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Listed below are all the standard plans which are currently in use by the Florida Department of Transportation, Design Section.

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DATE       September 12, 1975
TO          All Holders of Standard Index Book
FROM        E. H. Hart, Deputy Design Engineer (Roadways)
COPIES TO   
SUBJECT     New Standard Index Book

We have completed the new Road Design Standards Index Books and under cover of this memo are making distribution to all holders of our current standards.

These new indices are to be incorporated into all contract plans which are scheduled for the January 1976 letting or later. They are to be listed on the key sheet in the same order as shown on the "Table of Contents."

The two most obvious changes are the conversion of all the indices to the new alpha-numeric numbering system and the division into five major categories: Barriers, Drainage, General, Fences and Pavement. One of these categories, drainage, was further broken down into three groups: (1) Miscellaneous, (2) Inlets, Manholes and Junction Boxes, and (3) Endwalls. We have also made a number of long needed revisions and up-dating. Some of the drainage structures will require new bid item numbers which will be forwarded to you by October 1, 1975.

Please take time to study these new books and become familiar with the changes and the new numbering system.

All questions and/or comments should be directed to:

Mr. L. M. Filsinger
Road Design Section
Mail Sta. 32
Phone: 488-3851 (Suncom 278-3851).

EHH:j1
in direction of traffic.

BUFFER END SECTION

to be used with double faced rail.

END SECTION (ROUNDED)
MEMORANDUM
State of Florida Department of Transportation

DATE       June 20, 1977

TO          All Holders of Standard Index Books

FROM        E. H. Hart, Deputy Design Engineer (Roadways)

COPIES TO   Standard Index Drawings

SUBJECT     The following index drawings have been revised:

    BMB-01-1 (Sheet 1 of 3); General Note No. 1 was changed to include reflective barrier marker in the cost of the concrete barrier wall. Sheets 2 and 3 were not changed.

    DMD-01-1 Supersedes DMD-01; Sheet 2 has been revised to show bituminous coating required at the junction of dissimilar types of pipe. This is shown on "Detail of Concrete Jacket" at the bottom center of the sheet. Sheets 1 and 3 were not changed.

    GRR-01 (Sheet 6 of 6); This is a new index showing a new type of approved railroad crossing. We have included sheets 1 through 5 of 6 which show the change in those drawing numbers.

    GSE-02-1 Supersedes GSE-02: On sheet 1 we added a note under the superelevation chart. On sheet 2 we added the superelevation chart for e Max. 0.05.

Please destroy all copies of these indices in your files and replace with the revised index drawings.

EHH/LMF/db

LMF
DATE       October 26, 1976

TO         ALL HOLDERS OF STANDARD INDEX BOOKS

FROM       E. H. Hart, Deputy Design Engineer (Roadways)

COPIES TO  Mr. P. E. Carpenter

SUBJECT    Standard Index No. BMB-01-1

The subject index drawing has been revised as follows:

Sheet No. 1

1. Removed the detail showing modified footing for grassed medians.

2. Changed depth of barrier base from 8" to 1".

3. Added General Notes Nos. 5, 6, 7, & 8.

4. If the temporary terminal shown in Detail II is within 30 feet of the edge of pavement the terminal will not be used and an impact attenuator will be substituted.

5. Detail III will not be routinely used. Some special cases may justify this detail, however, approval of this office will be required for its use. An impact attenuator should be substituted except in rare cases.

Sheet No. 2

1. Changed depth of barrier base from 8" to 1".

2. Added Details B, C. & D.

3. Changed taper on Detail I from 10:1 to 20:1.

Sheet No. 3

1. Changed depth of barrier base from 8" to 1".

2. Revised inlet throat construction.

Please destroy the copies of Index No. BMB-01 in your files and replace with the revised drawings.

EHH/LMF/h1
MEMORANDUM
State of Florida Department of Transportation

DATE       June 20, 1977
TO          All Holders of Standard Index Books
FROM        E. H. Hart, Deputy Design Engineer (Roadways)
COPIES TO   

SUBJECT    Standard Index Drawings

The following index drawings have been revised:

BMB-01-1 (Sheet 1 of 3); General Note No. 1 was changed to include reflective barrier marker in the cost of the concrete barrier wall. Sheets 2 and 3 were not changed.

DMD-01-1 Supersedes DMD-01; Sheet 2 has been revised to show bituminous coating required at the junction of dissimilar types of pipe. This is shown on "Detail of Concrete Jacket" at the bottom center of the sheet. Sheets 1 and 3 were not changed.

GRR-01 (Sheet 6 of 6); This is a new index showing a new type of approved railroad crossing. We have included sheets 1 through 5 of 6 which show the change in those drawing numbers.

GSE-02-1 Supersedes GSE-02: On sheet 1 we added a note under the superelevation chart. On sheet 2 we added the superelevation chart for $e_{\text{max}}^\circ 0.05$.

Please destroy all copies of these indices in your files and replace with the revised index drawings.

EHH/LMF/db

LMF
SECTION THRU RECESSED "V" GROOVE TO FORM INSERSED FIGURES

The number is to be centered in the center of the top surface of all BRIDGE CULVERT headwalls.

Black Plastic Figures 3" in height as approved by the Engineer may be used to label figures formed by "V" Grooves.

"V" Grooves shall be formed by prefomed Figures.

TOP VIEW OF HEADWALL
SHOWING BRIDGE CULVERT NUMBER LOCATION
For Bridge Number see Key Map
SIDE DRAIN PIPE GRATE DETAILS FOR MITERED END SECTIONS

GENERAL NOTES:
(Mitered End Section)

1. The cost of all pipes, pipe and foundations, wire mesh, anchors & concrete are to be included in the unit price for mitered end sections, etc.
2. Refer to dimension and grate element tables for endwall dimensions, pipe grate sizes and related information.
3. Except when called for in the plans, pipe grates will not generally be used on side drain mitered end sections on pipe sizes 24" or smaller. All side drain mitered end sections on pipe 30" or greater shall be grooved.
4. Pipe grates are to be fabricated from galvanized material. All metal surfaces exposed during fabrication shall be repaired as specified in Section 571.14 Standard Specifications and/or supplements indicated in plans. Those pipe grates to be subjected to salt water or highly corrosive environment shall be hot-dipped galvanized after fabrication in accordance with ASTM A-123.
5. Suitable approved fastenings for the low or first pipe grate shall be 7/8" anchors that will provide a working load in tension of 2,000 lbs. and shear of 3,000 lbs. with this pipe grate being schedule 80 ASTM A-690 extra strong weight pipe. The same fastenings can be used on the remaining pipe grates with the pipe being either ASTM A-500 or A-53, grade B.
6. In critical hydraulic locations, grates shall not be used unless a potential debris transport, which may impair the hydraulic function of the structure, has been evaluated and appropriate adjustments made. Broken grate in excess of 3% or pipe with less than 1.5 of cover and grates in excess of 1% will require such an evaluation.
7. Multiple tapered tongue and groove concrete pipe splices used in the assembly of concrete pipe mitered and sections should be of relatively uniform pipe lengths for the purpose of avoiding short splices.
8. When corrugated metal pipe is used, that portion of the corrugated metal pipe in direct contact with the concrete slab shall be bithuminous coated prior to casting the concrete slab.
9. Either alternate corrugated metal or concrete mitered and section may be used with any alternate type side drain pipe except as follows: a. Existing or proposed corrugated metal pipe shall be extended with the same type of metal pipe or concrete mitered and section. b. The use of corrugated pipe mitered and sections shall not be permitted in those locations where the use of side drain pipe mitered and sections is not permitted.
10. When dissimilar pipe end for mitered end sections are used, the use of a concrete collar is required, see Standard Index DMD-01 for details. Bithuminous coating is required on all metal pipe within the collared area.
11. Alternate methods of end treatment may be substituted in lieu of the mitered and sections shown providing prior approval by shop drawing is obtained from the Engineer of Drainage. Filled End Sections may not be substituted for side drain mitered sections.
SEC. B-B
(May drain from any point as established by the Engineer)

GENERAL NOTES: These details are to apply to projects which provide for the conversion of 2-lane sections to 4-lane divided highwya roadways and for superimposed sections of new 4-lane divided highwya. Location of low point of points in gutters is to be set by the Engineer during construction and final location will be established in sections. The number of flumes is to be maintained at a minimum. No more than two flumes in any 100 feet of pavement. Location shown is drawing only. Cost of flumes to be included in the contract price for median curb or curb and gutter.
DATE February 18, 1976

TO District Design Engineers & Consultants

FROM E. H. Hart, Deputy Design Engineer (Roadways)

SUBJECT Standard Index Nos. DCI-01 and DCI-02

Index No. DCI-01

The following general note has been added:

8. For Inlet Bottoms see Index DSB-01.

Index No. DCI-02

Note 5 under general notes revised to read as shown below and note 7 added.

5. See Index DSD-01 for means of locking grate or cover to inlet and for other supplemental details.

7. For Inlet Bottoms see Index DSB-01

It will not be necessary to show each of the three Index numbers at each inlet on the Drainage Structure Sheets. Shown only the Index Number for the top portion of inlets. All three Index numbers must be shown on the key sheet.

No distribution of this revision to Index Nos. DCI-01 and DCI-02 will be made at this time.

EHH:j1
GENERAL NOTES
1. The finished grade and slope of the inlet face are to conform with the finished crown line and grade of the proposed roadway.
2. Any slopes are to be constructed or a curve, refer to the plans in accordance with the nearest section as necessary. Modify the inlet details as necessary.
3. All steel bars throughout the design include masonry shown. All steel bars shall be either cast-in-place or precast concrete. Inlet throats shall be either cast-in-place or precast concrete.
4. All steel bars in throat portions of inlets Types 1, 2, 3 & 4 may be used with Type I cured and Type II. Grade Type II materials are recommended in all cases.
5. Only round concrete support post will be acceptable.

SECTION A-A
INLET THROAT TYPE 1
INLET THROAT TYPE 2
INLET THROAT TYPE 3
INLET THROAT TYPE 4

SECTION 8-B

TABLE OF MATERIAL DIMENSIONS

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FLORIDA DEPARTMENT OF TRANSPORTATION
Road Design Section

CURB INLET-TYPES 1, 2, 3 & 4

REVISIONS
Date/Description

INITIALS/DATES

RECOMMENDED BY: PAMSMO

DESIGN ENGINEER

CHECKED BY:

DRAWING NO:

INDEX NO:

1 of 1

528-05

GEN. ENGINEER
DATE January 3, 1976

TO ALL HOLDERS OF STANDARD INDEX BOOKS

FROM E. H. Hart, Deputy Design Engineer (Roadways)

COPIES TO

SUBJECT STANDARD INDEX DRAWINGS

The following index drawings have been revised:

DCI-02-2 supersedes DCI-02-1; Welding requirements on the solid steel cover were revised and a sentence was added to General Note No. 10.

DSE-02-1 supersedes DSE-02; Dimensions and Quantities for 84" pipe endwall were added.

Please destroy the copies of DCI-02-1 and DSE-02 in your files and add the new index drawings.

LMF

EHH:LMF:j1
DATE       July 19, 1976
TO          All Holders of Standard Index Books
FROM        E. H. Hart, Deputy Design Engineer (Roadways)

SUBJECT    Standard Index No. DCI-02-1

This index has been revised to remove the reticuline bar grating and provide the use of the solid steel cover.

Please destroy the copy of Index No. DCI-02 in your files and replace with this new drawing.

EHH/LMF/j1
DETAILS OF TYPE "I" INLETS FOR MEDIAN WIDER THAN FOUR FEET

SECTION C-C

REINFORCING STEEL DIAGRAM
TOP SLAB OF INLET

GENERAL NOTES

DESIGN SPECIFICATIONS A.A.S.H.O. 1973

CHANGE IN EXPOSED EDGES TO BE CHAMFERED 1/8" UNLESS OTHERWISE SHOWN.

CONCRETE CURB FOR SHAPE OF CONCRETE CURB SEE INDEX NO. FCS-01

STEEL NO. 4 REINFORCING BARS 3" CENTERS UNLESS OTHERWISE NOTED. 1/4" CLEARANCE TO MOLD FACE.

FOR SUPPLEMENTAL NOTE IA CLEARANCE TO MOLD FACE.

THIS INLET WAS DESIGNED FOR USE WITH TYPE A & B MEDIAN CURB OR TYPE 1 & 2 TRAFFIC SEPARATOR. LOCATE OUTSIDE OF PEDESTRIAN CROSS TRAFFIC PATH.

DRAWN APPROVED 1-5-76

FLORIDA DEPARTMENT OF TRANSPORTATION
Road Design Section

CURB INLET-TYPE "I"

REVISIONS

INITIAL DATES

DEPARTMENT OF TRANSPORTATION
Road Design Section

DRAFT

INITIALS

Drawn by

Reviewed by

Approved by

DEPARTMENT OF TRANSPORTATION
Road Design Section

DRAWING NO. 7/10-4

1 OF 1
DCI-03
**TYPICAL DITCH BLOCK**

For all inlets except FIP inlets.

**SECTION 'D-D'**

**PREDOMINATE FLOW**

**SECTION 'C-C'**

3" Con. Ditch Pavement

3" Omn. Ditch Pavement

**SECTION 'A-A'**

Ditch bottom inlet - Type 'A'

Ditch bottom inlet - Type 'A' - general notes

1. Cost of Ditch Pavement to be included in cost of inlets.

2. Reinforcing - #4 A bars at each 1/2" center both ways

3. A Inlet to be used only where flow thru grate is less than 2" cfs.

4. Where material unsatisfactory for foundation is encountered at F.I. E.L., cast floor and carry walls down to satisfactory foundation. Backfill to F.I. with clean sand.

5. Direction of 1/2" x 3 1/2" bars to be in same direction as predominant flow.

6. Remove exposed edges (5/16" Chamfer)

7. Cut and bend bars out of way of Pipe when necessary; Bars to clear Pipe by 1/2".

8. For supplemental detail, see Index (D22-01).

9. Recommended maximum pipe sizes, are for concrete pipe. Check larger sizes for fit. For larger pipes, Type 'D' inlet or 'J-A' inlet (see detail above) should be considered.

10. This inlet was designed for ditches, medians, or other areas subject to heavy wheel loads where debris may be a problem. It is not for use in areas subject to pedestrian and/or bicycle traffic.

**SECTION 'E-E'**

**DETAIL 4" ZEE**

**GENERAL NOTES**

- For sketch of 2", bottom, see Index CAP-01 (An "A" angle).
- "A" to be oriented as Required by User's O.

**3/4" mesh permitted (at the option of the manufacturer)**

- Bars 1/2" x 3 1/2" x 1/8" x 1/8" Loos as shown

**PLAN**

Recommended, Maximum Pipe Sizes:

1/4" Side = 2" Pipe

3/4" Side = 24" Pipe

- See note "B"
GENERAL NOTES:

1. COST OF DITCH PAVING TO BE INCLUDED IN COST OF INLET.
2. REINFORCING - #4 BARS AT 12" CENTERS BOTH WAYS - 2" CLEARANCE TO INSIDE FACE.
3. FOR SUPPLEMENTARY DETAILS SEE INDEX NO. 00-07.
4. CUT AND BEND BARS OUT OF WAY OF PIPE WHEN NECESSARY. BARS TO CLEAR PIPE BY 1.0" MINIMUM.
5. FOUNDATION MUST BE SATISFACTORY FOR FOUNDATION IS ENCOUNTERED AT FL. EL. ONLY ELEVATION AND FILL HEAVILY DOWNS TO SATISFACTORY FOUNDATION. BACKFILL TO FL. WITH CLEAR SAND.
6. THIS INLET WAS DESIGNED FOR DITCHES, MEADOWS, OR OTHER AREAS SUBJECT TO HEAVY WEIGHT LOADS WHERE SEEN BY 10.0" CEMENT POUR NECESSARY THAN 1.0" TURF DRAINAGE. IT IS NOT FOR USE IN AREAS SUBJECT TO PEDESTRIAN AND/OR CYCLE TRAFFIC.
7. RECOMMEND 5/8" PIPE AS MAXIMUM SIZE FOR CONCRETE PIPE. FOR LARGER PIPE, 7/8" INLET SHOULD BE CONSIDERED.
DDI-05 - This is a new index. The use this inlet was designed for is shown in General Note No. 9.

Please destroy the copies of FTA-01-a and FTB-01-1 in your files and add all the new index drawings.

EHH:LMF:11

LMF
GENERAL NOTES:
1. Coat of Ditch Paving to be included in cost of Inlet.
2. Reinforcing - No. 4 bars of 1/2" diameter in high walls with 2" clearance to inside edge.
3. Where material unsatisfactory for foundations is encountered, fill elevation omit floor and bury wells down to satisfactory foundation, backfill in F.L. with clean sand.
4. Direction of 1/2" x 5" Main bane to be in same direction as predominant flow.
5. Chamfered edges (for Chamfer).
6. Cut and bend bars out of way of pipe when necessary.
7. For supplemental details, see Index (D-12-01).
8. Recommended maximum pipe sizes are for 10" inlet pipe. Check larger sizes for fit. For larger sizes (10'-0") steel should be considered (see detail sheets).
9. This inlet was designed for culverts, channels or other areas subject to heavy wheel loads where debris may be a problem and pedestrian traffic is anticipated. It is not for use in areas subject to bicycle traffic.
GUTTER INLET TYPE V
FOR PIPES 24" DIAM. AND SMALLER

NOTE: Cut and bend bars out of way of pipe when necessary. Bars to clear Pipe 12°.

GUTTER INLET TYPE V
FOR PIPES 30" DIAM. AND LARGER

GENERAL NOTES:
1. All exposed edges and corners shall be rounded to 1/4" radius.
2. For supplementary details see file no. 000-01.
3. This item was designed for unclipped access, or off-street access subject to heavy vehicular loads.
4. Item shall be fabricated using 304 stainless steel, production angular simple to fit.

STEEL DETAIL: MANUFACTURED BY BUDNIT, FLORIDA STEEL, INC.
(CALC. REINFORCEMENT, SCHEDULE FOR FORGED.)

FOR DETAILS SEE SHEET No. 056.

PLATE NO. 5-1-75

FLORIDA DEPARTMENT OF TRANSPORTATION
ROADWAY PLANS SECTION

GUTTER INLET TYPE V
FOR PIPES 24" DIAM. AND SMALLER

PL8-08-000

PL8-09-000

PL8-09-010

PL8-09-020

PL8-09-030
DETAIL OF EYE BOLT AND CHAIN OR LOCKING GRATES TO INLETS
Note: One required per inlet grate.

DETAIL OF LADDER BARS
Use for box heights over 10'-0"

ALTERNATE LOCATION OF PIPE IN STRUCTURE WHEN PREFABRICATED FLOOR SLAB IS USED
COMPLETE FLOW CHANNEL IS REQUIRED WHEN THERE IS FLOW THROUGH THE STRUCTURE
DETAIL SHOWING PIPE CONSTRUCTED THRU STORM SEWER STRUCTURE

NOTES:
1. Any type joint may be used in conjunction with any other type joint.
2. All grouted joints are to have a minimum thickness of 1".
3. Keyways are to be a minimum of 1/4" deep.
4. Jointowan are to be @ 4" base, 12" long with a minimum of 6 bases per joint evenly spaced.
5. Minimum cover on reinforcing bars is 1.5".

OPTIONAL CONSTRUCTION JOINTS

DITCH PAVEMENT PAD FOR STANDARD DITCH BOTTOM INLETS

ALTERNATE A

In order to facilitate drainage during construction, the section at the base ("A") may be eliminated. The invert of the pipe should be placed after the base and surface courses are in place.

ALTERNATE B

(Cost to be included in the unit price bid for Inlets.)

DETAIL OF TEMPORARY SUBGRADE DRAINS

(Optional with Contractor)

NOTE:
For all manholes, inlet and junction box structures, the inlet used to enter the pipe into the works or the pipe connecting to any of the above defined structures will not cause leakage into or out of any unit. Minimum flowage for pipe will be min. 1/8".

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROADWAY PLANS SECTION
SUPPLEMENTARY DETAILS FOR MANHOLE B INLET STRUCTURES
SAFETY MODIFICATION FOR
OPENING IN BOX CULVERTS

DETAIL OF MEDIAN ENDWALL
(MODIFICATION OF DETAILS SHOWN ON INDEX DOCS.)
Scale: 1/4" = 1'
Class I Concrete 1:37 Cu Yds. Coat of Steel to be included in price for Concrete

MEDIAN INLET DESIGN AS SHOWN ON THE PLANS

PROPOSED INLET MODIFICATION WHERE GRADE WAS SET 0.6 ABOVE THE DITCH

PROPOSED DITCH MODIFICATIONS WHERE GRADE WAS SET 0.3 ABOVE DITCH ELEV.

NOTE: These modifications will be made only on Projects now under construction.
Do not use this plan for Projects being designed.
SECTION A-A

PLAN

Note: This modification will be required where Type 2 Curb & Gutter is constructed adjacent to the inlet.

SECTION B-B
TYPE 2 CURB AND GUTTER

SAFETY MODIFICATION FOR TYPE D-5 INLET (FROM DETAILS ON INDEX DECO2)
October 5, 1977

All Holders of Standard Index Books

E. H. Hart, Deputy Design Engineer (Rdwys.)

Standard Index Drawings

The following index drawings have been revised:

DCE-01-1 supersedes DCE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

DSE-01-1 supersedes DSE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

DCE-04-1 supersedes DCE-04. This index has been redrawn. The general notes were revised, design notes were added, a detail for a reinforced concrete jacket was added and sheet 2 which showed the grate details and requirements has been deleted.

PEJ-02-1 supersedes PEJ-02. This index was revised to show the joint extended across the shoulder pavement when the shoulder pavement is constructed with either concrete or econcrete. Details and notes were added or deleted as needed for this revision.

All projects whose scheduled letting will not be delayed should be reviewed for the utilization of these revised indices.

Please destroy all copies of these indices in your files and replace with the revised index drawings.
### Table of Dimensions and Estimated Quantities

#### Pipe Culvert Endwalls with U-Type Wings

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<tr>
<th>Opening</th>
<th>Unit</th>
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#### Concrete Endwall with 45° Wings for Pipe Culverts

### Table of Dimensions and Estimated Quantities

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Notes:

- Chamber all exposed edges 4/16.
- Provide good gradation near gage using concrete, if natural conditions are very bad, where tie rods are required the cost of same shall be included in the unit price bid for concrete.

---

**Florida Department of Transportation**

**Standard Endwalls for Pipe Culverts**

**Standard Details**

**Sheet Date**

**Description**

**Supervisor**

**Prepared By**

**Drawn By**

**Reviewed By**

**Checked By**

**Printed By**

**Scale**

**1/4" = 1'-0"**

---

**Contact Information**

**Address**

**Phone**

**Fax**

**Email**
MOUNTING DETAILS FOR STEEL GRATING

STEEL GRATING USE CRITERIA

1. GRATED HEADWALL AND/OR ENDWALL IS TO BE USED IN PIPE CULVERTS WHEN:
   - BLANKETED CULVERT SECURITY AREA IS DEPLETED BY ANY OF THE FOLLOWING CONDITIONS:
   - GRADE AREA TO CULVERT CONSISTS OF MIDDING OR UNGRADED AREAS OR AREAS WHERE DEBRIS OR GRATING MIGHT BE NEGLIGIBLE.
   - LENGTH TO CULVERT IS BY Чеост MILL OR IN ANY DEFICIENT CHANNELS MIGHT BE OF A WEAKER MATERIAL.
   - BEING TO CULVERT IN APPRAISE EXCEPT ON AN UNIVERSITY BASALT (O TO 3 YARD, FRICTION) FOR EXAMPLE A GRATING BASE ON FAY SHOVEL TERMINAL HAVING NARROWLY LAYED UNDERGROUND WATER TABLE.
   - LARGER WATER CYLINDER MATCHING WITH RESIDENTIAL BATHROOMS MIGHT NOT SERIOUSLY AFFECT ROADWAY ENHANCEMENT, TIER OPERATION OR URBAN PROJECT.

2. STEEL GRATING TO BE USED ONLY WHERE CALLED FOR IN PLAIN AND
   - DEBRIS HEADWALL AND/OR ENDWALL HAVING EITHER #11 OR #11 BARS OF AREA.

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE GRATE

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GENERAL NOTES:
1. COST OF GRATING TO BE PAID FOR AS A FOREMAN GAGE PER FOOT.
2. COST OF GAINED BOLT AND NUTS TO BE INCLUDED IN BILL PRICE FOR ENDSHALL GATE.
3. ALL ANGLE, CHANNEL, AND BAR STEEL TO BE A.5 TON A-550 WEATHERING STEEL EXCEPT AS NOTED IN SPECIFICATIONS.
4. WHEN SCRAPING IS NOT PERMITTED TO LAST WAVE FOR ALL ANGLE, CHANNEL, AND BAR STEEL TO BE A.5 TON A-50 GRADE 50, GAINED WEATHERING.
5. CHANNEL SECTION #2 X 54 MAY BE USED AS AN ALTERNATE FOR #3 X 6.0 CHANNEL.

SIGNED APPROVED 8-30-75

REQUIREMENTS OF TRANSPORTATION BOARD OF PUBLIC UTILITY PLAN SECTION

U-ENDWALLS FOR PIPE CULVERTS

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MEMORANDUM
State of Florida Department of Transportation

DATE October 5, 1977

TO All Holders of Standard Index Books

FROM E. H. Hart, Deputy Design Engineer (Rdws.)

COPIES TO

SUBJECT Standard Index Drawings

The following index drawings have been revised:

DCE-01-1 supersedes DCE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

DSE-01-1 supersedes DSE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

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All projects whose scheduled letting will not be delayed should be reviewed for the utilization of these revised indices.

Please destroy all copies of these indices in your files and replace with the revised index drawings.
FLARED END SECTION

DIA. T REINF. (CONC) BELL (CONC) A B C D E P R1 R2 FLAT WEIGHT (LBS) TOE WALL

GENERAL NOTES
1. Flared end sections shall conform to the requirements of ASTM 76 with the exception that dimensions and reinforcement shall be as specified in the table above. Circumferential reinforcement may consist of either one cake or two cakes of steel.

2. Connections between the flared end section and the pipe culvert may be any of the following types unless otherwise shown on the plans.
   a. Joints meeting the requirements of Section 941-1.5 of the Standard Specifications.

   The manufacturer of the flared end section shall identify the manufacturer of the pipe culvert and certify that the flared end section is suited to joining the pipe culvert.
   b. Joints sealed with preformed plastic gaskets.

   The gaskets shall meet the requirements of Section 942-2 of the Standard Specifications and the minimum sizes for gaskets shall be as stated specified for equivalent sizes of elliptical pipe.
   c. Reinforced concrete jackets, as detailed on this drawing.

   Cost of the reinforced concrete jacket to be included in the contract unit price for the flared end section.

   When non-coated corrugated metal pipe is called for in the plans, the pipe shall be bituminous coated in the jacketed area as specified on Index EMD-O1. Bituminous coating to be included in the contract unit price for the pipe culvert.

3. Toe walls shall be constructed when shown on the plans or at locations designated by the Engineer. The walls are to be cast in place with Class 1 Concrete and paid for under the contract unit price for Class 1 Concrete (Miscellaneous).

4. Reinforcing steel to be included in cost of toe wall.

5. Sodding shall be placed around the flared end section in accordance with Index GRC-O1, and paid for under the contract unit price for sodding.

6. Flared end sections may be spliced in pipe culverts. Side slopes shall be warped as required to fit the flared end sections.

DESIGN NOTES
1. Flared end sections are intended for use outside the clear recovery area of median drain and cross drain installations.

2. Flared end sections are not intended for side drain installations.

3. Reinforced concrete jackets shall be used at all locations where high velocities and/or highly erosive soils may cause spalling of the pipe. These locations shall be shown on the plans.

4. Toe walls shall be used whenever the anticipated velocity of discharge and soil type are such that erosion action would occur.

5. Toe walls are not required where ditch pavement is provided, except when discharging would occur if the ditch pavement should fail.
TABLE OF DIMENSIONS AND QUANTITIES FOR ONE STEEL HINGED GRATE

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<th>PILAR</th>
<th>F/M</th>
<th>N/Q</th>
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STEEL HINGED GRATE - USE CRITERIA

A. Direct plaque the section in the direction shown with square outline of the steel hinged grate using a 2"-2". Use the most efficient steel hinged grate for the application. Dimension a 2"-2".

B. Recessed in this 2"-2". Use square outline of the steel hinged grate using a 2"-2". Use the most efficient steel hinged grate for the application. Dimension a 2"-2".

C. Use a 2"-2". Use square outline of the steel hinged grate using a 2"-2". Use the most efficient steel hinged grate for the application. Dimension a 2"-2".

D. Use a 2"-2". Use square outline of the steel hinged grate using a 2"-2". Use the most efficient steel hinged grate for the application. Dimension a 2"-2".

GENERAL NOTES

1. All steel for hinged grate shall be smooth, straight and equally spaced. A 2"-2". Use square outline of the steel hinged grate using a 2"-2". Use the most efficient steel hinged grate for the application. Dimension a 2"-2".

2. After fabrication, hinged grate shall be straightened as required, then galvanized per A 2"-2". Use square outline of the steel hinged grate using a 2"-2". Use the most efficient steel hinged grate for the application. Dimension a 2"-2".

3. The grade and length, if necessary, shown in mounting details may be either cast into the flared end forming reinforcement or cut to field to the field grade shown.

4. Steel grade shall be for all cold-formed grate per grade.

5. All welds should be in accordance with Article 60-06 of this standard specifications.
## Bill of Reinforcing Steel

### Estimated Quantities

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<th>Item</th>
<th>Unit</th>
<th>Quantity</th>
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### Bending Diagrams

**Note:** Bars are sized 3/8" x 3/8". Dimensions are given as in-out.

---

## Concrete Endwall with U-Type Wings

- **For 60" Concrete Pipe**

---

## Concrete Endwall with U-Type Wings for 66" Concrete Pipe

---

### AIA Board

- Florida Department of Transportation
- roadway plane section
- U-endwall for 60" and 66" pipe culvert

---

### Drawing Information

- Approved: 3-20-02
- Drawing No.: 3006
- Project: 518C-02
GENERAL NOTES

DESIGN SPECIFICATIONS: AALNC, 1979
CHARTER: All materials sized and located as shown in project plans or as otherwise noted.
REINFORCING STEEL: Grade 40 or 60

PLAN
SHOWING BARS IN FOOTING

Note: All bar dimensions are out to out

BENDING DIAGRAMS

Note: All bar dimensions are out to out

ESTIMATED QUANTITIES

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TYPICAL SECTION
THRU ENDWALL

HALF ELEVATION
SHOWING BARS IN BACK FACE OF WALL

Bare A @ 6 6" Cts
Bare B

SECTION A-A

NOTE: Cut and Field Bend Bare B as Shown.

HALF ELEVATION
SHOWING BARS IN FRONT FACE OF WALL

Florida Department of Transportation
Roadway Plan Section
STANDARD ENDWALL FOR 72" CONCRETE PIPE
### Bill of Reinforcing Steel

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### Bending Diagrams

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- L-7
- B-7
- C-7
- D-7
- E-7
- F-7
- G-7
- H-7
- I-7
- J-7
- K-7
- L-7
- M-7
- N-7
- O-7
- P-7
- Q-7
- R-7
- S-7
- T-7
- U-7
- V-7
- W-7
- X-7
- Y-7
- Z-7

### Estimated Quantities

- Concrete: 2-5/8
- Rebar: 2-7/8

### General Notes

- Design Specifications: AASHTO 1973
- Chamfer: All edges and corners to be chamfered
- Reinforcing Steel: Grade 40 or 60

---

**General Information**

- **Approved by:** 3-30-76
- **Florida Department of Transportation**
- **R.o.d. Plan Section:** Endwall for Quadruple 100' x 73' CMP Arch

---

**Drawings**

- **Section A-A**
- **Section C-C**
- **Section B-B**

---

**Materials**

- **Concrete:** 2-5/8
- **Rebar:** 2-7/8

---

**Notes**

- Construction joint
- See detail on Index No. SEC-01
MEMORANDUM

State of Florida Department of Transportation

DATE October 5, 1977

TO All Holders of Standard Index Books

FROM E. H. Hart, Deputy Design Engineer (Rdrys.)

COPIES TO

SUBJECT Standard Index No. DCE-20

This is a new index developed as a substitute for Index No. DCE-03 (with grate, no baffles) as the standard endwall treatment for most median drains and infield cross drains. DCE-20 is intended for use within the clear recovery area and has been set up to call for the grate unless it is specifically deleted in the plans by note. The cost of this unit is anticipated to exceed the cost of additional pipe and a flared end section or other acceptable end treatment outside the clear recovery area, therefore should be used only when it can be economically justified or when other restrictions indicate that it would offer a better treatment than a pipe extension. The use of DCE-03 with grate and baffles should be continued when erosive velocities are anticipated and the extra interior width of DCE-03 and baffles would be required to provide energy dissipation.

The DCE-20 endwall is suitable for use on intersecting road cross drains where a treatment such as a mitered end section would be required. This endwall could be used with the grate (30" pipe) or without grate (15", 18" or 24" pipes) provided that a concrete slab similar to the one shown on Index DME-01 is called for on the plans.

All projects whose scheduled letting will not be delayed should be reviewed for utilization of this index.

Please add this index to your file.
DATE      October 5, 1977

TO         All Holders of Standard Index Books

FROM       E. H. Hart, Deputy Design Engineer (Rdwys.)

COPIES TO  

SUBJECT    Standard Index Drawings

The following index drawings have been revised:

DCE-01-1 supersedes DCE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

DSE-01-1 supersedes DSE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

DCE-04-1 supersedes DCE-04. This index has been redrawn. The general notes were revised, design notes were added, a detail for a reinforced concrete jacket was added and sheet 2 which showed the grate details and requirements has been deleted.

PEJ-02-1 supersedes PEJ-02. This index was revised to show the joint extended across the shoulder pavement when the shoulder pavement is constructed with either concrete or econcrete. Details and notes were added or deleted as needed for this revision.

All projects whose scheduled letting will not be delayed should be reviewed for the utilization of these revised indices.

Please destroy all copies of these indices in your files and replace with the revised index drawings.

EHH:LMF:j1
### DETAILS FOR SINGLE METAL PIPE ARCH CULVERTS

NOTE: For Multiple Metal Pipe Arch Culvert spacing between arch centers = X.

#### DIMENSIONS and QUANTITIES for METAL PIPE ARCH CULVERTS

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#### DIMENSIONS and QUANTITIES for ROUND PIPE CULVERTS

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**SAND-CEMENT ENDWALLS FOR PIPE CULVERTS**

**PROJECT NO.**

**SAND SIZES**

- 1/2" (40%)
- 1/4" (60%)

*Note: Sizing charts not shown in image.*
SECTION Y-Y

FRONT ELEVATION

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MEMORANDUM
State of Florida Department of Transportation

DATE
October 25, 1977

TO
All Holders of Standard Index Books

FROM
E. H. Hart, Deputy Design Engineer (Rdws.)

COPIES TO

SUBJECT
Standard Index No. DME-01-1

This index has been revised and expanded to five sheets to include multiple pipe installations, pipe arch installations and fastener details. The dimensions, quantities and general notes were also expanded and revised.

All projects whose scheduled letting will not be delayed should be reviewed for utilization of this index.

Please destroy all copies of this index in your file and replace with the revised index drawings.

EHH:LMF:j1
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### TOP VIEW - SINGLE PIPE

Concrete Slab, 3" Thick, Reinforced with 6"x6" 10/10 Welded Wire Fabric.

### TOP VIEW - MULTIPLE PIPE

Concrete Slab, 3" Thick, Reinforced with 6"x6" 10/10 Welded Wire Fabric.

**Note:**

See Sheet 4 for Details and Sheet 5 for Notes.

---

**Material List:**

- **Concrete Slab:** 3" Thick with 6"x6" 10/10 Welded Wire Fabric

---

**Sidebar Notes:**

- 2" Sod
- 4" Sod
- Ditch Grade
- #4 Bar

---

**Section Notes:**

- Side Drain Pipe Cuv.
GENERAL NOTES

1. The cost of all pipe, grates, fasteners, reinforcing, connectors, anchors and concrete shall be included in the contract unit price for mitered end section, each. Sodding not included.

2. The reinforced concrete slab shall be constructed for all sizes of side drain pipe and cost in place with Class 1 concrete.

3. Round pipe size 30” or greater and pipe-arch size 35” x 24” or greater shall be gasketed unless excepted in the plans. Smaller sizes of pipe shall be gasketed only when called for in the plans.

4. Grates are to be fabricated from galvanized steel. The lower grate on all traffic approach ends shall be Schedule 80 ASTM A403 extra strong pipe. All remaining grates shall be either ASTM A 501 structural tubing or A53, grade B, pipe.

Base metal exposed during fabrication shall be repaired as specified in Section 562, Standard Specifications. Grates subject to salt water or highly corrosive environment shall be hot-dipped galvanized after fabrication in accordance with ASTM A 253.

5. Concrete pipe used in the assembly of mitered end sections shall be of selective lengths to avoid excessive connections.

6. Cast-in-place metal pipe gasketing that is damaged during backfilling and protruding for mitered end section shall be repaired.

7. That portion of corrugated metal pipe in direct contact with the concrete slab shall be bituminous coated prior to placing of the concrete.

8. Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of side drain pipe; corrugated steel pipe mitered end sections may be used with any type of side drain pipe except aluminum pipe; and corrugated aluminum mitered end sections may be used with any type of side drain pipe except steel pipe. When bituminous coated metal pipe is specified for side drain pipe, mitered sections shall be constructed with pipe or concrete pipe.

9. When the mitered end section pipe is dissimilar to the side drain pipe, a concrete jacket shall be constructed in accordance with Standard Index DMC-Oil.

10. When existing multiple side drain pipes are spaced other than the dimensions shown in this detail, or have non-parallel axes, or have non-uniform sections, the mitered and seclus will be constructed either separately or in single pipe mitered and sections or collectively as multiple end and sections as directed by the Engineer; however, mitered and sections will be paid for each, based on each independent pipe end.

11. Ditch transitions shall be used on all grades in excess of 3% as directed by the Engineer.

DESIGN NOTES

1. In critical hydraulic locations, grates shall not be used until potential debris transport has been evaluated by the drainage engineer and appropriate adjustments made. Ditch grades in excess of 3% or pipe with less than 1.5’ of cover and grades in excess of 1% will require such an evaluation (General Note 3).

2. The design engineer shall determine highly corrosive locations and specify in the plans when the grates shall be hot-dipped galvanized after fabrication (General Note 4).

SIDE DRAIN MITERED END SECTION

NOTES & INFORMATION

<table>
<thead>
<tr>
<th>Sheet</th>
<th>Drawing</th>
<th>Project No.</th>
<th>5 of 5</th>
<th>DME-OI-1</th>
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The following index drawings have been revised or added.

FTA-01-2 supersedes FTA-01-1; Concrete posts and braces were added to this drawing as an alternate on Type "A" Fence.

FTB-01-2 supersedes FTB-01-1; Steel "C" post was added to this drawing as an alternate for line posts on Type "B" Fence.
GENERAL NOTES

Soil Fiber, Bituminized Fiber, Plastic Sheets or any other Multiple-coated materials may be used in lieu of the Earth Slope Drain.

Pipe Slope Drains may be used as an alternative.

Where there is no existing Concrete Ditch a similar method may be used to anchor the Top of the Drain into the Earth or Grasped ditch.

SECTION C-C

TEMPORARY SLOPE DRAINS FOR FILL SECTIONS

NOTE: THIS IS A SUGGESTED METHOD ONLY. ANY ALTERNATE SOLUTION MAY BE USED AS APPROVED BY THE PROJECT ENGINEER.

TEMPORARY SLOPE DRAIN FOR FILL HEIGHTS GREATER THAN 10' OR ROADWAY GRADES STEEPER THAN 15%
GENERAL DESIGN NOTES

1. The Type 'A' RETAINER & BASIN is preferred over the Type 'B' because of the oil baffles & a larger silt basin. The Type 'A' RETAINER should not be used only in cases where it is not practicable to construct an open silt basin.
2. The CHAIN LINK FENCE hardware cloth intended to screen out & retain debris washed into storm sewer system for later removal.
3. The Silt Basin is intended to allow silt & sand washed into storm sewer system to settle out before spilling into natural water body.
4. The oil skimming baffles in Type 'B' RETAINER are intended to prevent oil washed into storm sewer system from spilling over well.

GENERAL CONSTRUCTION NOTES

1. Fence posts to be ALUMINUM or CONCRETE ONLY.
2. All metal hardware to be ALUMINUM only.
3. Fence to be installed inside of posts.
4. Fence to be ALUMINUM DRAIN LINE FINS, 2½" WIDE.
5. Fence to be tied to all posts & bashes at 6" centers.
6. ALUMINUM HARDWARE cloth, 2½" mesh to be attached to inside of fence;
7. All posts to be set in CONCRETE.
8. ALUMINUM POSTS to be 3" dia. minimum, see table 2 for details.
9. BRAZED TO BE ALUMINUM OR CONCRETE ONLY.
10. All slabs to be 3½" thick.
11. The word 'Silt' & then are interchangeable.
12. The silt basin & then be constructed prior to construction of pipe outfall, maintenance & clean out to be by the contractor until acceptance by the engineer.

DRAWING NO. 1 OF 3
INDEX NO. SEC-25
General Notes:
1. Width and depth of weir may be varied to fit conditions of site. However, as a general guide it should have a depth between 6' to 12' deep with a width between 3' to 6' wide.
2. Top elevation of ditch check should be too provide an effective check for all without causing an objectionable breakwater. Depending upon site conditions and the particular section of the area this top elevation will have a wide range. As a general guide a suggested trial height of approximately 1/4 the distance between natural ground and ditch bottom be used unless other criteria are used.
3. Additional spill protection may be provided for slope protection if desired.
4. For use in lateral ditches or side ditches.

SUGGESTED SEDIMENT CHECK.
GENERAL NOTES

Silt barrier to prevent drifting of sediments caused by discharge of storm sewers during construction, dredging, or filling operations.

Exact placement of silt barrier shall be as enjoined to effectively control soil dispersion under the conditions present on a particular project.

The details shown on this sheet are suggested methods only; alternate solutions and usage of materials may be used as approved by the Engineer.

SECTION A-A

NOTE: All floating or lifting tackle on exerts a lifting force on the weights. These are to be driven into the bottom in lieu of frames and weights.

DETAIL OF FLOATING SILT BARRIER

DETAIL OF STAKED SILT BARRIER

NOTES

The silt barrier will be constructed with 1 1/2" diameter pilings with a minimum of 6 pilings at the invert. The pilings will extend a minimum of 6 feet below the invert. The pilings will be placed 6 feet apart. The pilings will be extended a minimum of 4 feet below the invert.

The pilings will be placed in such a manner as to ensure stability and prevent drifting.

DETAIL SHOWING PLACEMENT OF STAKED SILT BARRIER AT EXISTING DITCH LOCATIONS
DITCH BOTTOM INLET

Curb and gutter inlets

TEMPORARY PROTECTION AROUND INLETS OR SIMILAR STRUCTURES

Note: For use on constructor or initially constructed structures.

PLAN

EXH. GRND = 2-4’ LONG HAY OR STRAW BALES

ELEVATION

Note: To be used where the natural ground slopes toward the toe of slope.

2-4’ x 2’ x 2’ HAY OR STRAW BALES

PLAN

EXT. GRND = 2-4’ LONG HAY OR STRAW BALES

ELEVATION

Note: To be used where the natural ground slopes away from the toe of slope.

DETAIL OF HAY OR STRAW BALES DAM ON PAVED DITCH

PLAN

HAY OR STRAW BALES DAMPED BY FENCE

Note: Stakes may not be needed at the direction of the Engineer.

HAY OR STRAW BALES BACKED BY FENCE

Note: Payment to be made under Item 10-4 = Bailed Hay or Straw - Ten

TYPES OF TEMPORARY DAMS

Note: Posts should extend far enough up each hay stake to effectively hold the material down (minimum 36 inches without)

Note: Posts Opening 4” x 4” x 4’

Type A or B Fence

Note: Fence may not be needed at the direction of the Engineer.
FOUR LANE ROADWAY

TWO LANE ROADWAY

* When otherwise shown on plans this dimension may be reduced to 24".

Note: All dimensions shown are standard.
The details shown on this Index Drawing do not supersede the detail shown on Index GRC-01.

SYMBOL | SOIL | CLASSIFICATION*  
--- | --- | ---  
S | Select | A-1, A-3, A-2-4  
H | High Plastic | A-5 or A-7 (both with LL > 30)  
M | Muck | A-B

Symbols listed L to R in order of preference.
* AASHTO Soil Classification System (AASHTO M-146)  
  # Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry, and therefore should be used in the embankment above water level existing at time of construction.
MEMORANDUM
State of Florida Department of Transportation

DATE September 13, 1976

TO All Holders of Standard Index Books

FROM E. H. Hart, Deputy Design Engineer (Rdrys.)

COPIES TO

SUBJECT Standard Index No. GRC-01-1

The subject standard index drawing has been revised as follows:

Sheet No. 1 - Added "Detail for Removal of Excess Base Material".

Sheet No. 2 - Was not changed.

Please destroy the copy of Index No. GRC-01 in your files and replace with this new drawing.

EH, LMF

EH, LMF: J1
MEMORANDUM
State of Florida Department of Transportation

DATE       June 20, 1977

TO         All Holders of Standard Index Books

FROM       E. H. Hart, Deputy Design Engineer (Roadways)

COPIES TO

SUBJECT    Standard Index Drawings

The following index drawings have been revised:

BMB-01-1 (Sheet 1 of 3); General Note No. 1 was changed to include reflective barrier marker in the cost of the concrete barrier wall. Sheets 2 and 3 were not changed.

DMD-01-1 Supersedes DMD-01; Sheet 2 has been revised to show bituminous coating required at the junction of dissimilar types of pipe. This is shown on "Detail of Concrete Jacket" at the bottom center of the sheet. Sheets 1 and 3 were not changed.

GKH-01 (Sheet 6 of 6); This is a new index showing a new type of approved railroad crossing. We have included sheets 1 through 5 of 6 which show the change in those drawing numbers.

GSE-UZ-1 Supersedes GSE-02: On sheet 1 we added a note under the superelevation chart. On sheet 2 we added the superelevation chart for e Max. 0.05.

Please destroy all copies of these indices in your files and replace with the revised index drawings.

EHH/LMF/db

LMF
PLAN - 90° CROSSING

PLAN - SKEW CROSSING

SECTION A-A

SECTION B-B

ALTERNATE END SECTION

DETAILS OF RAILROAD CROSSING TYPE J
GENERAL NOTES

1. This drawing is based on using 12" rail on a tangent section and Decking fabricated in sections to fit the corresponding sections of the supporting frame. The depth of the 2 bars and channels may be varied to fit other rail sections.

2. The framework units are attached to ties by 7/8" x 6 1/2" lag screws, and to headwall by 5/8" anchor bolts. Double coil spring washers are used with lags to compensate for vertical motion.

3. The decking is attached to the framework with 5/8" bolts. The head of the bolt is to be spot welded to the underside of the channel flange.

4. Flangeway and outside filler timbers to be rabbed to assure close fit prior to treatment.

5. Tie to be sawed and spaced 18° C to C.

6. Crossing of any angle can be equipped with units of either 45°, 67° 30' or 90°.

7. Decking may be as shown or equal (Submit shop drawings for approval by the Engineer).
GENERAL NOTES

1. The crossings shown on this sheet are NOT to be used under the following conditions: (a) All locations with more than double tracks, (b) at crossings with a skew angle in excess of 50 degrees or (c) within zones for an existing or scheduled future vehicular stop. Zone lengths are charted above.

2. For additional details, materials required and installation procedures refer to the manufacturer's specifications.

3. Details shown are for straight track installations. Materials are also available for curved track installations.

STOP ZONE

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CROSSING TYPE "P" (POLYETHYLENE)

CROSSING TYPE "R" (RUBBER)
GENERAL NOTES

1. The reinforced concrete slabs are manufactured in 8'-0" sections, 0" in depth to fit all rail sections 5 1/4" in height or heavier. Slabs are interchangeable and relocatable.

2. Center slabs are one piece construction allowing for 2 1/2" flange opening. 90 lb. rail is used to encase, armor and reinforce slabs and is held to gauge with 3 tie rods per slab.

3. Slabs are installed by a "floating" process, supported on non-shrinkable, non-metallic grout positioned on the ties. Slabs can be placed on wood ties, concrete ties, steel ties, bridge decks or any other type of track support. No re-spacing of ties is necessary.

4. Slabs are secured to "running rails" with specially designed hardware. Insulation is to be provided for crossings in signal territory.

5. Curved slabs are fabricated to fit curved track to 22 degrees (262.04° radius). Special slabs are available for Diamond Crossings, Turnouts, Multiple Tracks, Bridge Decks and Rapid Transit Systems.

6. For additional details, materials required and installation procedures refer to the manufacturers specifications.
GENERAL NOTES

1. This drawing is based on using 15/16" rail on a tangent section and Decking fabricated in sections to fit the corresponding sections of the supporting frame. The depth of the z bars and channels may be varied to fit other rail sections.

2. The framework units are attached to ties by 7/8" x 6 1/2" log screws, and to Headwall by 5/8" anchor bolts. Double coil spring washers are used with logs to compensate for vertical motion.

3. The decking is attached to the framework with 5/8" bolts. The head of the bolt is to be spot welded to the underside of the channel flange.

4. Flange way and outside filler timbers to be rabbed to assure close fit prior to treatment.

5. Ties to be sawed and spaced 18" C to C.

6. Crossing of any angle can be equipped with units of either 45°, 67°30' or 90°.

7. Decking may be as shown or equal (Submit shop drawings for approval by the Engineer).
DATE March 11, 1976

TO ALL HOLDERS OF STANDARD INDEX BOOKS

FROM E. H. Hart, Deputy Design Engineer (Roadways)

COPIES TO

SUBJECT Standard Index No. GRR-01, Sheet 5 of 5

This is a new index which shows two new Railroad Crossings, Type "P" (High Density Polyethylene) and Type "R" (Rubber). The use of these materials on the State Highway System is restricted by the general notes on the index.

Please add this index to your file.

LMF

EHH:LMF:j1
GENERAL NOTES

1. The crossings shown on this sheet are NOT to be used under the following conditions: a) at locations with more than double tracks, or b) at crossings with a skew angle in excess of 30 degrees or c) within zones for an existing or scheduled future vehicular stop. Zone lengths are charted above.

2. For additional details, materials required and installation procedures refer to the manufacturer's specifications.

3. Details shown are for straight track installations. Materials are also available for curved track installations.
- GENERAL NOTES -

1. The norms applying to PCC Pavement are not applicable to R.B.A.C. Pavement.

2. (a) RCC Pavement Projects:
   Where shoulder pavement adjacent to Shoulder Sutter is more than 4" wide it shall be identical to the adjacent traffic pavement complying with the transverse joint interest of 6" width.
   (b) Flexible Base Projects:
      Where shoulder pavement used in conjunction with Shoulder Sutter is less than 6" wide with shall be identical to the adjacent roadway pavement.

3. Entries and Entrance terminals as detailed shall not be used as ramps for which a speed of 20 MPH of a vehicle cannot be maintained. A such ramp shall be stabilized and constructed as per Art. 3303.5.8. According to Title 559.25 (B) 559.25 and 559.25

DETAILED ENTRANCE TERMINAL
WITH ADDED LANE

DETAILED ENTRANCE TERMINAL
TWO THRU LANES
SKETCHES INDICATING SHOULDER TREATMENT AT SPEED CHANGE LANES WITH SHOULDER GUTTER

SKETCHES INDICATING SHOULDER TREATMENT AT SPEED CHANGE LANES WITHOUT SHOULDER GUTTER
For median widths greater than 26', curb is to be used only as required for clearance of support.

1. Decal, to stop - see P.558 AASHTO Red Book
2. 37V-45 MPH to stop
3. 480-50 MPH to stop
4. Increase in radius if turning on HGV exceeds 200 VPH (HGV - 200%) + additional radius (Radius to 25' increments)

LEFT TURN CONTROL DETAILS

For additional detail see drawing (1) and footnote (1)

NOTE: Entries and exits on curves should be avoided when possible.

The details shown on this sheet apply to Cross Road ramp Terminals ONLY.

REVISIONS

STANDARD DETAILS FOR RAMP TERMINALS

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4 OF 4 GRT-D1
MEMORANDUM

State of Florida Department of Transportation

DATE June 20, 1977

TO All Holders of Standard Index Books

FROM E. H. Hart, Deputy Design Engineer (Roadways)

COPIES TO

SUBJECT Standard Index Drawings

The following index drawings have been revised:

BMB-01-1 (Sheet 1 of 3); General Note No. 1 was changed to include reflective barrier marker in the cost of the concrete barrier wall. Sheets 2 and 3 were not changed.

DMD-01-1 Supersedes DMD-01; Sheet 2 has been revised to show bituminous coating required at the junction of dissimilar types of pipe. This is shown on "Detail of Concrete Jacket" at the bottom center of the sheet. Sheets 1 and 3 were not changed.

GRR-01 (Sheet 6 of 6); This is a new index showing a new type of approved railroad crossing. We have included sheets 1 through 5 of 6 which show the change in those drawing numbers.

GSE-02-1 Supersedes GSE-02: On sheet 1 we added a note under the superelevation chart. On sheet 2 we added the superelevation chart for e Max. 0.05.

Please destroy all copies of these indices in your files and replace with the revised index drawings.
GENERAL NOTES FOR SUPERELEVATION

1. Maximum rate of super-elevation (on municipal construction) shall be 0.05 ft/ft.


3. When positive super-elevation is required, the slope of the outer or the inside curve shall be a continuation of the slope of the super-elevated pavement.

4. In construction, short vertical curves shall be placed at all small gradual bends within the limits of the super-elevated transition.

5. Minimum outer gradient within the limits of the super-elevation transition shall be 0.06:

6. The variable super-elevation transition length "L" shall include a minimum value of no feet for design speeds under 40 mph and 100 feet for design speeds of 60 mph.

7. Normal Sections Having Lane Arrangements Different Than Shown, But Consist of a Series of Planes, Shall Be Super-elevated in a Similar Manner.

8. For Curves in Rural Areas, See Index No. 0601-05.

SUPERELEVATION DETAILS FOR MUNICIPAL CONSTRUCTION

LINE 1 - MAX. SUPERELEVATION RATE (0.05 FT/FT)
LINE 2 - SLOPE OF PARABOLA AT END OF PAVE
LINE 3 - POSITIVE SUPERELEVATION RATE LESS THAN 0.05 FT/FT
LINE 4 - ADVERSE SUPERELEVATION

VALUES OBTAINED FROM THE CHART ARE ALLOCABLE TO A PARABOLIC SUPER ELEVATION. WHEN THIS TYPE SECTION IS USED, SUPERELEVATION IS ESTABLISHED BY POINTING A DIAGONAL ACROSS THE ARC OF THE PARABOLIC CURVE UNTIL THE DIAGONAL IS ATTAINED. POINTS A & B ON DIAGRAM, THE NORMAL PARABOLIC CURVE WILL BE MASTICATED OUTSIDE OF THE LIMITS OF THE PLANES THEN FORMED.

SUPERELEVATION OF PARABOLIC SECTION

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DETAIL OF SUPERELEVATION TRANSITION
FOR TWO TRAFFIC LINES EACH DIRECTION

DETAIL OF SUPERELEVATION TRANSITION
FOR TWO TRAFFIC LINES EACH DIRECTION WITH MEDIAN AND PARKING

NOTE: THE SECTIONS AND PROFILES SHOWN ON THIS SHEET ARE EXAMPLES OF THE SUPERELEVATION TRANSITION. SIMILAR SCHEMES SHOULD BE USED FOR ROADWAYS HAVING DIFFERENT SECTION DESIGNS.

The super-elevation rates shown above are to be used for urban (Link B, gutter) applications. In suburban areas, sufficient R/W may be required to make suitable connections.
### Symbols for Plan Sheets

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<td>RAILROAD (DRAINAGE MAPS)</td>
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### Utility Adjustment Symbols

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### Standard Symbols for Key Maps and Plan Sheets

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<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEFINITION OF SKEW</td>
<td>CONCRETE</td>
</tr>
<tr>
<td>WOOD</td>
<td>RATE OF SUPERELEVATION</td>
</tr>
</tbody>
</table>

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**Plan Approved:** T.T. 71

**State of Florida Department of Transportation**

**Road Design Section**

**Standard Symbols for Key Maps and Plan Sheets**

<table>
<thead>
<tr>
<th>Drawn by:</th>
<th>Reviewed by:</th>
<th>Approved by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.T. 71</td>
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<table>
<thead>
<tr>
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<tr>
<td></td>
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**GSS-01**
# Standard Symbols for Plan Sheets

## Traffic Signals Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Traffic Signal Head (Open Wire Mounted)" /></td>
<td>Existing</td>
</tr>
<tr>
<td><img src="image" alt="Traffic Signal Head (Pedestal Mounted)" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Traffic Signal Head (Pole Mounted)" /></td>
<td>Existing</td>
</tr>
<tr>
<td><img src="image" alt="Vehicle Detector (Loop)" /></td>
<td>Existing</td>
</tr>
<tr>
<td><img src="image" alt="Vehicle Detector (Others)" /></td>
<td>Existing</td>
</tr>
<tr>
<td><img src="image" alt="Pedestrian Detector (Pushbutton)" /></td>
<td>Existing</td>
</tr>
<tr>
<td><img src="image" alt="Controller Cabinet (Panel Mounted)" /></td>
<td>Existing</td>
</tr>
<tr>
<td><img src="image" alt="Controller Cabinet (Pole Mounted)" /></td>
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</tr>
</tbody>
</table>

## Lighting Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="New Pole &amp; Luminaire" /></td>
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</tr>
<tr>
<td><img src="image" alt="Existing Pole &amp; Luminaire" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Existing Pole &amp; Luminaire to be Removed" /></td>
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</tr>
<tr>
<td><img src="image" alt="Final Position of Relocated or Adjusted Pole &amp; Luminaire" /></td>
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</tr>
<tr>
<td><img src="image" alt="New High Mast Lighting Tower" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Concrete or Utility Pole &amp; Luminaire" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="PVC (Polyvinyl Chloride) Lighting Conduit and Conductors" /></td>
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</tr>
<tr>
<td><img src="image" alt="Rigid Galvanized Lighting Conduit and Conductors" /></td>
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</tr>
<tr>
<td><img src="image" alt="Concrete Lighting Pull Box" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Waterproof Lighting Pull Box" /></td>
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</tr>
<tr>
<td><img src="image" alt="Lighting Distribution Point" /></td>
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<tr>
<td><img src="image" alt="New Joint Use Pole" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Existing Use Pole" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Under Deck Lighting Fixture" /></td>
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</tbody>
</table>

## Signing and Pavement Marking Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
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<tbody>
<tr>
<td><img src="image" alt="Pavement Arrow" /></td>
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<td><img src="image" alt="Single Solid Line" /></td>
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</tr>
<tr>
<td><img src="image" alt="Double Solid Line" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Skip Line" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Stop Bar" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Traffic Sign (Panel Mounted)" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Traffic Sign (Pole Mounted)" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Sign Number" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Sign Item Number" /></td>
<td>Proposed</td>
</tr>
<tr>
<td><img src="image" alt="Traffic Flow Arrow" /></td>
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</tr>
</tbody>
</table>
**Detail of Tractor Crossing, Type 'A'**

Reinforced Concrete

**Detail of Tractor Crossing, Type 'B'**

Treated Timber

**Plan**

- Symmetrical about 4
- Shoulder 11
- Width of Base, see Section Below
- No. 4 Bars @ 6" Cts., Top and Bottom

**Section A-A**

- Symmetrical about 6
- 10" roadway width
- Shoulder Width 6.5 ft.
- Double 1/4" slope to match elev.

**Note**

Class I concrete is to be used unless otherwise noted in plans or special provisions.

**Section X-X**

- Corners exposed to traffic to be chamfered 1/4"
Typical 1/2 Section for Automobile Traffic
Typical 1/2 Section for Truck-Trailer Traffic

Point of connection to be determined by the Engineer during construction.

SIDE DRAIN pipe diameter 18 min. or 2" x 13 Pipe arch min.

Base and surface to be the same as adjacent roadway.

PLAN

STANDARD SIDE DRAIN

Sweeps to be developed in all cases.

STANDARD PROFILE FOR TURNOUT

DETAILS OF TURNOUT CONSTRUCTION TO PRIVATE PROPERTY AND GRADED ROADS

LIMITS OF CLEARING & GRUBBIN STABILIZING AT INTERSECT
MEMORANDUM

December 29, 1976

To: All Holders of Standard Index Books

From: E. H. Hart, Deputy Design Engineer (Roadways)

Copies To: Mr. P. E. Carpenter, FHWA

Subject: Standard Index GTO-01-1 and DME-01 (2 sheets)
        Mitered End Sections for Side Drain Installation

Index GTO-01-1 has been revised and Index DME-01 has been added to provide for mitered end sections on side drain pipe up to 60" in diameter. Mitered end sections are to be used on all new construction and safety projects beginning with the March letting. Pipe grates are to be constructed when side drain pipe is 30" and larger.

Because of funding limitations, it will not be possible to upgrade side drain installations to provide mitered end sections in conjunction with normal resurfacing projects. Mitered end sections will be added on widening projects only when the widening necessitates the relocation or replacement of side drain pipe.

Referring to the Standard Index DME-01, Sheet 2 of 2, the intent of the note #6 is not to eliminate grates at these locations, but to insure that under potential problem situations, the site is evaluated. If the evaluation indicates, safe modifications such as using a larger size pipe would be an "appropriate adjustment". Deleting the grate bars would not be appropriate. Note 11 will allow the use of alternates with prior approval. An anticipated alternate might be some form of "U" endwall requested to replace mitered concrete pipe, due to potential production problems.

Index GTO-01-1

1. Details of turnout construction to private property and graded roads revised to provide for mitered end sections.
2. Limits of clearing and grubbing and stabilizing at intersections revised to show limits of base 3" outside edge of pavement and limits of stabilizing 9" outside.

....more....
3. General notes 2 and 3 revised.

Pay items for mitered end sections (side drain) have been established and entered in C.E.S.

Please destroy the copies of Index GTO-01 in your files and replace with the revised drawing.

EHH:rb
STANDARD PROFILE FOR TURNOUT

DETAILS OF TURNOUT CONSTRUCTION TO PRIVATE PROPERTY AND GRADED ROADS

SECTION "B-B"

SECTION "C-C"

GENERAL NOTES

1. No driveways, turnouts, or side streets are to be constructed without compensation for easements from the owner except for replacement of driveways, turnouts, and/or side streets existing at the time of acquiring right-of-way of the project and as may be required by the Engineer during construction.

2. In a rural section where the adjoining property owner desires installation of Turnout, the Department will construct or will allow the construction of a minimum of two 60' turnouts, to any business establishment within a 300' radius of property, with a minimum of 30' of space between them.

3. In urban areas, at the request of the adjoining property owner or his assigns, and to the extent that there is sufficient property, the Department will construct or will allow the construction of up to two entrances (drop cuts) of thirty feet each, maximum, separated by a minimum of six feet of curbing, but curbing shall be required around all curbs.

4. In both urban and rural areas, wherever dual driveways are allowed, that portion of the right-of-way between the drives and outside the pavement limits of the highway shall be maintained as a "No-Parking-Area" and shall be suitably outlined by such fences, bollards, curbs, or other obstructions as are safe and effective.

LIMITS OF CLEARING, GRAVELING AND STABILIZING AT INTERSECTIONS

GENERAL STABILIZING NOTES

1. No Stabilizing will be required for Paved Turnouts to Private Property.

2. Stable Material may be required for Unpaved Turnouts to Private Property as directed by the Engineer in accordance with Section 122-1 of the Standard Specifications.
**CONCRETE CURB AND GUTTER DETAILS**

**DETAILS OF CONCRETE CURB**

Note: When Curb or Gutter is constructed adjacent to Flexible Pavement, the "A" Expansion Joint shown above will not be used.

**CONSTRUCTION OF CURB AND GUTTER ADJACENT TO FLEXIBLE PAVEMENT**

Note: Water Control Gutter and Drop Gutter are constructed adjacent to Flexible Pavement, the face of the lip of the gutter shall be as shown in this detail.

**CONTRACTION JOINT IN CURB OR CURB AND GUTTER, CENTER OF CURT- TO CURT. MAXIMUM**

Note: Joint on crusher surface and flat surface above center where Curb and Gutter is adjacent to PCC Pavement.

---

**MEDIAN CURB AND GUTTER ENDS**

**DETAILS**

**SPECIAL END OF MEDIAN CURB AND GUTTER**

Use for Type A (Curb Only)

**PLAN**

Transition from full height to 0 height.

**PROFILE**

Transition from full height, Profile top of curb

**SPECIAL END OF MEDIAN CURB AND GUTTER**

Use for Type A (Curb Only)

**PLAN**

Transition from full height to 0 height.

**PROFILE**

Transition from full height, Profile top of curb

**DETAILS**

**SPECIAL END OF MEDIAN CURB AND GUTTER**

Transition from full height to O height.

---

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**CURB AND GUTTER**

---

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**CURB, GUTTER AND CURTAIN WALL**

---

**GENERAL NOTES**

1. For Curb and Gutter, Traffic Separation provides 1/2"/1/2" construction joints at K centers.
2. All Curb and Gutter details are shown for construction adjacent to Concrete Pavement, unless otherwise noted.
MEMORANDUM
State of Florida Department of Transportation

DATE October 5, 1977

TO All Holders of Standard Index Books

FROM E. H. Hart, Deputy Design Engineer (Rdwys.)

COPIES TO

SUBJECT Standard Index Drawings

The following index drawings have been revised:

DCE-01-1 supersedes DCE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

DSE-01-1 supersedes DSE-01. The chart showing data and quantities for metal pipe arch culverts was up-dated to 1974 AASHTO specifications.

DCE-04-1 supersedes DCE-04. This index has been redrawn. The general notes were revised, design notes were added, a detail for a reinforced concrete jacket was added and sheet 2 which showed the grate details and requirements has been deleted.

PEJ-02-1 supersedes PEJ-02. This index was revised to show the joint extended across the shoulder pavement when the shoulder pavement is constructed with either concrete or econcrete. Details and notes were added or deleted as needed for this revision.

All projects whose scheduled letting will not be delayed should be reviewed for the utilization of these revised indices.

Please destroy all copies of these indices in your files and replace with the revised index drawings.

\EHH:LMF:j1
DETAIL SHOWING RIGID SHOULDER PAVEMENT

Concrete Pavement
Rigid Shoulder Pavement
Sheet Metal Strip

DETAIL SHOWING SHEET METAL STRIP

Note: Immediately prior to placing the seal, the joint shall be thoroughly cleaned of all foreign material. Immediately after the seal is placed, the metal strip shall be bent up against the pavement edge.

The sheet metal strip shall be a minimum of 1/8-inch thick and shall be galvanized or conform to ASTM A 795, Grade 40, or Grade 60.

GENERAL NOTES

1. Quantity of Expansion Joint to be determined by measurement along the entire length of the joint.
2. For additional details, see Index No. P-1.01.
3. The # of roadway and the # of bridge do not necessarily coincide. Prior to the placement of the expansion joint, the # of the roadway pavement shall be determined.
4. When the shoulder pavement is constructed with either concrete or asphaltic concrete, the expansion joints and contraction joints shall be continued across the shoulder pavement. See detail for construction in rigid shoulder pavement.

REINFORCING STEEL

*Finish surface smooth. Cure with heavy coating of water. Seal joints with finished compound. Apply second application immediately prior to placing pavement.

SECTION A-A THROUGH EXPANSION JOINT

COMPRESSION SEAL DETAIL

Note: All contacting surfaces between the Compression Seal and Concrete shall be thoroughly coated with a lubricating adhesive.

SECTION THRU SEALS

Either of the three Seals shown may be used.

REVISIONS

INITIALS | DATES
--- | ---

FLORIDA DEPARTMENT OF TRANSPORTATION
Bridge Design Section

Bridges: Approach Expansion Joint for Concrete Pavement

Approved by:

Drawn by: E. L. Smith

Specified by: E. W. Miller

1 of 1

PEI-02-1
DETAILS OF TYPE I CONCRETE TRAFFIC SEPARATOR

NOTE: STABILIZE FULL WIDTH OF TRAFFIC SEPARATOR.

DETAILS OF TYPE II CONCRETE TRAFFIC SEPARATOR

DETAILS OF TYPE III CONCRETE TRAFFIC SEPARATOR

DETAILS OF TYPE IV CONCRETE TRAFFIC SEPARATOR

CONSTRUCTION JOINT DETAILS

FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC SEPARATORS

REVISIONS

1.

TRAFFIC SEPARATORS

PROJECT NO.

FILE NO.

DATE

DESCRIPTION

DRAWN

CHECKED

APP

APPROVED

FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN SECTIONS

1.

POINTS OF DISAGREEMENT

FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN SECTIONS

1.

POINTS OF DISAGREEMENT

FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN SECTIONS

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CONSTRUCTION PLAN SECTIONS

1.

POINTS OF DISAGREEMENT

FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN SECTIONS

1.
DATE  September 7, 1976

TO    DISTRICT DESIGN ENGINEERS

FROM  E. H. Hart, Deputy Design Engineer (Roadways)


SUBJECT  Railroad Grade Crossing Traffic Control Devices

We have decided that the details on the old Index No. GPD-01 should be considered Traffic Control Devices rather than Railroad Crossing Protective Devices, and have therefore transferred this standard to the Traffic Operations Section. You should therefore delete Index GPD-01 from your Roadway Standards and substitute Standard Index 17882.

The Traffic Operations Section does not normally handle the standards in the same fashion as Roadway Design, however, they have agreed that this one standard will be handled in the same manner as the Roadway Design Standards.

By copy of this memo I am transmitting a mylar print to Mr. Ed Bailey, Reproduction Supervisor, and request that he destroy all copies of GPD-01 and substitute Index No. 17882 in its place.

There will be no change in your handling with the exception of the number change. Any future revisions made to this standard will be sent to you by this office.

EHH:jl