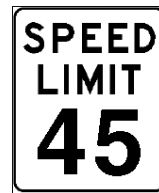


# Berrien County Road Commission Traffic Sign Policy

(Operations Policy No. 2)



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Berrien County Road Commission



**Author:**

Michael Juengling  
Traffic Safety Supervisor  
Berrien County Road Commission  
[www.bcroad.org](http://www.bcroad.org)

**Berrien County Road Commission Advisory Committee:**

Louis Csokasy, Managing Director  
Brian Berndt, County Roadway Engineer  
August Zielke, Road Commission Chairman  
Jess Minks, Road Commissioner

**Prepared for:**

Berrien County Road Commission  
2860 E. Napier Avenue  
Benton Harbor, MI 49022

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## 1. PURPOSE AND BACKGROUND

The purpose of this policy is to establish uniformity in the installation and maintenance of traffic signs on the Berrien County Road Commission roadway system. This policy recognizes that the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) is the standard for all traffic control devices on all public roads in Michigan and therefore all traffic control devices on the Berrien County roadway system shall conform to its standards and specifications as specified in the Michigan Vehicle Code, Public Act 300 of 1949, Section 257.608. The purpose of this policy is to describe typical applications and procedures related to placement of traffic signs on Berrien County Road Commission roadways.

This policy officially recognizes the rule in the MMUTCD that establishes minimum retro-reflectivity levels for traffic signs and describes how Berrien County Road Commission achieves compliance.

It is in the interest of Berrien County Road Commission and the public to prevent the excessive use of traffic signs on the county roadway system. A conservative use of traffic signs reduces maintenance costs and improves the effectiveness of those remaining signs. It is the goal of the Berrien County Road Commission to limit the use of traffic signs to those that:

1. *Fulfill a need;*
2. *Command attention;*
3. *Convey a clear, simple meaning;*
4. *Command respect from road users; and*
5. *Give adequate time for proper response.*

Eliminating unnecessary signage reduces sign clutter, lowers maintenance costs and improves traffic safety for the traveling public.

## 2. POLICY STATEMENT

This policy provides standards and guidance for Berrien County Road Commission employees to judiciously install and maintain traffic signs. All traffic signs on the Berrien County Road Commission roadway system shall conform to the MMUTCD. Traffic signs not required to be installed by the MMUTCD shall not be installed on the Berrien County Road Commission roadway system unless specified in this Policy, or authorized by the Traffic Safety Supervisor or County Highway Engineer. Permanent signage is not to be placed by the public within the public road right of way. Temporary signage erected by the public, such as political signs, garage sale signs, real estate signs, etc. are permitted provided the following conditions are met: permission from the property owner has been obtained, the sign does not block vision of motorists, the sign does not contain a vulgar or hateful message, the sign does not cause a general distraction or create a nuisance. The Road Commission may remove any sign within its right of way without prior notice to the owner of the sign.

### **3. SIGN RETROREFLECTIVITY MANAGEMENT METHOD**

The Berrien County Road Commission shall use the Blanket Replacement method for maintaining minimum retroreflectivity levels for traffic signs. The MMUTCD, Section 2A.08, describes this method as follows:

*“All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest life material used on the affected signs.”*

#### **Guidance**

Roadway segments that are repaved or reconstructed should have priority for traffic sign replacement. The Traffic Safety Supervisor should prioritize other roadway segments based upon the need, budget or other special circumstances.

The replacement of traffic signs shall be based upon the expected life of sign sheeting as determined by the manufacturer’s warranty period or as documented by an engineering study. The replacement interval is not dependent on the traffic sign location or orientation.

### **4. TRAFFIC SIGN MANAGEMENT**

The Berrien County Road Commission shall use a sign inventory (i.e. RoadSoft) to track all traffic signs on the county roadway system.

#### **Guidance**

The sign inventory should be used to implement the sign replacement program for each roadway segment.

### **5. TRAFFIC SIGN STANDARDS AND GUIDANCE**

This section describes standards and guidance for sign sheeting, sign posts and sign usage.

#### **5.1. Sign Sheeting**

Traffic sign sheeting shall meet the minimum sheeting standards of the MMUTCD and be approved by the Traffic Safety Supervisor.

## 5.2. Sign Posts

All new traffic sign posts shall meet the requirements of the MMUTCD, Section 2A.21, the NCHRP Report 350, the Michigan Standard Specifications for Construction and be approved by the Traffic Safety Supervisor.

### Guidance

New sign posts should be used for signs installed and/or replaced on roadway segments that have been reconstructed. For all other roadway segments, the ground and riser post should be inspected and replaced as necessary.

## 5.3. Regulatory Signs

Information about Regulatory signs is provided in Chapter 2B of the MMUTCD.

### 5.3.1. STOP Sign (R1-1)



The STOP sign shall be installed and maintained at all county roadway intersections with publicly maintained roadways. The STOP sign configuration should be approved by the Traffic Safety Supervisor.

The STOP sign shall NOT be installed for any private roadway that intersects a county roadway unless approved by a local Township Supervisor. A blue street name sign with white lettering (see section 5.5.3) shall also be installed. The Township shall pay all costs associated with this type of installation. The Berrien County Road Commission will not maintain these signs once installed unless requested to do so by the Township.

The STOP sign shall not be installed within county roadway right-of-way at private or public entrances for private or government facilities unless approved by the Traffic Safety Supervisor. STOP signs that are approved at these locations shall be maintained by the property owner.

A multi-way stop installation shall be based upon an engineering study and meet warrants as set by the MMUTCD.

### Guidance

The Michigan Department of Transportation (MDOT) is responsible for the installation and maintenance of STOP signs at all US/State Trunk Roadway and county roadway intersections.

### 5.3.2. YIELD Sign (R1-2)



The YIELD sign shall be installed and maintained when approved by the Traffic Safety Supervisor.

### 5.3.3. ALL-WAY Plaque (R1-3P)



The ALL-WAY plaque shall be installed and maintained for every all-way stop intersection.

### 5.3.4. Speed Limit Sign (R2-1)

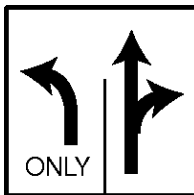


The Speed Limit sign shall only be installed and maintained for authorized speed zones having an approved Traffic Control Order (TCO) issued by the Michigan State Police. Speed Limit signs shall not be installed for statutory speed limits unless authorized by the Traffic Safety Supervisor (as set forth in Michigan Vehicle Code Section 257.629). A Speed Limit sign shall be installed whenever the speed limit changes, including when entering a statutory (i.e. prima facie) speed limit area.

#### Guidance

Speed zones are established by the Michigan State Police, The Berrien County Road Commission and the local Township authorities. The Berrien County Road Commission Traffic Safety Supervisor is responsible to submit requests to authorize, change or revoke speed zones. Contact the Berrien County Road Commission Traffic Safety Supervisor to inquire about established speed zones.

### 5.3.5. Advance Intersection Lane Control Signs (R3-30 Series)



The Advance Intersection Lane Control sign shall be installed and maintained at all signalized intersections when approved by the Traffic Safety Supervisor.

### 5.3.6. No Parking and Clear Vision Area (R7 and R8 Series)



The No Parking sign shall only be installed and maintained for zones where parking has been restricted by a TCO from the Michigan State Police or by Road Commission resolution. The

Clear Vision Area sign shall be installed when authorized by the Traffic Safety Supervisor.

### 5.3.7. Traffic Signal, Pedestrian Actuation Signs (R10 Series)



This sign shall be installed and maintained when approved by the Traffic Safety Supervisor.

### 5.3.8. Road Closed Signs (R11 Series)



The Road Closed sign (R11-2) shall be used when a road is closed to all traffic except authorized vehicles (i.e. construction equipment). The Road Closed to Thru Traffic sign shall be used when through traffic is not permitted or where local traffic is permitted for some distance beyond the sign until the point of closure. Emergency road closures shall use a Road Closed sign placed upon a Type III barricade with at least one working amber light in flash mode.

### 5.3.9. Weight Limit Signs (R12-1 through R12-5)



The Weight Limit signs shall be installed and maintained when approved by the Traffic Safety Supervisor or County Highway Engineer.

### 5.3.10. Bridge and Structure Weight, Width and Height Restriction Signs (R12-1a)



The Bridge and Structure Weight Restriction signs shall be installed and maintained for all restricted bridges, as close to the restricted bridge or structure as possible. The ON BRIDGE AHEAD sign shall be installed with the Weight Restriction sign, in advance of the restricted bridge or structure, at the nearest intersections approaching the restriction.

### Guidance

A map or listing of restricted bridges can be obtained from the Berrien County Road Commission office or on the Berrien County Road Commission web site.



### 5.3.11. No Thru Trucks



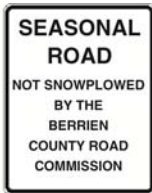
The No Thru Trucks sign shall be installed and maintained for all roads restricting through traffic by commercial vehicles. A resolution must first be passed by the Berrien County Road Commission Board of Commissioners before installation of these signs. A map and listing of restricted roads is available at the BCRC office or on the BCRC web site.

### 5.3.12. Seasonal Load and Speed Restrictions (i.e. Frost Laws)



The Seasonal Load and Speed Restrictions in Effect sign shall be installed and maintained when seasonal load and speed restrictions (i.e. frost laws) are in effect. Placement of these signs shall be determined by the Traffic Safety Supervisor. A map and list showing All-weather and seasonally restricted roads is available at the BCRC office or on the BCRC web site.

### 5.3.13. Seasonal Road



The Seasonal Road sign shall be installed and maintained on roads not maintained during winter months (typically November – April). A resolution by the Board of Road Commissioners is required before posting a road as a seasonal road. A map showing seasonal road locations is available at the BCRC office or on the BCRC web site.

### 5.3.14. Grade Crossing (Crossbuck) Sign (R15-1)



The railroad authority is responsible for the installation and maintenance of the Crossbuck sign at signalized grade crossings. The Road Commission will install and maintain the Railroad Crossing sign at un-signalized grade crossings.

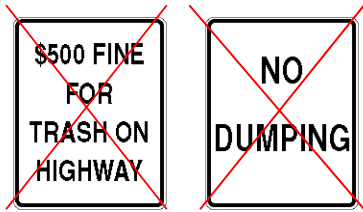
### 5.3.15. Ordinance Signs



Ordinance signs displaying County or Township ordinances shall be installed and maintained when approved by the Traffic Safety Supervisor. The ordinance displayed on the sign shall only apply to traffic operations. A Township shall be responsible for the cost of material to fabricate and install an ordinance sign. When the sign is due for replacement or is damaged, as determined by Berrien

County Road Commission, the Township shall be responsible for the cost of material and labor to fabricate and install the new sign.

### 5.3.16. Other Regulatory Signs



All other regulatory signs not required to be installed by the MMUTCD, authorized by this Policy or the Traffic Safety Supervisor shall NOT be installed or maintained.

### 5.3.17. Berrien County Road Commission Regulatory Sign Usage Summary

Standard (Shall)	Conditional (Approved by Traffic Supervisor)
STOP (R1-1)	YIELD (R1-2)
ALL-WAY (R1-3P)	Weight Limit (R12-1 thru R12-5)
Speed Limit (R2-1)	Ordinance Signs
Intersection Lane Control (R3-7)	Clear Vision (R8-3a)
No Parking (R7 Series)	
Bridge and Structure Restriction (R12 Series)	

## 5.4. Warning Signs

Information about Warning signs is provided in Chapter 2C of the MMUTCD.

### 5.4.1. Horizontal Alignment Signs (W1-1 through W1-5, W1-10 Series)



A road segment shall have a Ball Bank test (see appendix) performed on each horizontal curve to obtain the advisory speed value(s) at the time a sign inventory is completed.

#### Guidance

A Ball Bank test is performed by using a slope meter mounted in a vehicle. See the Appendix for testing procedures.

Horizontal Alignment signs shall be installed in accordance with the guidance shown below.

The nature of the county gravel road system, in terms of the cross-section elements and surface condition, present unique conditions that are variable through time to the driver and not

normally encountered on the paved county roadway system. As such, general operating speeds on gravel roads are less than on paved roads. This suggests the application of evaluation criteria of horizontal alignment warning signs should match the general operating speed. Therefore, Berrien County has determined that it shall utilize a safe and reasonable operating speed of 35 mph for the selection of horizontal warning signs on gravel roads instead of the established speed limit of 55 mph as per Michigan Public Act 300 of 1949 Section 257.627 and 257.628. It should be noted the MMUTCD does not establish a standard to install horizontal alignment warning signs on roads with an average annual daily traffic (AADT) of less than 1,000 vehicles per day.

### **Guidance**

Selection of the following Horizontal Alignment signs should use the following criteria:

Turn sign (W1-1): One change in horizontal alignment requiring an advisory speed of 30 mph or less.

Curve sign (W1-2): One change in horizontal alignment requiring an advisory speed of 35 mph or greater. If advisory speed is equal to speed limit of roadway, an advisory panel is not necessary.

Reverse Turn sign (W1-3): Two turns that meet the criteria for a Turn sign and are connected by a tangent < 600 feet in length.

Reverse Curve sign (W1-4): Two curves that meet the criteria for a Curve sign and are connected by a tangent < 600 feet in length.

Winding Road sign (W1-5): Three or more turns or curves that meet the criteria for a Turn or Curve sign and are connected by tangents < 600 feet in length. The Advisory Speed Plaque (W13-1P) shall use the lowest advisory speed for all curves or turns covered by the sign.

Combination Horizontal alignment/intersection sign (W1-10): Used where an intersection occurs at or near a turn or curve.

#### **5.4.2. One-Direction Large Arrow Sign (W1-6)**



The One-Direction Large Arrow sign shall be installed and maintained when a Turn sign (W1-1) or Reverse Turn sign (W1-3) is installed. This sign may also be installed when a Curve sign (W1-2), Reverse Curve sign (W1-3) or Winding Road sign (W1-5) is installed. Installation will be based on crash history and traffic volume or at the discretion of the Traffic Safety Supervisor.

### 5.4.3. Two-Direction Large Arrow Sign (W1-7)



The Two-Direction Large Arrow sign may be installed and maintained at a “T” intersection when approved by the Traffic Safety Supervisor. Crash history is one factor used in deciding when this sign is needed.

### 5.4.4. Chevron Alignment Sign (W1-8)



The Chevron Alignment sign may be installed at the discretion of the Traffic Safety Supervisor. Typical installation occurs if crash history indicates a need for additional signage or if space does not allow the installation of a W1-6 sign. Spacing of Chevron signs shall follow Table 2C-6 from the MMUTCD. Chevron signs shall not be installed on gravel or dead-end roads.

#### Guidance

The installation of Chevron signs may deviate from this Sign Policy on roads with a traffic volume less than 1,000 vehicles per day.

### 5.4.5. Cross Road and Side Road Signs (W2-1 and W2-2)



The Cross Road and Side Road sign may be used in advance of an intersection to indicate the presence of an intersection and the possibility of turning or entering traffic. An advance name panel (W16-8P) should be used if possible (see 5.4.31).

### 5.4.6. Advance Traffic Control Sign – Stop Ahead (W3-1)



The Advance Traffic Control (Stop Ahead) sign shall be installed and maintained in advance of all STOP signs on non-dead-end, paved roads in rural areas. The Stop Ahead sign shall be installed and maintained in advance of all STOP signs in urban areas or on rural dead-end roads when approved by the Traffic Safety Supervisor. The Stop Ahead sign is typically not used on subdivision or gravel roads unless crash history or limited sight distance indicates a need for installation of the Stop Ahead sign.

#### Guidance

The Traffic Safety Supervisor should evaluate the need to install a Stop Ahead sign in urban areas or on rural dead-end roads by considering the available stopping sight distance to the STOP sign and available space to install the Stop Ahead sign.

#### 5.4.7. Reduced Speed Limit Ahead Sign (W3-5)



The Speed Reduction sign shall be installed and maintained when the following criteria are satisfied:

##### Condition A

The W3-5 sign shall be used in advance of an authorized speed zone of 45 mph or less if leaving a segment with the statutory speed limit (See Michigan Vehicle Code Section 257.627 and 257.628 for information on statutory speed limits).

##### Condition B

The W3-5 sign shall be used in advance of a lower authorized speed zone when leaving a segment with a higher authorized speed limit that is at least 15 mph greater than the lower speed zone or when approved by the Traffic Safety Supervisor.

#### 5.4.8. Lane Ends Signs (W4-2 and W9-2)



The Lane Ends Symbol and Merge signs shall be installed and maintained when there is a reduction in the number of traffic lanes in the same direction of travel.

#### 5.4.9. CROSS TRAFFIC DOES NOT STOP Plaque (W4-4P Series)



The CROSS TRAFFIC DOES NOT STOP plaque shall be installed and maintained when approved by the Traffic Safety Supervisor. Crash history is typically used to decide when this sign is warranted

#### 5.4.10. ROAD NARROWS and NARROW ROAD (W5-1 Series)



The ROAD NARROWS sign shall be installed and maintained where road pavement width (including paved shoulders) significantly changes along a road segment. The NARROW ROAD sign may be used when approved by the Traffic Safety Supervisor. A speed advisory plaque may also be used.

**5.4.11. NARROW BRIDGE Sign (W5-2)**



The NARROW BRIDGE sign shall be installed and maintained in advance of all bridges or culverts having a two-way roadway clearance width less than 19 feet but more than 17 feet as per Michigan State Statute 254.20

**5.4.12. ONE LANE BRIDGE Sign (W5-3)**



The ONE LANE BRIDGE sign shall be installed and maintained in advance of all bridges or culverts having a two-way roadway clearance width 17 feet or less as per Michigan State Statute 254.20

**5.4.13. Hill Sign (W7-1, W7-1a)**



The Hill sign shall be installed and maintained when approved by the Traffic Safety Supervisor.

**5.4.14. Hill Blocks View Sign (W7-6)**



The HILL BLOCKS VIEW sign may be used in advance of a crest vertical curve to advise road users to reduce speed as they approach and traverse the hill as only limited sight distance is available. This sign should only be installed when past crash history warrants its installation and receives approval by the Traffic Safety Supervisor

**Guidance**



The HIDDEN DRIVE sign shall no longer be used. This sign is not in the MMUTCD and no guidelines exist for its installation. Studies have shown that this type of sign does not alter driver behavior and gives a false sense of security to the driveway user (see references).

#### 5.4.15. BUMP and DIP Signs (W8-1, W8-1a, W8-1b, W8-2)



Upon notification to the Traffic Safety Supervisor of a hazardous bump or dip on the county roadway system, the Traffic Safety Supervisor will investigate and determine if a BUMP or DIP sign should be installed. If approved by the Traffic Safety Supervisor, the BUMP or DIP sign shall be installed and maintained.

#### Guidance

The Traffic Safety Supervisor should review each location where a BUMP and DIP sign are installed periodically and determine if the BUMP or DIP signs are still justified. If not justified, the BUMP or DIP sign should be removed.

#### 5.4.16. PAVEMENT ENDS Sign (W8-3)



The PAVEMENT ENDS sign shall be used where a paved surface changes to a gravel or earth surface. If the pavement surface change occurs where a stop or 90 degree turn exists then the PAVEMENT ENDS sign is not necessary.

#### 5.4.17. ROUGH ROAD Sign (W8-8)



The ROUGH ROAD sign shall be used to warn motorists of an approaching rough section of roadway. No Speed Advisory plaque (W13-1P) will be posted since conditions may vary widely.

#### 5.4.18. Pedestrian Warning Sign (W11-2 and W16 Series)



The Pedestrian Warning sign shall be installed and maintained when approved by the Traffic Safety Supervisor. When used at a crossing, the Pedestrian Warning sign shall be supplemented with a diagonal downward pointing arrow (W16-7P)

plaque showing the location of the crossing, regardless of the presence of crosswalk markings. The crossing location shall be preceded by a Pedestrian Warning sign supplemented with an AHEAD plaque (W16-9P).

### Guidance

The Traffic Safety Supervisor should complete an engineering study to determine if a pedestrian crosswalk is justified. Typically, a 30 inch, neon yellow Pedestrian sign is used when speed limits are 40 mph or lower or space does not allow for a larger sign. The 36 inch, yellow-green Pedestrian signage should be used on roadways with a speed limit of 45 mph or greater.

#### 5.4.19. Deer Crossing Sign (W11-3)



The Road Commission recognizes the significant danger that deer pose to the traveling public on County roads. However, due to the random nature of deer behavior and changing crossing locations, the Road Commission will not install or maintain Deer Crossing signs unless recommended by the Traffic Safety Supervisor.

#### 5.4.20. Farm Equipment Sign (W11-5)



The Farm Equipment sign shall not be installed or maintained unless crash history indicates a problem location. Installation of this sign is subject to the approval of the Traffic Safety Supervisor.

#### 5.4.20. Horse Crossing Sign (W11-7)



The Horse Crossing sign shall only be used where a designated equestrian trail crosses a County Roadway or where a riding stable (open to the public) must have members travel along a portion of a County Roadway to reach an equestrian trail or riding area. This sign is not intended to designate owners of horses or where horse owners may choose to ride within the County Road right of way.

#### 5.4.21 Horse and Buggy Sign (W11-14)



The Horse and Buggy sign shall only be used for a horse and buggy vehicle commonly used for transportation, as in the case of the Amish. This sign is not intended to warn of recreational use by a horse and buggy on County Roads.



#### 5.4.22. Snowmobile Crossing Warning Sign (W11-6)

The Berrien County Road Commission shall not sign for snowmobile crossing areas.

#### 5.4.23. Fire Station Warning Sign (W11-8)



The Fire Station Warning sign shall be installed in advance of an official Fire Station when approved by the Traffic Safety Supervisor. A Fire Department may wish to install a dynamic flashing Fire Station Warning sign that flashes based upon activity at the Fire Station. The Fire Department shall be responsible for the purchase and maintenance costs of the flashing beacon and sign. The sign sheeting shall meet the minimum sheeting standards of the MMUTCD and be approved by the Traffic Safety Supervisor. A formal letter of agreement between the Berrien County Road Commission and the Fire Department shall be executed prior to the installation of a Fire Station Warning sign with flashing beacon.

#### Guidance

The formal request to install a Fire Station flashing warning sign should be in the form of a letter from the Fire Department. A flashing sign includes the sign panel and reflective sheeting. The flashing sign should be included in the Berrien County Road Commission sign inventory to track when the life of the sheeting exceeds the sheeting warranty life.

#### 5.4.24. Truck Crossing Warning Sign (W11-10)



The Truck Crossing Warning sign shall be installed and maintained when approved by the Traffic Safety Supervisor.

#### 5.4.25. Golf Cart Crossing Warning Sign (W11-11)



The Golf Cart Crossing Warning sign shall be installed and maintained when approved by the Traffic Safety Supervisor. This sign should only be installed when a painted crossing is present.

**5.4.26. Bicycle/Pedestrian and TRAIL CROSSING Sign (W11-15, W11-15a)**



The Bicycle/Pedestrian and TRAIL CROSSING signs shall be installed and maintained when approved by the Traffic Safety Supervisor.

**5.4.27. Low Clearance Signs (W12-2, W12-2a, W12-X2)**



The Low Clearance sign shall be installed and maintained where the clearance of a bridge or structure is less than 13 feet 6 inches.

**5.4.28. Advisory Speed Plaque (W13-1P)**



The Advisory Speed Plaque shall be installed and maintained when specified by this Policy, the MMUTCD or when approved by the Traffic Safety Supervisor.

**5.4.29. DEAD END or NO OUTLET Sign (W14-1 and W14-2)**



The DEAD END sign shall be installed and maintained at the beginning of all dead end county roadways, excluding subdivision roads. The NO OUTLET sign shall be installed and maintained at the entrance to a road or road network from which there is no other exit.

**5.4.30. ROAD ENDS and End of road Signs (W14-2a and OM4-3)**



The ROAD ENDS and End of Road signs shall be installed and maintained at the termination of a County Road as determined by the Traffic Safety Supervisor. The use of these signs on subdivisions roads is optional.

#### 5.4.31. Distance and Advance Street Name Plaques (W16-2, W16-3 and W16-8 Series)



The Distance or Advance Street Name Plaque shall be installed and maintained when specified by this Policy, the MMUTCD or when approved by the Traffic Safety Supervisor.

#### 5.4.32. Supplemental Arrow Plaques (W16-5P, W16-6P)



The Supplemental Arrow Plaque shall be installed and maintained when specified by this Policy, the MMUTCD or when approved by the Traffic Safety Supervisor. Also see section 5.4.18 and 5.7.1.

#### 5.4.33. Other Warning Signs



Warning signs that notify drivers of a nearby resident or child with a medical condition shall not be used. Signs such as these are not found in the MMUTCD and have little to no effect on driver behavior. It is the responsibility of parents and residents to realize that roadways are dedicated to motor vehicle use and a sign will not keep them or their children safe.



Warning signs for businesses shall not be installed or maintained by the Road Commission.

All other warning signs not required to be installed by the MMUTCD, authorized by this Policy or the Traffic Safety Supervisor shall not be installed or maintained.

#### 5.4.34. Berrien County Road Commission Warning Sign Usage Summary

<b>Standard (Shall)</b>	<b>Conditional (Approved by Traffic Supervisor)</b>
Horizontal Alignment (W1-1 thru W1-5, W1-10)	Cross Road and Side Road (W2-1 and W2-2)
One-Direction Large Arrow (W1-6)	Cross Traffic Does Not Stop (W4-4P Series)
Stop Ahead (W3-1)	Two-Direction Large Arrow (W1-7)
Reduced Speed Limit Ahead (W3-5)	Chevron Alignment (W1-8)
Lane Ends Symbol, Merge Left or Right (W4-2 and W9-2)	Hill Symbol and Hill Blocks View (W7-1, W7-6)
Narrow Bridge and One Lane Bridge (W5-2 and W5-3)	Bump and Dip signs (W8-1 and W8-2)
Pavement Ends (W8-3)	Rough Road (W8-8)
Low Clearance (W12-2)	Pedestrian Warning (W11-2)
Dead End and No Outlet (W14-1 and W14-2)	Fire Station Warning (W11-8)
Road Ends and End of Road (W14-2a and OM4-3)	Truck Crossing (W11-10)
Road Narrows (W5-1)	Golf Cart Crossing (W11-11)
	Bicycle/Pedestrian and Trail Crossing (W11-15 and W11-15a)
	Advisory Speed Plaque (W13-1P)
	Advance Name and Distance Plaques (W16 Series)
	Narrow Road

### 5.5. Guide Signs

Information about Guide signs is provided in Chapter 2D of the MMUTCD.

#### 5.5.1. Route Signs



The Route sign is typically not used on the county road system except for the Red Arrow Highway designation. This sign shall be installed and maintained when approved by the Traffic Safety Supervisor.

### 5.5.2. Destination Signs (D1 Series)



Upon request, destination signs shall only be installed if the following criteria are satisfied and when approved by the Traffic Safety Supervisor:

The Destination sign shall only be installed at intersections where one Primary County Roadway intersects another Primary County Roadway.

Destination signs shall only be installed for cities or villages included on the recognized list of cities and villages as shown on the Berrien County Road Commission's Act 51 Certification maps.

No more than three cities may be identified on a Destination sign. If a Destination sign is placed by request then any cost to install and maintain the sign shall be paid by the requestor. The Berrien County Road Commission shall be responsible for the cost and expense to install and maintain all other Destination signs.

### 5.5.3. Street Name Sign (D3-1)



The Street Name sign shall be installed at all county roadway intersections.

When authorized by the Traffic Safety Supervisor, a Street Name sign may be mounted above a STOP sign. The Street Name sign shall be white text on a green background for all public roads. All street names should include a designator such as Road, Avenue, Street, etc. and may be abbreviated as necessary. The letter size shall be in accordance with the MMUTCD.

#### Guidance

Berrien County Road Commission is responsible for the installation and maintenance of Street Name signs at MDOT Roadway/County Roadway intersections.



The Street Name sign shall only be installed at private roadway intersections upon request by a Township or by the Berrien County 911 Emergency Communications Director. The Berrien County Road Commission is not responsible for the maintenance of those Street Name signs installed at private roadway intersections in Berrien County. Street Name signs for private roadways shall be white text on a blue

background. The letter size shall be in accordance with the MMUTCD. Any cost associated with the installation or maintenance of the private road sign will be passed on to the sign requestor.

**5.5.4. Adopt a Road Sign**



The ADOPT A ROAD sign designates a section of County roadway that has formerly been adopted by a group or resident with the goal of keeping their section of roadway relatively free of roadside trash. For more information on the Adopt a Road program, please visit the BCRC web site.

**5.5.5. Berrien County Road Commission Guide Sign Usage Summary**

All other guide signs not authorized by this Policy or the Traffic Safety Supervisor shall not be installed or maintained.

Standard (Shall)	Conditional (Approved by Traffic Supervisor)
Red Arrow Hwy route sign	Destination (D1 Series)
Street Name Sign (public roads) (D3-1)	Street Name Sign (private roads) (D3-1)
Adopt a Road sign	

**5.6. Other Signs**

There are other signs listed in other chapters of Part 2 of the MMUTCD that require attention by this Policy.

**5.6.1. General Information Sign (I-2, I-5, I-8, etc.) – Chapter 2H**



The General Information sign shall be installed and maintained upon request by an official representative of a Township or other public entity. The request shall be made in writing on official agency letterhead. The requesting agency shall be responsible for the cost of material to fabricate the sign. When the sign is due for replacement or is damaged, as determined by Berrien County Road Commission, the requestor shall be responsible for the cost of material to fabricate the new sign as well as the cost to install the sign.

**5.6.2. General Service Signs (D and R Series) – Chapter 2I to 2M**



The Berrien County Road Commission typically does not install or maintain General Service Signs. Upon request from an official group, director or public entity a General Service Sign or series of signs shall be installed and maintained by the Berrien County Road Commission when approved by the Traffic Safety Supervisor. Any cost to purchase, fabricate and install the signage will be passed on to the person(s) or entity requesting the sign(s).

**5.6.3 Berrien County Road Commission General Information/Service Sign Usage Summary**

All other information/service signs not authorized by this Policy or the Traffic Safety Supervisor shall not be installed or maintained.

Standard (Shall)	Conditional (Approved by Traffic Supervisor)
	General Information Sign (I Series)
	General Service Sign (D Series)

**5.7. School Area Signs**

**5.7.1. School Zone Sign (S1-1) and Plaques (W16-7P, W16-9P)**



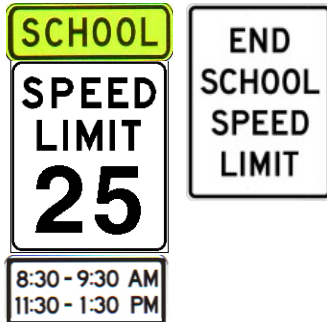
The School Zone Sign shall be installed in advance of a school when approved by the Traffic Safety Supervisor. The AHEAD and Down Arrow Plaques shall be used in conjunction when a painted crosswalk is present.

**5.7.2. School Reduced Speed Ahead Sign (S4-5)**



The School Reduced Speed Ahead sign shall be used in advance of a School Zone Speed Limit and shall designate the new speed limit in effect during times shown on School Times plaque (S4-1P).

**5.7.3. School Speed Limit Assembly (S4-3P, R2-1, S4-1P) and END SCHOOL SPEED LIMIT Sign (S5-3)**



The School Speed Limit Assembly and END SCHOOL SPEED LIMIT sign shall be installed and maintained when approved by the Traffic Safety Supervisor. The times and speed limit listed must follow the guidelines set forth in the Michigan Vehicle Code Section 257.627a.

**5.7.4. Berrien County Road Commission School Area Sign Usage Summary**

Standard (Shall)	Conditional (Approved by Traffic Supervisor)
	School Zone Signs (S1-1, W16-7P, W16-9P)
	School Speed Limit Assembly & END SCHOOL SPEED LIMIT (S4-5, S4-3P, R2-1, S4-1P)

All other school area signs not authorized by this Policy or the Traffic Safety Supervisor shall not be installed or maintained.

**5.8. Railroad-Roadway Grade Crossing Signs**

**5.8.1. Grade Crossing Advance Warning Signs (W10 Series)**



The Railroad Crossing Warning sign (W10-1) shall be installed and maintained in advance of all railroad crossings, unless otherwise noted by the MMUTCD. All other Railroad Crossing Warning signs (W10 Series) shall be installed and maintained when approved by the Traffic Safety Supervisor.



**Guidance**

A BUMP sign may be installed for a rough railroad crossing when approved by the Traffic Safety Supervisor. A speed advisory plaque (W13-1) may also be installed under the BUMP sign.



**5.8.2. Low Ground Clearance Roadway-Rail Grade Crossing Sign (W10-5)**



The Low Ground Clearance Roadway-Rail Grade Crossing sign shall be installed and maintained when approved by the Traffic Safety Supervisor. A map (Commercial Driver’s Map) showing these locations can be found at the BCRC office or on the BCRC web site.

**Guidance**

The Low Ground Clearance Roadway-Rail Grade Crossing sign is generally recommended by the Berrien County Road Commission Weighmaster.

**5.8.3. Grade Crossing Advance Warning Signs (W10 Series)**



The Grade Crossing Advance Warning signs shall be installed and maintained when approved by the Traffic Safety Supervisor.

**5.8.4. BCRC Railroad-Roadway Grade Crossing Sign Usage Summary**

<b>Standard (Shall)</b>	<b>Conditional (Approved by Traffic Supervisor)</b>
Railroad Crossing Warning Sign (W10-1)	Low Ground Clearance Grade Crossing Sign (W10-5)
Grade Crossing Advance Warning Sign (W10 Series)	Bump Sign (W8-1)

All other railroad-roadway grade crossing signs not authorized by this Policy or the Traffic Safety Supervisor shall not be installed or maintained.

## 5.9. Traffic Signal Signs

All Traffic Signal Signs (R10 Series) shall be installed and maintained when approved by the Traffic Safety Supervisor.

## 5.10. Markers

### 5.10.1. Type 3 Object Marker (OM3 Series)



The Clearance Marker shall be installed on all bridge abutments and culverts with above grade structures. Standard placement is on each corner of the bridge deck or culvert headwalls.

### 5.10.2. End of Roadway Marker (OM4-3)



The End of Road Marker shall be installed and maintained when approved by the Traffic Safety Supervisor (see section 5.4.30).

### 5.10.3. Delineators



Delineators shall consist of a yellow, white or green 4 inch reflector mounted on a 7 foot support. Delineators are installed with green reflectors to assist Road Commission employees in finding drains and culverts. White and yellow reflectors are placed to mark curbs and other obstructions for snow plow drivers. White reflectors shall be placed so as to be seen closest to the side of the road in the direction of travel. Yellow reflectors are placed on the opposite side of the road from the direction of travel.

#### 5.10.4. Berrien County Road Commission Markers Usage Summary

<b>Standard (Shall)</b>	<b>Conditional (Approved by Traffic Supervisor)</b>
Type 3 Object (OM3)	Delineators (White, Yellow, Green)
End of Roadway Marker (OM4-3)	

All other markers not authorized by this Policy or the Traffic Safety Supervisor shall not be installed or maintained.

### 6. POLICY IMPLEMENTATION

Upon the adoption of this policy by the Berrien County Board of Road Commissioners, the policy shall be implemented as signs are replaced under the sign maintenance blanket replacement schedule. Signs may also be removed as needed when approved by the Traffic Safety Supervisor.

When a county roadway segment is scheduled for the replacement of its traffic signs:

- Traffic signs that are specified to be installed by this Policy shall be retained
- Traffic signs subject to the approval of the Traffic Safety Supervisor shall be reviewed by the Traffic Safety Supervisor to determine if they shall be retained or removed
- Traffic signs not specified to be installed by this Policy shall be removed

### 7. MISSING AND DAMAGED SIGNS

The Berrien County Road Commission will seek recovery of damages for any signs damaged by the motoring public. Typically, a crash report must be issued stating that Road Commission property (i.e. a road sign) was damaged in the crash. The at-fault driver's insurance company will be contacted and a bill for sign replacement cost and installation will be issued. If the at-fault driver has no insurance then a bill will be sent directly to that driver.

#### 7.1. Critical Signs

Upon notification to the Berrien County Road Commission by the Berrien County Road Commission Sheriff's Department, Berrien County Road Commission 911 Emergency Communications or other official police agency, the following signs are given highest priority (same day) for sign replacement or temporary sign placement:

STOP Sign (R1-1) and YIELD Sign (R1-2)

The following signs shall be given the next highest priority and are replaced as soon as possible:

Curve Signs (W1 Series), Railroad Crossing Warning Sign (W10-1) and Stop Ahead Sign (W3-1)

## **7.2. Other Traffic Signs**

Upon notification to the Berrien County Road Commission, all other traffic signs should be replaced as soon as possible during the normal course of business.

## **8. SPECIAL EVENT SIGNING**

The Berrien County Road Commission shall not perform special event signing unless authorized by the Traffic Safety Supervisor

## **9. SIGN PROGRAMS**

The following sign programs are made available to the public:

### **9.1. Adopt-A-Road Signing Program**



The Berrien County Road Commission maintains the Adopt-A-Road program. Roadway segments are available on a first-come, first-serve basis. Information regarding this program is available on the Berrien County Road Commission web site.

### **9.2. Neighborhood Watch Signs**

The Berrien County Road Commission does not install or maintain Neighborhood Watch Signs. These signs may be installed at the request of a Township Supervisor. All costs associated with the purchase and installation of these signs will be paid for by the Township.

### **9.3. Supplemental Guide Signing Programs**

The MMUTCD and the Berrien County Road Commission Sign Policy allow for supplemental guide signs to be installed on the county roadway system. The Berrien County Road Commission will provide signs at no cost to Hospitals if requested. All other Supplemental Guide Signs shall be approved by the Traffic Safety Supervisor and all costs associated with the sign and its installation shall be paid for by the requestor. Installation of these signs shall be by Berrien Road Commissions employees only.

#### **9.4. Sale of Traffic Signs**

The Berrien County Road Commission will only sell traffic signs to other governmental agencies. All other institutions and citizens must purchase traffic signs from other sources such as a vendor.

### **10. DEVIATION FROM POLICY AND STANDARDS**

This Policy does not supersede the MMUTCD; Association of American State Roadway Transportation Officials (AASHTO) "Green Book" titled A Policy on Geometric Design of Roadways and Streets; or other AASHTO or MDOT guidelines, manuals and policies.

This Policy provides Standards, Guidance, and Options for design and application of traffic control devices. The Berrien County Road Commission reserves the right to supersede any or all of this Policy when safety concerns dictate. The Traffic Safety Supervisor shall review the proposed deviation. If the Traffic Safety Supervisor approves the deviation, the Traffic Safety Supervisor shall submit the recommended deviation to the County Highway Engineer for final approval. The approved deviation shall be documented by the Traffic Safety Supervisor.

### **11. REVIEW AND MODIFICATION OF POLICY**

This Policy should be reviewed on a regular basis to ensure that the standards and guidance contained therein reflect future revisions of the MMUTCD; AASHTO guidelines, manuals and policies, and Traffic Safety convention.

# Appendix

- Ball Bank Test Procedure
- References And Definitions

# **Ball Bank Test Procedure**

## **Slope Meter**

The slope meter is an instrument used to determine the comfortable speed that a passenger vehicle can travel around a curved roadway section. This instrument consists of a steel ball in a sealed, curved glass tube filled with an alcohol solution. The tube, bent on the arc of a circle, is graduated from 0 to 20 degrees, both to the left and right of the zero point. The tube is enclosed in a metal case. When mounting the ball-bank indicator, the vehicle should be in a stationary level position. The speedometer of the test vehicle must be accurately calibrated and the tires uniformly inflated. The indicator should be mounted vertically, with the steel ball at the zero point. All occupants who are to be in the vehicle when the observations are made should be in the same position when mounting or checking the instrument as when making the test drive. This is necessary because changing the position of a passenger or the load in the test vehicle may cause the vehicle body to tilt to the right or left. This tilting action or body roll will cause a change in the slope meter readings.

## **Procedures for Testing a Curve**

The use of the slope meter or electronic meter to measure the comfortable speed on curves involves the efforts of two people--one to drive and the other to observe the meter. The following procedures should be followed in each test:

1. The curve under observation should first be appraised by the driver to determine the approximate safe speed which can be maintained.
2. The driver should then conduct the first test at a speed 10 mph below the appraised speed.
3. Each succeeding test should be made at a speed 5 mph greater than the preceding test, until the meter has reached the maximum degree value for that speed range. These values are shown on the Ball Bank Test Worksheet.
4. On each test, the driver should attain the trial run speed at a distance of at least 1/4 mile from the beginning of the curve.
5. The course throughout the curve should be maintained precisely in the center of the lane and at uniform speed. Using a vehicle equipped with cruise control aids in this process.
6. The observer shall note carefully the position of the ball on the slope meter or the display on an electronic meter at the approximate center of the curve and shall record the reading.

## **Curve Study Sheet**

It is important that all information be recorded as indicated on the Ball Bank Test Worksheet. See the attached worksheet below. Trial runs should be made in each direction. The comfortable speed for the curve is the exact speed which swings the ball specified degree value off center on a slope meter or as displayed on an electronic meter. Any speed which causes the



ball to move more than the specified degree value away from the zero position is considered uncomfortable to the driver and possibly unsafe at higher speeds.

<b>Ball Bank Test Worksheet</b>		
<b>Curve Location</b>		Date:
Road Number:		Inspector:
Road Name:		
Beginning Ref. Point:		
Ending Ref. Point:		
<b>Measurements</b>		
Trial	Speed	Reading
1		
2		
3		
4		
5		
6		
Speed Limit:		
Advisory Speed:		
Difference:		
Curve Direction (Circle)	Right / Left	
<b>Traditional Ball Bank Indicator Evaluation Criteria</b>		
Speed Range	Maximum Degree Value	
≤ 20 mph	16 degrees	
25 – 30 mph	14 degrees	
≥ 35 mph	12 degrees	
<b>Horizontal Alignment Warning Sign Selection</b>		
Sign	Criteria	Select (X)
Turn Sign (W1-1)	≤ 30 mph	
Curve Sign (W1-2)	≥ 35 mph	

## References

## References

The following references were used to draft this sign policy:

Michigan Manual on Uniform Traffic Control Devices, 2011 edition. Michigan Department of Transportation.

Michigan Vehicle Code, Public Act 300 of 1940. Michigan State Legislature

Technical Update on Children at Play and Hidden Drive Signs. The Ohio LTAP Center (<http://www.dot.state.oh.us/ltap>)

A Policy on Geometric Design of Roadways, and Streets (Green Book). 2011. American Association of State Roadway and Transportation Officials.

St. Louis County Public Works Department, St. Louis County, Minnesota, Traffic Sign Policy