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STANDARD SYMBOLS FOR KEY MAPS

- Highway with full control of access
- Controlled access highway with frontage roads
- Interchange
- Proposed controlled access highway
- Divided highway
- Paved road—high type
- Bituminous road—medium and low type
- Gravel or stone road
- Soil surfaced road
- Graded and drained road
- Unimproved road
- Primitive road
- Impassable road
- Private road
- Distance between points
- Streets in inset areas or delimited urban compact areas
- Extension of local roads within city limits
- Federal aid interstate highway
- Federal aid primary highway
- Federal aid secondary highway
- National forest road
- Interstate highway
- U.S. numbered highway
- State highway
- Railroad
- Abandoned railroad or logging tram
- Railroad station or prepay station
- Grade crossing
- Railroad above
- Railroad below
- Airport, complete facilities
- Airfield, limited facilities
- Landing area or strip
- Runways
- Canal or drainage ditch
- Narrow stream
- Wide stream
- Wide stream with dam
- Dam with road
- Lake, reservoir or pond
- Lake, reservoir or pond with dam
- Intermittent pond
- Marsh
- Swamp
- Highway bridge
- Highway grade separation
- Pedestrian underpass or overpass
- State boundary line
- County boundary line
- Civil township boundary
- Forbes purchase line
- Land section line
- Survey by others
- National or state park boundary
- National or state forest boundary
- School
- Community hall
- Post office
- Police school
- Garbage dump
- Auto junkyard
- Sanitary fill
- Sewage disposal plant
- Power plant
- Power substation
- Radio or TV control tower
- Radar station
- Animal shelter
- Locked gate or fence
- Directional arrow
- Triangulation station with name
- Location of symbol
- Location of inset boundary within map
- State capital
- Other city or village
- Corporate limits
- Delimited urban compact area boundary
- Picnic ground
- Bathing beach swimming pool
- Camp site, trailer park
- Tourist court or motel
- Camp or lodge
- Small state park
- National forest park
- County park
- Wayside park
- Boat ramp
- Fire control headquarters
- Lookout tower
- Fish hatchery (pond)
- Game checking station
- Pistol range
- Golf course
- Country club
- Fire station
- Race course, speedway
- Dog track, rodeo arena
- Recreation area, historic site
- Dwelling
- Group of dwellings
- Seasonal dwelling
- Seasonal dwellings closely spaced
- Church
- Cemetery
- Church and cemetery
- Business
- Gauging or small pumping station
- Dairy

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD DESIGN

STANDARD SYMBOLS
### STANDARD SYMBOLS FOR PLAN SHEETS

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<td>(JOINT USE POLE)</td>
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<tr>
<td>SIGNAL PHASE</td>
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</tbody>
</table>

- **NEW POLE & LUMINAIRE**
- **EXISTING POLE & LUMINAIRE**
- **EXISTING POLE & LUMINAIRE TO BE REMOVED**
- **FINAL POSITION OF RELOCATED OR ADJUSTED POLE & LUMINAIRE**
- **NEW HIGH MAST LIGHTING TOWER**
- **CITY OR UTILITY OWNED LUMINAIRE & POLE**
- **PVC (POLYVINYL CHLORIDE) LIGHTING CONDUIT AND CONDUCTORS**
- **RIGID GALVANIZED LIGHTING CONDUIT AND CONDUCTORS**
- **CONCRETE LIGHTING PULL-BOX**
- **WATERPROOF LIGHTING PULL-BOX**
- **LIGHTING DISTRIBUTION POINT**
- **NEW JOINT USE POLE**
- **EXISTING USE POLE**
- **UNDER DECK LIGHTING FIXTURE**

---

**STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION**

**DESIGN NO.**

**REVISIONS**

**STANDARD SYMBOLS**

**DATE:** 7/1/19

**SHEET:** 3 of 3

**DRAWN:**

**CHECKED:**

**APPROVED:**

**002**
TEMPORARY SLOPE DRAIN

SLOPE DRAIN APPLICATION

SOD FLUME (SODDING OVERLAPPED)
**GENERAL DESIGN NOTES**

1. Basins should be as deep as practical with a minimum depth of 2.0 feet.

2. In Type A, when the top of embankment is below high water, face side will be removed along the top of the embankment.

3. In Type B, the weir shall be located as far from the embankment as practical. On steep ditch grades two or more weirs may be required. Intermediate weirs shall be constructed without sliding basins.

4. In Type B, the 6" PVC pipe shall be constructed unless shown otherwise in the plans.

**GENERAL CONSTRUCTION NOTES**

1. Fence materials shall be aluminum or concrete only.

2. Aluminum posts shall be 3" diameter minimum. Aluminum rail braces shall be in accordance with Index 452. Concrete posts and rail braces shall be in accordance with Index 451. All posts to be set in concrete.

3. Fabric shall be trenched to inside of posts and rail braces, and tied to posts and braces at 6" centers.

4. For additional details on fencing, see Index Nos. 451 and 452.

5. All basin slopes to be 1 unless otherwise shown on the plans.

6. Sediment basins to be constructed prior to commencement of upland construction. Maintenance and clean out to be by the Contractor until acceptance of project by the Engineer.
FLOATING SILT BARRIERS

ELEVATION

STAKED SILT BARRIER

LEGEND
- Pile Locations
- Dredge Area
- Meaning Does Not Apply
- Anchor
- Barren Movement Due To Current Action
- Structure Alignment

NOTES
1. Number and spacing of anchors depend on current velocities.
2. Deployment of barrier around pile locations may vary to accommodate construction operations.
3. Navigation may require segmenting barrier during construction operations.
4. The above applications indicate Type I Floating Silt Barrier since anchors are shown; however, if conditions warrant, Type II Floating Silt Barrier may be used. For additional information see Standard Specifications.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
PORT DESIGN

FLOATING AND STAKED SILT BARRIERS

Table: Types of Silt Barriers

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>I</td>
<td>Staked Silt Barrier</td>
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<tr>
<td>II</td>
<td>Floating Silt Barrier</td>
</tr>
</tbody>
</table>

Diagram: Diagram showing the installation and use of staked and floating silt barriers.
SHOULDER AND SLOPE TREATMENT FOR SUPERELEVATED ROADWAYS

GENERAL NOTES
1. For sodding adjacent to ditches and at headwalls, see Index No 261.
2. All front slopes steeper than 4:1 are to be sodded.

SHOULDER AND SLOPE TREATMENT IN SAG VERTICAL CURVES
**CHANNELIZATION**

Channelization required at all drainage structures with two or more pipes.

Smooth flow channels composed of concrete, or brick and mortar shall be constructed in the bottoms of all structures to a depth equal to half the diameter of the largest pipe.

**SECTION XX**

Channel to be formed with either half-pipe and mortar or brick and mortar.

**PLAN ON PIPE**

**SECTION YY**

**BOTTOM CONSTRUCTION WHEN INLET SERVES AS MANHOLE**

GENERAL NOTE:

Mortar used to seal the pipe into the walls of prefabricated units will be of such a mix that shrinkage will not cause leakage into or out of the units. Maximum opening for pipe shall be the O.D. of the pipe required plus 6".

**EYE BOLT AND CHAIN FOR LOCKING GRATES TO INLETS**

Note: Multiple grates to be chained together.

**COVER FOR ALL FRAME**

All covers to be cast welded to flanges at third points or ground on third points with gasket (for frame shown in detail above).** CAST IRON FRAMES AND COVER**

**LADDER BARS**

Use for box heights over 10'-0".

**SECTION**

**TYPE I**

For Manholes

As Shown On Index 200

**SECTION**

**TYPE II**

For Type 1,2,3 & 4 Inlets

**TYPE III**

For Type 7 & 8 Inlets

**ALTERNATE LOCATION OF PIPE IN STRUCTURE WHEN PREFABRICATED FLOOR SLAB IS USED**

COMPLETE FLOW CHANNEL IS REQUIRED WHEN THERE IS FLOW THROUGH THE STRUCTURE
TEMPORARY SUBGRADE DRAINS

UTILITY PIPES THRU STORM SEWER STRUCTURES

OPTIONAL CONSTRUCTION JOINTS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS

1. Any type joint may be used in combination with any other type joint.
2. All grouted joints are to have a minimum thickness of 1/2".
3. Reinforcement bars to be a minimum of 1/2" deep.
4. Joint dowels are to be 3/4 bars, 12" long with a minimum of 6 bars per joint evenly spaced.
5. Minimum cover on reinforcing bars is 5".

DESIGNER'S NOTE: "Sump" conflict manhole shell not be used unless the system is hydraulically designed to take in account the backwater generated if the capacity is completely blocked. "Sump" conflict manholes must be larger than those normally provided.
**GENERAL NOTES**

1. The finished grade and slope of the inlet tops are to continue with the finished cross slope and grade of the adjacent sidewalks.

2. When inlets are to be constructed of a surge, refer to the plans or specifications for details and dimensions, detail the inlet. Seal details as required.

3. All parts in this plan shall be in accordance with the requirements of all other construction plans. Inlet tops shall be in accordance with the requirements of all other construction plans.

4. The unit section of plate 1, 2, 3, 4, 5 may be constructed with the below concrete support and will be acceptable.

5. For building blocks, see note next to detail.

6. These inlet tops were designed by the City of New York and are Type 6 inlets. Below is a table of construction items and types:

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<th>TABLE OF INLET TOP DIMENSIONS</th>
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</tr>
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**CURB INLET TOPS**

**TYPES 1, 2, 3, 4**

**SECTION A-A FOR INLETS TYPE 1, 2, 3, 4**

**SECTION 8-B**

**SECTION B-B**

**INLET THROAT TYPE 1**

- Inlet Throat Type 2
- Symmetrical about E

**INLET THROAT TYPE 3**

- Inlet Throat Type 2
- Symmetrical about E

**See Side Reinforcing Details**

**See Side Reinforcing Details**
TOP VIEW
CURB INLET TOP TYPE 5
(Curb Inlet Top Type 6 Symmetrical with Left Half)

SECTION BB

SECTION AA
(Stationary Steel Cover)

INLET TOP MODIFICATION FOR TYPE 5 CURB

HALF SECTION DD
FOR STEEL COVER

SECTION EE
FOR STEEL COVER

TOP VIEW
FOR STEEL COVER

GENERAL NOTES:
1. The finished grade and slope of the inlet base are to conform with the finished cross slope and grade of the proposed sidewalk and/or driveway.
2. Knife edges are to be constructed in accordance with the plans to extend the outlet and ensure necessary, modify the inlet details accordingly. Bend knife where necessary.
3. All reinforcing steel shall be No. 4 minimum cover unless otherwise specified. Use No. 5 minimum cover for Type steel or other equivalent grades.
4. The cover fillers shown for rectangular trenches are necessary when trenches are located in conjunction with concrete with bottoms or within a channel with rectangular cross sections.
5. For inlet bottoms see Index No. 200.
6. These inlet tops are designed for use with standard curb and gutter Type C and Type F. Locate outside of pedestrian cross traffic if possible.
7. See Index No. 200 for supplemental details.
8. All steel used for frame and cover shall meet the requirements of ASTM 6-39.
9. Either corrugated steel or sheet covers may be used. None covers shall be Corrugated No. 50 colored in accordance with ASTM A-41.
10. When Alternate "A" Cover is specified, where the cast-in concrete is of the reinforced type and cover and frame are to be used. Covers are to be grouted in accordance with the grouting detail shown on sheet 2-M-B, in lieu of lock welding.
11. Lock weld cover to frame with backup bars or clips.

STEEL COVER
(See Sheet 2-M-B for Corrugated Sheet and Frame)
GENERAL NOTES

1. This inlet was designed for shoulder gutters subject to heavy wheel load in sections where stubble exists or where improved or improved protected surfaces will be laid. In other sections where a bicycle sole plate is necessary use the steel grating shown on Index No. 220.

2. All reinforcing steel bars are 1/2" @ 12" centers.

3. Cut and bend bars out of way of pipe when necessary. Bars to be clean pipe by 1/32".

4. All exposed rings and corners shall be treated to avoid rust.

5. Recommended maximum pipe sizes based on concrete pipe (see Section 6. A. D. Rebars. Section B. B. 6. A. 2). GRATING.

6. Larger pipe sizes may be used but should be checked for Index No. 220. Bottom Type J is recommended for longer slope runs.

7. For supplementary details see index numbers 200 and 220.

8. Grate and top of structure shall be free to grade shown on plans.

9. When Alternate G. grate is specified in plans, the grate is to be hot dipped galvanized after fabrication.

State of Florida Department of Transportation
Road Design

GUTTER INLET

TYPE J

SHOULDER GUTTER TRANSITION

PLAN

(WITHOUT GATE)

SECTION BB

SECTION AA

SECTION DD

SECTION CC

See Index Number 200

INLET WITH BOTTOM TYPE J

STEEEl GRATING
GENERAL NOTES

1. All exposed edges and corners shall be rounded to 0.5" radius.
2. Per supplementary details see Reference No. 5.
3. The curb is designed for wheel traffic, while sidewalks are subject to heavy wear caused when vehicles are moved and if so subject to pedestrian and bicycle traffic.
4. When alternate "J" grates are specified in plans, the grate is to be set dipped provided after fabrication.
5. Grate and top of structure shall be level to grade shown on plans.

NOTE: Let and bend bars out of way of pipe when necessary. Bars to clear pipe 1".

NOTE: All reinforcing steel bars are 0.5" in 0.5" thru. 

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION 
HAND DESIGN 

GUTTER INLET 
TYPE V 

[Signature]

STATEWIDE APPROVALS FILE 

No.: 221
SECTION DD

SECTION EE

SECTION CC

SECTION AA

SECTION BB

GENERAL NOTES
1. Cost of ditch piping to be included in cost of inlet.
2. Reinforcing - No bars at each 12" center both ways, 2" clear to inside face.
3. Inlet to be used only where flow thru grate is less than 7 fps.
4. Where material unsatisfactory for foundation is encountered at FL, flexi will be used and carry walls down to satisfactory foundation. Backfill to FL with clean soil.
5. Direction of 3/4" x 3/4" bars to be in same direction as predominate flow.
6. Chamfer exposed edges, (1/2" chamfer) and cut and bend bars out of way of pipe when necessary.
7. Bars to clear pipe by 4 ft.
8. For supplemental detail, see Index 201.
9. Recommended maximum pipe sizes are for concrete pipe. Check larger sizes for fit for larger pipes. Inlet Type B or Bottom Type J (see detail above) should be considered.
10. This inlet was designed for ditches, medians, or other areas subject to heavy wheeled loads where debris may be a problem. It is not for use in areas subject to pedestrian and/or bicycle traffic.
11. When alternate 6" grate is specified in plans, the grate is to be hot dipped galvanized after fabrication.
12. Sodding to be paid for under contract unit price for Sodding, BY.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
PHASE DESIGN

DITCH BOTTOM INLET

TYPE A

<table>
<thead>
<tr>
<th>Sheet No.</th>
<th>Rev. No.</th>
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<tr>
<td>1</td>
<td>A</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

F.M.A. Approved: 7/19/75
1 of 1 250
GENERAL NOTES:
1. COST OF DITCH PAVING TO BE INCLUDED IN COST OF INLET.
2. REINFORCING-4 #4 BARS AT 12" CENTERS BOTH WAYS 2" CLEARANCE TO INSIDE FACE.
3. FOR SUPPLEMENTAL DETAILS SEE INDEX NO. 201.
4. CUT AND BEAD BARS OUT OF WAY OF PIPE WHEN NECESSARY. BARS TO BE FASTEN TO PIPE.
5. WHERE MATERIAL UNSATISFACTORY FOR FOUNDATION (UNSATISFACTORY AT FL. 21) ONE FLOOR AND CARRY WALLS DOWN TO SATISFACTORY FOUNDATION. BACKFILL TO FL. WITH CLEAR SAND.
6. THIS INLET HAS BEEN DESIGNED FOR DITCHES, INCLUDING ON OTHER AREAS SUBJECT TO HEAVY WHEEL LOADS WHERE DITCHES MAY BE A PROBLEM. IT CAN BE USED IN AREAS SUBJECT TO FLOODS AND/OR SUBMERSION.
7. RECOMMEND 36" PIPE AS MINIMUM SIZE FOR CONCRETE PIPE. FOR LARGER PIPE, 2" INLET SHOULD BE CONSIDERED.
8. WHEN ALTERNATE 2 GRATE, IN SPECIFIED IN PLANS, THE GRATE IS TO BE NOT DIRECTLY GROOVED AFTER FABRICATION.
9. TROWELS TO BE PLACED UNDER CONTINUOUS INLET PER FOR HOUSTON, TX.
PLANT

SECTION

TYPE C

Recommended Minimum Pipe Size:
2" x 3" Wall - 85° Pipe
3" x 3" Wall - 60° Pipe

No. 4 Bars 7/16" Cms.

SECTION

TYPE D

Recommended Minimum Pipe Size:
5" x 4" Wall - 75° Pipe
3" x 3" Wall - 60° Pipe

No. 4 Bars 7/16" Cms.

SECTION

TYPE E

Recommended Minimum Pipe Size:
2" x 3" Wall - 85° Pipe
3" x 3" Wall - 60° Pipe

No. 4 Bars 7/16" Cms.

SECTION

TYPE H

Recommended Minimum Pipe Size:
7" x 3" Wall - 30° Pipe
7" x 8" Wall - 25° Pipe
2" x 3" Pipe

No. 4 Bars 7/16" Cms.

INLETS

PLANT

SECTION

TYPE A

SLOTS (NON-TRAVERSABLE)

SECTION

TYPE B

END VIEW

PART AND SD

SD ONLY

Note: For slots with transversal slots see sheet 2 of 2.

PAVEMENT AND SODDING

GENERAL NOTES
1. REVELED EDGES: All exposed corners and edges to be chiselled 1/2".
2. FOUNDATION: Where material unsatisfactory for foundation is encountered at PL, EL, or fill, filter and screen with 3" drain cloth or similar material. Design to be submitted to AHS for approval.
3. CAST IRON: In accordance with Florida Department of Transportation Specifications.
4. STEEL GRATING: Manufactured by Borden, Florida Steel, Irving, Ralston, U.S. Foundry, Gainsville (1 or 2 bars).
5. STRUCTURES: These structures are to be placed in areas subject to heavy wheel loads.
6. DETAILS: For supplementary details see Standard Index 000.
7. PIPE SIZES: Recommended minimum pipe size given are for concrete pipe. Larger than recommended sizes must be checked for fire.
8. USES: When used without slotted pipe, it is recommended for use in other areas subject to infrequent traffic loads where debris is minimum. Where debris is a problem slotted pipe should be used when permitted by safety criteria.
9. ALTERNATE C & D GRAVEYARD: When specified in plans, shall be used for other applications after fabrication.
10. PAVEMENT: To be used only where shown in plans. Cost to be included in cost of earthwork.
11. SODDING: To be used around all inlets. To be paid for under contract unit price for Sodding SY.

APPROX. PIPE WEIGHT:

TYPE C
Approx. Weight: 225 Lbs.

TYPE D
Approx. Weight: 300 Lbs.

TYPE E
Approx. Weight: 400 Lbs.

CAST IRON GRATING

APPROX. PIPE WEIGHT:

TYPE C
Approx. Weight: 225 Lbs.

TYPE D
Approx. Weight: 300 Lbs.

TYPE E
Approx. Weight: 400 Lbs.

STEEL GRATING

APPROX. PIPE WEIGHT:

TYPE C
Approx. Weight: 225 Lbs.

TYPE D
Approx. Weight: 300 Lbs.

TYPE E
Approx. Weight: 400 Lbs.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD DESIGN

DITCH BOTTOM INLETS TYPES C, D, E & H

Specified Size
1 1/4" 1 1/4" 1 1/4" 1 1/4"

Designed by

Engineer

Approved by

Engineer

P.W. No. 225

P.W. No. 225

PSW. No. 225

PSW. No. 225

200" 200" 200" 200"

State of Florida 10/23/20

1 of 2

225
QUANTITIES

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GENERAL NOTES

1. For additional details see Index Nos. 201 and 232.
2. Cost of pavement to be included in contract unit price for item.
3. Slope to be provided on one or both sides as called for in plans.
4. Sodding to be paid for under contract unit price for sodding, SY.
5. Modification not adaptable to DBT Type H.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

DITCH BOTTOM INLETS
TYPES C, D, E, & H

Approved: 10/17/20

2 of 2 232
GENERAL NOTES

1. Cost of Ditch Paving to be included in cost of Inlet.
2. Reinforcing - B30 S of 12' on center both ways with 2" clearance to inside face.
3. Where material unsatisfactory for foundation is encountered at FL, elevation omit floor and carry walls down to satisfactory foundation. Backfill to FL with clean sand.
4. Direction of 1-1/2" x 5" main bars to be in same direction as predominant flow.
5. Chamfer exposed edges. (1/8" Chamfer)
6. Cut and bend bars out of way of pipe when necessary. Bars to clear pipe by 1/8".
7. For supplemental details, see Index 201.
8. Recommended maximum pipe sizes are for concrete pipe. Check larger sizes for FL. For larger pipe, a J-J inlet should be considered (see detail above).
9. This inlet is designed for ditches, medians or other areas subject to heavy wheel loads, where only light debris is expected and pedestrian traffic is anticipated. It is not for use in areas subject to bicycle traffic.
10. When alternate G grate is specified in plans, the grate is to be hot dipped galvanized after fabrication.
11. Sodding to be paid for under contract unit price for Sodding, SY.
**Bill of Reinforcing Steel**

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<td>5'-3&quot;</td>
<td>Footing</td>
<td>Bend</td>
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<tr>
<td>B</td>
<td>1/4</td>
<td>14</td>
<td>31'-6&quot;</td>
<td>Footing</td>
<td>Straight</td>
</tr>
<tr>
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<td>1/4</td>
<td>4</td>
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<td>1/8</td>
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<td>1'-8&quot;</td>
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**Bending Diagrams**

**Estimated Quantities**

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**General Notes**

Design Specifications: A.A.S.H.O., 1973

Chamfer: All exposed edges and corners to be chamfered 3/8" unless otherwise shown.

Reinforcing Steel: Grade 40 or 60

Soading: See Index 281

State of Florida Department of Transportation

Ross Design

Straight Concrete Endwalls

Single and Double 60° Concrete Pipe

**Elevation**

(Showing Bars in Footing)

**Plan**

(Showing Bar in footing)

**Section A A**

**Half Elevation**

(Showing Bars in Front Face Of Wall)

**Typical Section Thru Endwall**

(Showing Bars in Back Face Of Wall)
MOUNTING FOR STEEL GRATE

STEEL GRATE USE CRITERIA

1. Steel grating shall be used only in areas where the regular clear deck surface area and area off of the following conditions exist:
   a. Clear deck area to cover roughly 25% of normal or typical areas or areas where debris and/or dirt is negligible.
   b. Minimum to ensure it is least covered in high to covered channels that debris transport is not considered a material problem.
   c. Grates to cover all areas,既要也要on an equal weight basis to ensure uniform load distribution and prevent localized heavy loads.
   d. Areas where grates are located with sufficient backwater from the design conditions and traffic operations to ensure property.

2. Steel grating to be used only where called for in plans and subject to approval of the engineer having authority to call for 0.1% of grate.

GENERAL NOTES:
1. Cut of grating is to be made as shown in Figure 0A. 100% of the exterior area.
2. Cut of grating is to be made as shown in Figure 0A. 100% of the exterior area.
3. All size channel one bar steel to be A-17.7. A-285M. A-286M. Weathering steel
   FABRIC AT NEXT LOW ES 10%.
4. All grates shall be tested by the state to ensure compliance with the applicable specifications.
5. Channel grating C234.0 may be substituted for C24 x 14 CHANNEL.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ENGINEERING DEPARTMENT

U-TYPE CONCRETE ENDWALLS
Baffles and Grate Optional 21/2 to 30 PIPE
TABLE OF DIMENSIONS AND ESTIMATED QUANTITIES
PIPE CULVERT ENDWALLS WITH U-TYPE WINGS

<table>
<thead>
<tr>
<th>Opening</th>
<th>Wall Feeding</th>
<th>Quantity in One Endwall</th>
<th>Steel</th>
<th>Tie Rods</th>
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</thead>
<tbody>
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<td>D</td>
<td>H</td>
<td>G</td>
<td>K</td>
<td>E</td>
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<td>0.6</td>
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<td>0.2</td>
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Note: Check all exposed edges 4".

TABLE OF DIMENSIONS AND ESTIMATED QUANTITIES
PIPE CULVERT ENDWALLS WITH 45° WINGS

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<tr>
<th>Opening</th>
<th>Wall Feeding</th>
<th>Quantity in One Endwall</th>
<th>Steel</th>
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<tbody>
<tr>
<td>D</td>
<td>H</td>
<td>G</td>
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Note: Check all exposed edges 4".

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
WINGED CONCRETE ENDWALLS
SINGLE ROUND PIPE

WINDED CONCRETE ENDWALLS
SINGLE ROUND PIPE

<table>
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Issued By: [Signature]
Date: 5/26/76

Checklist: Approved: 5/26/76

Approval No: 266

Page: 1 of 1
### GENERAL NOTES

1. Flared end sections shall conform to the requirements of ASTM T6 with the exception that dimensions and reinforcement shall be as prescribed in the table below. Corners of reinforcement may consist of either one ring or two rings of steel. Compressive strength of concrete shall be 4000 psi. Shop drawings for flared sections having dimensions other than shown must be submitted for approval to the Engineer of Drainage.

2. Connections between the flared end section and the pipe culvert may be by any of the following types unless otherwise shown on the plans.
   a. Joints meeting the requirements of Section 942.15 of the Standard Specifications.
   b. Joints sealed with preformed elastomeric gaskets.
   c. Reinforced concrete joggles, cast in place on this drawing.

3. 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 selected for the pipe, the pipe shall be bituminous coated in the jacketed area as specified in Table 2B1J. Bituminous coating to be included in the contract unit price for the pipe culvert.

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

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

### DESIGN NOTES

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

2. Reinforced concrete joggles shall be used at all locations where high velocities and/or highly erosive soils may cause disintegration. These locations will be shown on the plans.

3. Toe walls shall be cast to create the anticipated discharge rate and soil type are such that erosion action would occur. Toe walls are not required where ditch pavement is provided, except when piping would occur if the ditch pavement is removed.

### Table: Flared End Section

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<th>Bell</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>P</th>
<th>R1</th>
<th>R2</th>
<th>Flat</th>
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<td>3/4</td>
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### Reinforced Concrete Jacket Detail

- Flared End Section
- Reinforced Concrete Pipe Shown
- 24" for 30" to 72" Pipe
- 42" for 15" to 24" Pipe

### Section CC

- Reinforced Concrete Jacket Detail
SLOPE AND DITCH TRANSITIONS

CONCRETE PIPE CONNECTOR

ANCHOR DETAIL
**DIMENSIONS & QUANTITIES**

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<tr>
<th>D</th>
<th>X</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>M</th>
<th>N</th>
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<th>CONCRETE (CU. YD)</th>
<th>SODDING (SQ. YD)</th>
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**TOP VIEW - SINGLE PIPE**

Concrete Slab, 3" Thick, Reinforced With 6" x 6".
10/10 Welded Wire Fabric.

**TOP VIEW - MULTIPLE PIPE**

Concrete Slab, 3" Thick, Reinforced With 6" x 6".
10/10 Welded Wire Fabric.

**STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION**

**SIDE DRAIN**

**MITERED END SECTION**

**JINGLE AND MULTIPLE ROUND CONCRETE PIPE**

**SECTION**

Paid For As Side Drain Pipe Cu.'s

1' (Pipe To Be Included Under Unit Price For Mitered End Section)
The specified weld shall be made when the fabricated unit is subject to hazardous loads and required bending. Tack welds are permitted for local or pile fabrication. Galvanizing over welded surface not required.

FASTENER UNIT
FOR ALL SIZES OF SINGLE AND MULTIPLE DRAIN PIPE

GRADE DETAIL
FOR SINGLE & MULTIPLE DRAIN PIPE

CONCRETE PIPE CONNECTOR DETAIL

ANCHOR DETAIL

SIDE DRAIN
MITERED END SECTION
DETAILS FOR CONCRETE & CORRUGATED METAL PIPE

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
BROOKS FLORIDA DEPARTMENT OF TRANSPORTATION

CONCRETE PIPE TOLERANCES

Note:

4/8" x 2" bolts are standard for all grate fasteners, except when the contractor elects to use the printed upper notes for the intermediate fasteners on multiple drain pipe, which will require the following bolt lengths:

*Core Hole Bolt Length (One B x C):
2 3/4" to 6 3/4" x 2 3/4"

4 x Bolt Dia. 1" Min.
4 x Bolt Dia. 2 1/4" Min.

2 1/4" x 1/2" Steel Bar (See Detail Right)
Pipe Shell T (Varies)

3 x Bolt Dia. Min.
4 x Bolt Dia. 2 1/4" x 1/2" Steel Bar (See Detail Right)
Pipe Shell T (Varies)

All bars, bolts, nuts and washers are to be galvanized steel.
Bolt diameters shall be 1/8" for 15" to 30" pipe and 1/4" for 42" to 60" pipe.
Two connectors required per joint, located 60° right and left of bottom center of pipe.
Bolt holes in pipe shell are to be drilled.

3L or Bolt Length + 3 1/2" Min.

All bars, bolts, nuts and washers are to be galvanized steel.
Bolt diameters shall be 1/8" for 15" to 30" pipe and 1/4" for 42" to 60" pipe.
Two connectors required per joint, located 60° right and left of bottom center of pipe.
Bolt holes in pipe shell are to be drilled.

2 1/4" x 1/2" Steel Bar
Pipe Shell T (Varies)

Optional Slope

Flail Washer [2 Reqd]

0.5" x 6" Bolt May Be Substituted

Anchors required for C & D only.
Anchor, washer and nut to be galvanized steel.
Bolt anchors are 2 1/2" deep, others are drilled by boring.
Anchor bars are spaced at a distance equal to four H.D. corrugations. Move the nacheons in the outside creets of corrugations.
Flail washer to be placed on inside wall of pipe.
GENERAL NOTES

1. Mitered and sections shall be paid for as mitered end section, each, based on each independent pipe end.

2. The cost of all pipe(s), grooves, fasteners, reinforcing, connections, anchors and concrete shall be included in the contract unit price for mitered end section, each. Embedding not included.

3. The reinforced concrete slab shall be constructed for all sizes of side drain pipe and cast in place with Class I concrete.

4. Round pipe size 30" or greater and pipe-size 35 1/2" or greater shall be graded unless specified in the plans. Smaller sizes of pipe shall be graded only when called for in the plans. The lower grade on all downstream units on divided highways shall be omitted.

5. Grooves are to be fabricated from steel ASTM A53, Grade B, pipe. The lower grade on all traffic approach ends shall be Schedule 80 and all remaining grooves shall be Schedule 40.

6. Grooves subject to salt spray or corrosive free environment may be fabricated from galvanized pipe, with zinc metal coating approved during fabrication required as specified in Section 562, Standard Specifications, or fabricated from black pipe and hot-dipped galvanized after fabrication in accordance with ASTM A123. Grooves subject to water or highly corrosive environment shall be hot-dipped galvanized after fabrication in accordance with ASTM A123.

7. Concrete pipe used in the assembly of mitered and sections shall be of select lengths to avoid excessive connections.

8. Corrugated metal pipe galvanizing that is damaged during handling and performing for mitered and section shall be repaired.

9. That portion of corrugated metal pipe in direct contact with the concrete slab shall be bluish white concrete precast to prevent it from embedment.

10. Unless otherwise designated in the plans, concrete pipe mitered and sections may be used with any type of side drain pipe. For corrugated steel pipe mitered and sections shall be constructed with the pipe in concrete pipe. Hot-dipped galvanized pipe mitered and sections shall be constructed in accordance with the details shown for corrugated metal pipe (including anchor bolts, gusset, etc.) and may be used with any type of 30", 36", or 48" side drain pipe. When the mitered end section is discontinuous to the side drain pipe, a concrete jacket shall be constructed in accordance with Standard Index 280.

11. When existing multiple side drain pipes are used under the same dimensions shown in this detail, or in non-uniform sections, the mitered and sections shall be constructed either separately as single pipe mitered and sections or collectively as multiple pipes and sections as directed by the Engineer, however, mitered and sections will be paid for each, based on each independent pipe end.

12. Elliptical concrete pipe mitered and sections shall be constructed using appropriate mitered section details for round concrete pipe and corrugated metal pipe arch, sheets 1, 3, 4, and 5.

DESIGN NOTES

1. In critical hydraulic locations, grooves 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 5). The design engineer shall determine highly corrosive locations and specify in the plans when the grooves shall be hot-dipped galvanized other fabrication (General Note 5).

2. The design engineer shall determine and specify in the plans which alternate types of mitered end section will not be permitted. The restrictions shall be based on corrosive or structural requirements.
**GENERAL NOTE**

1. Details for concrete and round corrugated metal pipe, concrete pipe shown.

2. Sod slopes 2' each side and top and ditch 4' beyond toe.

**Estimated Quantities & Dimensions**

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>L (Cm)</th>
<th>Conc Pipe</th>
<th>Sand-Cement Riprap</th>
<th>Concrete</th>
<th>Sod</th>
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<tbody>
<tr>
<td>12''</td>
<td>3'</td>
<td>15</td>
<td>15</td>
<td>60</td>
<td>8.60</td>
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<td>24''</td>
<td>3'</td>
<td>15</td>
<td>15</td>
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**SIDE DRAIN Mitered End Section**

SINGLE ROUND CONCRETE & CORRUGATED METAL PIPE

Reinforced Concrete Slab Placement
3” Thick, 6” x 6” 10/10 Weave Wire Fabric; 2’ Wide Sides and Top.
INLETS OR MANHOLES ON INTEGRAL PRECAST CONCRETE RISER FOR CONCRETE PIPE

CONCRETE COLLAR FOR EXTENSION OF EXISTING PIPE CULVERTS

Note: Spigot and to be placed in existing (Culvert) regardless of direction of flow.

CONCRETE JACKET FOR JOINING MAINLINE PIPE AND STUB PIPE

Note: Either Cast Iron Pipe or PVC Pipe, Schedule 40, may be used.

CONCRETE GUTTER AND DRAINS AT RETAINING WALLS

ElliPtical ConCrete pipe Joints

Cost of concrete jacket and filter fabric jacket to be included in cost of Elliptical Concrete Pipe Culvert.

CONCRETE JACKET FOR CONNECTING DISSIMILAR TYPES OF PIPE

Note: Cost of Masonry to be included in Contract Unit Price for New Pipe.

MISCELLANEOUS DRAINAGE DETAILS
GENERAL NOTES
1) All cross drain and side drain pipe structures to be constructed to a length that will be a multiple of 4' in length. All drilled to a depth of 12' below bridge level. No additional lengths allowed.

SCHEDULE OF
BELL REINFORCEMENT
Classes - III, IV, V, W, A, B

<table>
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<th>Nominal Pipe Diameter</th>
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<td>0.85</td>
</tr>
<tr>
<td>12&quot;</td>
<td>0.75</td>
<td>0.85</td>
</tr>
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</table>

5) All reinforcing shall be located above this line unless WTL is defined in bell reinforcement.

DETAIL OF BELL & SPIGOT CONCRETE PIPE JOINT
USING ROUND RUBBER GASKET

RAILROAD COMPANY
CLEARMANCE
BELOW BOTTOM OF RAIL TIE
STRENGTH
30" (Min.)

SOUTHERN RAILWAY SYSTEM
30" (Min.)

METHOD FOR DETERMINING THE LENGTH OF SPECIAL PIPE REQUIRED UNDER RAILROADS

MISCELLANEOUS DRAINAGE DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
HIGHWAY DESIGN

MISCELLANEOUS DRAINAGE DETAILS

METHOD FOR SETTING LIMITS OF VARIABLE FRONT SLOPES AT DRAINAGE STRUCTURES

NOTE: Filling or excavating of variable slopes to be done during normal grading operations.
### SODDING QUANTITIES (SY)

#### ENDWALL - INDEX 250

<table>
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**Note:** These quantities are for one pipe.

#### ENDWALL - INDEX 261

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</table>

**Note:** Quantity for 25 is for endwall with bottles.

---

### SODDING QUANTITIES (SY)

#### ENDWALL - INDEX 270

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<td>72&quot;</td>
<td>25.26</td>
<td>25.77</td>
<td>23.48</td>
</tr>
</tbody>
</table>

**Note:** Quantity for 25 is for endwall with bottles.

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### DITCH PAVEMENT & SODDING

**STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION**
**ROAD DESIGN**

**DITCH PAVEMENT & SODDING**

**NOTE:** All straight endwalls except Index 250 will require sodding as shown in this drawing. Quantities for each particular case to be determined by the designer.
Provide approximately a minimum of 0.25% grade on gutter, slightly warping the surface of the median pavement if necessary, within limits of the median curb or curb and gutter. Construct a drainage flume or flumes at the point or points of the grade. See details.

SECTION A-A

Provide smooth Section
Match existing grade

SECTION B-B

(May drain from any point as established by the Engineer.)

SECTION C-C

FLUME DETAIL

GENERAL NOTES: These details are to apply to projects which provide for the conversion of 2-lane sections to 4-lane divided highway sections and for superimposed sections of new 4-lane divided highways. Location of low point or points in gutters is to be set by the Engineer during construction and will establish locations of flumes. The number of flumes is to be maintained at a minimum. Plans for median openings to conform to detail plans.

Layout above is illustration only. Cost of flumes to be included in the contract price for Median Curb or Curb and Gutter.
DETAIL OF CONC. SPILLWAY AT END OF SHOULDER GUTTER

(TO BE USED WHERE INLETS, MIVES B. ENDMILLS ARE INDICATIG)
SAFETY MODIFICATION FOR INLETS IN BOX CULVERTS

ELEVATION

 sectional slop varies not less than 8°1/2, 6'

SECTION AA

PLAN

SECTION BB

Ditches Park

Top of Box

First Shed in Box (Depth Varies)
GENERAL NOTES

1. Cost of grate to be paid for as Exhibit G grate per pound, tabulated quantity.
2. Cost of grouted bolts and nuts to be included in bid price for Exhibit grate.
3. Grates to be ASTM A 3600 weathering steel. If coated with self-watering coatings designated in plans grate to be fabricated from ASTM A 3600. Grade B0, then galvanized.
4. Reinforcing Steel - All bars are size 10. Sections show one center. Make to be 12" minimum. Creepload is 0" except as noted.
5. The cost of dowel bars and anchor bars to be included in the bid price for reinforcing steel.
6. G30/AASHTO bars 0" deep anchor bars to be included in the bid price for reinforcing steel.
7. For use criteria see plans DB.
8. Grate seat must be a minimum of 6" below anchor bolts. Grate must be thoroughly cleaned prior to placing dowel bars and anchor bolts.

DIMENSIONS AND QUANTITIES PER GRADE

<table>
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DIMENSIONS AND QUANTITIES PER U-ENDDHAL

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<td>250</td>
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TYPICAL RETURN PROFILES
INCLUDING DETAIL SHOWING LOCATION OF INLETS ON RETURN

NOTE:
1. On normal intersections, profiles need not be included in the plans as the above typicals adequately present the desired configuration.
2. For major intersections, where extreme grades are involved or where it is deemed necessary to include profiles in order to present adequate design details, return profiles may be included in the plans.
3. Inlet locations and box parts should be located, as much as possible, to be compatible with pedestrian traffic and drop curb location.
4. A minimum 2% grade should be maintained on all slag grading outside inlet limits.
NOTES:
1. The ramp surface shall be finished in accordance with sub-article 1.1.23 as modified herein and hand抹黑. The curbing shall not exceed a maximum slope of 0.5:1.
2. Curb cut ramps are to be located as shown on the plans.
3. Basis of payment: contract unit price per lin. ft. of Concrete Sidewalk.
4. Complete curb cut ramps are to be constructed at all locations shown on plans even when sidewalk is not constructed concurrently.

CURB CUT RAMP
FACILITY FOR PHYSICALLY HANDICAPPED

Section AA

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CURB CUT RAMPS
PHYSICALLY HANDICAPPED

CURB CUT RAMP
FACILITY FOR PHYSICALLY HANDICAPPED

Section AA

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By distance from final edge of sidewalk to back point of 18.7 slope.
\[ x = \frac{0.576}{d} \]
GENERAL NOTES
1. The ramp surface shall be finished in accordance with sub article 406-15-2.5 as modified. Approved hand methods may be used.
2. Curb cut ramps are to be located as shown on the plans.
3. Basis of payment to be the contract unit price per sq. yd. of Concrete Sidewalk.

THESE RAMPS TO BE USED ONLY WHERE SIDEWALK IS SIGNED AS A BIKE ROUTE

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
HIGHWAYS

Curb Cut Ramps
Bikeways & Physically Handicapped

<table>
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<tr>
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<th>Code</th>
<th>Approved By</th>
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304

2 of 2
DETAIL SHOWING RIGID SHOULDER PAVEMENT

NOTE: Rigid shoulder pavement shall be concrete or cemcrete as called for in the plans.

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, sheet metal strip shall be bent up against the pavement edge.

The sheet metal strip shall be a minimum #6 gauge steel, 12" wide and shall be galvanized in accordance with ASTM A-526, Coating Designation (G60).

GENERAL NOTES

1. Pay quantity of expansion joint to be calculated against pavement of right angle to the centerline of the roadway pavement. Shoulder pavement pay-included.

2. Specifications and detail details see Index No. 305.

3. If the C of roadway and the C of bridge do not necessarily coincide, prior to the placement of the expansion joint, the C of the roadway pavement shall be determined.

SECTION THRU SEALS

Either of the three Seals shown may be used.

REINFORCING STEEL

Sheet metal strip shall be bent up against the pavement edge. The finish surface must be capped with a lubricating adhesive.
END ANCHORAGE TYPE IV

Note: The payment for the items of End Anchorage Assemblies Type IV shall include furnishing and installing the Buffer End Sections, Special End Shoe, One Piece Anchor Plate, Cable Assembly, Wire Sleeve, Bearing Plate, Two Treated Timber Break-Away Posts, and Concrete Fittings including nine rebar, and treated bearing plate and the necessary hardware.
Double-Groove Unit

Typical Cross Section

Drainage Slot Detail

Lifting Slot Detail

Tongue Protector Detail

Tongue Protector in Place

View of Matching Units

General Notes

1. Materials and workmanship for precast double-tongue and double-groove units shall meet the requirements of Section 805 of the Uniform Building Code, except for thickness and width requirements shown in this drawing. The thickness of the tongue shall be 2 inches (50 mm) minimum.

2. For permanent installations, the units shall be cast with mixing units only, unless specified otherwise in the project. Permanent units do not require tongue protectors.

3. Units for temporary protection shall be cast with mixing units only, unless otherwise specified in the project. Temporary units must be designed with tongue protectors.

4. Units for temporary protection may be used for permanent applications. Units designed for temporary protection shall not be used for permanent applications without modification.

5. Prestressed double-tongue and double-groove units may be used in Class E working on high-speed roads.

6. Prestressed double-tongue and double-groove units are not applicable to the use of double-groove barrier units.

7. Weight of double-groove units is in accordance with Project Specifications.

Temporary Installations

Permanent Installations

Precast Concrete Barrier Wall

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

Scale:

1" = 20' - 6" (0.3 m - 0.2 m)

Date:

November 29, 2016

F.N.S. Approval Date: December 16, 2016

41 of 41

Preliminary Design Plan Number

Sheet 2 of 2

F.N.S. Approval

Approve By

F.N.S. Approval Date

Approval Date

Drawing No.

100965

S: 4:00
GENERAL NOTES (TYPE 'B' FENCE)

1. THIS FENCE TO BE PROVIDED GENERALLY IN URBAN AREAS.

2. LITE POSTS MAY BE ANY OF THE FOLLOWING:
   (A) GALVANIZED STEEL PIPE; (B) NORMAL; (C) ALUMINUM COATED STEEL PIPE; (D) NORMAL; (E) ALUMINUM COATED STEEL; (F) ALUMINUM; (G) ALUMINUM ALLOY; (H) ALUMINUM COATED STEEL; (I) NORMAL; (J) ALUMINUM ALLOY PIPE; (K) NORMAL.

3. CORNER, END OR FULL POSTS MAY BE ANY OF THE FOLLOWING:
   (A) GALVANIZED STEEL PIPE; (B) NORMAL; (C) ALUMINUM COATED STEEL; (D) TYPE 'B' NORMAL; (E) ALUMINUM ALLOY PIPE; (F) NORMAL.

4. CORNER POST ASSEMBLIES MAY BE USED IN PROJECTS WITH CORNER, END OR FULL POST ASSEMBLIES TO BE APPROVED BY THE ENGINEER.

5. CHAIN LINK FABRIC, POSTS, BAILS, SAFETY FRAMES, EXPANSION CLIPS, ELBOWS, TUBULAR TIES, DIMENSIONS AND ALL MATERIALS AGREED TO IN THE SPECIFICATIONS MUST BE USED EXCEPT AS NOTED.

6. CONCRETE BASE SHALL BE NO. 9 GAGE AND GALVANIZED AT RATE OF 3.0 PIPS PER SQ FT.

7. THE CONTRACTOR MAY ELECT TO USE A COMBINATION OF ZINC-COATED STEEL POSTS, ALUMINUM POSTS, ALUMINUM ALLOY POSTS, AND ALUMINUM ALLOY FENCE MEMBERS. (B) IN GENERAL, ONLY ONE COMBINATION TO MATERIALS WILL BE ALLOWED IN FENCE CONSTRUCTION.

8. CONCRETE FABRIC SHALL BE CLASS 2 AS SPECIFIED IN SECTION 348 OF THE STANDARD SPECIFICATIONS EXCEPT THAT THE REQUIREMENTS CONTAINED IN 345, 346, 347, AND 348 SHALT APPLY. MATERIALS FOR CLASS 2 CONCRETE MAY BE USED FOR CONCRETE BASES. PLEASE SEE SIMILAR MATERIALS.

9. IN LOCATIONS OF FIRM WELL DRAINED SLOPES, THE CONTRACTOR MAY ELECT TO INSTALL 12 IN. POSTS INLINES ON WIRE AND BRACKETS TO A MAXIMUM DEPTH OF THREE FEET IN LINES OF USING CONCRETE POSTS.

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GENERAL NOTES

1. All fabric shall be 6 ft gage 2' mesh knitted top & bottom selvages.

2. All gate components shall meet the galvanizing requirements specified in Index No. 452.

3. Cast all gate components shall be included in the contract unit price for Cantilever Slide Gate.

4. The Contractor may substitute any equivalent cantilever slide gate approved by the Engineer.
FOUR LANE ROADWAY

TWO LANE ROADWAY

Note: All dimensions shown are standard. The details shown on this index drawing do not supersede the details shown on Index 500. When otherwise shown on plans this dimension may be reduced to 2'-0".

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<td>High Plastic</td>
<td>A-5 or A-7 (both with LL&gt;50)</td>
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<tr>
<td>M</td>
<td>Mock</td>
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Symbols listed left to right in order of preference.

G 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.
2-LANE OR 4-LANE PAVEMENT, NO MEDIAN

NORMAL PAVEMENT SLOPE
SUPERELEVATION TRANSITION L
FULL SUPERELEVATION

STRAIGHT LINE TRANSITION FROM NORMAL PAVEMENT SLOPE TO SUPERELEVATION SLOPE

SHOULDER CONSTRUCTION WITH SUPERELEVATION

SHOULDER ON HIGH SIDE

SHOULDER ON LOW SIDE
MAINTAIN 90 FT FT DROP ACROSS INSIDE SHOULDER. UNTIL PAVEMENT SUPERELEVATION CROSS SLOPE REACHES 90 FT/Ft. FOR PAVEMENT CROSS SLOPE GREATER THAN 90 FT/Ft, SHOULDER TO HAVE SAME SLOPE AS PAVEMENT.

GENERAL NOTES FOR SUPERELEVATION
1. USE NORMAL SECTION WITH NO SUPERELEVATION FOR CURVES UP TO 20 FT FT AND NORMAL PAVEMENT SLOPE FOR CURVES OVER 20 FT FT.
2. IF-initial design speed is 70 MPH, THEN design speed of 65 MPH is used in the name of the horizontal portion of the curve. Super elevate at the normal cross slope rate of 18 FT/Ft or as indicated by the curve for the approved design speed.
3. THE LENGTH OF SUPERELEVATION TRANSITION IS DETERMINED BY USING A RELATIVE SLOPE OF PAVEMENT EDGE TO PROFILE GRADE AT THE CURVE END. SUCH THAT THE MAXIMUM LENGTH OF TRANSITION SHALL BE 90 FT/Ft.
4. FOR CURVES IN MONORAIL AREAS, SEE INDO NO. 5.

SUPERELEVATION

SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD DESIGN

SUPERELEVATION

STRAIGHT LINE TRANSITION FROM NORMAL PAVEMENT SLOPE TO SUPERELEVATION SLOPE

NOTE: AGRICULTURAL DITCH IN CROSS SLOPE

NOTE: AGRICULTURAL DITCH IN CROSS SLOPE

NOTE: AGRICULTURAL DITCH IN CROSS SLOPE

NOTE: AGRICULTURAL DITCH IN CROSS SLOPE

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NOTE: AGRICULTURAL DITCH IN CROSS SLOPE

NOTE: AGRICULTURAL DITCH IN CROSS SLOP
SUPERELEVATION TRANSITION $L_1$, Varies (00' Min.)

Straight Line Transition Outside Edge of Pavement

$0.1L_1$

Curve

$0.25L_4$

Tangent

$D_1$

Outer Roadway

$D_2$

Inner Roadway

$0.1L_4$

Tangent

$D_3$

Profile Grade

$D_4$

Profile Grade

$D_5$

Profile Grade

$S$ = Slope Ratio

SECTION A-A
NORMAL CROWNED SECTION

SECTION B-B
SUPERELEVATION SECTION LT & RT.

SECTION C-C
SUPERELEVATION SECTION LT.
PLANE INCLINED SECTION RT.

SECTION D-D
PLANE INCLINED SECTION LT.
SUPERELEVATION TRANSITION RT.

SECTION E-E
SUPERELEVATION TRANSITION LT.
FULL SUPERELEVATION RT.

SECTION F-F
FULL SUPERELEVATION LT & RT.

8-LANE PAVEMENT WITH ONE LANE SLOPED TO MEDIAN
The image describes the construction of turnouts and widening sections for roads, including details on surface courses, base courses, and friction courses. The section also includes a table for quantities of friction courses for different turnout types.

### GENERAL NOTES

1. Turnouts are to be constructed or resurfaced at locations as directed by the Engineer.
2. Turnout construction not required with paved shoulders.
3. Connections outside the 5' limit are to be constructed as directed by the Engineer.
4. Contract unit price, Turnout Construction, to include excavation and base.
5. Payment for surface course to be included in roadway resurfacing pay item.
6. Payment for feathering friction course to be included in the unit price for Asphalt Concrete Friction Course placed on the roadway. Feathered areas will not be included in measured quantities. Feathering not required for FC-2 B FC-3 friction courses.

### SECTION AA WITH WIDENING

Surface Course (1" Thick, Min.) (To be the same material as Resurfacing or Leveling). Surface not required if asphalt mix base is used.

Base (Any material currently specified by the Department for base or surface course construction; 3" thick for asphalt mixes and 4" thick for other materials.)

### SECTION A-A

Surface Course (1" Thick, Min.) (To be the same material as Resurfacing or Leveling). Surface not required if asphalt mix base is used.

Base (Any material currently specified by the Department for base or surface course construction; 3" thick for asphalt mixes and 4" thick for other materials.)

### QUANTITIES FOR ONE TURNOUT (Sq. Yd.)

<table>
<thead>
<tr>
<th>Drive Width (Feet)</th>
<th>Intersection</th>
<th>Type I</th>
<th>Type II</th>
<th>Type I</th>
<th>Type II</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
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<td>100</td>
<td>90</td>
<td>80</td>
<td>300</td>
<td>299</td>
</tr>
</tbody>
</table>

The diagram also includes symbols and annotations for existing drive, widened sections, and base and surface construction details.
ALUMINUM HANDRAIL ON GRAVITY WALL

ESTIMATED QUANTITIES FOR WALL

<table>
<thead>
<tr>
<th>Height Above Ground</th>
<th>Concrete</th>
<th>Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>3'</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>4'</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>5'</td>
<td>35</td>
<td>5</td>
</tr>
</tbody>
</table>

GENERAL NOTES:
1. All fixed joints to be either welded all around and ground smooth on standard type rail fittings. At the connectors, option posts shall be connected to base by helix only. Helix filler to be alloy ER-5556 or ER-5553.
2. Nuts, washers, and bolts to be hot dip galvanized in accordance with ASTM A153. After the nuts have been tightened, the anchor bolt thread shall be driven in and flattened, and the entire bolt spot welded and coated with zinc compound.

PLAN

CONCRETE STEPS

WALLS, HANDRAILS & STEPS
GENERAL NOTES

1. The notes applying to P.C.C. Pavement are not applicable to R.B.A.C. Pavement.

2. (a) P.C.C. Pavement Projects:
   Where shoulder pavement adjacent to shoulder gutter is less than 6' wide, it shall be identical to the adjacent roadway pavement beginning with the through joint nearest the point of 6' width.

(b) Flexible Base Projects:
   Where shoulder pavement used in conjunction with shoulder gutter in less than 6' width width, it shall be identical to the adjacent roadway pavement.

3. Exit and Entrance terminals as detailed shall not be used on ramps for which a speed of 50 M.P.H. or greater cannot be maintained. For such ramps, parallel deceleration and acceleration lanes shall be used in place of tapers with lengths set according to table J-8 and J-10 (1973 A-A-9-H-O - Red Book).

DETAIL C

ENTRANCE TERMINAL
TWO THRU LANES

DETAIL D

ENTRANCE TERMINAL
WITH ADDED LANE

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
HIGHWAYS

RAMP TERMINALS
SHOULDER TREATMENT
AT SPEED CHANGE LANES WITH SHOULDER GUTTER

SHOULDER TREATMENT
AT SPEED CHANGE LANES WITHOUT SHOULDER GUTTER
NOTE
CLASS II CONCRETE IS TO BE
USED UNLESS OTHERWISE NOTED
IN PLANS OR SPECIAL PROVISIONS

PLAN

SECTION A-A

TYPE A
REINFORCED CONCRETE

TRACTOR CROSSINGS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

TRACTOR CROSSINGS
INSTALLATION

NOTES:
1. Elevation of the top of each length of marker pipe shall be determined as soon as it is installed and shall be maintained before the next length of marker pipe is added.
2. Settlement plate assemblies shall be dropped and protected from construction vehicles and equipment. If settlement plates are damaged, they shall be replaced in kind.
3. Oatum used to construct seal should not have a mesh covering (plastic or other synthetic material).
**GENERAL NOTES**

1. The purpose of shrubs in areas back of guardrail is to eliminate hard maintenance in these areas.

2. Shrubs are to be planted approximately 5 feet from guardrail posts and guardrail. Narrow plantation area are to have at least one row of shrubs, in direct line with guardrail.

3. Shrubs are to be placed approximately 3 feet centers in rows with 5 feet spacing.

4. Shrubs are to be added in successive rows to create a zig-zag pattern between any two rows.

5. Shrubs shall be specified in the plant by Landscape Architect Master Plan Site List numbers.

6. Only one variety of shrub shall be planted within any green conference and no shrub variety is to be repeated within a distance of one mile.

7. When guardrail piling is constructed in conjunction with shrub planting, soil sterilization shall be in accordance with Section 325 of the Standard Specifications.

**STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION**

**SHRUBBERRY**

**BACK OF GUARDRAIL APPLICATION**

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Wise Myrtle</td>
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<tr>
<td></td>
<td>Pachysandra</td>
</tr>
<tr>
<td></td>
<td>Prostanthera</td>
</tr>
<tr>
<td></td>
<td>Tatarica</td>
</tr>
<tr>
<td></td>
<td>Vaccinium</td>
</tr>
<tr>
<td></td>
<td>Viola</td>
</tr>
<tr>
<td></td>
<td>Zieranthera</td>
</tr>
</tbody>
</table>

**545**
PLAN

SECTION A-A

ELEVATION

DETAIL OF 9"x9"x12.5" ANCHORS
ANCHORS SPACED 18" C.C. MAX.
TWO ANCHORS EACH END ANGLE

SECTION B-B

ELEVATION

TYPE 3"X3" SLAB

GENERAL NOTES

1. The furnishing and installing of concrete crossings, together with any necessary drilling, bolting, adjustment and track alignment shall be furnished by the Contractor and paid for by the Railroad Company without cost to the Contractor or to the Department.

2. All concrete ties, rubber pads, the logs of ties and wood filler blocks shall be furnished and installed by the Railroad Company.

3. Concrete Crossings shall be spaced on 8' centers by the Railroad Company.

4. Rubber pads shall be installed on concrete ties in field using contact cement.

5. Filter blocks shall be pressure treated pine or clear heart redwood and shall be shaped prior to shipment.

6. Class 1 concrete 3" thick tops used in construction.  By mutual agreement of General Approach Slabs and for Box girder crossings (Cost to be included in cost of Class 1 concrete, see note no 6.)

PLAN OF SKewed CROSSING

PLAN - 90° CROSSING

ELEVATION

REINFORCING FOR CONCRETE PAVING BETWEEN PARALLEL TRACK CROSSINGS

(Cost of reinforcing to be included in cost of Class 1 Concrete, see note no 6.)
1. This drawing is based on using 3/16" 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 3/8" x 6 1/2" lag screws, and to Headwell by 5/8" anchor bolts. Dowl-shaped spring washers are used with tags 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 split welded to the underside of the channel flange.

4. Flangeway and outside filler timbers to be rubber banded to ensure 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°, 67½–30° 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 for multiple track crossings within zones for an existing or scheduled future vehicular stop. Zone lengths are charted above.

2. Crossings on this sheet may be used for single track crossings within the zones in the chart unless engineering or safety considerations dictate otherwise.

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

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

PARTIAL PLAN DEPICTING
SUGGESTED PAD PLACEMENT

CROSSING TYPE "P"
(POLYETHYLENE)

STOP ZONE
Design Zone length from stop:
45 M.P.H. or less: 250',
50 - 55: 350',
60 - 65: 500',
70: 700'

PARTIAL SECTION PARALLEL TO RAIL

CROSSING TYPE "R"
(RUBBER)

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

RAILROAD CROSSINGS
TYPE P & R
GENERAL NOTES

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

2. Center slabs are one piece construction allowing for 2 1/2" flange opening. 80 lb. rail is used to encase, armor and reinforce slabs and is held to gage with 3 ft. rod per slab.

3. Slabs are installed by a "flotation" 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 by "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 MAINTENANCE OF TRAFFIC NOTES

1. All signs, pavement markings, barricades and warning lights necessary for maintenance of traffic shall be constructed in accordance with the MUTCD.

2. The detour pavement shall be of width equal to the existing pavement, but lanes shall not be less than 40 feet in width. When one-way lane operations are necessary, a minimum width of 20 feet shall be maintained and traffic controlled in accordance with the MUTCD. Minimum width for the detour shoulders is 6 feet.

3. Ramped pavement markers shall be placed along the center of the detour pavement at 40-foot centers on the tangent roadway, and at 20-foot centers along the curve.

4. Existing signs and pavement markings that conflict with construction signage and work signs shall be obliterated or removed.

5. Posted speed on the existing facility shall be decreased at the rate of 10 mph per 500 feet (minimum 10 mph) until detour design speed is reached.

6. Method of attacking temporary guardrail to the detour structure to be approved by the Engineer.

7. Provisions approved by the Engineer shall be made for the removal of storm water from the roadway(s) during construction.

8. Temporary detour equipment shall be the Insert (type indicated in Figure 7.3 of the MUTCD.

PHASE II

1. Maintain two-way two-lane traffic over existing facility.
2. Construct temporary structure, approaches, guardrail and attenuators.
3. The signing shown in the Phase I diagram is required whenever equipment or their activities are within 15 feet of the existing pavement edge.

PHASE III

1. Re-sign and mark as shown in Phase II plans.
2. Re-route traffic to detour and maintain two-way traffic on detour. Traffic control shall be in accordance with the MUTCD. Install class H barriers.
3. Construct proposed structure and reconstruct or resurface existing approaches.

TABLE FOR MINIMUM RADIUS FOR NORMAL CROSS SLOPES

<table>
<thead>
<tr>
<th>Post Speed</th>
<th>Detour Speed</th>
<th>Minimum Radii M.P.H.</th>
<th>M.P.H.</th>
<th>M.F.</th>
<th>FT</th>
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<tbody>
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<td>450</td>
<td>30</td>
<td>450</td>
<td></td>
</tr>
</tbody>
</table>

Double Yellow Reflectors P. markings

END CONSTRUCTION
NOTES:

1. When a crossover is no longer needed, all temporary construction shall be immediately removed, and the lane restored to its original condition.

2. Cost of all construction, maintenance, removal, and restoration work related to temporary crossovers shall be included in the contract unit price for Maintenance of Traffic L2.

3. Crossover to be constructed where sight distance is adequate in both directions as directed by the Engineer.
PHASE I

1. Maintain two-lane two-way traffic over existing pavement. Construct new roadway within the proposed 4-Lane limits, excluding the friction course. Sign as shown if roadway construction area falls within 15 feet of existing pavement edge. When the construction area falls more than 15 feet from the existing pavement edge, traffic shall be controlled in accordance with Cases 1, 2, or 3 of the MTSCP.

2. Construct shoulder pavement to provide two-lane two-way traffic over shoulder and existing pavement during Phase II roadway construction. Lanes to be not less than 10 feet in width. Signing as shown to be in place prior to shoulder pavement construction.

PHASE II

1. Remove existing pavement marking, in areas of detour and re-mark as shown, install warning devices and re-sign as shown. Traffic to be controlled in accordance with Case 4 of the MTSCP. Lanes to be not less than 10' in width.

2. Route through traffic to temporary and existing pavement.

3. Construct transitions, excluding friction course.

LEGEND

- Phase I
- Phase II
- MTSCP Manual On Traffic Control And Safe Practices

Note: Not all elements may be present in the diagram.
**GENERAL MAINTENANCE OF TRAFFIC NOTES**

1. All signs, pavement marking, barriers and warning lights necessary for maintenance of traffic shall conform to the MTCSP.

2. Lane widths for maintenance of two-way traffic should be equal to lane widths of the existing facility, but lanes shall be not less than 10 feet in width. When one lane one-way operations are necessary, a minimum width of 12 feet shall be maintained and traffic controlled in accordance with the MTCSP. Minimum width for the temporary shoulder is 6 feet.

3. Railed pavement markers shall be placed along the center of the pavement under traffic, on 40 foot centers on the tangent roadway and 20 foot centers through the curve.

4. Existing signs and pavement markings that conflict with construction signing and marking shall be obliterated or removed.

5. Painted speed on the existing facility shall be decreased at the rate of 10 mph per 500 feet (calculated distance until driver speed is reached).

6. Additional baricades, signs, lighting or other traffic controls as required by the MTCSP shall be provided as follows:

   a. All phases

   b. Other phases

7. Intermediate advisory speed signs shall be erected when the length of construction exceeds one mile, as directed by the Engineer.

8. Procedures approved by the Engineer shall be followed for the removal of storm water from the roadway(s) during construction.

9. Baricades shall meet the requirements of Chart I of the MTCSP.
PHASE III

1. Sign and mark Phase III pavement in accordance with the Phase III diagram.
2. Route through traffic to Phase II pavement.
3. Construct friction course over Phase I pavement. Side street traffic to be maintained. Through and cross traffic to be controlled in accordance with Cases XX and XXI of the MTPSP. When work extends through an intersection, temporarily route cross traffic to other cross streets. When rerouting is not possible, provide one lane access (minimum) for two lanes two-way cross streets and one lane access (minimum) each direction for four-lane two-way cross streets.

GENERAL MAINTENANCE OF TRAFFIC NOTES

1. All signing, pavement marking, barricades and warning lights necessary for maintenance of traffic shall conform to the MTPSP.
2. Existing raised pavement markers that are properly located shall remain in place. Damaged markers shall be replaced. Markers to be installed shall be placed every 40 feet or longer roadways and every 50 feet on curves.
3. For divided facility, identical through traffic signing as shown above shall be placed on the outside and median of both roadways for each phase.
4. Existing signs and pavement markings that conflict with construction signage and markings shall be obliterated or removed.
5. All signalized intersections, signals shall be directed or relocated as required to the center of relocated lanes.
6. Preliminary approved by the Engineer be made for the removal of storm water from the roadways during construction.
7. Additional barricades, signing, lighting or other traffic controls as required by the MTPSP shall be provided on conditions stated in each phase.

LEGEND

- Phase I
- Phase II
- Phase III
- MTPSP

Manual On Traffic Control And Safe Practices
Denotes Direction Of Traffic And Does Not Reflect Pavement Markings