


FDOT

2019 Standard Plans
 Index 102-600 Sheets 1 to 12



Standard Plans for Road and Bridge Construction
 Form No. 102-10-001


State of Florida Department of Transportation
 Office of Design
 Mail Station 52
 805 Suwannee Street
 Tallahassee, Florida 32304-6400

Florida Department of Transportation

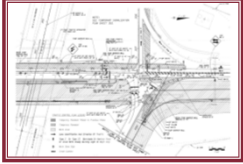
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Index 102-600 Sheet 1
General Notes

All projects and works on highways, roads and streets must have a Temporary Traffic Control Plan.



Standard Plans Index Drawings
 (Examples that may be referenced)




Project Specific Drawings
 (Required where conditions vary from those shown in the Standard Plans)

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Index 102-600 Sheet 1
General Notes

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.



FDOT Standard Plans
 (Required on State Highway System)




MUTCD
 (Required on the State Highway System and all local roads)

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Index 102-600 Series
General Notes

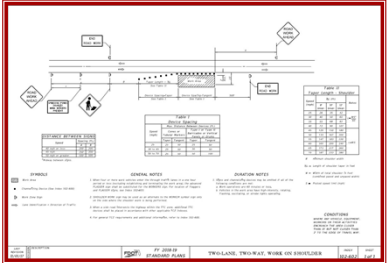
Index No. 600 contains information specific to the Federal and State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets on the State Highway system.



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Index 102-600 Series
General Notes


Index Nos. 102-601 thru 102-670 are Department-specific typical applications of commonly encountered situations. Modification can be made to these indexes if the changes comply with the MUTCD and Department criteria.



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Index 102-600 Sheet 2
Definitions

Regulatory Speed: The maximum permitted travel speed posted for the work zone is indicated by the regulatory speed limit signs.





- Shall be shown for each phase in Traffic Control Plans
- Should be used to determine taper lengths, clear zone widths, etc.

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Index 102-600 Sheet 2 


Definitions

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



W13-1P

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Index 102-600 Sheet 2 

Definitions

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.

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Index 102-600 Sheet 2 


Definitions

Detour: A detour is the redirection of traffic onto another roadway to bypass the temporary traffic control zone.

Lane Shift: A lane shift is the redirection of traffic onto a different section of the permanent pavement.


Diversion: 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.

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Index 102-600 Sheet 2 


Definitions

Above Ground Hazard



<p>Any Object, Material, or Equipment</p> <ul style="list-style-type: none"> • other than TTC devices 	<p>Within the Clear Zone</p> <ul style="list-style-type: none"> • or roadway 	<p>Greater than 4 inches high</p> <ul style="list-style-type: none"> • is firm and unyielding and not breakaway
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Index 102-600 Sheet 2 

Temporary Traffic Control Devices

<p>Devices must be removed as soon as practical when they are no longer needed.</p>	<p>All temporary traffic control devices must be ON the Department's APL.</p>	<p>When work is suspended for a short period of time, temporary traffic control devices that are no longer appropriate must be removed or covered.</p>
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Index 102-600 Sheet 2 

Temporary Traffic Control Devices


TRAFFIC CONTROL DEVICES (Trailer Mounted)

Trailer mounted devices shall be delineated with a temporary traffic control 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



Warning Devices


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Index 102-600 Sheet 2 

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 (LCD) may be used to delineate a temporary traffic control zone pedestrian walkway.



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Index 102-600 Sheet 2 


Pedestrian and Bicyclist





Advanced notification of sidewalk closures and marked detours shall be provided by appropriate devices and signs. See Index 102-660 for typical applications.


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Index 102-600 Sheet 2 


Overhead Work

Option 1:

- Overhead work using a modified lane closure
- Signalized Intersection
- 60 minutes or less
- Speed limit is 45 mph or less
- High-intensity lights on vehicle
- Equipment directly below work
- 100 foot taper (minimum)




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Index 102-600 Sheet 2 


Overhead Work

Option 2:
 Overhead work above an open lane of traffic
 Pole and pole appurtenances work
 60 minutes or less
 Speed limit is 45 mph or less
 High-intensity lights on work vehicle



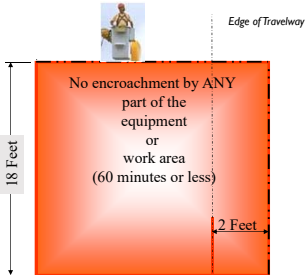
Work must not encroach an area bounded by 2' from the edge of travel way or 18' height.

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Index 102-600 Sheet 2 

Overhead Work

Option 2: Overhead work above an open lane of traffic




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Index 102-600 Sheet 2 

Overhead Work

Option 3:
 Overhead work adjacent to an open lane of traffic
 Pole and pole appurtenances work
 1 day or less
 Speed limit is 45 mph or less
 High-intensity lights on work vehicle

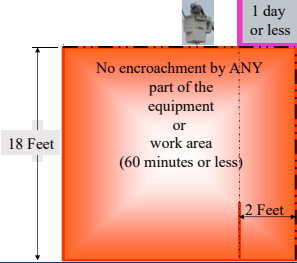


Work must not encroach an area bounded by 2' from the edge of travel way up to 18' height. Above 18' not to encroach over traffic lane except as allowed in Option 2.

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Index 102-600 Sheet 2
Overhead Work

Option 3: Overhead work adjacent to an open lane of traffic



18 Feet

No encroachment by ANY part of the equipment or work area (60 minutes or less)


1 day or less

2 Feet

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Index 102-600 Sheet 2
Overhead Work

Option 4: Overhead work with no encroachment below work area




Traffic shall be detoured, shifted, diverted or paced as to not encroach in the area directly below the overhead work operations

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Index 102-600 Sheet 2
Overhead Work

Option 5: Conductor/Cable Pulling Above an Open Traffic Lane



The utility shall take precautions to ensure that pull ropes and conductors/cables at no time fall below the minimum vertical clearance.

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Index 102-600 Sheet 2 

Railroads

Railroad crossings affected by a construction project should be evaluated for traffic controls to reduce queuing on the tracks.





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Index 102-600 Sheet 2 

Sight Distance

Tapers should begin well in advance of sharp vertical or horizontal 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.

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Index 102-600 Sheet 2 

Above Ground Hazard



During non-working hours, all objects, materials and equipment must be stored outside the travelway and clear zone or shielded by a barrier or crash cushion.

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

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Index 102-600 Sheet 3

The term 'clear zone' describes the unobstructed relatively flat area, impacted by construction, extending outward from the edge of the traffic lane.

Clear Zone Width

WORK ZONE SPEED (MPH)	TRAVEL LANES & MULTILANE RAMP'S (feet)	AUXILIARY LANES & SINGLE LANE RAMP'S (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

Index 102-600 Sheet 3

Superelevation

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.

WORK ZONE POSTED SPEED (MPH)	MINIMUM RADIUS (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

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Index 102-600 Sheet 3

Length of Lane Closures

Limits of Lane Closure - 3 Miles Maximum

Taper Length Buffer Space Work Area

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Index 102-600 Sheet 3
Overweight/Oversize Vehicles



The Contractor shall notify the Engineer who in turn shall notify the State Permits Office 7 calendar days in advance if the Traffic Control Plan impacts the flow of overweight/oversized vehicles.

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Index 102-600 Sheet 3
Lane Widths

Type of Facility	Minimum Lane Width
Interstate	11' with at least one 12' lane
Freeway	11'
Other Facilities	10'

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Index 102-600 Sheet 3
High-Visibility Safety Apparel

All workers within Right-of-Way shall wear:
 ANSI/ISEA 107-2004 or newer Class 2 apparel
 Florescent Orange-red or Yellow-green in Color





All flaggers within Right-of-Way shall wear:
 Daytime - ANSI/ISEA 107-2004 or newer Class 2 apparel
 Nighttime - 107-2004 or newer Class 3 apparel
 Florescent Orange-red or Yellow-green in Color

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Index 102-600 Sheet 3
Regulatory Speed in Work Zones


SPEED LIMIT 25	SPEED LIMIT 35	SPEED LIMIT 45	SPEED LIMIT 55	SPEED LIMIT 65
SPEED LIMIT 30	SPEED LIMIT 40	SPEED LIMIT 50	SPEED LIMIT 60	SPEED LIMIT 70

Shall be shown for each phase of work
Should be established as close to the normal highway speed as possible


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Index 102-600 Sheet 4
Flagger Control

Primary Device **Flagging Stations**






6 foot min



STOP/SLOW Paddle Shall be illuminated at night

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Index 102-600 Sheet 4
Survey Work Zones



SURVEY CREW AHEAD sign shall be the principal advance warning sign used for survey operations.

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Index 102-600 Sheet 4
Sign Materials

Material	Used
Mesh	Daylight only
Vinyl	Not to exceed 1 day
Other	Per vendor drawing shown on APL

Mesh Material

APL #S102-014-045

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Index 102-600 Sheet 4
Intersecting Road Signing

When work operations exceed 60 minutes, place the ROAD WORK AHEAD sign on the side street entering the work zone.


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Index 102-600 Sheet 4
Adjoining and/or Overlapping Work Zone Signing

Adjoining and/or overlapping work zone signing shall not conflict, confuse or be mislead.

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Index 102-600 Sheet 4
Sign Covering






Existing or temporary signs that are no longer applicable shall be removed or fully covered


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Index 102-600 Sheet 4
Detours, Lane Shifts & Diversions

Detours are signed over their entire length




Lane shifts and diversions are signed with the reverse curve sign. Number of arrows shall be equal to the number of lanes shifted/diverted.



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Index 102-600 Sheet 4
General Sign Information

May be omitted for work operations less than 1 day



Extended Distance Utility Work Ahead End Road Work Speeding Fines

Length of Road Work Project Information Grooved Pavement

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Index 102-600 Sheet 5
Work Zone Sign Supports

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.

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Index 102-600 Sheet 5
Work Zone Sign Supports


Signs shall be post-mounted when work operations exceed 1 day except for:



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Index 102-600 Sheet 5
Work Zone Sign Supports

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).


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Index 102-600 Sheet 5 

Crashworthy???


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Index 102-600 Sheet 5 
Post Mounted Sign Notes


Sign Support System must be on the APL

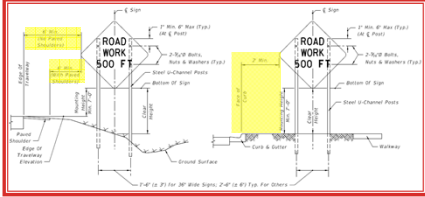
Post Only
3 lb/ft - May be driven

Post on Breakaway Splice
3 lb/ft - May be on approved breakaway splice
4 lb/ft - Must be on approved breakaway splice




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Index 102-600 Sheet 5 




Type of Roadway	Horizontal Offset
No paved shoulder	6' min. from Travelway
With paved shoulder	6' min. from edge of shoulder
Curb & Gutter	2' min. from the face of curb

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Index 102-600 Sheet 5 

Mounting Height




Bottom of Sign


7 feet minimum

Edge of Travelway Elevation

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Index 102-600 Sheet 5 

Clear Height




Bottom of Sign

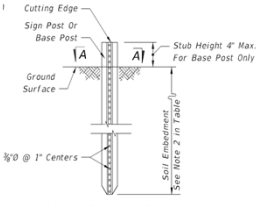
Ground line at Centerline of Sign

10 feet for 3 lb/ft
12 feet for 4 lb/ft

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Index 102-600 Sheet 5 

Typical Splice Installation




Top Bolt
No bolts installed closer than 1 inch to cutting edge

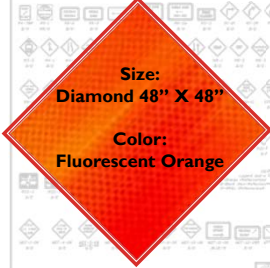
Stub Height
4 Inch Maximum From Existing Ground

Most Common Alignment
Base Post in Front (traffic approaching)
Sign Post in Back

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


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Index 102-600 Sheet 7 




Size:
Diamond 48" X 48"

Color:
Fluorescent Orange

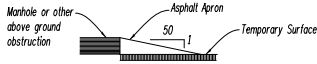



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Index 102-600 Sheet 8 

Manholes/Crosswalks/Joints


Asphalt apron required		
Item	Location	Elevation Difference
Manhole	Travelway	1" or more
Uneven Surfaces (including Manholes)	Crosswalk	Greater than 1/4"
Transverse Joints	Travelway	1" or more


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Index 102-600 Sheet 8 

Removing Pavement Markings



Water Blasting




Grinding

Conflicting pavement markings shall be removed by any method approved by the Engineer.

Painting over with black paint or spraying with asphalt are not allowed.

Full pavement width overlays of a structural or friction course (non-final surface) are acceptable alternative.


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Index 102-600 Sheet 8 


Signals

Signal operations that require modification shall be included in the Traffic Control Plan.


Actuated or traffic responsive mode signal operations shall be maintained



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Index 102-600 Sheet 8 

Advance Warning Arrow Boards




Arrow Mode

- Stationary Lane Closures or Mobile Operations


Caution Mode

- Shoulder Work
- Two-lane, Two-way

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Index 102-600 Sheet 8 

Portable Changeable Message Signs



Supplement Standard Signing

Reinforce Static Advance Warning Messages

Updated Guidance Information

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Index 102-600 Sheet 8 
Truck/Trailer Mounted Attenuators

Used for mobile operations or short-term stationary operations.




Truck Mounted




Trailer Mounted

Either the truck mounted or trailer mounted are acceptable

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Index 102-600 Sheet 8 
Channelizing Device Consistency


Cones, tubular markers, drums, vertical panels and barricades shall not be intermixed within either the lateral transition or within the tangent alignment



Drums in taper with cones in tangent is allowed

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Index 102-600 Sheet 9 - Dropoffs 



Drop-Off Condition, Note 2: 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).

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Index 102-600 Sheet 9 - Dropoffs

DROP-OFF CONDITION DETAIL

Drop-Off Condition, Note 2: When drop-offs occur within the clear zone due to construction or maintenance activities, protection devices are required. 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.

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Index 102-600 Sheet 9 - Dropoffs

Drop-Off Condition, Note 5: For conditions 1 and 3, 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.

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Index 102-600 Sheet 9 - Dropoffs

Condition	A (ft)	D (ft)	Device Required
1	0-12	> 3	Temporary Barrier
2	> 12-CZ	> 3 to 4.5	Channel/Plug 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

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Index 102-600 Sheet 9 - Dropoffs

Greater than 3 in and up to 5 in

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

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Index 102-600 Sheet 9 - Dropoffs

Greater than 5 in

0 ft. Clear Zone

5"

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

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Index 102-600 Sheet 9
Travel Lane Treatment


Difference is 1-1/2 inch or less

- No treatment is needed between travel lanes

Difference is 3 inches or less

- 1:4 slope or flatter

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Index 102-600 Sheet 9 

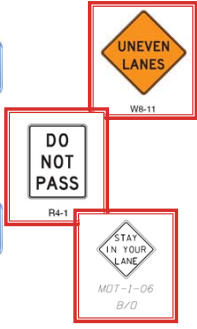
Travel Lane Treatment Signing

Any difference in elevation between adjacent travel lanes, signing is required


- UNEVEN LANES sign
- Placed at intervals of 1/2 mile max

Slope steeper than 1:4

- Not to exceed 3 miles in length
- R4-1 and MOT-01-06 shall supplement the UNEVEN LANES sign



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Index 102-600 Sheet 9 

Pedestrian Way Drop-Off Condition Notes


Definition of Pedestrian Way Drop-Off

- Drop in elevation greater than 10-inches, closer than 2-feet from edge of pedestrian way
- Slope steeper than 1:2, closer than 2-feet from edge of pedestrian way when total drop-off is greater than 60-inches

Protection

- Any drop-off adjacent to pedestrian way must be protected with temporary barrier wall, pedestrian longitudinal channelizing devices (LCD), or approved handrail.


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Index 102-600 Sheet 10 

Business Signs

Post Mounted

- Height 7 feet min
- Minimum Offsets:
 - 2' behind face of curb on urban roadways
 - 6' from edge of pavement on rural roadways
- 40' before entrance
- 1 sign for each driveway entrance



Specific Business Name

Channelizing Devices

- Reduced spacing
- Provide sight distance

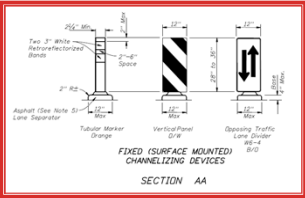

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Index 102-600 Sheet 10
Temporary Lane Separator

Shall be supplemented with:

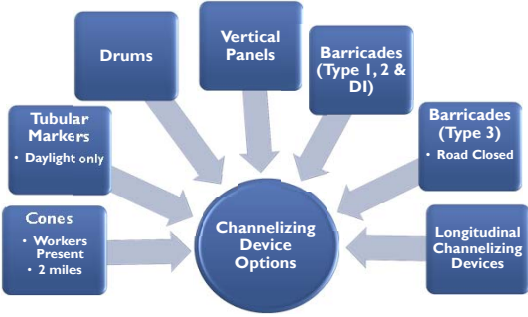
Opposing Traffic Lane Divider
Tubular Marker
Vertical Panel



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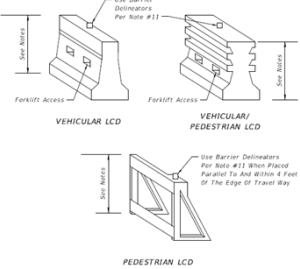
Index 102-600 Sheet 11
Channelizing Devices



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Index 102-600 Sheet 11
Longitudinal Channelizing Devices (LCD)



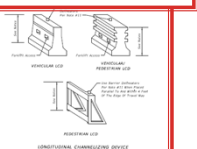
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Index 102-600 Sheet 11

Longitudinal Channelizing Devices (LCD)

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.



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Longitudinal Channelizing Devices (LCD)

Vehicle Longitudinal Channelizing Devices



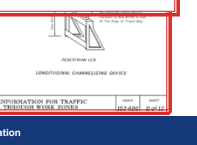
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Index 102-600 Sheet 11

Longitudinal Channelizing Devices (LCD)

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.



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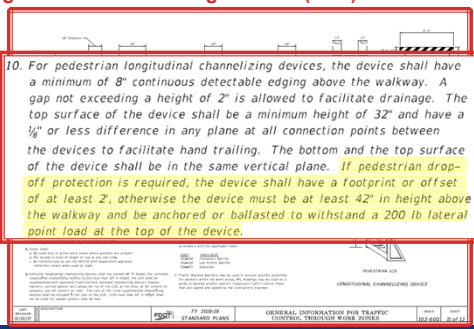
Index 102-600 Sheet 11
Longitudinal Channelizing Devices (LCD)



Pedestrian Rail

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Index 102-600 Sheet 11
Longitudinal Channelizing Devices (LCD)



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 1/4" 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.

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Index 102-600 Sheet 11
Longitudinal Channelizing Devices (LCD)

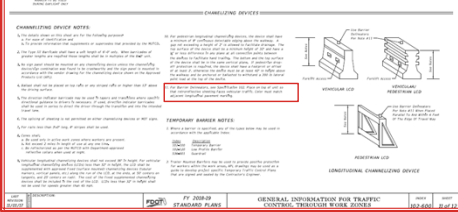


Pedestrian Wall

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Index 102-600 Sheet 11
Longitudinal Channelizing Devices (LCD)

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.



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Index 102-600 Sheet 12
Retroreflective Raised Pavement Markers

Shall be used as a supplement to:

- All lane lines
- Edgelines in transition and approach areas
- Edge lines of gore areas



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Index 102-600 Sheet 12
Raised Pavement Markers

Typical spacing shall be:

- Tangent Sections
 - 40 foot centers
- Approach and Transitions
 - 5 foot centers



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