CITY OF FORT PIERCE

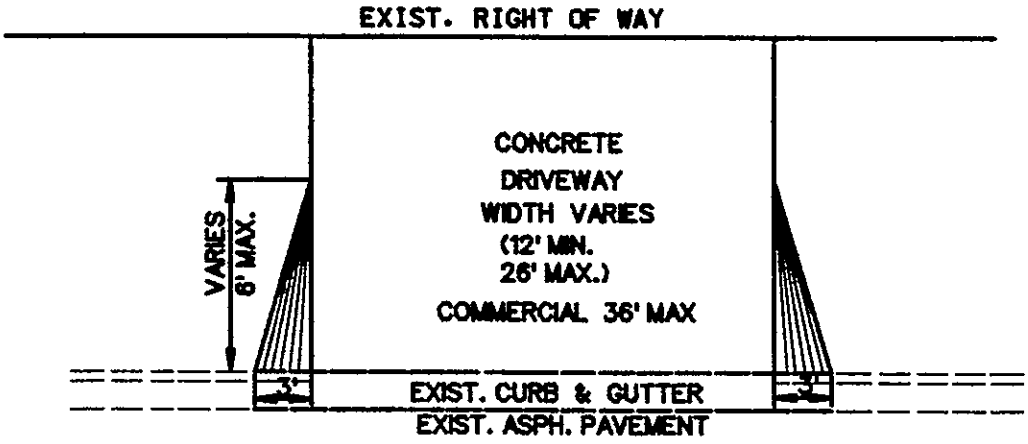
STANDARD

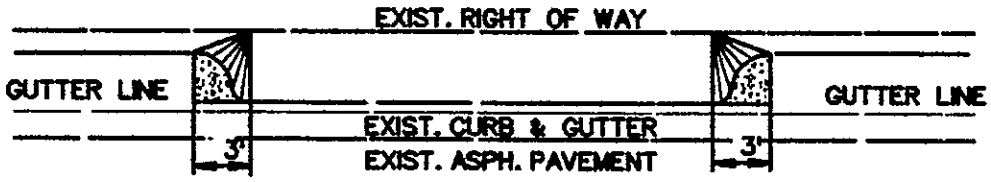
SPECIFICATIONS AND DETAILS

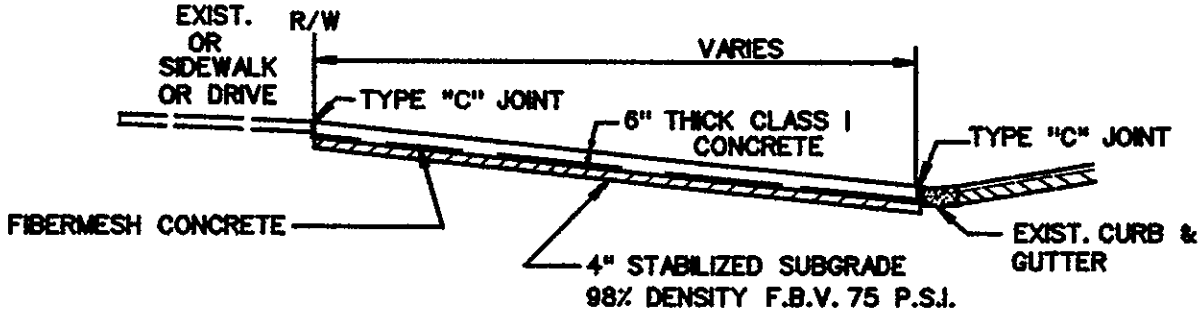
DEPARTMENT OF ENGINEERING

100 NORTH U.S. 1
POST OFFICE BOX 1480
FORT PIERCE FLA. 34954-1480
(561) 460-2200

AUGUST 14, 1998







GENERAL CONSTRUCTION NOTES:

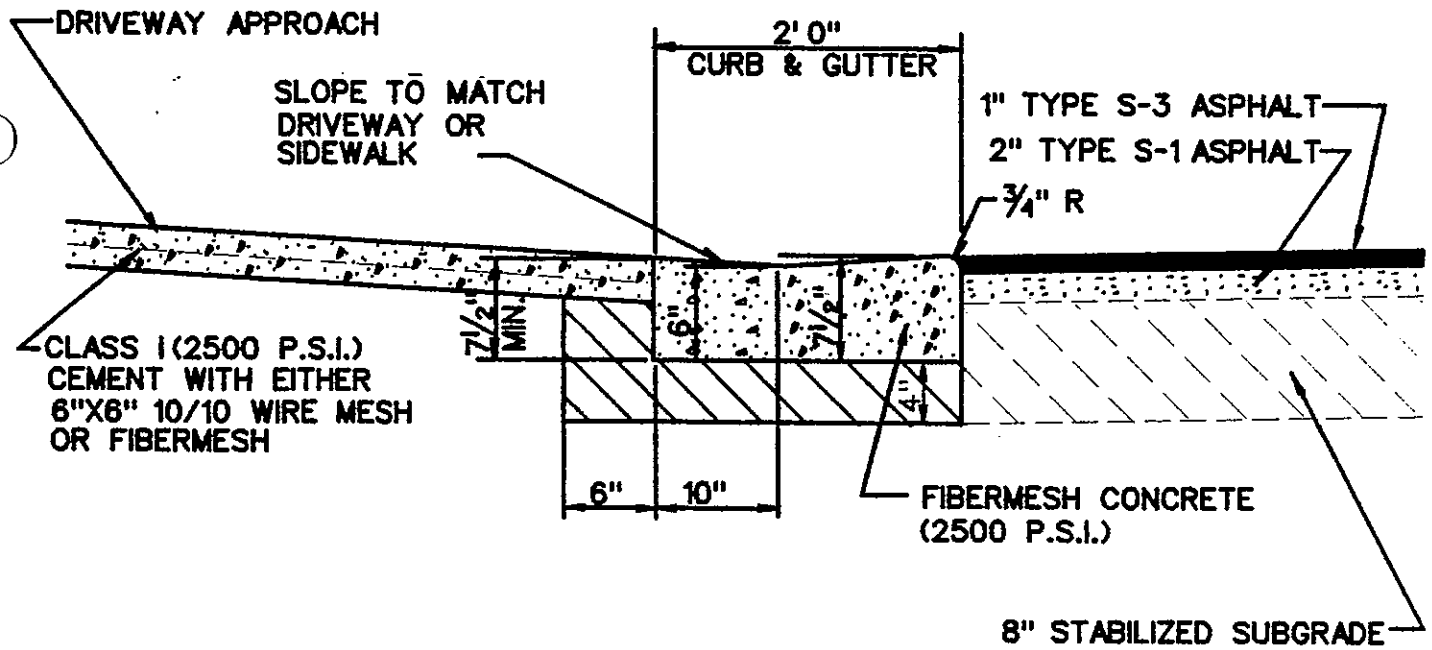
1. CONCRETE STRENGTH TO BE 2500 P.S.I. AT 28 DAYS.
2. SUBBASE TO BE 98% DENSITY - F.B.V. 75 P.S.I.
3. THE CONCRETE SHALL BE GIVEN A BROOM FINISH AND THE EDGES OF THE SIDEWALK SHALL BE FINISHED WITH A EDGING TOOL HAVING AN RADIUS OF ½ INCH.

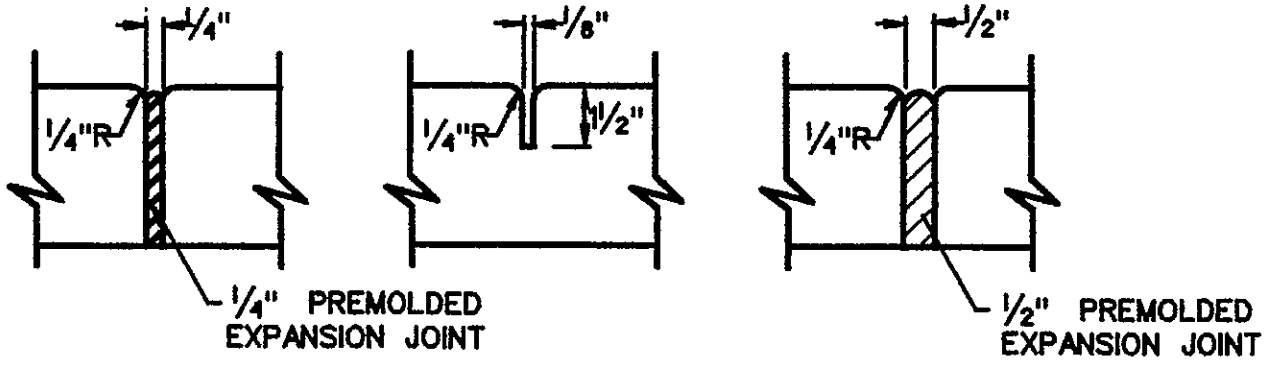
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

DRIVEWAY DETAILS

REVISIONS
SHEET No.
D1

SCALE: N.T.S. | ISSUED AUGUST 1998





TYPE 'A' TYPE 'B' TYPE 'C'

'A' At P.C. & P.T. of curves and at junction of existing and new sidewalks.

'B' 5' center to center on new sidewalks and 10' center to center on new curb and gutter

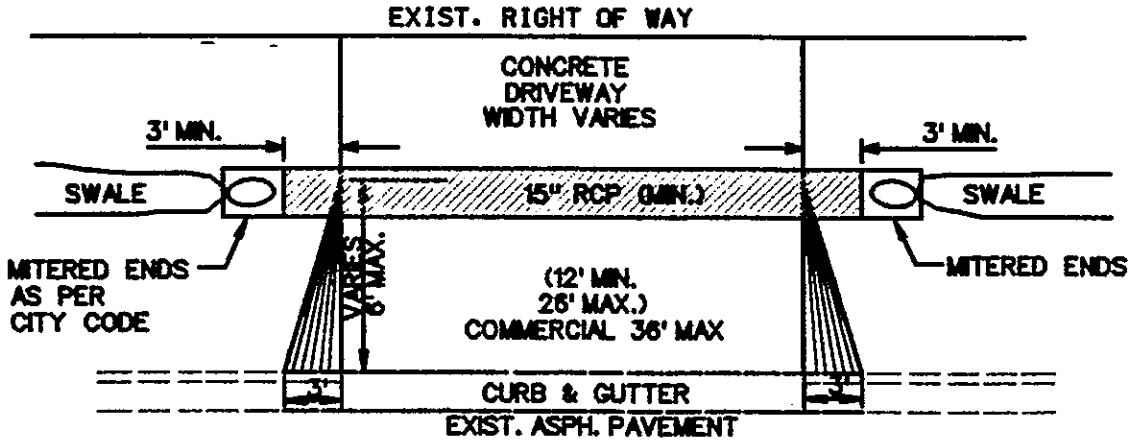
'C' Where new sidewalk abuts concrete curbs, driveway and similar structures.

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

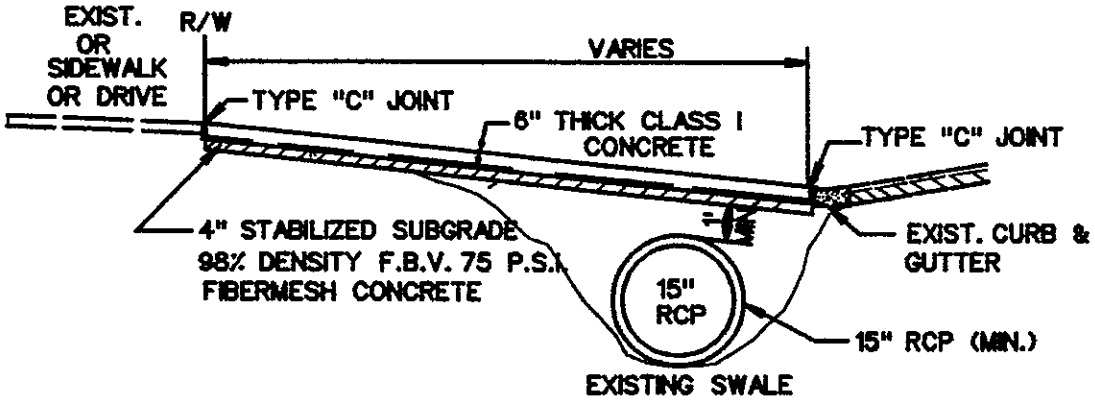
CONCRETE DRIVEWAY CURB WITH JOINT DETAILS

REVISIONS
SHEET No.
D2

SCALE: N.T.S. | ISSUED AUGUST 1998



15" RCP TO MATCH EXISTING FLOW OF SWALE AND MUST NOT IMPEDE EXISTING DRAINAGE. ELEVATIONS ARE TO BE SET BY CITY ENGINEER OR HIS REPRESENTATIVE.



GENERAL DRIVEWAY CONSTRUCTION NOTES:

1. CONCRETE STRENGTH TO BE 2500 P.S.I. AT 28 DAYS.
2. SUBBASE TO BE 98% DENSITY - F.B.V. 75 P.S.I.
3. THE CONCRETE SHALL BE GIVEN A BROOM FINISH.
4. 15" RCP MINIMUM PIPE SIZE TO BE USED, AND MUST BE 1' BELOW DRIVEWAY.
5. SEE MITERED END DETAILS FOR SPECIFICATIONS ON MITERED ENDS (REQUIRED BY CITY CODE).

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

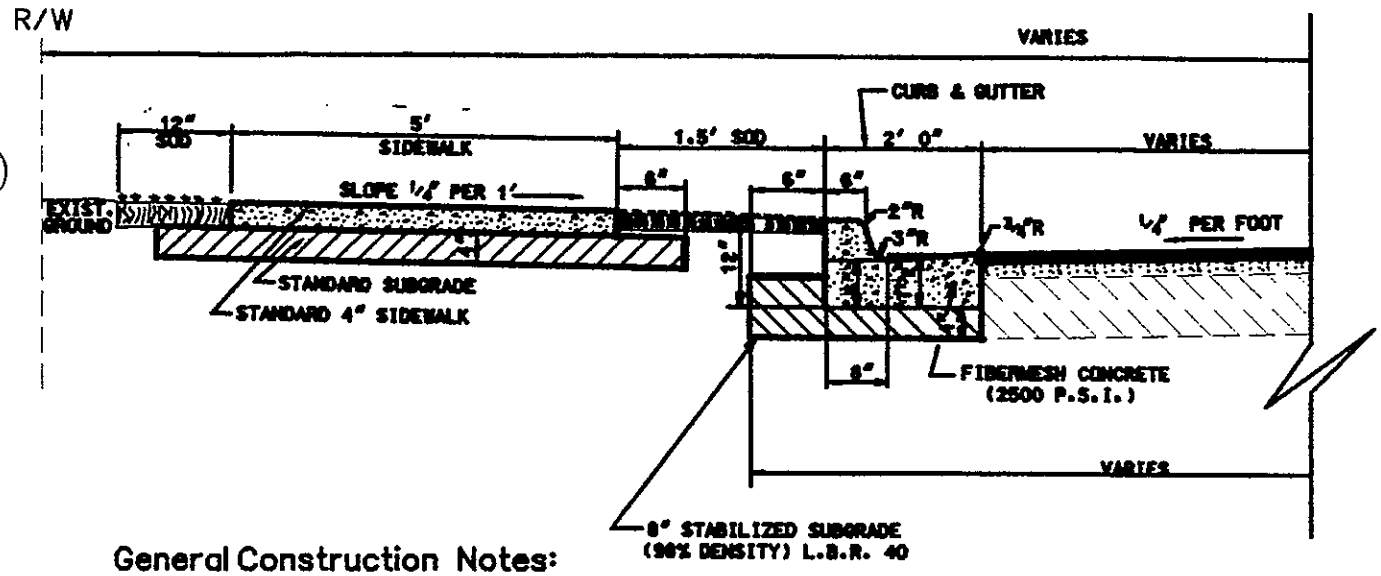
DRIVEWAY DETAILS

REVISIONS

SHEET No.
D3

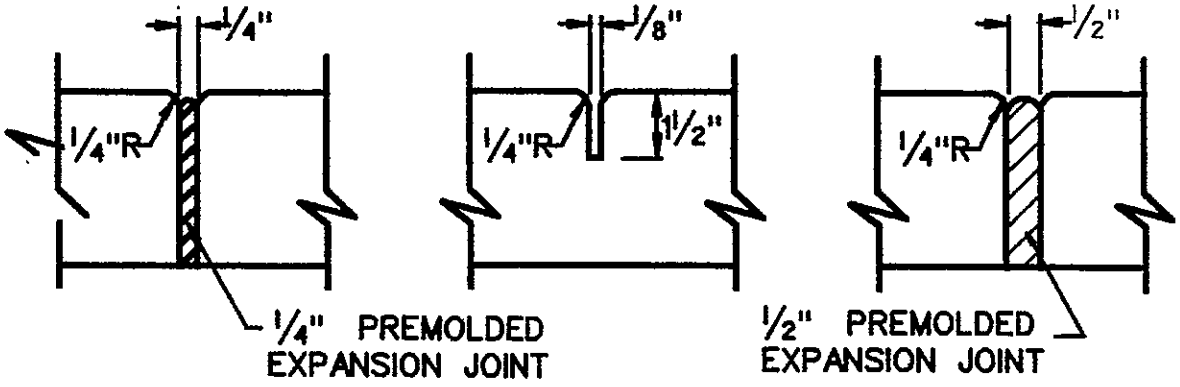
SCALE: N.T.S.

ISSUED AUGUST 1998



General Construction Notes:

1. Concrete strength to be 2500 P.S.I. at 28 days.
2. Tooled dummy contraction joints every 5' (Type 'B' Joints)
3. Expansion joints w/premolded filler at 100' o/c (Type 'C' Joints)
4. Subbase to be 98% Density L.B.R. 40
5. The concrete shall be given a broom finish and the edges of the sidewalk shall be finished with an edging tool having a radius of 1/2 inch



TYPE 'A' TYPE 'B' TYPE 'C'

'A' At P.C. & P.T. of curves and at junction of existing and new sidewalks.

'B' 5' center to center on new sidewalks and 10' center to center on new curb and gutter

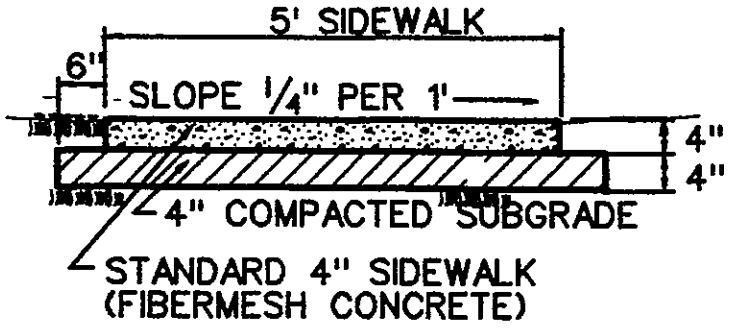
'C' Where new sidewalk abuts concrete curbs, driveway and similar structures.

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

SIDEWALK WITH GRASS AND CURB DETAIL

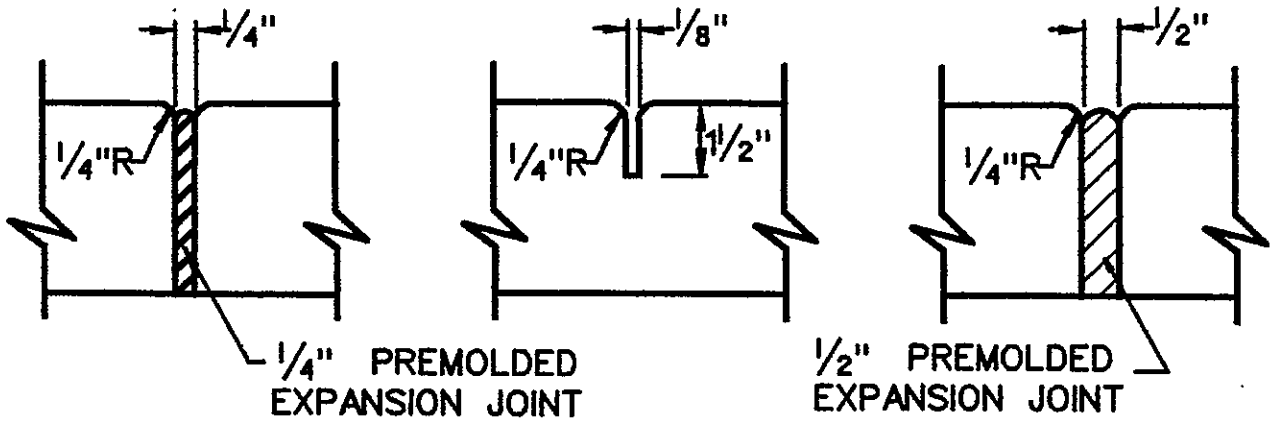
REVISIONS
SHEET No.
SW1

SCALE: N.T.S. | ISSUED AUGUST 1998



General Construction Notes:

1. Concrete strength to be 2500 P.S.I. at 28 days.
2. Tooled dummy contraction joints every 5' (Type 'B' Joints)
3. Expansion joints w/premolded filler at 100' o/c (Type 'C' Joints)
4. Subbase to be 98% Density F.B.V. 75 P.S.I.
5. The concrete shall be given a broom finish and the edges of the sidewalk shall be finished with an edging tool having a radius of 1/2 inch



TYPE 'A' TYPE 'B' TYPE 'C'

'A' At P.C. & P.T. of curves and at junction of existing and new sidewalks.

'B' 5' center to center on new sidewalks and 10' center to center on new curb and gutter

'C' Where new sidewalk abuts concrete curbs, driveway and similar structures.

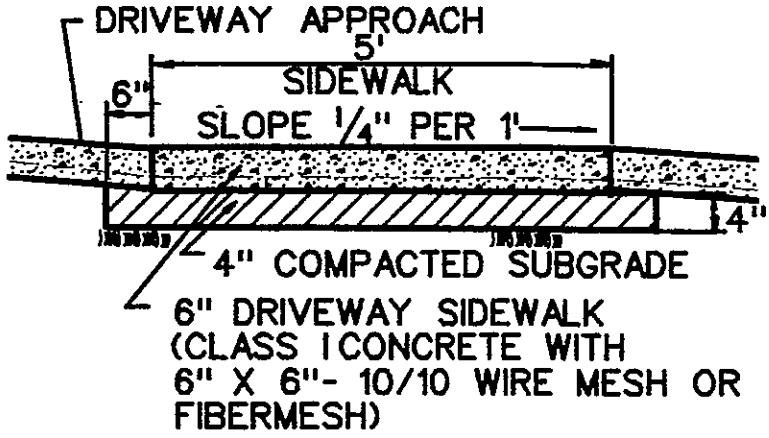
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

TYPICAL 4" SIDEWALK DETAIL

SCALE: N.T.S. | ISSUED AUGUST 1998

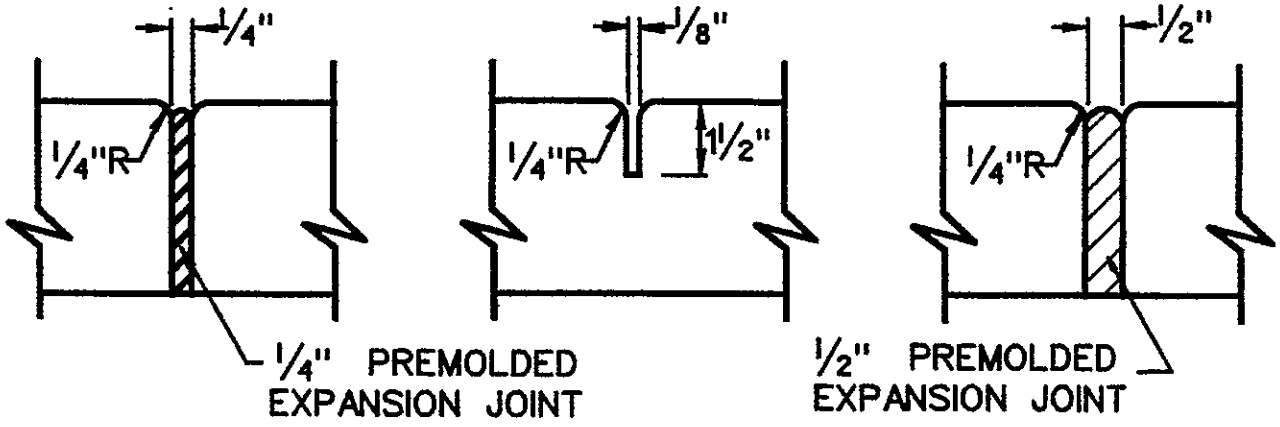
REVISIONS

SHEET No. SW2



General Construction Notes:

1. Concrete strength to be 2500 P.S.I. at 28 days.
2. Tooled dummy contraction joints every 5' (Type 'B' Joints)
3. Expansion joints w/premolded filler at 100' o/c (Type 'C' Joints)
4. Subbase to be 98% Density F.B.V. 75 P.S.I.
5. The concrete shall be given a broom finish and the edges of the sidewalk shall be finished with an edging tool having a radius of 1/2 inch



TYPE 'A' TYPE 'B' TYPE 'C'

'A' At P.C. & P.T. of curves and at junction of existing and new sidewalks.

'B' 5' center to center on new sidewalks and 10' center to center on new curb and gutter

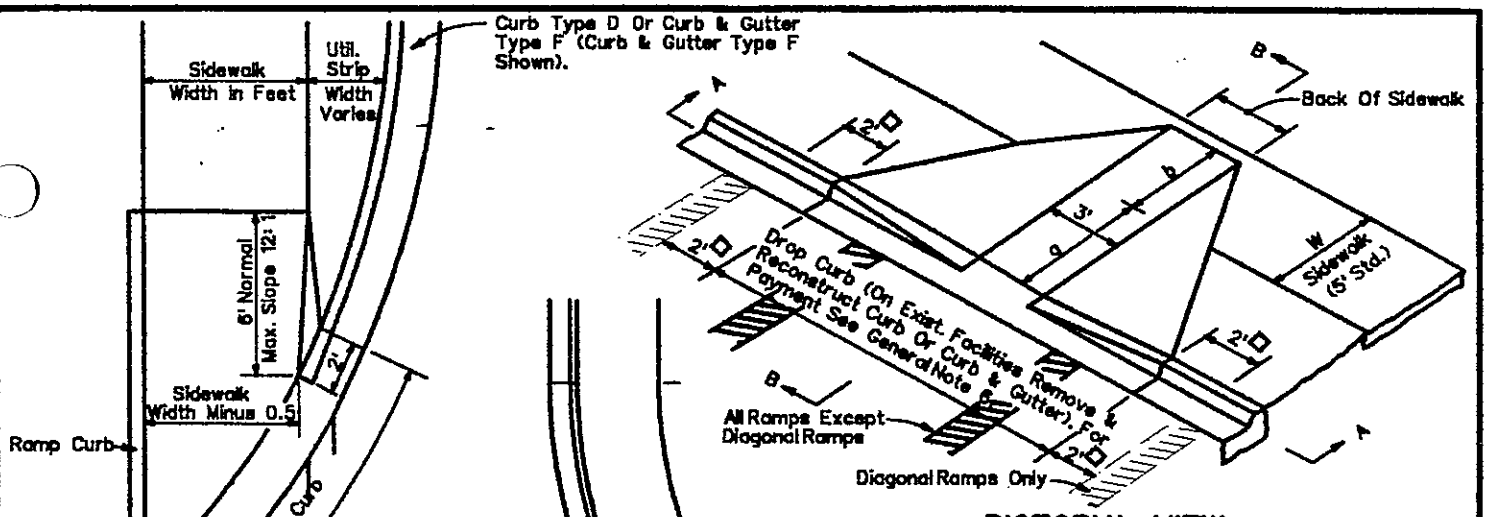
'C' Where new sidewalk abuts concrete curbs, driveway and similar structures.

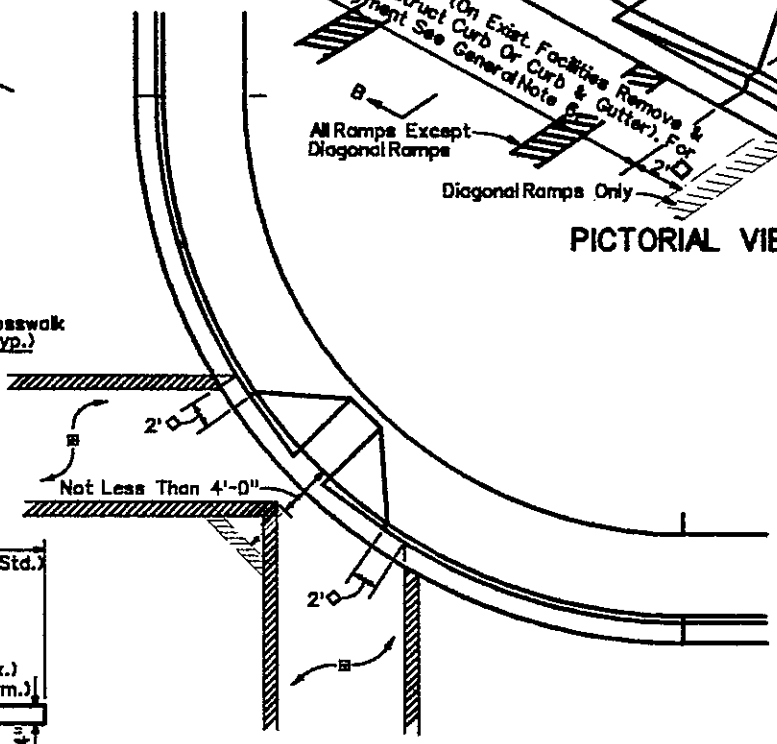
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

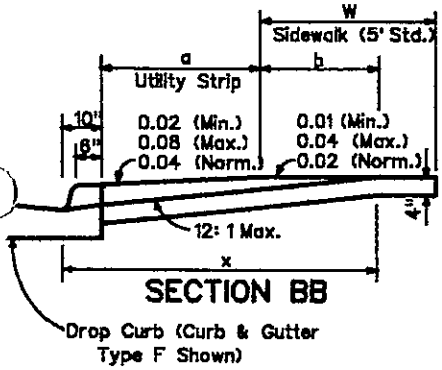
TYPICAL 6" SIDEWALK DETAIL

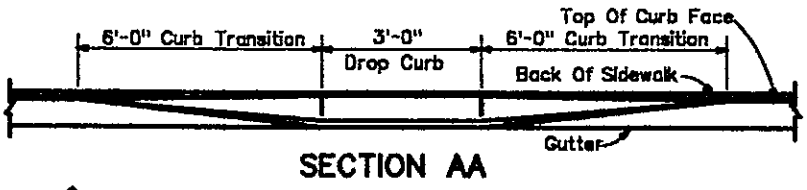
REVISIONS
SHEET No.
SW3

SCALE: N.T.S. | ISSUED AUGUST 1998









◇ Not less than 2' full height curb adjacent to diagonal ramp and within crosswalk limits

▣ Crosswalk widths and configuration vary.

W	a	W+a+10"	X	b
5'	0'	5.8'	5.8'	5.0'=
6'	0'	6.8'	6.8'	6.0'==
7'	0'	7.8'	7.3'	6.5'==
8'	0'	8.8'	7.3'	6.5'==
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

•b=x-(a + 10")

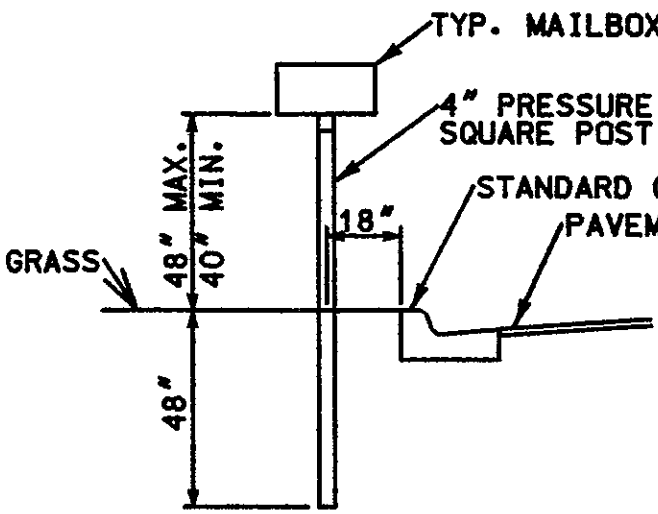
b=Distance from front edge of sidewalk to back point of 12:1 slope.
=Back of sidewalk drop required for all sidewalk slopes.
==Back of sidewalk drop required for sidewalk slopes 0.04 and part 0.02.

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

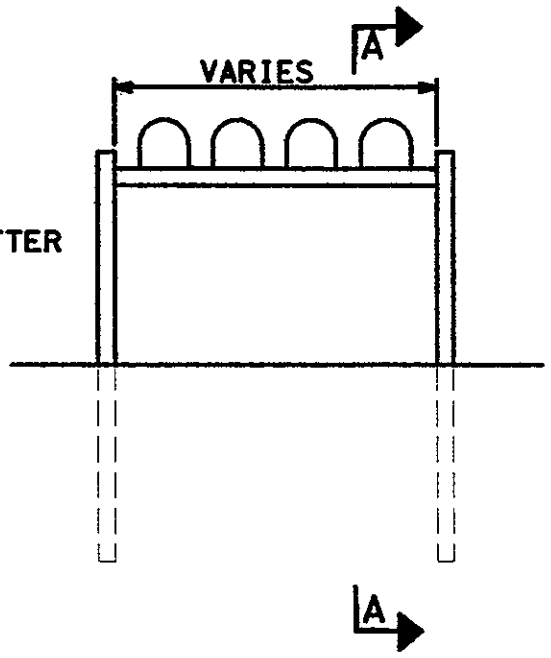
HANDICAP RAMPS

REVISIONS
BAR 4/10/01
SHEET No.
SW5

SCALE: N.T.S. | ISSUED AUGUST 1998



SECTION A-A



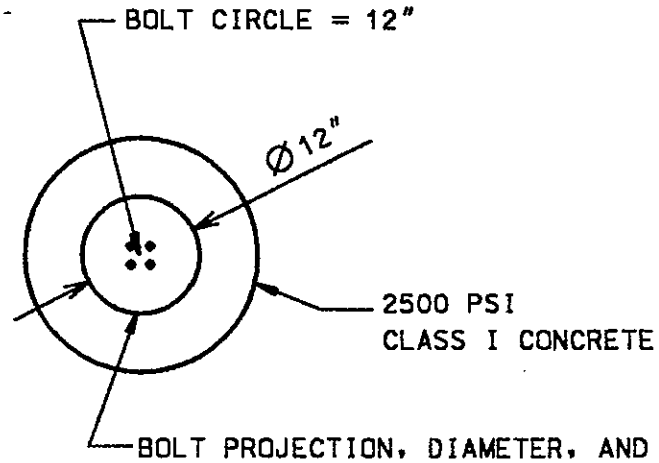
ELEVATION

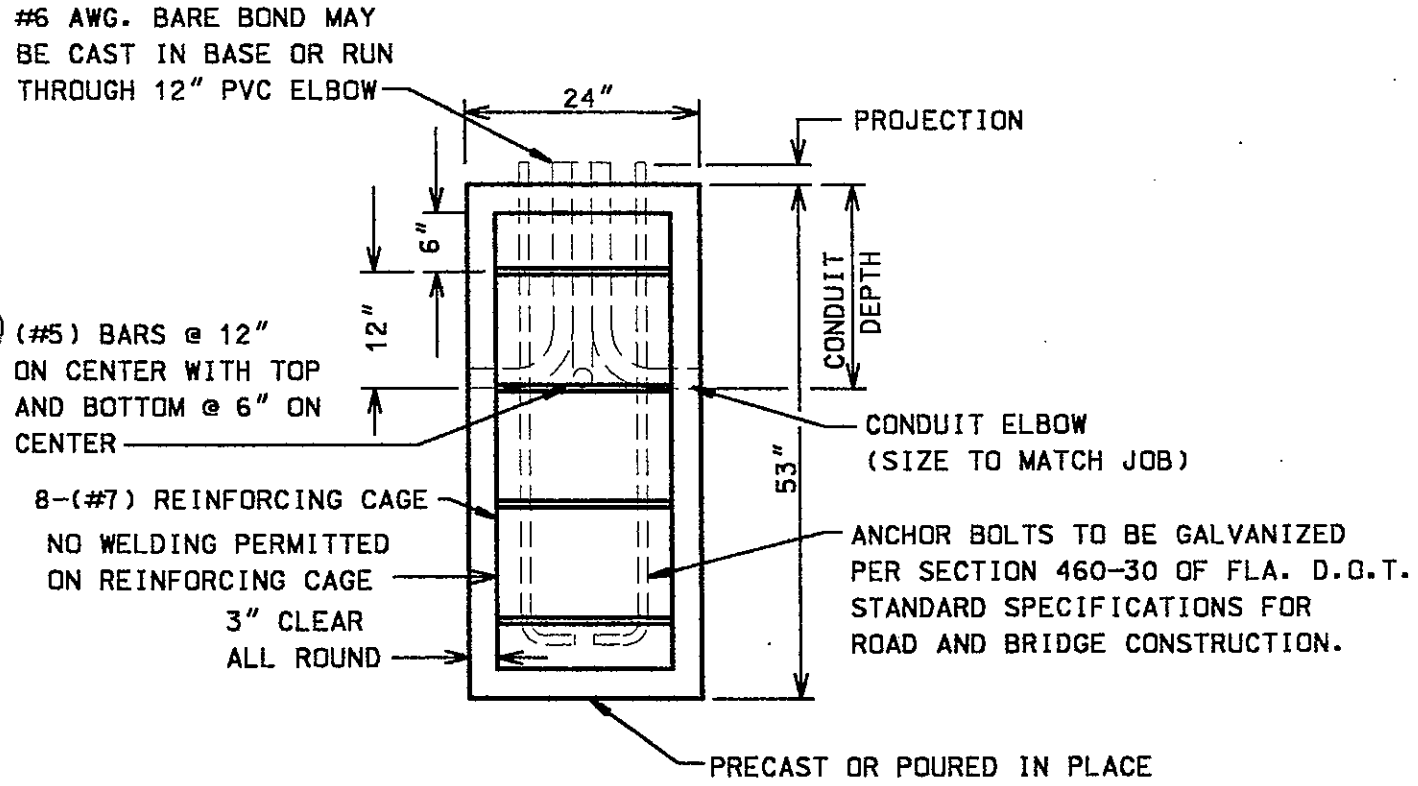
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

TYPICAL MAILBOX INSTALLATION DETAIL IN GRASS STRIP

REVISIONS
SHEET No.
SW6

SCALE: N.T.S. | ISSUED AUGUST 1998





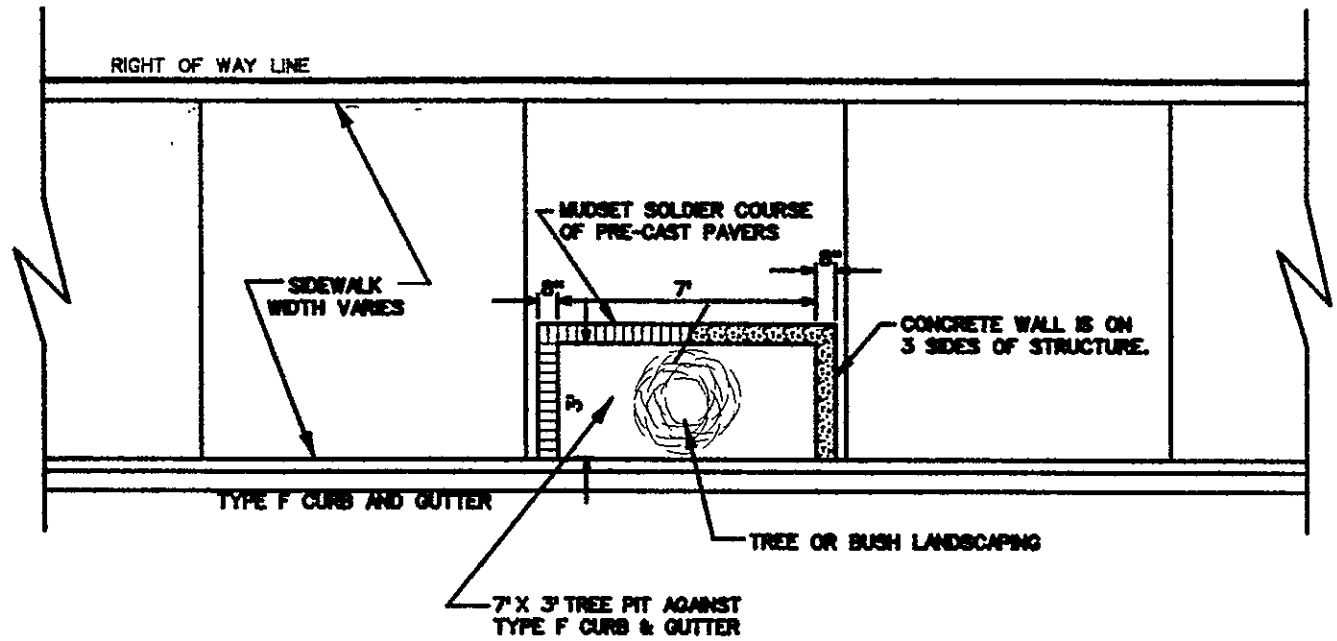
REINFORCING STEEL TO BE GRADE 40 OR 60

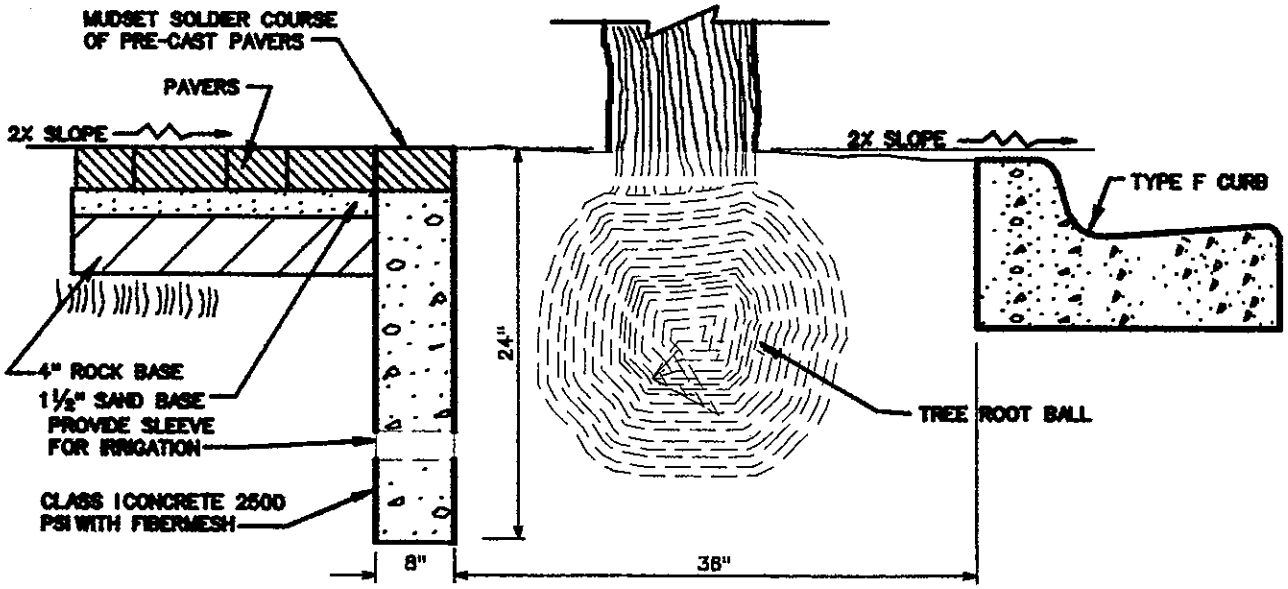
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

DECORATIVE POLE CONCRETE FOUNDATION DETAIL

REVISIONS
SHEET No.
SW8

SCALE: N.T.S. | **ISSUED OCTOBER 2000**



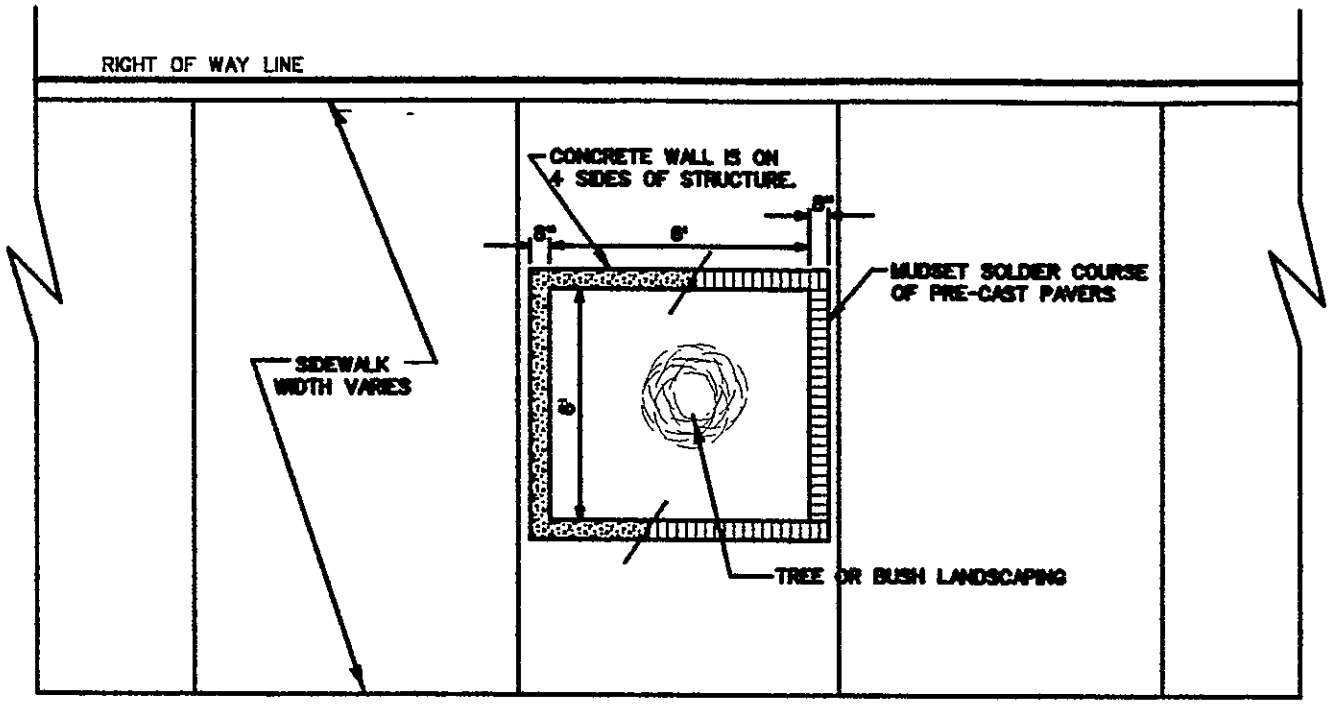


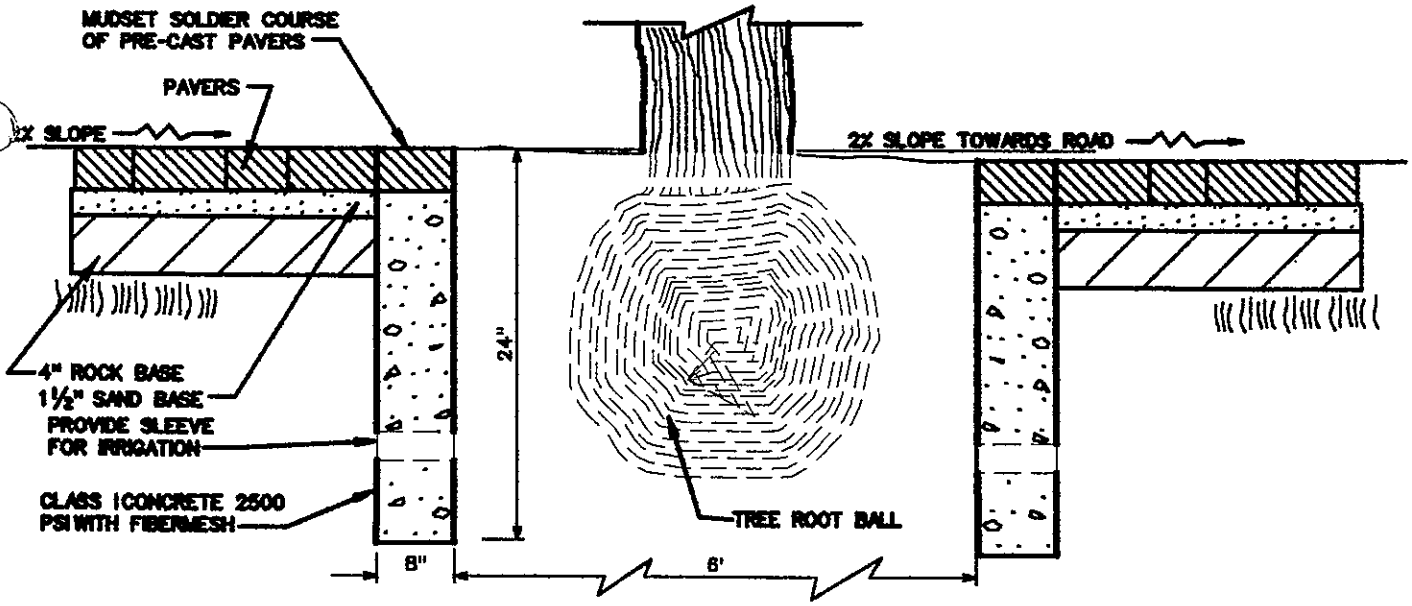
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

7' X 3' TREE PIT DETAIL

REVISIONS
SHEET No.
SW9

SCALE: N.T.S. | ISSUED APRIL 2001





CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

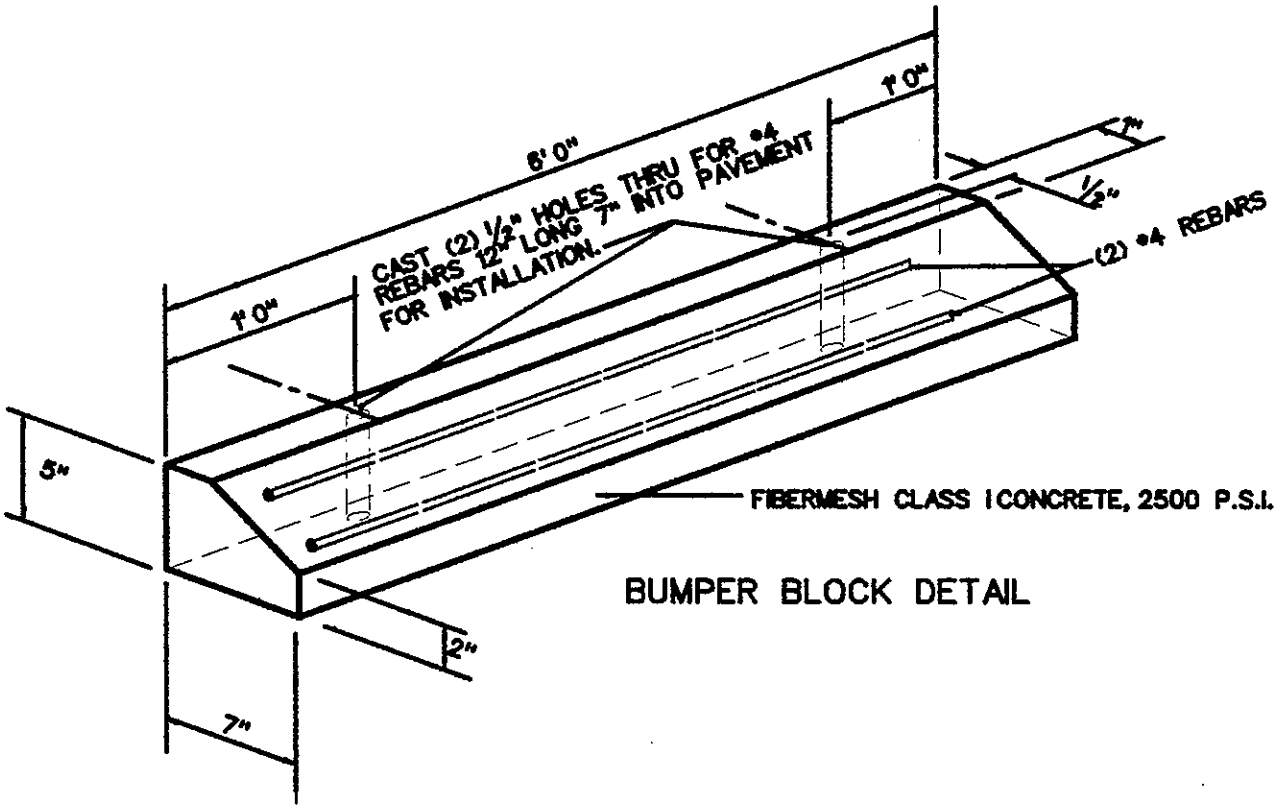
6' X 6' TREE PIT DETAIL

REVISIONS

SHEET No.
SW10

SCALE: N.T.S.

ISSUED APRIL 2001



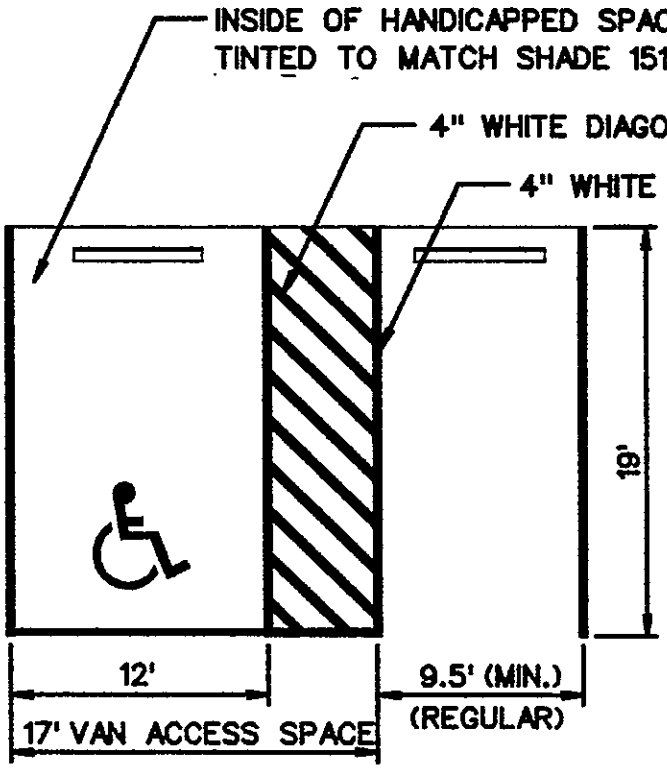
BUMPER BLOCK DETAIL

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

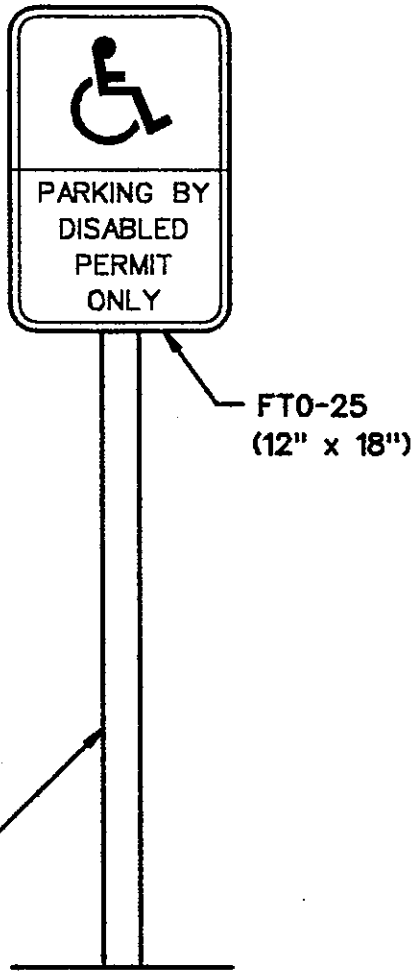
BUMPER BLOCK DETAIL

REVISIONS
SHEET No.
PL1

SCALE: N.T.S. | ISSUED AUGUST 1998



PAVEMENT MARKINGS



HANDICAPPED PARKING SIGN

NOTE:

FOR PARKING REQUIREMENTS SEE FORT PIERCE CODE.

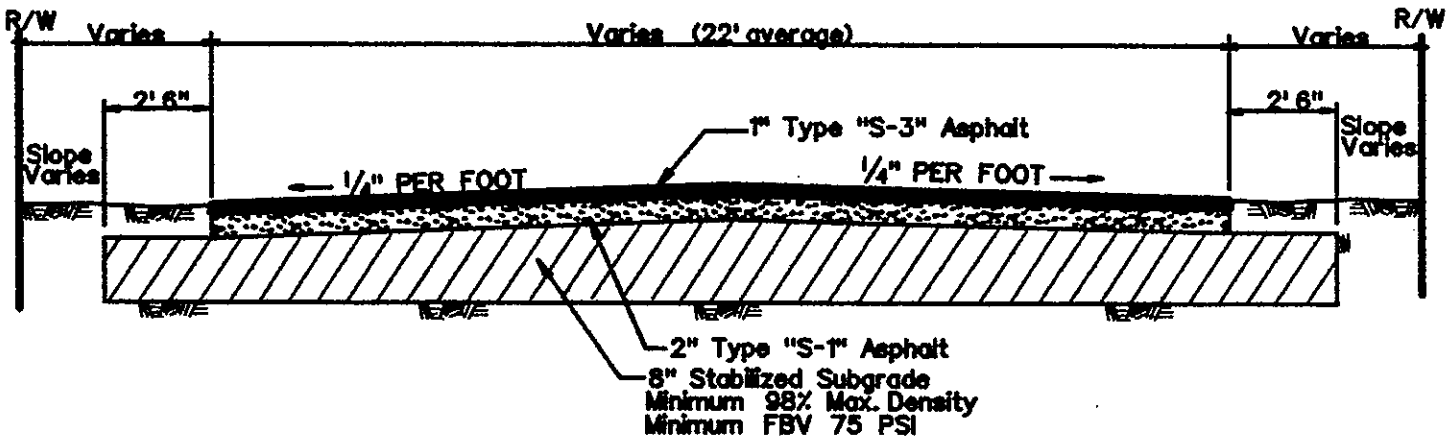
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

HANDICAPPED AND REGULAR PARKING DETAIL

SCALE: N.T.S. | ISSUED AUGUST 1998

REVISIONS

SHEET No.
PL2

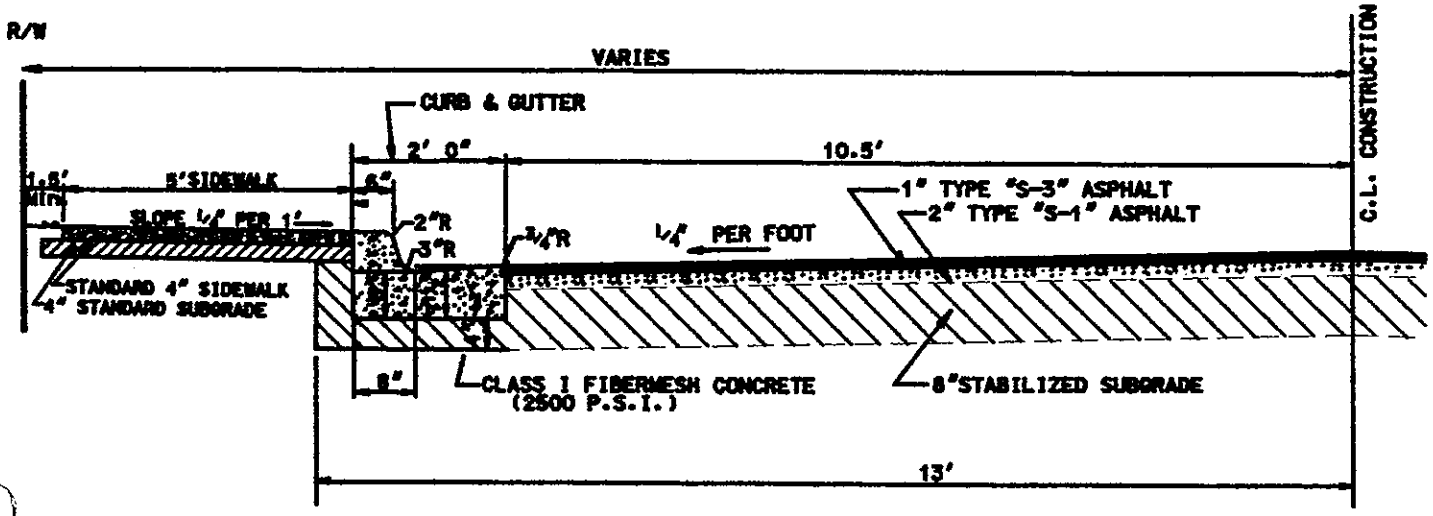


CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

PAVING DETAIL WITHOUT CURB AND GUTTER

REVISIONS
SHEET No.
PV1

SCALE: N.T.S. | ISSUED AUGUST 1998

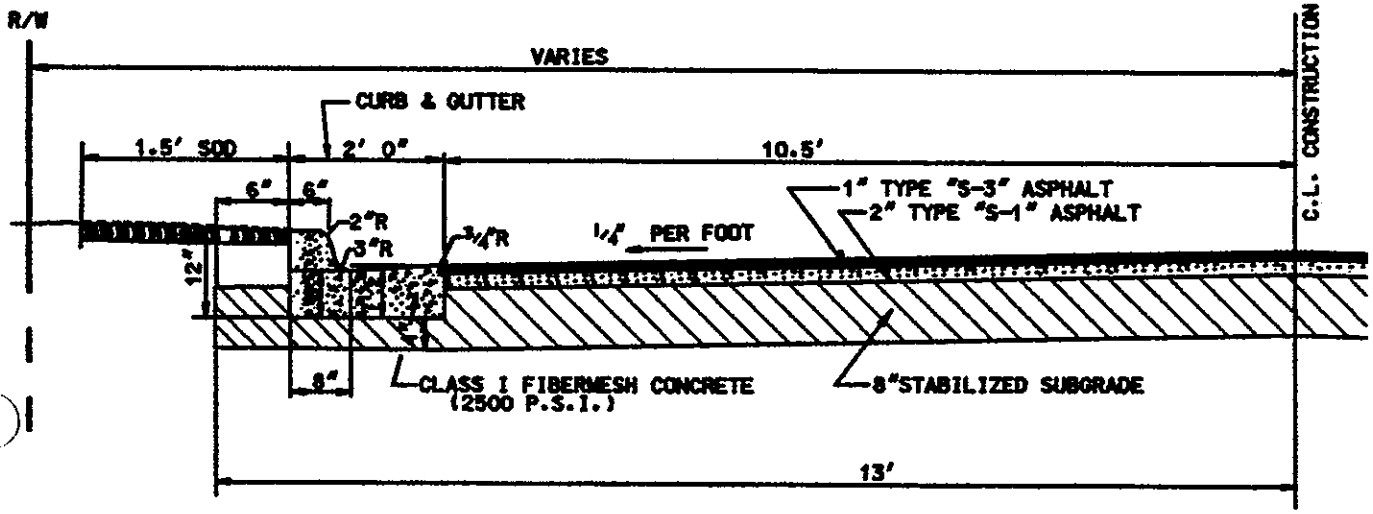


CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

PAVEMENT WITH CURB & GUTTER AND SIDEWALK

REVISIONS
SHEET No.
PV2

SCALE: N.T.S. | ISSUED AUGUST 1998

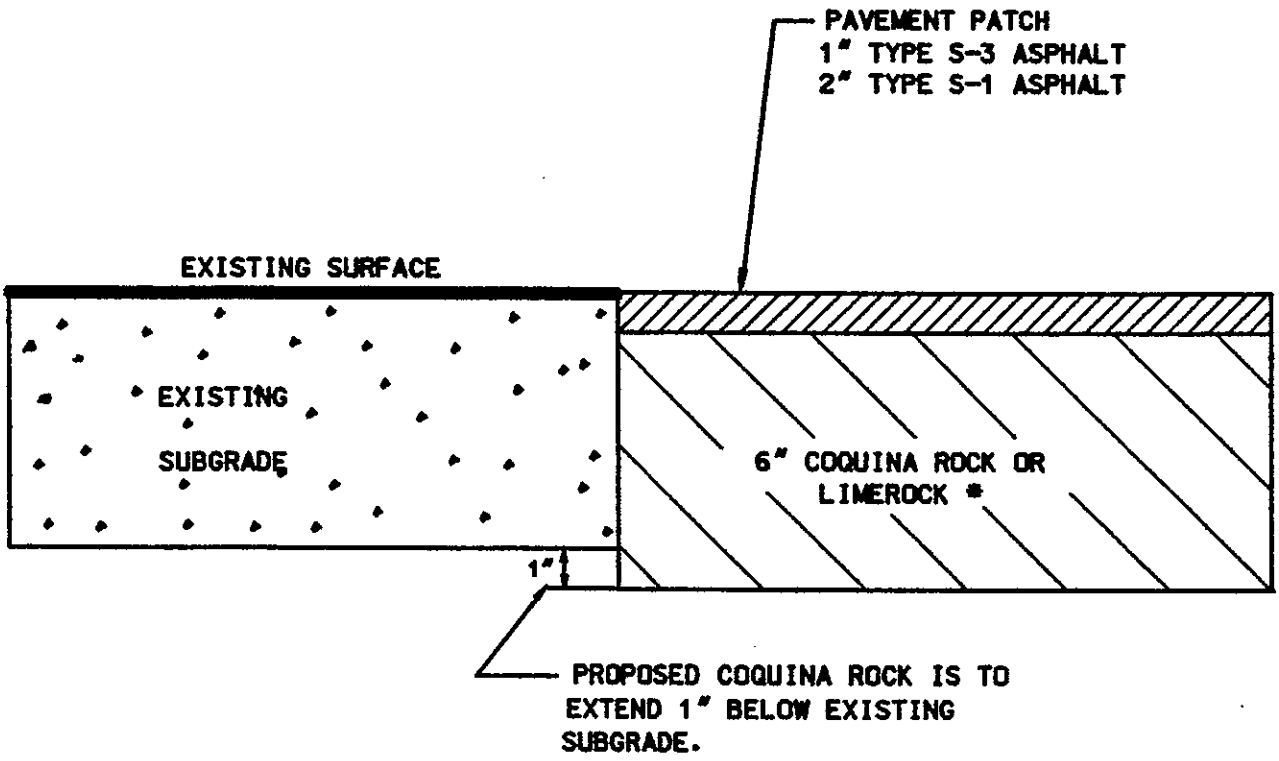


CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

PAVEMENT WITH CURB & GUTTER

REVISIONS
SHEET No.
PV3

SCALE: N.T.S. | ISSUED AUGUST 1998



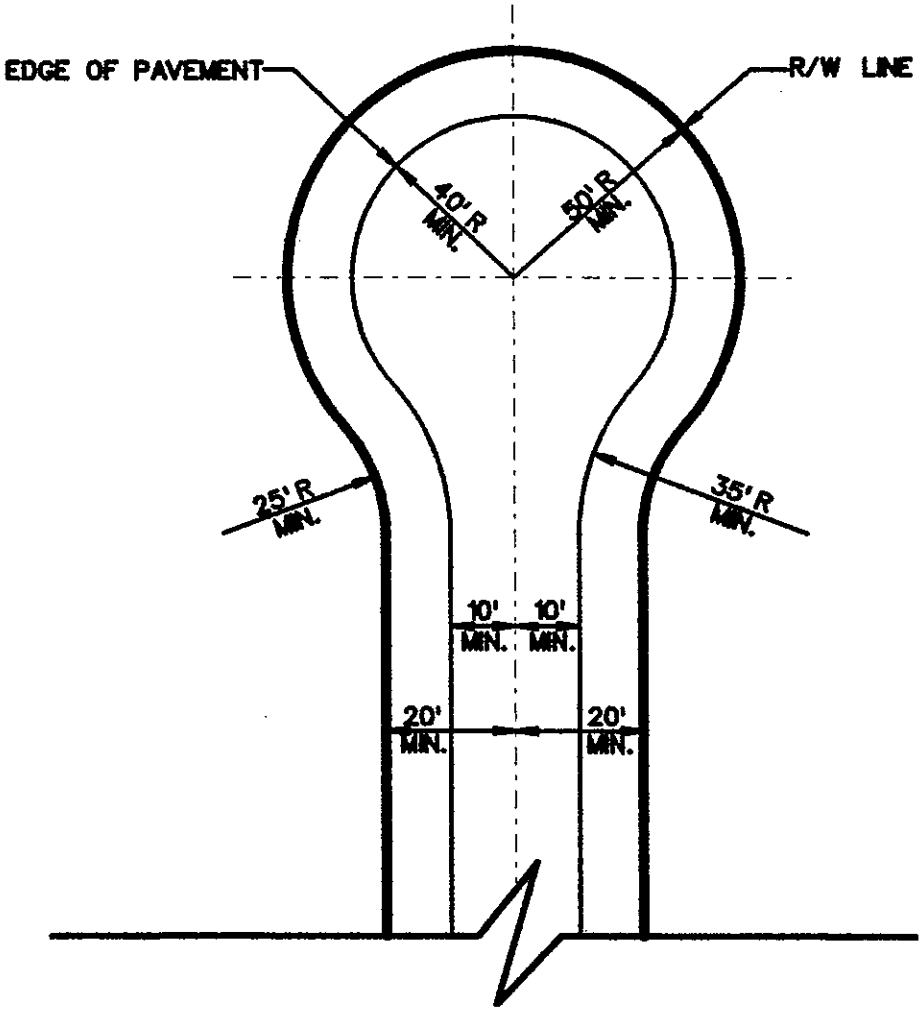
* 6" LIMEROCK OR CRUSHED COQUINA COMPACTED TO 98% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO METHOD T-180

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

PAVEMENT PATCHING

REVISIONS
SHEET No.
PV4

SCALE: N.T.S. | ISSUED AUGUST 1998



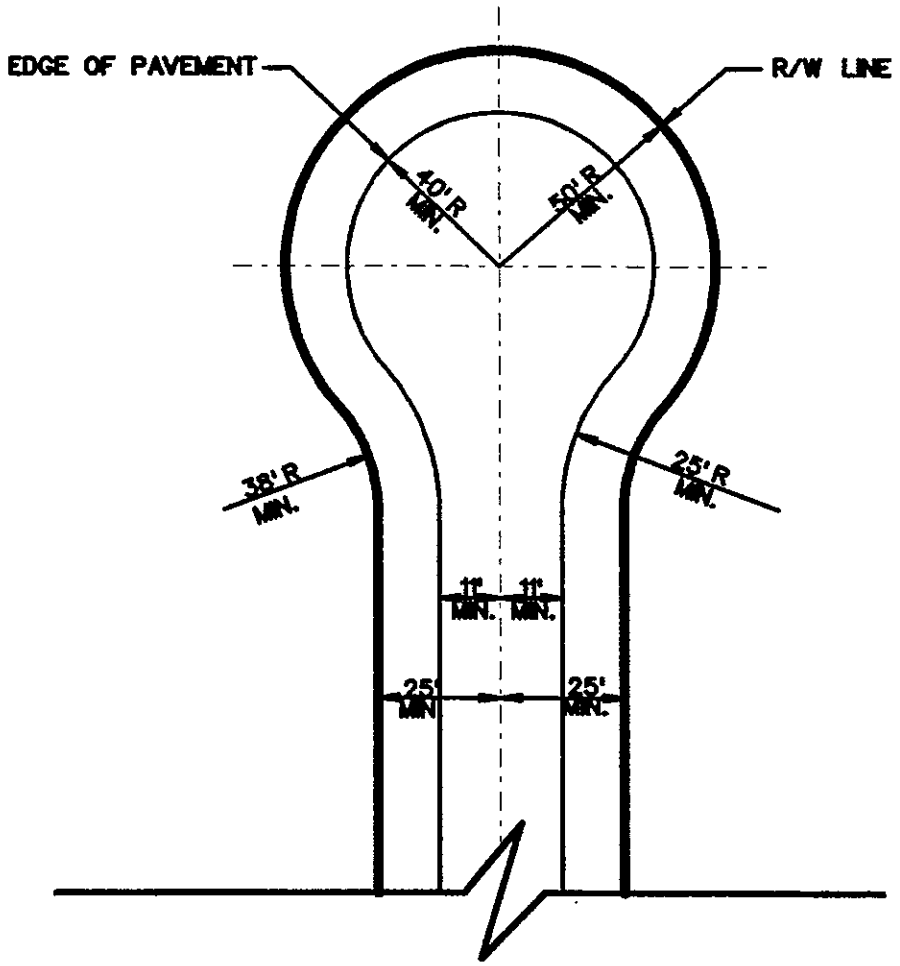
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

CUL-DE-SAC DETAIL

40 FT. RIGHT OF WAY

REVISIONS
SHEET No.
PV5

SCALE: N.T.S. | ISSUED AUGUST 1998



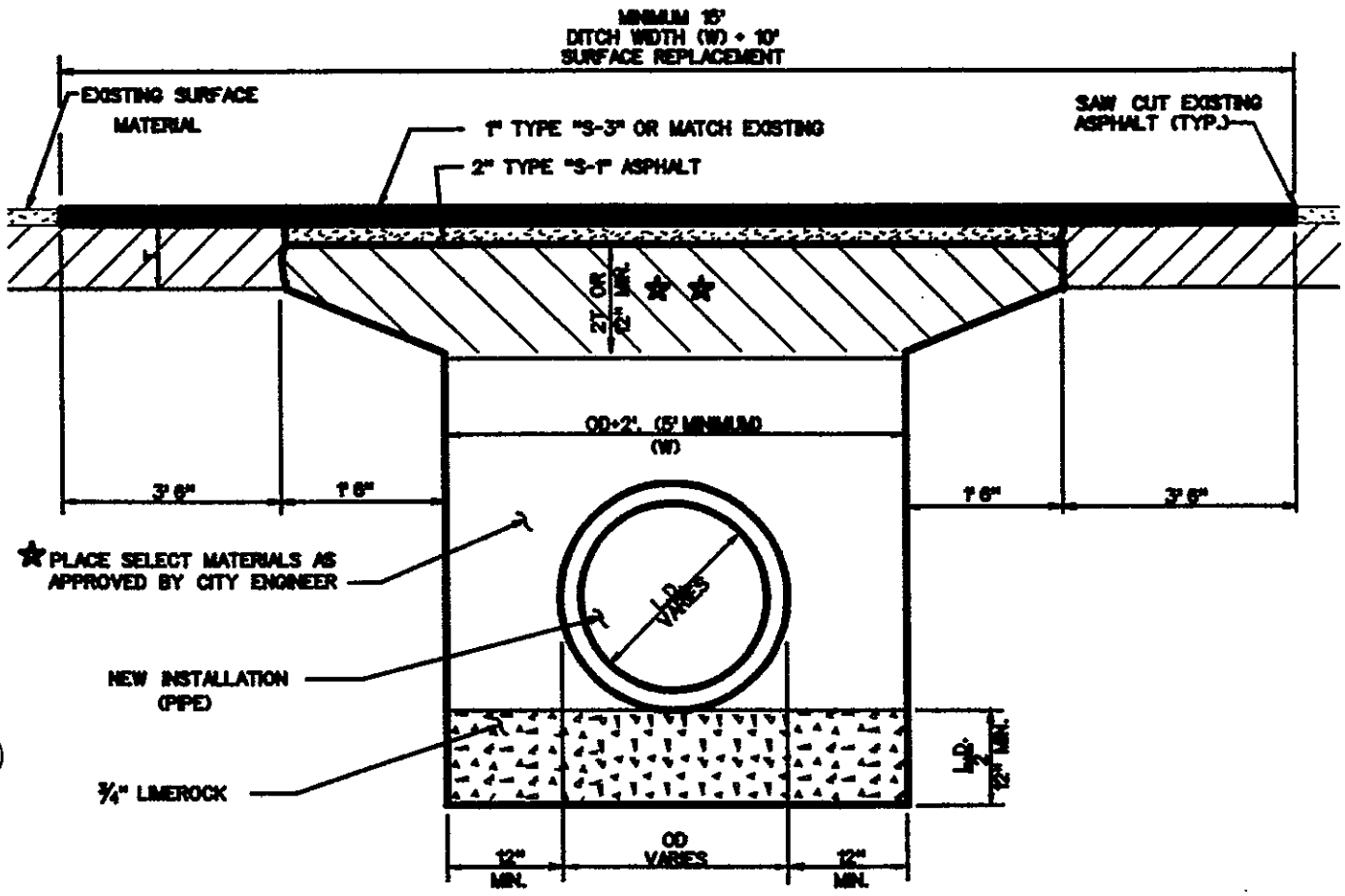
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

CUL-DE-SAC DETAIL

50 FT. RIGHT OF WAY

REVISIONS
SHEET No.
PV6

SCALE: N.T.S. | ISSUED AUGUST 1998



★ INITIAL BACKFILL SHALL BE PLACED TO 12" ABOVE THE PIPE IN 6" LIFTS. BACKFILL SHALL BE MECHANICALLY TAMPED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO METHOD T-99. UPPERMOST 12" TO BE COMPACTED TO 98% OF T-99.

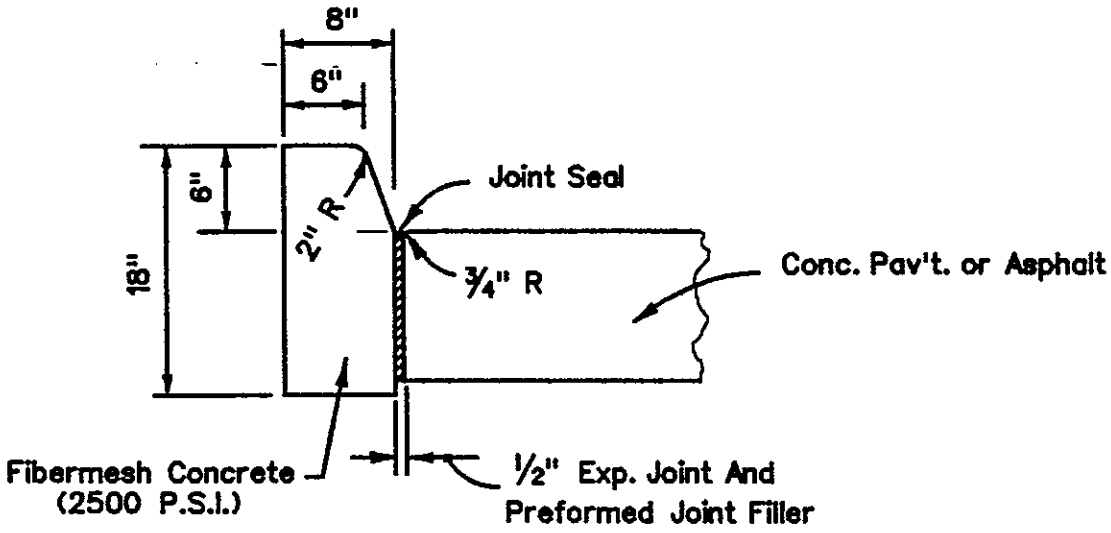
★★ LIMEROCK OR CRUSHED COQUINA COMPACTED TO 98% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO METHOD T-180.

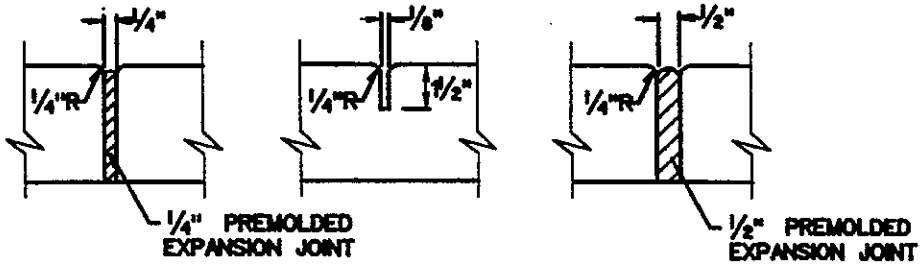
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

PAVEMENT RESTORATION DETAIL WITH TRENCH

REVISIONS
SHEET No.
PV7

SCALE: N.T.S. | ISSUED AUGUST 1998





TYPE 'A' TYPE 'B' TYPE 'C'

Note: For use adjacent to concrete or flexible pavement, concrete shown. Expansion joint, preformed joint filler and joint seal are required on concrete pavement only.

GENERAL NOTES

1. For curb, gutter, curb and gutter and traffic separators provide ⅛" - ¼" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers.

2. Ends of Curbs Types B and D shall transition from full to zero heights in 3 feet.

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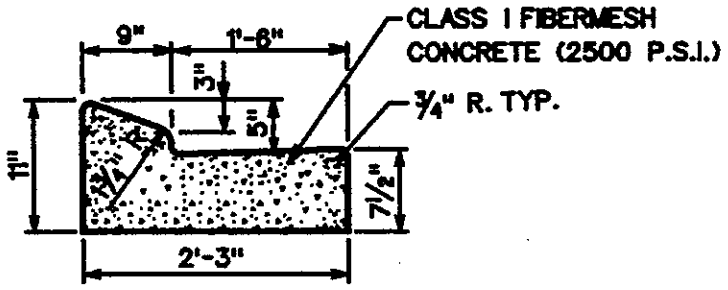
TECHNICAL SPECIFICATIONS AND DETAILS

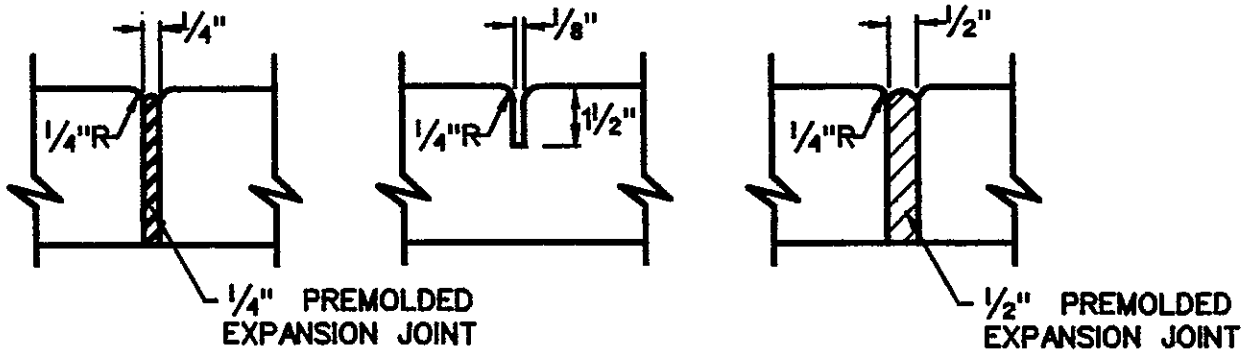
TYPE D CURB DETAIL

REVISIONS
SHEET No.
CG1

SCALE: N.T.S. | ISSUED AUGUST 1998



★ NOTE: WHEN USED ON HIGH SIDE OF ROADWAYS. THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE THE ADJACENT PAVEMENT. THE THICKNESS OF THE LIP SHALL BE 6", UNLESS OTHERWISE SHOWN ON PLANS.



TYPE 'A' TYPE 'B' TYPE 'C'

'A' At P.C. & P.T. of curves and at junction of existing and new sidewalks.

'B' 5' center to center on new sidewalks and 10' center to center on new curb and gutter

'C' Where new sidewalk abuts concrete curbs, driveway and similar structures.

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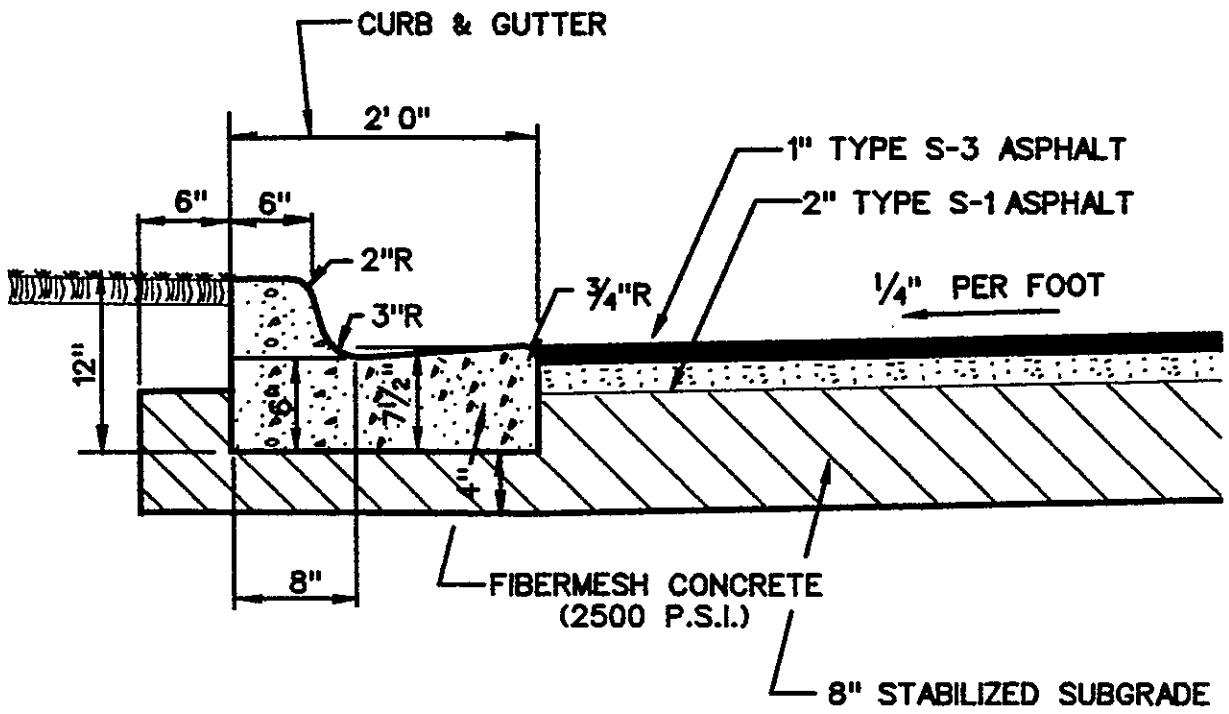
TECHNICAL SPECIFICATIONS AND DETAILS

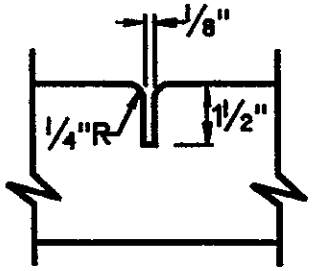
TYPE "E" CURB

REVISIONS

SHEET No. CG2

SCALE: N.T.S. | ISSUED AUGUST 1998





10' center to center on new curb and gutter

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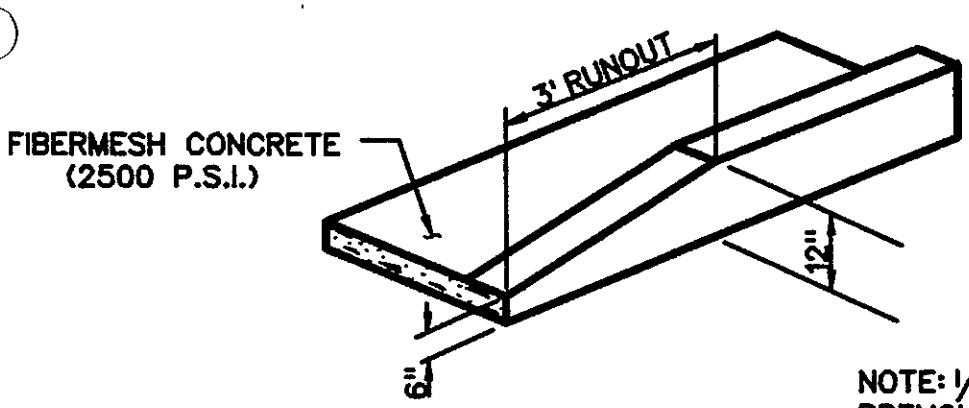
TECHNICAL SPECIFICATIONS AND DETAILS

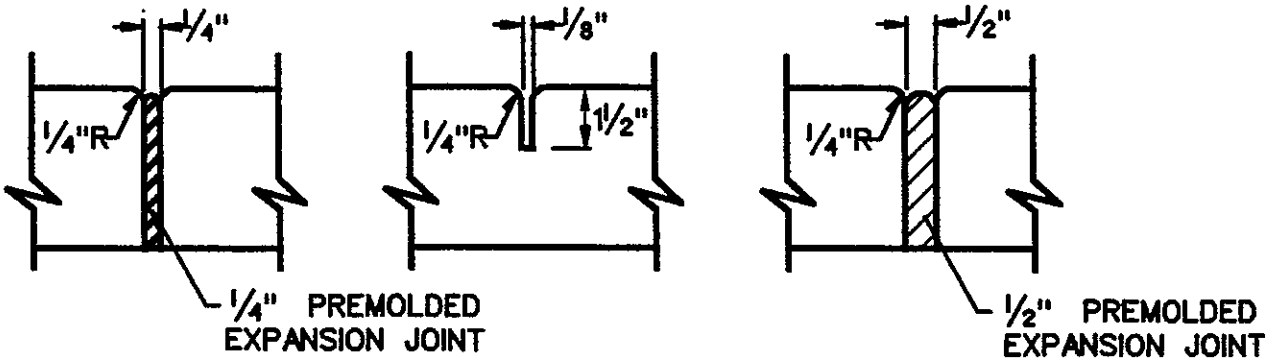
TYPE F
CURB & GUTTER
WITH JOINT DETAILS

REVISIONS
SHEET No.
CG3

SCALE: N.T.S. | ISSUED AUGUST 1998



NOTE: 1/2" EXPANSION JOINT WITH PREMOLDED EXPANSION MATERIAL AT 100' ON CENTER.



TYPE 'A' TYPE 'B' TYPE 'C'

'A' At P.C. & P.T. of curves and at junction of existing and new sidewalks.

'B' 5' center to center on new sidewalks and 10' center to center on new curb and gutter

'C' Where new sidewalk abuts concrete curbs, driveway and similar structures.

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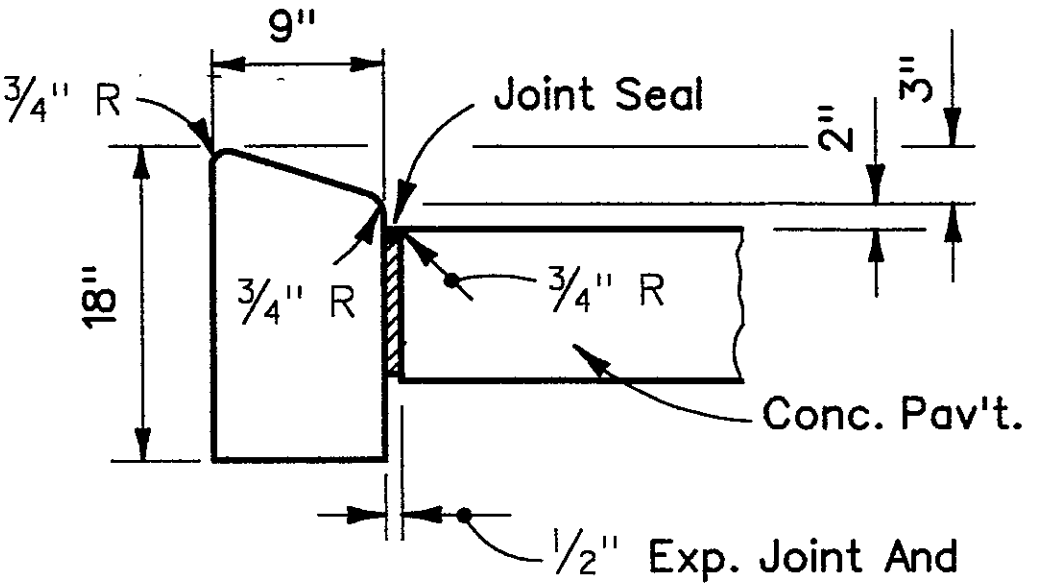
TECHNICAL SPECIFICATIONS AND DETAILS

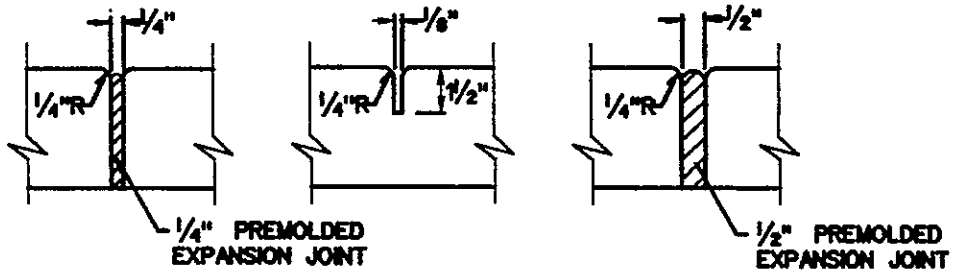
TERMINAL CURB DETAIL WITH JOINT DETAILS

REVISIONS

SHEET No.
CG4

SCALE: N.T.S. | ISSUED AUGUST 1998





TYPE 'A' TYPE 'B' TYPE 'C'

Note: For use adjacent to concrete or flexible pavement, concrete shown. Expansion joint, preformed joint filler and joint seal are required on concrete pavement only.

GENERAL NOTES

1. For curb, gutter, curb and gutter and traffic separators provide 1/8" - 1/4" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers.

2. Ends of Curbs Types B and D shall transition from full to zero heights in 3 feet.

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

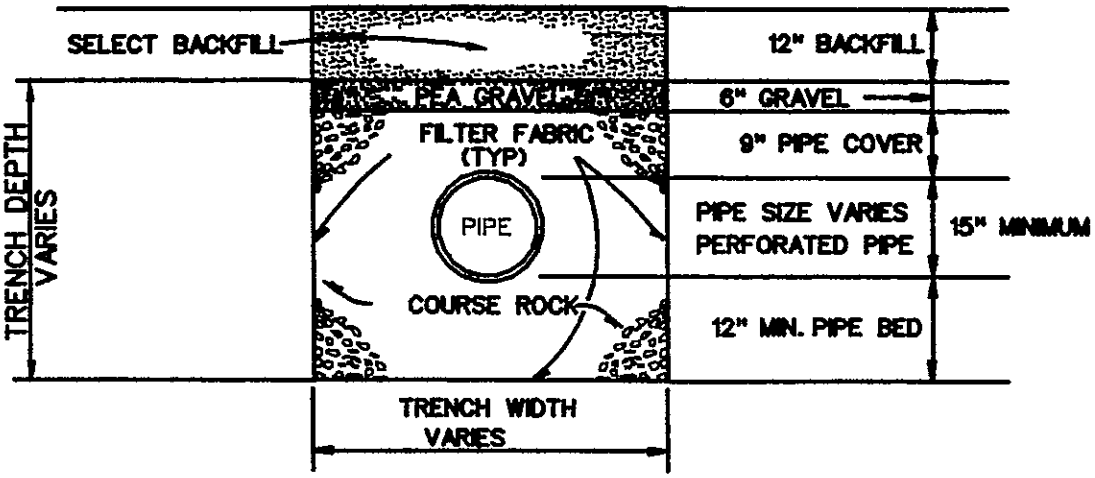
TYPE B CURB DETAIL

REVISIONS

SHEET No.
CG5

SCALE: N.T.S.

ISSUED AUGUST 1998



★ FILTER FABRIC SHALL BE SUBSURFACE DRAINAGE TYPE SECTION 985. ALL FILTER FABRIC JOINTS SHALL LAP A MEETING THE REQUIREMENTS OF F.D.O.T. STANDARDS MINIMUM OF ONE (1) FOOT.

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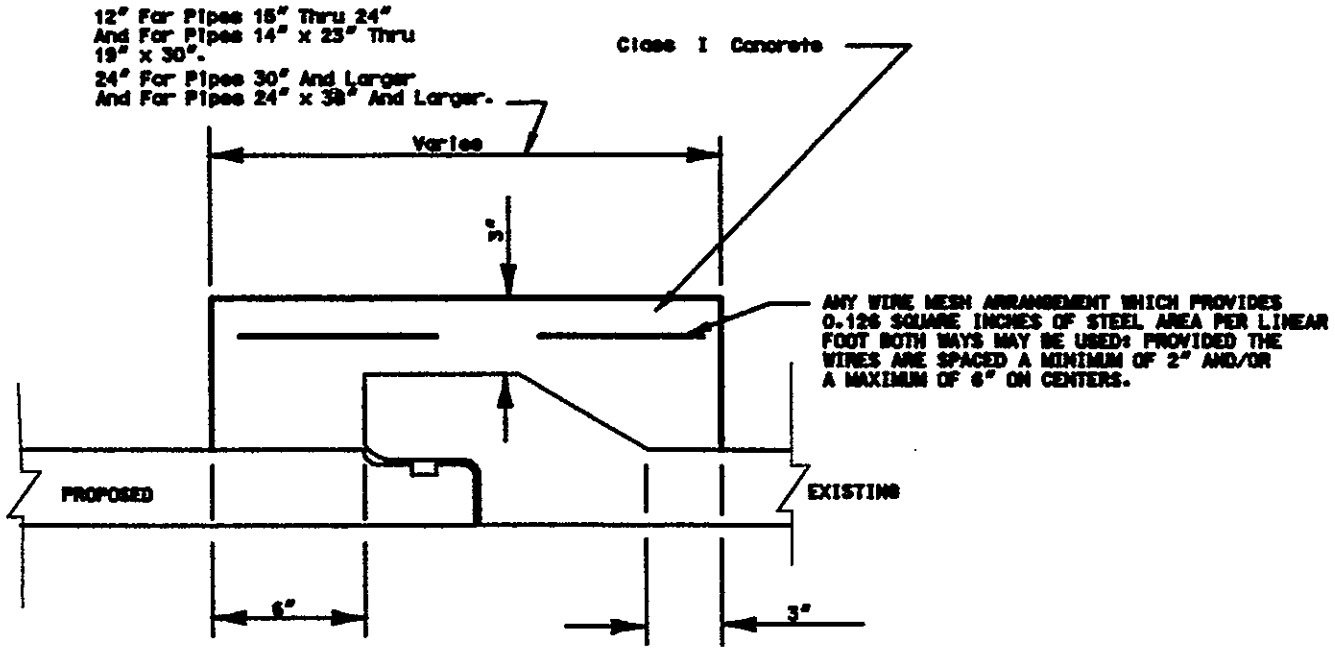
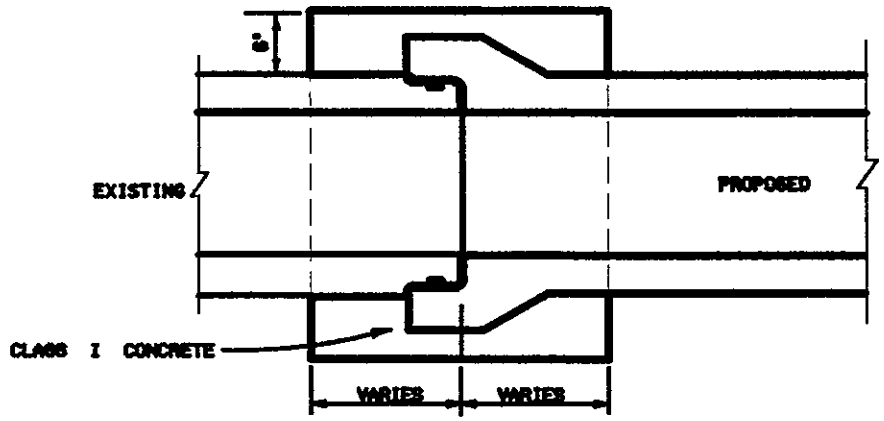
TECHNICAL SPECIFICATIONS AND DETAILS

EXFILTRATION TRENCH DETAIL

REVISIONS
SHEET No.
ET1

SCALE: N.T.S. | ISSUED AUGUST 1998





(ALL PIPE SIZES)

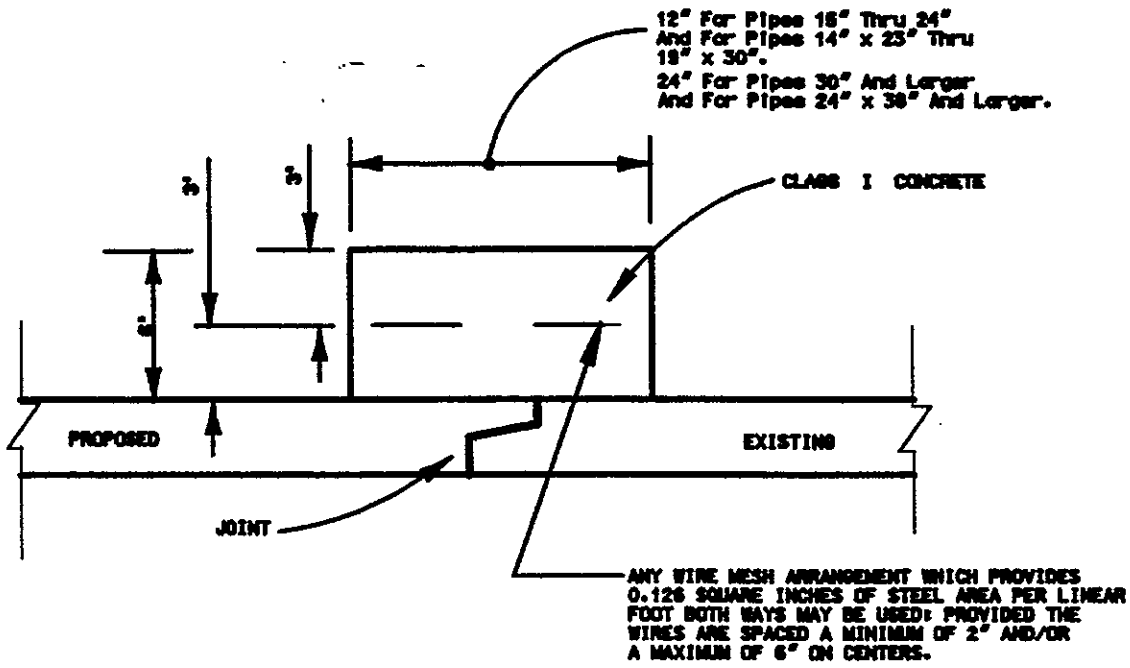
BELL AND SPIGOT

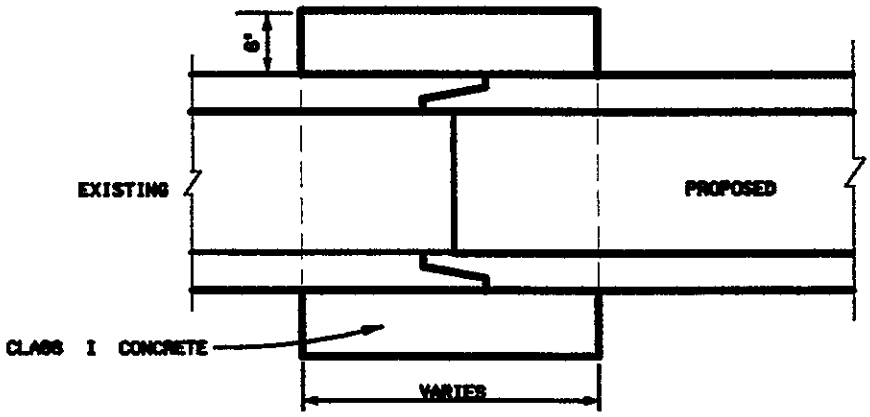
CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

BELL AND SPIGOT JOINT DETAIL

REVISIONS
SHEET No.
DRA 1

SCALE: N.T.S. | ISSUED AUGUST 1998





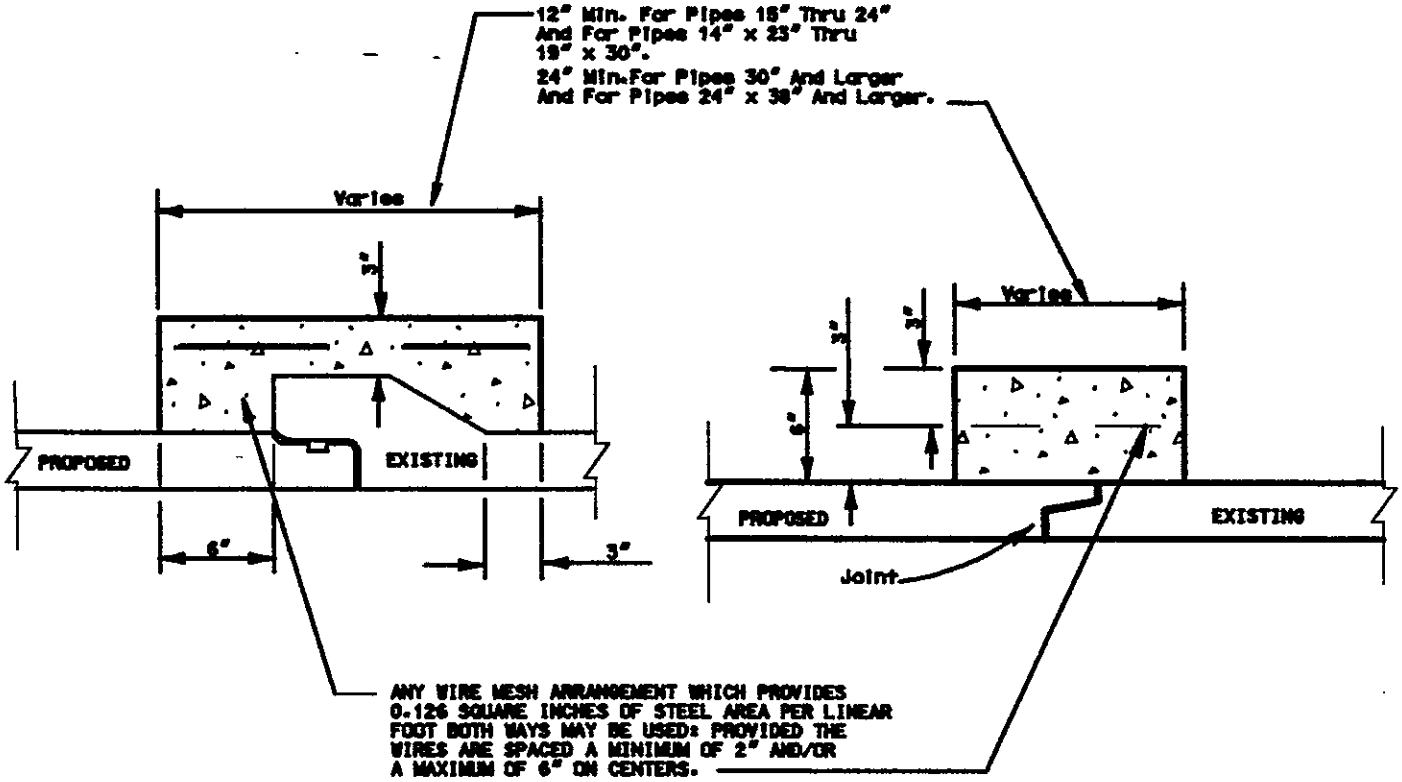
TONGUE & GROOVE

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

TONGUE AND GROOVE JOINT DETAIL

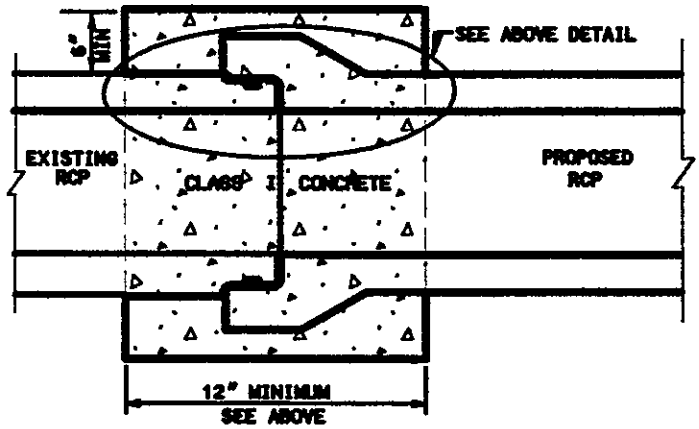
REVISIONS
SHEET No.
DRA 2

SCALE: N.T.S. | ISSUED AUGUST 1998



BELL AND SPIGOT

TONGUE & GROOVE



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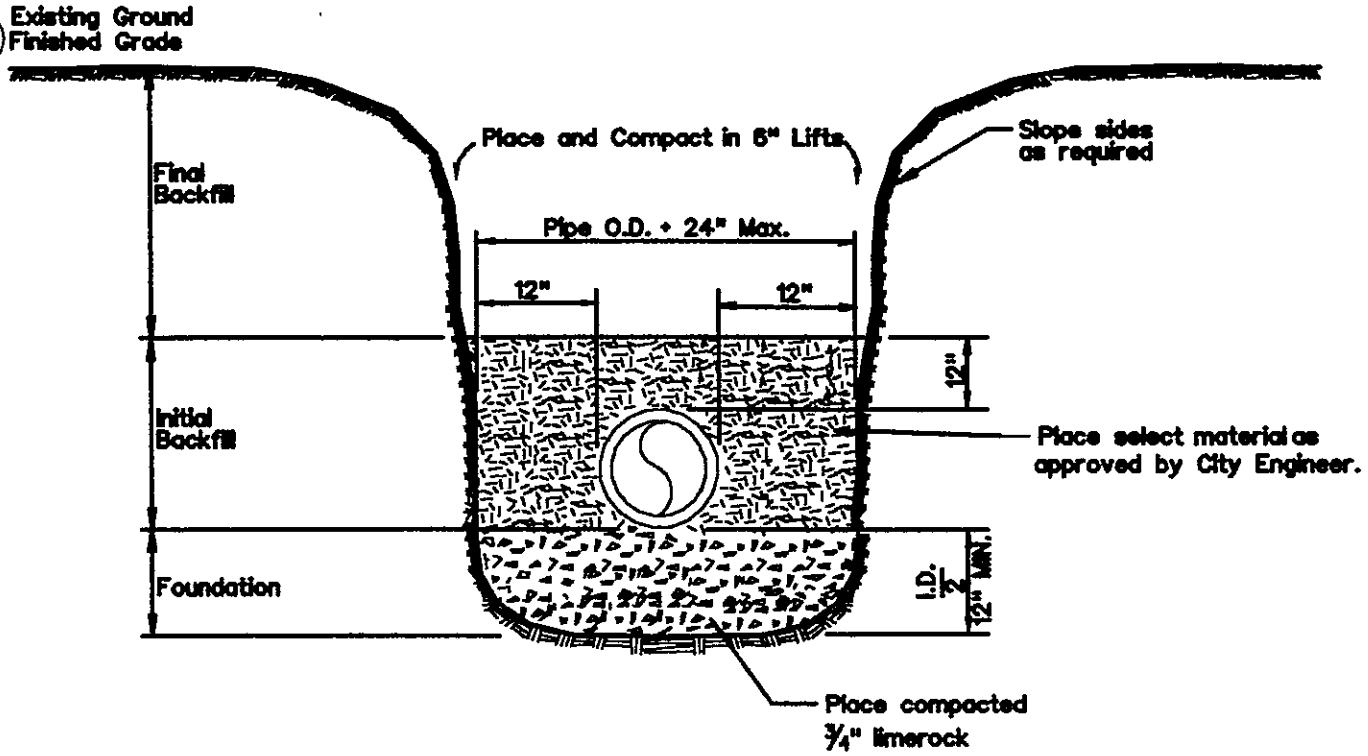
TECHNICAL SPECIFICATIONS AND DETAILS

CONCRETE COLLAR JOINT DETAIL

REVISIONS
SHEET No.
DRA 3

SCALE: N.T.S. | ISSUED AUGUST 1998



General Construction Notes:

1. All trenching shall comply with the requirements of the Florida Trench Safety Act.
2. Foundation -¾" LIMEROCK a minimum of 12" in depth.
3. Initial backfill - The material placed to 12" above the pipe shall be placed in six inch layers and compacted with mechanical tampers to at least 95% maximum density as determined by AASHTO T-99.
4. Final Backfill - To be placed in layers not to exceed one foot in thickness and compacted with appropriate equipment to at least 95% maximum density as determined by AASHTO T-99

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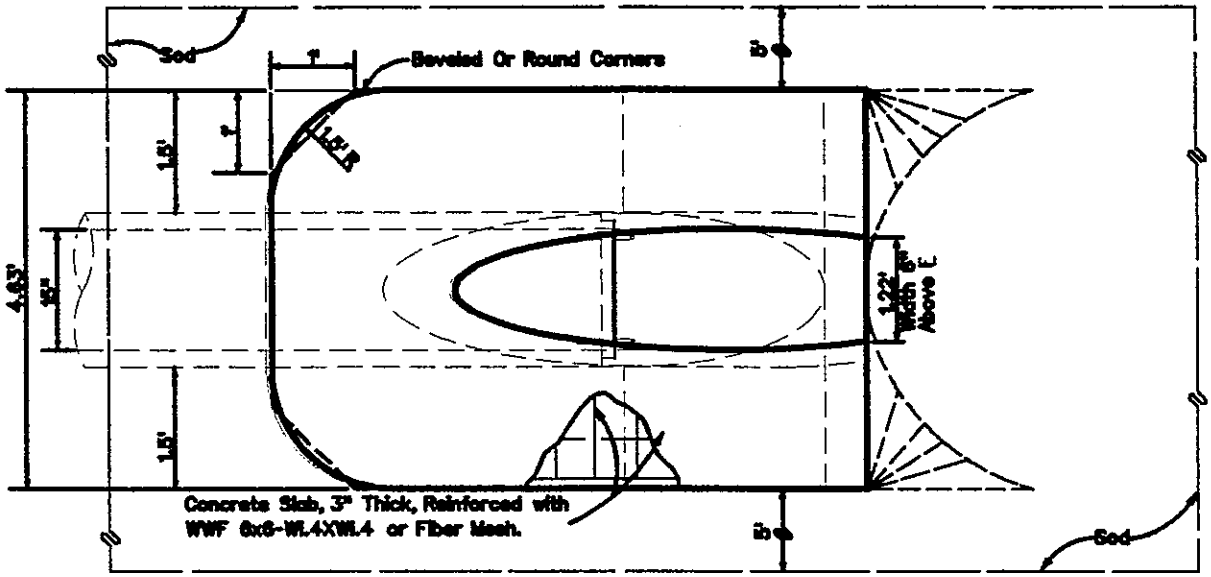
TECHNICAL SPECIFICATIONS AND DETAILS

TRENCH DETAIL

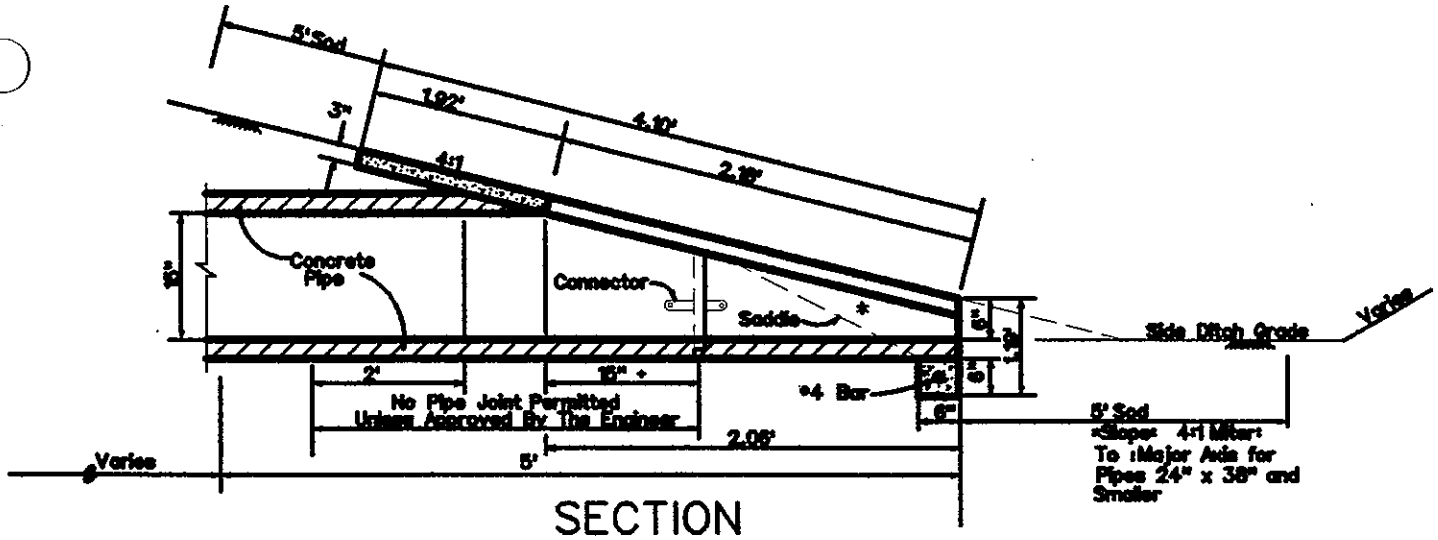
REVISIONS
SHEET No.
DRA 4

SCALE: N.T.S. | ISSUED AUGUST 1998



TOP VIEW-SINGLE PIPE

ALL CONCRETE IS TO BE CLASS I



SECTION

ALL CONCRETE IS TO BE CLASS I
FIBER MESH AT 2500 PSI

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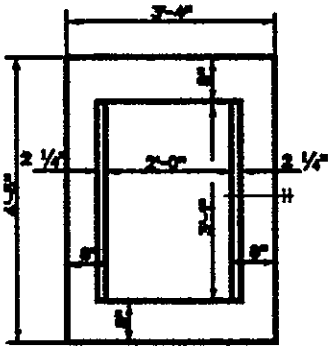
TECHNICAL SPECIFICATIONS AND DETAILS

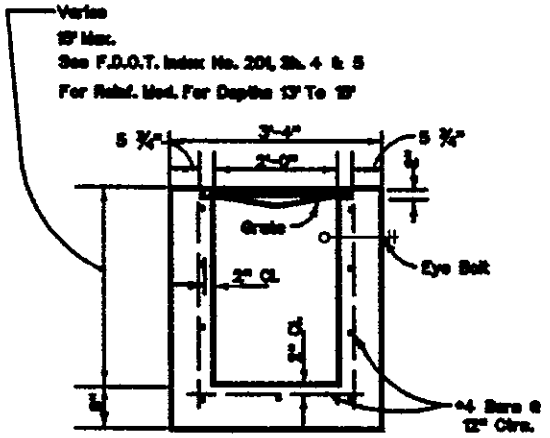
MITERED END DETAIL

REVISIONS
SHEET No.
DRA 5

SCALE: N.T.S. | ISSUED AUGUST 1998

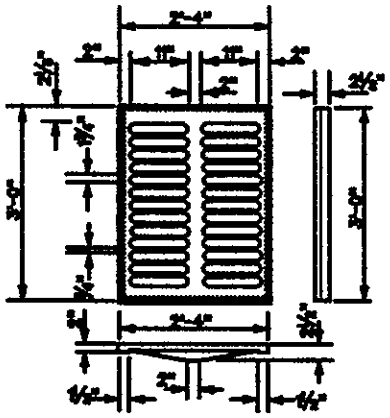


PLAN



SECTION

Recommended Maximum Pipe Size
2'-0" Wall-18" Pipe



TYPE C GRATE

Approx. Weight 235 Lbs.

GENERAL NOTES

1. These inlets are suitable for bicycle and pedestrian areas and are to be used in ditches, medians and other areas subject to infrequent traffic loadings but are not to be placed in areas subject to any heavy wheel loads.
2. Inlets subject to minimal debris should be constructed without slots. Where debris is a problem inlets should be constructed with slots. Slotted inlets located within roadway clear zones and in areas accessible to pedestrians shall have traversable slots. The traversable slot modification is not adaptable to Inlet Type H. Slots may be constructed at either or both ends as shown on plans.
3. Steel grates are to be used on all inlets where bicycle traffic is anticipated. Steel grates are to be used on all inlets with traversable slots. Either cast iron or steel grates may be used on inlets without slots where bicycle traffic is not anticipated. Either cast iron or steel grates may be used on all inlets with non-traversable slots. Subject to the selection described above, when Alternate G grate is specified in the plans, either the steel grate, hot dipped galvanized after fabrication, or the cast iron grate may be used, unless the plans stipulate the particular type.
4. Recommended maximum pipe sizes shown are for concrete pipe. Pipe sizes larger than those recommended must be checked for fit.
5. All exposed corners and edges of concrete are to be chamfered ¾".
6. Pavement to be used on inlets without slots and inlets with non-traversable slots only when called for in the plans but required on all traversable slot inlets. Cost to be included in contract unit price for inlets. Quantities shown are for information only.
7. Traversable slots constructed in existing inlets shall be paid for as inlets partial, and shall include the cost for slot openings, paving and any required replacement grates.
8. Sodding to be used on all inlets not located in paved areas and paid for under contract unit price for Sodding SY.
9. For supplementary details see F.D.O.T. Specifications Index No. 201.

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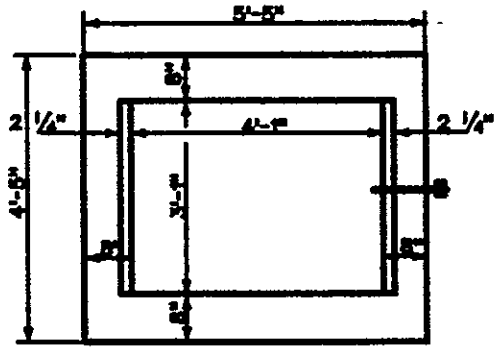
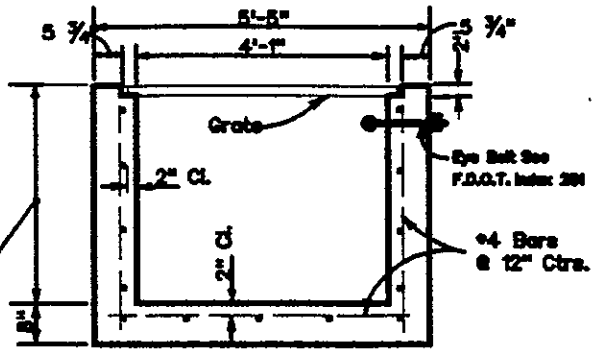
TYPE "C" INLET

REVISIONS
SHEET No.
DRA 6

SCALE: N.T.S. | ISSUED AUGUST 1998



PLAN

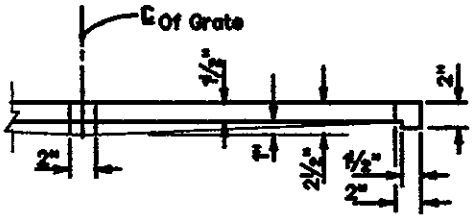


SECTION

Varies
15' Max.
See F.D.O.T. Index No. 201, Sh. 4 & 5
For Reinf. Mod. For Depths 13' To 15'

Recommended Maximum Pipe Size:
3'-1" Wall-24" Pipe
4'-1" Wall-36" Pipe

CAST IRON GRATE NOT PERMITTED ON INLET TYPE D



HALF SECTION
CAST IRON GRATES

GENERAL NOTES

1. These inlets are suitable for bicycle and pedestrian areas and are to be used in ditches, medians and other areas subject to infrequent traffic loadings but are not to be placed in areas subject to any heavy wheel loads.
2. Inlets subject to minimal debris should be constructed without slots. Where debris is a problem inlets should be constructed with slots. Slotted inlets located within roadway clear zones and in areas accessible to pedestrians shall have traversable slots. The traversable slot modification is not adaptable to inlet Type H. Slots may be constructed at either or both ends as shown on plans.
3. Steel grates are to be used on all inlets where bicycle traffic is anticipated. Steel grates are to be used on all inlets with traversable slots. Either cast iron or steel grates may be used on inlets without slots where bicycle traffic is not anticipated. Either cast iron or steel grates may be used on all inlets with non-traversable slots. Subject to the selection described above, when Alternate G grate is specified in the plans, either the steel grate, hot dipped galvanized after fabrication, or the cast iron grate may be used, unless the plans stipulate the particular type.
4. Recommended maximum pipe sizes shown are for concrete pipe. Pipe sizes larger than those recommended must be checked for fit.
5. All exposed corners and edges of concrete are to be chamfered ¾".
6. Pavement to be used on inlets without slots and inlets with non-traversable slots only when called for in the plans but required on all traversable slot inlets. Cost to be included in contract unit price for inlets. Quantities shown are for information only.
7. Traversable slots constructed in existing inlets shall be paid for as inlets partial, and shall include the cost for slot openings, paving and any required replacement grates.
8. Sodding to be used on all inlets not located in paved areas and paid for under contract unit price for Sodding SY.
9. For supplementary details see F.D.O.T. Specifications Index No. 201.

NOTICE: Steel Grates Are Required On Inlets With Traversable Slots And On Inlets where Bicycle Traffic Is Anticipated.

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TECHNICAL SPECIFICATIONS AND DETAILS

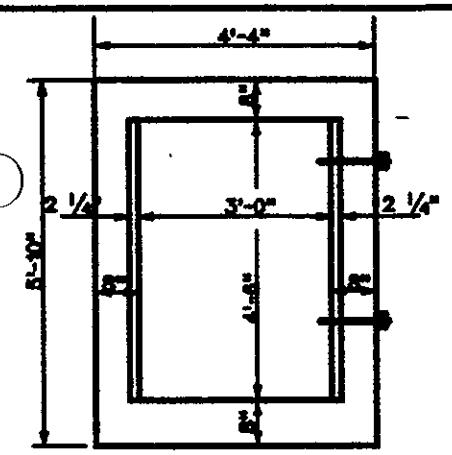
TYPE "D" INLET

REVISIONS

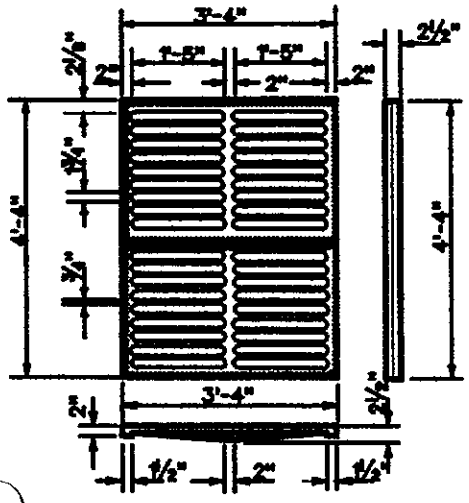
SHEET No.
DRA 7

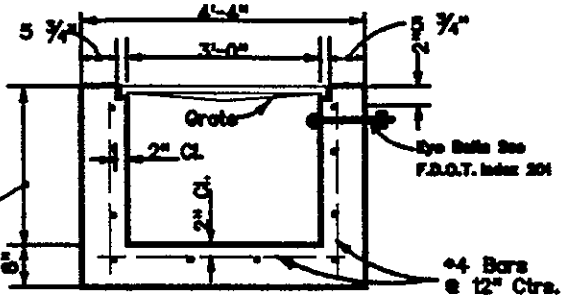
SCALE: N.T.S.

ISSUED AUGUST 1998



PLAN





SECTION

Varies
15" Max.
See F.D.O.T. Index No. 201, Sh. 4 & 5
For Reinf. Mod. For Depths 13' To 15'

Recommended Maximum Pipe Size:
3'-0" Wall-24" Pipe
4'-6" Wall-42" Pipe

GENERAL NOTES

1. These inlets are suitable for bicycle and pedestrian areas and are to be used in ditches, medians and other areas subject to infrequent traffic loadings but are not to be placed in areas subject to any heavy wheel loads.
2. Inlets subject to minimal debris should be constructed without slots. Where debris is a problem inlets should be constructed with slots. Slotted inlets located within roadway clear zones and in areas accessible to pedestrians shall have traversable slots. The traversable slot modification is not adaptable to inlet Type H. Slots may be constructed at either or both ends as shown on plans.
3. Steel grates are to be used on all inlets where bicycle traffic is anticipated. Steel grates are to be used on all inlets with traversable slots. Either cast iron or steel grates may be used on inlets without slots where bicycle traffic is not anticipated. Either cast iron or steel grates may be used on all inlets with non-traversable slots. Subject to the selection described above, when Alternate G grate is specified in the plans, either the steel grate, hot dipped galvanized after fabrication, or the cast iron grate may be used, unless the plans stipulate the particular type.
4. Recommended maximum pipe sizes shown are for concrete pipe. Pipe sizes larger than those recommended must be checked for fit.
5. All exposed corners and edges of concrete are to be chamfered ¾".
6. Pavement to be used on inlets without slots and inlets with non-traversable slots only when called for in the plans but required on all traversable slot inlets. Cost to be included in contract unit price for inlets. Quantities shown are for information only.
7. Traversable slots constructed in existing inlets shall be paid for as inlets partial, and shall include the cost for slot openings, paving and any required replacement grates.
8. Sodding to be used on all inlets not located in paved areas and paid for under contract unit price for Sodding SY.
9. For supplementary details see F.D.O.T. Specifications Index No. 201.

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TECHNICAL SPECIFICATIONS AND DETAILS

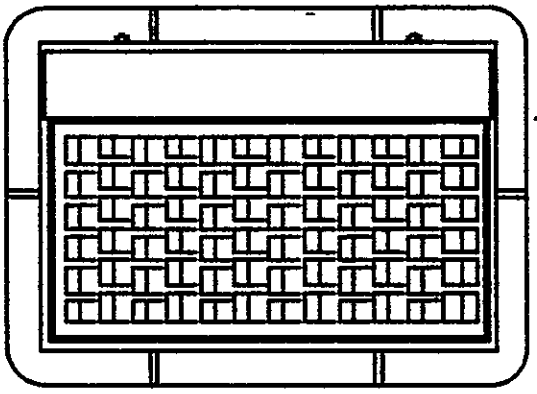
TYPE "E" INLET

REVISIONS

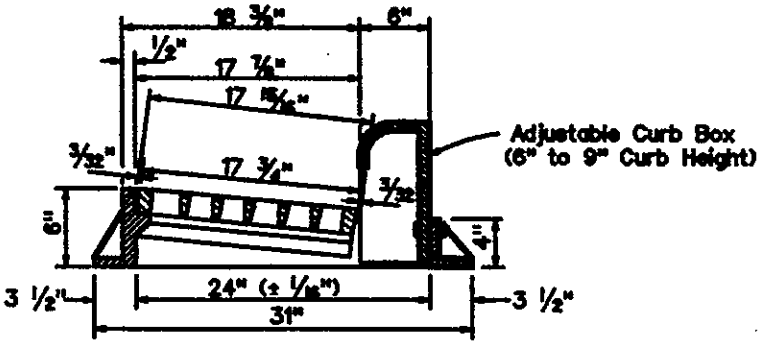
SHEET No.
DRA 8

SCALE: N.T.S.

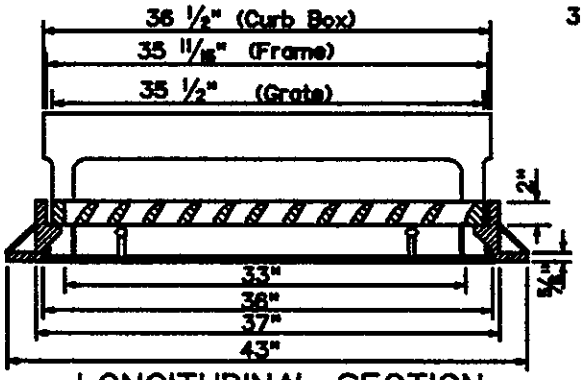
ISSUED AUGUST 1998



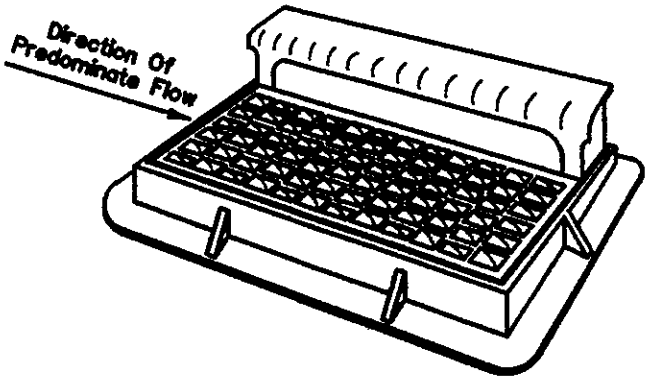
TOP VIEW



TRANSVERSE SECTION



LONGITUDINAL SECTION



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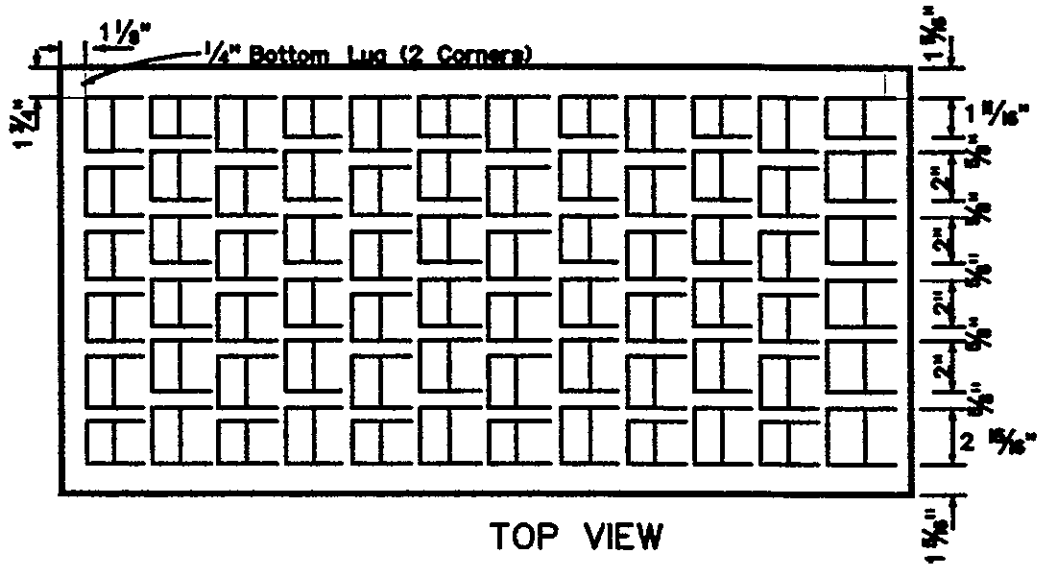
TECHNICAL SPECIFICATIONS AND DETAILS

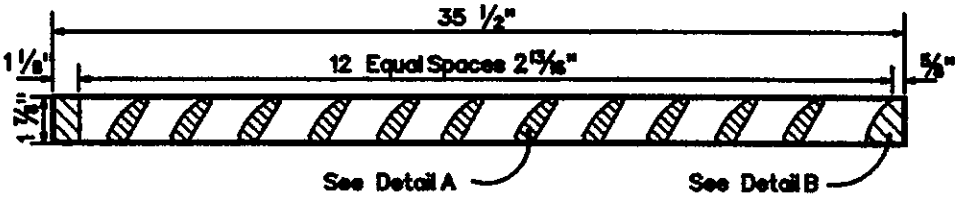
CURB INLET FRAME AND GRATE DETAIL

REVISIONS
SHEET No.
DRA 9

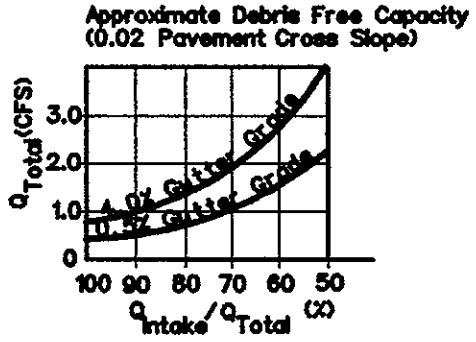
SCALE: N.T.S. | ISSUED AUGUST 1998



TOP VIEW



SECTION



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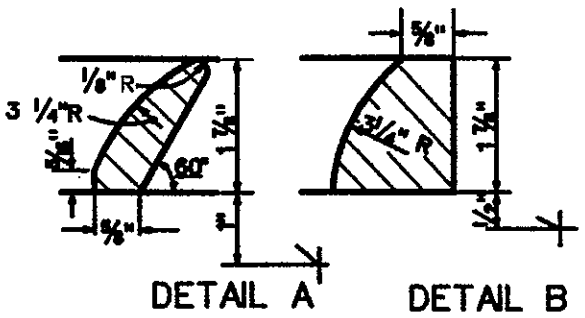

DETAIL A DETAIL B

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CURB INLET GRATE DETAIL

REVISIONS	
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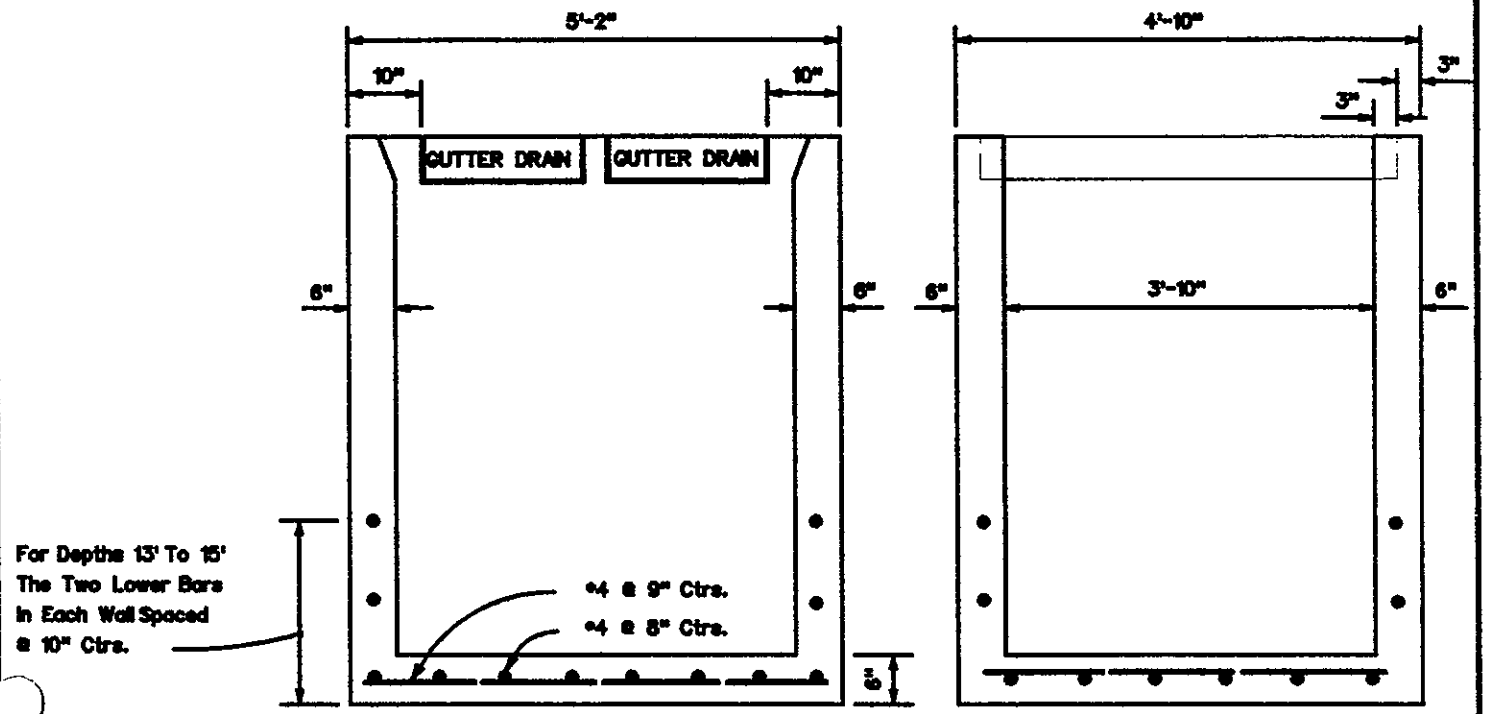

DITCH BOTTOM INLET TYPE B

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TECHNICAL SPECIFICATIONS AND DETAILS

TYPE B INLET BOTTOM

REVISIONS
SHEET No.
DRA 11

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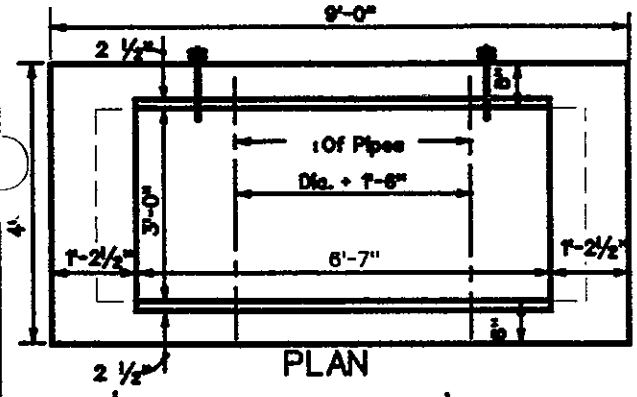
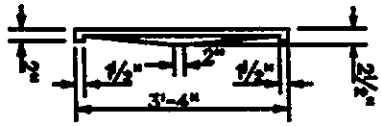
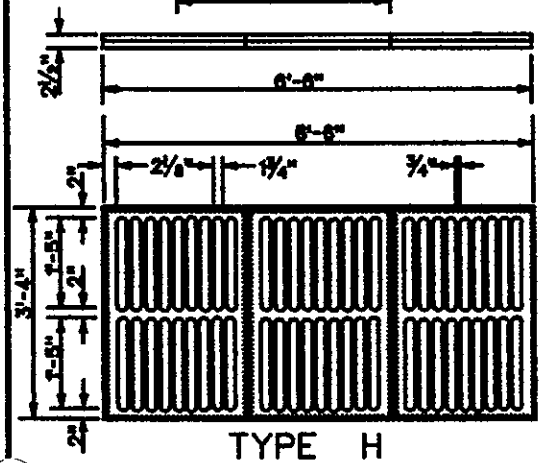
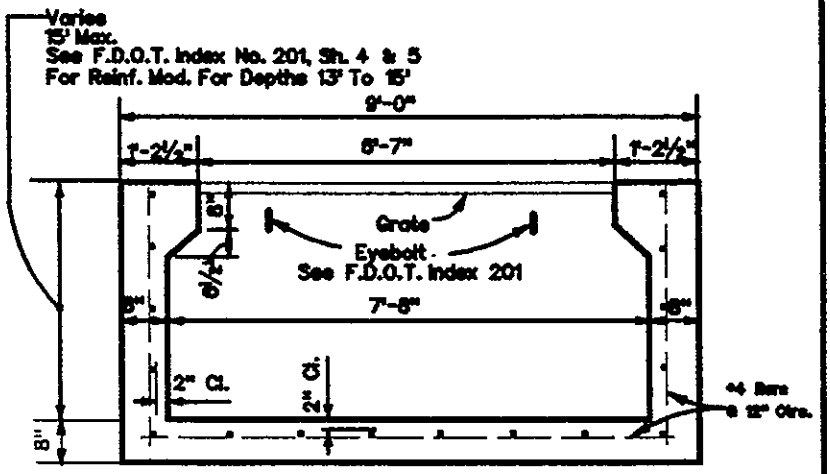






TYPE H
Approx. Weight 725 Lbs.



SECTION

Recommended Maximum Pipe Size:
3'-0" Wall-24" Pipe
7'-8" Wall-1-66" Pipe
2-30" Pipe

GENERAL NOTES

1. These inlets are suitable for bicycle and pedestrian areas and are to be used in ditches, medians and other areas subject to infrequent traffic loadings but are not to be placed in areas subject to any heavy wheel loads.
2. Inlets subject to minimal debris should be constructed without slots. Where debris is a problem inlets should be constructed with slots. Slotted inlets located within roadway clear zones and in areas accessible to pedestrians shall have traversable slots. The traversable slot modification is not adaptable to Inlet Type H. Slots may be constructed at either or both ends as shown on plans.
3. Steel grates are to be used on all inlets where bicycle traffic is anticipated. Steel grates are to be used on all inlets with traversable slots. Either cast iron or steel grates may be used on inlets without slots where bicycle traffic is not anticipated. Either cast iron or steel grates may be used on all inlets with non-traversable slots. Subject to the selection described above, when Alternate G grate is specified in the plans, either the steel grate, hot dipped galvanized after fabrication, or the cast iron grate may be used, unless the plans stipulate the particular type.
4. Recommended maximum pipe sizes shown are for concrete pipe. Pipe sizes larger than those recommended must be checked for fit.
5. All exposed corners and edges of concrete are to be chamfered ¾".
6. Pavement to be used on inlets without slots and inlets with non-traversable slots only when called for in the plans but required on all traversable slot inlets. Cost to be included in contract unit price for inlets. Quantities shown are for information only.
7. Traversable slots constructed in existing inlets shall be paid for as inlets partial, and shall include the cost for slot openings, paving and any required replacement grates.
8. Sodding to be used on all inlets not located in paved areas and paid for under contract unit price for Sodding SY.
9. For supplementary details see F.D.O.T. Specifications Index No. 201.

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TYPE "H" INLET

REVISIONS
SHEET No.
DRA 12

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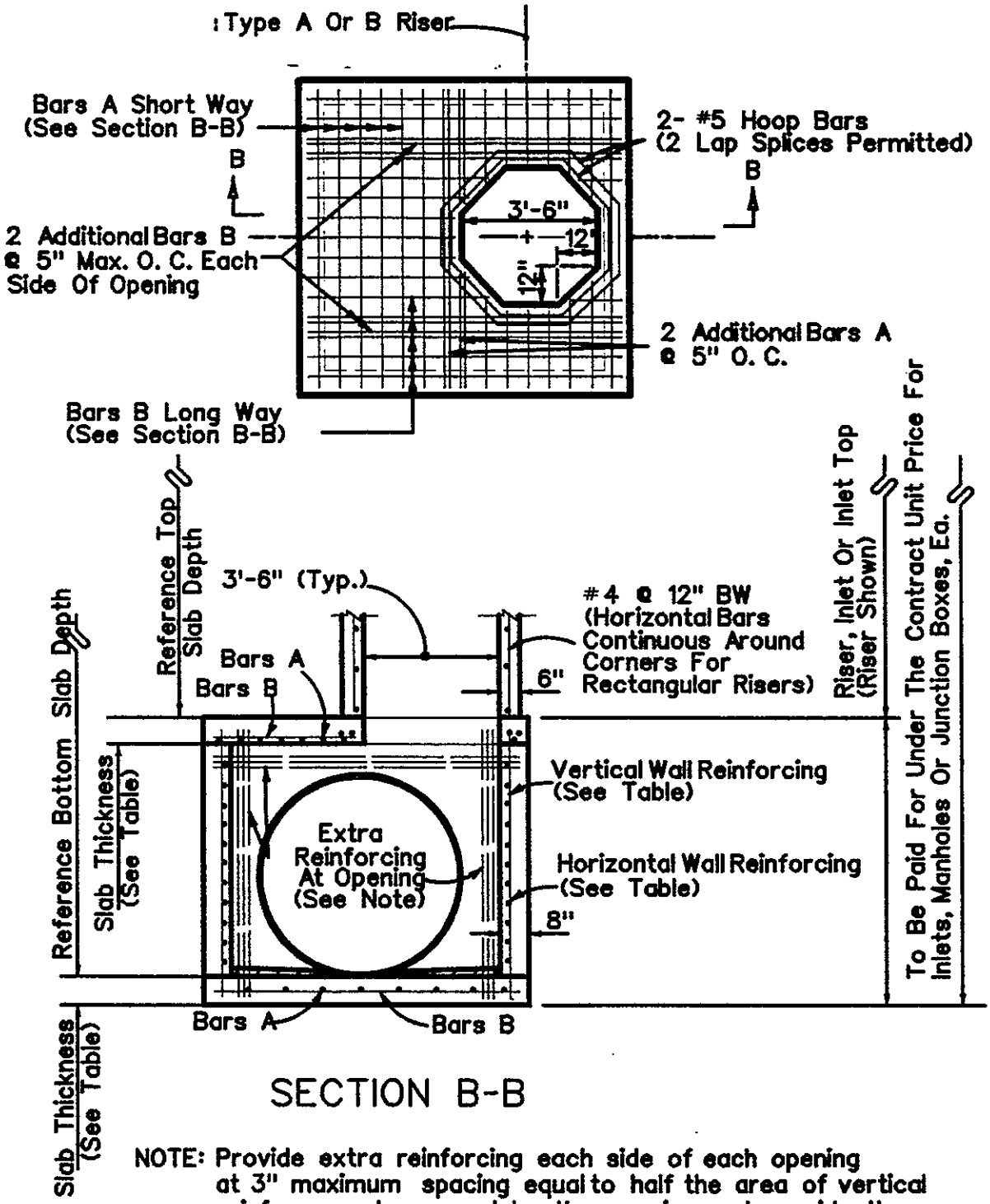

SECTION B-B

NOTE: Provide extra reinforcing each side of each opening at 3" maximum spacing equal to half the area of vertical reinforcement removed by the opening and provide the same area of reinforcement above each opening at 3" maximum spacing as removed by the opening.

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TYPE J AND P STRUCTURES SHEET 1 OF 4

REVISIONS
SHEET No.
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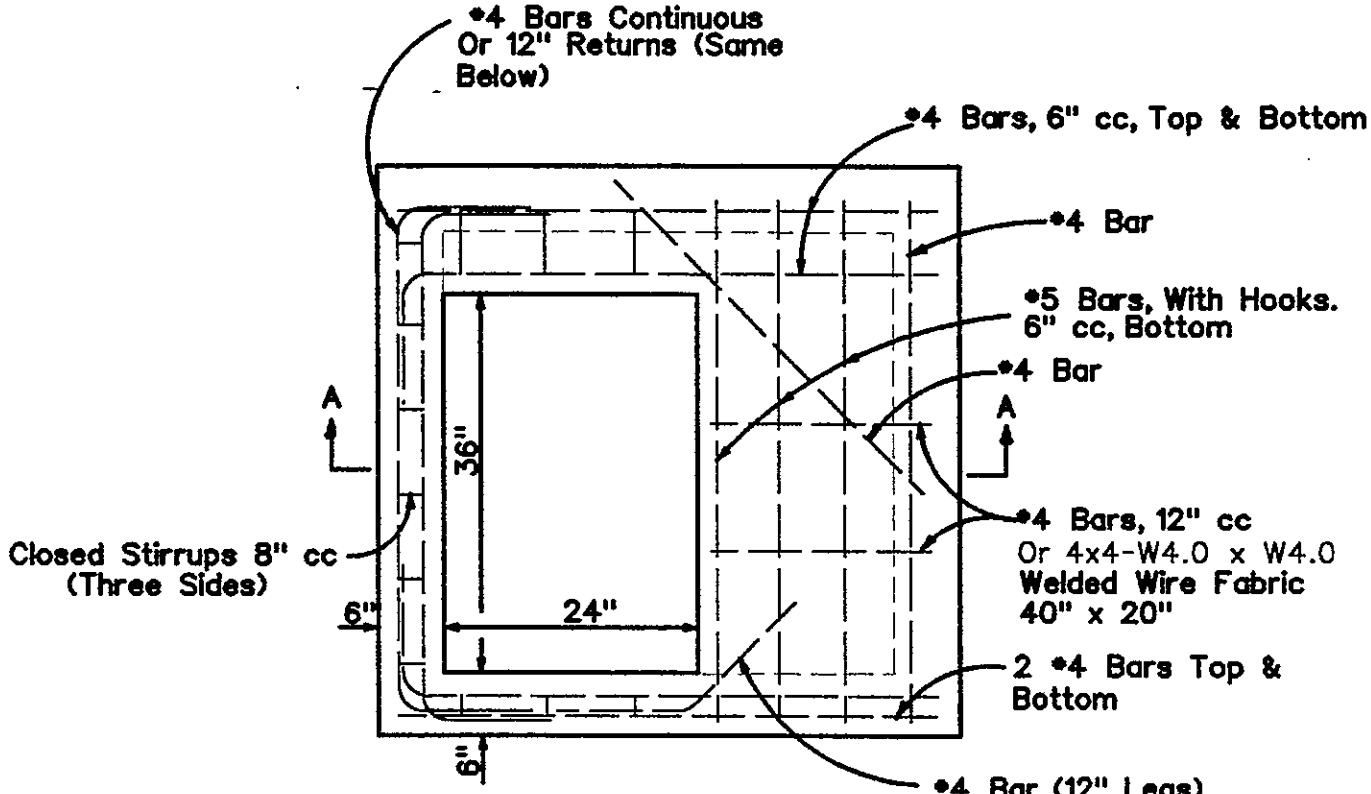
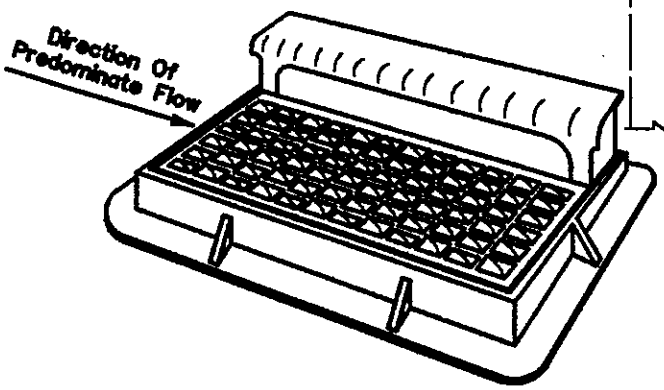
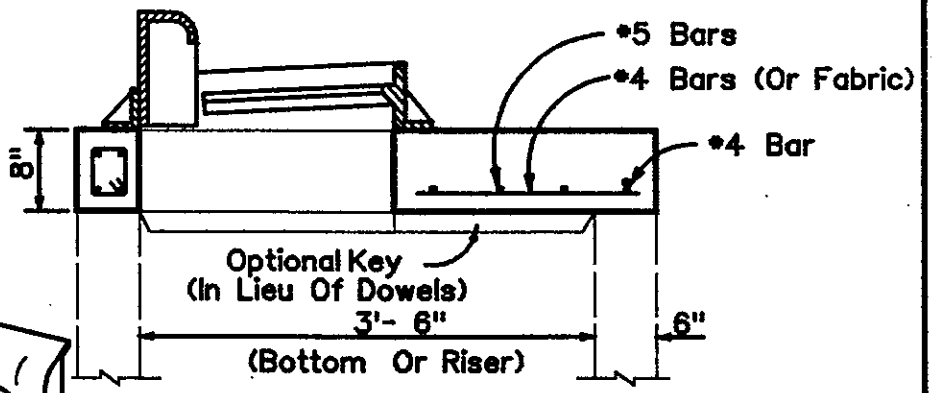
SCALE: N.T.S. | ISSUED AUGUST 1998



TOP VIEW

SEE CURB INLET FRAME AND GRATE DETAILS





SECTION A-A (SEE NOTE 6 ON TYPE J AND P STRUCTURE NOTES)

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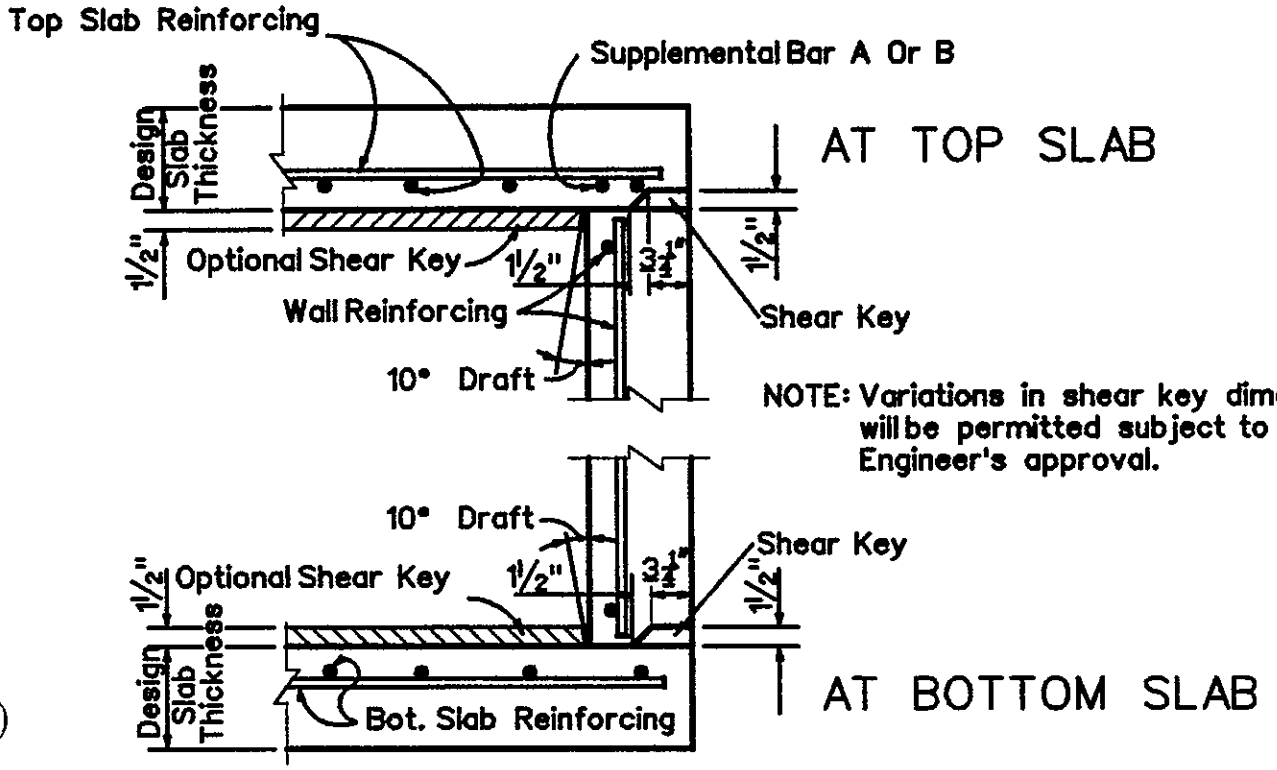
TYPE J AND P STRUCTURES SHEET 2 OF 4

REVISIONS
SHEET No.
DRA 14

SCALE: N.T.S. | ISSUED AUGUST 1998



SLAB TO WALL DETAILS

FOR PRECAST ALTERNATE

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TYPE J AND P STRUCTURES SHEET 3 OF 4

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1. Wall thickness and reinforcement are for either reinforced cast-in-place or precast concrete units except that precast circular units may be furnished with walls in accordance with either A.S.T.M. C-478 (up to 96" diameter) or A.S.T.M. C-76, Class III, B Wall, modified where the elliptical steel cage area is placed in the center one-third of the wall.

2. Top and floor slab thickness and reinforcement are for precast and cast in place construction. Top and floor slabs shall be of Class II concrete. Concrete as specified in A.S.T.M. C-478 (4000 psi) may be used in lieu of Class I and Class II concrete in precast items manufactured in plants which are under the 'Standard Operating Procedures' for the inspection of precast drainage products.

3. All reinforcement shall be A.S.T.M. A615, Grade 60 or 65 KSI welded wire fabric, either smooth or deformed.

4. Rectangular structures may be rotated as directed by the Engineer in order to facilitate connections between the structure walls and storm sewer pipes.

5. Except when ACI hooks are specifically required, embedment hooks in the top and bottom slabs may be replaced with straight embedments or peripheral reinforcement in accordance with the reinforcement detail shown under 'Rebar Straight End Embedment Or Peripheral Reinforcement In Lieu of ACI Standard Hooks For Top And Bottom Slabs'.

6. All steel bars shall have 1 ½" minimum cover unless otherwise shown. Horizontal steel in rectangular structures shall be lapped a minimum of 24 bar diameters at corners.

7. The corner fillets shown are necessary for rectangular structures used with circular risers and inlet throats and used on skew with rectangular risers, inlet and inlet throats. Fillets will be required in lieu of the bottom slab of the Alt. B riser when used with the Alt. A box. Each fillet shall be reinforced with 2-#5 bars.

8. Structures with depths over 14' are to be checked for floatation by designer of project drainage.

9. Units larger than specified standard may be substituted at the contractor's option when these units will not cause or increase the severity of utility conflicts. Such larger units shall be furnished at no additional cost to the cITY. Larger Alternate A units cannot replace Alternate B units without approval of the Engineer.

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NOTES FOR TYPE J AND P STRUCTURES SHEET 4 OF 4

REVISIONS

SHEET No.

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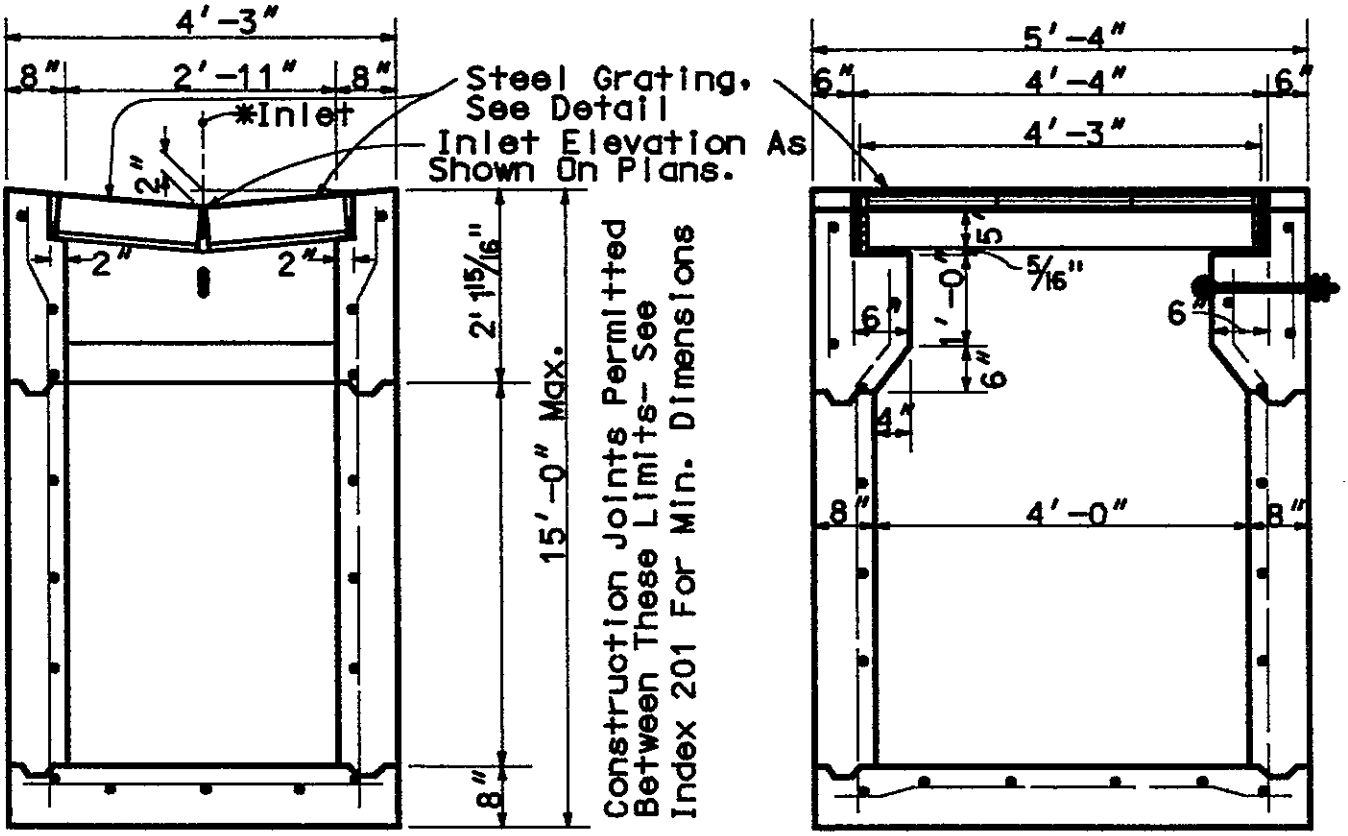

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GUTTER INLET
TYPE J
SHEET 1 OF 2

REVISIONS
SHEET No.
DRA 17

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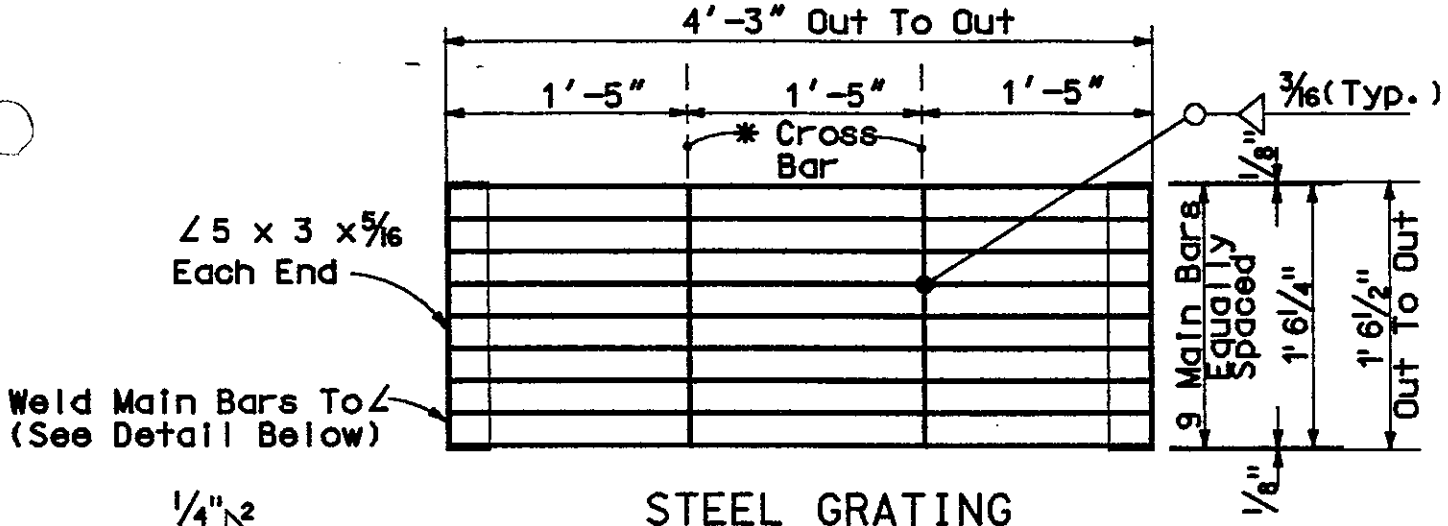

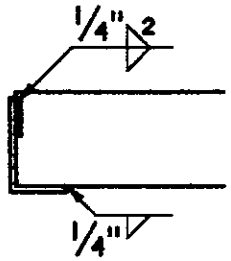

DETAIL

STEEL GRATING

Note: Two Required Per Inlet

Main Bars 5" x 1/4" (Notched For Cross Bars).

Cross Bars 1 3/4" x 1/4" (Continuously Welded At Main Bar Notches).

Main Bars And Cross Bars Flush On Top.

GENERAL NOTES

1. This inlet is designed for ditches, medians or other areas subject to heavy wheel loads, where only light debris is expected and pedestrian traffic is anticipated.
   NOTICE: Inlet not for use in areas subject to bicycle traffic.

2. Reinforcing- No. 4 bars at 12" centers both ways with 2" clearance to inside face. Cut or bend bars out of way of pipe when necessary; bars to clear pipe by 1 1/2".

3. When alternate G grate is specified in plans the grate is to be hot dipped galvanized after fabrication.

4. For supplemental details, see Index 201.

5. Cost of ditch paving to be included in cost of inlet. Sodding to be paid for under contract unit price for Sodding, SY.

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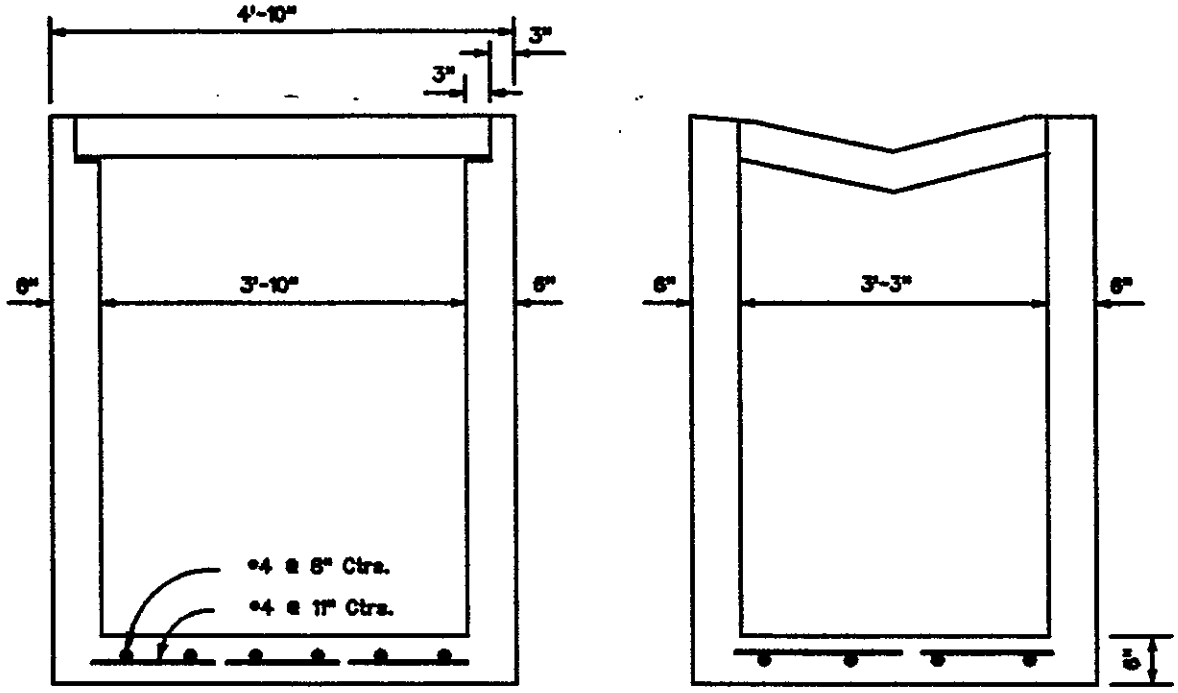
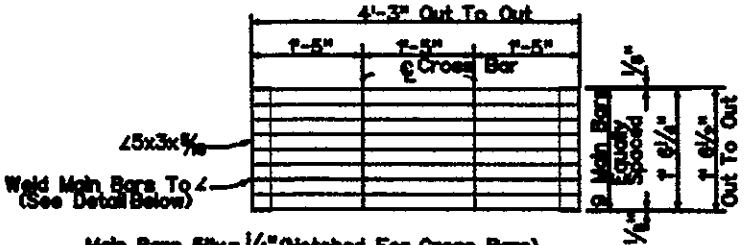
GUTTER INLET TYPE J SHEET 2 OF 2

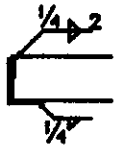
REVISIONS
SHEET No.
DRA 18

SCALE: N.T.S. | ISSUED AUGUST 1998

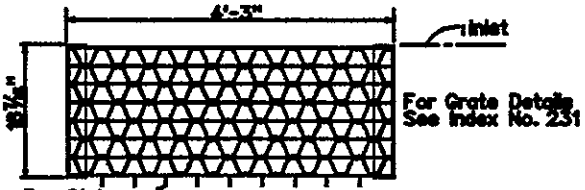


GUTTER INLET TYPE S



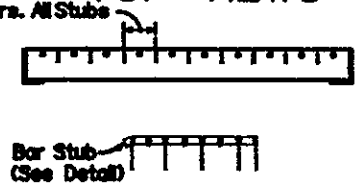


DETAIL



TOP VIEWS

DETAIL OF BAR STUB



STEEL GRATE

GENERAL NOTES

1. This inlet with parallel bar grate shall be used for limited access facilities and other bicycle restricted facilities subject to heavy loads and, may be used in locations where Inlets Type A and B, with wide grate opening, are unacceptable. On limited access facilities with designated bicycle access and on all other facilities, including roads overpassing limited access highways, the reticuline grate shall be used.
2. Reinforcing steel all No. 4 bars at 12" centers both ways with 2" clearance to inside of walls and bottom. Bars to be cut or bent for 1½" minimum clearance around pipe.
3. All exposed edges and corners shall be tooled to ¾" radius.
4. When Alternate G grate is specified in plans, the grate is to be hot dipped galvanized after fabrication.
5. For supplementary details see Index Nos. 200 and 201.

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GUTTER INLET TYPE S

REVISIONS	
SHEET No.	
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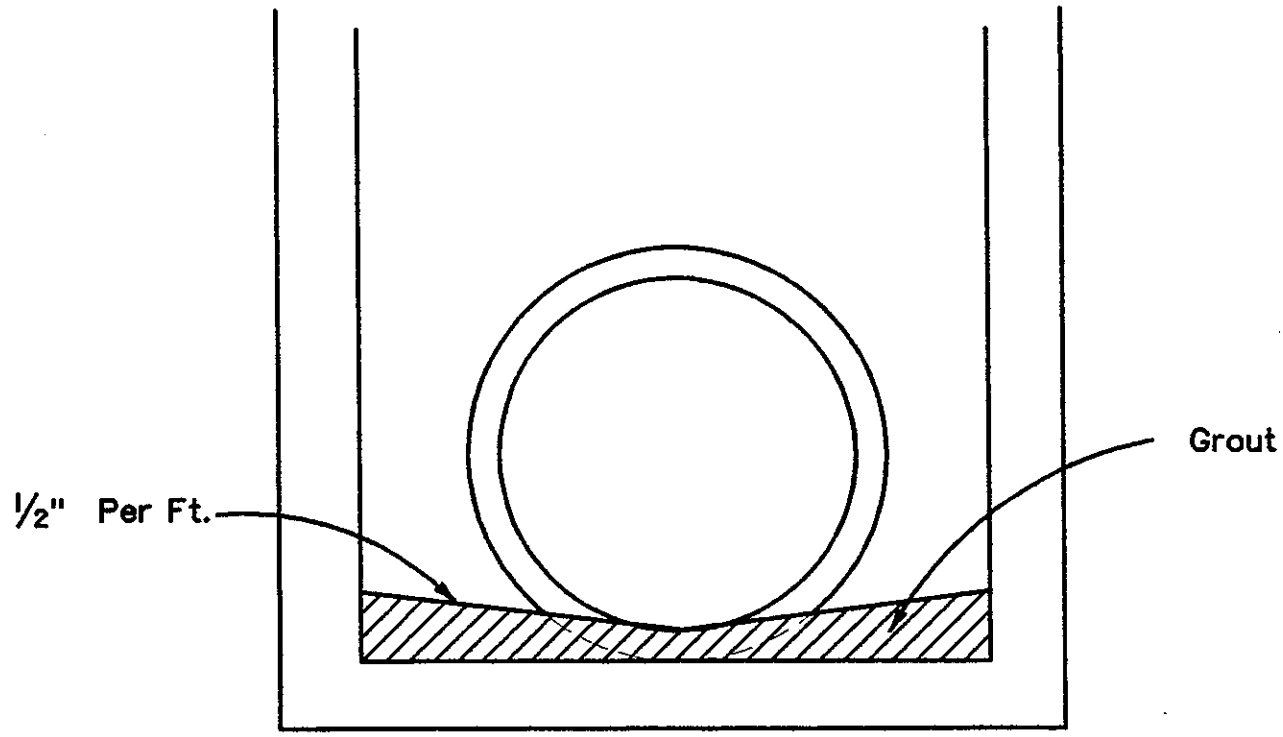

Note: Grout to consist of 3:1 Sand-Cement Mixture or any Class Concrete.

FOR ALL STRUCTURES UNLESS EXCLUDED BY SPECIAL DETAIL

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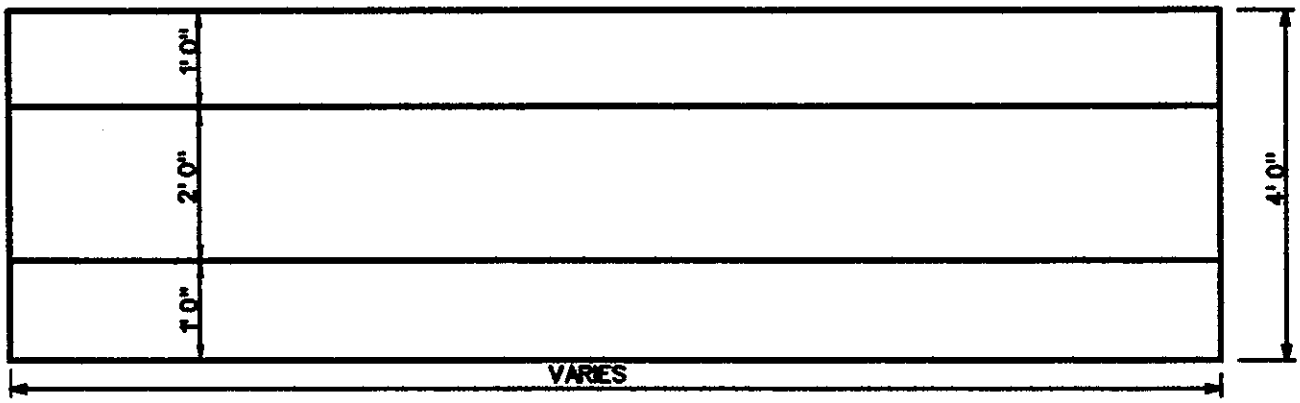
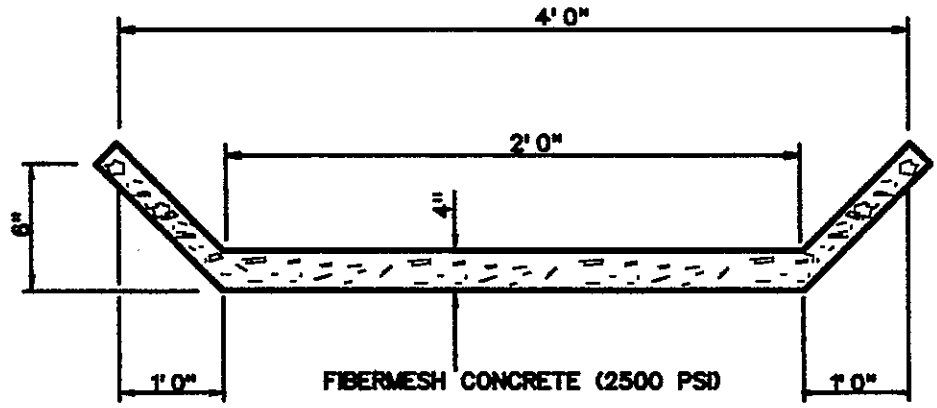
DRAINAGE STRUCTURE INVERT

REVISIONS	
SHEET No.	
SCALE: N.T.S.	ISSUED AUGUST 1998
DRA 20	





NOTE: CONCRETE SHALL BE 4" MIN. THICKNESS, 2500 PSI, WITH FIBERMESH REINFORCING. LENGTH OF FLUME TO BE DETERMINED IN THE FIELD BY THE CITY ENGINEER AND/OR HIS REPRESENTATIVE.

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TYPICAL FLUME DETAIL

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DRA 21

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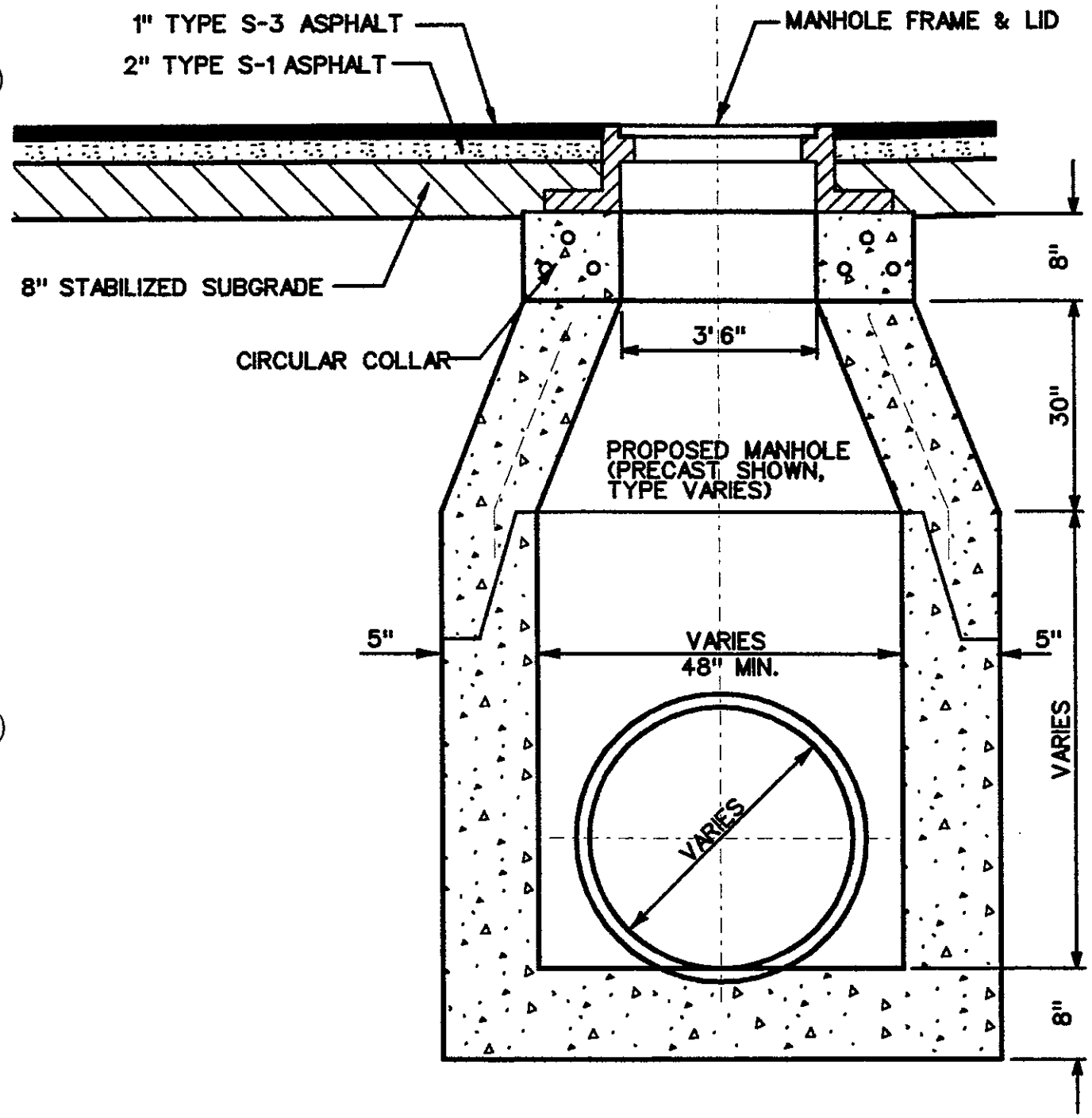

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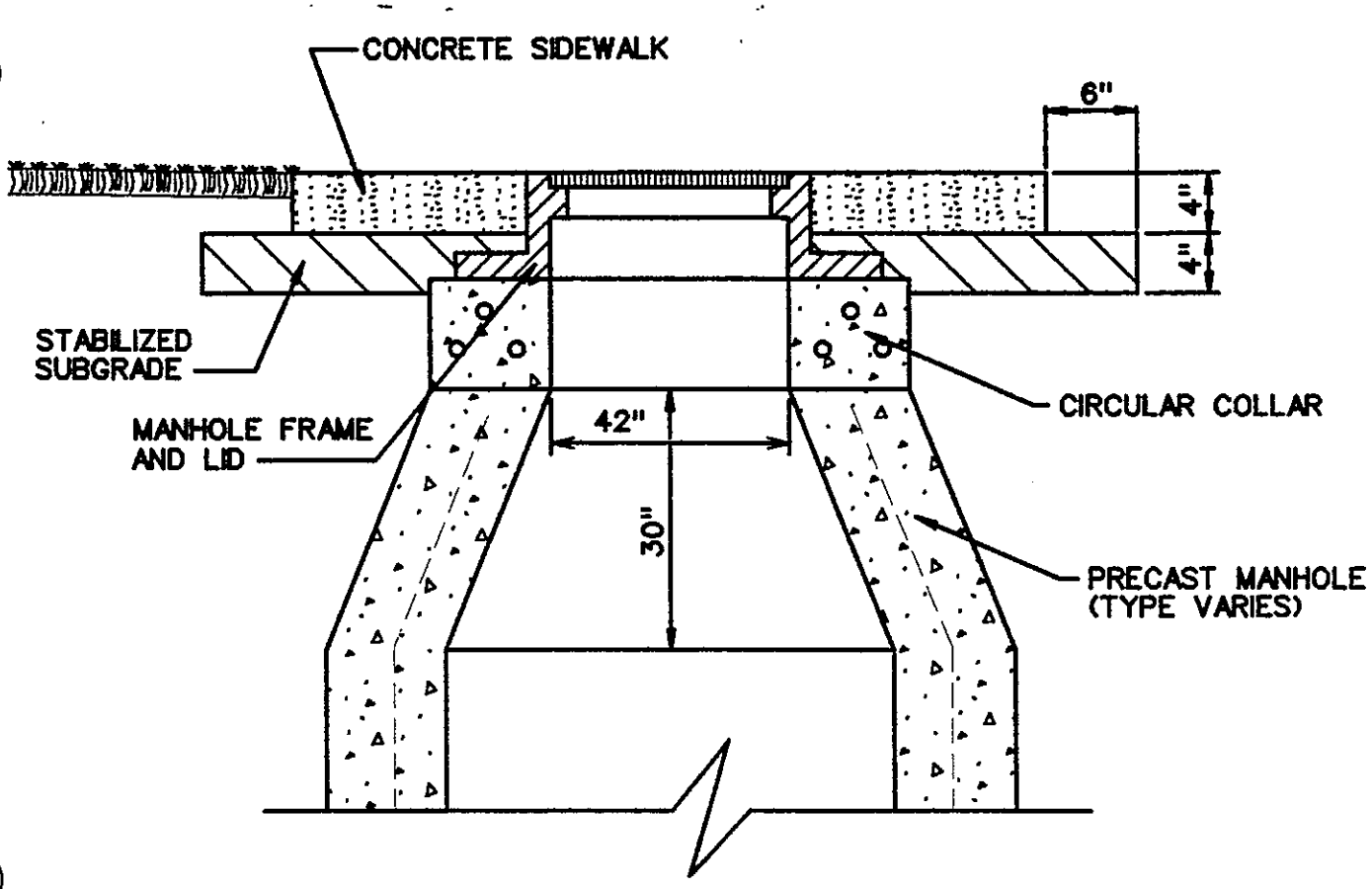
STORM SEWER MANHOLE IN ROAD-WAY

REVISIONS
SHEET No.
DRA 23

SCALE: N.T.S. | ISSUED AUGUST 1998



NOTE:
IF EXTENSION RING IS REQUIRED, WORK THIS DETAIL TOGETHER WITH EXTENSION RING DETAIL. (SEE DETAIL *)

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MANHOLE IN SIDEWALK DETAIL

REVISIONS
SHEET No.
DRA 24

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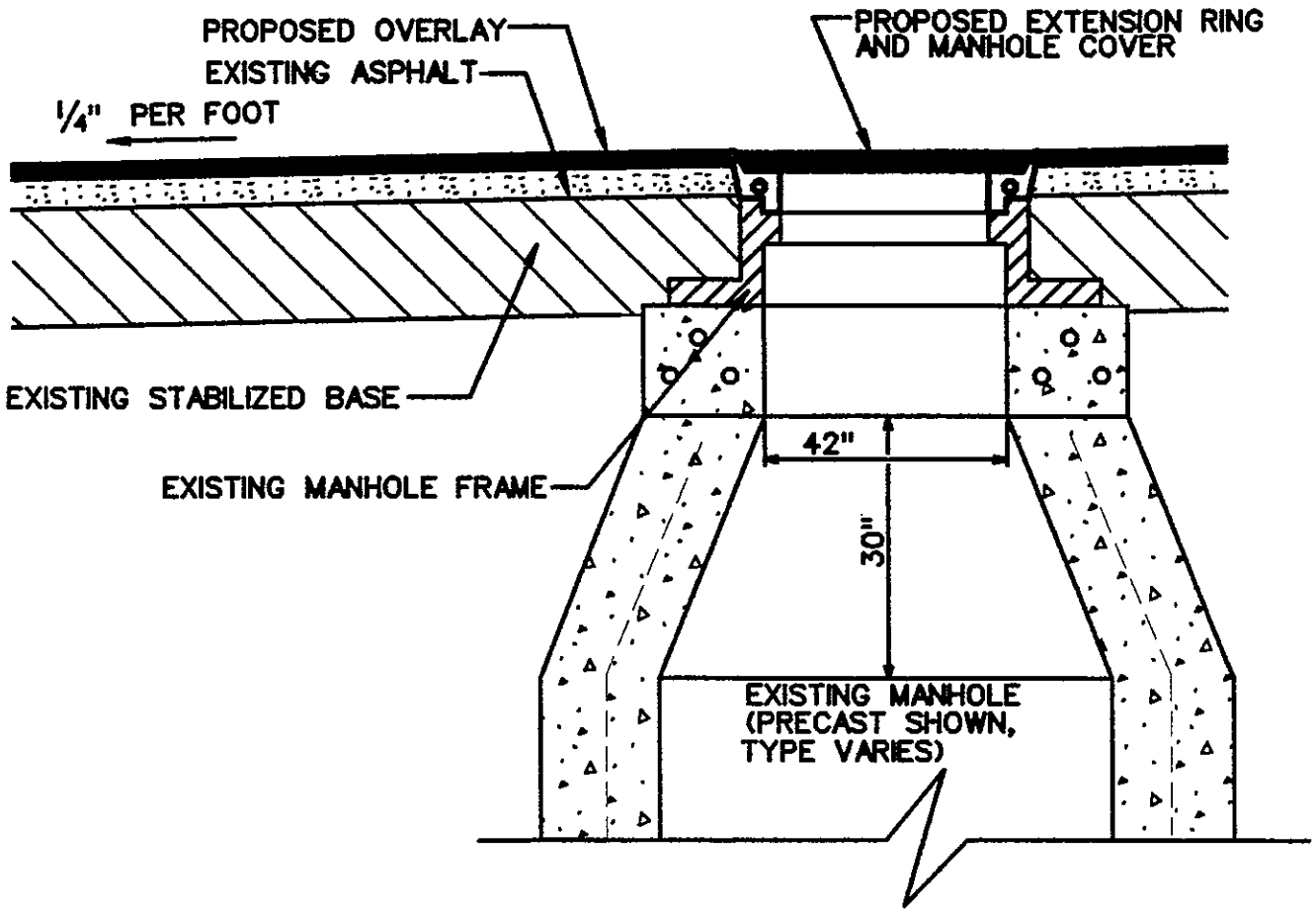

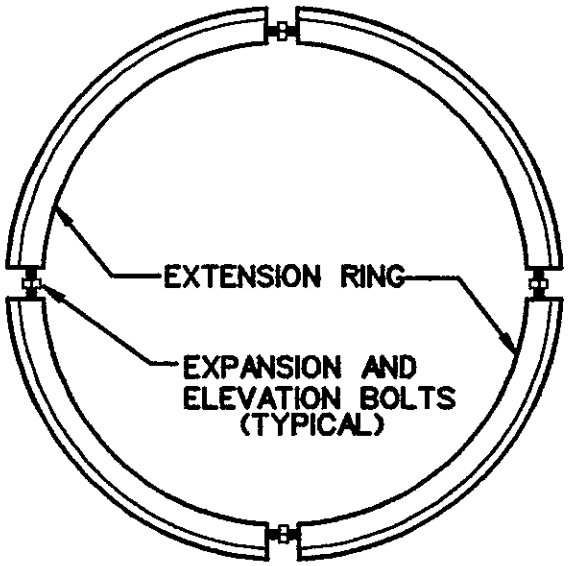

NOTE:

1. EXTENSION RING SHALL BE "ADJUST-TO-GRADE'S 4 SECTION EXTENSION RINGS"
2. EXTENSION RINGS TO BE INSTALLED PRIOR TO RESURFACING.
3. RAISED MANHOLE IS TO BE PROTECTED WITH LIGHTED BARRICADE UNTIL OVERLAY IS IN PLACE.

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EXTENSION RING DETAIL

REVISIONS
SHEET No.
DRA 25

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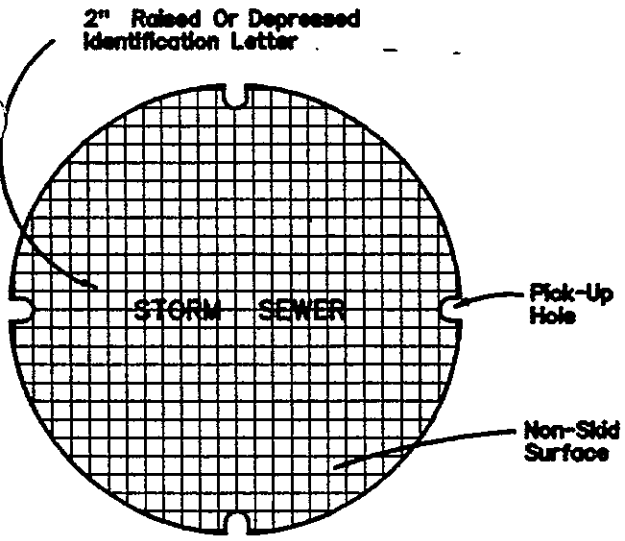
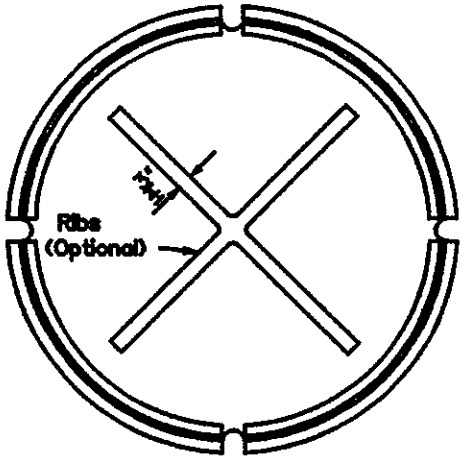
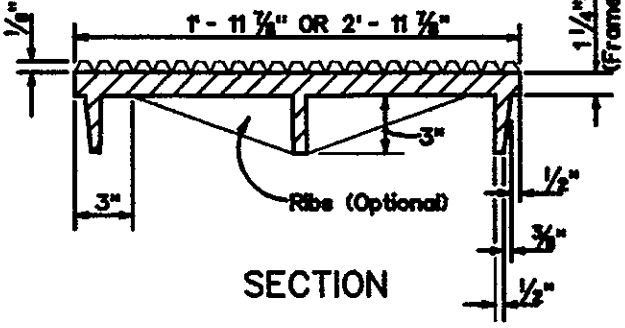


TOP VIEW



BOTTOM VIEW

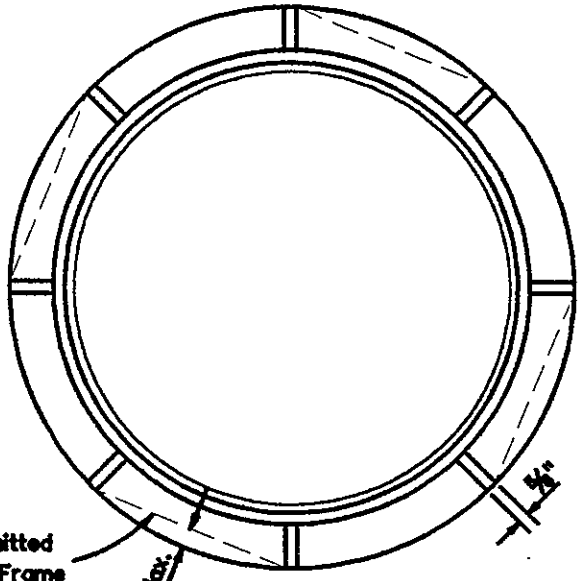


SECTION

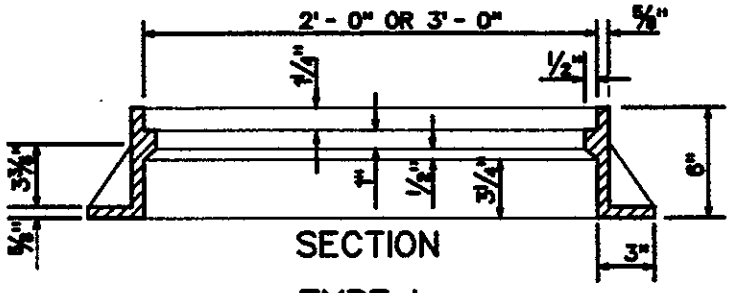
WEIGHT OF CASTINGS						
Frame Type	2' OPENING		3' OPENING			
	Frame	Cover (Std.)	Frame	2-Piece Cover		
				Cover	Ring	Total
I	128 Lbs.	212 Lbs.	220 Lbs.	212 Lbs.	280 Lbs.	492 Lbs.
II	134 Lbs.	212 Lbs.	280 Lbs.	212 Lbs.	280 Lbs.	492 Lbs.
III	98 Lbs.	212 Lbs.	220 Lbs.	212 Lbs.	280 Lbs.	492 Lbs.

NOTES (FRAMES, AND COVER)

1. The 212 lb. cover is to be used for all frames Types I, II, III and the 2-Piece Cover, and is the replacement cover for all previous frames with 1½" deep seats (traffic type). The 185 lb. cover (non-traffic type), 1984 Roadway and Traffic Design Standards Index No. 201, is the replacement cover for existing frames with ½" deep seats. Installation of frames with ½" deep seats is not permitted. The 185 lb. covers are to be placed in existing ½" deep seated frames only when specifically called for in the plans or as specifically directed by the Engineer.



TOP VIEW



SECTION

TYPE I
For Manholes

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MANHOLE COVER DETAIL

REVISIONS	
SHEET No.	
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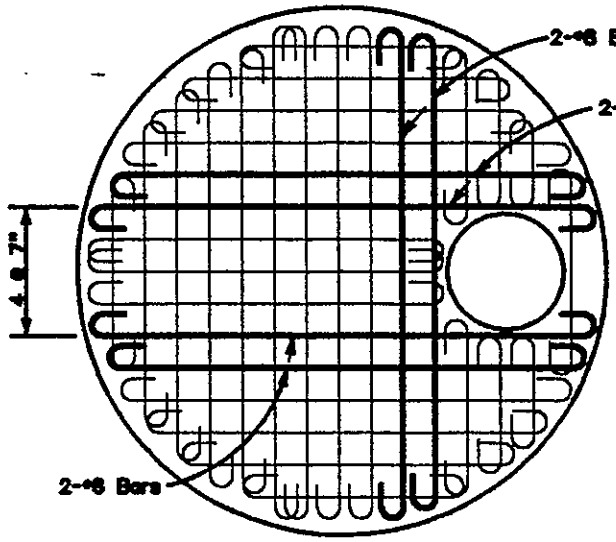
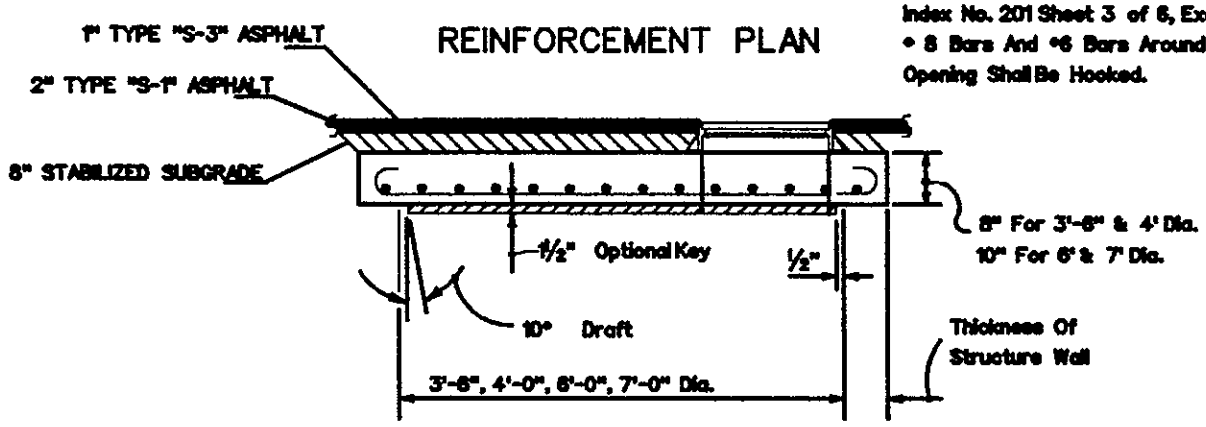
DRA 26	



All Reinforcement No. 6 Bars Except 6-#6 Bars Shown. Bars Spaced @ 6" Centers Both Ways Except Middle Bars Shown @ 7" Centers. All Bars with ACI Standard Hooks Canted Approx. 45°, Or Embedded in Accordance With The Slab Reinforcement Detail Shown Under Optional Construction Joints, F.D.O.T. Standards Index No. 201 Sheet 3 of 6, Except all #6 Bars And #6 Bars Around Manhole Opening Shall Be Hooked.

REINFORCEMENT PLAN



SECTION

NOTES

1. Manhole top Type 7 slabs shall be of Class I concrete. Concrete as specified in ASTM C-478 may be used for precast units and Horizontal steel in the walls of rectangular structures shall be lapped a minimum of 24 bar diameter at corners.

2. Manhole top Type 7 slabs may be of cast-in-place or precast construction. The optional key is for precast tops and in lieu of dowels. Frame and slab openings are to be omitted when top is used over a junction box. Frames can be adjusted with from one to six courses of brick.

3. Manhole tops shall be secured to structures by optional construction joints as shown on F.D.O.T. Sheet 201-3 of 6.

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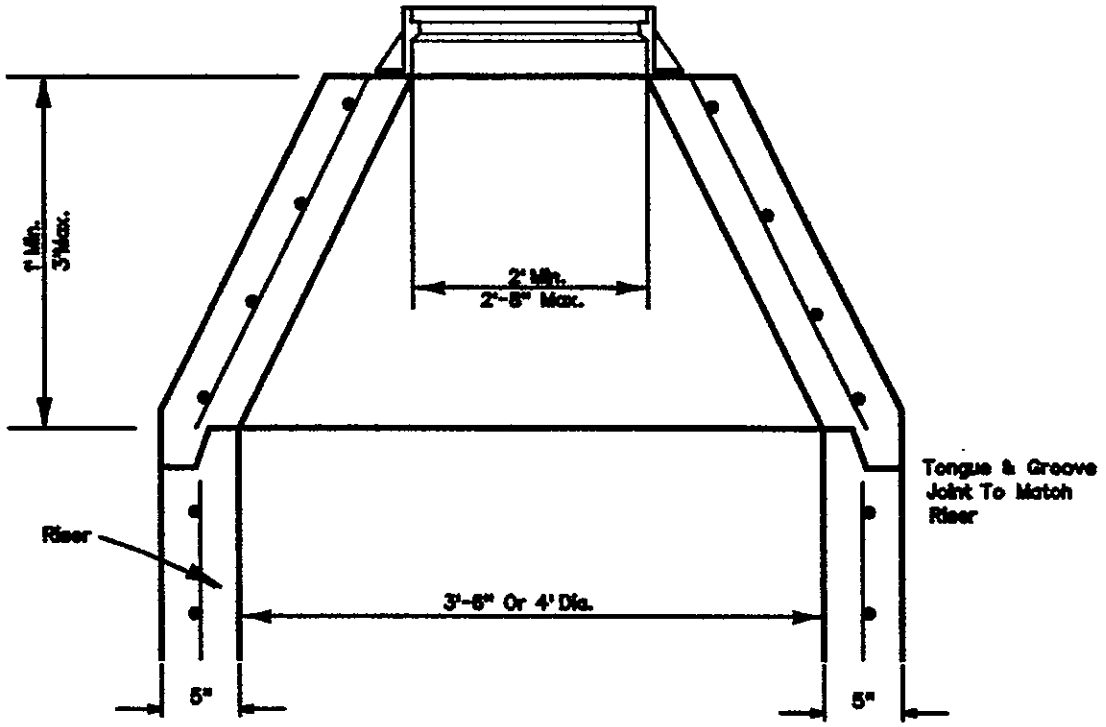
MANHOLE TOP TYPE 7 (TRAFFIC)

REVISIONS

SHEET No.

SCALE: N.T.S. | ISSUED AUGUST 1998 | DRA 27



PRECAST CONCENTRIC CONE

NOTES

1. Manhole top Type 8 may be of cast-in-place or precast concrete construction or brick construction. For concrete construction, the concrete and steel reinforcement shall be the same as the supporting wall unit. An eccentric cone may be used.

2. Manhole tops shall be secured to structures by optional construction joints as shown on F.D.O.T. Standards Index 201 Sheet 3 of 6.

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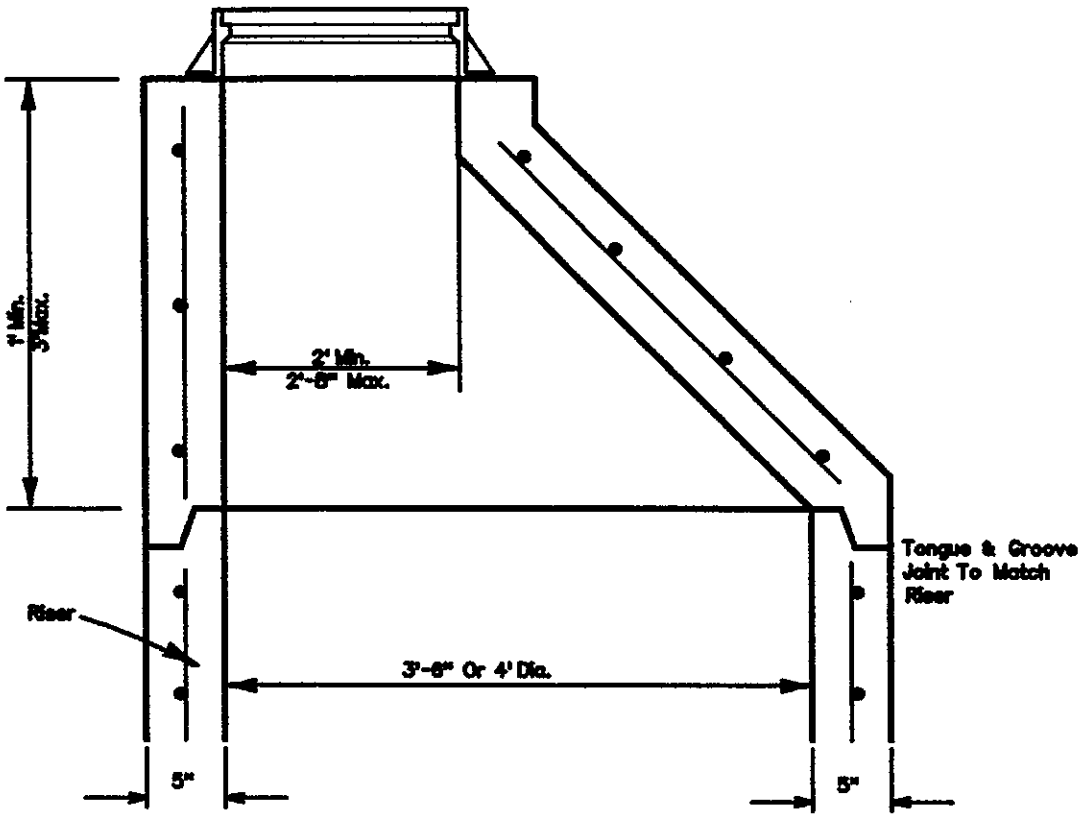
TYPE "8" MANHOLE TOP PRECAST CONCENTRIC CONE

REVISIONS	
SHEET No.	
DRA 28	

SCALE: N.T.S. | ISSUED AUGUST 1998



PRECAST ECCENTRIC CONE

NOTES

1. Manhole top Type 8 may be of cast-in-place or precast concrete construction or brick construction. For concrete construction, the concrete and steel reinforcement shall be the same as the supporting wall unit. An eccentric cone may be used.

2. Manhole tops shall be secured to structures by optional construction joints as shown on F.D.O.T. Standards 201 Sheet 3 of 6.

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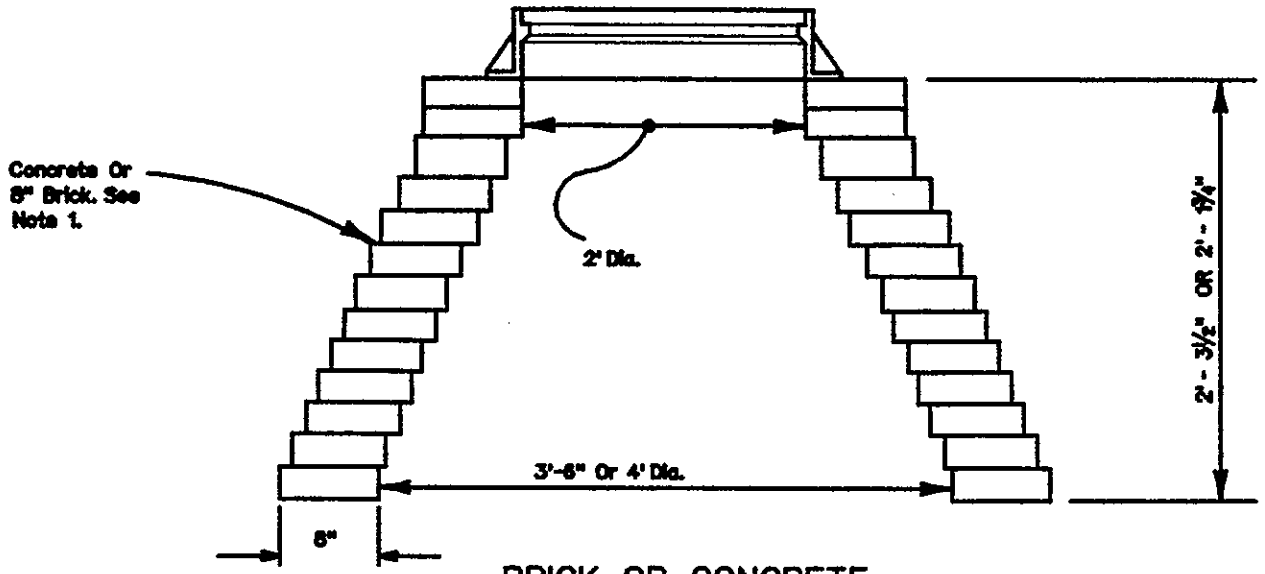
TECHNICAL SPECIFICATIONS AND DETAILS

TYPE "8" MANHOLE TOP PRECAST ECCENTRIC CONE

REVISIONS	
SHEET No.	
SCALE: N.T.S.	ISSUED AUGUST 1998
DRA 29	



BRICK OR CONCRETE

NOTES

1. Manhole top Type 8 may be of cast-in-place or precast concrete construction or brick construction. For concrete construction, the concrete and steel reinforcement shall be the same as the supporting wall unit. An eccentric cone may be used.

2. Manhole tops shall be secured to structures by optional construction joints as shown on F.D.O.T. Standards Index 201 Sheet 3 of 6.

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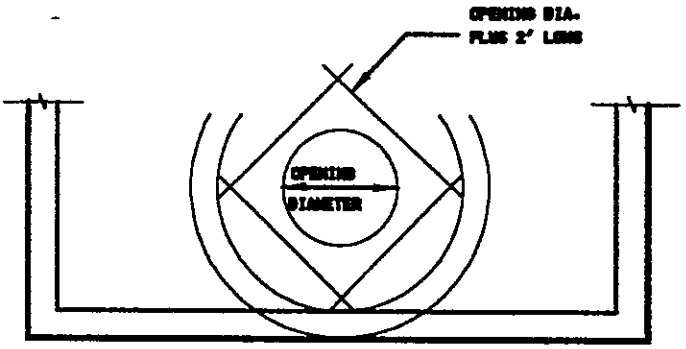
TECHNICAL SPECIFICATIONS AND DETAILS

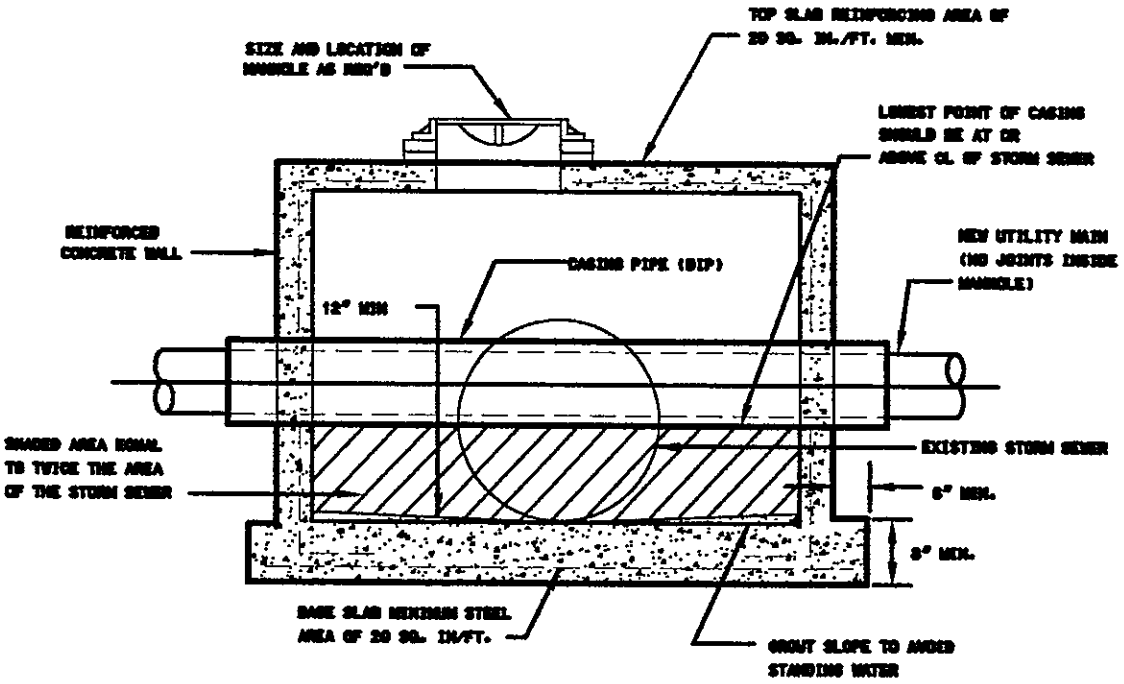
TYPE "8" MANHOLE TOP BRICK

REVISIONS
SHEET No.
DRA 30

SCALE: N.T.S. | ISSUED AUGUST 1998



PARTIAL PLAN



NOTES:

1. CONFLICT MANHOLE WILL BE ALLOWED WHERE DESIGN PROBLEMS AND ECONOMICS PROVE THEM TO BE THE ONLY VIABLE SOLUTION AS APPROVED BY FPUA ENGINEERING.
2. CONFLICT MANHOLES WILL NOT BE ALLOWED FOR WATER MAINS CROSSING GRAVITY WASTEWATER SYSTEMS. AS APPROVED BY FPUA ENGINEERING.

CONFLICT MANHOLE
N.T.S.

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CONFLICT MANHOLE DETAIL

REVISIONS	
SHEET No.	
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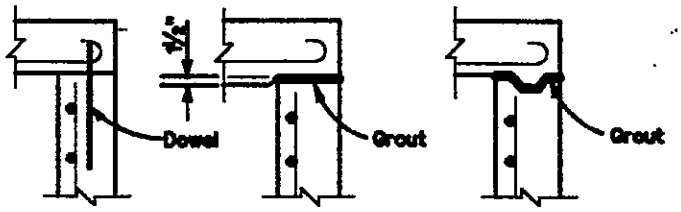
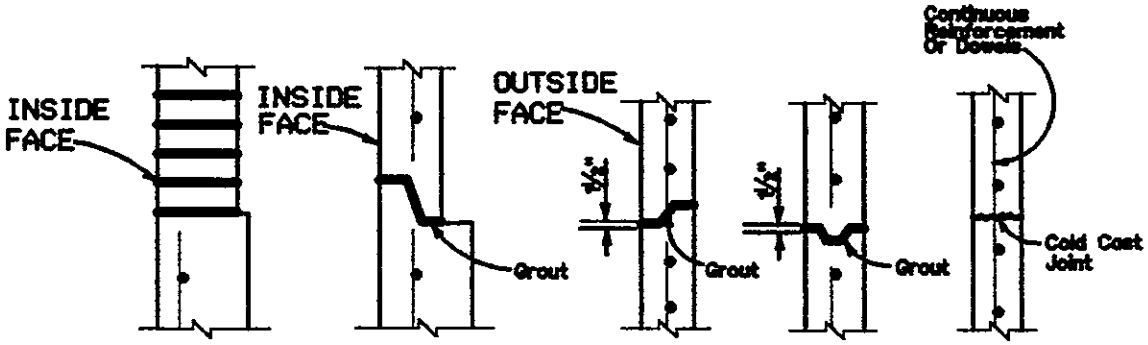
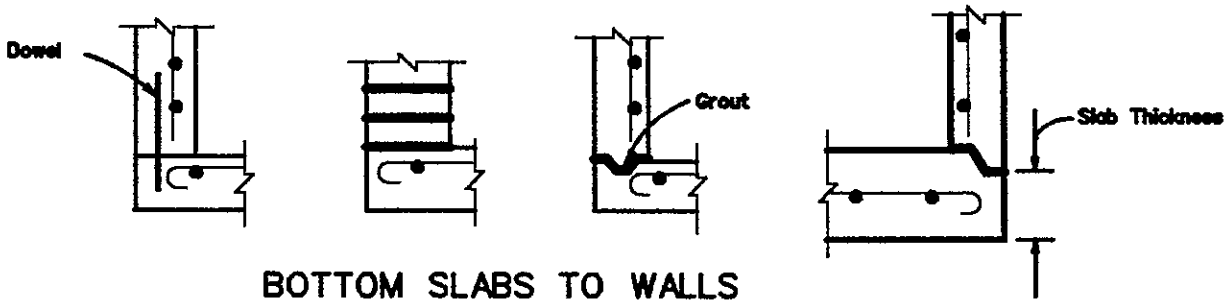


TOP SLABS TO WALLS



WALL JOINTS



BOTTOM SLABS TO WALLS

1. One or more types of joints may be used in a single structure, except brick wall structure. Brick wall construction is permitted on circular units only.
2. All grouted joints are to have a maximum thickness of 1".
3. Keyways are to be a minimum of 1½"deep.
4. Joint dowels are to be #4 bars, 12" long with a minimum of 6 bars per joint for circular structures approximately evenly spaced, and, 2 bars per side at approximate quarter points for rectangular structures.
5. Minimum cover on reinforcing bars is 1¼".
6. Joints between wall segments and between wall segments and top or bottom slabs may be sealed either by preformed plastic gasket material using the procedures given in Section 430-7.3 or by grout.
7. Approved product inserts may be used in lieu of dowel embedment.

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TECHNICAL SPECIFICATIONS AND DETAILS

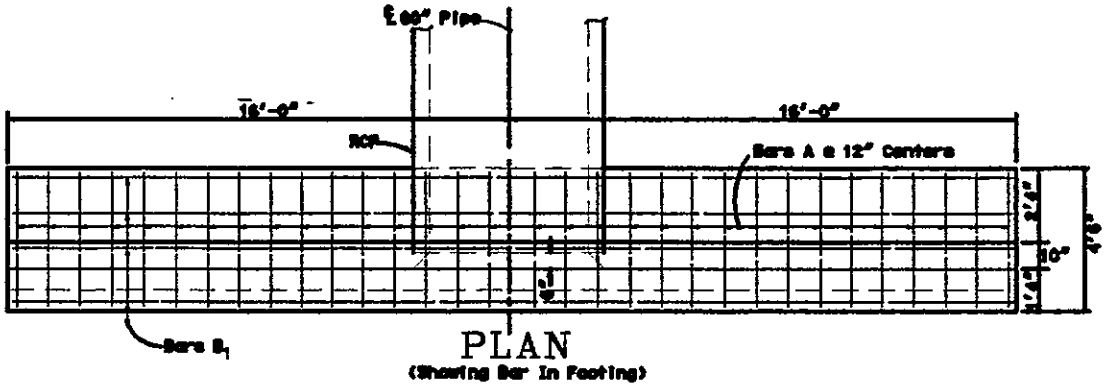
MANHOLE JOINT DETAILS

REVISIONS

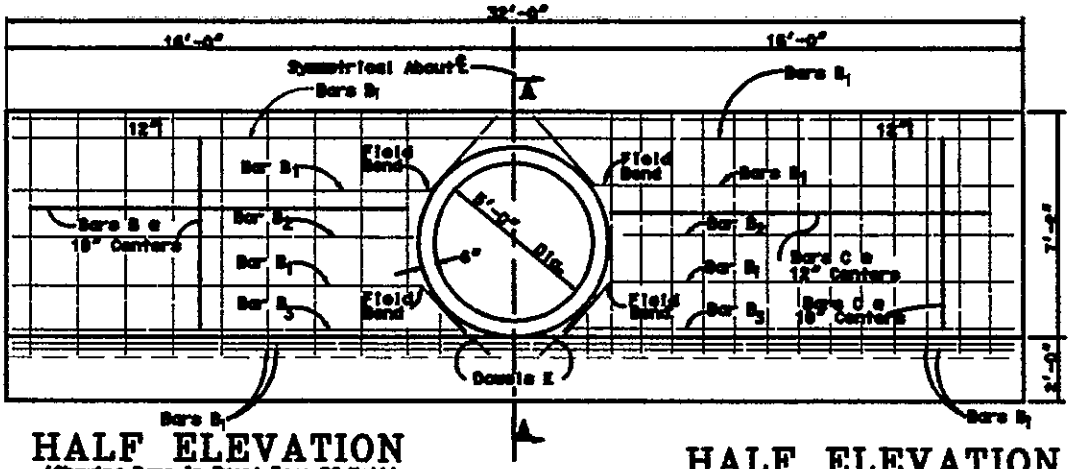
SHEET No.
DRA 32

SCALE: N.T.S.

ISSUED AUGUST 1998



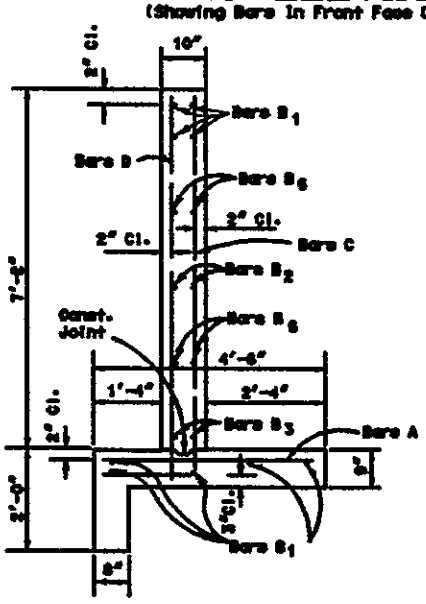
PLAN
(Showing Bar In Footing)



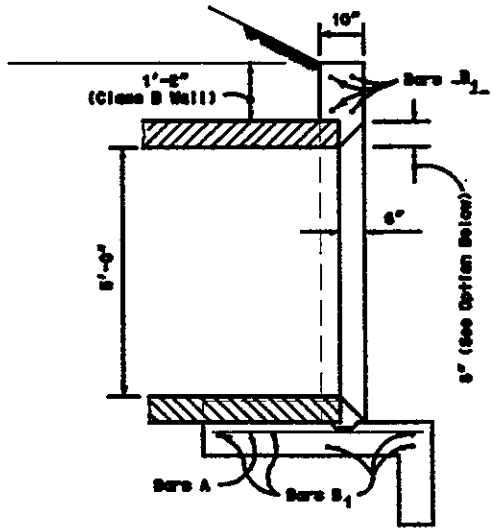
HALF ELEVATION
(Showing Bars In Front Face Of Wall)

NOTE: Cut and field bends Bars B_1 as shown

HALF ELEVATION
(Showing Bars In Back Face Of Wall)



TYPICAL SECTION
THRU ENDWALL



SECTION AA

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

CONCRETE HEADWALL DETAIL SHEET 1 OF 2

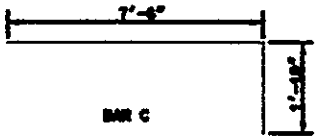
REVISIONS
SHEET No.
DRA 33

SCALE: N.T.S. | ISSUED AUGUST 1998

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQ'D	LENGTH	LOCATION	BENDING
A	No. 4	32	4'-6"	Footing	Straight
B_1	No. 4	13	24'-6"	Footing & Wall	Straight
B_2	No. 4	4	12'-4"	Wall	Straight
B_3	No. 4	4	13'-6"	Wall	Straight
C	No. 4	36	9'-4"	Wall	Bend
D	No. 4	19	7'-6"	Wall	Straight
E	No. 4	8	1'-6"	Footing & Wall	Straight

BENDING DIAGRAM



NOTE: All bar dimensions are out to out

ESTIMATED QUANTITIES

ITEM	UNIT	RCP	CMP
Concrete Class II	Cu. Yd.	11.3	11.4
Reinforcing Steel	Lb.	695	695

1. Endwalls may be cast-in-place or precast construction. Cast-in-place endwalls shall conform to the details on this Index, design specifications AASHTO 1998. Precast construction which adheres to this Index, including any additional reinforcement required for handling which shall be determined by the Contractor or supplier, does not require additional approvals. For precast construction, see F.D.O.T. Index No. 201 for opening and grouting details.

2. Reinforcing steel shall be either Grade 40 or 60.

3. Concrete shall be Class II, except that concrete meeting the requirements of ASTM C 478 (4000 PSI) may be used in lieu of Class II concrete in precast units manufactured in plants which are under the Standard Operating Procedures for the inspection of precast drainage products.

4. Chamfer: All exposed edges and corners to be chamfered ¾" unless otherwise shown.

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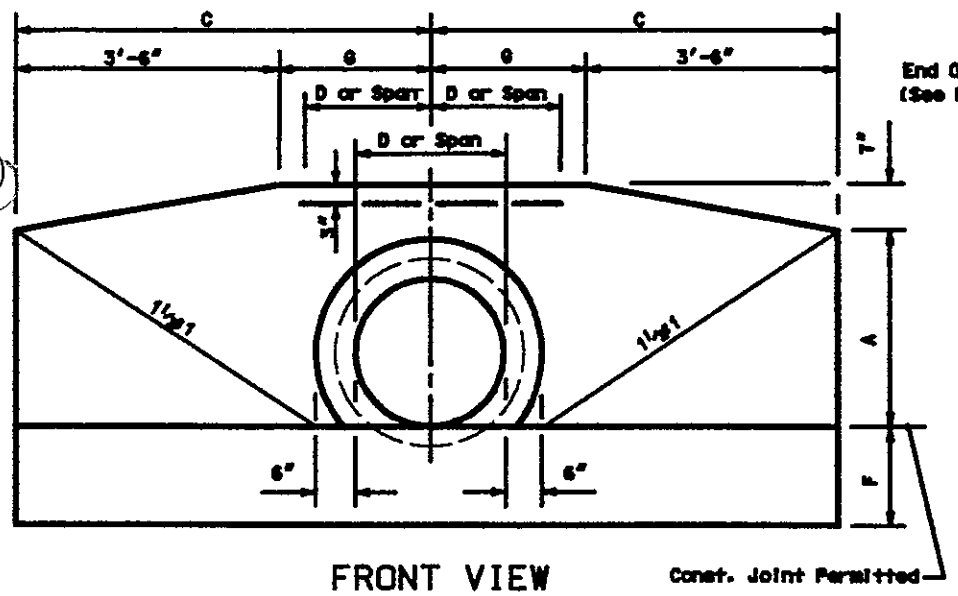
CONCRETE HEADWALL NOTES SHEET 2 OF 2

REVISIONS

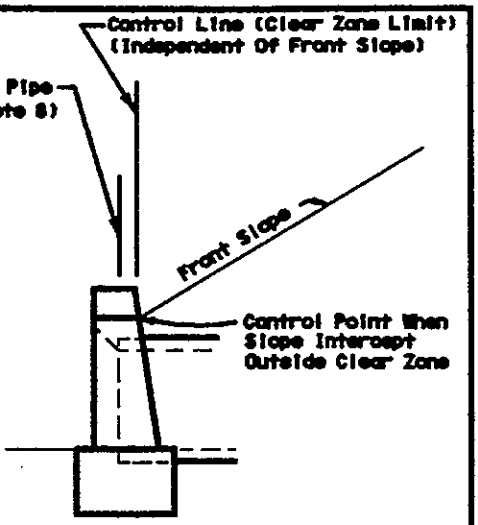
SHEET No. DRA 34

SCALE: N.T.S. | ISSUED AUGUST 1998

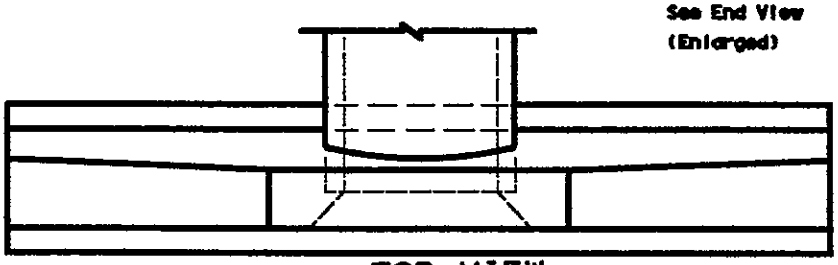


FRONT VIEW

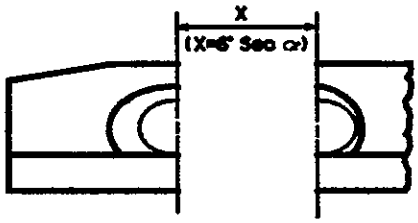
Const. Joint Permitted
See End View
(Enlarged)



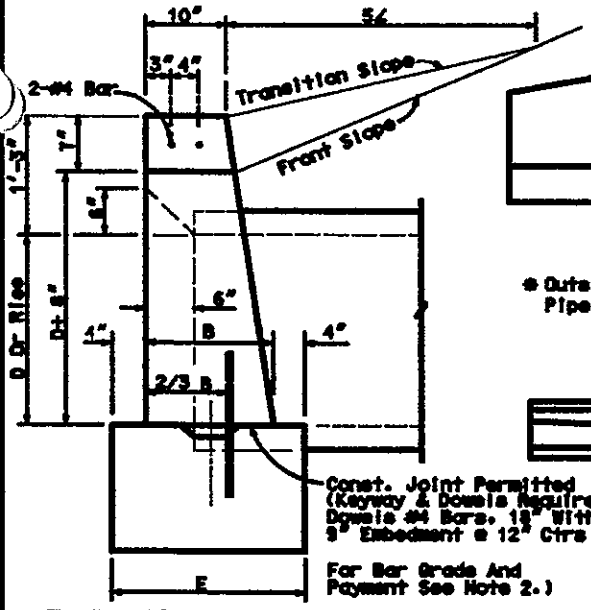
END VIEW
STANDARD
LOCATION CONTROL



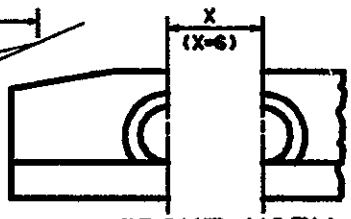
TOP VIEW



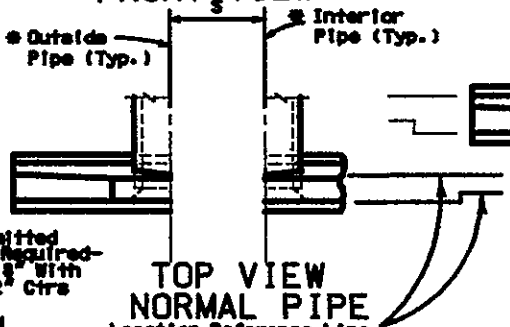
FRONT VIEW



END VIEW (ENLARGED)



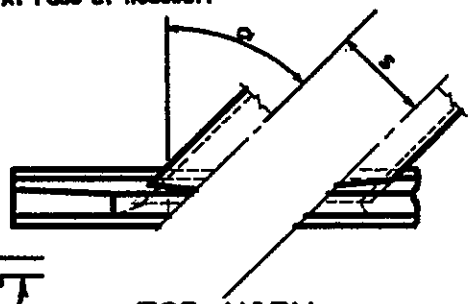
FRONT VIEW



TOP VIEW
NORMAL PIPE
Location Reference Line
(See Location Control Above)

LEGEND

- α Pipe Skew
- s Center To Center Pipe Spacing
- x Centerline To Centerline Dimension At Face Of Headwall



TOP VIEW
SKEWED PIPE

NOTES: FOR ENDWALLS ON SHEET 2 OF 3. DIMENSIONS ON SHEET 3 OF 3
ENDWALL POSITIONS FOR SINGLE AND MULTIPLE PIPE AND SPACING FOR MULTIPLE PIPE

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
TECHNICAL SPECIFICATIONS AND DETAILS

HEADWALL DETAIL
SHEET 1 OF 3

REVISIONS	
SHEET No.	
SCALE: N.T.S.	ISSUED AUGUST 1998
DRA 35	

GENERAL NOTES

1. Endwall dimensions, locations and positions are for round and elliptical concrete pipe and for round and pipe-arch corrugated metal pipe. Round concrete pipe shown.

2. Endwalls may be cast in place or precast concrete. Reinforcing steel shall be Grades 40 or 60. Additional reinforcement necessary for handling precast units shall be determined by the Contractor or the supplier. Cost of reinforcement shall be included in the contract unit price for concrete, (endwalls).

3. All exposed corners and edges of concrete are to be chamfered ¾".

4. Concrete meeting the requirements of ASTM C-478 (4000 psi) may be used in lieu of Class II concrete in precast items manufactured in plants which are under the Standard Operating Procedures for the inspection of precast drainage products.

5. On outfall ditches with side slopes flatter than 4' H provide 20' transitions from the endwall to the flatter side slopes, right of way permitting.

6. For sodding around endwalls see Index No. 281.

7. Payment for concrete quantities for endwalls skewed to the pipe shall be made on the following basis:

Endwall Skew To Pipe	Use Tabulated Value
0° to 5°	0°
6° to 15°	15°
16° to 30°	30°
31° or over	45°

8. Pipe length plan quantities shall be based on the pipe end locations shown in the standard location control end view, or lengths based on special endwall locations called for in the plans.

9. Payment for pipe in pipe culverts shall be based on plan quantities, adjusted for endwall locations subsequently established by the Engineer.

10. Endwalls to be paid for under the contract unit price for Class I Concrete (Endwalls), CY.

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HEADWALL DETAIL
SHEET 2 OF 3

REVISIONS

SHEET No.
DRA 36

SCALE: N.T.S.

ISSUED AUGUST 1998

DATA AND ESTIMATED QUANTITIES FOR ONE ROUND CONCRETE PIPE

D	Opening Area (SF)		Dimensions											Class I Concrete (CY)					D
	Number Of Pipes									X				Number Of Pipe And Skew Angle Of Pipe					
														Single	Double				
	1	2	A	B	C	E	F	G	S	0°	15°	30°	45°	Concrete	Concrete				
														0°	0°	15°	30°	45°	
18"	1.23	2.46	1'-11"	1'-6"	4'-0"	1'-10"	1'-6"	0'-6"	2'-7"	2'-4"	2'-6"	3'-0"	3'-6"	1.55	1.89	1.93	1.95	1.74	18"
19"	1.77	3.54	2'-2"	1'-6"	4'-0"	1'-11"	1'-6"	1'-0"	2'-10"	2'-10"	2'-11"	3'-6"	4'-0"	1.55	1.99	2.01	2.05	2.17	19"
21"	2.41	4.82	2'-6"	1'-4"	5'-0"	2'-0"	1'-4"	1'-6"	3'-6"	3'-4"	3'-6"	3'-9"	4'-6"	1.57					21"
24"	3.14	6.28	2'-9"	1'-4"	5'-6"	2'-0"	1'-4"	2'-0"	3'-6"	3'-9"	3'-6"	3'-11"	4'-10"	2.34	2.82	2.84	2.91	3.05	24"
27"	3.98	7.95	2'-11"	1'-6"	6'-0"	2'-1"	1'-6"	2'-6"	3'-10"	3'-10"	4'-0"	4'-6"	5'-6"	2.73					27"
30"	4.91	9.82	3'-2"	1'-6"	6'-6"	2'-2"	1'-6"	3'-0"	4'-0"	4'-0"	4'-6"	4'-11"	6'-0"	3.26	4.13	4.16	4.26	3.48	30"
36"	7.07	14.14	3'-6"	1'-6"	7'-6"	2'-4"	1'-6"	4'-0"	5'-1"	5'-1"	5'-6"	6'-10"	7'-2"	4.65	5.73	5.77	5.92	5.23	36"
42"	9.62	19.24	4'-2"	1'-10"	8'-6"	2'-6"	2'-0"	5'-0"	6'-0"	6'-0"	6'-6"	6'-11"	8'-6"	6.33	8.11	8.17	8.38	8.05	42"
48"	12.57	25.14	4'-6"	2'-1"	9'-6"	2'-9"	2'-0"	6'-0"	6'-0"	6'-6"	7'-0"	7'-10"	9'-1"	8.16	10.49	10.48	10.75	11.35	48"
54"	15.90	31.80	5'-2"	2'-6"	10'-6"	3'-1"	2'-0"	7'-0"	7'-0"	7'-6"	7'-11"	8'-10"	10'-10"	11.71	15.25	15.36	15.75	16.69	54"

CONCRETE ELLIPTICAL PIPE

Rise	Span	Opening Area (SF)		Dimensions											Class I Concrete (CY)						Rise	Span	Approx. Equiv. Round Pipe
		Number Of Pipes										X			Number Of Pipe And Skew Angle Of Pipe								
															Single	Double							
		1	2	A	B	C	E	F	G	S	0°	15°	30°	45°	0°	0°	15°	30°	45°				
13"	18"	1.3	2.6	1'-6"	1'-6"	3'-0"	1'-10"	1'-6"	0'-6"	2'-10"	2'-10"	2'-11"	3'-6"	4'-0"	1.02	1.45	1.46	1.51	1.69	13"	18"	15"
14"	23"	1.6	3.6	1'-10"	1'-6"	4'-0½"	1'-11"	1'-6"	0½"	3'-6"	3'-6"	3'-6"	3'-11"	4'-10"	1.36	1.82	1.84	1.89	2.01	14"	23"	18"
19"	30"	3.3	6.6	2'-6"	1'-4"	5'-1½"	2'-0"	1'-4"	1'-7½"	4'-6"	4'-6"	4'-6"	4'-10"	5'-11"	1.88	2.66	2.67	2.65	2.62	19"	30"	24"
24"	38"	5.1	10.2	2'-6"	1'-6"	6'-6"	2'-1"	1'-6"	2'-0"	5'-2"	5'-2"	5'-4"	6'-0"	7'-1"	2.64	3.66	3.68	3.69	3.95	24"	38"	30"
29"	45"	7.4	14.8	3'-1"	1'-6"	7'-6"	2'-6"	1'-6"	3'-0"	6'-0"	6'-6"	6'-6"	6'-11"	8'-6"	3.32	4.48	4.52	4.65	4.95	29"	45"	36"
34"	53"	10.2	20.4	3'-6"	1'-7"	7'-1½"	2'-8"	1'-7"	4'-0½"	7'-1"	7'-1"	7'-4"	8'-2"	10'-0"	4.24	5.76	5.81	6.00	6.39	34"	53"	42"
38"	60"	12.9	25.8	3'-10"	1'-6"	8'-6"	2'-4"	1'-6"	5'-0"	7'-11"	7'-11"	8'-2"	9'-2"	11'-2"	5.22	7.16	7.25	7.46	7.98	38"	60"	48"
45"	68"	16.6	33.2	4'-3"	1'-10"	9'-0½"	2'-6"	1'-10"	5'-0½"	9'-10"	9'-10"	9'-2"	10'-2"	12'-6"	6.65	9.01	9.09	9.36	10.00	45"	68"	54"
48"	76"	20.5	41.0	4'-6"	2'-1"	10'-6"	2'-9"	2'-0"	7'-2"	9'-0"	9'-6"	10'-1"	11'-2"	13'-9"	8.06	11.74	11.85	12.22	13.02	48"	76"	60"
53"	83"	24.8	49.6	5'-1"	2'-6"	11'-7"	3'-2"	2'-0"	8'-1"	10'-7"	10'-7"	10'-11"	12'-5"	15'-0"	12.89	16.98	16.95	17.67	18.83	53"	83"	66"
58"	91"	29.5	59.0	5'-6"	2'-10"	12'-9½"	3'-6"	2'-10"	9'-9½"	11'-4"	11'-4"	11'-8"	13'-1"	16'-0"	16.46	22.26	22.46	23.16	24.66	58"	91"	72"

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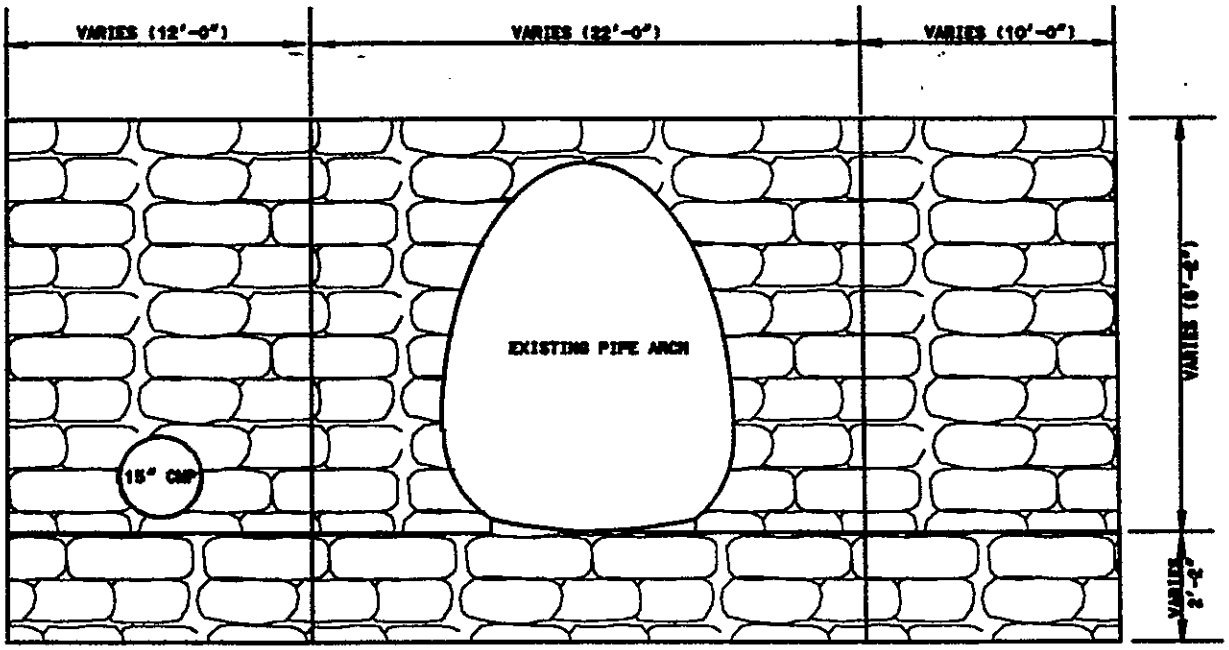
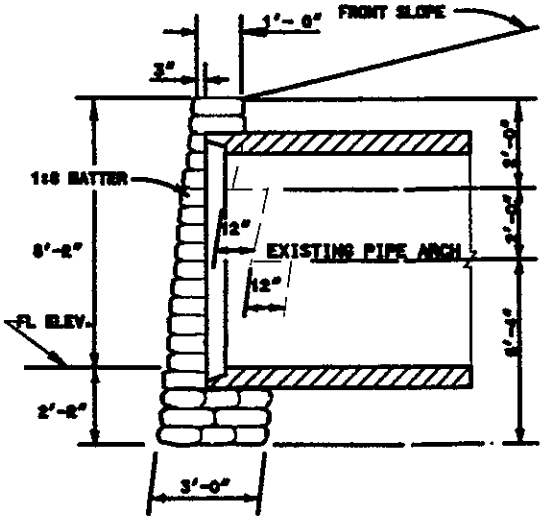
HEADWALL DETAIL
SHEET 3 OF 3

REVISIONS	
SHEET No.	
SCALE: N.T.S.	ISSUED AUGUST 1998
DRA 37	



FRONT ELEVATION



RIPRAP HEADWALL SECTION

CONSTRUCTION NOTES:

1. RIPRAP SACKS shall be made of jute, cotton or scrim reinforce paper. The sack material shall be permeable and absorptive enough to permit sufficient water to provide for hydration of the cement. The sacks shall be of uniform size and dimensions, in order to provide uniformity of lines in the completed work.
2. THE SAND AND CEMENT shall be proportioned in the ratio of five cubic feet of sand to 94 pounds (1 bag) of portland cement. The sand and cement shall be mixed until the mixture is of uniform color.
3. FILLING SACKS: The mixed material shall be placed in the sacks, with care being taken to place the same amount of material in each sack, and at least the top six inches of the sacks shall remain unfilled to allow for proper tying or folding and to insure against breaking of the sack during placing.
4. PLACING: The filled sacks shall be placed with their tied or folded ends all in the same direction. The sacks shall be laid with broken joints, in a regular pattern. The sacks shall be rammed or packed against each other so as to form a close and molded contact. All sacks shall then be thoroughly saturated with water.
5. GROUTING: Immediately after watering, all openings between sacks shall be filled with dry grout composed of one part portland cement and five parts sand.
6. PINNING: The top row of riprap bags shall be secured by pinning using No. 4 reinforcing bars 18 inches in length, as follows:
   (a) The end bags shall be secured using two bars per bag, one vertical and one diagonal.
   (b) The next to last bag on each end shall be secured with two bars vertically.
   (c) Bags located over the pipe shall be secured by a bar which is driven diagonally.
   (d) Intermediate bags shall be secured with a single bar.

   All bars shall be driven to one inch below the surface of the bag.

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RIP-RAP HEADWALL DETAIL

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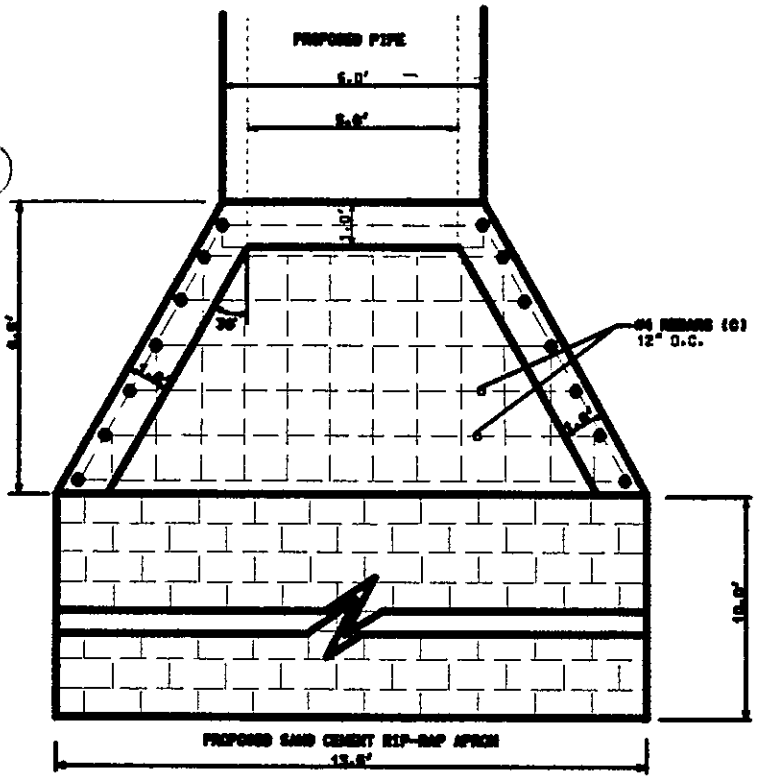
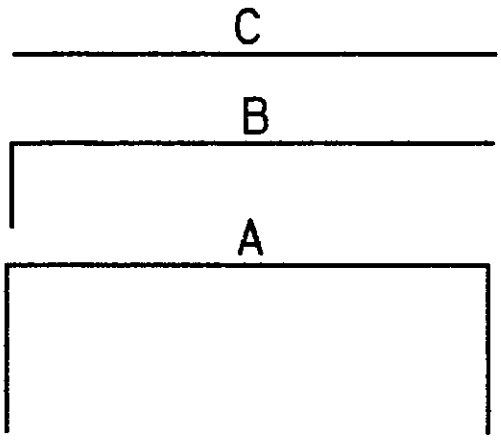
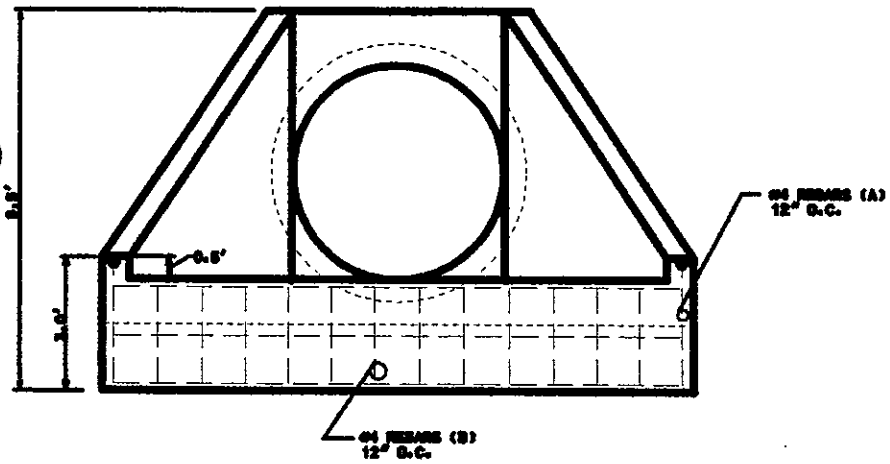
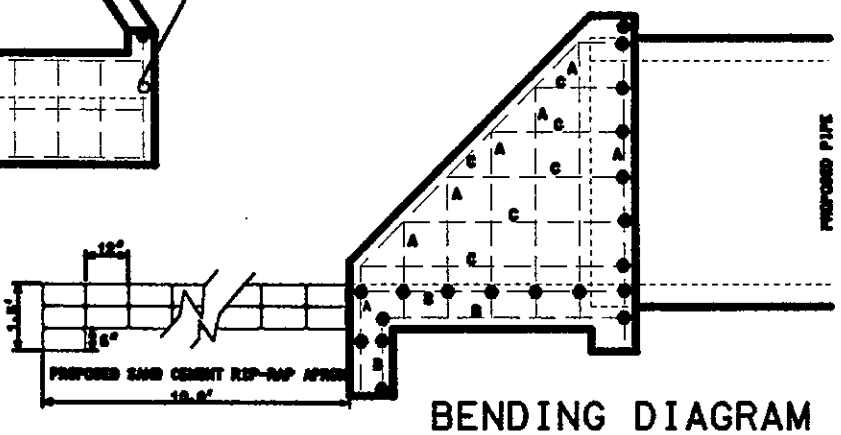


REINFORCING ROD CONFIGURATIONS



NOTE: ALL REINFORCING SHALL BE GRADE 60 & SHALL BE BENT & SIZED TO MAINTAIN A 2" MINIMUM OF CLEARANCE FROM THE FORMS. ALL RE-BAR IS TO BE EPOXY COATED TO PREVENT WEATHERING IF EXPOSED TO ELEMENTS.





BENDING DIAGRAM

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CONCRETE HEADWALL DETAIL

REVISIONS	
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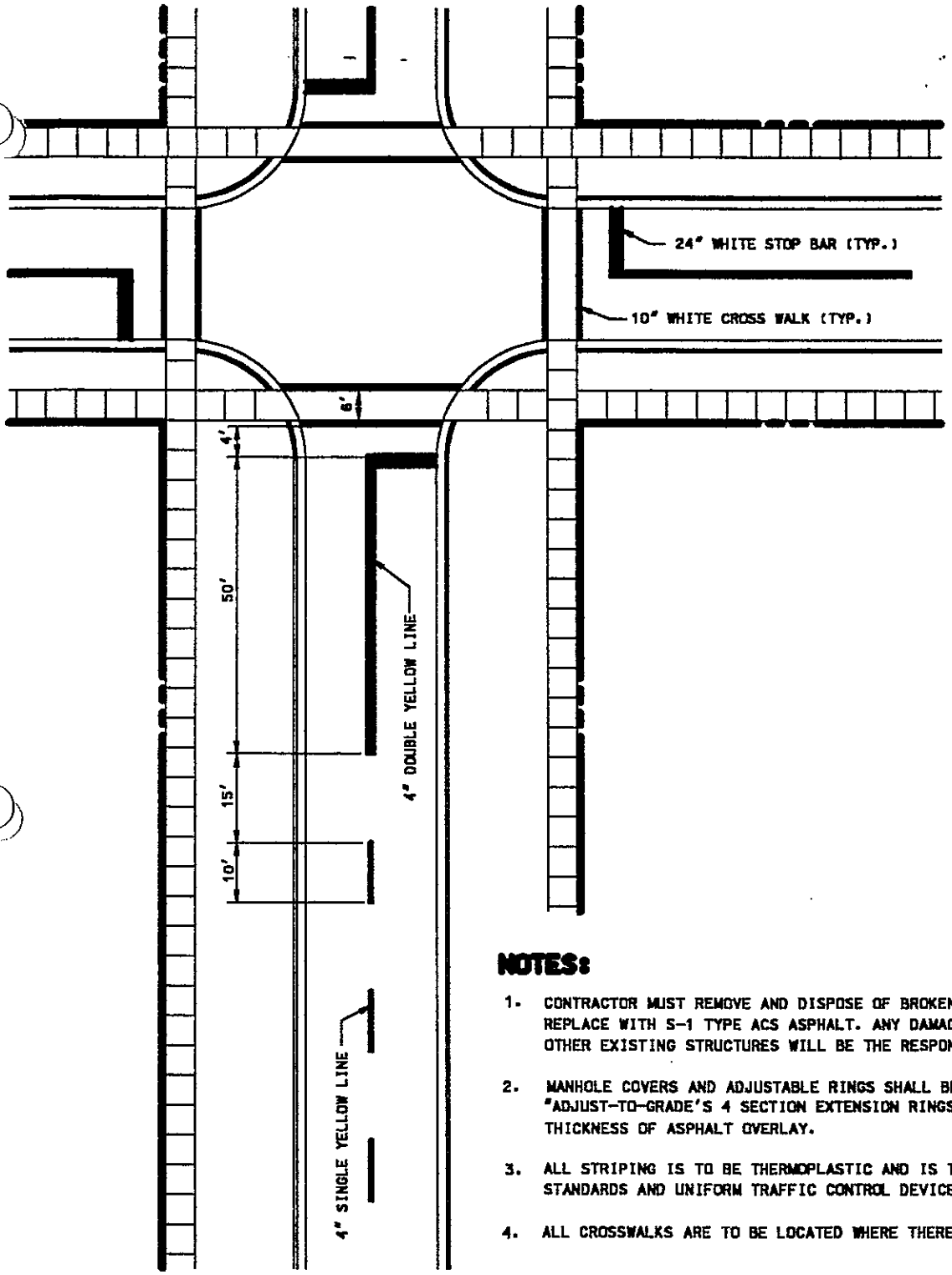

NOTES:

1. CONTRACTOR MUST REMOVE AND DISPOSE OF BROKEN CONCRETE COLLARS AND REPLACE WITH S-1 TYPE ACS ASPHALT. ANY DAMAGE TO MANHOLES, VALVES OR OTHER EXISTING STRUCTURES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. MANHOLE COVERS AND ADJUSTABLE RINGS SHALL BE "NUPCO" AND SHALL BE "ADJUST-TO-GRADE'S 4 SECTION EXTENSION RINGS" AS REQUIRED BY THE THICKNESS OF ASPHALT OVERLAY.
3. ALL STRIPING IS TO BE THERMOPLASTIC AND IS TO CONFORM TO F.D.O.T. STANDARDS AND UNIFORM TRAFFIC CONTROL DEVICES.
4. ALL CROSSWALKS ARE TO BE LOCATED WHERE THERE IS SIDEWALK ONLY.

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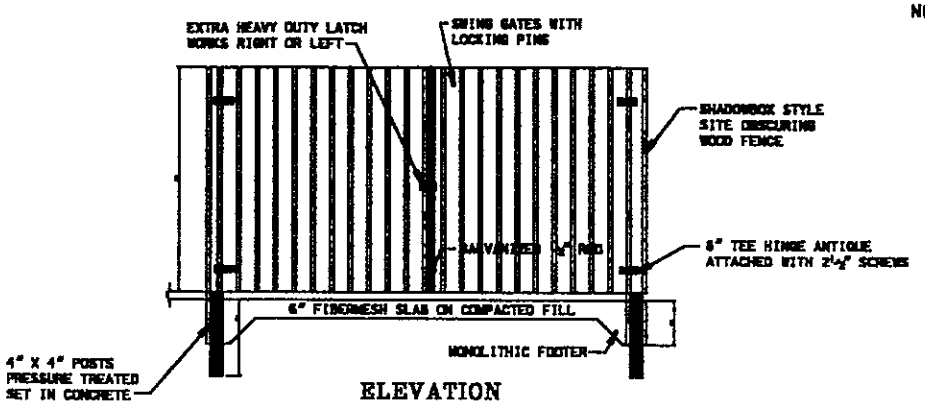
TYPICAL STREET STRIPING DETAIL

REVISIONS
SHEET No.
STP 01

SCALE: N.T.S. | ISSUED DECEMBER 2000



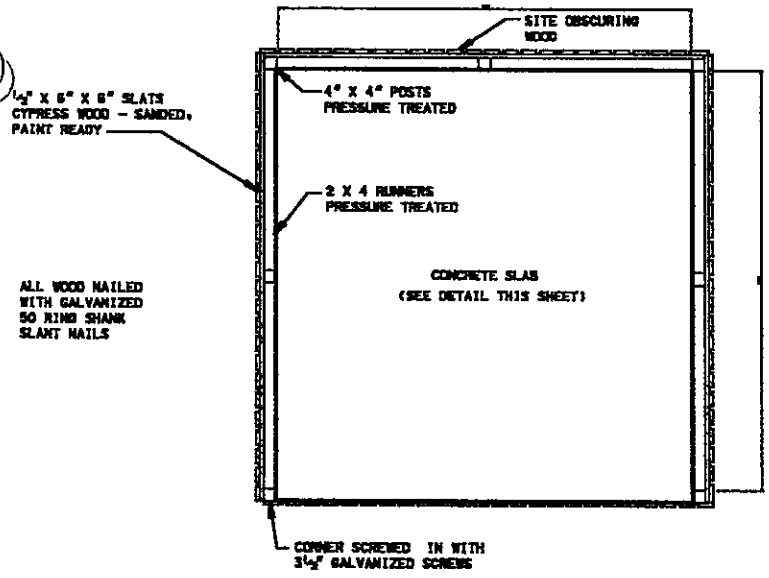
ELEVATION

NOTE: ALL LUMBER USED IS TO BE PRESSURE TREATED AND PAINT READY

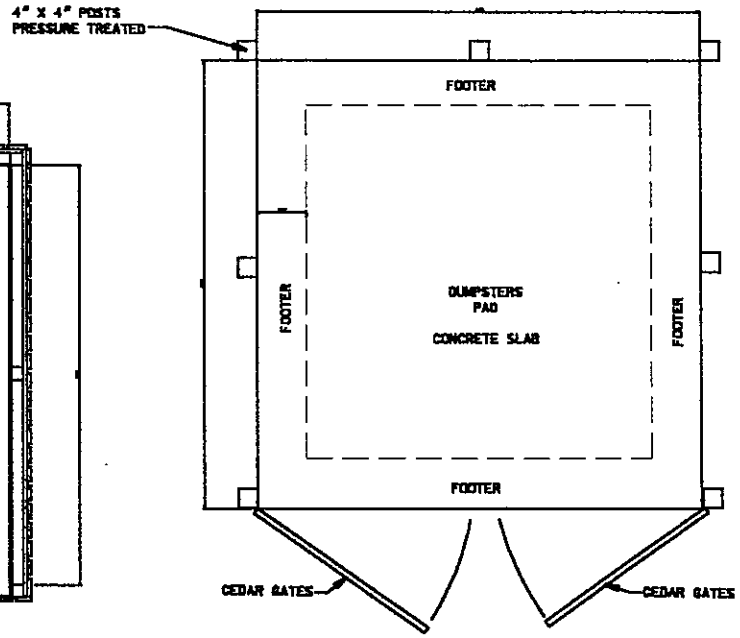
ALL NAILS, SHANKS, OR OTHER METAL ATTACHMENTS ARE TO BE OF RUST RESISTANT MATERIALS.

ALL LOCATIONS OF DUMPSTERS MUST BE PREAPROVED PRIOR TO CONSTRUCTION OF SAID PAD.

ENCLOSURE TO BE PAINTED AS PER CITY SPECIFICATIONS



PLAN VIEW



FOOTER DETAIL

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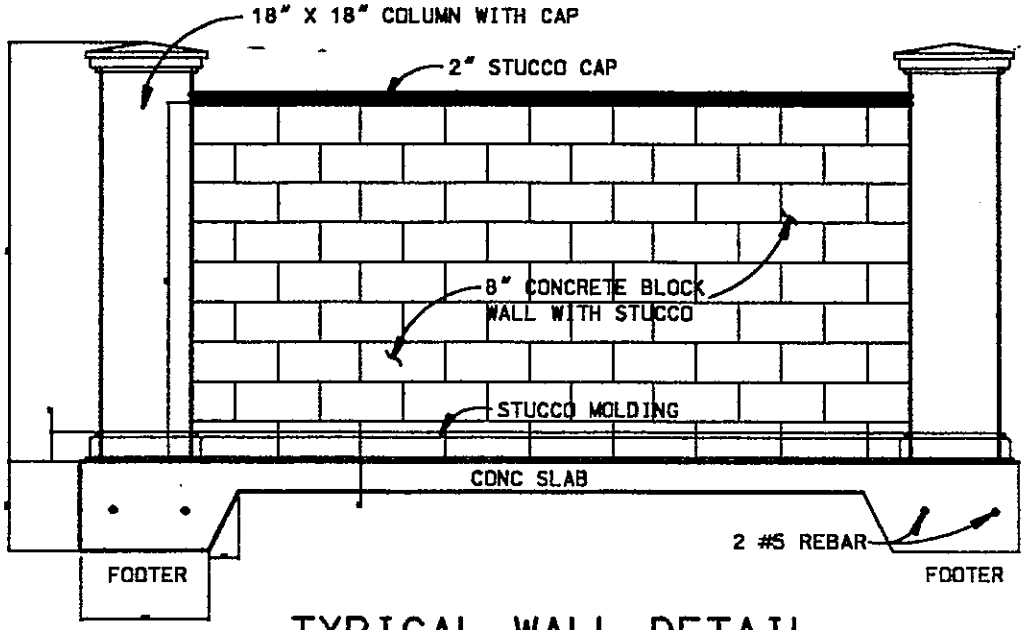
TECHNICAL SPECIFICATIONS AND DETAILS

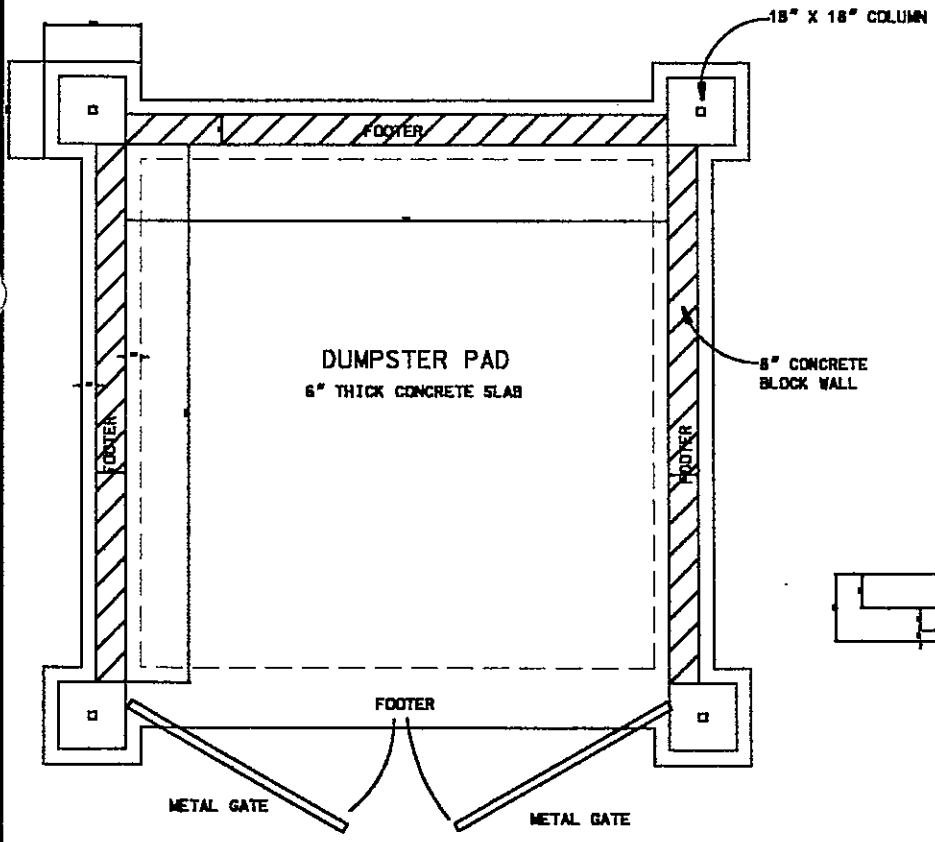
DUMPSTER PAD DETAILS

REVISIONS

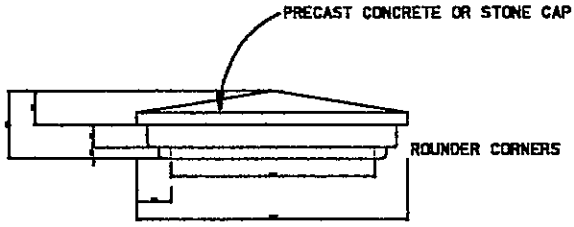
SCALE: N.T.S. | ISSUED AUGUST 1999 | SHEET No. 003



TYPICAL WALL DETAIL



FOOTER FOUNDATION



CAP DETAIL

CITY OF FORT PIERCE • DEPARTMENT OF ENGINEERING
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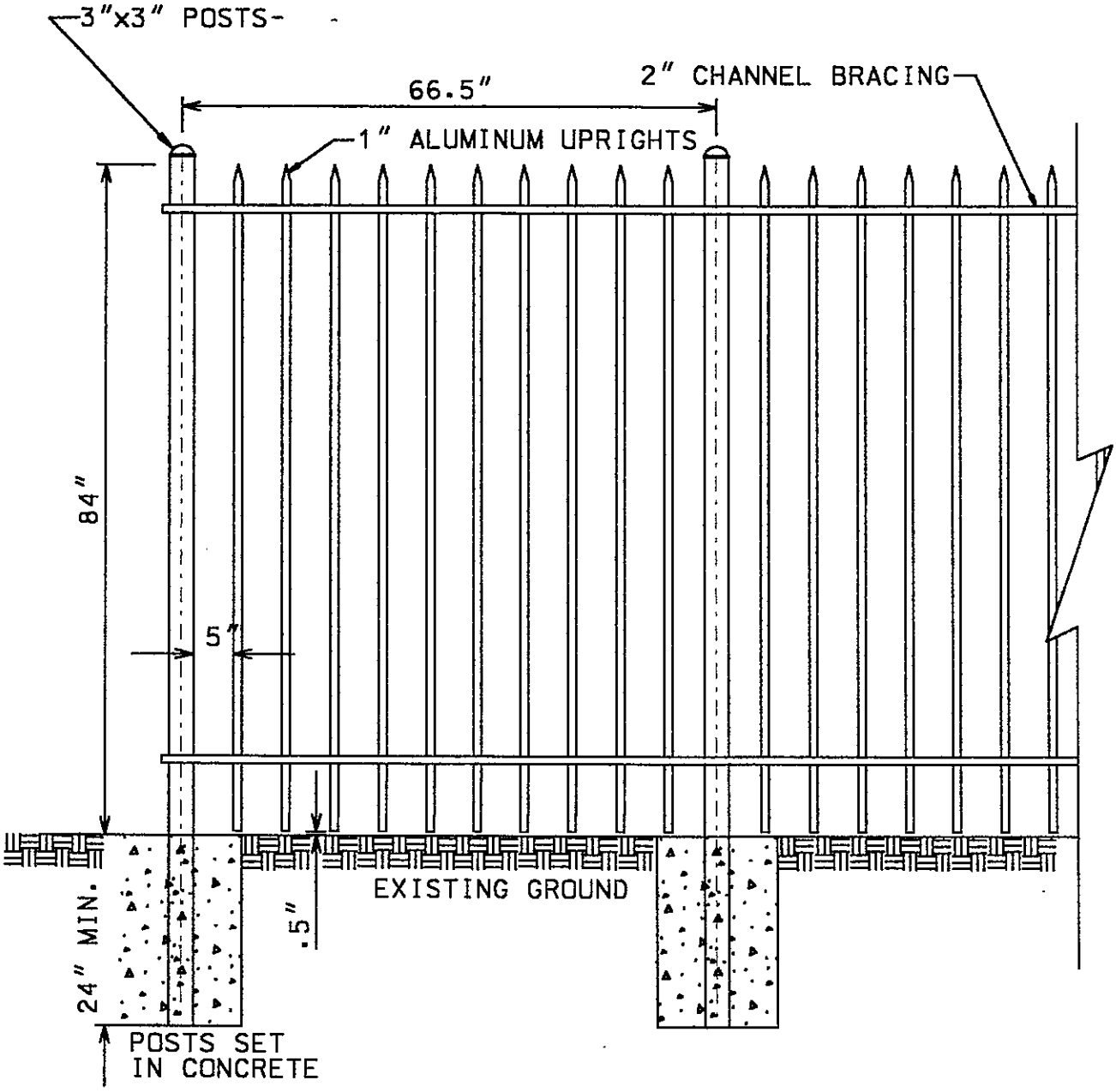
DUMPSTER PAD DETAILS

REVISIONS
SHEET No.
003

SCALE: N.T.S. | ISSUED AUGUST 1999



7' ALUMINUM PICKET FENCE

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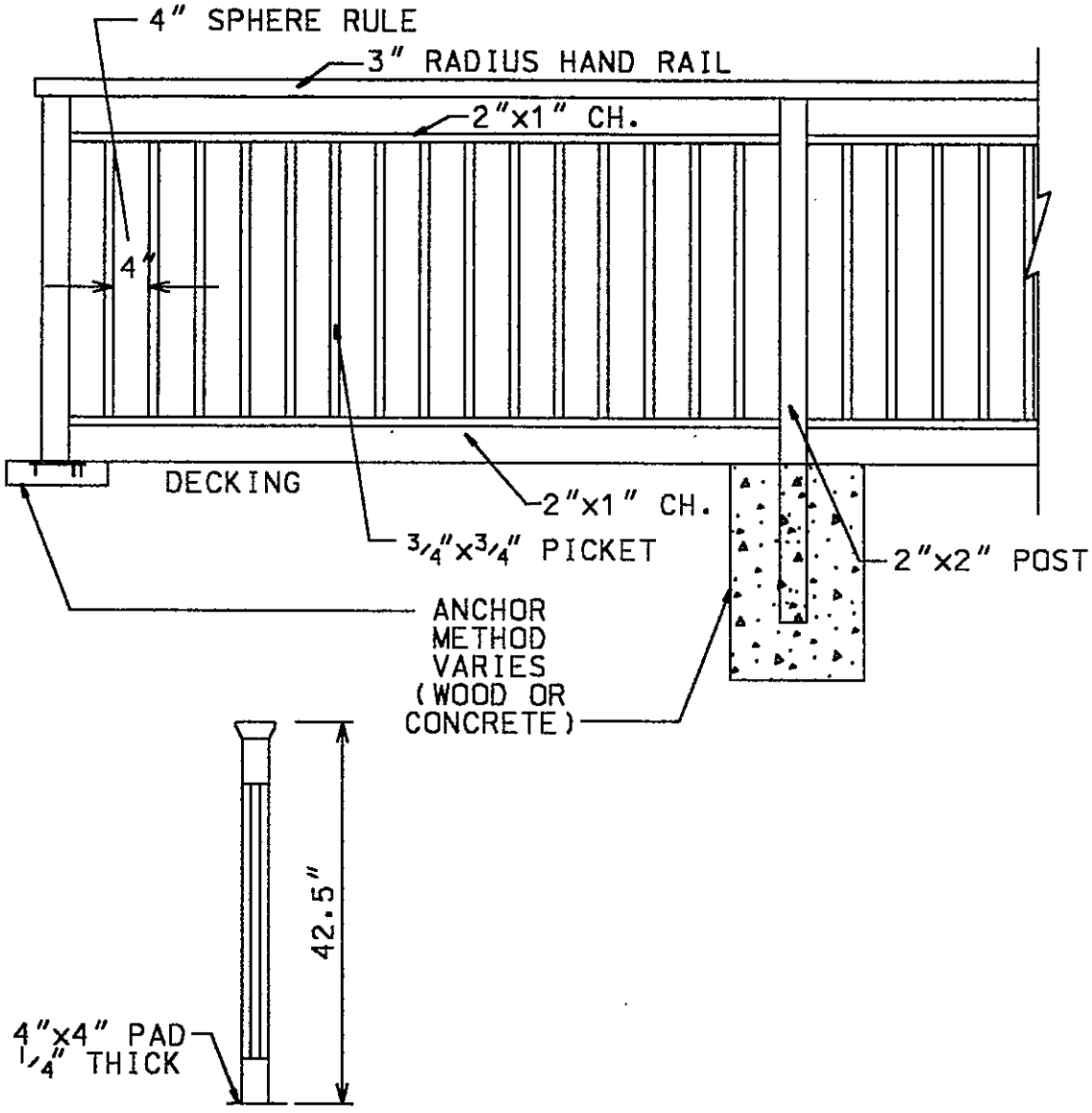
TECHNICAL SPECIFICATIONS AND DETAILS

7' PICKET FENCE
ALUMINUM

REVISIONS

SCALE: N.T.S. | ISSUED AUGUST 1999 | SHEET No. FD1



42" WHITE ALUMINUM PICKET FENCE

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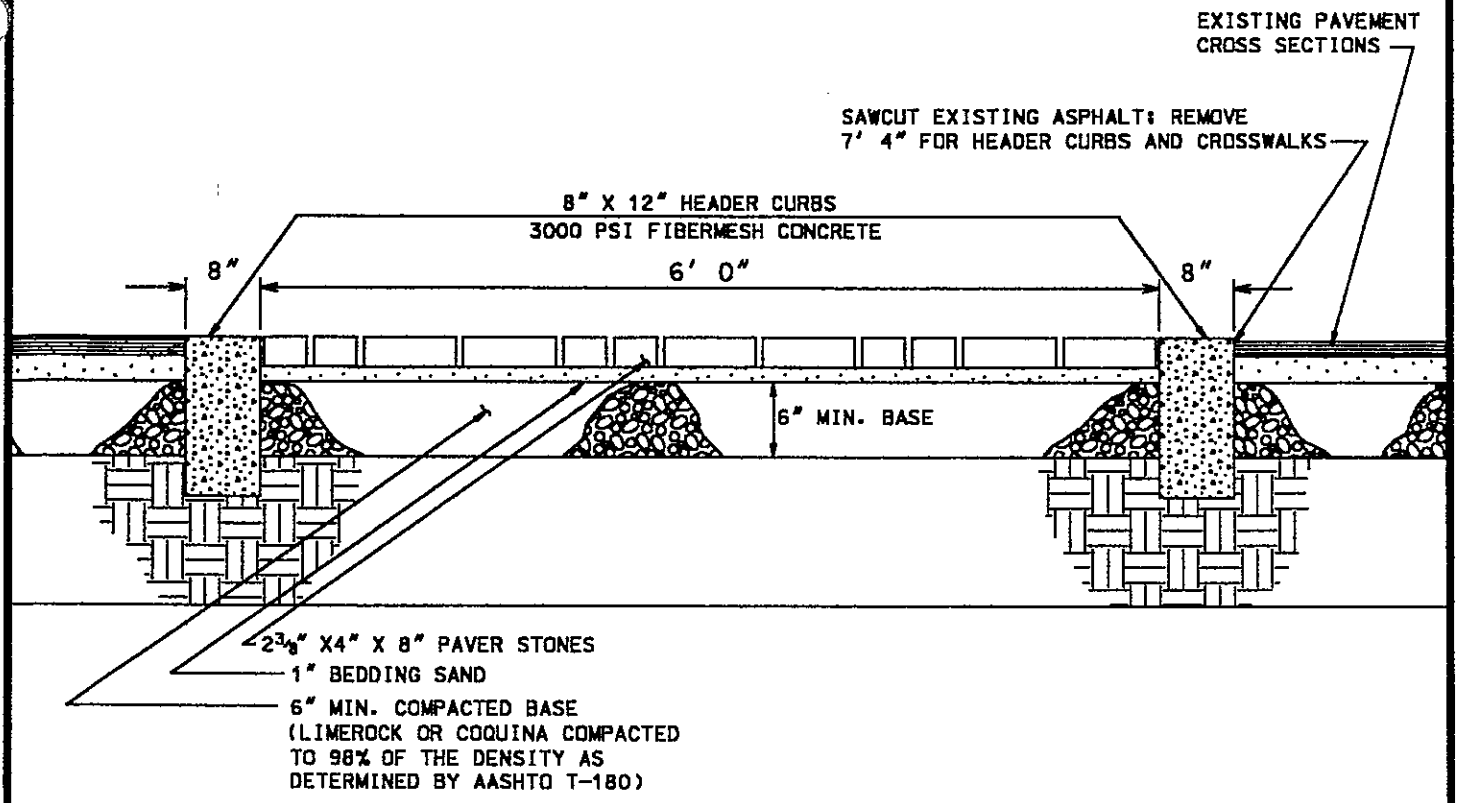
42" PICKET FENCE ALUMINUM

REVISIONS	
SHEET No.	FD2

SCALE: N.T.S. | ISSUED AUGUST 1999



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STREET CROSS-WALK DETAIL

REVISIONS	
SHEET No.	FD1

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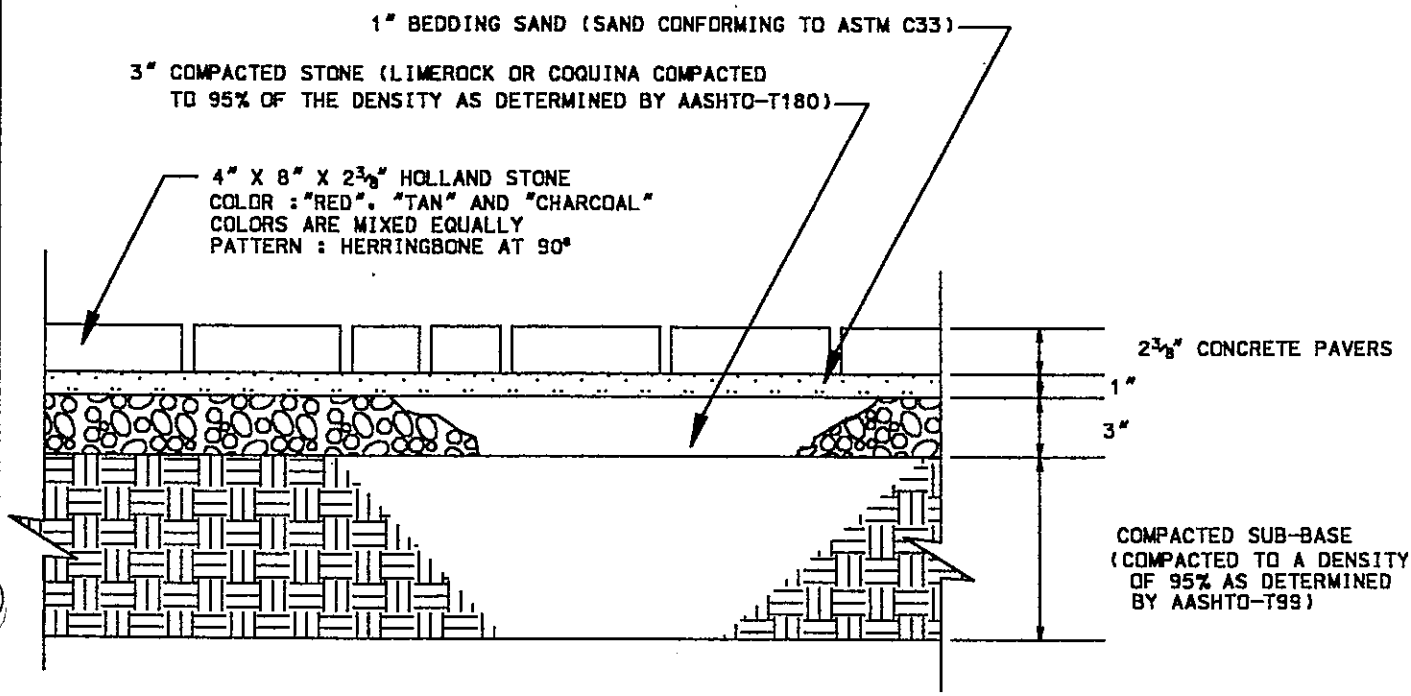

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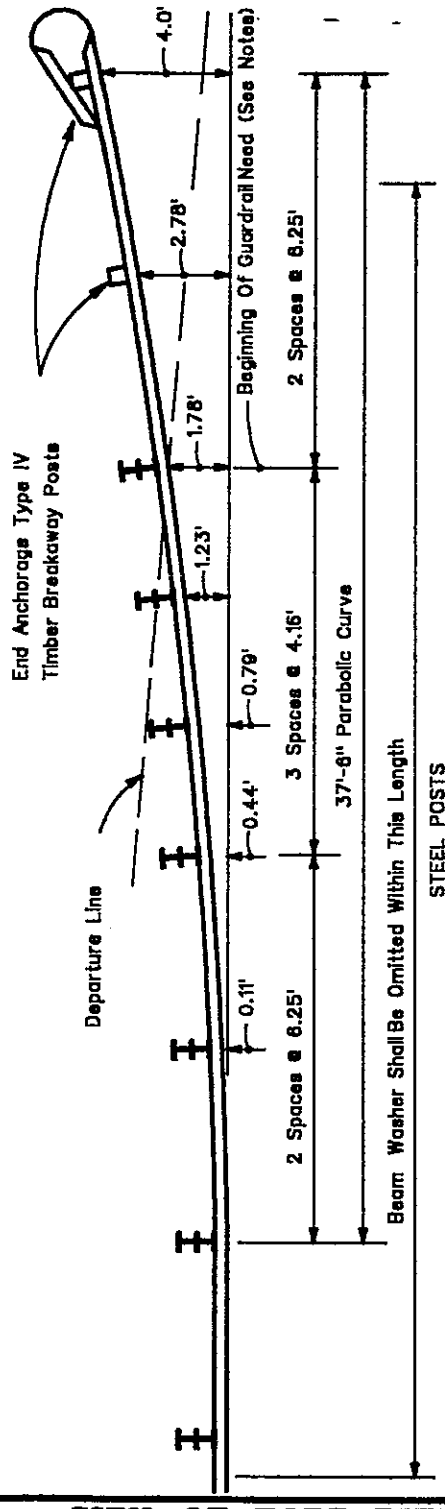
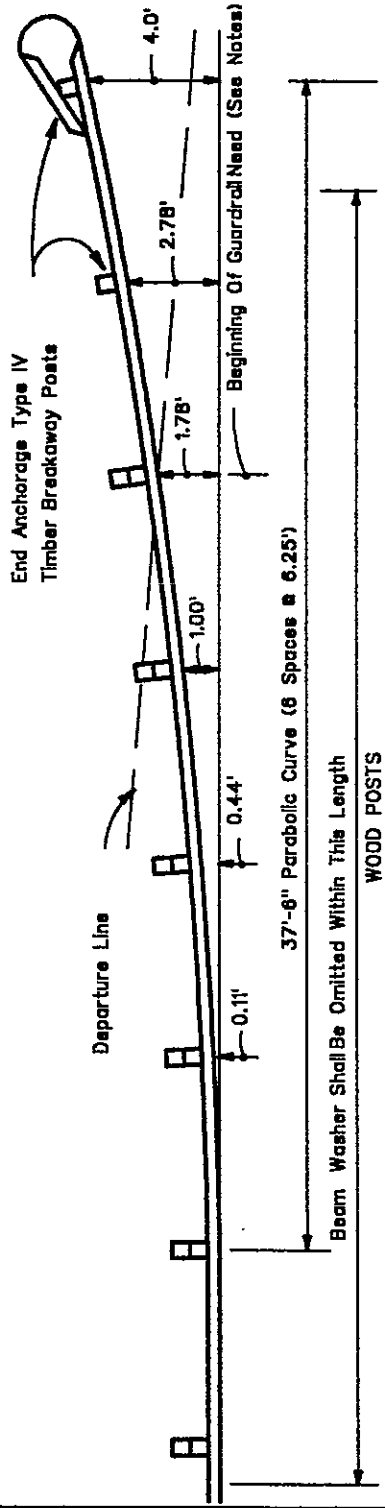
PAVER SIDEWALK CROSS-SECTION

REVISIONS
SHEET No. FD2

SCALE: N.T.S. | ISSUED AUGUST 1999





Notes:

All posts in flare except breakaway posts to be standard length posts.

All posts except breakaway post will have offset blocks. For post and offset block combinations.

The beginning of guardrail need to be determined by Figure 1 (Length Of Advancement).

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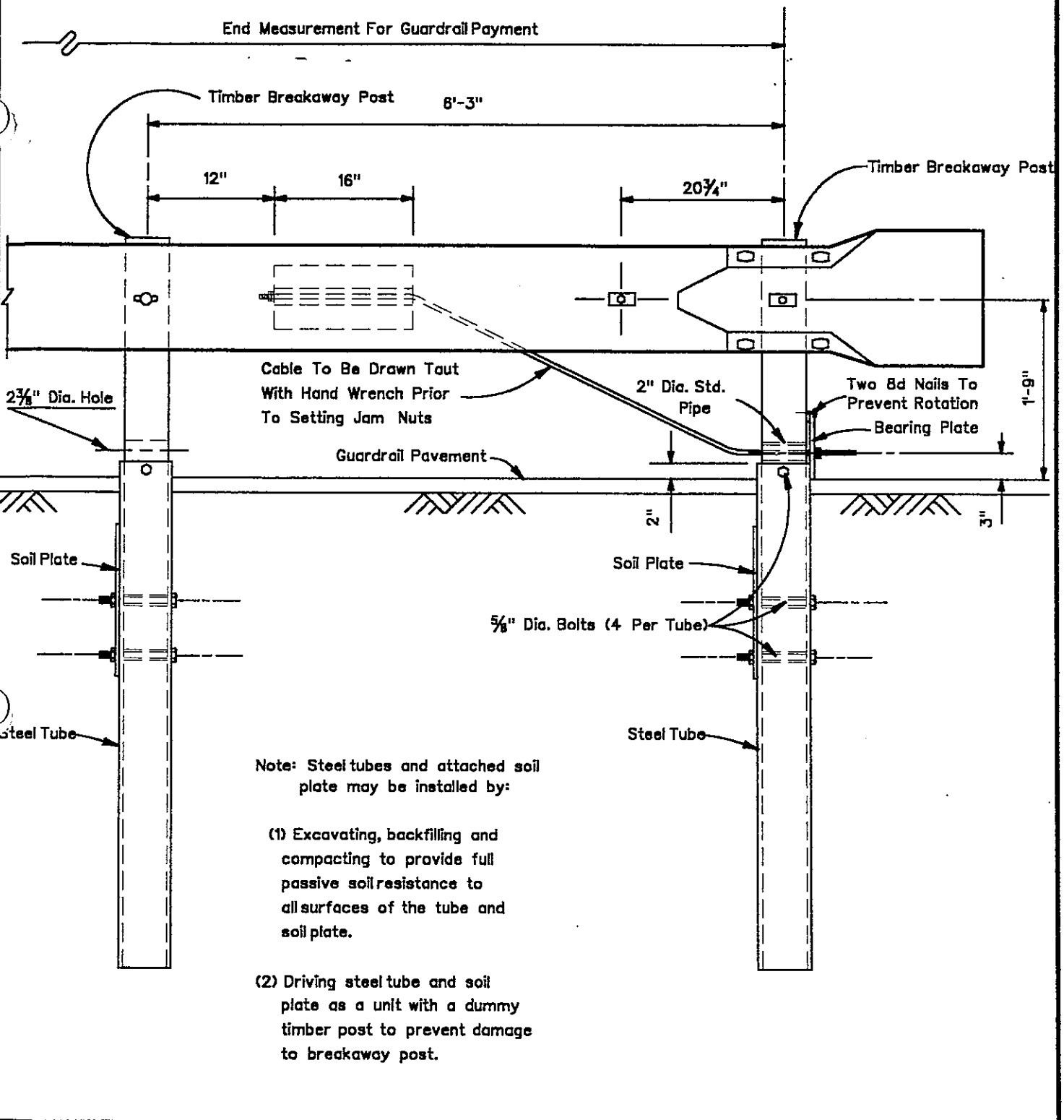
GUARDRAIL FLANGE DETAILS

SCALE: N.T.S. | **ISSUED AUGUST 1998**

REVISIONS

SHEET No.
GR1



Note: Steel tubes and attached soil plate may be installed by:

(1) Excavating, backfilling and compacting to provide full passive soil resistance to all surfaces of the tube and soil plate.

(2) Driving steel tube and soil plate as a unit with a dummy timber post to prevent damage to breakaway post.

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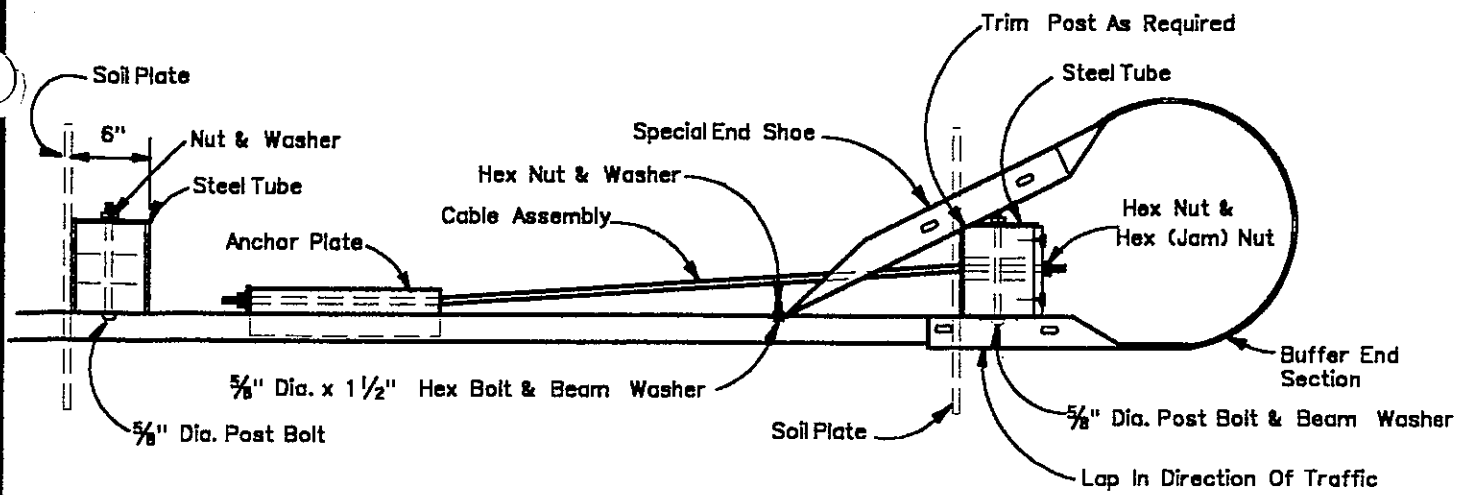
GUARDRAIL FRONT VIEW DETAILS

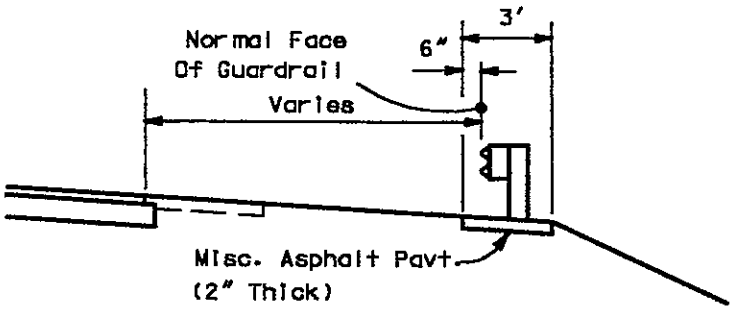
REVISIONS
SHEET No.
GR2

SCALE: N.T.S. | ISSUED AUGUST 1998



GUARDRAIL TOP VIEW

Note: The payment for the items of End Anchorage Assemblies Type IV shall include furnishing and installing the Buffer End Section, Special End Shoe, One-Piece Anchor Plate, Cable Assembly, Pipe Sleeve, Soil Plates, Steel Tubes, Bearing Plate, two Treated Timber Break-Away Posts, and the necessary hardware.



SHOULDER WITH OR WITHOUT 4' PAVEMENT

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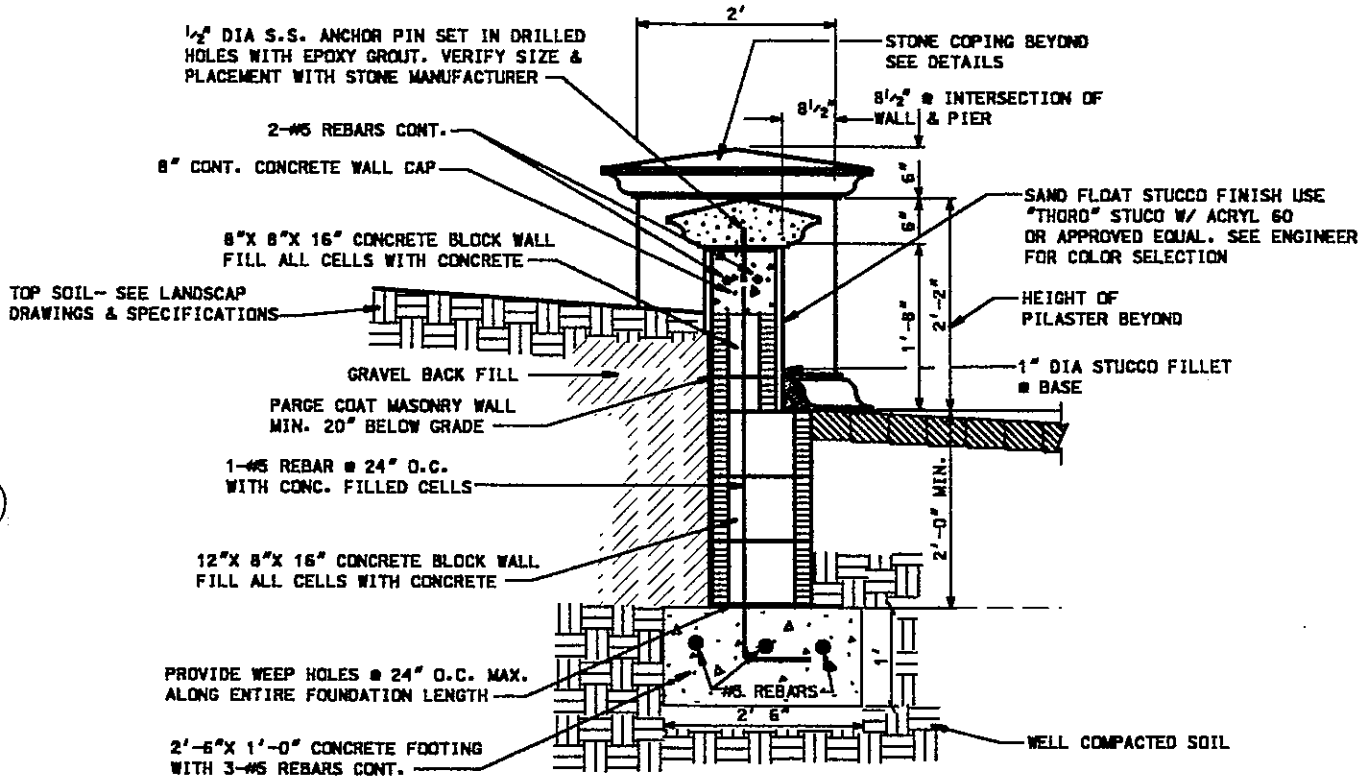
GUARDRAIL DETAILS

REVISIONS
SHEET No.
GR3

SCALE: N.T.S. | **ISSUED AUGUST 1998**



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ROUNDABOUT WALL DETAIL

REVISIONS
SHEET No.
RD1

SCALE: N.T.S. | **ISSUED OCTOBER 2001**