TRAFFIC

OPERATIONS

STANDARDS

JANUARY 1981
TRAFFIC OPERATIONS STANDARD INDEXES
FLORIDA DEPARTMENT OF TRANSPORTATION

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CONCRETE POLE DETAIL

SURGE PROTECTOR SPECIFICATIONS

1. The unit shall withstand a surge current up to 20,000 amps, and repetitive surges of 200 amps for a minimum of 10,000 occurrences.

2. The unit shall respond in less than 50 nanoseconds and within this time have a peak clamping voltage better than 100 Vrms.

3. The maximum allowable voltage that can pass continuously through the hot leg of the protector must be less than 500 Vrms.

4. The current drain shall be less than 100 microamps.

5. The unit shall be insulated 600 V to ground and shall be weatherproof.

6. The unit shall not allow holdover current or conduction to ground after the surge ends.

7. Protection shall be achieved for both the 480 V and neutral conductors with the surges being passed to ground and not to neutral.

8. There shall be no discharge lag in the protection of the 480 V conductor over the neutral conductor.

9. Underwriters Laboratory Approval not required.

CONCRETE POLE WIRING DETAIL

METAL POLE DETAIL

METAL POLE WIRING DETAIL

FLORIDA DEPARTMENT OF TRANSPORTATION

CONVENTIONAL POLE DETAILS

INDEX

Drawing No 17500

INDEX

1

DRAWING NO 17500

INDEX

1

DRAWING NO 17500

INDEX

1
1. Ground rods shall have a resistance to ground not to exceed 25 ohms, where the resistance is not as low as 25 ohms. **Two or more ground rods connected in parallel** shall be used. **Conductor shall have necessary test equipment, current calibration certificate required at final inspection to insure acceptability of grounding system.**

2. The contractor shall be responsible for contacting all utility companies prior to any underground work. The utility company will locate and identify their facilities.

3. Contractor shall determine the service required date for the power company transformer installation at the pre-construction conference.

4. The power company reserves the right to install the riser, switch gear and weather head on power company poles at the expense of the contractor. Contact the power company prior to installing or requesting an alternate procedure.

5. Any damaged portions of galvanized steel poles and bracket arms shall be painted in accordance with section 562 of the specification.

6. Poles, bracket arms and frangible devices shall be designed in accordance with the design criteria, as indicated by the plans and using the applicable equation or tests found in standard specifications for structural supports for highway lighting equipment. A.A.S.H.T.O., 3rd Edition, 1973.

7. The luminaire manufacturer shall place a permanent tag on the luminaire housing on which is imprinted the following information: material, size, type, lamp shown on design plan, lamp (if this position in luminaire), (if light distribution with this lamp is the position specified, input voltage and power factor. Luminaire photometric submittals required.

8. Before final acceptance contractor shall provide 2 sets of full size as built plans to the maintenance secretary.

9. Conduit routing shall be pole to pole. Maintaining pole setback distance from edge of pavement, any cable routing in locations where quadrangle is proposed shall be 3'-0" in front of the standard quadrangle position.

10. Pole positions and conduit routing may be adjusted, as approved by the engineer, to prevent conflicts with utility lines or adjacent construction (trenching). 

11. Where a quadrangle is constructed, the poles shall be placed a minimum of 6' behind the face of quadrangle.

12. Pole foundation installations shall be backfilled and compacted to a firm stable condition approximately equal to that of the adjacent soil. The fill shall conform to existing grade and fully sodded.

13. The wires at the pole handle and full boxes shall be lapped in the pole and full boxes with simple lengths to completely remove connections to the outside of the pole and full boxes to make connections accessible for changing fuses and trouble shooting the system.

14. Neutral wires to have white insulation. **Circuit No. 2 wires to have black insulation. Other circuits to be colored coded by insulation. Do not use white or green insulated wires for ungrounded conductors.**

15. Unless otherwise specified, all cable shall be single conductor, 4- conductor, or percent conductivity stranded copper, with tinned insulation.

16. All splices shall be made in full boxes or on the pole base. No splices shall be made inside the conduit.

17. All exposed or surface mounted conduit shall be insulated. Conduit shall be connected with either expansion joints or flexible steel conduit sections adequate to take care of vibrations and thermal expansions. All insulated conduit shall be grounded.

18. All conduit that will remain empty as spares shall be handle-tested, cleaned inside and both ends capped. Leave the conduit resistant full, clean wire and place full, clean wire in full boxes to mark the location of the ends of the conduit.

19. Full boxes shall be located at ends of conduit crossing roadways.

20. These plans represent minimum acceptable criteria. The inspection of these drawings represent the minimum base of acceptance.

21. All material unless otherwise specified shall be underwriters laboratory approved.

22. Prior to any equipment order, the contractor shall submit for approval, equipment specifications or drawings data for all material proposed for the project. And must include specifically:

   a) Luminaire photometrics.
   b) Pole strength calculations.
   c) Pole frangibility test results.
   d) Bolt specifications and bolt circle diameter.

23. Seventy copies of shop drawings and design data for highway lighting equipment shall be submitted to the state traffic operations engineers at the following address with original copies.

   State Traffic Operations Engineer
   Department of Transportation
   Tallahassee, Florida 32304

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**FLORIDA DEPARTMENT OF TRANSPORTATION**

**HIGHWAY LIGHTING**

**GENERAL NOTES**

**DATE REVISED**(5/29/89)

**INITIAL**

**CHECKED**

**APPROVED**

**DESIGNED**

**CHECKED**

**STAMPED**

**EDWIN T. MCGUIRE (Sig)

HIGHWAY ENGINEER**

**LESTER JONES**

**DRAWING NO.** 1

**INDEX NO.** (1750)
LUMINAIRE SPECIFICATIONS

The reflector with its aluminum cover shall be firmly attached to a cast iron ring. The ring shall have keyhole slots in its upper surface. When the reflector-reflector assembly is attached, it will be readily attached and detached from the luminaire bracket entry and lamp support assembly without completely removing the support bolts.

Each luminaire shall contain an integral constant wattage auto-transformer. The transformer shall be located inside a support framework and be bolted to the luminaire. All electrical input, power riser,IES light distribution, and all electrical connections shall be protected from exposure to weather.

The luminaire shall be attached to the bracket arm in means of a bracket entry and lamp support assembly. The assembly shall include a six entry slip nut designed for two (2) inch pipe with provision for up to six (6) inch pipe. The luminaire, an enclosed terminal block shall be included. All electrical connections shall be weather tight and when not in use, the luminaire. All electrical connections shall be protected from exposure to weather.

The luminaire shall be attached to the bracket arm in means of a bracket entry and lamp support assembly. The assembly shall include a six entry slip nut designed for two (2) inch pipe with provision for up to six (6) inch pipe. The luminaire, an enclosed terminal block shall be included. All electrical connections shall be protected from exposure to weather.

The luminaire shall be attached to the bracket arm in means of a bracket entry and lamp support assembly. The assembly shall include a six entry slip nut designed for two (2) inch pipe with provision for up to six (6) inch pipe. The luminaire, an enclosed terminal block shall be included. All electrical connections shall be protected from exposure to weather.

LUMERERS SYSTEM SPECIFICATIONS

The luminaire system shall consist of the following:

A. Head frame and lenses
B. Luminaire ring
C. Cables
D. Washers
E. Portable power unit (if required)

The head frame shall be readily made fit the top of the head frame platform. This platform with its associated sheaves etc., shall be covered and mantled. The head frame structure shall be made of wrought iron or stainless steel. The head frame platform shall be constructed so that the head frame platform can be removed without the luminaire from the bracket arm.

The rings shall be connected to the ballast type regulator connected, enclosed. All electrical input, power riser,IES light distribution, and all electrical connections shall be protected from exposure to weather.

Rings shall be electrically insulated to ASTM 48 and dried in yellow chromate for corrosion resistance. Washers and cables keepers shall have a minimum of 0.119 inch cable air gilts of 0.156 inch or greater shall be provided.

The power riser shall be attached to the luminaire ring with a waterproof connector capable of withstands the weight of the power riser cable, when the wire rope is required to be used. The wire rope shall be made of stainless steel. The outer sheath of the wire rope shall not exceed one fifth (1/5) of the wire rope manufacturer's approved diameter. The wire rope manufacturer's approved diameter shall be provided by the wire rope manufacturer. The wire rope manufacturer's replaced by the wire rope manufacturer. The wire rope shall be replaced by the wire rope manufacturer. The wire rope shall be replaced by the wire rope manufacturer.

The head frame shall also include three (3) latching devices to support the luminaire ring assembly when the luminaire device is not in operation. The latches shall be actuated by alternate raising and lowering of the head frame cables. Latching devices of the luminaire ring shall be sealed by indicators or witness rings. A permanent identification shall be provided by the wire rope manufacturer. The latching devices shall be strong enough to support the weight of the ring and all the luminaire system mechanisms which depend upon latching devices. The latching devices shall be actuated by the power riser cable for the cord of six (6) inches or larger. Each end of the sheathed or rollers shall have a keeper to prevent the cable from jumping out of the roller track.

The head frame shall also be actuated by the power riser cable for the cord of six (6) inches or larger. Each end of the sheathed or rollers shall have a keeper to prevent the cable from jumping out of the roller track.

FOOTING

The high mast foundations shall be constructed in accordance with the details shown in the plans. Anchor bolts per manufacturer's specifications, foundations shall be supplied by the lighting engineer prior to purchase.

One (1) hole in two (2) inch hole for anchor bolt. All metal parts, nuts, screws, washers, etc., shall be furnished. The hole shall be made in the foundation for 5/8 " x 3/4" or the nature of the material used in their fabrication.

FLORIDA DEPARTMENT OF TRANSPORTATION
HIGHWAY LUMINAIRES AND TRAFFIC OPERATIONS

M-fold Lightning Details

DATE REVISIONS
INITIALS DATES
Approved

Check by

G.K.

Approved

Check by

FL-105011

DEPT OF TRAFFIC OPERATIONS (ENG)

Lester Jones

2

2

17502

By

INDEX NO

2

of 3

DEPT OF TRAFFIC OPERATIONS (ENG)

Lester Jones

2

50 KSI.

20 KSI.

AS SPECIFIED.

AS SPECIFIED.
GROUNDS

MAXIMUM RESISTANCE TO GROUND 25 OHMS PER ROD, AND TOTAL SYSTEM NOT TO EXCEED 5 OHMS

4/0 AWG STRANDED CU BARE WIRE CONNECTED TO POLE BASE PLATE.

POWER LEAD COUPLING FROM GALV STEEL CONDUIT TO PVC CONDUIT (SCHEDULE 40) (SEE PLANS FOR CONDUIT SIZE)

GALV STEEL CONDUIT POWER LEAD COUPLING FROM GALV. STEEL CONDUIT TO PVC CONDUIT (SCHEDULE 40) (SEE PLANS FOR CONDUIT SIZE)

SURGE PROTECTOR SPECIFICATIONS

1. THE UNIT SHALL WITHSTAND A SURGE CURRENT UP TO 20,000 AMPS, AND REPEETITIVE SURGES OF 200 AMPS FOR A MINIMUM OF 10,000 OCCURRENCES.

2. THE UNIT SHALL RESPOND IN LESS THAN 50 NANOSECONDS AND WITHIN THIS TIME HAVE A PEAK CLAMPING VOLTAGE BETTER THAN 1000 VMA.

3. THE MAXIMUM ALLOWABLE VOLTAGE THAT CAN PASS CONTINUOUSLY THROUGH THE HOT LEGS OF THE PROTECTOR MUST BE LESS THAN 500 VRMS.

4. THE CURRENT DRAIN SHALL BE LESS THAN 100 MICROAMPS.

5. THE UNIT SHALL BE INSULATED 600 V TO GROUND AND SHALL BE WEATHERPROOF.

6. THE UNIT SHALL NOT ALLOW HOLDOVER CURRENT OR CONDUCTION TO GROUND AFTER THE SURGE ENDS.

7. PROTECTION SHALL BE ACHIEVED FOR BOTH THE HOT AND NEUTRAL CONDUCTORS WITH THE RUSIES BEING PASSED TO GROUND AND NOT TO NEUTRAL.

8. THERE SHALL BE NO DISCHARGE LAG IN THE PROTECTION OF THE 240 V CONDUCTOR TO THE NEUTRAL CONDUCTOR.

9. UNDERWRITER'S LABORATORY APPROVAL NOT REQUIRED.

FRONT SIDE VIEW

4/0 CU BARE BOND WIRE AT ALL PULL BOXES AND POLE BASES, ENDS OF CONDUIT SHALL BE SEALED WITH ELECTRICAL PUTTY AFTER WIRING IS COMPLETED.

ALL SPLICES SHALL BE MADE WITH COMPRESSION SLEEVES OR SPLIT BOLT CONNECTORS, PROPERLY TAPED AND WATERPROOFED.

6 AWG INSULATED CU GROUND WIRE IN 1/2" GALV STEEL CONDUIT.

POWER LEAD COUPLING FROM GALV STEEL CONDUIT TO PVC CONDUIT (SCHEDULE 40) (SEE PLANS FOR CONDUIT SIZE)
GREY BOND WIRE MAY BE CAST IN BASE OR RUN THROUGH 1/2" PVC CLUNK.

GROUND WIRE ABOVE GROUND BOND WIRE CONNECTING 1-4-6 WITH AT ALL IS COMPLETED.

GROUND RODS AWG CONDUIT, ELECTRICAL PULL BOXES, OR BARE TO BE CAGE.

REINFORCING STEEL NO WELDING PERMITTED ON REINFORCING #6 BASE AT 5 GA. WIRE, OR STRANDED 3" DIRECTLY TOGETHER.

AWG BARE PUTTY TOPS I 60.

PUTTY BE SEALED 8-17 TO REINFORCING AFTER FLAT SPIRAL 6" PITCH (3 BOX WIRING DETAIL BOND MAY BE CAST IN METAL POLE CONCRETE CAGE.

BASE AT 60° 3" CLEAR TO BE GRADED AT LEAST 6" IN DIAMETER.

BASE PLATE SHALL BE NOTCHED TO INDICATE THE ORIENTATION OF THE SHAFT CABLE NAPS.

DRAINAGE SHALL BE PROVIDING IN THE BOTTOM OF THE FOUNDATION BY MEANS OF AN OPENING AT LEAST 3 SQUARE INCHES.

THE FOUNDATION SHALL BE DESIGNED FOR INSTALLATION USING A RIGHT HAND TURNING MOVEMENT WITH A SLIGHT DOWN PRESSURE.

THE WHOLE FOUNDATION SHALL BE HOT DIP GALVANIZED AFTER FABRICATION TO ASTM A-125.

THE FOUNDATION DETAIL BE DRILLED TO THE LENGTH AT LEAST 6" IN DIAMETER.

CHEDREILLE FOR MOUNTING HEIGHTS LESS THAN 60FT.

THE WHOLE FOUNDATION SHALL BE NOTched TO INDICATE THE ORIENTATION OF THE SHAFT CABLE NAPS.

THE WHOLE FOUNDATION SHALL BE NOTched TO INDICATE THE ORIENTATION OF THE SHAFT CABLE NAPS.

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SIGN LIGHTING INSTALLATION

The Florida Department of Transportation shall provide an area for sign service entry into a pole base or pull-box installed in Lighting Circuit and LED Lighting Circuit conductors for connection by Sign Contractor. The sign contractor shall furnish and install luminaires, fixed non-removable switches, conductors, conduit, and all other electrical equipment necessary for connection to Roadway Lighting circuit as provided by Roadway Lighting Contractor. Compromise type connectors properly taped and waterproofed shall be used. See Roadway Lighting Plans for sign service locations.

PLACEMENT OF SIGN LIGHTS
1. Luminaires shall be mounted as near the top of the Pole as Practical to protect the Sign Face from road and other damage.
2. Luminaires shall be mounted at such height above the back of the Pole as to clear the traffic.
3. Luminaires shall be mounted against the Pole or a bracket attached to the Pole which is mounted on a bracket which is approved.
4. The Mercury Vapor Luminaires proposed for Sign Lighting shall be submitted for Approval to the Lighting Engineer Department of Transportation.

PLAN

OVERHEAD POWER SUPPLY

4'-0" to 1' Luminaires

GROUND LAG ATTACHED SUBURBAN SIGN STRUCTURE

DIAMETER OF SIGN LIGHTS

NUMBER OF FIXTURES

SIGN DESIGN

PLAYGROUND FOR PLACEMENT OF SIGN LIGHTS

10'-0" OR LESS

4'-0" to 21'-0"

21'-1" to 32'-0"

32'-1" to 43'-0"

PLACEMENT OF SIGN LIGHTS

For pull-box mounted on structural column a 3/4" O.D. mild steel conduit shall be provided with a conduit box.

Florida Department of Transportation

DATE

REVISIONS

INITIALS

DATES

Was approved for approval by

D AT E

0-6-79

112-31-79

1-1979

0-15-79

112-3-79

0-11-79

0-1-79

0-11-79

112-5-79

0-8-79

checked by

checked by

Lester Jones

Drawing No.

Index No.

117505
NOTES

1. Dimension "A". To be established from Type and Make of Luminaire to be Purchased and Used on the Project.
2. The Center Lines of Both Flange Plates and the 3" Dia. Pipe Luminaire Support Arm to be Set Parallel to the Roadway before the Set Screw is Seated.
3. Minor Adjustments in the Horizontal Location of the Luminaire Support Arm along the Bottom Chord of the Truss will be allowed so that the Flange Plate will Clear the Truss Web Members.
4. All Steel Pipe shall meet the Strength Requirements of ASTM Specification A-53 Grade "A" or Grade "B", Steel Plates shall meet the Requirements of A-36 and Bolts, Nuts and Washers shall meet the Requirements of ASTM A307.
5. All Items shall be Hot Dip Galvanized after Fabrication in Accordance with the Requirements of ASTM A123 and/or A153.
6. Luminaire Support Arm shall be free to rotate in a clockwise or counter clockwise direction. When service or maintenance is required for Sign Face or Vertical Face of Truss, Support Arm shall be capable of being rotated 90° from Parallel to the Roadway for Unobstructed Working Clearance.

DATE REVISIONS
10-6-79 TRAFFIC OPERATIONS
11-15-79 TRAFFIC OPERATIONS
2-3-80 TRAFFIC OPERATIONS

INITIALS
M. C. Rose

ACKNOWLEDGED

RECONCILED

CHECKED BY

SUPERVISED BY

A. H. DRAWING NO.

INDEX NO.

17505

2 or 2
### TYPICAL ELEVATION

(For notes and dimensions not shown, see "TYPICAL CROSS SECTION SHEETS")

See Tables for size and number of wind beams.

### GOLF COURSE EAST

**TYPICAL ELEVATION**

- See Tables for size and number of wind beams.
- See Dealing Strip Details.
- See Backing Strip Detail.
- See Sign Face Details.

### Aluminum Sign Panels 0.025" Thick

For Post Size, See Cross Section Sheets.

### Backing Strip Detail

- 0.025" Aluminum for Head Machine Screws
- With Nut and Lock Washers

### Stiffener Detail

- 3/16" HD Pipe for HNV LCB Aluminum
- See Table for Size and Number of Wind Beams

### GENERAL NOTES


**Design Criteria**: The wind loading Chart shall be calculated per Table 6. Flange Width 1.5' equals 0.010. The Sign Focussing Chart shall be calculated per Table 5. The following A.S.T.M. Requirements, High Strength Bolts, Nuts and Washers A.S.T.M. A 309, All Other Steel Bolts, Nuts and Washers A.S.T.M. A 567. CALVING OR METALLICALLY ALTERED: All Sheet Steel, Pipes, Plates, A.S.T.M. A 36, Nuts and Washers shall be galvanized, or rolled on galvanized, or meet the requirements of A.S.T.M. A 36.

**Wind Load Chart**

- For Post Size, See Cross Section Sheets.

**Pipe Stiffeners**

- See Figure 1 for pipe stiffeners.

**NOTE**: All Airplane Construction Aluminum and Stiffeners may be used in lieu of structural steel and stiffeners. See drawing no. 1 for details.

### Aluminum Flat Head Machine Screws

- With Nut and Lock Washers

### Aluminum Backing Strip

- With Nut and Lock Washers

### Steel Post to Pipe Welds

- 1/2" min.: Weld to Flat Pipe Side Post.

### Partial Rear Elevation

- See Tables for size and number of Z-type wind beams.

### Sign Face Details

- See Figure 1 for sign face details.

### Backing Strip Details

- Minimum Dealing of Class IV.

### Size of Wind Beams

<table>
<thead>
<tr>
<th>WIND</th>
<th>NO BEAMS</th>
<th>MAX DEPTH</th>
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<td>2</td>
<td>9' 0&quot;</td>
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<td>80</td>
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<td>8' 0&quot;</td>
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</tbody>
</table>

### Wind Loading Chart by Zones

- See Table for size and number of Z-type wind beams.

### Structural Steel

- All Structural Steel shall meet the requirements of A.S.T.M. A 572. STEEL NUTS, NUTS AND LOCK WASHERS: All Structural Steel, Nuts and Washers shall meet the requirements of A.A.S.H.O. Standard Specifications for Welding of Structural Steel, Highway Bridges and Fl. FLANGE WIDTH 1.5' equals 0.010. The following A.S.T.M. Requirements, High Strength Bolts, Nuts and Washers A.S.T.M. A 309, All Other Steel Bolts, Nuts and Washers A.S.T.M. A 567. CALVING OR METALLICALLY ALTERED: All Sheet Steel, Pipes, Plates, A.S.T.M. A 36, Nuts and Washers shall be galvanized, or rolled on galvanized, or meet the requirements of A.S.T.M. A 36.

### Stiffener Steel


### General Notes


### Wind Load Chart by Zones

- See Tables for size and number of Z-type wind beams.

### Steel

GENERAL NOTES
(1) For "General Notes" covering specification and materials; See Sheets 104 and 3 of Index 9555

TYPICAL PARTIAL ELEVATION

(Existing Aluminum or Steel Overhead Truss)

SECTION B-B

EXISTING WIND BEAM 4 2.5.36
(Per Inches O.B.M.)

EXISTING SIGN FACE

SECTION A-A

EXISTING WIND BEAM

5" H.I.S Bolt
An Alternate Coit 8oH of Alloy 31:56 and Heat Treated to Ta Temper may be limited for condotrolon in lieu of fabricated loH for approval by 1111 Engln-.

Drawing I of Index No. 11921

For detail of Post & Truss Anchor ----------

Concrete Footing see Index No. 1020

ALUMINUM TRUSSES
ASSEMBLY DETAILS FOR TYPE A,B,C TRUSS
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION STRUCTURES

BRIDGE SPAN TRUSSES FOR OVERHEAD SIGNS

GENERAL NOTES

1) For "General Notes" covering Specifications and Materials, see Sheet 1 of 4 Index 9535
2) SHOP DRAWINGS: Contractor shall submit complete shop drawings before fabrication for approval.
3) COLUMN LENGTHS: It shall be the Contractor's responsibility to determine the length of column supports.

SCHEDULE FILLET WELD SIZE

TRUSS MEMBERS POST MEMBERS SCHEDULEWELD SIZE THICKNESSTHICKNESSWELD SIZE

T E F T E F T E F

6* T* T T T T

NOTE:
The number of Chord Splices may be changed or omitted as necessary to facilitate fabrication and or erection.

NOTICE:
The number of Chord Splices may be changed or omitted as necessary to facilitate fabrication and or erection.

SPICE PLATE FLANGE TABLE

<table>
<thead>
<tr>
<th>TUBE SIZE</th>
<th>y</th>
<th>BOLT SIZE &quot;D&quot;</th>
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SHOP DRAWINGS: Contractor shall submit complete shop drawings before fabrication for approval.

COLUMN LENGTHS: It shall be the Contractor's responsibility to determine the length of column supports.
### Number of 3.2 2.33 Horizontal Wind Bases for Sign Depth and Wind

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<tr>
<th>Wind Category</th>
<th>No. Bases</th>
<th>Sign Depth</th>
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<tr>
<td>100</td>
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<td>7'-3&quot;</td>
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<td>3</td>
<td>10'-0&quot;</td>
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<td>300</td>
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### Number of 4.2 2.33 Vertical Hanger Bases for Sign Length

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<tr>
<td>300</td>
<td>4</td>
<td>12'-6&quot;</td>
<td>45'-0&quot;</td>
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</table>

### Typical Sign Face Elevation for O.C. Truss

- **Note:** Spacing of vertical hangers may be varied in the field or be necessary to clear the truss struts and diagonals at panel points.
- **Details:**
  - Vertical Hanger Beoma
  - See Table for Spacing

### Stiffener Details

- **Materials:**
  - Pipe: 3.2 2.33 Alum. Wind Bases
  - Tube: 3.2 2.33 Alum. Wind Bases

### General Notes

- (1) For "General Notes" covering specifications, materials and wind loads, see Sheets 1-4 and 3-14, Index 99.05
NOTE: EXIT NUMBERING PANEL, shall be located to the right side for right exit and to the left for left.

ELEVATION

(SEwing mounting of Proposed Assembly to Type "A" or "B"-sided sign)

SECTION A-A

SECTION C-C

GENERAL NOTES


SHEETS AND PLATES: Material used shall meet the requirements of Aluminum Association Alloy 6061-T6 and ASTM Specification B-209. Sheets shall be degreased, washed, neutralized and treated with Adherent EOD,chrome (10), in much. All stenciling shall be done on Sheets.

MATERIALS: All Aluminum Materials shall meet the requirements of the Aluminum Association Alloy 6061-T6 and shall also meet the following ASTM Specifications for the following: Sheet and Plates B-209, Extruded Shapes B-221, and Standard Specifications for Structural Shapes B-150 and Structural Standards B-308.

ALUMINUM BOLTS, NUTS & LOCK WASHERS: All aluminum-Bolts shall meet the requirements of Aluminum Association Alloy 2024-T3 or 7075-T6 (ASTM Spec. B-101). The base must be of Aluminum Casting or of at least 0.020" thick and at Chromate Sealed. Lockwashers shall meet the requirements of Aluminum Association Alloy 7075-T6 (ASTM Specification B-220). Nuts shall meet the requirements of Aluminum Association Alloy 6061-T6 or 4043-T6.

SIGN FACE: All Sign Face materials shall be mounted. See Sign Layout Sheet for Dimensions "L" and Sign Face Details. MATERIALS: All sign face materials shall be chrome (10), Chromate Sealed. Face shall be rounded and be at least 0.0002" thick.

OVERHEAD SIGNS: For details to mount proposed Assembly to Overhead Signs refer to Details for mounting to Type "A" or "B" Ground Signs.

INTERCHANGE AND EXIT NUMBERING FOR SIGNS WITH HORIZONTAL WIND BEAMS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DETAILED MOULDING EXIT NUMBERING PANELS TO HIGHWAY SIGNS

PREPARED BY: J. A. DETRO

DRAWN BY: J. A. DETRO

DATE: 10-7-74

Sheet 3 of 3

Florida Department of Transportation

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**DESIGN NOTES**
- **MATERIALS:** All materials are in accordance with the specifications provided in the project drawings.
- **CONSTRUCTION:** The construction must be completed in accordance with the approved plans.
- **SPECIAL REQUIREMENTS:** The project must comply with all local, state, and federal regulations.

**SIGN TYPES**
- **ROAD SIGNS:** Includes directional, regulatory, and informational signs.
- **WIND LOADING:** The design must be capable of withstanding the specified wind loads.

**SIGN BRACKET TYPES**
- **Type I:** Ideal for light to medium-duty signs.
- **Type II:** Suitable for medium to heavy-duty signs.

**PROJECT NUMBER**: 1234567890

---

**TYPICAL SECTION**

**SIGN BRACKET TYPE I**

**SIGN BRACKET TYPE II**

---

**RIGHT OF WAY, ROADWAY, AND SIDEWALK**

---

**SITE PLAN**

---

**DRAWING SCALE:** 1" = 100'
### Table

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**NOTE:** For Columns, specify use near larger diameter and with thickness.

### Specifications

**Aluminum Bolts, Nuts, and Lock Washers:** Use bolts that meet the requirements of the American Society of Mechanical Engineers (ASME) Specification B-199. The nuts shall meet the requirements of the American Society of Mechanical Engineers (ASME) Specification B-199. The lock washers shall meet the requirements of the American Society of Mechanical Engineers (ASME) Specification B-199. The aluminum alloy shall be Aluminum Association Alloy 6061-T6.

**Tolerances:** The workmanship shall be in accordance with the American Society of Mechanical Engineers (ASME) Specification B-199. All aluminum alloy shall meet the requirements of the American Society of Mechanical Engineers (ASME) Specification B-199. The aluminum alloy shall be Aluminum Association Alloy 6061-T6.
FOR FREEWAY USE

WEIGH STATION
1 MILE

ALL TRUCKS ENTER WEIGH STATION

WEIGH STATION NEXT RIGHT

WEIGH STATION NEXT LEFT

FOR OTHER THAN FREEWAY USE

NOTE: ALL SIGNS TO HAVE GREEN REFLECTORIZED BACKGROUND WITH WHITE LEGEND AND BORDER, EXCEPT SIGNS NOS. FTO-4 & FTO-8, WHICH SHALL HAVE WHITE BACKGROUND WITH BLACK LEGEND AND BORDER. ALL DIMENSIONS SHOWN ARE IN INCHES AND EIGHTHS.

NOTE: FTO-0A RIGHT ARROW

NOTE: FTO-0B LEFT ARROW

NOTE: FTO-9A RIGHT ARROW

NOTE: FTO-9B LEFT ARROW

NOTE: FTO-10A RIGHT ARROW

NOTE: FTO-10B LEFT ARROW

NOTE: FTO-11 TO BE USED WITH SIGNS NO. FTO-5A & FTO-5B.

NOTE: FTO-12 TO BE USED WITH SIGN NO. FTO-9.

NOTE: FTO-0A RIGHT ARROW

NOTE: FTO-0B LEFT ARROW

NOTE: FTO-9A RIGHT ARROW

NOTE: FTO-9B LEFT ARROW

NOTE: FTO-10A RIGHT ARROW

NOTE: FTO-10B LEFT ARROW

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NOTE: FTO-9B LEFT ARROW

NOTE: FTO-10A RIGHT ARROW

NOTE: FTO-10B LEFT ARROW

NOTE: FTO-11 TO BE USED WITH SIGNS NO. FTO-5A & FTO-5B.

NOTE: FTO-12 TO BE USED WITH SIGN NO. FTO-9.
WEIGH STATION
AGRICULTURAL INSPECTION NEXT MILE

SIGN NO. FT0-13
15'-0" x 1'-6"
2" BORDER - 9" RAD.

NOTE

ALL SIGNS SHALL HAVE GREEN REFLECTORIZED BACKGROUND WITH WHITE LEGEND AND BORDER, EXCEPT SIGNS FT0-14A WHICH SHALL HAVE A WHITE BACKGROUND WITH BLACK LEGEND AND BORDER.

ALL DIMENSIONS SHOWN ARE IN INCHES AND EIGHTS.

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS

TYPICAL SIGNING FOR TRUCK WEIGH AND INSPECTION STATIONS

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NO RIGHT TURN ON RED" SIGNS MAY BE ERECTED AS DEEMED NECESSARY BY THE LOCAL TRAFFIC ENGINEERS.

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<tr>
<td>46 TO 55</td>
<td>500 FT</td>
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APPROACH DISTANCE SPEED (MPH) 25 TO 35 350 FT 36 TO 45 350 FT 46 TO 55 500 FT.

SPECIAL SPEED RESTRICTIONS ARE NOT NORMALLY APPLICABLE TO THESE TWO CASES.

4" YELLOW SKIP LINE

DBL. 4" YELLOW LINE

NOTE: WHEN COMPETING PAVEMENT MESSENGER QUANTITIES DO NOT INCLUDE TRANSVERSE LINES.

NO RIGHT TURN ON RED" SIGNS MAY BE ERECTED AS DEEMED NECESSARY BY THE LOCAL TRAFFIC ENGINEERS.

I. TRAFFIC CONTROL DEVICES FOR A SCHOOL CROSSWALK AT A SIGNALIZED INTERSECTION

2. TRAFFIC CONTROL DEVICES FOR A SCHOOL CROSSWALK AT A STOP CONTROLLED INTERSECTION.
3. TRAFFIC CONTROL DEVICES WITH FLASHING BEACON FOR REDUCED SPEED ZONE AT A SCHOOL CROSSWALK (2 LANES - 2 WAY TRAFFIC) (MIDBLOCK OR ONTHRU STREET AT AN INTERSECTION)

4. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK (NO FLASHING BEACON) (2 LANES - 2 WAY TRAFFIC) (MIDBLOCK OR ONTHRU STREET AT AN INTERSECTION)

5. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK WITH OVERHEAD FLASHING BEACON SPEED LIMIT SIGNS (4 LANES UNDIVIDED - 2 WAY TRAFFIC) (MIDBLOCK OR ONTHRU STREET AT AN INTERSECTION)
6. TRAFFIC CONTROL DEVICES FOR A SCHOOL CROSSWALK
WITHOUT A SPEED REDUCTION
(2 Lanes - 2 Way Traffic)

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<tr>
<td>46 TO 55</td>
<td>500</td>
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A"s & B"distances shall be increased by adding the intersecting street width (curb returns included) to dimensions given in Table.

7. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK
WITH OVERHEAD FLASHING BEACON SPEED LIMIT SIGNS
(4 Lanes Divided - 2 Way Traffic)

8. TRAFFIC CONTROL DEVICES FOR SIGNALIZED MIDBLOCK
SCHOOL CROSSWALK

---

FLORIDA DEPARTMENT OF TRANSPORTATION
Traffic Operations

SCHOOL SIGNS & MARKINGS

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Drawing No: Index No: 3 of 6: 17344
9. TRAFFIC CONTROL DEVICES AT SCHOOL ENTRANCES WHERE THERE ARE LITTLE OR NO WALKING STUDENTS

These signs are intended for use only at those few locations where the school entrance is not evident to the motorist, and must be approved in advance by the responsible traffic engineering authority.

10. TRAFFIC CONTROL DEVICES FOR A TYPICAL SCHOOL ZONE FRONTING THE SCHOOL PROPERTY

The school zone limits or unprotected activity as defined by local school board through the local traffic engineers.

NOTE

The school bus stop ahead sign is to be used in advance of locations where a school bus, when stopped to pick up or discharge passengers, is not visible for a distance of 500' in advance. It shall have a minimum size of 30" x 30". It is not intended that these signs be used where ever a school bus stops to pick up or discharge passengers. These signs are intended for use only where terrain and roadway features limit the approach sight distance and where there is no opportunity to relocate the stop to another location with adequate visibility.

FLORIDA DEPARTMENT OF TRANSPORTATION
Traffic Operations

SCHOOL SIGNS & MARKINGS

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[Diagram of a school zone with various signs and traffic control devices, including a school bus stop sign, speed limit signs, and pedestrian crossing signs.]
FLASHER UNIT AND CABINET TO BE PLACED ON THE STRAIN POLE SUPPORTING OVERHEAD SIGN ASSEMBLY OR ON SERVICE POLE.

BULB REPLACEMENT SHALL BE FROM THE FRONT.

NOTE: FLASHING BEACON MAY BE PLACED WITHIN OR BELOW PANEL.

OPTIONAL LOCATION OF FLASHING BEACON

SEE "CABLE ENTRY DETAIL"
SPEED LIMIT ASSEMBLY

White background with black legend and border.

SCHOOL SPEED LIMIT

- Background: Yellow with black legend and border.
- Dimensions: 24" x 36".
- Description: "SCHOOL SPEED LIMIT 00 00-00 00-00".

END SCHOOL ZONE

- Background: White with black legend.
- Dimensions: 24" x 36".
- Description: "END SCHOOL ZONE 00-00 MPH WHEN FLASHING."
MARKINGS FOR LEFT OFF-RAMPS
THE LEFT EDGE LINE (YELLOW) WILL BE CONTINUOUS FROM THE MAIN LINE DOWN THE RAMP TO CROSS ROAD.
THE MAIN LINE LEFT EDGE LINE (YELLOW) WILL START AGAIN AT THE PHYSICAL GORE WHICH IS THE END OF
8" LINE USED IN GORE DELINEATION.

4" WHITE LINE BEGINS AT POINT OF SHOULDER PAVEMENT

4" WHITE EDGE LINE

4" YELLOW EDGE LINE

NORMAL TAPERED EXIT
(TWO THRU LANES)

4" WHITE STRIPING

4" WHITE EDGE LINE

GREEN LINE ALONG LEFT
EDGE OF TRAVELWAY

MANTAIN FULL RAMP WIDTH

COLORED-RED REFLECTIVE MARKERS EVERY 40 FT.

NORMAL TAPERED EXIT ONLY
(TWO THRU LANES-THREE APPROACH LANES)

COLORED-RED REFLECTIVE MARKERS EVERY 40 FT.

AMBER RED REFLECTIVE MARKERS EVERY 40 FT.

COLORLESS-RED REFLECTIVE MARKERS EVERY 40 FT.

4" WHITE EDGE LINE

4" WHITE EDGE LINE

4" WHITE STRIPING

4" WHITE STRIPING

4" WHITE EDGE LINE

REVISIONS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS

INTERCHANGE MARKINGS

UNITED STATES OF AMERICA

DATE INITIALS DESCRIPTIONS
1/12/75 PM REvised NOTES & WALL ISSUE
5/62 KH REvised DETAILS

DETAILED BY

CHECKED BY

REMARKS

INTERCHANGE MARKINGS

1 OF 4 17345
4" white line along right edge of travelway

4" yellow line along left edge of travelway

4" white & yellow edge lines terminate at point of shoulder pavement

SHOULDER PAVEMENT

SHOULDER LINE

NORMAL TAPERED ENTRANCE

4" skip line ends at point where their lane width and ramp width equal.

SHOULDER PAVEMENT

SHOULDER LINE

4" white line

NORMAL TAPERED ENTRANCE

WITH ADDED LANE

4" yellow line along left edge of travelway

4" white & yellow edge lines terminate at point of shoulder pavement

SHOULDER PAVEMENT

SHOULDER LINE

REFERENCE REFLECTIVE MARKERS EVERY 40' SHALL END AT THE TERMINATION OF THE YELLOW EDGE LINE

4" yellow line along left edge of travelway

4" white & yellow edge lines terminate at point of shoulder pavement

SHOULDER PAVEMENT

SHOULDER LINE

NORMAL TAPERED ENTRANCE

INTERCHANGE MARKINGS

FLORIDA DEPARTMENT OF TRANSPORTATION

4" yellow line along left edge of travelway

4" white & yellow edge lines terminate at point of shoulder pavement

SHOULDER PAVEMENT

SHOULDER LINE

NORMAL TAPERED ENTRANCE

WITH ADDED LANE

4" yellow line along left edge of travelway

4" white & yellow edge lines terminate at point of shoulder pavement

SHOULDER PAVEMENT

SHOULDER LINE

NORMAL TAPERED ENTRANCE

WITH ADDED LANE

C O L O R L E S S- R E F L E C T I V E P A V E M E N T M A R K E R S TO BE PLACED ON EVERY STRIPE BEGINNING AT NOSE.

COLORLESS RED REFLECTIVE PAINT MARKERS MARKERS TO BE PLACED ON EVERY STRIPE BEGINNING AT NOSE.

REFLECTIVE PAINT MARKERS SHALL BE PLACED OUTSIDE OF THE STRIPE IF PAINT IS USED.
COLORLESS-RED REFLECTIVE PAINT MARKERS TO BE PLACED EVERY STRIPE BEGINNING AT NOSE.

REFLECTIVE PAINT MARKERS SHALL BE PLACED OUTSIDE OF THE STRIPE IF PAINT IS USED.

COLORLESS-RED REFLECTIVE MARKERS (EVERY 40 FT.) SHALL END AT THE TERMINATION OF THE ACCELERATION LANE

6" SOLID WHITE LINE SHALL EXTEND 1/2 OF ACCELERATION LANE FROM GORE MARKINGS

SEE DETAIL E

WHITE THERMOPLASTIC ARROW WITH COLORLESS-RED REFLECTIVE MARKERS TO BE USED ONLY IN AREAS WITH LOW TRAFFIC VOLUMES.

WHITE PAINT ARROW WITH COLORLESS-RED REFLECTIVE MARKERS.

WHITE EDGE LINE

YELLOW EDGE LINE

AMBER-RED REFLECTIVE MARKERS (EVERY 40 FT.) SHALL BEGIN AT THE BEGINNING OF THE YELLOW EDGE LINE

COLORLESS-RED REFLECTIVE MARKERS (EVERY 40 FT.) SHALL BEGIN AT THE BEGINNING OF THE DECELERATION LANE

SKIP LINE FOR ONE-HALF LENGTH OF FULL WIDTH DECELERATION AND ACCELERATION LANE

SEE DETAIL B

END 4" WHITE LEFT EDGE LINE

END 4" YELLOW LEFT EDGE LINE

END 4" WHITE EDGE LINE

END 4" YELLOW EDGE LINE

AMBER-RED REFLECTIVE MARKERS (EVERY 40 FT.) SHALL END AT THE TERMINATION OF THE YELLOW EDGE LINE

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS
INTERCHANGE MARKINGS

WRONG WAY ARROWS

TITLE BLOCK

REVISIONS

DATE
DETAILS
DESCRIPTIONS
DETAILED BY
CHECKED BY
REVISED NOTES & TITLE BLOCK
REVISED ON DIMENSIONS
LAYOUT
SUPPLEMENTED BY
SUPERVISED BY

3 0F 4 12/25
Placing of Reflective Pavement Markers and Delineator Posts for Non-Loop Ramps

- End colorless-red markers at the end of acceleration lane.
- Begin colorless-red reflective markers (every 10') at beginning of deceleration lane.
- End 4' yellow edge line.
- Wrong-way arrow.
- End 4' white edge line.

Placing of Reflective Pavement Markers and Delineator Posts for Loop Ramps

- End colorless-red markers at the end of yellow edge line.
- Wrong-way arrow.
- End 4' yellow edge line.
- 4' white edge line.

TYPICAL RAMP TERMINALS

At Crossroad

(Entrance and Exit)

- Single white post mounted delineator (40' spacing).
- Single white post mounted delineator (40' spacing).
- Single white post mounted delineator (40' spacing).
- Island guardrail.
- Single white post mounted delineator (40' spacing).

Wrong-way arrow.

4' white edge line.

Stop signs to be used with controlled or signaled intersections only.

Thermoplastic wrong-way arrow with markers to be placed half way up the ramp opposite the wrong-way signs.

Standard lane use arrow.

See water section 31-18 and index 17346 for placement.

Florida Department of Transportation
Traffic Operations

Revisions

Date

Initials

Revisions

17-10-13

K.R. Approved

17345
EXTENSION OF EDGE LINE THROUGH CROSS-OVER AREA.

WHITE OR YELLOW EDGE LINE.


PAVEMENT ARROW AND MESSAGE DETAILS.

PAVEMENT MARKINGS AND DELINEATORS FOR MEDIAN CROSS-OVER.

PAVEMENT MARKINGS FOR INTERSECTIONS WITH MAJOR AND MINOR ROADS.

FLORIDA DEPARTMENT OF TRANSPORTATION
Traffic Operations
SPECIAL MARKING AREAS

REVISIONS

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DATES

APPROVED

DEPARTMENT OF TRANSPORTATION
Traffic Operations

TABLE 2.19

NO. 1

PAVEMENT MARKINGS AND DELINEATORS FOR MEDIAN CROSS-OVER

PAVEMENT MARKINGS FOR INTERSECTIONS WITH MAJOR AND MINOR ROADS

FLORIDA DEPARTMENT OF TRANSPORTATION
Traffic Operations
SPECIAL MARKING AREAS

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APPROVED

DEPARTMENT OF TRANSPORTATION
Traffic Operations

TABLE 2.19

NO. 1
TYPICAL INTERSECTION 2 THRU LANES PLUS LEFT TURN LANE, WITH CROSSWALK

DETAIL "A"

RIGHT TURN LANE DROP AND ISLAND DETAILS

RIGHT TURN LANE AND ISLAND DETAILS

FOR LEFT TURN STORAGE LANE DETAIL DRAWING X OF X

SEE DETAIL "X" THIS SHEET

150' MINIMUM OR AS DETERMINED BY EXIT WHERE W IS THE LATERAL OFFSET IN FEET AND THE SPEED LIMIT IN MILES PER HOUR (SPEED LIMITS)

IS MINIMUM AS SHOWN OR A PEDESTRIAN CURVE * (L. SO ADJUST MAY BE INSTALLED

SEE LATERAL OFFSET IN FEET

SEE LATERAL OFFSET IN FEET

SEE LATERAL OFFSET IN FEET

POSITION SPEED LIMIT

FT. 10

50 OR LESS 10

55 20

60 25

45 25

50 OR MORE 10

10'

15'

70'

10'

6" WHITE CENTER TO CENTER SPACING FOR CHEVRONS

APPLIES TO ONE WAY LEFT TURN LANE ALSO

MEDIAN

FULL LANE WIDTH

4" WHITE

6" YELLOW

SEE DETAIL OF X OF X FOR PLACEMENT SEE DRAWING X OF X

10" CENTER TO CENTER SPACING

NOTE DOUBLE YELLOW LATERAL CENTER LINES ON ALL REMAINING APPROACHES SHALL BE EXTENDED BACK 200' FOR PROJECTS INVOLVING INTERSECTION IMPROVEMENT ONLY

WIDTH OF CROSSWALK TO EQUAL WIDTH OF THE ADJACENT SIDEWALK, BUT NOT LESS THAN 6'

NOTE

24" WHITE STOP LINE

WHEN SPECIFIED, "STOP" MESSAGE SHALL BE PLACED 15' BACK OF STOP LINES.

STOP BARS, CROSSWALKS AND DOUBLE CENTER LINES DETAILS

FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

TRAFFIC OPERATIONS

REVISIONS

INITIALS

DATE

DESCRIPTION

INITIALS

DATE

REFERENCES

TRAFFIC CONTROL CUP
APPENDIX

9-80

CHECKED BY

DRAWING NO.

17546

3 OF 3

24" WHITE STOP LINE

WAVES

12" RECOMMENDED (WHITE)

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### Taper Length Equation

\[ TL = \frac{1}{2} \times S \]

\[ TL = \frac{1}{2} \times \text{Speed (M.P.H.)} \]

**TL** = Taper Length

**S** = Speed (M.P.H.)

---

### RAISED PAVEMENT MARKERS

- **NOTE:** Raised pavement markers shall be set in Thermoplastic as shown below, or set two (2) inches inside painted line as shown in detail A.

---

### 4-LANE-2-LANE TRANSITION-NO MEDIAN

**NOTE:** Raised pavement markers (directional red and colorless) should be used in all gores of this type.

---

### PAVEMENT MARKINGS FOR TRAFFIC CHANNELIZATION AT GORE

(Traffic Flows in Same Direction)

---

### PAVEMENT MARKING FOR TRAFFIC SEPARATION

(Traffic Flows in Opposite Direction)

---

### Florida Department of Transportation

Traffic Operations

**SPECIAL MARKING AREAS**

**REVISIONS**

**INITIALS**

**DATES**

<table>
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<th>No.</th>
<th>Description</th>
<th>Initials</th>
<th>Dates</th>
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**Drawn By:**

- K. D. Rosen

**Checked By:**

- H. J. S. Pope

**Supervised By:**

- R. L. Ziegler

**Redrafted:**

- 8-80

**Designed:**

- C. M. S. Deschamps

**Approved:**

- R. L. Ziegler

**Drawing No.:**

1734E

**Issue No.:**

4-1-75

---

**NOTE:** Raised pavement markers (directional red and colorless) should be used in all gores of this type.
SEVERE CASES MAY REQUIRE USE OF CONTRAST OR GRADUATED ADVISORY SPEED SIGNS (PRIVATIZED NON-PRODUCTIVE) IN ADDITION TO those ON RIGHT EDGE IS NOT MANDATORY WHERE SPEEDS ARE LOWER THAN 50 M.P.H.

Note: Raised pavement markers on edge lines through transition area are optional.

Schemes for Transition From 2-Lane to 4-Lane Roadway

ENDPOINTS OF L1 ARE THE PHYSICAL NOSE AND POINT OF WHICH PAVED SURFACE BEGINS TO TAPER TO ONE LANE, ON NEWER ROADS L1 WILL USUALLY BE SIMILAR TO L2, BUT ON CLOSER ROADWAYS L1 MAY BE MUCH LESS FOR THE TRANSITION L1 BEGINS AT POINT WHERE INCREASED WIDTH BEGINS TO NARROW AND CONTINUES TO POINT OF UNIFORM LANE WIDTH.

FLORIDA DEPARTMENT OF TRANSPORTATION
Traffic Operations
SPECIAL MARKING AREAS

REVISED
INITIALS DATES

10-15-79

REDACTED CHECKED

K R.

DRAWING NO.
INDEX NO.
5

17346
RAILROAD CROSSING AT 2-LANE ROADWAY

RAILROAD CROSSING AT 4-LANE ROADWAY

NOTES
1. When computing pavement messages, quantities do not include transverse lines.
2. When dynamic devices are not present or are to be installed, the crossbar shall be located at the future gate location to the right in accordance with Index 178B.

THE RAILROAD PROTECTION DEVICE IS TO BE LOCATED WITHIN 12 FT. OF THE RAILROAD CENTERLINE ON PHYSICALLY DIVIDED FACILITIES. ADDITIONAL PROTECTION DEVICES MAY BE INSTALLED IN THE MEDIAN. SEE STANDARD INDEX 178B.

SPECIAL MARKING AREAS

R.L. ELLIOTT

FLORIDA DEPARTMENT OF TRANSPORTATION
Traffic Operations

SPECIAL MARKING AREAS

REVISED

INITIALS

DATES

R.L. ELLIOTT

DEPUTY

TRAFFIC

OPERATIONS

ENGINEER

8-80

REVISED

CHECKED BY

SUPervised by KR

8-1-76

9-1-76

9-1-76

Redrafted

Check

9-1-76

10-12-76

K.K.

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CASE I. REFLECTOR SHALL HAVE A YELLOW REFLECTIVE BACKGROUND, AND YELLOW REFLECTIVE BUTTONS (SIGN SHOP 812-170)

CASE II. REFLECTOR SHALL HAVE A RED REFLECTIVE BACKGROUND, AND RED REFLECTIVE BUTTONS (SIGN SHOP 812-170)

YELLOW REFLECTOR CASE 1

YELLOW REFLECTOR CASE 2

YELLOW REFLECTORS CASE 1

YELLOW REFLECTORS CASE 2

CASE II. REFLECTORS

CASE I. REFLECTORS

YELLOW REFLECTORS

RED REFLECTORS

YELLOW REFLECTORS

RED REFLECTORS

YELLOW REFLECTORS

RED REFLECTORS

CASE II. REFLECTORS

CASE I. REFLECTORS
### General Notes

1. **Type B** Symbol signs shall be shown symbol signs for motorist services. Services shall always appear in the following order reading from left to right and top to bottom: gas, food, lodging, phone, hospital, camping.

2. If the same service is provided in both directions, the sign shall be placed within 100 feet of the exit ramp.

3. **Type C** Symbol signs shall be placed with white reflective legend and border with blue reflective background.

4. Full-size drawings of symbol signs are available from traffic operations, Dir. of Trans. Port., Tallahassee, Fla.

5. For mounting details, see Index 9535 for Type X Breakaway or Index 1060 for Type C殉道.

### Approximate Position of Second Motorist Service Sign

- Depth: 600' for interchanges with two exit ramps.

- Depth: 1200' for interchanges with two exit ramps.

### Ramp-Mounted Signs

- Ramp-mounted signs shall be installed to avoid conflict with existing signs.

### Notes

- Signs shall be located on the side of the ramp for services in that particular direction. If there are services in both directions, then signs shall be installed on both sides.

- Ramp-mounted signs shall be installed to avoid conflict with existing signs.

- In no case shall they be placed within 100 feet of another sign.

- Single-panel arrow size will be 36".

- Dual-panel arrow size will be 36".

### Revisions

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**Florida Department of Transportation**

**Traffic Operations**

**Signing for Motorist Services**
NOTE

FOR ADEQUATE DRIVER COMMUNICATION
CONDITIONS REQUIRE.

THIS SIGN WITHIN THE STATE LINE.

NOTE:

DISTANCE MESSAGE OF 1/2 MILE MAY BE USED TO KEEP
THIS SIGN WITHIN THE STATE LINE.

NOTE:

ROADWAY NOT CRAWN TO SCALE
DISTANCES SHOWN ARE APPROPRIATE
FOR ADEQUATE DRIVER COMMUNICATION
BUT MAY BE ALTERED SLIGHTLY IF FIELD
CONDITIONS REQUIRE.

NOTES:

1. SIGNS AND SIGN STRUCTURES SHALL BE ERECTED IN ACCORDANCE WITH THE DETAILS SHOWN IN ROC X 2985.
2. SIGN FT0-17 SHALL BE LOCATED ON THE WELCOME CENTER GROUNDS.
3. SIGN FT0-19 SHALL BE LOCATED ON LIMITED ACCESS HIGHWAYS ONLY.
4. DETAIL OF FLORIDA SYMBOL IS AVAILABLE ON REQUEST FROM TRAFFIC OPERATIONS OFFICE OF D.O.T.

Florida Department of Transportation
WELCOME CENTER SIGNING
FOR LIMITED ACCESS HIGHWAYS

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REVISIONS
NOTES

(1) SIGNS AND SIGN STRUCTURES SHALL BE ERECTED IN ACCORDANCE WITH THE DETAILS SHOWN ON INDEX NO. 6-75.

(2) SIGN FT0-19 SHALL BE LOCATED ON THE WELCOME CENTER GROUNDS IN PROXIMITY TO THE BUILDING AND AS FAR FROM THE MAIN LINE ROADWAY AS POSSIBLE (2 SIGNS BACK TO BACK).

(3) DETAIL OF FLORIDA SYMBOL IS AVAILABLE ON REQUEST FROM TRAFFIC OPERATIONS OFFICE OF D.O.T.

REVISIONS

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FOR PRIMARY HIGHWAYS

INITIALS

RECORDS FOR DATED

WELCOME CENTER SIGNING FOR PRIMARY HIGHWAYS

STATE OF FLORIDA

WELCOME CENTER

1 MILE

SIGN NO. FT0-22A
4'-6" x 12'-6"
2" BOR - 9" RAD.
BLUE REF. BACKGROUND
WHITE REF. LEGEND & BORDER

1/2 MILE

SIGN NO. FT0-22B
5"-0" x 12'-6"
2" BOR - 9" RAD.

NOTE
ROADWAY NOT DRAWN TO SCALE

NOTE
EITHER ONE BUT NOT BOTH OF SIGNS FT0-22A OR B SHOULD BE USED DEPENDING ON SPEED, ROADSIDE DEVELOPMENT & GEOMETRIC CONDITIONS.

FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC OPERATIONS

WELCOME CENTER SIGNING FOR PRIMARY HIGHWAYS

INITIALS

RECORDS FOR DATED

WELCOME CENTER SIGNING FOR PRIMARY HIGHWAYS

STATE OF FLORIDA

WELCOME CENTER

1 MILE

SIGN NO. FT0-22A
4'-6" x 12'-6"
2" BOR - 9" RAD.
BLUE REF. BACKGROUND
WHITE REF. LEGEND & BORDER

1/2 MILE

SIGN NO. FT0-22B
5"-0" x 12'-6"
2" BOR - 9" RAD.

NOTE
ROADWAY NOT DRAWN TO SCALE

NOTE
EITHER ONE BUT NOT BOTH OF SIGNS FT0-22A OR B SHOULD BE USED DEPENDING ON SPEED, ROADSIDE DEVELOPMENT & GEOMETRIC CONDITIONS.
### Typical Placement of Reflective Pavement Markers in Thermoplastic

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**FLORIDA DEPARTMENT OF TRANSPORTATION**

Traffic Operations

**TYPICAL PLACEMENT OF REFLECTIVE PAVEMENT MARKERS IN THERMOPLASTIC**

**DATE** | **INITIALS** | **DESCRIPTION**  | **DETAILED BY** | **CHECKED BY** | **APPROVED BY** | **SUPERVISED BY**
---|---|---|---|---|---|---
10-79 | K.H. | Initials | | | | |

**Note:**
Reflective Pavement Markers shall be placed 40' c/c on all projects, however on sharp curves less than 40' may be used, if specified by the plans.

For Pavement Arrow Requirements, see Item 17346.
**NOTES**

1. For lane lines separating one-way traffic, raised reflective markers shall be bi-directional (colorless & red).
2. For center lane markings for two-way traffic, raised reflective markers shall be bi-directional (amber & amber) except where passing is restricted in one direction only.
3. Raised reflective markers shall be placed 40' C.C. on all projects, however on sharp curves less than 40' may be used, if specified by the plans.
4. All markings shall be applied before raised markers are installed.

---

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**TYPICAL PLACEMENT OF REFLECTIVE PAVEMENT MARKERS (PAINT)**

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**GRAPHIC**

- **DIRECTION OF TRAVEL WITH STATIONING**
  - Lane Line 15'
  - Lane Line 15'

- **NOTES** on the diagram:
  - Bi-Directional Amber
  - Mono-Directional Amber
  - Raised Reflective Markers
  - Painted Traffic Lines
Notes: The color of the sign shall be high intensity silver-white reflective background with black opaque border and legend.

The exit number shall be centered in the space provided on sign panel.

Color is reflective green background with reflective white legend and border.
PARKING BY DISABLED PERMIT ONLY

Notes:
1. All letters are 1.5" Series "C".
2. Top portion of sign shall have a reflectorized blue background with white reflectorized legend & border.
3. Bottom portion of sign shall have a reflectorized white background with black opaque legend & border.

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS

SPECIAL SIGN DETAIL

REVISIONS

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SUPERVISORY REPORT

2 of 3
17355
FLORIDA ROUTE MARKER FOR INDEPENDENT USE
FTO-28

NUMERICAL SIZE
1 or 2 Digits 10" Series "C" - 24"x24"
3 Digits 8" Series "B" - 24"x24"
4 Digits 8" Series "B" - 24"x30"
More Than 4 Digits 8" Series "B" - 24"x60"

Notes: 1. All state route markers and auxiliaries shall have black opaque legend and border with white reflective background.
2. Full size prints are available from Tallahassee Traffic Operations.

FLORIDA SHIELD FOR GUIDE SIGN USE

Notes: 1. Florida shield shall have black opaque legend with white reflective background.
2. Full size prints are available from Tallahassee Traffic Operations.

FLORIDA'S TURNPIKE TRAILBLAZER
FTO-27

Notes: 1. Full size prints are available from Tallahassee Traffic Operations.
2. Type 'B' arrow to be positioned as indicated on Signing Plans.
3. Green reflectorized background with White reflectorized legend and border.
NOTES:
1. OTHER METHODS FOR ATTACHMENT OF THE SIGN TO THE DROP PIPE MAY BE APPROVED BY TALLAHASSEE TRAFFIC OPERATIONS.
2. LOWER ELEVATIONS OF SIGNS SHALL BE APPROXIMATELY THE SAME.
3. TYPE A SHALL BE USED FOR CENTER SIGN OF SPAN ONLY.

DETAILS:
- **DETAIL/SIGN CLAMP**
- **DROP PIPE**
- **MESSENGER WIRE**
- **SPAN WIRE CLAMP**

**TYPICAL INSTALLATIONS/SIGN PANEL (S) MOUNTED ON SPAN WIRE**

**DETAIL/OPPOSING SIGNS ON SINGLE DROP PIPE**

**DETAIL/SINGLE PANEL ON DROP PIPE AND SPAN WIRE**

**DETAIL/ATTACHMENT OF DROP PIPE TO MESSENGER WIRE**

**TYPICAL SPAN WIRE INSTALLATION**

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**Traffic Operations**

**SPAN WIRE MOUNTING DETAILS**

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<td>State Traffic Operations Eng.</td>
<td>1-16-76</td>
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**DRAWING NO.** 17356
**FIGURE A**

For use in areas not exposed to vehicular traffic and under driveways.

- May be adjusted in field due to field conditions upon approval of project engineer.

**FIGURE B**

For use in asphalt roadway adjacent to gutter when placement outside of the pavement is not feasible.

- Trench not to be open more than 25' at a time when construction area is subject to vehicular or pedestrian traffic.
- Asphalt to be sawcut and removed to leave neat lines on both sides of the 12" pavement cut.

**FIGURE C**

For use in installing conduit under existing asphalt pavement not adjacent to gutter when jack is not feasible.

- Rigid conduit must be used when jack is not feasible.

**FIGURE D**

For use installing conduit under a new roadway prior to installation of curbs, base and pavement.

**FIGURE E**

For use in installing conduit under sidewalk.

- Sidewalk patches to match existing joints.
- Entire sidewalk slab must be replaced when specified in the plans.
- Backfill and tamp with material from trench except at driveways.
- Backfill a length of trench within the driveway entirely with class C concrete.

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_Revision Details_

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*Florida Department of Transportation*

Traffic Operations

Conduit Installation Details

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*Drawing No. 1 of 2 (1772)*
**FIGURE A**

Pull box entry of conduit under sidewalks

---

**FIGURE B**

Section

Note: One run of conduit (between pull boxes) shall not contain more than 360° of bend including pull box bends.

---

**FIGURE C**

For use under railroads

*In case of multiple tracks, the measurement is to be from the centerline of the outside track.*

---

Florida Department of Transportation
Traffic Operations

**CONDUIT INSTALLATION DETAILS**

INITIALS: OATES

Drawn by: MICK

Supervised by: J.R.M.
No. 8 STRANDED COPPER GROUND WIRE (BARE)

CRIMP TYPE ELECTRICAL CONNECTOR

MESSENGER WIRE

SIGNAL CABLE

TETHER WIRE

AUTOMATIC COMPRESSION TYPE CLAMP (Feed Through Deadend)

RIGID CONDUIT

CONDUIT FOR GROUND WIRE - FROM GRADE TO 81 HOLE GRADE.

5/8" x 20' GROUND ROD (COPPERCLAD)

NOTE:

1. THE SERVICE HEAD HOLE FOR JOINT USE POLES MAY BE DRILLED BY THE UTILITY COMPANY AT AN ANGLE OF 90° BUT NOT LESS THAN 45° TO THE FACE OF THE POLE.

2. USE A SPLIT CLAMP ON A STEEL POLES.

3. THE LOAD FACE OF POLE SHALL BE PERPENDICULAR TO LOAD.

4. VERTICAL CLEARENCE OF NOT LESS THAN 9 FEET AND NOT MORE THAN 19 FEET, MEASURE UNDER THE MOST CRITICAL SIGNAL ASSEMBLY (IN REGARDS TO CLEARANCE) FOR THAT SPAN.

FLORIDA DEPARTMENT OF TRANSPORTATION

INITIALS

DATES

Redrawn By: Mick

09-10-80

Supervised By: J.R.M.

17727
1. The messenger wire of the interconnect cables shall be grounded to the copper ground wire of the pole or to the external wire extending down the pole.

2. When utilizing the external ground wire to the pole, a piece of 1½ inch conduit shall extend up the pole externally to a point eight (8) feet above finish grade to protect the ground wire connecting the messenger wire to the ground rod.

3. Locking cable ties or lashing wire when used shall be placed no further than one (1) foot apart except at the point of cable drop or terminations where one (1) shall be placed at the point where the cables separate from the messenger wire and another placed four (4) inches (max) from that tie. When using Figure "A" interconnect cable only the locking cable ties shall be used.

4. If accessible the internal ground wire of the support pole may be used to ground the messenger wire.
1. As an option, the contractor will be allowed to install pedestrian signals on concrete poles and pedestals with the use of lead anchors in lieu of the standard steel bands.

2. Holes drilled or punched in metal poles or pedestals shall be thoroughly reamed, cleaned of all burrs and covered with two coats of zinc-rich paint as specified in the standard specifications for road and bridge constructions. Grommets or bushings shall be installed in holes.

3. Grounding to be in accordance with Section 620 of the standard specifications.
**GENERAL NOTES**

1. THE MINIMUM DISTANCE BETWEEN THE "TWISTED PAIRS OF LOOP LEAD-IN WIRE" IS 6'.

2. IF THE LOOP LEAD-IN IS 75' OR LESS FROM THE EDGE OF THE LOOP TO THE DETECTOR OR CONTROLLER CABINET CONTINUE THE TWISTED PAIR TO THE SPECIFIED FULL BOX OR CABINET, A MINIMUM OF 10' FROM THE EDGE OF THE DETECTOR OR CONTROLLER CABINET.

3. THE MAXIMUM SAW CUT DEPTH SHALL BE 5'-0" ON RESIDENCES OR 6'-0" ON NEW ROADWAY DEPARTURES PROJECTS REQUIRING LOOP INSTALLATION. LOOP CUTS MAY BE INSTALLED IN THE ASPHALT BASE PRIOR TO THE PLACEMENT OF THE ASPHALT WEARING SURFACE, PROVIDED THAT THE BOTTOM OF THE LOOP WIRE IS NOT GREATER THAN 2" BELOW THE FINAL WEARING SURFACE.

4. THE WIDTH OF SAW CUTS SHALL BE SUFFICIENT TO ALLOW UNFORCED PLACEMENT OF LOOP WIRE INTO LOOP WIRE INTO THE SAW CUT BUT NOT GREATER THAN 3".

5. A NONMETALLIC HOLD DOWN MATERIAL SHALL BE USED TO SECURE LOOP WIRE AND LEAD IN TO THE BOTTOM OF SAW CUTS. HOLD DOWN MATERIAL SHALL BE PLACED AT APPROXIMATELY ONE FOOT INTERVALS AROUND LOOPS AND TWO FOOT INTERVALS ON LEAD-INS.

6. A MINIMUM COVER OF 2'-0" OF SEALANT MATERIAL SHALL BE PROVIDED IN THE SAW CUT BETWEEN THE UPPERMOST LOOP WIRE OR LEAD-INS AND THE ASPHALT WEARING SURFACE.

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**VEHICLE LOOP INSTALLATION DETAILS**

**REVIEWS**

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**DATE**

06-16-80
STANDARD VEHICLE LOOP TYPES

NOTES:
1. THE "NUMBER OF TURNS" INDICATED AT THE SPECIFIED POINT OR THE LOOP REFERS TO THE NUMBER OF PASSES OF LOOP WIRES WHICH ARE PLACED IN THE SAW CUT IN FORMING THE COMPLETE LOOP.
2. LOOP TYPES OR DETAILS NOT DRAWN TO SCALE.
3. LOOP TYPES ARE CENTERED IN A SINGLE LANE EXCEPT TYPE E WHICH IS CENTERED IN TWO LANES.
1. Signs RIO-3 and RIO-4 shall be mounted above detectors, explaining their purpose and use.

2. The positioning of pedestrian push button should clearly indicate which crosswalk signal is actuated by each push button.

3. Push buttons and signs are to be mounted in accordance with standard specifications.

4. Ground to be in accordance with Section 2620 of standard specifications.

---

**Figure A**

Pole mounted detector station.

**Figure B**

Pedestrian signal (See Fig. E8F).

**Figure C**

Wood pole mounted detector station.

**Figure D**

Post detector station.

**Figure E**

Plan of concrete pedestal.

**Figure F**

Concrete pedestal.

---

Notices:

- Signs RIO-3 and RIO-4 shall be mounted above detectors, explaining their purpose and use.
- The positioning of pedestrian push button should clearly indicate which crosswalk signal is actuated by each push button.
- Push buttons and signs are to be mounted in accordance with standard specifications.
- Ground to be in accordance with Section 2620 of standard specifications.

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**Florida Department of Transportation**

**Traffic Operations**

**Designed by:** J.M.C. 7-13-77

**Checked by:**

**Quantified by:**

**Supervised by:**

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**Revisions**

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**Assemblies:**

- Figure A
- Figure B
- Figure C
- Figure D
- Figure E
- Figure F
GROUND LINE OR GRADE CABINET

POLE PLATE WITH STEEL BAND OR LEAD ANCHOR BOLTS

STEEL BAND OR LEAD ANCHOR BOLTS

LAG BOLT

POLE CLAMP

POLE PLATE WITH STEEL BAND OR METHOD APPROVED BY THE ENGINEER

CONDUIT

PULLING ELBOW TYPE LB

GROUND ROD

PEDESTAL MOUNTED

FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC OPERATIONS

CABINET INSTALLATION DETAIL

INITIALS DATES
Redrawn by: J.R.M. 09-17-80
Supervised by: J.R.M.
DRAWING NO. 1 OF 1

NOTES:

1. NUMBER, SIZE AND ORIENTATION OF CONDUIT SWEEP WILL VARY ACCORDING TO SITE CONDITION OR LOCATION. ONE SPARE 2" PVC CONDUIT SHALL BE PROVIDED IN ALL BASES. THE SPARE SHALL EXIT IN THE DIRECTION OF THE CENTER REAR OF THE CABINET. IF OBSTRUCTIONS PREVENT THE SPARE CONDUIT FROM EXITING TO THE REAR, OR THE SMART CABINET IS LOCATED ON THE R/W LINE, THE SPARE SHALL EXIT IN THE DIRECTION IN WHICH THE CABINET IS LOCATED. ALL SPARE SWEEPS OF CONDUIT SHALL BE CAPPED WITH A WEATHER PROOF FITTING.

2. GROUNDING TO BE IN ACCORDANCE WITH SECTION 620 OF THE STANDARD SPECIFICATIONS.
SIGNALIZED INTERSECTION
Vehicle Movements & Signal Head Number Assignments Are Not Directionally Oriented. They Shall Maintain Their Relative Orientation About The Intersection (I.E., Movements 3 & 4 Are Always To The Right Of Movements 1 & 2 Etc.)

LEGEND
- Vehicle Movement Number
- Pedestrian Movement Number
- Timing Function Number
- Phase Number
- Green Arrow (Left or Right)
- Red Arrow
- Yellow Arrow

SIGNAL CLEARANCE TABLE
(Bank Indicates No Clearance Required)

<table>
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<tr>
<th>From</th>
<th>To</th>
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<th>G</th>
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SOP 1

SOP 2

SOP 3

SOP 4

SOP 5

SOP 6

SOP 7

SOP 8

SOP 9

SOP 10

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS
STANDARD SIGNAL OPERATING PLANS

Drawn by: J.M.C. 4-26-79
Checked by: J.W.J.
Approved by: FLORIDA DEPARTMENT OF TRANSPORTATION
**FLORIDA DEPARTMENT OF TRANSPORTATION**

**TRAFFIC OPERATIONS**

**ADVANCE WARNING FOR R.R. CROSSING**

**FUNCTIONAL BLOCK DIAGRAM**

- **Passive State** (Train Circuit Not Actuated)
  - Signal Heads Not Active in Passive State
  - Weatherlight Cap
  - 4" Aluminum Pipe
  - Sign No. W30-3TA"
  - 4" Aluminum Pipe (0.188" Wall Thickness)
  - Stationary Background to Form a Portion of Distance Message When "Stop Ahead" Sign Is in Closed Mode
  - Pulling Elbow (Type LBOLE (10 MIN.)
  - Grade at Edge of Travelway

- **Active State** (Train Circuit Actuated)
  - Signal Heads Flashing Alternately in Active State
  - Flasher Cabinet (Signal Flasher, Manual Test Switch, Normally Closed, Push Button, Control Relay)
  - Pulling Elbow (Type LBOLE (10 MIN.))
  - Sign Control Wiring to Be As Recommended by Manufacturer
  - Engineering Grade Reflective Sheeting (Yellow)
  - 4" Letters (Series "c")

**TYPICAL PLAN**

- **Location of the Advance Warning Sign**
  - The distance is measured along right edge of pavement from R/R stop bar to the advance warning sign.

- **Rev. 4**
  - Added Pull Box, Revisited 4 Pedestal

**Revisions**

- **Designed by CG 12/12/79**
- **Checked by 12/12/79**
- **Approved**

**Note:**
- 1. "Stop Ahead" is standard and preferred sign message. Another message may be approved when appropriate for specific situations.
- 2. Pull box, revised 4 pedestal

**Advance Warning for R.R. Crossing**

**Revisions**

- Designed by CG 12/12/79
- Checked by 12/12/79
- Approved

**Designed by**

- **CG 12/12/79**

**Checked by**

- **12/12/79**

**Approved**

- **Signed by**

**Drawing No.**

- **17881**
SIGNAL PLACEMENT AT RAILROAD CROSSING (2-LANE DESIGN)

SIGNAL PLACEMENT AT RAILROAD CROSSING (4-LANE DESIGN)

GENERAL NOTES
1. No guardrail is proposed for signals; however, some form of impact attenuation device may be specified for certain locations.
2. Advance flasher to be installed when called for in plans or specifications.
3. Top of foundation shall be no greater than 4" above finished shoulder grade.

4. TYPE OF TRAFFIC CONTROL DEVICES
   I. Flashing signals
   II. Flashing signals with cantilever
   III. Flashing signals with gate
   IV. Flashing signals with cantilever & gate
   V. Gate

5. CLASS OF TRAFFIC CONTROL DEVICES
   I. Flashing signals-ONE TRACK
   II. Flashing signals-MULTIPLE TRACKS
   III. Flashing signals-GATE-ONE TRACK
   IV. Flashing signals-GATE-MULTIPLE TRACKS
   V. Gate

6. SIX LANE GRADE CROSSINGS ARE SPECIAL CONDITIONS. PLACEMENT OF RAILROAD TRAFFIC CONTROL DEVICES ARE NOT COVERED UNDER THIS INDEX.

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS
RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES

REVIEWS

REVISIONS

DATE INITIAL DESCRIPTION

10-24-76 JJC ADDED SHEET 3 TO INDEX

RECOMMENDED BY

DRAWING NO INDEX NO.

17882

NOTES:
-フラッシャー信号の設置が必要な場合、特定の場所ではある形式の衝撃緩衝装置が指定される可能性がある。
-アドバンスフラッシャーは、プランや仕様に必要な場合には設置される。
-基礎の頂点は、完成された肩幅が4英寸以下でなければならない。

4. 交通制御デバイスの種類
   - 信号フラッシュ
   - カンチレバー付き信号フラッシュ
   - ゲート付き信号フラッシュ
   - カンチレバーとゲート付き信号フラッシュ
   - ゲート

5. 交通制御デバイスのクラス
   - 信号フラッシュ-1レーン
   - 多レーン信号フラッシュ
   - ゲート付き信号フラッシュ-1レーン
   - ゲート付き信号フラッシュ-多レーン
   - ゲート

6. 六レーンのグレードクロスイングは特殊な条件である。ルールズのレールクロスイング交通制御デバイスはこのインデックスでカバーされていない。

フロリダ州運輸省
交通運営
レールクロスイング交通制御デバイス
ACUTE ANGLE (AND RIGHT ANGLE)

SIGNAL PLACEMENT AT RAILROAD CROSSING (2 LANES, CURB & GUTTER)

GENERAL NOTES

7. The location of flashing signals and stop lines shall be established based on future or present installation of gates with appropriate track clearances.

8. Where plans call for railroad traffic control devices to be installed in curbed medians, the minimum median width shall be 10 feet.

9. Location of railroad traffic control device is based on the distance available between face of curb & sidewalk.

D - E' - Locate device outside sidewalk.

E' - Locate device between face of curb & sidewalk.

10. Stop line to be perpendicular to edge of roadway, approx. 6' from nearest rail, or 8' from and parallel to gate when present.

TYPE I

TYPE II

TYPE III

TYPE IV

TYPE V

FLORIDA DEPARTMENT OF TRANSPORTATION
RAILROAD GRADE CROSSING TRAFFIC OPERATIONS

REVISIONS

DATE | INITIALS | DESCRIPTION
---|---|---
7-08-77 | C G | ADDED GENERAL NOTES

INDEX NO. 17882
1. "STOP HERE ON RED" is omitted in Type I operation and "TRAFFIC SIGNALS" are omitted in Type III operation.
2. The time between beginning of flashing yellow on "Drawbridge Ahead" sign and the clearance of traffic signal to red, or beginning of flashing red, should not be less than the travel time of a passenger car, from the sign location to the stop line, traveling at the 85 percentile approach speed.
3. Beginning of operation of drawbridge gates shall not be less than 15 seconds after steady red or 20 seconds after flashing red (Actual time may be determined by the bridge tender).
4. Time of gate lowering and raising is dependent upon gate type.
5. Time of bridge opening is determined by the bridge tender.
6. Each gate shall be operated by a separate switch.
7. On each approach (Type III), all four red signals shall be on the same two circuit flasher, with the two top signals on one circuit, and the two bottom signals on the alternately flashing circuit.
8. A drawbridge ahead sign is required for both types of signal operation. However, a flashing beacon shall be added to the sign when physical conditions prevent a driver traveling at the 85% approach speed from having a continuous view of at least one signal indication for approximately 10 sec.
9. Requirements on Gate Installation Are Contained In Section 4E-13 through 4E-17 of the Manual on Uniform Traffic Control Devices as revised by Official Rulings, Volume VII, Rule 67.

**SEQUENCE CHART**

**NOTES:**

1. "STOP HERE ON RED" is omitted in Type II operation and "TRAFFIC SIGNALS" are omitted in Type III operation.
2. The time between beginning of flashing yellow on "Drawbridge Ahead" sign and the clearance of traffic signal to red, or beginning of flashing red, should not be less than the travel time of a passenger car, from the sign location to the stop line, traveling at the 85 percentile approach speed.
3. Beginning of operation of drawbridge gates shall not be less than 15 seconds after steady red or 20 seconds after flashing red (Actual time may be determined by the bridge tender).
4. Time of gate lowering and raising is dependent upon gate type.
5. Time of bridge opening is determined by the bridge tender.
6. Each gate shall be operated by a separate switch.
7. On each approach (Type III), all four red signals shall be on the same two circuit flasher, with the two top signals on one circuit, and the two bottom signals on the alternately flashing circuit.
8. A drawbridge ahead sign is required for both types of signal operation. However, a flashing beacon shall be added to the sign when physical conditions prevent a driver traveling at the 85% approach speed from having a continuous view of at least one signal indication for approximately 10 sec.
9. Requirements on Gate Installation Are Contained In Section 4E-13 through 4E-17 of the Manual on Uniform Traffic Control Devices as revised by Official Rulings, Volume VII, Rule 67.

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**TRAFFIC CONTROL DEVICES FOR MOBILE BRIDGE SIGNALS**

**REVISIONS**

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**DRAWING NO.**

1 of 3 17890
DRAWBRIDGE SIGNAL

2'-6" x 5'-0"
2" BORDERS - 4" RADIUS
6" SERIES "O" LETTERS

BLACK OPAQUE LEGEND AND BORDER ON REFLECTORIZED YELLOW BACKGROUND

TO BE USED WITH TYPE I OPERATION, AS SHOWN ON PREVIOUS SHEET
MONOTUBE SUPPORT MOUNTING

GATE & ARM DETAIL

12 Volt Flashing Red Lights Shall Be Mounted Abope Gate Arm And Shall Operate In The Flashing Mode Only When Gate Arm Is In The Lowered Position Or In The Process Of Being Lowered. The Number Of Lights Shall Vary According To Length Of The Gate Arm.

REVISIONS

DATE INITIAls DESCRIPTION
11/08/75 J.M.C. DESIGNED
7/20/76 O:O DETAIL REVISED AND DRAWING CHECKED
10/10/76 O:O DETAIL REVISED
12/08/76 O:O DETAIL REVISED

INITIALS DATES
J.W.G. SIGNED
J.W.G. DRAFTED