. Applications:** Rock check dams are used primarily in small to moderately sized open channels that have erosive velocities for design flow conditions. They are typically used in long linear roadway type projects or on short steep sections of drainage channel. These devices are a smaller version of stone outlet sediment traps which are used for larger drainage areas.

**D. Limitations:** Rock check dams shall not be used in a live stream. The installation of check dams reduces the hydraulic capacity of the channel and localized flooding may result. If not properly installed as detailed or not properly maintained the use of this method can lead to more serious channel erosion problems and channel instability. Method should not be used as a primary erosion control device, but in conjunction with other devices.

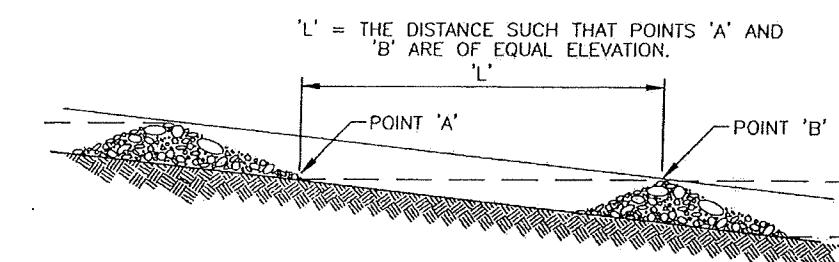
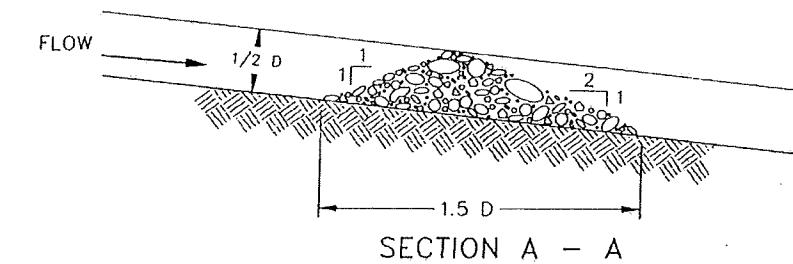
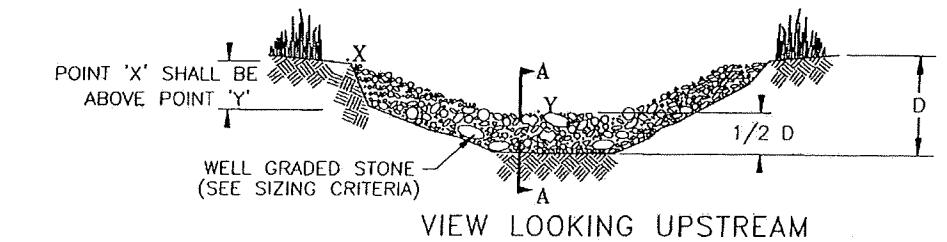
### E. Design Criteria:

- 1) Drainage Area: 2.0 acres or less.
- 2) Linear Spacing: Top of the downstream dam is at the same elevation as the bottom of the upstream dam.
- 3) Maximum Height: 2 feet at the center of the dam.
- 4) Stone Size: Well graded from  $1\frac{1}{2}$ " diameter through the maximum stone diameter.  
Max. Stone Diameter (inches) = (3 inches/ft.) x (Base Width in feet)
- 5) Stone Slope: 1.5H:1V or flatter.

### F. Material Specifications:

- Aggregate: Natural stone or re-cycled concrete in a mix ratio of 1:1 of 6-inch to 12-inch diameter stone with 2-inch to 4-inch diameter stone.

**G. Maintenance Requirements:** Rock check dams should be inspected weekly and after all rain events to ensure that the device is functioning properly. Remove sediment from the storage area upstream of the dam when the depth of sediment has built up to one-half of the dam height. Repair damage to the channel in the vicinity of the check dams immediately to prevent additional damage. Replace missing or dislodged rock as needed to maintain the design height and cross section of the check dam.



SPACING BETWEEN CHECK DAMS

## ROCK CHECK DAM

N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
ROCK CHECK DAMS			
DATE:	SEPTEMBER 2016		SD-29

## 8. STONE OUTLET SEDIMENT TRAP

**A. Description:** A ponding area formed by placing an earth and/or stone embankment across a drainage-way or swale. The ponding area may be natural or improved to provide the required storage volume.

**B. Purpose:** To detain sediment laden runoff long enough to allow the majority of the sediment to settle from the water and to allow diffused runoff from the outlet.

**C. Applications:** Normally used where the natural topography allows for the construction of the embankment to form the ponding area. Diversions, drainage improvements, and localized grading will allow placement in almost any location that has adequate space for the storage area and will accept the runoff from the disturbed site. The stone outlet sediment trap can be used instead of the standard sediment basin.

**D. Limitations:** Do not place device in a live stream. Avoid placing in areas planned for future improvements such as pavement or buildings. Inlet channels or pipe should be located as far away from the stone outlet as is practicable to allow for maximum sediment settling time in the basin.

**E. Design Criteria:**

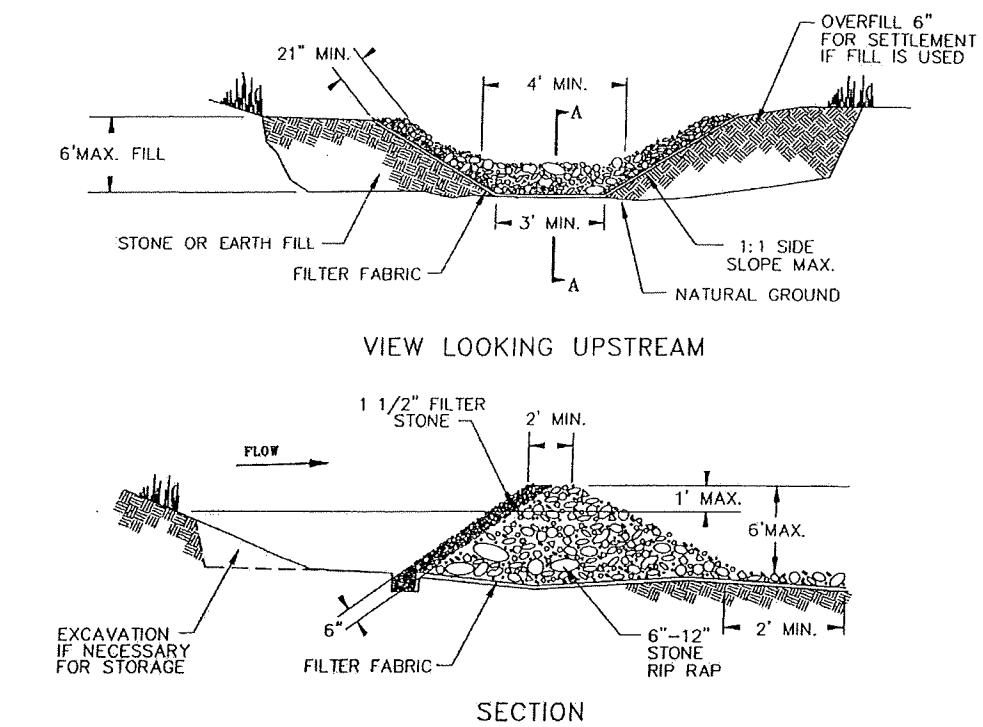
- 1) Drainage Area: 30 acres, maximum.
- 2) Storage Volume: 1800 cubic feet per acre of disturbed land draining to the device.
- 3) Surface Area of Storage Area: 1% (0.01) of the area draining to the device.
- 4) Embankment Height: 6 feet (maximum) to top.
- 5) Embankment Slopes: 1 5H:1V or flatter.
- 6) Embankment Top Width: 2 feet (minimum)
- 7) Stone Outlet Width: 4 feet (minimum)
- 8) Outlet Capacity: 10-year design storm,  $C = 0.50$ , Max.  $T_c = 15$  minutes.
- 9) Freeboard @ Design Flow: 6 inches.

**F. Material Specifications:**

- 1) Stone Rip-Rap: Re-cycled concrete 6-inch to 12-inch in diameter
- 2) Filter Stone: Passing 1½ Sieve 100%, Retained on ¼" Sieve 100%

Filter Fabric: NCTCOG Item 201.5.2.1

**G. Maintenance Requirements:** Stone outlet sediment traps should be inspected weekly and after major rain events to ensure that the device is functioning properly. Remove sediment from the storage area when the depth of sediment has built up to one-half the height of the stone outlet. Inspect the downstream base of the stone outlet and the downstream flow channel to ensure that no excessive erosion or gullies have developed and repair as necessary. The sediment storage area should drain within 48 to 72 hours after a rain event. The filter stone on the upstream face of the stone outlet may require cleaning or replacement if standing water remains for longer periods.



**STONE OUTLET SEDIMENT TRAP**  
N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
STONE OUTLET SEDIMENT TRAP			
DATE:	SEPTEMBER 2016		SHEET SD-30

## 9. SEDIMENT BASIN

**A. Description:** A basin created by building an earth dam across a waterway or low drainage area and/or by excavation. The basin temporarily detains sediment laden runoff and releases it at a reduced rate normally through a perforated corrugated metal riser and barrel assembly.

**B. Purpose:** To detain the sediment laden runoff long enough to allow the sediment to settle from the stormwater and become trapped in the basin. Prevents sedimentation in off-site streams, lakes and drainageways.

**C. Applications:** The device is one of the most effective BMPs available for sedimentation control, but due to the area required for storage and the cost of construction it is usually used on larger projects with drainage areas greater than 5 acres. This application works particularly well where larger disturbed areas naturally drain toward one outlet point.

**D. Limitations:** Limitations on the use of this device include:

- 1) The drainage area to any one basin shall not exceed 100 acres.
- 2) Do not locate basin storage area in areas planned for future construction (i.e. buildings, pavements, structures, etc.)
- 3) If excessive erosion occurs in area draining to the basin, the cleanup, disposal and stabilization of sediment from the basin can become a very costly operation.
- 4) Access must be provided for heavy equipment to perform cleanout and removal operations.
- 5) Do not locate in live streams or within 100-year floodplains.

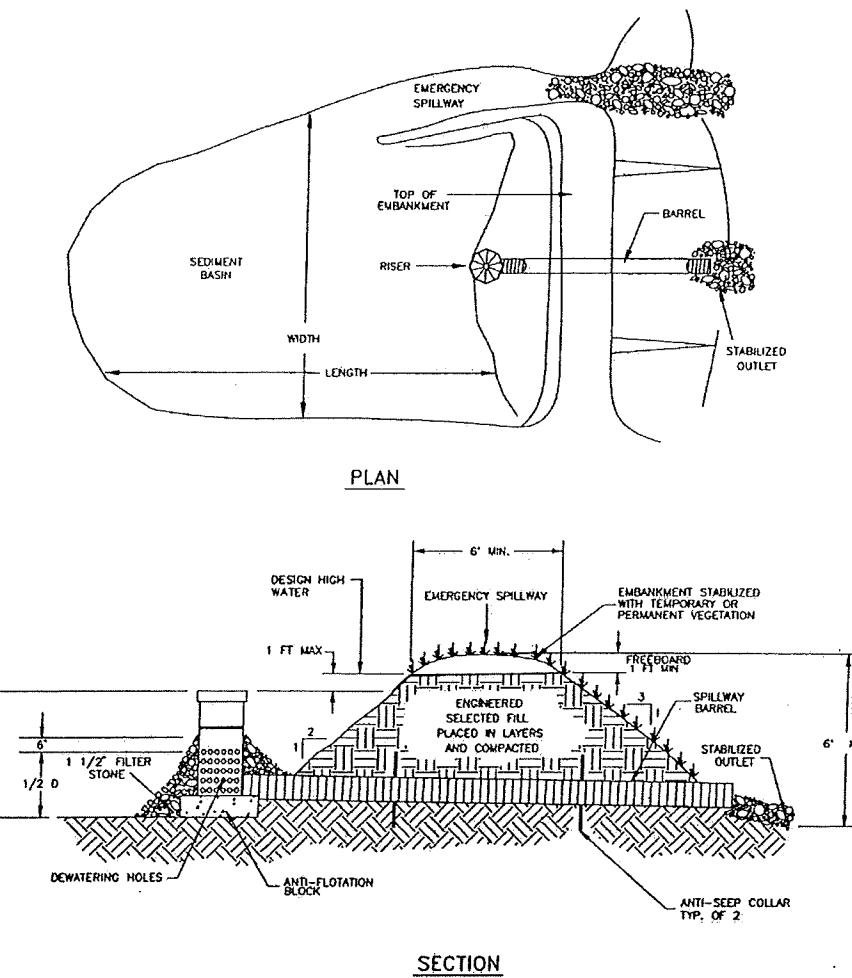
### E. Design Criteria:

- 1) Drainage Area: Less than 100 acres.
- 2) Storage Volume: 1800 cubic feet per disturbed acre draining to basin.
- 3) Length/Width Ratio: 2:1
- 4) Surface Area: 1% of drainage area to basin.
- 5) Dam Height: 6 feet (Max.)
- 6) Embankment Slopes: 3H:1V or flatter on downstream face.  
2H:1V or flatter on upstream face.
- 7) Top of Dam Width: 6 feet (Min.)
- 8) Riser/Barrel Capacity: Peak runoff from 10-year storm event.
- 9) Side Channel Overflow Capacity: Peak runoff from 100-year storm event.
- 10) Basin Dewatering:  $\frac{1}{2}$ " diameter holes spaced 10" - 12" horizontally and 8" vertically from bottom of riser up to  $\frac{1}{2}$  of riser height. Place 1 1/2" filter stone around the outside of the riser to a height 6" above top row of  $\frac{1}{2}$ " holes.

### F. Material Specifications:

- 1) Riser/Barrel: Corrugated Metal Pipe with Holes Drilled
- 2) Filter Stone: Passing 1 1/2" Sieve 100%, Retained 3/4" Sieve 100%
- 3) Concrete: 2000 psi Concrete (Min.)
- 4) Stone Rip-Rap: Natural stone or re-cycled concrete:
  - Passing 5-inch Sieve = 100%
  - Retained on 2-inch Sieve = 100%

**G. Maintenance Requirements:** Periodically inspect sediment basin to ensure that facility is functioning properly. Clean out sediment and dispose of properly when the sediment storage volume is  $\frac{1}{2}$  full. Clean or replace filter stone when stone becomes clogged with sediment or facility will no longer drain properly. Check outlet of spillway barrel and downstream toe of dam to ensure that water is not flowing under the dam or along the outside edge of the spillway pipe. Check downstream channel and overflow channel for erosion and gullies and repair as needed.



## SEDIMENT BASIN/ POND

N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
SEDIMENT BASIN			
DATE:	SEPTEMBER 2016		SHEET SD-31

## 10. EROSION CONTROL MATTING

A. Description: A geomembrane or biodegradable fabric placed over disturbed ground areas or immediately downstream of disturbed ground areas.

B. Purpose: To limit the effects of erosive runoff, rainfall impact, and to control minor amounts of sediment runoff.

C. Applications: Matting can be used on any construction-related disturbed land areas, but are particularly effective for erosion control on short steep slopes and channel bottoms or sides. They are also well suited for sheet flow sedimentation control from small drainage areas on flat grades.

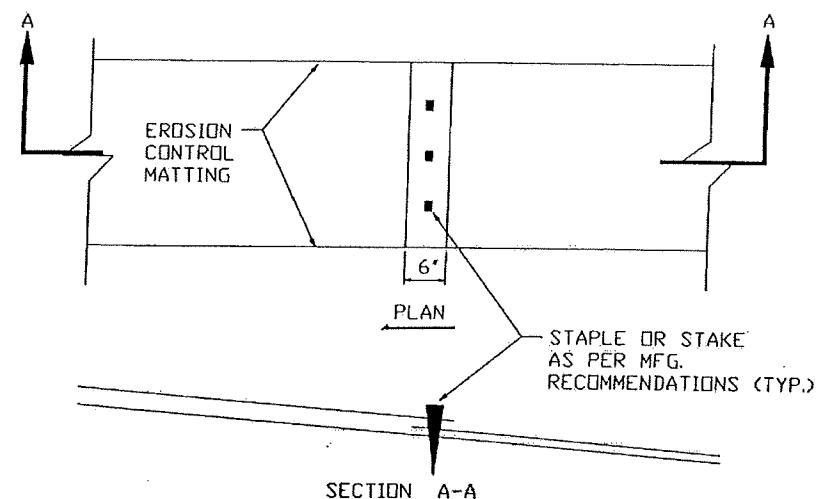
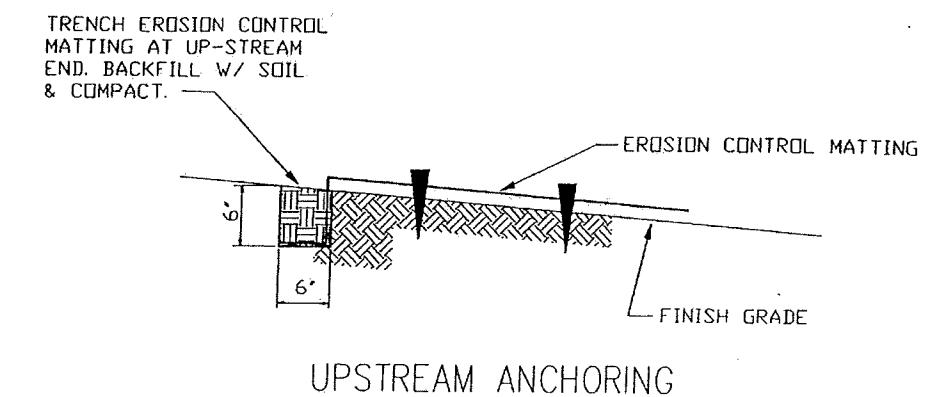
D. Limitations: Although matting can be highly effective for erosion control, it may be less cost effective than other BMPs in certain situations. When used for sedimentation control the drainage area must be kept small enough to ensure sheet flow on to the matting at relatively flat grades (i.e. low velocities).

E. Design Criteria:

- 1) Matting for Erosion Control and Flexible Channel Liners: Follow the manufacturer's recommendations. All mats shall be pinned in place.
- 2) Sedimentation Control: Limit drainage area to 30 feet per linear foot of mat. Max. Slope  $\leq$  three percent (3%).

F. Material Specifications: Products listed in the most recent TxDOT Approved Product List for slope protection and flexible channel liners. Mats are usually installed according to the manufacturer's recommended guidelines. Manufacturer's information will verify acceptable applications for a particular product.

G. Maintenance Requirements: Inspect the erosion control matting installations after all rainfall events to ensure that the facilities are functioning properly and have not been displaced by runoff. Particular attention must be paid to the upstream ends of channel linings and slope protection, as well as the joints between adjacent mats. Repair any damaged areas promptly and replace any displaced matting. Additional staking may be required on steeper slopes and in channel bottoms.



EROSION CONTROL MATTING  
N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
EROSION CONTROL MATTING			
DATE:	SEPTEMBER 2016		SD-32

## 11. PIPE INLET PROTECTION

**A. Description:** A temporary sediment control barrier made of standard concrete block and filter stone or stone rip-rap and filter stone surrounding the inlet end of a storm drain pipe or inlet pipe headwall.

**B. Purpose:** To remove sediment from storm runoff before it enters into the storm drain system.

**C. Applications:** Where existing or proposed storm drain pipes or culverts are to be used prior to final stabilization of the area draining to the pipe inlet. This method is used where the pipe inlet will collect relatively heavy stormwater flows and overflow capability is needed.

**D. Limitations:** Ponding will occur around the pipe inlet with possible localized flooding as the result. Excavation of a sediment storage area can make final channel stabilization difficult and may create a separate erosion problem if not properly constructed. Do not use Cinder Block Pipe Inlet Protection for pipes larger than 36" in diameter.

### E. Design Criteria:

Volume: 1800 Cubic Feet per Acre of Drainage Area.

Side Slopes: 1.5H:1V or Flatter.

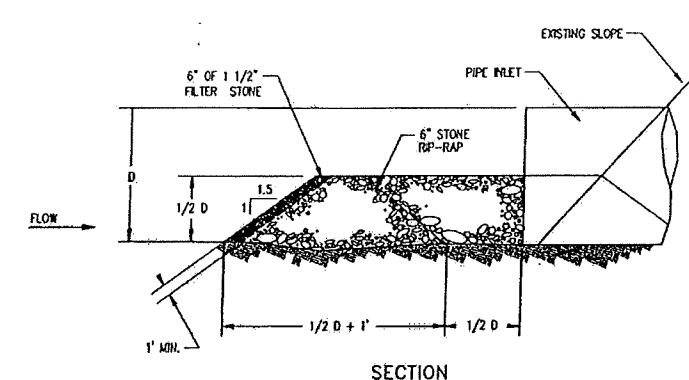
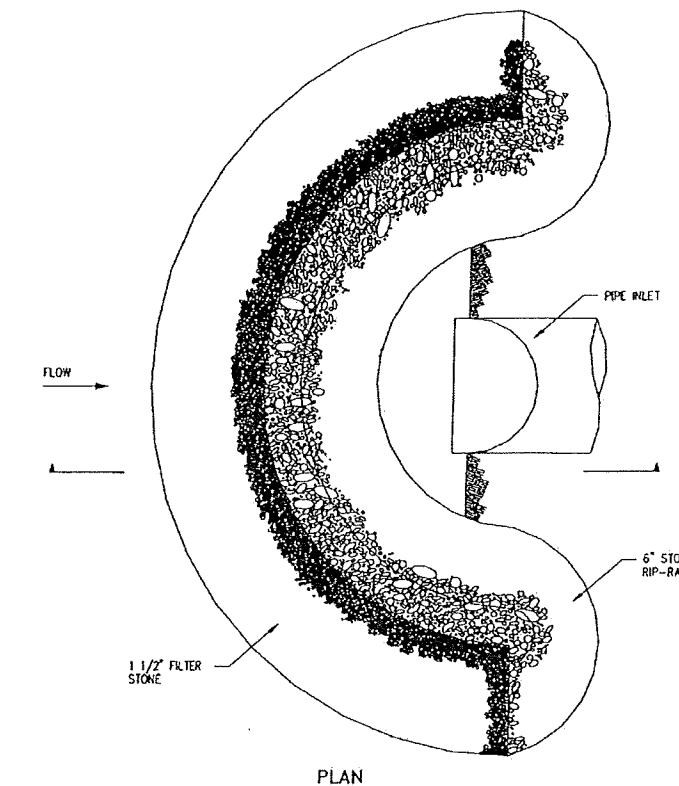
Top of Stone and Sediment Storage:  $\frac{1}{2}$  of Inlet Pipe Diameter.

### F. Material Specifications:

Concrete Block: ASTM C 139, Concrete Masonry Unit for Construction.  
Wire Fabric: Standard Galvanized Hardware Fabric with  $\frac{1}{2}$ " by  $\frac{1}{2}$ " Openings.

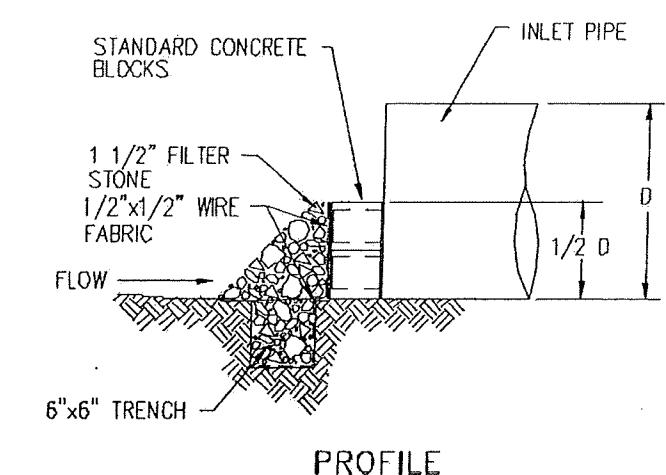
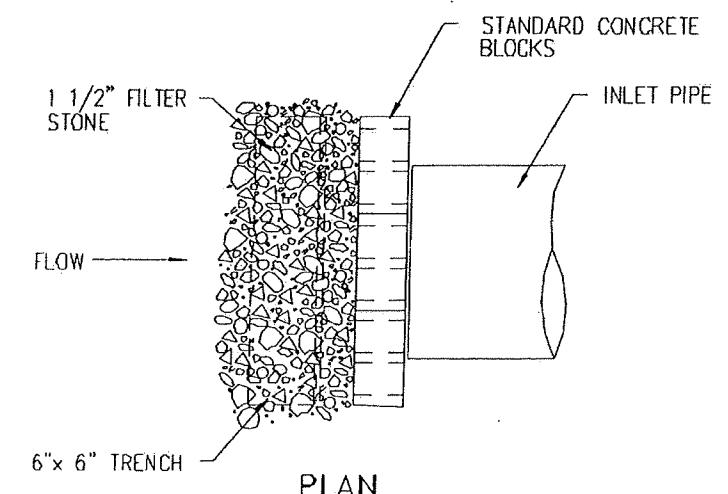
Filter Stone: Passing 1½-inch Sieve 100%, Retained  $\frac{3}{4}$ -inch Sieve 100%  
Stone Rip-Rap: 6-inch Diameter Stone or Crushed Concrete

**G. Maintenance Requirements:** Pipe inlet protection should be inspected weekly and after major rain events to ensure that the device is functioning properly. Remove sediment from the sediment storage area when the depth of sediment has built up to one-half of the design depth. If de-watering of the storage volume is not occurring, clean or replace the filter stone surrounding the pipe inlet. Clean the stone surface the first few times by raking. Repeated sediment build-up will require filter stone replacement.



RIP-RAP PIPE INLET PROTECTION

N.T.S.



CINDER BLOCK PIPE INLET PROTECTION

N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
PIPE INLET PROTECTION			
DATE:	SEPTEMBER 2016		SD-33

## **12. GRASS LINED CHANNELS**

**A. Description:** A channel with vegetation and possibly temporary or permanent erosion control matting that is constructed to a design cross section and grade for the conveyance of stormwater runoff during long-term or different phases of construction. Channels shall be vegetated within 15-days of reaching final grade.

**B. Purpose:** To convey concentrated stormwater runoff without erosion, sediment deposition, or flooding.

**C. Applications:** This practice can be applied where:

- 1) Concentrated stormwater runoff must be conveyed on a site.
- 2) A vegetative lining can provide sufficient stability for the channel and flow conditions.
- 3) Channel grades are generally less than 5%.
- 4) Space is available for a relatively large cross section.

**D. Limitations:** The use of this practice is normally limited to:

- 1) Areas where a channel slope of from 1% to 5% can be attained.
- 2) Areas where the natural drainage patterns can be maintained by use of the open channels.
- 3) Design flow velocities that will be less than 6 feet per second.
- 4) Areas graded through existing ground conditions (i.e. not in fill material).

**E. Design Criteria:**

- 1) Capacity: shall convey the runoff from a 100-year storm.
- 2) Shape: Trapezoidal, parabolic or V bottom at the discretion of the designer.
- 3) Velocity: Less than 6 feet per second at design flow. Erosion control matting may be required to stabilize when design velocity > 6 fps.
- 4) Side Slopes: 3H:1V or flatter.
- 5) Freeboard: One foot between design flow depth and top of bank.

**F. Material Specifications:**

- 1) Seeding: NCTCOG Item 202.6
- 2) Sodding: NCTCOG Item 202.5.2 (Solid Sod)
- 3) Erosion Control Matting: TxDOT approved Specification Item 169, Class 2.

**G. Maintenance Requirements:** During the vegetation establishment period inspect channels after every rain event. Check for erosion and sediment buildup and repair as needed. After establishment of vegetation periodically check channel for damage. Particular attention must be given to side slopes, embankments at pipe inlets and outlets, and condition of the vegetative stabilization. Vegetated channels require maintenance for weed control, possible mowing, sediment removal and nil development. Silt shall be kept from entering channels from adjacent disturbed areas.

NO.	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
<b>STANDARD CONSTRUCTION DETAILS</b>			
<b>GRASS LINED CHANNELS</b>			
DATE:	SEPTEMBER 2016	BY:	SD-34

### 13. OUTLET VELOCITY CONTROL STRUCTURE

A. Description: A stone rip-rap structure placed at a pipe outlet, headwall outlet or the outlet end of an armored channel section.

B. Purpose: Used to reduce the outlet flow velocity and dissipate the outlet flow energy to reduce the potential for downstream channel erosion.

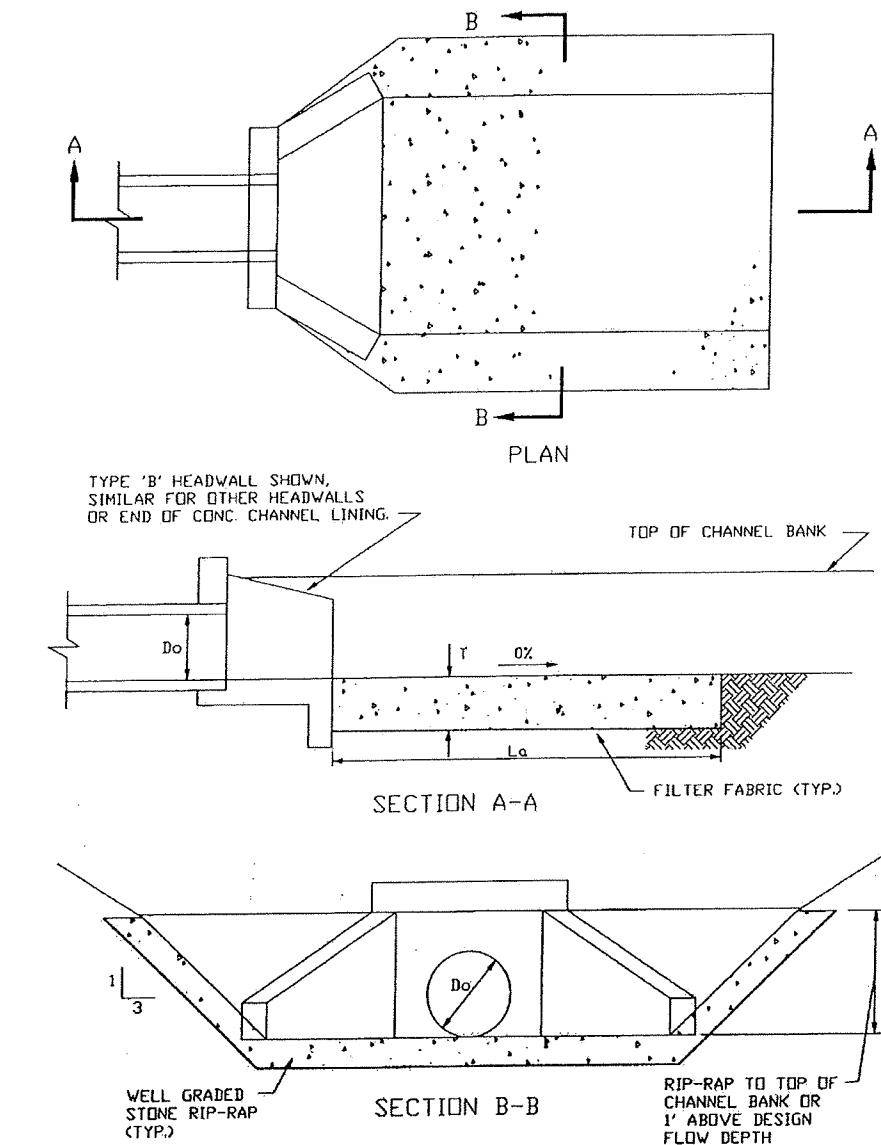
C. Applications: Applies to all pipe, headwall or armored channel outlets into vegetated channels where the outlet flow velocity exceeds 4 feet per second.

D. Limitations: Do not use where the downstream channel has a very steep longitudinal slope or where a vertical drop will result at the pipe end or end of the rip-rap pad. Method does not apply well to narrow downstream channels.

E. Material Specifications:

- 1) Aggregate: Natural stone or re-cycled concrete in a mix ratio of 1:1 of 6-inch to 12-inch diameter stone with 2-inch to 4-inch diameter stone.
- 2) Filter Fabric: NCTCOG Item 201.5.2.1

F. Maintenance Requirements: Inspect periodically and after major rain storm events to ensure that the facility is functioning properly. Repair dislodged or missing stone rip-rap and repair any downstream erosion as soon as possible.



OUTLET VELOCITY CONTROL STRUCTURE  
N.T.S.

NO.	REVISION	BY	DATE
CITY OF OVILLA, TEXAS			
STANDARD CONSTRUCTION DETAILS			
OUTLET VELOCITY CONTROL STRUCTURE			
DATE:	SEPTEMBER 2016		SD-35

#### **14. CURB INLET PROTECTION**

**A. Description:** A temporary sediment control barrier made of filter stone and standard concrete block, welded wire fabric, hardware fabric or 2x4 studs surrounding a storm drain inlet.

**B. Purpose:** To remove sediment from storm runoff before it enters into the storm drain system.

**C. Applications:** Where storm drain inlets are to be used prior to final stabilization of the area draining to the structure. This method is used where the inlet will collect relatively heavy flows and overflow capability is needed. This method is also to be used to protect existing curb inlets located in paved areas.

**D. Limitations:** Ponding will occur around the inlet with possible localized flooding as the result. When used at locations that are open to vehicle traffic, this device will encroach into the traveled way. If the curb inlet is not a recessed type inlet a traffic barricade shall be placed at each end of the inlet protection device.

**E. Design Criteria:**

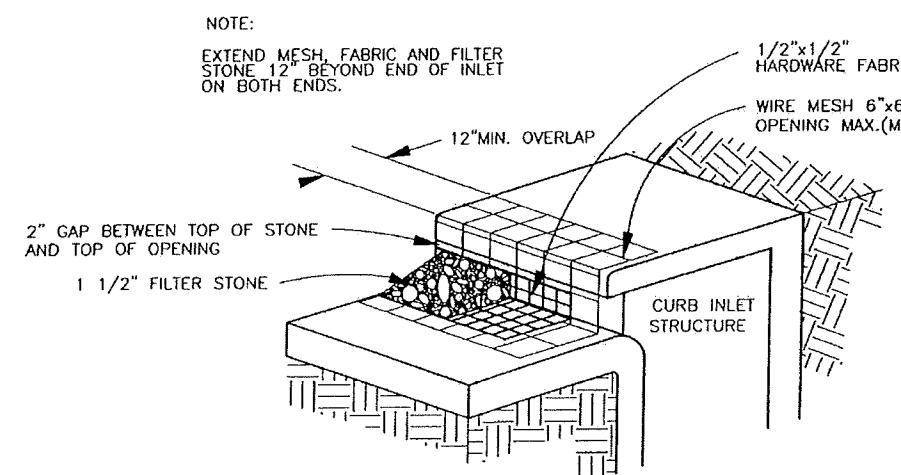
- 1) Drainage Area: 2.0 acres or less.
- 2) Height: 6" (Maximum).

**F. Material Specifications:**

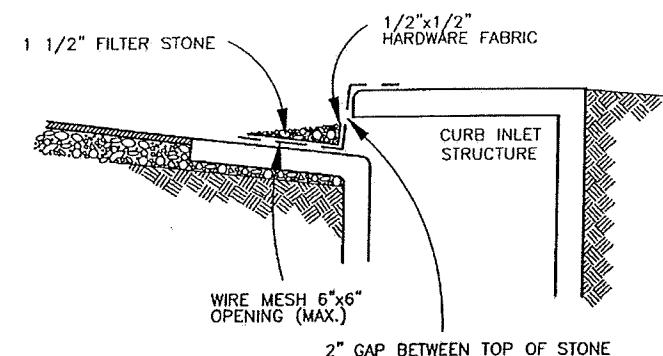
- 1) Concrete Block: ASTM C 139, Concrete Masonry Unit for Construction.
- 2) Wire Fabric: Standard galvanized hardware fabric with 1/2 by 1/2' openings.
- 3) Filter Stone: Passing 1½" Sieve = 100%  
Retained ¾" Sieve = 100%
- 4) Wire Mesh: Welded wire fabric conforming to NCTCOG Item 201.14.2.5 maximum opening 6" x 6".

**G. Maintenance Requirements:** Inlet protection should be inspected weekly and after major rain events to ensure that the device is functioning properly. Remove sediment from the storage area when the depth of sediment has built up to one-half of the storage depth. If de-watering of the storage volume is not occurring, clean or replace the filter stone. Clean the filter stone surface the first few times by raking. Repeated sediment build-up will require filter stone replacement.

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STANDARD CONSTRUCTION DETAILS			
CURB INLET PROTECTION			
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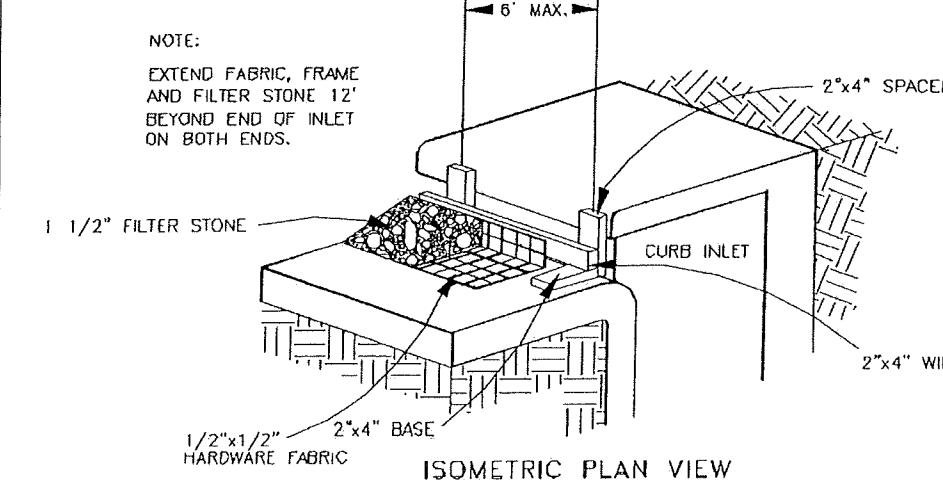
ISOMETRIC PLAN VIEW



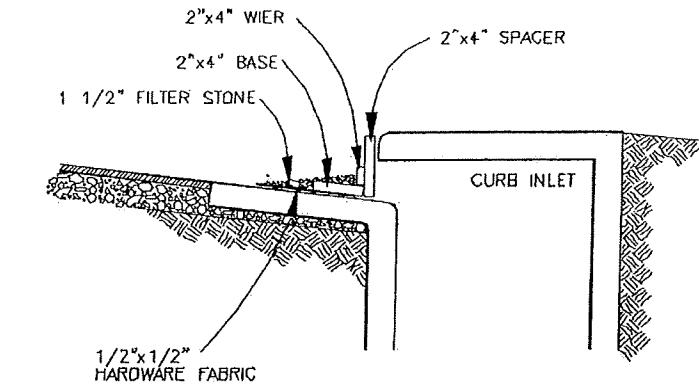
INLET SECTION

**TYPE A CURB  
INLET PROTECTION**

N.T.S.



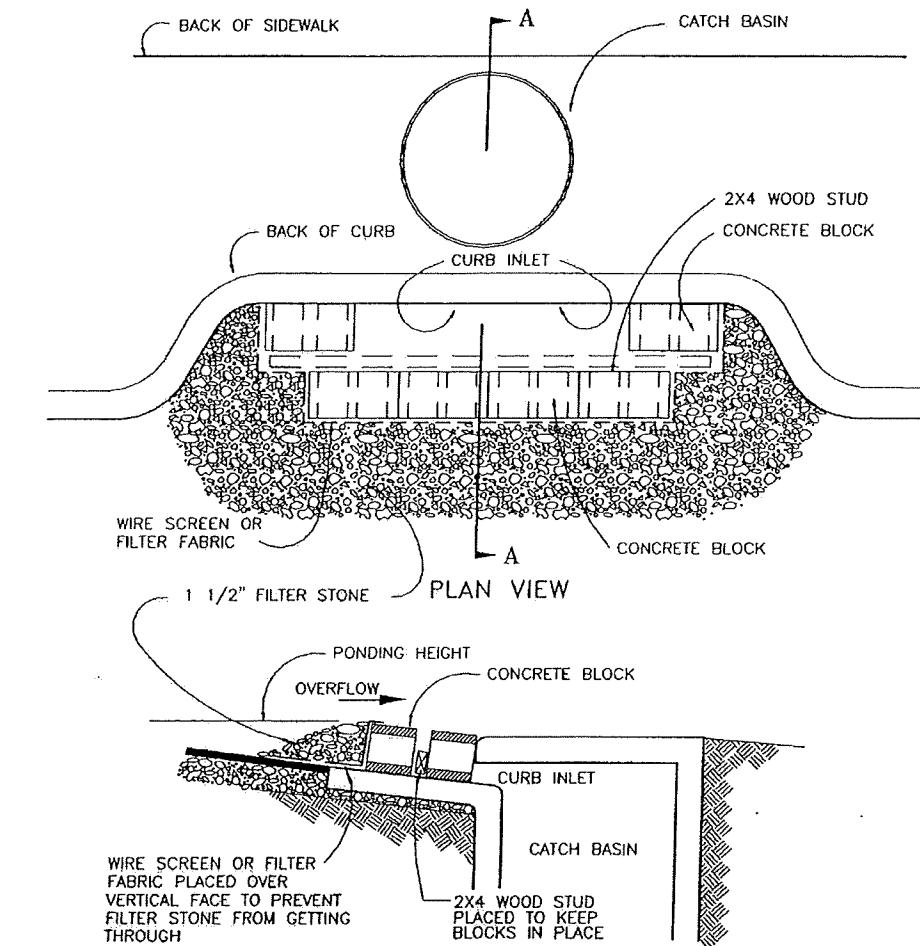
ISOMETRIC PLAN VIEW



INLET SECTION

**TYPE B CURB  
INLET PROTECTION**

N.T.S.



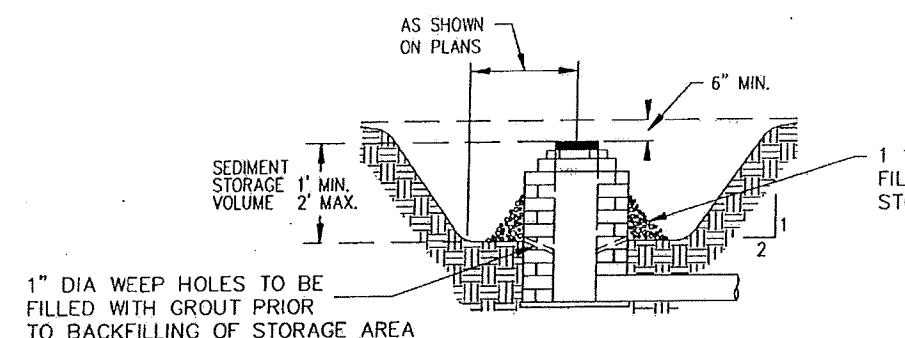
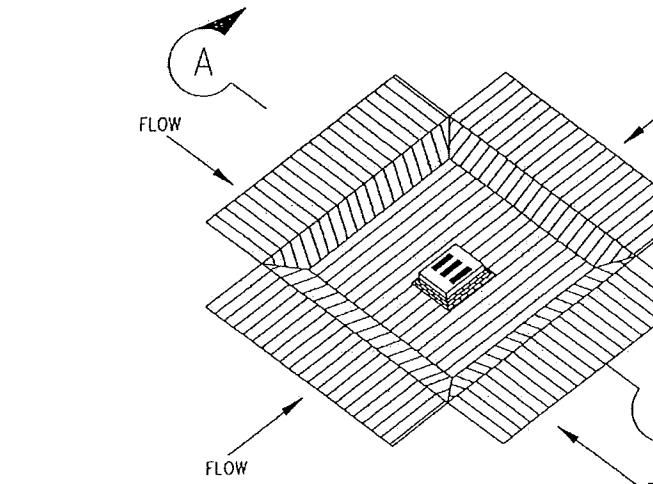
SECTION A - A

**BLOCK AND GRAVEL RECESSED  
CURB INLET PROTECTION**

N.T.S.

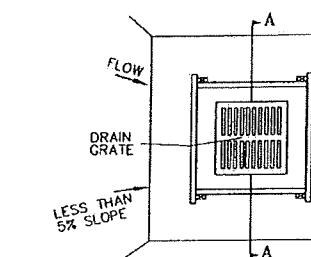
NOTE: FILTER STONE CAN BE REPLACED WITH  
ACCEPTED GEOTEXTILE FABRIC

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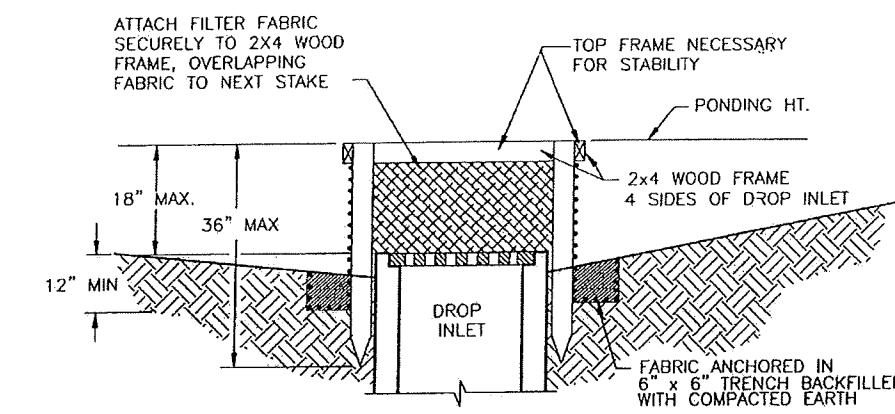


SECTION A-A

EXCAVATED DROP INLET PROTECTION  
N.T.S.

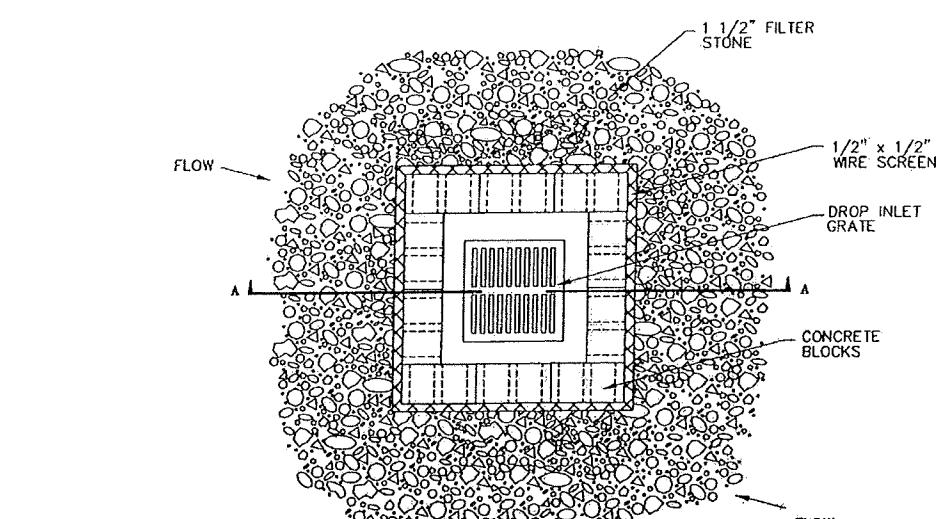
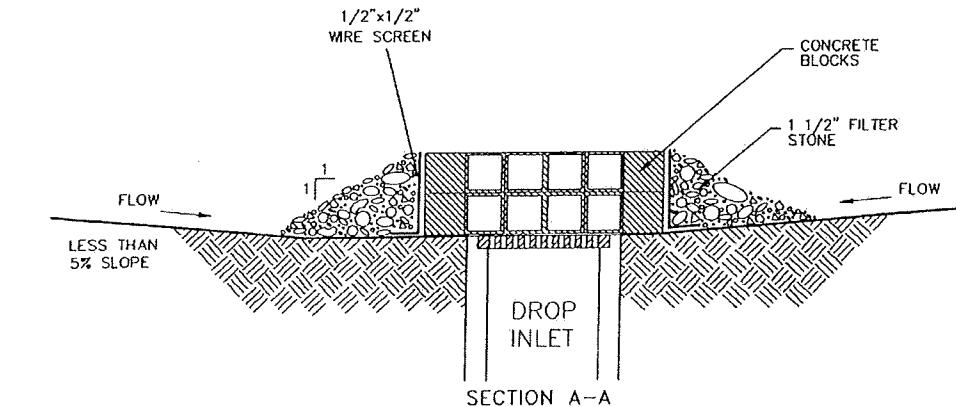


PLAN VIEW



SECTION A-A

FILTER FABRIC DROP INLET PROTECTION  
N.T.S.



PLAN VIEW

BLOCK/GRAVEL DROP INLET PROTECTION  
N.T.S.

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DROP INLET PROTECTION			
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## 1. VEGETATIVE STABILIZATION

This chapter provides standards and specifications for the use of vegetative BMPs for controlling erosion due to land disturbing activities. These methods are primarily for preventing erosion caused by rainfall impact and storm water runoff. The timely use of temporary and permanent ground covers can have a dramatic effect on the amount of erosion that will leave the site of land disturbing activity.

Material specifications listed in this Chapter use the latest versions of the North Central Texas Council of Governments, Standard Specifications for Public Works Construction, the City of Parker, Special Provisions to Standard Specifications for Public Works Construction and the Texas Department of Transportation, Standard Specifications for Construction of Highways, Streets and Bridges to the maximum extent possible.

## 2. TEMPORARY SEEDING

A. Description: The planting of fast growing annual grasses or small grains to provide initial, temporary ground cover for disturbed areas.

B. Purpose: To temporarily stabilize disturbed land areas and earthen BMPs that will not be brought to final grade or have permanent stabilization applied within a period of 30 days.

C. Applications: This practice applies to graded areas, soil areas with sparse vegetation, and soil areas with no vegetation. Specific construction site applications include diversions, earth dams, temporary sediment basins, roadway embankments, rough graded areas and soil stockpiles.

D. Limitations: The application of temporary seeded ground cover has the following limitations:

- 1) Areas must be re-seeded or permanently stabilized within 1-year.
- 2) High cost for short term uses.
- 3) Improper attention to materials and application techniques can lead to higher maintenance costs and severe erosion damage.
- 4) Not applicable to areas used by foot and vehicle traffic.
- 5) Not applicable to areas with excessive stormwater runoff or high velocity runoff.

E. Design Criteria: Comply with requirements of TxDOT Standard Construction Specification Item No. 164, Seeding for Erosion Control.

F. Material Specifications: Comply with requirements of TxDOT Standard Construction Specification Item No. 164, Seeding for Erosion Control.

G. Maintenance Requirements: inspect areas with temporary ground cover weekly and immediately after heavy rainfall events. Repair rills, bare areas, and washouts immediately and re-seed to establish temporary ground cover. Watering may be required to initiate the germination process. The use of annual grasses requires that the areas be re-seeded yearly or be stabilized with permanent ground cover. Protect seeded areas from foot and vehicle traffic.

## 3. PERMANENT SEEDING

A. Description: Stabilizing disturbed ground areas by establishing perennial vegetative ground cover by seeding.

B. Purpose: To permanently stabilize disturbed areas by establishing a relatively low cost, maintainable ground cover.

C. Applications: Permanent vegetative techniques can and should be applied to almost all construction sites at the completion of the project. Permanent seeding is used on fine- graded areas on which long-lived vegetative ground cover is the most practical and effective method for stabilizing the soil. The method can also be used on rough-graded areas that will not be brought to final grade for more than a year.

D. Limitations: The application of permanent seeded ground cover has the following limitations:

- 1) Seasonal limits on suitable seeding dates for specific varieties of seed.
- 2) Improper attention to materials and application techniques can lead to higher maintenance costs and severe erosion damage.
- 3) Not applicable to areas used by foot and vehicle traffic.
- 4) Not applicable to areas with excessive stormwater runoff or high velocity runoff.
- 5) Not applicable to steep slopes. Slopes steeper than 3H:1V restrict the use of equipment for seedbed preparation and mowing.
- 6) May require permanent irrigation.

E. MATERIAL SPECIFICATIONS: Comply with requirements of the North Central Texas Council of Governments (NCTCOG), Standard Specifications for Public Works Construction, Item 202.6.1 - Seeding, along with Item 202.4 - Fertilizer.

F. Maintenance Requirements: Repair rills, bare areas, and washouts immediately and re-seed to establish permanent ground cover. Watering, fertilization and soil supplements may be required to initiate the germination process and to maintain permanent ground cover. Protect seeded areas from excessive water runoff and traffic prior to establishing vegetation. May require periodic mowing and weed control.

## 4. REMNANT SODDING

A. Description: Stabilizing bare ground areas by laying a continuous cover of grass sod.

B. Purpose: To provide immediate vegetative stabilization to disturbed land areas and earthen BMPs.

C. Applications: Practice applies to disturbed land areas that require immediate and permanent ground cover or where sodding is the preferred method of establishing grass. Locations that are particularly well suited to stabilization with sod include:

- 1) Swales, channels and ditches carrying storm water at acceptable velocities.
- 2) Steeper slopes than can be stabilized by normal seeding.
- 3) Residential or commercial lawns and golf courses where prompt use and aesthetics are important.
- 4) Areas around drop inlets after the drainage basin has been stabilized.

D. Limitations: The application of sod ground cover has the following limitations:

- 1) More costly to install than seeding.
- 2) More difficult to obtain, transport and store.
- 3) May require permanent irrigation.

E. Material Specifications: Comply with requirements of the North Central Council of Governments (NCTCOG), Standard Specifications for Public Works Construction, Item 202.5.1 - Solid Sod, along with Item 202.4 - Fertilizer.

F. Maintenance Requirements: Repair rills and washouts immediately and re-sod to establish permanent ground cover. Watering, fertilization and soil supplements may be required to establish and maintain permanent ground cover. Remove dead sod and replace promptly. May require periodic mowing and weed control. Slopes steeper than 3H:IV will require staking of the sod to hold it in place.

## 5. OTHER BMP's

Other BMP's shall be included in the design plans.

All inlet protection shall meet the requirements of Erosion Control BMP's found in the latest edition of Standard for Construction, North Central Texas Council of Governments (NCTCOG).

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<b>EROSION &amp; BMP NOTES</b>			
DATE:	SEPTEMBER 2016		SD-39

## SITE DESCRIPTION

PROJECT LIMITS: \_\_\_\_\_  
PROJECT DESCRIPTION: \_\_\_\_\_

MAJOR SOIL DISTURBING ACTIVITIES: \_\_\_\_\_

TOTAL DRAINAGE AREA: XX AC.

TOTAL DRAINAGE AREA TO BE DISTURBED: XX AC.

WEIGHTED RUNOFF COEFFICIENT \_\_\_\_\_

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: \_\_\_\_\_

NAME OF RECEIVING WATERS: \_\_\_\_\_

WATER QUALITY: \_\_\_\_\_

### SOIL STABILIZATION PRACTICES:

- \_\_\_\_\_ TEMPORARY SEEDING
- \_\_\_\_\_ PERMANENT PLANTING, SODDING, OR SEEDING
- \_\_\_\_\_ MULCH SOD
- \_\_\_\_\_ SOIL RETENTION BLANKET
- \_\_\_\_\_ BUFFER ZONES
- \_\_\_\_\_ PRESERVATION OF NATURAL RESOURCES

OTHER: \_\_\_\_\_

### STRUCTURAL PRACTICES:

- \_\_\_\_\_ SILT FENCES
- \_\_\_\_\_ HAY BALES
- \_\_\_\_\_ ROCK BERMS
- \_\_\_\_\_ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- \_\_\_\_\_ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- \_\_\_\_\_ DIVERSION DIKE AND SWALE COMBINATIONS
- \_\_\_\_\_ PIPE SLOPE DRAINS
- \_\_\_\_\_ PAVED FLUMES
- \_\_\_\_\_ ROCK BEDDING AT CONSTRUCTION EXIT
- \_\_\_\_\_ TIMBER MATTING AT CONSTRUCTION EXIT
- \_\_\_\_\_ CHANNEL LINERS
- \_\_\_\_\_ SEDIMENT TRAPS
- \_\_\_\_\_ SEDIMENT FILTERS
- \_\_\_\_\_ STORM INLET SEDIMENT TRAP
- \_\_\_\_\_ STONE OUTLET STRUCTURES
- \_\_\_\_\_ CURBS AND GUTTERS
- \_\_\_\_\_ STORM SEWERS
- \_\_\_\_\_ VELOCITY CONTROL DEVICES

OTHER: \_\_\_\_\_

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES: \_\_\_\_\_

STORM WATER MANAGEMENT: \_\_\_\_\_

EARTHWORK: \_\_\_\_\_

SIDE SLOPES: \_\_\_\_\_

## EROSION AND SEDIMENT CONTROLS

### OTHER EROSION AND SEDIMENT CONTROLS:

Maintenance: ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE DONE AT THE EARLIEST DATE POSSIBLE, BUT NO LATER THAN 7 CALENDAR DAYS AFTER THE SURROUNDING EXPOSED GROUND HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE FROM HEAVY EQUIPMENT. THE AREAS ADJACENT TO CREEKS AND DRAINAGE WAYS SHALL HAVE PRIORITY FOLLOWED BY DEVICES PROTECTING STORM SEWER INLETS.

Inspection: AN INSPECTION WILL BE PERFORMED BY A CONTRACTOR APPROVED INSPECTOR IN ACCORDANCE WITH THE MOST RECENT NPDES REQUIREMENTS. AN INSPECTION AND MAINTENANCE REPORT WILL BE MADE PER EACH INSPECTION. BASED ON THE INSPECTION RESULTS, THE CONTROLS SHALL BE REVISED PER THE INSPECTION REPORT. CITY SHALL REVIEW ALL CONTRACTOR INSPECTIONS. THE CONTRACTOR'S INSPECTORS SHALL INSPECT EROSION CONTROL DEVICES EVERY WEEK, AS WELL AS AFTER EVERY RAIN OF 1/2-INCH OR MORE AS RECORDED ON A NONFREEZING RAIN GAUGE TO BE LOCATED ON THE PROJECT SITE. CITY INSPECTOR TO INSPECT EROSION CONTROL DEVICES EVERY 14 CALENDAR DAYS.

Waste Materials: ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL STATE AND LOCAL CITY SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION, AND THE TRASH WILL BE HAULED TO A LOCAL LANDFILL. NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE.

Hazardous Waste (including spill reporting): AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS: PAINTS, ACIDS FOR CLEANING MASONRY SURFACES, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION, OR CONCRETE CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS, THE CONTRACTOR SPILL COORDINATOR SHOULD BE CONTACTED IMMEDIATELY.

Sanitary Waste: ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

### OFF SITE VEHICLE TRACKING:

- \_\_\_\_\_ HAUL ROADS DAMPENED FOR DUST CONTROL
- \_\_\_\_\_ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- \_\_\_\_\_ EXCESS DIRT ON ROAD REMOVED DAILY
- \_\_\_\_\_ STABILIZED CONSTRUCTION ENTRANCE

Other: THE CONTRACTOR SHALL BE RESPONSIBLE FOR AUGMENTING THESE PLANS WITH OTHER MEASURES FOR ANY OTHER TEMPORARY EROSION CONTROL MEASURES OCCASIONED BY THE WORK, SUCH AS FOR HAUL ROADS AND BORROW PIT ACCESS. ALL CONTINGENT EROSION CONTROL PRACTICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION OR CONSTRUCTION.

Remarks: DISPOSAL AREAS, STOCKPILES, AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT MAY ENTER RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, WATER BODY OR STREAM BED. CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS. ALL WATERWAYS SHALL BE CLEARED AS SOON AS PRACTICABLE OF TEMPORARY EMBANKMENTS, TEMPORARY BRIDGES, MATTING, FALSE WORK, PILING, DEBRIS OR OTHER OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT A PART OF THE FINISHED WORK. THERE ARE NO HISTORICAL SITES OR ENDANGERED SPECIES IMPACTED BY THIS PROJECT.

NO.	REVISION	BY	DATE
<b>CITY OF OVILLA, TEXAS</b>			
<b>STANDARD CONSTRUCTION DETAILS</b>			
<b>SITE DESCRIPTION - EROSION &amp; SEDIMENT CONTROLS</b>			
DATE:	SEPTEMBER 2016	SHEET	SD-40

