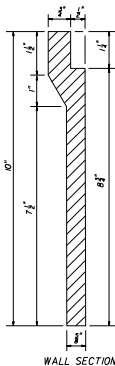
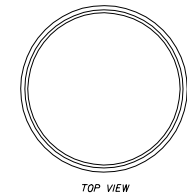


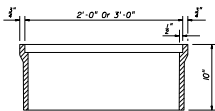
SECTION
TYPE I
For Manholes



WALL SECTION

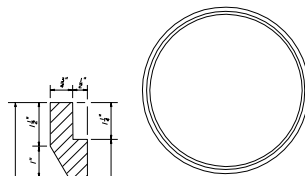


TOP VIEW

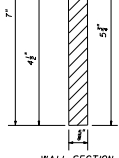


SECTION

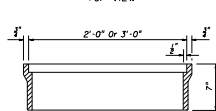
TYPE II
For Curb Inlets Types 1, 2, 3, & 4



TOP VIEW



WALL SECTION

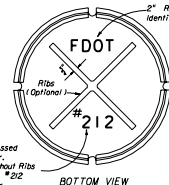


SECTION

TYPE III
For Curb Inlets Types 7 & 8



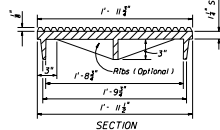
TOP VIEW



BOTTOM VIEW

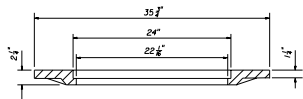
2" Raised Or Depressed Identification Number. Covers With And Without Ribs Shall Bear The Same #212 Identification Number.

1/2" See General Note No. 1

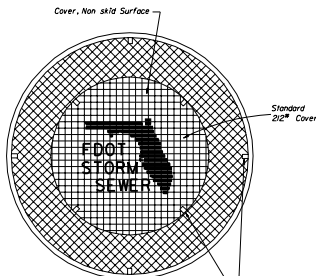


SECTION

COVER FOR ALL FRAMES



2-PIECE COVER



2-PIECE COVER

For Use With Types I, II And III Frames With 3'-0" Opening

Pick-ups

CAST IRON FRAMES

NOTES (FRAMES, AND COVER)

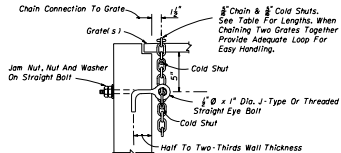
- The 212" cover is to be used for all frames Types I, II, III and the 2-Piece Cover, and is the replacement cover for all previous frames with 1/2" deep seats (Traffic type). The 185 lb. cover (non-traffic type), 1984 Roadway and Traffic Design Standards Index No. 201, is the replacement cover for existing frames with 1/2" deep seats. Installation of frames with 1/2" deep seats is not permitted. The 185 lb. covers are to be placed in existing 1/2" deep seated frames only when specifically called for in the plans or as specifically directed by the Engineer.
- Use the 2'-0" cover, unless the 2-piece cover is called for in the plans.

Frame Type	WEIGHT OF CASTINGS				
	2' OPENING		3' OPENING		
	Frame	Cover (Std.)	Frame	2-Piece Cover	
			Inside	Outside	Total
I	155 Lbs.	190 Lbs.	220 Lbs.	190 Lbs.	410 Lbs.
II	145 Lbs.	190 Lbs.	255 Lbs.	190 Lbs.	445 Lbs.
III	90 Lbs.	190 Lbs.	180 Lbs.	190 Lbs.	370 Lbs.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

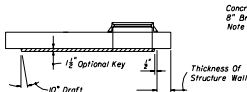
SUPPLEMENTARY DETAILS FOR
MANHOLES AND INLETS

Revised By	Name	Date	Approved By
Drawn By	MS	06/82	1 of 6
Checked By	JM	06/82	00

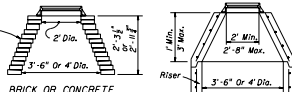


Notes: When Alternate G grate is specified, the chain, bolt, nuts, washer and cold shuts shall be galvanized in accordance with the specifications for the grate.

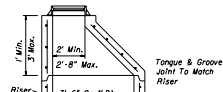
Cost of eye bolt and chain to be included in the contract unit price for inlets.



SECTION
Note: See Slab Designs Index 200.
TYPE 7



PRECAST CONCENTRIC CONE
TYPE 8



PRECAST ECCENTRIC CONE

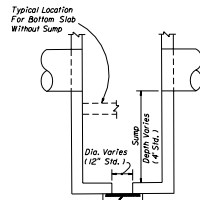
MANHOLE TOPS

NOTES (TOPS)

- Manhole top Type 7 slabs shall be of Class II concrete. Concrete as specified in ASTM C476 may be used for precast units; see General Note No. 3.
- 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.
- Manhole top Type 8 may be of cast-in-place or precast 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.
- Manhole tops shall be secured to structures by optional construction joints as shown on Sheet 3 of 6.
- Substitution of manhole top Type 8 for manhole top Type 7 is allowed provided that minimum dimensions shown above are not reduced.

DESIGN NOTES

- Manhole top Type 8 should be specified in the plans when depths shown above can be maintained.



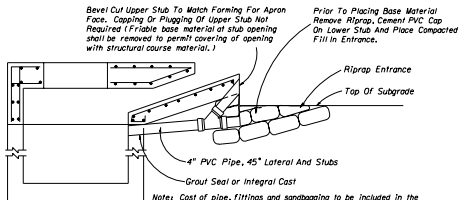
1/2" Galvanized Hardware Cloth
No. 4 Course Aggregate 2' x 2' x 2'
Filter Fabric

NOTE: Sump bottom appropriate for all manhole and inlet types. Cost for sump bottom to be included in the contract unit price for inlet or manhole.

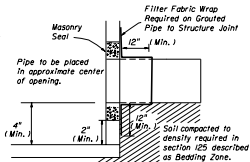
SUMP BOTTOM

EYE BOLT AND CHAIN REQUIREMENTS				
Index Number	Inlet Type	Eye Bolts	Length Of Chain	Handling & Remarks
217	(MB) 1	1	4'-0"	Slide & Spin
	(MB) 2	1	4'-0"	Slide & Spin
	(MB) 3	2	2 @ 4'-0"	Slide & Spin
	(MB) 4	2	2 @ 4'-0"	Slide & Spin
	(MB) 5	2	2 @ 4'-0"	Slide & Spin
218	(BW)	1	3'-8"	Slide Or Slide & Spin
219	(BW, RGD)	1	4'-0"	Slide & Spin
220	S	1	4'-0"	Slide & Spin
221	V	1	4'-0"	Slide & Spin
230	A	1	3'-0"	Slide
231	B	1	5'-0"	Slide & Spin
232	C	1	2'-6"	Slide & Spin
	D	1	2'-6"	Slide & Spin
	E	2	2 @ 2'-6"	Slide & Spin
	H	2	2 @ 2'-6"	Flip Ctr. Grate and Slide & Spin Single Free Grate
	I	1	1'-6"	Ctr. Grate To One End Grate
233	F	1	3'-6"	Flip Or Slide & Spin
	G	1	6'-0"	Slide
234			2'-0"	Lifting Loop
	J	1	4'-0"	Slide & Spin

EYE BOLT AND CHAIN FOR LOCKING GRATES TO INLETS



TEMPORARY DRAINS FOR SUBGRADE AND BASE



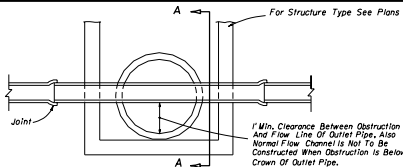
Note: Grout to consist of 3:1 Sand-Cement Mixture or any Class Concrete. FOR ALL STRUCTURES UNLESS EXCLUDED BY SPECIAL DETAIL

ALL PIPE TYPES DRAINAGE STRUCTURE INVERT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

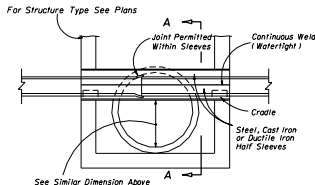
SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS

Designed By	Checked By	Date	Approved By
ALB	DM/TS	00	J. A. McNamee
Drawn by	Checked by	Date	Scale
LWF	DM/TS	00	2 of 6



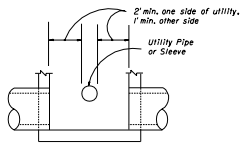
NOTE: No joints allowed inside the Condition I structure.

CONDITION I



NOTE: Only water mains will be allowed to pass through a Condition II structure.

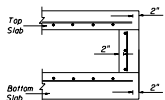
CONDITION II



DESIGNERS NOTE

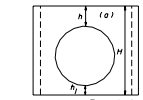
"Sumped" conflict manholes shall not be used unless the system is hydraulically designed to take in account the headloss generated if the sump is completely blocked.

UTILITY PIPES THRU
STORM SEWER STRUCTURES

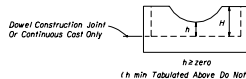


(NOTE: NOT APPLICABLE AROUND MANHOLE AND RISER OPENINGS)

REBAR STRAIGHT END EMBEDMENT
FOR TOP AND BOTTOM SLABS



SEPARATE RISER SEGMENTS WITH CONSTRUCTION JOINTS OTHER THAN DOWEL OPTION

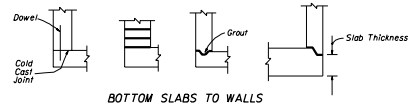


TOP OR BOTTOM SEGMENT FOR DOWEL CONSTRUCTION JOINTS OR CONTINUOUS CAST SEGMENTS
COMPARATIVE SIDE VIEWS

MINIMUM DIMENSIONS FOR BOX AND RISER SEGMENTS

GENERAL NOTES

- For square or rectangular precast drainage structures, either deformed or smooth welded wire fabric may be used provided:
 - The smooth welded wire fabric shall comply with ASTM A85, and deformed welded wire fabric shall comply with ASTM A497.
 - Width and length of the unit is four times the spacing of the cross wires.
 - Wire fabric shall be continuous around the box, spliced at quarter points with overlap of not less than the spacing of the cross wires plus 2".
- For equivalent steel areas for precast drainage structures, see Sheet 4.
- Horizontal steel in the walls of rectangular structures shall be lapped a minimum of 24 bar diameter at corners.
- Welding of splices and laps is permitted. The requirements and restrictions placed on welding in AASHTO M259 shall apply.
- Rebar straight end embedment or peripheral reinforcement may be used in lieu of ACI standard hooks for top and bottom slabs except when hooks are specifically called for in plans or standard drawings.
- Concrete as specified in ASTM C478, (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".
- Maximum opening for pipe shall be the pipe o.d. plus 6". Mortar used to seal the pipe into the opening will be of such a mix that shrinkage will not cause leakage into or out of the structure.
- For pay item purposes, the height used to determine if a drainage structure is less than or greater than 10 feet shall be computed using (a) the elevation of the top of the manhole lid, (b) the grate elevation or the theoretical gutter grade elevation of an inlet, or (c) the outside top elevation of a junction box less the flow line elevation of the lowest pipe or top of sump floor.



- 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.
- All grouted joints are to have a maximum thickness of 1".
- Keyways are to be a minimum of 1 1/2" deep.
- Joint dowels are to be #4 bars, 12" long with a minimum of 6 bars per joint approximately evenly spaced for circular structures or 2 bars per side at approximate quarter points for rectangular. Bars are to be placed approximately 6" into fresh concrete leaving the remainder to extend into the secondary cast. Welded wire fabric may be substituted for the dowels bar in accordance with the equivalent steel area table on Index 201, Sheet 4.
- Minimum cover on reinforcing bars is 1 1/2".
- 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.
- Approved product inserts may be used in lieu of dowel embedment.

OPTIONAL CONSTRUCTION JOINTS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

SUPPLEMENTARY DETAILS FOR
MANHOLES AND INLETS

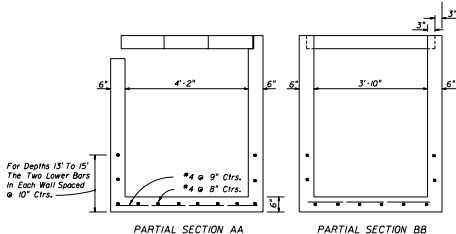
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MLB	06/75	J. A. McNamee
DRAWN BY	DATE	SCALE
LMF	06/75	00
CHECKED BY	DATE	NO. OF SHEETS
		3 OF 6

NOTES FOR THIN-WALL PRECAST OPTIONS

- The details on Sheets 4, 5 & 6 are optional for precast inlet construction up to depths of 15'. These inlets can be used with All "B" Bottoms, Index 200. Cast-in-place construction must adhere to the details contained on the referenced indexes.
- Only the dimensions and reinforcement changes or other modifications are indicated. For all other dimensions and details, the referenced index drawings apply. When these precast units are used in conjunction with All "B" Structure Bottoms, Index 200, the interior dimensions of an All "B" Bottom can be adjusted to reflect these inlet interior dimensions.
- Concrete which meets the requirements of ASTM C478 shall be used for structures constructed to these details.
- Reinforcement can be either deformed bar reinforcement or welded wire fabric. Bar reinforcement other than 40 ksi may be used, however only two grades are recognized; Grade 40 and Grade 60. Welded wire fabric, including deformed welded wire fabric, will be recognized as having a design strength of 65 ksi. The area of reinforcement required may be reduced in accordance with the Equivalent Steel Area Table provided. For bars and spacings not given, the steel area required can be determined by the following equations:

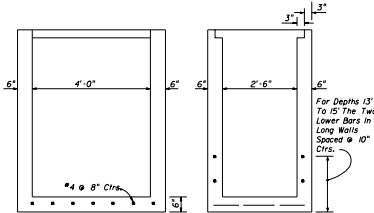
$$\text{Grade 60 Steel Area} = A_s \left(\frac{60}{40} \right)^2 \times A_s \text{ 40}$$

$$\text{Welded Wire Fabric Steel Area} = A_s \left(\frac{65}{40} \right)^2 \times A_s \text{ 40}$$



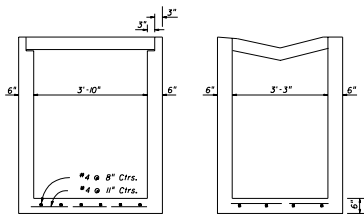
PARTIAL SECTION AA PARTIAL SECTION BB

DITCH BOTTOM INLET TYPE B
INDEX 231



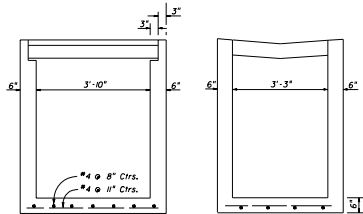
PARTIAL SECTION AA PARTIAL SECTION BB

DITCH BOTTOM INLET TYPE F
INDEX 233



PARTIAL SECTION AA PARTIAL SECTION BB

GUTTER INLET TYPE S
INDEX 220



PARTIAL SECTION AA PARTIAL SECTION BB

GUTTER INLET TYPE V
AND DITCH BOTTOM INLET TYPE J
INDEX 221 & 234

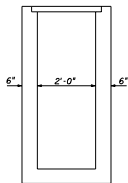
In no case will fabric with wires smaller than W3.1 or spacings greater than 8" be permitted. Bar reinforcement shall show the minimum yield designation grade mark of either the number 60 or one (1) grade mark line to be acceptable of the higher value. Maximum bar spacing shall not be greater than two (2) times the slab thickness with a maximum spacing of 12" or three (3) times the wall thickness, with a maximum spacing of 18".

EQUIVALENT STEEL AREA TABLE					
GRADE 40 REINFORCING BAR	EQUIVALENT GRADE 60 REINFORCING BAR	EQUIVALENT 65 KSI WELDED WIRE FABRIC			
Bar Size & Spacing	Bar Size & Spacing	Min. Steel Area	Style Designation	Min. Steel Area	
#4 @ 12" CCEW	.20	#3 @ 9 1/2" CCEW	.1333	3" x 3" - W3.1 x W3.1 or 4" x 4" - W4.5 x W4.5 or 6" x 6" - W6.5 x W6.5	.1230
#4 @ 9" CCEW	0.267	#4 @ 13 1/2" CCEW or #3 @ 7" CCEW	.1778	3" x 3" - W4.5 x W4.5 or 4" x 4" - W5.5 x W5.5 or 6" x 6" - W8.5 x W8.5	.1641
#6 @ 6" CCEW	0.88	#5 @ 6" CCEW or #6 @ 9" CCEW	.5867	4" x 4" - W20 x W20 or 6" x 6" - W30 x W30	.5415
#7 @ 6" CCEW	1.20	#6 @ 6 1/2" CCEW or #7 @ 9" CCEW	.80	4" x 4" - W26 x W26	.7385

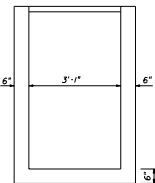
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

SUPPLEMENTARY DETAILS FOR
MANHOLES AND INLETS

Drawn By:	CHKD BY:	DATE:	APPROVED BY:
SPR/2006	SPR	09/06	<i>A. A. Williams</i>
Drawn By:	CHKD BY:	DATE:	APPROVED BY:
SPR/2006	SPR	09/06	<i>A. A. Williams</i>
Checked By:	DATE:	SHEET NO.	TOTAL SHEETS
SPR	09/06	00	6

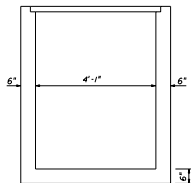


PARTIAL SECTION BB

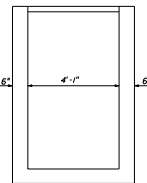


PARTIAL SECTION CC

DITCH BOTTOM INLET C
INDEX 232

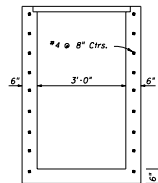


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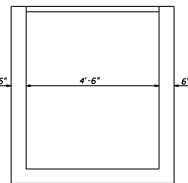


PARTIAL SECTION CC

DITCH BOTTOM INLET D
INDEX 232

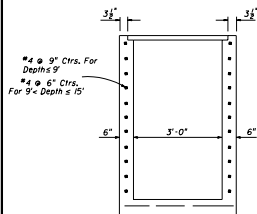


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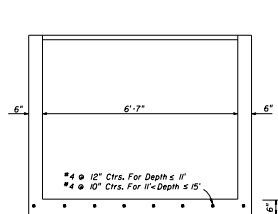


PARTIAL SECTION CC

DITCH BOTTOM INLET E
INDEX 232

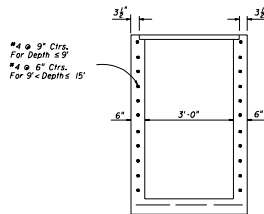


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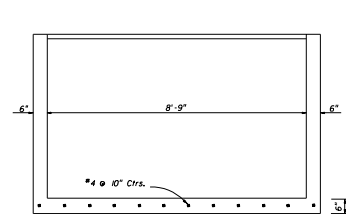


PARTIAL SECTION CC

DITCH BOTTOM INLET H (3-GRATE)
INDEX 232



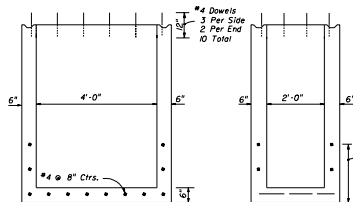
PARTIAL SECTION BB



PARTIAL SECTION CC

DITCH BOTTOM INLET H (4-GRATE)
INDEX 232

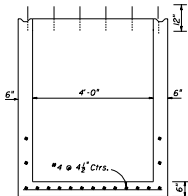
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD DESIGN			
SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS			
Designed By	Checked	Approved By	
gph/020	09/06	<i>A. A. McLean</i>	STATE ENGINEER
Drawn By	Checked	Scale	Sheet No.
gph/020	09/06	00	201
Checked By	ESB	09/06	00



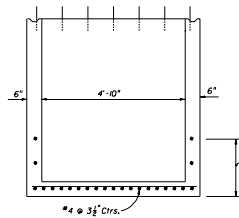
PARTIAL SECTION AA

PARTIAL SECTION BB

MEDIAN BARRIER INLET TYPES 1 & 2



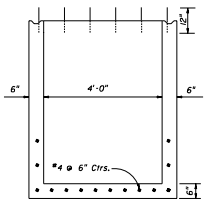
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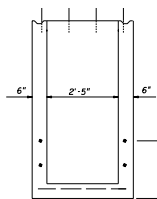
PARTIAL SECTION BB

MEDIAN BARRIER INLET TYPES 3, 4, & 5

INDEX 217



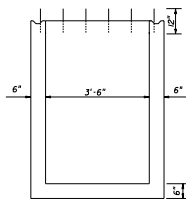
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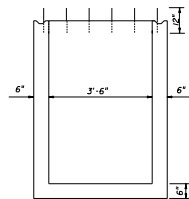
PARTIAL SECTION BB

BARRIER WALL (RIGID) (C & G)

INDEX 219



PARTIAL SECTION AA



PARTIAL SECTION BB

STRUCTURE BOTTOM TYPE P

INDEX 200

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD DESIGN			
SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS			
Designed By	Name	Date	Approved By
Drawn By			<i>J. A. McNamee</i>
Checked By			State Drainage Engineer
	Revisions	Sheet No.	Index No.
		00	6 of 6
			201