Agenda Item #: 3 - C - 5

PALM BEACH COUNTY
BOARD OF COUNTY COMMISSIONERS
AGENDA ITEM SUMMARY

Meeting Date: December 4, 2018	**{X} Consent { } Regular** **{ } Public Hearing { } Workshop**
Department:	**Engineering & Public Works**
Submitted By:	**Engineering & Public Works**
Submitted For:	**Roadway Production Division**

I. EXECUTIVE BRIEF

Motion and Title: Staff recommends motion to approve: a tri-party railroad agreement with the Florida Department of Transportation (FDOT) and the South Central Florida Express, Inc. (SCFE) for the creation of a railroad-highway grade crossing at County Road 880 (CR 880) FDOT Crossing Number 968624S.

SUMMARY: Approval of the agreement will allow the SCFE to construct a new railroad grade crossing on CR 880 to provide public safety, economic development, and community benefits. Palm Beach County (County) is a party to this agreement as owner of CR 880. The SCFE shall, at its expense, maintain and replace in perpetuity the crossing and automatic railroad crossing warning devices. District 6 (LBH)

Background and Justification: The SCFE is working on a southeast extension project at and around the town of South Bay to provide public safety, economic development, and community benefits. The southeast extension project eliminates the need for sugar cane operations to utilize public roads to deliver cane to the nearest elevator for transport on rail. Both train traffic and heavy truck traffic will shift from the center of South Bay to the south city limits away from populated areas. The SCFE and the FDOT have finalized the route of the new railroad tracks and CR 880 is one of the required new crossings. The SCFE will perform all work associated with the construction of the new railroad-highway grade crossing at CR 880. Some realignment of CR 880 at the crossing is required. SCFE has applied for a County permit and will include that work as part of the overall project. The SCFE shall, at its expense, maintain and replace in perpetuity the crossing and automatic railroad crossing warning devices.

Attachments:
1. Location Map
2. Tri-Party Agreement with FDOT and SCFE (4)

Recommended By: _____ 7 NOV 2018
County Engineer **Date**

Approved By: _____ 11/19/18
Assistant County Administrator **Date**

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2019	2020	2021	2022	2023
Capital Expenditures	$ -0-	-0-	-0-	-0-	-0-
Operating Costs	-0-	-0-	-0-	-0-	-0-
External Revenues	-0-	-0-	-0-	-0-	-0-
Program Income (County)	-0-	-0-	-0-	-0-	-0-
In-Kind Match (County)	-0-	-0-	-0-	-0-	-0-
NET FISCAL IMPACT	$ **	-0-	-0-	-0-	-0-
# ADDITIONAL FTE POSITIONS (Cumulative)					

Is Item Included in Current Budget? **Yes** **No**
Does this item include the use of federal funds? **Yes** **No X**

Budget Acct No.: Fund__ Dept.__ Unit__ Object
Program

Recommended Sources of Funds/Summary of Fiscal Impact:

**This item has no fiscal impact. Palm Beach County will not be responsible for any of the construction or maintenance costs associated with this project.

C. Departmental Fiscal Review: AHwillhite

III. REVIEW COMMENTS

A. OFMB Fiscal and/or Contract Dev. and Control Comments:

Lisa Pine 11/13/18
OFMB

Tracy for Lewis Jankowitz
Contract Dev. and Control
11/15/18

B. Approved as to Form and Legal Sufficiency:

11/19/2018
Assistant County Attorney

C. Other Department Review:

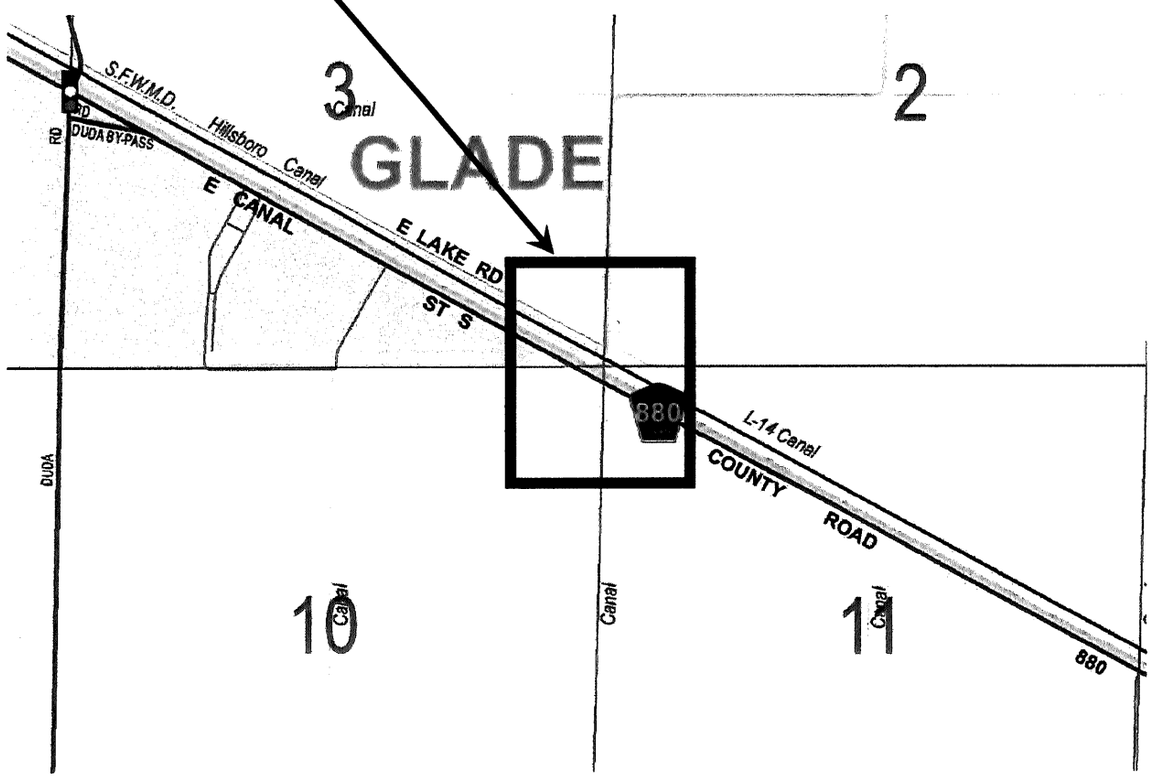
Department Director

This summary is not to be used as a basis for payment.

ATTACHMENT 1

CR 880 RAILROAD CROSSING

DOT/AAR CROSSING NUMBER 968624S



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LOCATION SKETCH

STIPULATION OF PARTIES FOR THE
OPENING OF COUNTY ROAD 880
FDOT CROSSING NUMBER 968624S RAILROAD-HIGHWAY GRADE CROSSING,
PALM BEACH COUNTY, FLORIDA

The South Central Florida Express, Inc. (RAILROAD) requests the opening of a railroad-highway grade crossing at County Road 880 in Palm Beach County (COUNTY). The proposed crossing is part of the RAILROAD'S Southeast Extension Project and provides public safety, economic development, and community benefits to the region. The Project will move significant continuous cane traffic from congested populated areas to agricultural areas as well as move truck traffic from public roads to private farm roads. The RAILROAD, COUNTY, and Florida Department of Transportation Central Office (DEPARTMENT) agree to the following conditions:

1. The RAILROAD has filed an application with the DEPARTMENT to open a public railroad-highway grade crossing at County Road 880, FDOT Crossing Number 968624S. A copy of the application is attached as EXHIBIT "A."
2. There is one mainline track at the proposed County Road 880 railroad-highway grade crossing with approximately 12 train movements per day. The current maximum train speed is 40 miles per hour at the proposed crossing location.
3. County Road 880, at the proposed crossing, is a two-lane roadway as set forth on the attached plans and maps in EXHIBIT "B."
4. The RAILROAD, at the RAILROAD'S expense, will provide all necessary materials and install a railroad grade crossing surface at County Road 880, in compliance with the DEPARTMENT'S Standard Plans Index 830-T01, attached as EXHIBIT "C," and reconstruct a 1,000-foot section of CR 880, in compliance with the COUNTY'S Right of Way Construction Permit issued to the RAILROAD (PERMIT), incorporated by reference herein.

5. The RAILROAD, at the RAILROAD'S expense, will provide all necessary materials and install at County Road 880, automated railroad grade crossing warning devices to include Type III, Class III flashing lights and gates, in accordance with the DEPARTMENT'S Standard Plans Index 509-070, attached as EXHIBIT "D," and the COUNTY'S PERMIT, incorporated by reference herein.

6. The RAILROAD, at the RAILROAD'S expense, shall maintain and replace in perpetuity the crossing surface and the railroad crossing traffic control devices at the County Road 880 railroad-highway grade crossing.

7. The RAILROAD will ensure that all Federal Railroad Administration Workplace Safety Regulations, to include flagging and insurance, are met for the improvements referenced in this Stipulation of Parties.

8. Any work by the COUNTY, within the County Road 880 railroad-highway grade crossing area, will be coordinated at least 72 hours in advance, except for emergency work for which immediate notice will be provided, with the RAILROAD'S DIVISION ENGINEER to ensure that all Federal Railroad Administration Workplace Safety Regulations, to include flagging and insurance, are met. The RAILROAD, at the COUNTY'S expense, shall erect on each side of the crossing, signs and object markers as identified in the DEPARTMENT'S Standard Plans Index 102-600, attached as EXHIBIT "E."

9. All work by the COUNTY and RAILROAD will be consistent with Manual of Uniform Traffic Control Devices (MUTCD) (2009 Edition), Federal Railroad Administration Rules and Regulations (FRA), American Association of State Highway and Transportation Officials (AASHTO) Policy, the DEPARTMENT'S Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways (Florida's Green Book), and COUNTY requirements.

10. DOT crossing number 968624S has been assigned to the County Road 880 railroad-highway grade crossing. The RAILROAD will complete the U.S. DOT Crossing Inventory Forms (OMB No. 2130-0017) for the opening of the County Road 880 railroad-highway grade crossing. The completed forms, as provided in EXHIBIT "F," will be submitted to the DEPARTMENT and to the FRA for inventory data entry.

11. This Stipulation of Parties has been executed by all parties having an interest in this matter. The RAILROAD and COUNTY waive hearing rights provided by Chapter 120, Florida Statutes, for the opening of the County Road 880 railroad-highway grade crossing with this Stipulation of Parties. The terms of this Stipulation of Parties may not be changed, waived, discharged, or terminated orally, but only by an instrument or instruments in writing, signed by the RAILROAD, COUNTY, and the DEPARTMENT.

12. This Stipulation of Parties is governed by, and shall be interpreted, and construed in accordance with the laws of the State of Florida.

13. Any failure of any party to insist upon the strict performance of any terms or provisions of this Stipulation of Parties is not deemed to be a waiver of the terms of this agreement.

14. As authorized by Section 335.141, Florida Statutes, and Rule Chapter 14-57, Florida Administrative Code, the DEPARTMENT permits the opening of the County Road 880 railroad-highway grade crossing, FDOT Crossing Number 968624S, as evidenced by this Stipulation of Parties, provided all conditions of this Stipulation are met and completed within 60 months of the execution of this Stipulation. The RAILROAD'S duties pursuant to this Stipulation, including the duties related to its installation, maintenance, and replacement of the crossing and the traffic control devices, shall survive the expiration of the permit for the opening of this crossing.

(THIS CONCLUDES THE BODY OF THIS STIPULATION OF PARTIES)

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their respective and duly authorized officers.

SOUTH CENTRAL FLORIDA EXPRESS (RAILROAD)

By: _____

Date: _____

PALM BEACH COUNTY (COUNTY), A Political Subdivision of the State of Florida, Board of County Commissioners

By: _____
Mayor

Date: _____

Approved as to Form and Legal Sufficiency

Date: _____

ATTEST:
SHARON R. BOCK

_____
Clerk & Comptroller (SEAL)

Approved as to Terms and Conditions

By: _____

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION CENTRAL OFFICE (DEPARTMENT)

By: _____
State Freight and Logistics Administrator

Date: _____

LEGAL REVIEW (DEPARTMENT)

By: _____
Attorney, FDOT

Date: _____

EXHIBIT A

Rule 14-57.010, F.A.C.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RAILROAD GRADE CROSSING APPLICATION

725-080-66
RAIL
01/13

ROAD NAME OR NUMBER	COUNTY/CITY NAME
South Central Florida Express, Inc.	Clewiston, Florida

A. IDENTIFICATION

Submitted By:

Applicant: South Central Florida Express, Inc.

Office: _____

Telephone: 863-902-2553

Address: 900 South WC Owen Ave,

Clewiston Florida, 33440

Application For:

- ☐ **Closing** a public highway-rail grade crossing by:
  - ☐ roadway removal
  - ☐ rail removal
- ☐ **Opening** a public highway-rail grade crossing by:
  - ☒ new rail line construction
  - ☐ new roadway construction
  - ☐ conversion of private to public highway-rail grade crossing

B. CROSSING LOCATION

FDOT/AAR Crossing Number: 968624S

Jurisdiction for Street or Roadway by Authority of: ☐ City ☒ County ☐ State

Local Popular Name of Street or Roadway: CR 880

Railroad Company: South Central Florida Express, Inc.

Railroad Mile Post: TBD

Submitted for the Applicant by: _____ DATE: 3/28/17
Name and Title General Manager

Application FDOT Review by: _____ DATE: 3/28/17
Central Rail Office

REFERENCES:
(Specific Legal Authority) 334.044 F.S., 120.57 F.S.
(Law Implemented) 335.141 F.S.
(Administrative Rule) 14-57.012 F.A.C.

OPENING APPLICATION QUESTIONNAIRE

Design plans, maps, aerials, and supporting documentation must be provided with the application.

If all parties, Applicant, Railroad, and Department, fail to agree to the rail crossing opening through a Stipulation of Parties, the Applicant must establish the crossing meets the criteria found in Rule 14-57.012, Florida Administrative Code. This questionnaire will assist the Department in evaluating the criteria and is not intended to be an exclusive list of factors. If the information is not available or unknown, please mark N/A.

Florida Administrative Code criteria:

A) Safety

a-1. How will the proposed crossing affect safety to drivers, pedestrians, cyclists, and rail personnel? Installation of crossing signals, barriers, warning lights, etc.
a-2. Has grade separation been considered in planning the crossing? Yes If not, why?
a-3. What crossings will be submitted for closure to offset the safety impacts of a new crossing opening? None
a-4. What safety measures are designed for the proposed crossing? All FDOT/STATE approved design.
a-5. What is the distance from the proposed crossing to the nearest intersection? Identify the street. Duda Road 1.08 Miles
a-6. Are there plans for any structures to be built near the crossing intersection? None
a-7. Identify all major traffic generators (i.e., businesses, shopping malls, recreational areas, special events, etc.) in this area. Specify type, location, and distance to proposed crossing. None
a-8. Provide a traffic operations and safety analysis, with traffic issues evaluated for the railroad crossing, train traffic movements, and railroad preemption. This analysis should include all proposed developments in the immediate vicinity and the increase in traffic predicted from the developments.

B) Necessity for rail and vehicle traffic

b-1. Why is the crossing necessary? To get to the other side of the road, service potential customers, connect to other existing track, remove trucks from the road.
b-2. Provide excerpts from the Comprehensive Plan or any other transportation plans relative to the proposed crossing. N/A
b-3. Provide description of land use on each side of the rail crossing. Agriculture
b-4. Provide predicted Annual Average Daily Traffic (AADT) at the crossing.
b-5. Provide level of service at the crossing. FDOT Inspections every 30 days.
b-6. Provide anticipated AADT and level of service in 5 years. No potential development is expected.
b-7. Provide predicted percentage of truck traffic and anticipated truck traffic 5 years out.
b-8. Will trucks carry hazardous materials? N/A If so, approximately how many trips per day or week? N/A
b-9. Will school buses use the crossing? N/A If so, how many school buses will use the crossing per day or week?
b-10. Will emergency rescue vehicles use the crossing? If so, approximately how many trips per day or week?
b-11. What is the predicted number of pedestrians and bike riders that will use the proposed crossing? What is the predicted number of users 5 years out? N/A
b-12. Please provide any corridor studies or other preliminary traffic engineering studies that pertain to this crossing. None

C) Alternate Routes

c-1. Are there access roads available to property owners if the crossing is not there? None
c-2. Name routes currently used or intended for use if the crossing is not approved? None available.
c-3. Are there traffic signals on these routes? N/A
c-4. How does the proposed crossing, if built, affect the AADT at nearby public crossings? Provide estimated traffic count changes, if any. N/A

D) Effect on rail operations and expenses

d-1. Provide current number and type of rail tracks. 1 Main Line.
d-2. Are there rail sidings or switches in the location of the proposed crossing? None
d-3. Is there a nearby rail yard? None If so, what is the distance of the yard to the proposed crossing.
d-4. Provide the current number of daily train movements (number of switching or thru trains; number of passenger or freight trains). 12 to 16
d-5. Provide the approximate times during the day and evening that the crossing will be blocked. Their will be a train every 2 to 4 hours.

EXHIBIT A

d-6. Provide the approximate length of time (i.e., minutes) that the crossing is blocked. 1 to 2 minutes.
d-7. Provide minimum and maximum train speeds at the proposed crossing. 10/40
d-8. What is the anticipated expansion of tracks and/or train movements?
d-9. What is the distance from the proposed crossing to adjacent public crossings? (Identify adjacent crossings by road name and crossing number.) US 27 13.5 Miles.
d-10. What are the estimated costs of the crossing installation and annual maintenance? Installation cost $162,523 Annual Maintenance $3,636 Who will be responsible for the costs of installation and maintenance? SCFE

E) Closure of one or more public crossings to offset opening a new crossing

e-1. Provide the names and crossing numbers of any crossing closure candidates that may offset the opening of the proposed crossing? None

F) Design of the grade crossing and road approaches

f-1. Submit design plans, inclusive of location of sidewalks, bike lanes, and traffic control devices, including pavement markings, signs, and highway traffic signals. Attached
f-2. What future changes are proposed (ex: phase one is a 2-lane roadway, left turn lane to be added in phase two)? None
f-3. What is the vehicular design speed at the proposed crossing? 55 mph.
f-4. How many thru or turn lanes? 2 Divided or undivided? Undivided

G) Presence of multiple tracks and their effect upon railroad and highway operations

g-1. Please confirm the number of tracks at the location and identify each track. 1 Main Line
g-2. How many train movements occur on each track and the types of trains that run on each track (passenger, thru freight or switching freight, and the number of cars)? 12 to 16 Trains per day all freight.

DTR Form Date: 20160223

Diagnostic Team Review

EXHIBIT B

Crossing #:

Inspection Date:

Location Information

Crossing #:		Railroad Co:	SCFE
City:		Nearest City:	Belle Glade
County:	Palm Beach	Road Name (Route #):	CR 880
Date of Inspection:		Nearest Cross Street:	Duda Road
GPS Latitude (N):	26.6630580	GPS Longitude (W):	-80.6216697

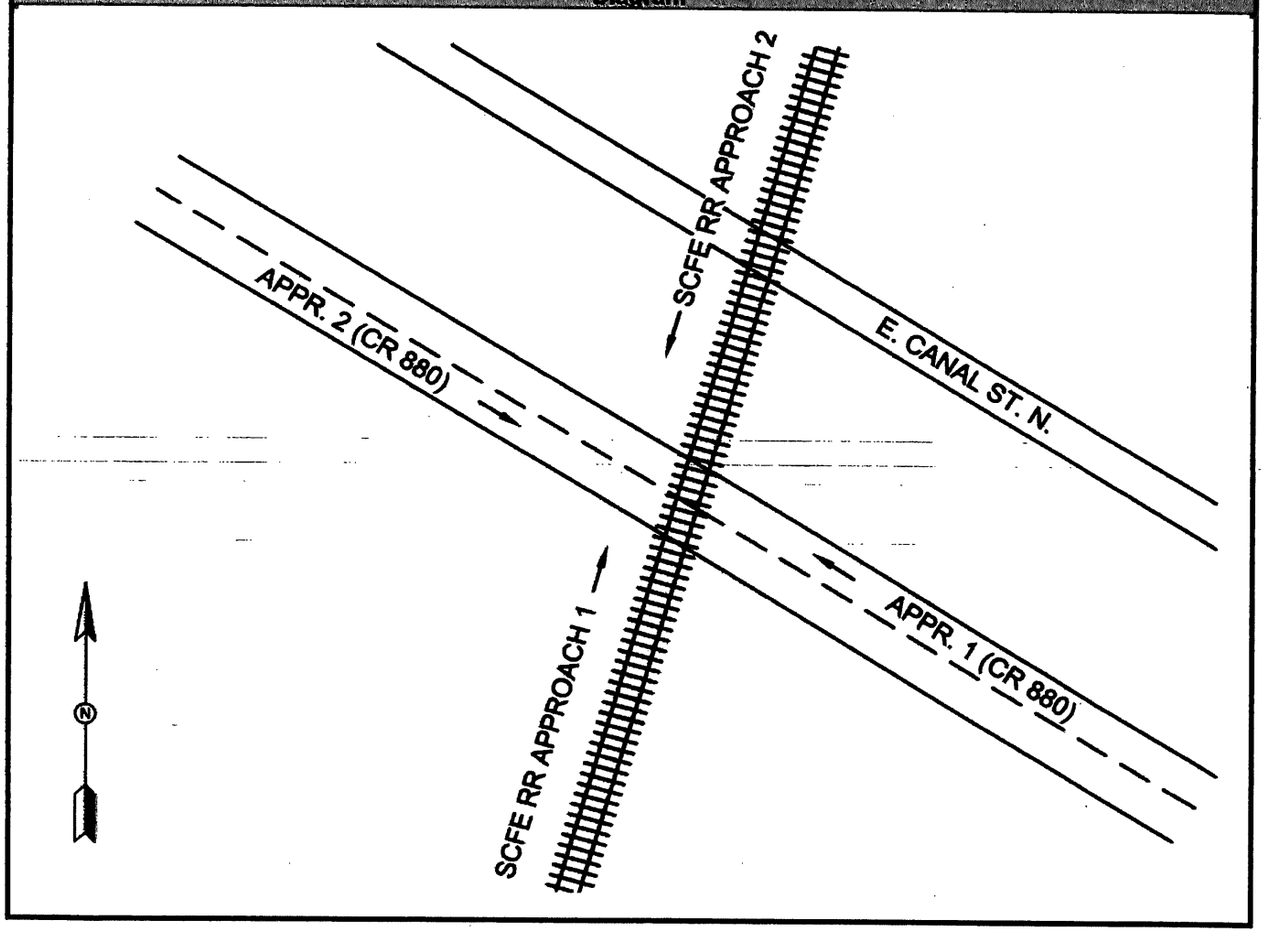
DTR Attendees

Name	Organization	Phone	Email
Harvey Crouch	Crouch Engineering	615.791.0630	hcrouch@crouchengineering.com
Julian Giraldo	Crouch Engineering	615.791.0630	jgiraldo@crouchengineering.com

Roadway Approaches to Crossing

Approach	Travel Direction Toward Crossing	Road Name (Route #)
1	Northwest Bound	CR 880
2	Southeast Bound	CR 880
3		
4		
5		
6		

Diagram



DTR Invitees not in Attendance

Name	Organization	Phone	Email

Crossing Attributes

Crossing Width (ft):		Cabinet Distance from Roadway (ft):				Max Train Speed (MPH) :	40
RR Cabinet Size:		Cabinet distance from Track (ft):				Smallest Crossing Angle:	
Existing Condition:		Railroad Track Signal within Sight:			No	Crossing Surface Type:	Concrete
Crossing Profile:	Level	Train Detection:	Constant Warning Time			Track Switch within Sight:	
# of Trains: Total #:	12	Switching:	0	Day Thru:	12	Tracks Run Down Street:	No
# of Tracks: Main:	1	Other:		Quiet Zone:	No	Other Tracks Type:	
Adjacent Crossing #:		Train Type:	Freight	Land Use:	Farm	Crossing Illuminated:	No
Track Signaled:	No	AADT Year:		AADT:		Roadway Surface Type:	Asphalt
Drainage Issues (If Yes, describe in Other Observations):			No	% Trucks:		Daily # of School Buses:	
Roadway Intersection within 500 ft (If Yes, describe in Other Observations):					Yes	Posted Speed Limit (MPH) :	55

			EXISTING CONDITIONS						RECOMMENDED IMPROVEMENTS					
APPROACH			1	2	3	4	5	6	1	2	3	4	5	6
Commercial Power Available (Yes or No):			Yes	Yes										
# of Railroad Masts:									1	1				
# of Mast-mounted Light Pairs:									2	2				
Cantilever Light Pairs		# Over Lane(s):												
		# Not Over Lane(s):												
Light Pair Type (Incandescent/LED):									LED	LED				
Light Pair Size (8"/12"):									12"	12"				
# of Bells:									1	0				
# of Railroad Gates:									1	1				
Roadway Signal within 500 feet (Yes or No):			No	No										
Roadway Signal Pre-Emption (Yes or No):			No	No										
# of Approach Lanes:			1	1										
# of Outbound Lanes:			1	1										
Center Turn Lane		Center Turn Lane (Yes or No):	No	No										
		Center Turn Lane Width (ft):												
Raised Median		Raised Median (Yes or No):	No	No										
		Raised MedianWidth (ft):												
Roadway Lane(s) Total Width (ft):			11	11										
Roadway Right Shoulder Width (ft):			4	4										
Pavement Markings (Yes or No)		Stoplines:	No	No					Yes	Yes				
		Centerline:	Yes	Yes					Yes	Yes				
		Edgeline:	Yes	Yes					Yes	Yes				
		RxR:	No	No					Yes	Yes				
		Dynamic Envelope:	No	No										
Sidewalk / Pathways		Sidewalk / Pathways (Yes or No):	No	No										
		Width (ft):												

Other Observations (Number the observations, i.e. Observation 1, ...)

Observation 1: There are no passenger trains.
Observation 2: The crossing has not yet been assigned an FRA crossing inventory number - it is a new grade crossing.
Observation 3: The Posted Speed Limit (MPH) is 55 mph.
Observation 4: An additional lane width, minimum, will be required, or one-lane traffic with a flagman or signal required, in order to provide enough working room for construction of the bridge and grade crossing.
Observation 5: The Hillsboro Canal runs parallel to CR 880, to the northeast.

R1-1

R1-2

R3-1a

R3-2a

R8-8

R8-9

R10-6

R8-10

R10-11a

R15-1

R15-2P

R15-3P

W10-1


W10-2


W10-3


W10-4


W10-5


W10-5P

W10-9

W10-9P


W10-11


W10-11a


W10-11b


W10-12

W13-1P


W14-3


I-13

Sign or Plaque	Sign Designation	Signs: Existing Conditions						Signs: Recommended Improvements					
		1	2	3	4	5	6	1	2	3	4	5	6
Stop	R1-1												
Yield	R1-2												
No Right Turn Across Tracks	R3-1a												
No Left Turn Across Tracks	R3-2a												
Do Not Stop on Tracks	R8-8												
Tracks Out of Service	R8-9												
Stop Here on Red	R8-10												
Stop Here When Flashing	R10-6												
No Turn on Red	R10-11a												
Crossbuck	R15-1							2	2				
Number of Tracks	R15-2P												
Exempt	R15-3P												
Grade Crossing Advance	W10-1							1	1				
Grade Crossing & Intersection Advance	W10-2												
Grade Crossing & Intersection Advance	W10-3												
Grade Crossing & Intersection Advance	W10-4												
Low Ground Clearance	W10-5												
Low Ground Clearance	W10-5P												
No Train Horn	W10-9												
No Train Horn	W10-9P												
Storage Space Symbol	W10-11												
Storage Space XX Feet between Tracks & Highway	W10-11a												
Storage Space XX Feet between Tracks & Highway	W10-11b												
Skewed Crossing	W10-12												
Advisory Speed Plaque	W13-1P												
No Passing Zone	W14-3												
Emergency Notification	I-13							1	1				

Recommendations (Number the recommendations, i.e. Recommendation 1, ...)

100% Work by Railroad:

Recommendation 1: Install two (2) retroreflective back-to-back Crossbuck (R15-1) (48" x 9") signs on the new mast on Approach 1 (Northwest bound CR 880)

Recommendation 2: Install two (2) retroreflective back-to-back Crossbuck (R15-1) (48" x 9") signs on the new mast on Approach 2 (Southeast bound CR 880).

Recommendation 3: Install new flashers and gates with back-to-back 12" LED flashing light pairs on the proposed mast on Approach 1 (Northwest bound CR 880).

Recommendation 4: Install new flashers and gates with back-to-back 12" LED flashing light pairs on the proposed mast on Approach 2 (Southeast bound CR 880).

Recommendation 5: Install one (1) 24" wide solid white stop line on Approach 1 (Northwest bound CR 880).

Recommendation 6: Install one (1) 24" wide solid white stop line on Approach 2 (Southeast bound CR 880).

Recommendation 7: Install a new sign post with 2" wide yellow retroreflective strips and one (1) retroreflective Grade Crossing Advance Warning (W10-1) (36") sign approximately 325' southeast of the crossing facing northwest bound traffic on Approach 1 (Northwest bound CR 880).

Recommendation 8: Install a new sign post with 2" wide yellow retroreflective strips and one (1) retroreflective Grade Crossing Advance Warning (W10-1) (36") sign approximately 325' northwest of the crossing facing southeast bound traffic on Approach 2 (Southeast bound CR 880).

Recommendation 9: Install single solid white edge lines and lane markings along Approach 1 (Northwest bound CR 880) approximately 325' southeast of the crossing.

Recommendation 10: Install single solid white edge lines and lane markings along Approach 2 (Southeast bound CR 880) approximately 325' northwest of the crossing.

Recommendation 11: Install one (1) Grade Crossing Pavement marking symbol (RxR) on Approach 1 (Northwest bound CR 880) at the Grade Crossing Advance Warning (W10-1) sign location.

Recommendation 12: Install one (1) Grade Crossing Pavement marking symbol (RxR) on Approach 2 (Southeast bound CR 880) at the Grade Crossing Advance Warning (W10-1) sign location.

90% Work by Railroad:

100% Work by Local Agency:

90% Work by Local Agency:

100% Work by State Forces:

90% Work by State Forces:

CROSSING SURFACES	
Type	Definition
C	Concrete
R	Rubber
RA	Rubber/Asphalt
TA	Timber/Asphalt

STOP ZONE FOR RUBBER CROSSING	
Design Speed (mph)	Zone Length (Distance From Stop)
45 Or Less	250'
50 - 55	350'
60 - 65	500'
70	600'

Notes:

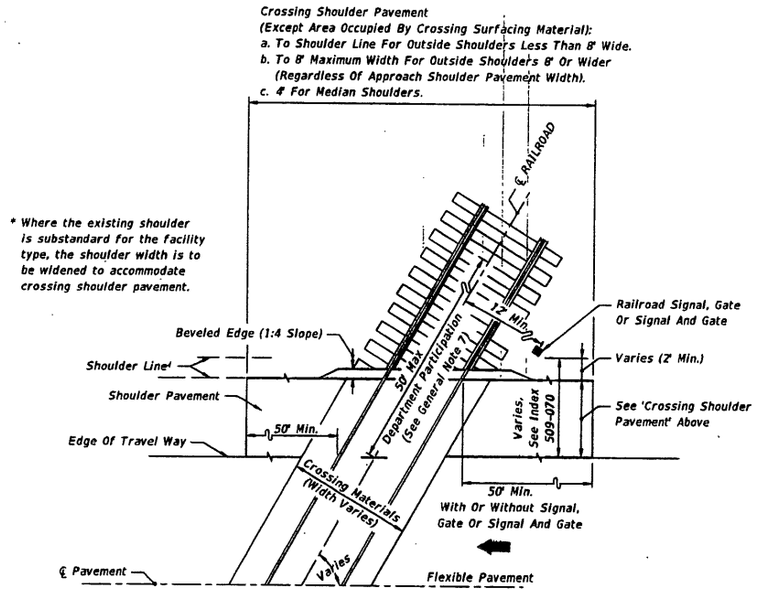
1. Type R Crossings are NOT to be used for multiple track crossings within zones for an existing or scheduled future vehicular stop. Zone lengths are charted above.
2. Single track Type R Crossings within the zones on the chart may be used unless engineering or safety considerations dictate otherwise.

GENERAL NOTES

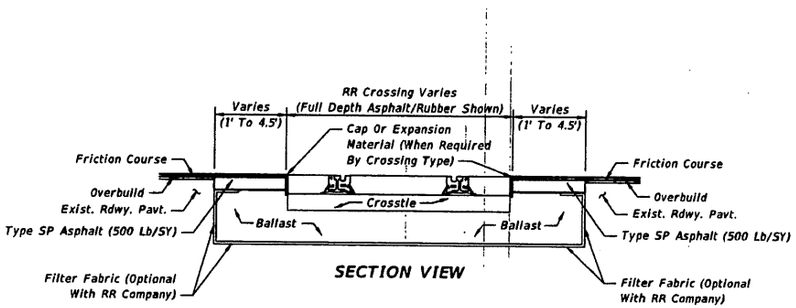
1. The Railroad Company will furnish and install all track bed (ballast), crossties, rails, crossing surface panels and accessory components. All pavement material, including that through the crossing, will be furnished and installed by the Department or its Contractor, unless negotiated otherwise.
2. When a railroad grade crossing is located within the limits of a highway construction project, a transition pavement will be maintained at the approaches of the crossing to reduce vehicular impacts to the crossing. The transition pavement will be maintained as appropriate to protect the crossing from low clearance vehicles and vehicular impacts until the construction project is completed and the final highway surface is constructed.
3. The Central Rail Office will maintain a list of currently used Railroad Crossing Products and will periodically distribute the current list to the District Offices as the list is updated.
4. The Railroad Company shall submit engineering drawings for the proposed crossing surface type to the Construction Project Engineer and/or the District Rail Office for concurrence along with the List of Railroad Crossing Products. The approved engineering drawings of the crossing surface type shall be made a part of the installation agreement.
5. Sidewalks shall be constructed through the crossing between approach sidewalks of the crossing. Sidewalks shall be constructed with appropriate material to allow unobstructed travel through the crossing in accordance with ADA requirements.
6. Install pavement in accordance with the Specifications.
7. The Department will participate in crossing work, that requires adjustments to rail outside of the crossing, no more than 50 feet from the edge of the travel way.

10/24/2017 9:53:39 AM

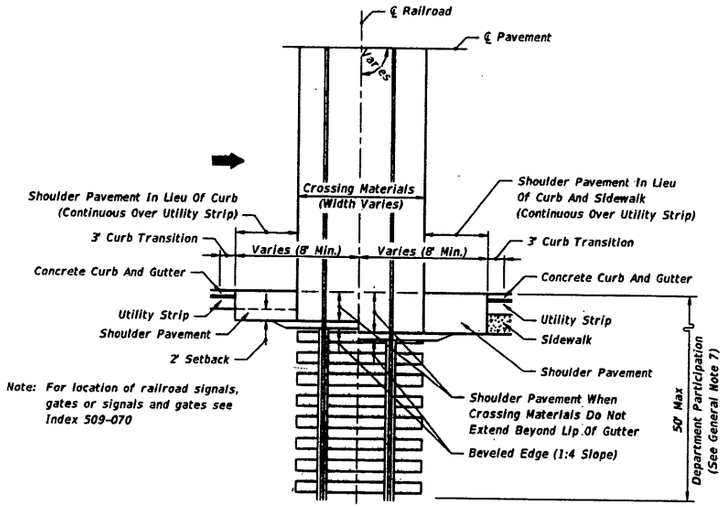
LAST REVISION 11/01/17	REVISION	DESCRIPTION: EXHIBIT C	FDOT FY 2018-19 STANDARD PLANS	RAILROAD (GRADE) CROSSING	INDEX 830-T01	SHEET 1 of 2



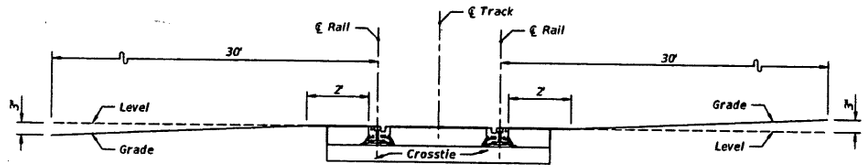
HALF PLAN
ROADWAYS WITH FLUSH SHOULDERS



TYPICAL CROSSING MATERIAL REPLACEMENT AT RR CROSSINGS



HALF PLAN
CURBED ROADWAYS



To prevent low-clearance vehicles from becoming caught on the tracks, the crossing surface should be at the same plane as the top of the rails for a distance of 2 feet outside the rails. The surface of the highway should also not be more than 3 inches higher or lower than the top of the nearest rail at a point 30 feet from the rail unless track superelevation makes a different level appropriate. Vertical curves should be used to traverse from the highway grade to a level plane at the elevation of the rails. Rails that are superelevated, or a roadway approach section that is not level, will necessitate a site specific analysis for rail clearances.

VERTICAL ROADWAY ALIGNMENT THROUGH A RAILROAD CROSSING

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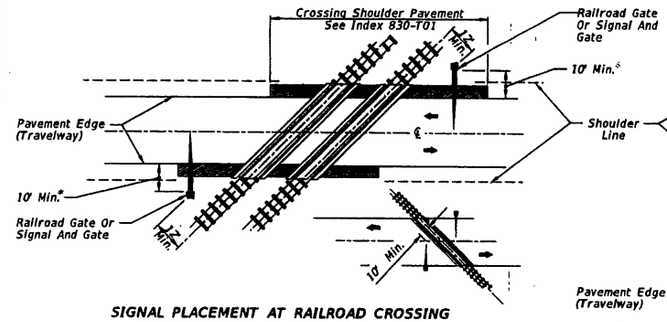
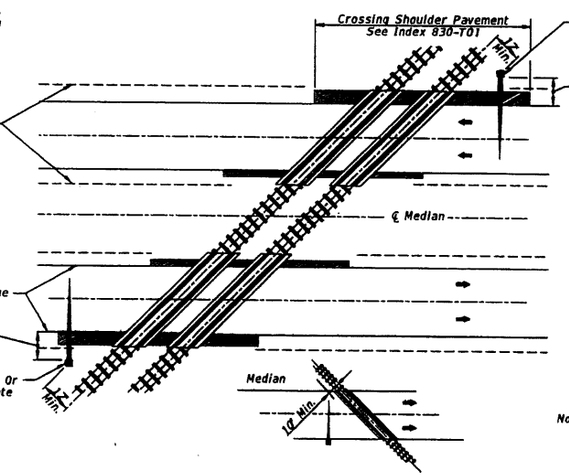
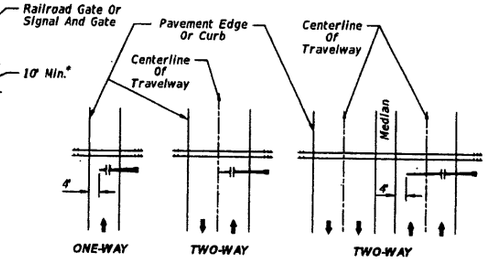


SIGNAL PLACEMENT AT RAILROAD CROSSING
(2 - LANE DESIGN)



SIGNAL PLACEMENT AT RAILROAD CROSSING
(4 - LANE DESIGN)



Note:
Arrows denote direction of travel not pavement markings.
Gate Length Requirements See Note 5 Sheet 3.

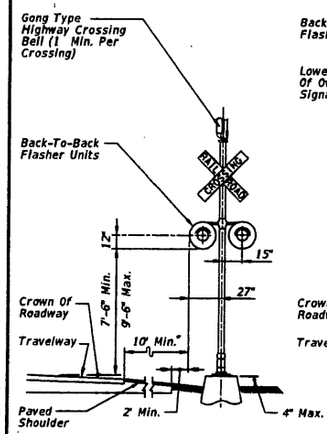
FIGURE 1

GENERAL NOTES:

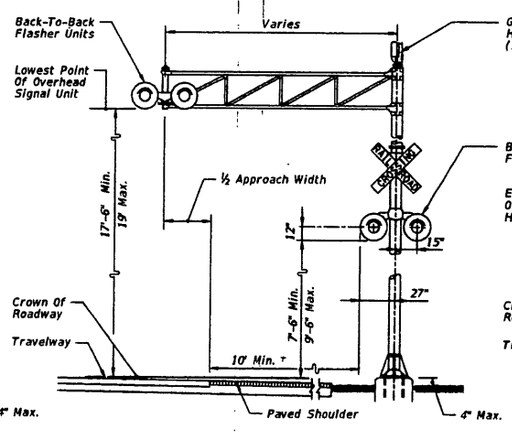
1. No guardrail is proposed for signals; however, some form of impact attenuation device may be specified for certain locations.
2. Advance flasher to be installed when and if called for in plans or specifications.
3. Top of foundation shall be no higher than 4" above finished shoulder grade.
4. Type of traffic control device
   - I Flashing warning devices
   - II Flashing warning devices with cantilever
   - III Flashing warning devices with gate
   - IV Flashing warning devices with cantilever and gate
   - V Gate
5. Class of traffic control devices (Not Shown)
   - I 2 Quadrant flashing warning devices-one track
   - II 2 Quadrant flashing warning devices-multiple tracks
   - III 2 Quadrant flashing warning devices and gates-one track
   - IV 2 Quadrant flashing warning devices and gates-multiple tracks
   - V 3-4 Quadrant flashing warning devices and gates-one track
   - VI 2-4 Quadrant flashing warning devices and gates-multiple tracks

Note:
Two separate foundations may be required (one for signals, one for gate), depending on type of equipment used.

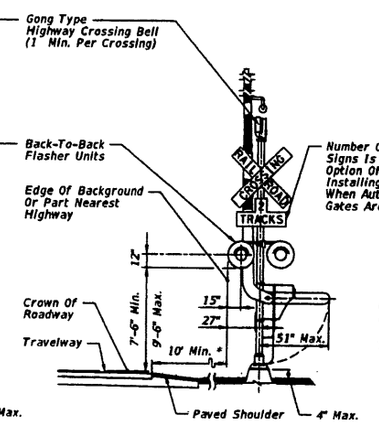
* When 10' is deemed impracticle the control device can be located as close as 2' from the edge of a paved shoulder but not less than 6' from the edge of the near traffic lane.



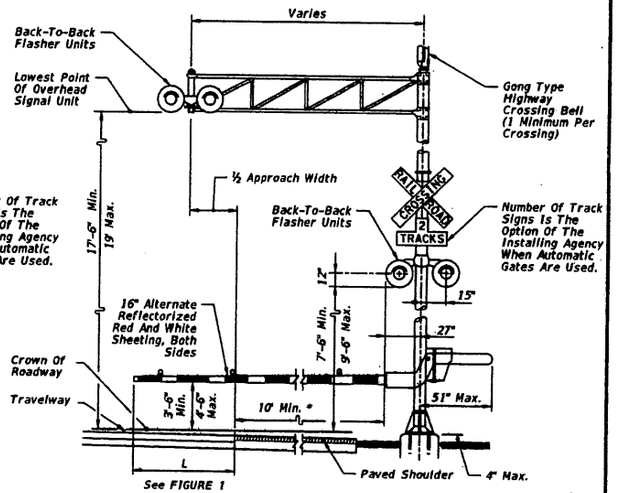
TYPE I



TYPE II



TYPE III AND TYPE V



TYPE IV AND TYPE VI

TRAFFIC CONTROL DEVICES FOR FLUSH SHOULDER ROADWAY

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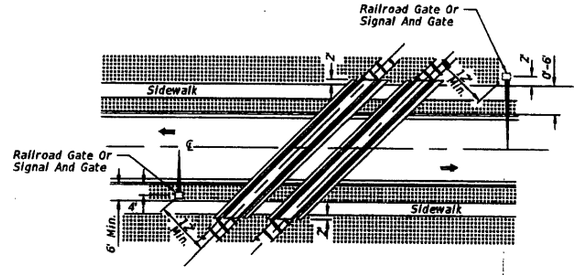
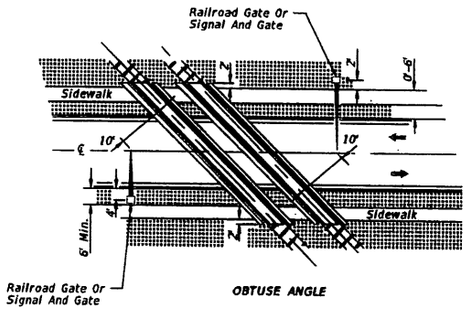


ACUTE ANGLE (AND RIGHT ANGLE)

SIGNAL PLACEMENT AT RAILROAD CROSSING

(2 LANES, CURB & GUTTER)



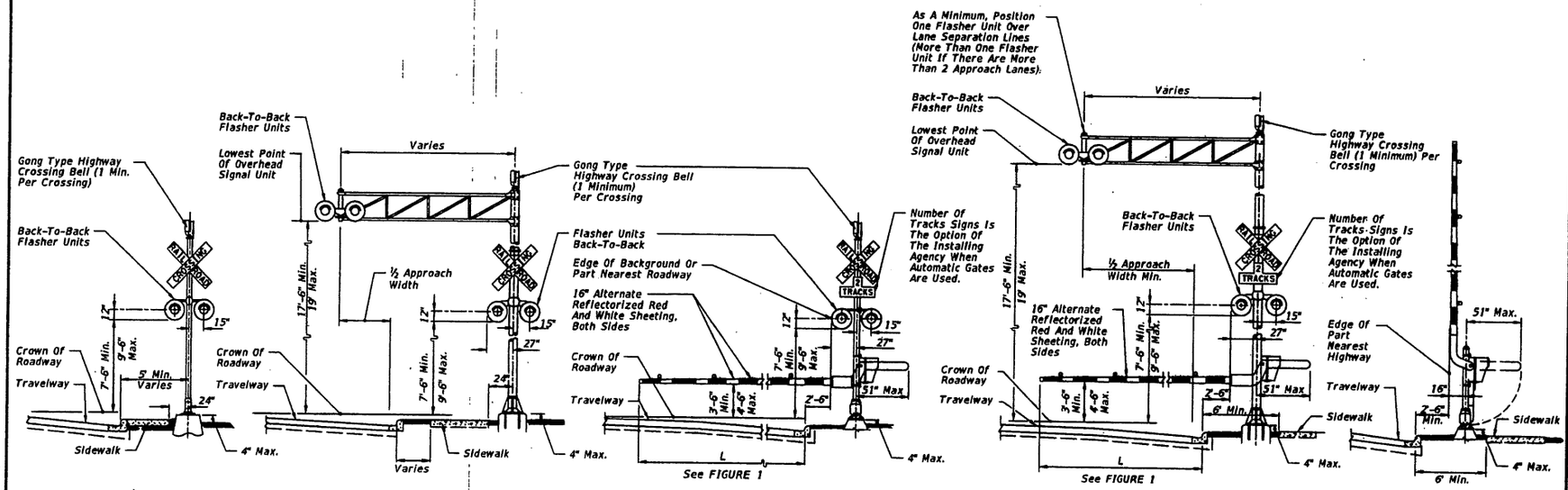
OBTUSE ANGLE

SIGNAL PLACEMENT AT RAILROAD CROSSING

(2 LANES, CURB & GUTTER)

NOTES:

1. The location of flashing warning devices and stop lines shall be established based on future (or present) installation of gate with appropriate track clearances.
2. Where plans call for railroad traffic control devices to be installed in curbed medians, the minimum median width shall be 12'-6".
3. Location of railroad traffic control device is based on the distance available between face of curb & sidewalk. 0' to 6' - Locate device outside sidewalk. Over 6' - Locate device between face of curb and sidewalk.
4. Stop line to be perpendicular to edge of roadway, approx. 15' from nearest rail; or 8' from and parallel to gate when present.
5. When a cantilevered-arm flashing warning device is used, the minimum vertical clearance shall be 17'-6" from above the Crown of Roadway to the Lowest Point of the Overhead Signal Unit.



TRAFFIC CONTROL DEVICES FOR CURBED ROADWAY

LAST REVISION	REVISION	DESCRIPTION:				INDEX	SHEET
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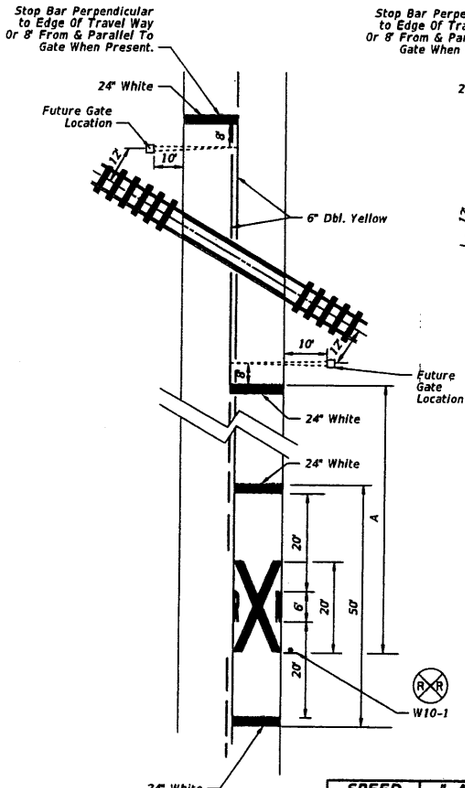
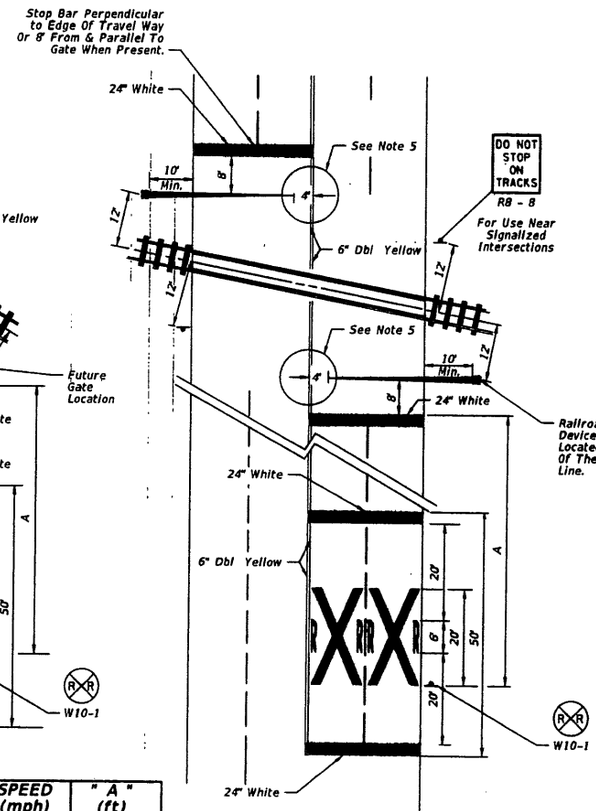
RAILROAD CROSSING AT TWO (2)-LANE ROADWAY

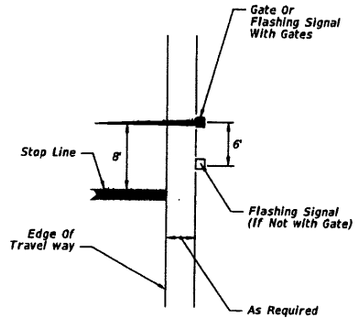


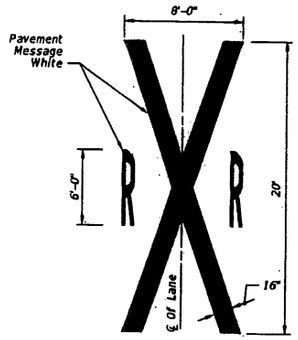
SPEED (mph)	" A " (ft)
60	400
55	325
50	250
45	175
40	125
35	100
URBAN	85 MIN.

RAILROAD CROSSING AT MULTILANE ROADWAY



RELATIVE LOCATION OF CROSSING TRAFFIC CONTROL DEVICES

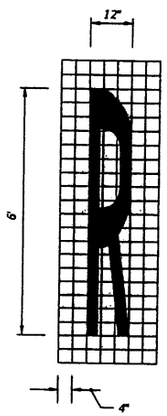




NOTES:

1. When computing pavement message, quantities do not include traverse lines.
2. Placement of sign W10-1 in a residential or business district, where low speeds are prevalent, the W10-1 sign may be placed a minimum distance of 100' from the crossing. Where street intersections occur between the RR pavement message and the tracks an additional W10-1 sign and additional pavement message should be used.
3. A portion of the pavement markings symbol should be directly opposite the W10-1 sign.
4. Recommended location for FTP-61-06 or FTP-62-06 signs, 100' urban and 300' rural. See Index 700-102 for sign details.
5. Gate Length Requirements:
   For Two-way undivided sections:
   The gate should extend to within 1' of the center line. On multiple approaches the maximum gate length may not reach to within 1' of the center line. For those cases, the distance from the gate to the center line shall be a maximum of 4'.

   For one-way or divided sections:
   The gate shall be of sufficient length such that the distance from the gate tip to the inside edge of pavement is a maximum of 4'.



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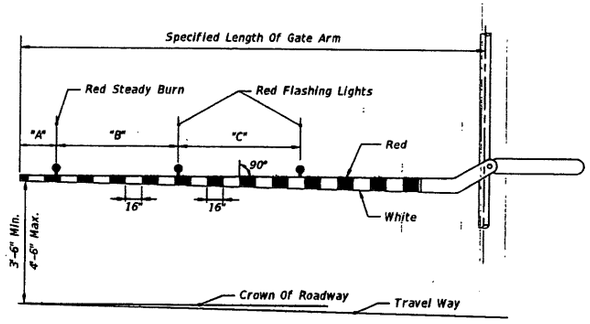
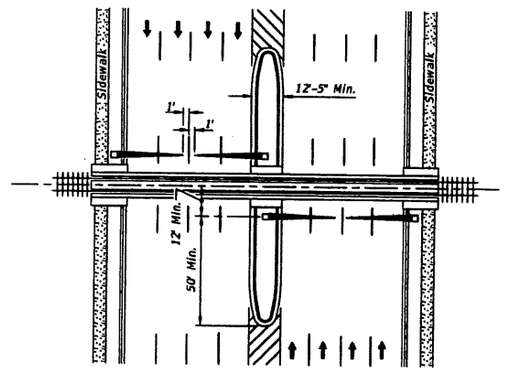
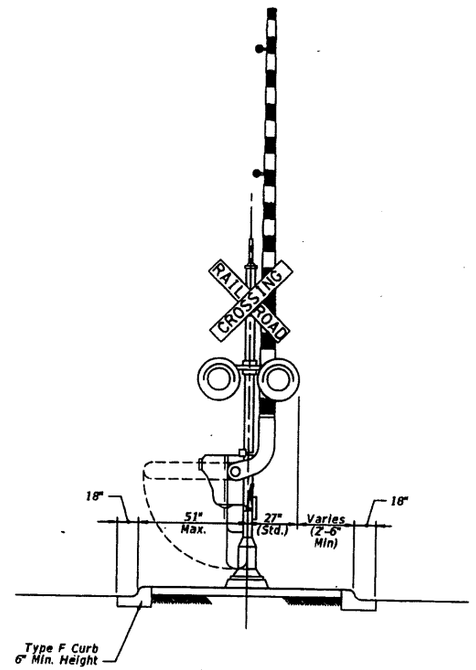
LAST REVISION	REVISION	DESCRIPTION:			
11/01/17		EXHIBIT D	FDOT FY 2018-19 STANDARD PLANS	RAILROAD GRADE CROSSING TRAFFIC CONTROL DEVICES	INDEX 509-070 / SHEET 3 of 4





PLAN



MEDIAN SECTION AT SIGNAL GATES

RAILROAD GATE ARM LIGHT SPACING

Specified Length Of Gate Arm	Dimension "A"	Dimension "B"	Dimension "C"
14 Ft.	6"	36"	5'
15 Ft.	18"	36"	5'
16-17 Ft.	24"	36"	5'
18-19 Ft.	28"	41"	5'
20-23 Ft.	28"	4'	5'
24-28 Ft.	28"	5'	5'
29-31 Ft.	36"	6'	6'
32-34 Ft.	36"	7'	7'
35-37 Ft.	36"	9'	9'
38 And Over	36"	10'	10'

NOTE:
For additional information see the "Manual On Uniform Traffic Control Devices", Part 8; The "Traffic Control Handbook", Part VIII; and AASHTO "A Policy On Geometric Design Of Streets And Highways".

MEDIAN SIGNAL GATES FOR

MULTILANE UNDIVIDED URBAN SECTIONS

(THREE OR MORE DRIVING LANES IN ONE DIRECTION, 45 MPH OR LESS)

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SHEET	CONTENTS
1	General Notes
2	Definitions Temporary Traffic Control Devices Pedestrian and Bicyclist Overhead Work Railroads Sight Distance Above Ground Hazard
3	Clear Zone Widths For Work Zones Superelevation Length Of Lane Closures Overweight/Oversize Vehicles Lane Widths High-Visibility Safety Apparel Regulatory Speeds In Work Zones
4	Flagger Control Survey Work Zones Signs
5	Work Zone Sign Supports
6	Project Information Sign
7	Commonly Used Warning and Regulatory Signs In Work Zones
8	Manholes/Crosswalks/Joints Truck Mounted Attenuators Removing Pavement Markings Signals Channelizing Devices Channelizing Devices Consistency Portable Changeable (Variable) Message Signs (PCMS) Advanced Warning Arrow Boards
9	Drop-Offs In Work Zones
10	Business Entrance Temporary Asphalt Separator
11	Channelizing Devices Notes Temporary Barrier Notes
12	Pavement Markings

GENERAL NOTES:

1. All projects and works on highways, roads and streets shall have a traffic control plan. All work shall be executed under the established plan and Department-approved procedures. This Index contains information specific to the Federal and State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets on the State Highway System. Certain requirements in this Index are based on the high volume nature of State Highways. For highways, roads and streets off the State Highway System, the local agency (City/County) having jurisdiction may adopt requirements based on the minimum requirements provided in the MUTCD.

2. Indexes 102-601 through 102-670 are Department-specific typical applications of commonly encountered situations. Adjust device location or number thereof as recommended by the Worksite Traffic Supervisor and approved by the Engineer. Devices include, but are not limited to, Flaggers, portable temporary signals, signs, pavement markings, and channelizing devices. Comply with MUTCD or applicable Department criteria for any changes and document the reason for the change.

3. Except for emergencies, any road closure on State Highway System shall comply with Section 335.15, F.S.

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LAST REVISION	REVISION	DESCRIPTION:					
11/01/17		EXHIBIT E	FDOT	FY 2018-19 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX 102-600	SHEET 1 of 12

DEFINITIONS

Regulatory Speed (In Work Zones)

The maximum permitted travel speed posted for the work zone is indicated by the regulatory speed limit signs. The work zone speed must be shown or noted in the plans. This speed should be used as the minimum design speed to determine runout lengths, departure rates, flare rates, lengths of need, clear zone widths, taper lengths, crash cushion requirements, marker spacings, superelevation and other similar features.

Advisory Speed

The maximum recommended travel speed through a curve or a hazardous area.

Travel Way

The portion of the roadway for the movement of vehicles. For traffic control through work zones, travel way may include the temporary use of shoulders and any other permanent or temporary surface intended for use as a lane for the movement of vehicular traffic.

a. Travel Lane: The designated widths of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other traffic lanes.

b. Auxiliary Lane: The designated widths of roadway pavement marked to separate speed change, turning, passing and climbing maneuvers from through traffic.

Detour, Lane Shift, and Diversion

A detour is the redirection of traffic onto another roadway to bypass the temporary traffic control zone. A lane shift is the redirection of traffic onto a different section of the permanent pavement. A diversion is the redirection of traffic onto a temporary roadway, usually adjacent to the permanent roadway and within the limits of the right of way.

Aboveground Hazard

An aboveground hazard is any object, material or equipment other than traffic control devices that encroaches upon the travel way or that is located within the clear zone which does not meet the Department's safety criteria, i.e., anything that is greater than 4" in height and is firm and unyielding or doesn't meet breakaway requirements.

TEMPORARY TRAFFIC CONTROL DEVICES

All temporary traffic control devices shall be ON the Department's Approved Products List (APL). Ensure the appropriate APL number is permanently marked on the device in a readily visible location.

All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered.

Arrow Boards, Portable Changeable Message Signs, Radar Speed Display Trailer, Portable Regulatory Signs, and any other trailer mounted device shall be delineated with a channelizing device placed at each corner when in use and shall be moved outside the travel way and clear zone or be shielded by a barrier or crash cushion when not in use.

PEDESTRIAN AND BICYCLIST

When an existing pedestrian way or bicycle way is located within a traffic control work zone, accommodation must be maintained and provision for the disabled must be provided.

Only approved pedestrian longitudinal channelizing devices may be used to delineate a temporary traffic control zone pedestrian walkway.

Advanced notification of sidewalk closures and marked detours shall be provided by appropriate signs.

OVERHEAD WORK

Work is only allowed over a traffic lane when one of the following options is used:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)

Overhead work using a modified lane closure is allowed if all of the following conditions are met:

a. Work operation is located in a signalized intersection and limited to signals, signs, lighting and utilities.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
e. Aerial lift equipment is placed directly below the work area to close the lane.
f. Traffic control devices are placed in advance of the vehicle/equipment closing the lane using a minimum 100 foot taper.
g. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)

Overhead work above a open traffic lane is allowed if all of the following conditions are met:

a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. No encroachment by any part of the work activities and equipment within an area bounded by 2 feet outside the edge of travel way and 18 feet high.
e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 3 (OVERHEAD WORK ADJACENT TO AN OPEN TRAFFIC LANE)

Overhead work adjacent to an open traffic lane is allowed if all of the following conditions are met:

a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
b. Work operations are 1 day or less.
c. Speed limit is 45 mph or less.
d. No encroachment by any part of the work activities and equipment within 2 foot from the edge of travel way up to 18' height.
   Above 18' in height, no encroachment by any part of the work activities and equipment over the open traffic lane (except as allowed in Option 2 for work operations of 60 minutes or less).
e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 4 (OVERHEAD WORK MAINTAINING TRAFFIC WITH NO ENCROACHMENT BELOW THE OVERHEAD WORK AREA)

Traffic shall be detoured, shifted, diverted or paced as to not encroach in the area directly below the overhead work operations in accordance with the appropriate index drawing or detailed in the plans. This option applies to, but not limited to, the following construction activities:

a. Beam, girder, segment, and bent/pier cap placement.
b. Form and falsework placement and removal.
c. Concrete placement.
d. Railing construction located at edge of deck.
e. Structure demolition.

OPTION 5 (CONDUCTOR/CABLE PULLING ABOVE AN OPEN TRAFFIC LANE)

Overhead cable and/or de-energized conductor installations initial pull to proper tension shall be done in accordance with the appropriate index or temporary traffic control plan.

Continuous pulling operations of secured cable and/or conductors are allowed over open lane(s) of traffic with no encroachment by any part of the work activities, materials or equipment within the minimal vertical clearance above the travel way. The utility shall take precautions to ensure that pull ropes and conductors/cables at no time fall below the minimum vertical clearance.

On Limited Access facilities, a site specific temporary traffic control plan is required. The temporary traffic control plan shall include:

a. The temporary traffic control set up for the initial pulling of the pull rope across the roadway.
b. During pulling operations, advance warning consisting of no less than a Changeable Message Sign upstream of the work area with alternating messages, "Overhead Work Ahead" and "Be Prepared to Stop" followed by a traffic control officer and police vehicle with blue lights flashing during the pulling operation.

RAILROADS

Railroad crossings affected by a construction project should be evaluated for traffic controls to reduce queuing on the tracks. The evaluation should include as a minimum: traffic volumes, distance from the tracks to the intersections, lane closure or taper locations, signal timing, etc.

SIGHT DISTANCE

Tapers: Transition tapers should be obvious to drivers. If restricted sight distance is a problem (e.g., a sharp vertical or horizontal curve), the taper should begin well in advance of the view obstruction. The beginning of tapers should not be hidden behind curves.

Intersections: Traffic control devices at intersections must provide sight distances for the road user to perceive potential conflicts and to traverse the intersection safely. Construction equipment and materials shall not restrict intersection sight distance.

ABOVEGROUND HAZARD

Aboveground hazards (see definitions) are to be considered work areas during working hours and treated with appropriate work zone traffic control procedures. During nonworking hours, all objects, materials and equipment that constitute an aboveground hazard must be stored/placed outside the travel way and clear zone or be shielded by a barrier or crash cushion.

For aboveground hazards within a work zone the clear zone required should be based on the regulatory speed posted during construction.

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CLEAR ZONE WIDTHS FOR WORK ZONES

The term 'clear zone' describes the unobstructed relatively flat area, impacted by construction, extending outward from the edge of the traffic lane. The table below gives clear zone widths in work zones for medians and roadside conditions other than for roadside canals; where roadside canals are present, clear zone widths are to conform with the distances to canals as described in the FDM 215.2.

CLEAR ZONE WIDTHS FOR WORK ZONES		
WORK ZONE SPEED (MPH)	TRAVEL LANES & MULTILANE RAMPS (feet)	AUXILIARY LANES & SINGLE LANE RAMPS (feet)
60-70	30	18
55	24	14
45-50	18	10
30-40	14	10
ALL SPEEDS CURB & GUTTER	4' BEHIND FACE OF CURB	4' BEHIND FACE OF CURB

SUPERELEVATION

Horizontal curves constructed in conjunction with work zone traffic control should have the required superelevation applied to the design radii. Under conditions where normal crown controls curvature, the minimum radii that can be applied are listed in the table below.

MINIMUM RADII FOR NORMAL CROWN	
WORK ZONE POSTED SPEED	MINIMUM RADIUS
MPH	feet
70	4090
65	3130
60	2400
55	1840
50	1390
45	1080
40	820
35	610
30	430
Superelevate When Smaller Radii Is Used	

LENGTH OF LANE CLOSURES

Lane closures must not exceed the following total lengths (includes taper, buffer space and work space) in any given direction on the interstate or on state highways with a posted speed of 55 MPH or greater:

1. 3 miles for ground-in rumble strip operations on two-lane, two-way roadways.
2. 2 miles for all other operations.

OVERWEIGHT/OVERSIZE VEHICLES

Restrictions to Lane Widths, Heights or Load Capacity can greatly impact the movement of over dimensioned loads. The Contractor shall notify the Engineer who in turn shall notify the State Permits Office, phone no. (850) 410-5777, at least seven calendar days in advance of implementing a maintenance of traffic plan which will impact the flow of overweight/oversized vehicles. Information provided shall include location, type of restriction (height, width or weight) and restriction time frames. When the roadway is restored to normal service the State Permits Office shall be notified immediately.

LANE WIDTHS

Lane widths of through roadways should be maintained through work zone travel ways wherever practical. The minimum widths for work zone travel lanes shall be as follows: 11' for Interstate with at least one 12' lane provided in each direction, unless formally excepted by the Federal Highway Administration; 11' for freeways; and 10' for all other facilities.

HIGH-VISIBILITY SAFETY APPAREL

All high-visibility safety apparel shall meet the requirements of the International Safety Equipment Association (ISEA) and the American National Standards Institute (ANSI) for "High-Visibility Safety Apparel", and labeled as ANSI/ISEA 107-2004 or newer. The apparel background (outer) material color shall be either fluorescent orange-red or fluorescent yellow-green as defined by the standard. The retroreflective material shall be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1,000 feet. Class 3 apparel may be substituted for Class 2 apparel. Replace apparel that is not visible at 1,000 feet.

WORKERS: All workers within the right-of-way shall wear ANSI/ISEA Class 2 apparel. Workers operating machinery or equipment in which loose clothing could become entangled during operation shall wear fitted high-visibility safety apparel. Workers inside the bucket of a bucket truck are not required to wear high-visibility safety apparel.

UTILITIES: When other industry apparel safety standards require utility workers to wear apparel that is inconsistent with FDOT requirements such as NFPA, OSHA, ANSI, etc., the other standards for apparel may prevail.

FLAGGERS: For daytime activities, Flaggers shall wear ANSI/ISEA Class 2 apparel. For nighttime activities, Flaggers shall wear ANSI/ISEA Class 3 apparel.

REGULATORY SPEEDS IN WORK ZONES

Traffic Control Plans (TCP's) for all projects must include specific regulatory speeds for each phase of work. This can either be the posted speed or a reduced speed. The speed shall be noted in the TCPs; this includes indicating the existing speed if no reduction is to be made. Regulatory speeds are to be uniformly established through each phase.

In general, the regulatory speed should be established to route vehicles safely through the work zone as close as to normal highway speed as possible. The regulatory speed should not be reduced more than 10 mph below the posted speed and never below the minimum statutory speed for the class of facility. When a speed reduction greater than 10 mph is imposed, the reduction is to be done in 10 mph per 500' increments.

Temporary regulatory speed signs shall be removed as soon as the conditions requiring the reduced speed no longer exist. Once the work zone regulatory speeds are removed, the regulatory speed existing prior to construction will automatically go back into effect unless new speed limit signing is provided for in the plans.

On projects with interspaced work activities, speed reductions should be located in proximity to those activities which merit a reduced speed, and not "blanketed" for the entire project. At the departure of such activities, the normal highway speed should be posted to give the motorist notice that normal speed can be resumed.

If the existing regulatory speed is to be used, consideration should be given to supplementing the existing signs when the construction work zone is between existing regulatory speed signs. For projects where the reduced speed conditions exist for greater than 1 mile in rural areas (non-interstate) and on rural or urban interstate, additional regulatory speed signs are to be placed at no more than 1 mile intervals. Engineering judgement should be used in placement of the additional signs. Locating these signs beyond ramp entrances and beyond major intersections are examples of proper placement. For urban situations (non-interstate), additional speed signs are to be placed at a maximum of 1000' apart.

When field conditions warrant speed reductions different from those shown in the TCP the contractor may submit to the project engineer for approval by the Department, a signed and sealed study to justify the need for further reducing the posted speed, or, the engineer may request the District Traffic Operations Engineer (DTOE) to investigate the need. It will not be necessary for the DTOE to issue regulations for regulatory speeds in work zones due to the revised provisions of F.S. 316.07451(2) (b). Advisory Speed plates will be used at the option of the field engineer for temporary use while processing a request to change the regulatory speed specified in the plans when deemed necessary. Advisory speed plates cannot be used alone but must be placed below the construction warning sign for which the advisory speed is required.

For additional information, refer to the Plans Preparation Manual, Volume 1, Chapter 10.

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FLAGGER CONTROL

Where flaggers are used, a FLAGGER symbol or legend sign must replace the WORKERS symbol or legend sign.

The flagger must be clearly visible to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagging instructions, and to permit traffic to reduce speed or to stop as required before entering the work site. Flaggers shall be positioned to maintain maximum color contrast between the Flagger's high-visibility safety apparel and equipment and the work area background.

Hand-Signaling Devices

STOP/SLOW paddles are the primary hand-signaling device. The STOP/SLOW paddle shall have an octagonal shape on a rigid handle. If the STOP/SLOW paddle is placed on a rigid staff, the minimum length of the staff, measured from the bottom of the paddle to the end of the staff that rests on the ground, must not be less than 6 ft. STOP/SLOW paddles shall be at least 24 inches wide with letters at least 6 inches high and should be fabricated from light semirigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When used at night-time, the STOP/SLOW paddle shall be retroreflectorized.

Flag use is limited to immediate emergencies, intersections, and when working on the centerline or shared left turn lanes where two (2) flaggers are required and there is opposing traffic in the adjacent lanes. Flags, when used, shall be a minimum of 24 inches square, made of a good grade of red material, and securely fastened to a staff that is approximately 36 inches in length. When used at nighttime, flags shall be retroreflectorized red.

Flashlight, lantern or other lighted signal that will display a red warning light shall be used at night.

Flagger Stations

Flagger stations shall be located far enough in advance of the work space so that approaching road users will have sufficient distance to stop before entering the work space. When used at nighttime, the flagger station shall be illuminated.

SURVEY WORK ZONES

The SURVEY CREW AHEAD symbol or legend sign shall be the principal Advance Warning Sign used for Traffic Control Through Survey Work Zones and may replace the ROAD WORK AHEAD sign when lane closures occur, at the discretion of the Party Chief.

When Traffic Control Through Work Zones is being used for survey purposes only, the END ROAD WORK sign as called for on certain 102 Series of Indexes should be omitted.

Survey Between Active Traffic Lanes or Shared Left Turn Lanes

The following provisions apply to Main Roadway Traffic Control Work Zones. These provisions must be adjusted by the Party Chief to fit roadway and traffic conditions when the Survey Work Zone includes intersections.

(A) A STAY IN YOUR LANE (MOT-1-06) sign shall be added to the Advance Warning Sign sequence as the second most immediate sign from the work area.

(B) Elevation Surveys-Cones may be used at the discretion of the Party Chief to protect prism holder and flagger(s). Cones, if used, may be placed at up to 50' intervals along the break line throughout the work zone.

(C) Horizontal Control-With traffic flow in the same direction, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' towards the flow of traffic.

(D) Horizontal Control-With traffic flow in opposite directions, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' in both directions towards the flow of traffic.

SIGNS

SIGN MATERIALS

Mesh signs and non-retroreflectice vinyl signs may only be used for daylight operations. Non-retroreflectice vinyl signs must meet the requirements of Specifications Section 994.

Retroreflective vinyl signs meeting the requirements of Specification Section 994 may be used for daylight or night operations not to exceed 1 day except as noted in the Indexes.

Rigid or Lightweight sign panels may be used in accordance with the vendor APL drawing for the sign stand to which they are attached.

INTERSECTING ROAD SIGNING

Signing for the control of traffic entering and leaving work zones by way of intersecting crossroads shall be adequate to make drivers aware of work zone conditions. When Work operations exceed 60 minutes, place the ROAD WORK AHEAD sign on the side street entering the work zone.

ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING

Adjoining work zones may not have sufficient spacing for standard placement of signs and other traffic control devices in their advance warning areas or in some cases other areas within their traffic control zones. Where such restraints or conflicts occur or are likely to occur, one of the following methods will be employed to avoid conflicts and prevent conditions that could lead to misunderstanding on the part of the traveling public as to the intended travel way by the traffic control procedure applied:

(A) For scheduled projects the engineer in responsible charge of project design will resolve anticipated work zone conflicts during the development of the project traffic control plan. This may entail revision of plans on preceding projects and coordination of plans on concurrent projects.

(B) Unanticipated conflicts arising between adjoining in progress highway construction projects will be resolved by the Resident Engineer for projects under his residency, and, by the District Construction Engineer for in progress projects under adjoining residencies.

(C) The District Maintenance Engineer will resolve anticipated and occurring conflicts within scheduled maintenance operations.

(D) The Unit Maintenance Engineer will resolve conflicts that occur within routine maintenance works; between routine maintenance work, unscheduled work and/or permitted work; and, between unit controlled maintenance works and highway construction projects.

SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING

Existing or temporary traffic control signs that are no longer applicable or are inconsistent with intended travel paths shall be removed or fully covered.

Sign blanks or other available coverings must completely cover the existing sign. Rigid sign coverings shall be the same size as the sign it is covering, and bolted in a manner to prevent movement.

Sign covers are incidental to work operations and are not paid for separately.

SIGNING FOR DETOURS, LANE SHIFTS AND DIVERSIONS

Detours should be signed clearly over their entire length so that motorists can easily determine how to return to the original roadway. The reverse curve (W1-4) warning sign should be used for the advanced warning for a lane shift. A diversion should be signed as a lane shift.

EXTENDED DISTANCE ADVANCE WARNING SIGN

Advance Warning Signs shall be used at extended distance of one-half mile or more when limited sight distance or the nature of the obstruction may require a motorist to bring their vehicle to a stop. Extended distance Advanced Warning Signs may be required on any type roadway, but particularly be considered on multilane divided highways where vehicle speed is generally in the higher range (45 MPH or more).

UTILITY WORK AHEAD SIGN

The UTILITY WORK AHEAD (W21-7) sign may be used as an alternate to the ROAD WORK AHEAD or the ROAD WORK XX FT (W20-1) sign for utility operations on or adjacent to a highway.

LENGTH OF ROAD WORK SIGN

The length of road work sign (G20-1) bearing the legend ROAD WORK NEXT_____ MILES is required for all projects of more than 2 miles in length. The number of miles entered should be rounded up to the nearest mile. The sign shall be located at begin construction points.

SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN

The SPEEDING FINES DOUBLED WHEN WORKERS PRESENT sign should be installed on all projects, but may be omitted if the work operation is less than 1 day. The placement should be 500 feet beyond the ROAD WORK AHEAD sign or midway to the next sign whichever is less.

GROOVED PAVEMENT AHEAD SIGN

The GROOVED PAVEMENT AHEAD sign is required 500 feet in advance of a milled or grooved surface open to traffic. The W8-15P placard shall be used in conjuction with the GROOVED PAVEMENT AHEAD sign.

END ROAD WORK SIGN

The END ROAD WORK sign (G20-2) should be installed on all projects, but may be omitted where the work operation is less than 1 day. The sign should be placed approximately 500 feet beyond the end of a construction or maintenance project unless other distance is called for in the plans. When other Construction or Maintenance Operations occur within 1 mile this sign should be omitted and signing coordinated in accordance with Index 102-600, ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING.

PROJECT INFORMATION SIGN

The Project information sign shall be installed when called for in the plans.

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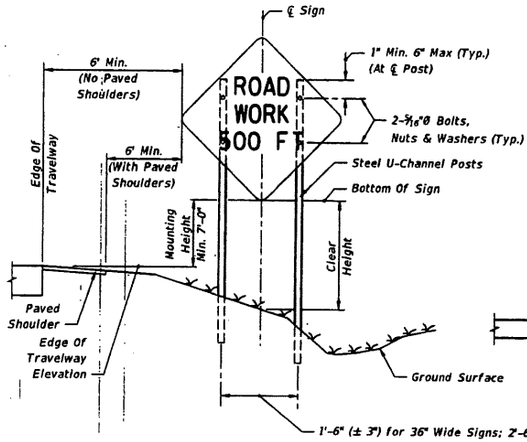
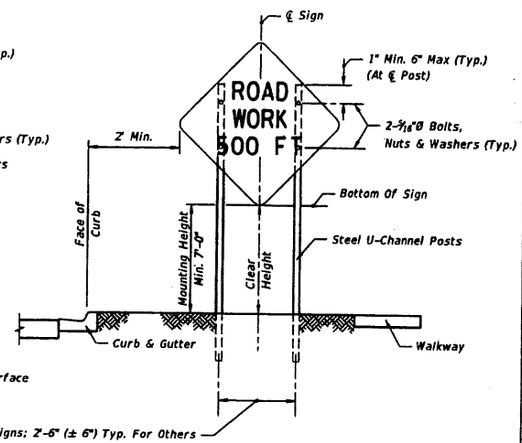
LAST REVISION 11/01/17	REVISION	DESCRIPTION: EXHIBIT E	FDOT FY 2018-19 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX 102-600	SHEET 4 of 12

TEMPORARY SIGN SUPPORT NOTES:

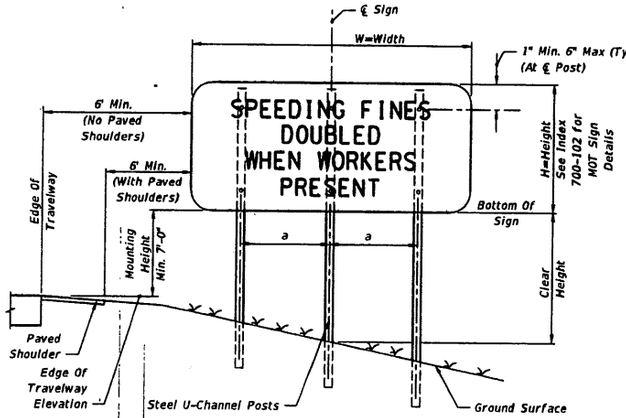
1. All signs shall be post mounted when work operations exceed one day except for:
   a. Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the APL.
   b. Pedestrian advanced warning or pedestrian regulatory signs mounted on sign supports in accordance with the vendor drawing shown on the APL.
   c. Median barrier mounted signs per Index 700-013.
2. Unless shielded with barrier or outside of the Clear Zone, signs mounted on temporary supports or barricades, and barricade/sign combination must be crashworthy in accordance with NCHRP 350 requirements and included on the Approved Products List (APL).
3. Use only approved systems listed on the Department's Approved Products List (APL).
4. Manufacturers seeking approval of U-Channel and steel square tube sign support assemblies for inclusion on the Approved Products List (APL) must submit a APL application, design calculations (for square tube only), and detailed drawings showing the product meets all the equirements of this Index.
5. Provide 3 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.43 in^3 for 60 ksi steel, a minimum section modulus of 0.37 in^3 for 70 ksi steel, or a minimum section modulus of 0.34 in^3 for 80 ksi steel.
6. Provide 4 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.56 in^3 for 60 ksi steel, or a minimum section modulus of 0.47 in^3 for 70 ksi or 80 ksi steel.
7. U-channel posts shall conform with ASTM A 499, Grade 60, or ASTM A 576, Grade 1080 (with a minimum yield strength of 60 ksi). Square tube posts shall conform with ASTM A 653, Grade 50, or ASTM A 1011, Grade 50.
8. Sign attachment bolts, washers, nuts, and spacers shall conform with ASTM A307 or A 36.
9. For diamond warning signs with supplement plaque (up to 5 ft^2 in area), use 4 lb/ft posts for up to 10 ft Clear Height (measure to the bottom of diamond warning sign).
10. Install 4 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.
11. The contractor may install 3 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the APL.
12. Install all posts plumb.
13. The contractor may set posts in preformed holes to the specified depth with suitable backfill tamped securely on all sides, or drive 3 lb/ft sign posts and any size base post in accordance with the manufacturer's detail shown on the APL.



2 POST SIGN SUPPORT MOUNTING DETAILS (SINGLE POST SIMILAR) RURAL

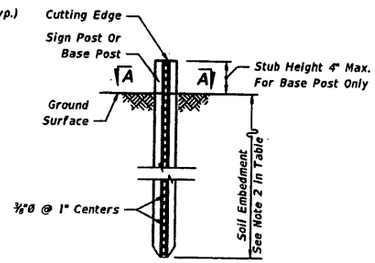


2 POST SIGN SUPPORT MOUNTING DETAILS (SINGLE POST SIMILAR) URBAN



3 POST SIGN SUPPORT MOUNTING DETAILS

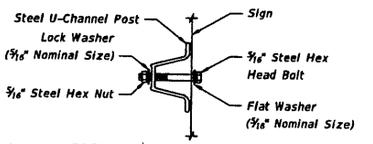
Where W = 48": a = 1' - 4½" (± 1")
W = 60": a = 1' - 9" (± 1")
W = 72": a = 2' - 1" (± 1")



TYPICAL FOUNDATION DETAIL

See APL for post, splice and connection details.
No bolts installed closer than 1" to cutting edge.

SECTION A-A (SCHEMATIC)



SIGN ATTACHMENT DETAIL (WITHOUT Z-BRACKET)

POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS

SIGN SHAPE	SIGN SIZE (Inches)	NUMBER OF STEEL U CHANNEL POSTS
Octagon	30x30	1
Triangle	36x36x36	1
	48x48x48	1
	60x60x60	2
Rectangle (W x H)	24x18	1
	24x30	1
	30x24	1
	36x18	1
	36x24	1
	48x18	1
	48x24	1
	36x48	2
	48x30	2
	48x36	2
	54x36	2
	48x60	3
	60x54	3
	72x48	3
	120x60*	4*
Square	30x30	1
	36x36	2
	48x48	2
Diamond (See Note 7)	48x48	2
Circle	36Ø	2

Notes For Table:

1. Use 3 lb/ft posts for Clear Height up to 10' and 4 lb/ft posts for Clear Height up to 12'.
* Use 4 lb/ft U-channel sign post with a mounting height of 7' min. and 8' max. Attach sign panel using Z-bracket detail on Sheet 6.
2. Minimum foundation depth is 4.0' for 3 lb/ft posts and 4.5' for 4 lb/ft posts.
3. For both 3 lb/ft and 4 lb/ft base or sign posts installed in rock, a minimum cumulative depth of 2' of rock layer is required.
4. The soil plate as shown on the APL vendor drawing is not required for base posts or sign posts installed in existing rock (as defined in Note 3), asphalt roadway, shoulder pavement or soil under sidewalk.

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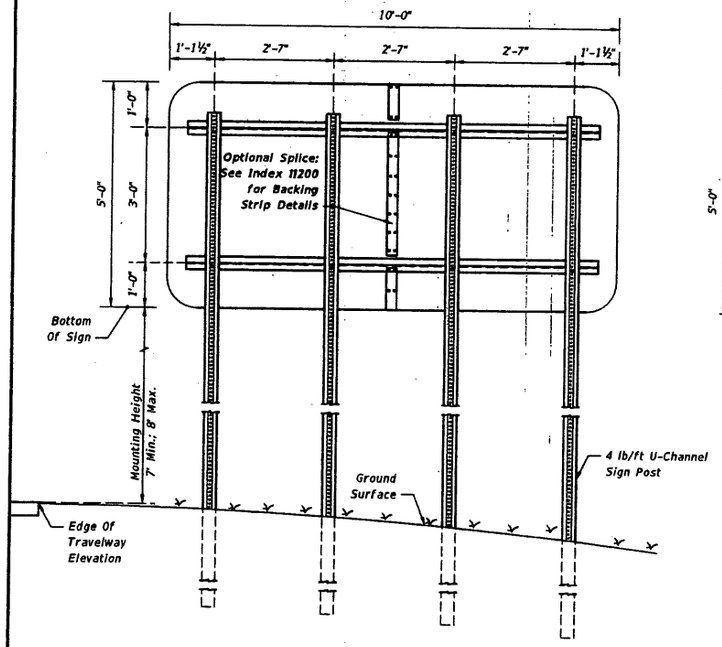
WORK ZONE SIGN SUPPORTS

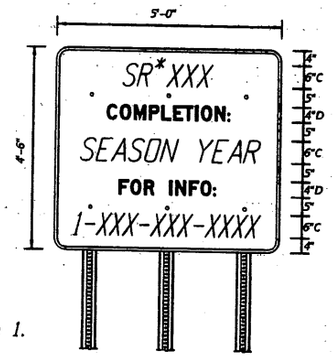


4 POST SIGN SUPPORT MOUNTING DETAIL

*-See Note 1.

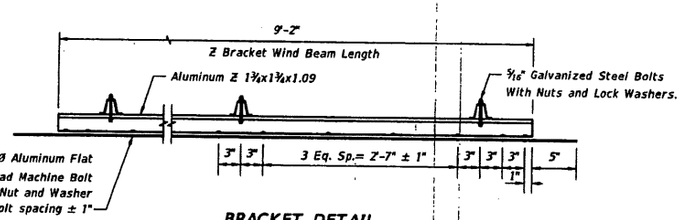
BORDER	10'-0"x 5'-0"
R=8"	8" Radii
TH=0.25"	4" and 6" series D Legend
IN=0.75"	Blue Background
	White Legend and Border

PROJECT INFORMATION SIGN DETAIL
50 MPH OR GREATER
Use SIGN ATTACHMENT DETAIL (WITH Z-BRACKET).

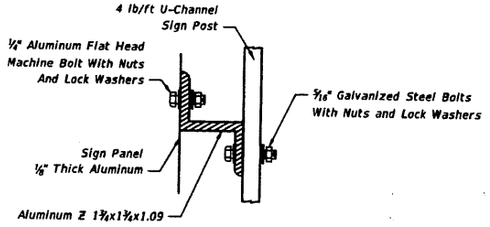


BORDER	5'-0"x 4'-6"
R=3"	3" Radii
TH=0.25"	4" series D Legend and
IN=0.75"	6" series C Legend
	Blue Background
	White Legend and Border

PROJECT INFORMATION SIGN DETAIL
45 MPH OR LESS
Use SIGN ATTACHMENT DETAIL (WITHOUT Z-BRACKET) On Sheet 5.



BRACKET DETAIL



SIGN ATTACHMENT DETAIL
(WITH Z-BRACKET)

PROJECT INFORMATION SIGN NOTES:

1. Road designation should be the most common designation (ie. I-Interstate, SR-State Road or US.)
2. Italic text on signs indicate variable information specific to the project.
3. See Sheet 5 for Typical Foundation Details and Post and Foundations Table.

PROJECT INFORMATION SIGN

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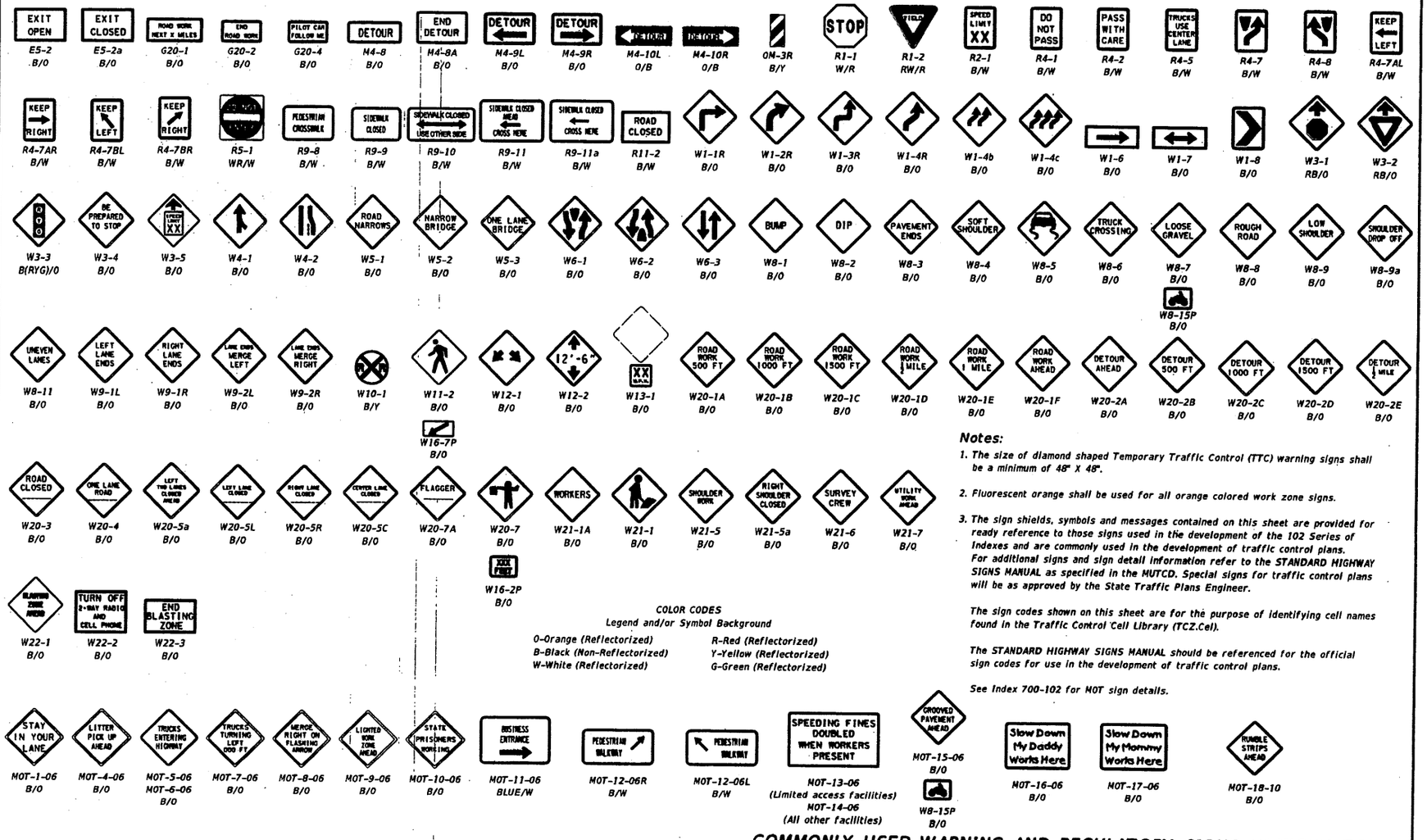
LAST REVISION	REVISION	DESCRIPTION:				INDEX	SHEET
11/01/17		EXHIBIT E	FDOT	FY 2018-19 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	102-600	6 of 12



COLOR CODES

Legend and/or Symbol Background

O-Orange (Reflectorized)
B-Black (Non-Reflectorized)
W-White (Reflectorized)
R-Red (Reflectorized)
Y-Yellow (Reflectorized)
G-Green (Reflectorized)

Notes:

1. The size of diamond shaped Temporary Traffic Control (TTC) warning signs shall be a minimum of 48" X 48".
2. Fluorescent orange shall be used for all orange colored work zone signs.
3. The sign shields, symbols and messages contained on this sheet are provided for ready reference to those signs used in the development of the 102 Series of Indexes and are commonly used in the development of traffic control plans. For additional signs and sign detail information refer to the STANDARD HIGHWAY SIGNS MANUAL as specified in the MUTCD. Special signs for traffic control plans will be as approved by the State Traffic Plans Engineer.

The sign codes shown on this sheet are for the purpose of identifying cell names found in the Traffic Control Cell Library (TCZ.cel).

The STANDARD HIGHWAY SIGNS MANUAL should be referenced for the official sign codes for use in the development of traffic control plans.

See Index 700-102 for MOT sign details.

COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES

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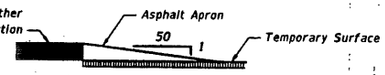
LAST REVISION 11/01/17	REVISION	DESCRIPTION: EXHIBIT E	FDOT FY 2018-19 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX 102-600	SHEET 7 of 12

MANHOLES/CROSSWALKS/JOINTS

Manholes extending 1" or more above the travel lane and crosswalks having an uneven surface greater than ½" shall have a temporary asphalt apron constructed as shown in the diagram below.

All transverse joints that have a difference in elevation of 1" or more shall have a temporary asphalt apron constructed as shown in the diagram below.



The apron is to be removed prior to constructing the next lift of asphalt. The cost of the temporary asphalt shall be included in the contract unit price for Maintenance of Traffic, LS.

REMOVING PAVEMENT MARKINGS

Existing pavement markings that conflict with temporary work zone delineation shall be removed by any method approved by the Engineer, where operations exceed one daylight period. Remove conflicting pavement marking using a method that will not damage the surface texture of the pavement, unless the pavement will be restored prior to traffic use. Painting over existing pavement markings with black paint or spraying with asphalt shall not be accepted as substitute for removal or obliteration. Full pavement width overlays of either a structural or friction course (non-final surface) are an acceptable alternate means to achieve removal.

SIGNALS

Existing traffic signal operations that require modification in order to carry out work zone traffic control shall be included in the TCP and be approved by the District Traffic Operations Engineer.

Maintain all existing actuated or traffic responsive mode signal operations for main and side street movements for the duration of the Contract and require restoration of any loss of detection within 12 hours. The contractor shall select only detection technology listed on the Department's Approved Products List (APL) and approved by the Engineer to restore detection capabilities.

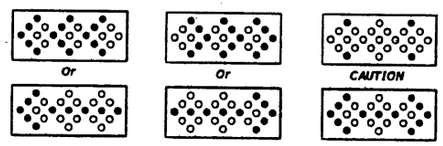
ADVANCE WARNING ARROW BOARDS

An arrow board in the arrow or chevron mode shall be used only for stationary or moving lane closures on multilane roadways.

For shoulder work, blocking the shoulder, for roadside work near the shoulder, or for temporarily closing one lane on a two-lane, two-way roadway, an arrow board shall be used only in the caution mode.

A single arrow board shall not be used to merge traffic laterally more than one lane. When arrow boards are used to close multiple lanes, a single board shall be used at the merging taper for each closed lane.

When Advance Warning Arrow Boards are used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.



● Minimum Required Lamps
○ Additional Lamps Allowed

MODES

PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS)

The PCMS can be used to:

1. Supplement standard signing in construction or maintenance work zones.
2. Reinforce static advance warning messages.
3. Provide motorists with updated guidance information.

PCMS should be placed approx. 500 to 800 feet in advance of the work zone conflicts or 0.5 to 2 miles in advance of complex traffic control schemes which require new and/or unusual traffic maneuvers.

If PCMS are to be used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.

For additional information refer to the FDOT Plans Preparation Manual, Volume I, Chapter 10.

TRUCK/TRAILER-MOUNTED ATTENUATORS

Truck/Trailer-mounted attenuators (TMA) can be used for moving operations and short-term stationary operations. For moving operations, see Indexes 102-607 and 102-619. For short-term, stationary operations, see Part VI of the MUTCD.

CHANNELIZING DEVICES

Channelizing devices for work zone traffic control shall be as prescribed in Part VI of the MUTCD, subject to supplemental revisions provided in the contract documents and the 102 Series of Indexes. Lighting Devices must not be used to supplement channelization.

CHANNELIZING DEVICE CONSISTENCY

Barricades, vertical panels, cones, tubular markers and drums shall not be intermixed within either the lateral transition or within the tangent alignment.

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DROP-OFF CONDITION NOTES

1. These conditions and treatments can be applied only in work areas that fall within a properly signed work zone.

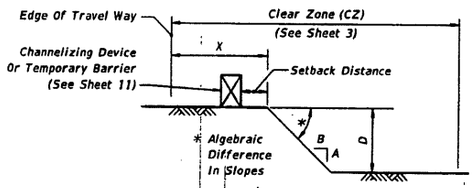
2. When drop-offs occur within the clear zone due to construction or maintenance activities, protection devices are required (See Table 1). A drop-off is defined as a drop in elevation, parallel to the adjacent travel lanes, greater than 3" with slope (A:B) steeper than 1:4. In superelevated sections, the algebraic difference in slopes should not exceed 0.25 (See Drop-off Condition Detail).

3. Drop-offs may be mitigated by placement of slopes with optional base material per Specifications Section 285. Slopes shallower than 1:4 may be required to avoid algebraic difference in slopes greater than 0.25. Include the cost for the placement and removal of the material in Maintenance of Traffic, LSD. Use of this treatment in lieu of a temporary barrier is not eligible for CSIP consideration. Conduct daily inspections for deficiencies related to erosion, excessive slopes, rutting or other adverse conditions. Repair any deficiencies immediately.

4. For Setback Distance, refer to the Index or Approved Products List (APL) drawing of the selected barrier.

5. For Conditions 1 and 3 provided in Table 1, any drop-off condition that is created and restored within the same work period will not be subject to the use of temporary barriers; however, channelizing devices will be required.

6. When permanent curb heights are ≥ 6", no channelizing device will be required. For curb heights < 6", see Table 1.



DROP-OFF CONDITION DETAIL

Table 1
Drop-off Protection Requirements

Condition	X (ft)	D (in.)	Device Required
1	0–12	> 3	Temporary Barrier
2	> 12–CZ	> 3 to ≤ 5	Channelizing Device
3	0–CZ	> 5	Temporary Barrier
4	Removal of Bridge or Retaining Wall Barrier		Temporary Barrier
5	Removal of portions of Bridge Deck		Temporary Barrier

TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING NOTES

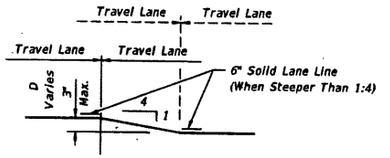
1. This treatment applies to resurfacing or milling operations between adjacent travel lanes.

2. Whenever there is a difference in elevation between adjacent travel lanes, the W8-11 sign with "UNEVEN LANES" is required at intervals of ½ mile maximum.

3. If D is 1½" or less, no treatment is required.

4. Treatment allowed only when D is 3" or less.

5. If the slope is steeper than 1:4 (not to be steeper than 1:1), the R4-1 and M0T-1-06 signs shall be used as a supplement to the W8-11; this condition should never exceed 3 miles in length.



TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING DETAIL

PEDESTRIAN WAY DROP-OFF CONDITION NOTES

1. A pedestrian way drop-off is defined as:

   a. a drop in elevation greater than 10" that is closer than 2' from the edge of the pedestrian way

   b. a slope steeper than 1:2 that begins closer than 2' from the edge of the pedestrian way when the total drop-off is greater than 60"

2. Protect any drop-off adjacent to a pedestrian way with pedestrian longitudinal channelizing devices, temporary barrier wall, or approved handrail.

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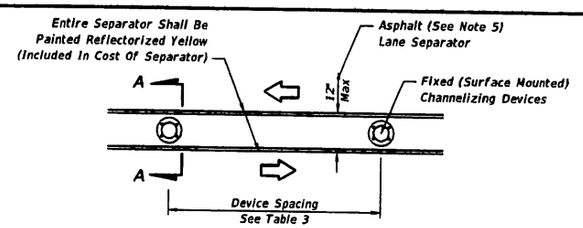
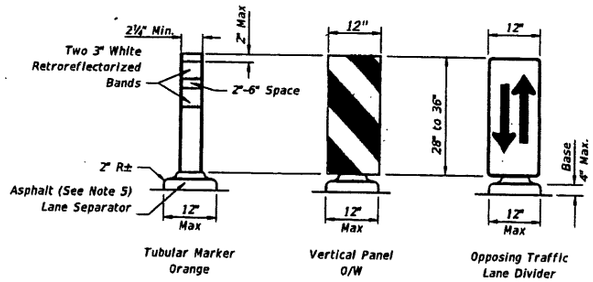
DROP-OFFS IN WORK ZONES

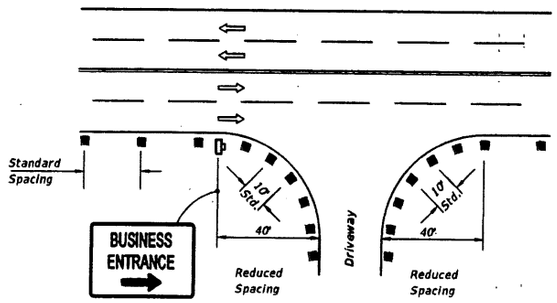
Table 3 Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Tubular Markers		Vertical Panels or Opposing Traffic Lane Divider	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100



PLAN



FIXED (SURFACE MOUNTED) CHANNELIZING DEVICES



1. For single business entrances, place one 24" x 36" business sign for each driveway entrance affected. Signs shall show specific business names. Logos may be provided by business owners. Standard BUSINESS ENTRANCE sign in Index 700-102 may be used when approved by the Engineer.
2. When several businesses share a common driveway entrance, place one 24" x 36" standard BUSINESS ENTRANCE sign in accordance with Index 700-102 at the common driveway entrance.
3. Channelizing devices shall be placed at a reduced spacing on each side of the driveway entrance, but shall not restrict sight distance for the driveway users.
4. Business entrance signs are intended to guide motorist to business entrances moved/modified or disturbed during construction projects. Business entrance signs are not required where there is minimal disruption to business driveways which is often the case with resurfacing type projects.

PLACEMENT OF BUSINESS ENTRANCE SIGNS AND CHANNELIZING DEVICES AT BUSINESS ENTRANCE

SECTION AA

1. Temporary lane separators shall be supplemented with any of the following approved fixed (surface mounted) channelizing devices: tubular markers, vertical panels, or opposing traffic lane divider panels. Opposing traffic lane divider panels (W6-4) shall only be used as center lane dividers to separate opposing vehicular traffic on a two-lane, two-way operation. Tubular Markers, Vertical Panels and Opposing Traffic Lane Divider panels shall not be intermixed within the limits where the temporary lane separator is used. The connection between the channelizing device and the temporary lane separator curb shall hold the channelizing device in a vertical position.
2. Reflectorized materials shall have a smooth sealed outer surface which will display the same approximate color day and night. Furnish channelizing devices having retroreflective sheeting meeting the requirements of Section 990.
3. 12" openings for drainage shall be constructed in the asphalt and portable temporary lane separator at a maximum spacing of 25' in areas with grades of 1% or less or 50' in areas with grades over 1% as directed by the Engineer.
4. Tapered ends shall be used at the beginning and end of each run of the temporary lane separator to form a gradual increase in height from the pavement level to the top of the temporary lane separator.
5. The Contractor has the option of using portable temporary lane separators containing fixed channelizing devices in lieu of the temporary asphalt separator and channelizing devices detailed on this sheet. The portable temporary lane separator shall come in portable sections that can be connected to maintain continuous alignment between the separate curb sections. Each temporary lane separator section shall be 36 inches to 48 inches in total length. Portable temporary lane separators shall duplicate the color of the pavement marking. Portable temporary lane separators shall be one of those listed on the Approved Products List.
6. Any damage to existing pavement caused by the removal of temporary lane separator shall be satisfactorily repaired and the cost of such repairs are to be included in the cost of Maintenance of Traffic, LS.

TEMPORARY LANE SEPARATOR

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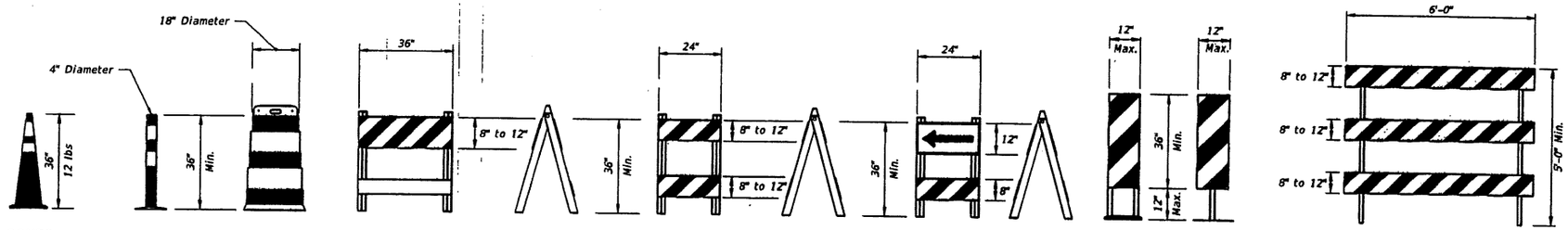


CONES | TUBULAR MARKER | PLASTIC DRUMS | TYPE I BARRICADE | TYPE II BARRICADE | DIRECTION INDICATOR BARRICADE | A-FRAME | POST MOUNT | TYPE III BARRICADE

TUBULAR NON-FIXED MARKER TO BE USED DURING DAYLIGHT ONLY

VERTICAL PANEL

CHANELIZING DEVICES

CHANNELIZING DEVICE NOTES:

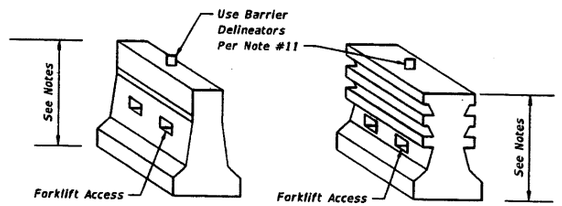
1. The details shown on this sheet are for the following purposes:
   a. For ease of identification and
   b. To provide information that supplements or supersedes that provided by the MUTCD.
2. The Type III Barricade shall have a unit length of 6'-0" only. When barricades of greater lengths are required those lengths shall be in multiples of the 6'-0" unit.
3. No sign panel should be mounted on any channelizing device unless the channelizing device/sign combination was found to be crashworthy and the sign panel is mounted in accordance with the vendor drawing for the channelizing device shown on the Approved Products List (APL).
4. Ballast shall not be placed on top rails or any striped rails or higher than 13" above the driving surface.
5. The direction indicator barricade may be used in tapers and transitions where specific directional guidance to drivers is necessary. If used, direction indicator barricades shall be used in series to direct the driver through the transition and into the intended travel lane.
6. The splicing of sheeting is not permitted on either channelizing devices or MOT signs.
7. For rails less than 3'-0" long, 4" stripes shall be used.
8. Cones shall:
   a. Be used only in active work zones where workers are present.
   b. Not exceed 2 miles in length of use at any one time.
   c. Be reflectorized as per the MUTCD with Department-approved reflective collars when used at night.
9. Vehicular longitudinal channelizing devices shall not exceed 36" in height. For vehicular longitudinal channelizing devices (LCDs) less than 32" in height, the LCD shall be supplemented with approved fixed (surface mounted) channelizing devices (tubular markers, vertical panels, etc.) along the run of the LCD, at the ends, at 50' centers on tangents, and 25' centers on radii. The cost of the fixed supplemented channelizing devices shall be included in the cost of the LCD. LCDs less than 32" in height shall not be used for speeds greater than 45 mph.
10. For pedestrian longitudinal channelizing devices, the device shall have a minimum of 8" continuous detectable edging above the walkway. A gap not exceeding a height of 2" is allowed to facilitate drainage. The top surface of the device shall be a minimum height of 32" and have a 1/8" or less difference in any plane at all connection points between the devices to facilitate hand trailing. The bottom and the top surface of the device shall be in the same vertical plane. If pedestrian drop-off protection is required, the device shall have a footprint or offset of at least 2', otherwise the device must be at least 42" in height above the walkway and be anchored or ballasted to withstand a 200 lb lateral point load at the top of the device.
11. For Barrier Delineators, see Specification 102. Place on top of unit so that retroreflective sheeting faces vehicular traffic. Color must match adjacent longitudinal pavement marking.

TEMPORARY BARRIER NOTES:

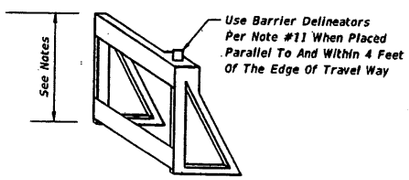
1. Where a barrier is specified, any of the types below may be used in accordance with the applicable Index:

Index	Description
102-100	Temporary Barrier
102-120	Low Profile Barrier
536-001	Guardrail

2. Trailer Mounted Barriers may be used to provide positive protection for workers within the work areas. APL drawings may be used as a guide to develop project specific Temporary Traffic Control Plans that are signed and sealed by the Contractor's Engineer.



VEHICULAR LCD | VEHICULAR/ PEDESTRIAN LCD



PEDESTRIAN LCD

LONGITUDINAL CHANNELIZING DEVICE

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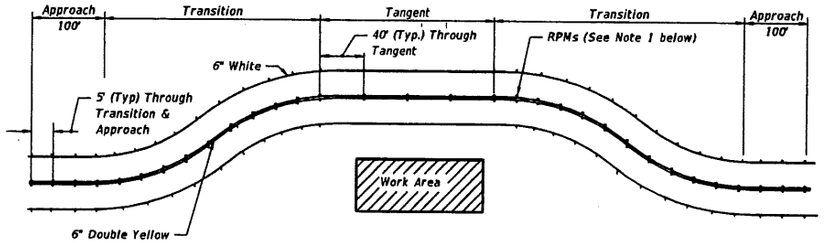
LAST REVISION	REVISION	DESCRIPTION:				
11/01/17		EXHIBIT E	FDOT	FY 2018-19 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX 102-600 / SHEET 11 of 12



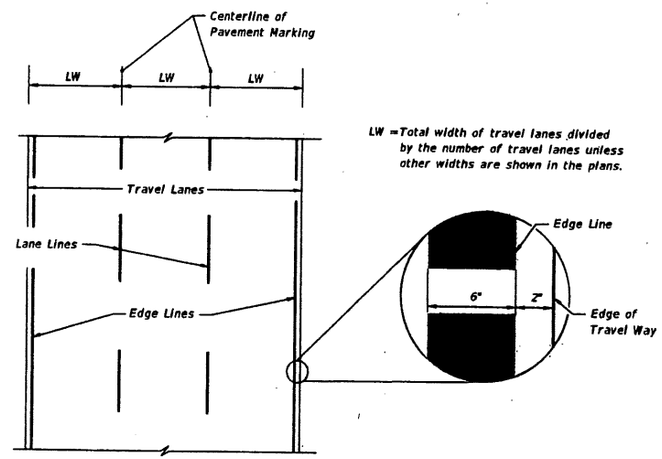
USE OF RPMS TO SUPPLEMENT PAINT OR REMOVABLE TAPE IN WORK ZONES

1. RPMs shall be installed as a supplement to:
   a. All lane lines.
   b. Edge lines in transition & approach areas.
   c. Edge lines of gore areas.
2. Placement of RPMs should be as shown in Index 706-001 with the following exceptions: RPMs shall be placed at 5 feet center to center in approach and transition areas.

NOTES FOR RAISED PAVEMENT MARKERS:

1. The color of the raised pavement marker under both day and night conditions shall conform to the color of the marking for which they serve as a positioning guide, or for which they supplement.

2. RPMs used to supplement lane lines are to be paid for as Raised Pavement Marker (Temporary), EA. RPMs used as a temporary substitute for paint or removable tape due to equipment malfunction are to be placed at the Contractor's expense.



PLACEMENT OF PAVEMENT MARKINGS

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U. S. DOT CROSSING INVENTORY FORM

EXHIBIT F

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date *(MM/DD/YYYY)* ____/____/____	B. Reporting Agency ☐ Railroad ☐ Transit ☐ State ☐ Other	C. Reason for Update *(Select only one)* ☐ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	D. DOT Crossing Inventory Number

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County

4. City / Municipality ☐ In ☐ Near	5. Street/Road Name & Block Number *(Street/Road Name)* | ** (Block Number)*	6. Highway Type & No.

7. Do Other Railroads Operate a Separate Track at Crossing? ☐ Yes ☐ No If Yes, Specify RR	8. Do Other Railroads Operate Over Your Track at Crossing? ☐ Yes ☐ No If Yes, Specify RR

9. Railroad Division or Region ☐ None	10. Railroad Subdivision or District ☐ None	11. Branch or Line Name ☐ None	12. RR Milepost *(prefix)* | *(nnnn.nnn)* | *(suffix)*

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR *(if applicable)* ☐ N/A	16. Crossing Owner *(if applicable)* ☐ N/A

17. Crossing Type ☐ Public ☐ Private	18. Crossing Purpose ☐ Highway ☐ Pathway, Ped. ☐ Station, Ped.	19. Crossing Position ☐ At Grade ☐ RR Under ☐ RR Over	20. Public Access *(If Private Crossing)* ☐ Yes ☐ No	21. Type of Train ☐ Freight ☐ Transit ☐ Intercity Passenger ☐ Shared Use Transit ☐ Commuter ☐ Tourist/Other	22. Average Passenger Train Count Per Day ☐ Less Than One Per Day ☐ Number Per Day____

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number? ☐ Yes ☐ No If Yes, Provide Crossing Number	25. Quiet Zone *(FRA provided)* ☐ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID ☐ N/A	27. Latitude in decimal degrees *(WGS84 std: nn.nnnnnnn)*	28. Longitude in decimal degrees *(WGS84 std: -nnn.nnnnnnn)*	29. Lat/Long Source ☐ Actual ☐ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative *(Railroad Use)* *	32.B. Narrative *(State Use)* *

33. Emergency Notification Telephone No. *(posted)*	34. Railroad Contact *(Telephone No.)*	35. State Contact *(Telephone No.)*

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains *(6 AM to 6 PM)*	1.B. Total Night Thru Trains *(6 PM to 6 AM)*	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?

2. Year of Train Count Data *(YYYY)*	3. Speed of Train at Crossing 3.A. Maximum Timetable Speed *(mph)* ____ 3.B. Typical Speed Range Over Crossing *(mph)* From ____ to ____

4. Type and Count of Tracks

Main ____ Siding ____ Yard ____ Transit ____ Industry ____

5. Train Detection *(Main Track only)*
☐ Constant Warning Time ☐ Motion Detection ☐ AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled? ☐ Yes ☐ No	7.A. Event Recorder ☐ Yes ☐ No	7.B. Remote Health Monitoring ☐ Yes ☐ No

EXHIBIT F

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☐ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
			☐ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____ ☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☐ Stop Lines ☐ Dynamic Envelope ☐ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☐ No

Specify Type _____ Count _____
Specify Type _____ Count _____
Specify Type _____ Count _____

2.K. Private Crossing Signs *(if private)* ☐ Yes ☐ No

2.L. LED Enhanced Signs *(List types)*

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* _____	3.E. Total Count of Flashing Light Pairs
Roadway _____ Pedestrian _____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane _____ ☐ Incandescent Not Over Traffic Lane _____ ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☐ No	

3.J. Non-Train Active Warning ☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None

3.K. Other Flashing Lights or Warning Devices Count _____ Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic ☐ Divided Traffic Number of Lanes _____	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____

☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☐ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☐ Yes ☐ No If Yes, Approximate Distance *(feet)* _____	☐ 0° – 29° ☐ 30° – 59° ☐ 60° - 90°	☐ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☐ (08) Non-Federal Aid	☐ (0) Rural ☐ (1) Urban ☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☐ No	_____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year _____ AADT _____	_____ %	☐ Yes ☐ No Average Number per Day _____	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____