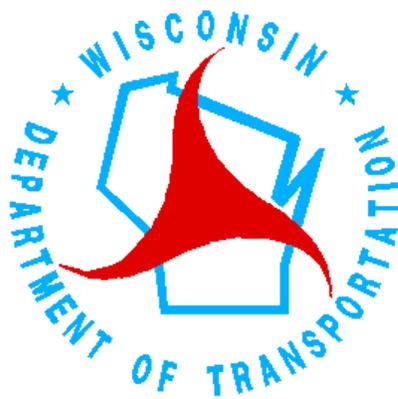




SIGNING GUIDELINES MANUAL



July 2014 Edition



Wisconsin Department of Transportation Signing Guidelines Manual

DATE: July 2, 2014

TO: Traffic and Project Development Engineers and Supervisors
Signing Coordinators and Sign Crew Chiefs
County Highway Commissioners and Signing Personnel

FROM: Bill McNary, State Traffic Engineer
Bureau of Traffic Operations

SUBJECT: DOT Signing Guidelines Manual

This manual was developed to provide guidance to improvement project inspectors as well as Department and County field and maintenance crews for the installation, service and maintenance of all types of highway signs on the State Highway network. The goal for this manual is to install signs to provide safe, understandable and efficient system of guidance to the motoring public.

These guidelines are intended to provide a framework of policies and practices for the systematic reporting and handling of sign installation, replacement or repair activities done by others under the direction of the Wisconsin Department of Transportation through its Regions. It is inherent in these guidelines that the basic thrust be to promote safety of the motorist, safety for the improvement and maintenance crews and standardization of practices toward uniform application and appearance statewide.

Improvement crews and maintenance crews will perform their operations in accordance with the Manual On Uniform Traffic Control Devices, Wisconsin Supplement of the MUTCD, Traffic Guidelines Manual and other Department policies as referenced within.

The Department recognizes these guidelines *may* require adjustments and revision as they are implemented. We encourage constructive comments for the improvement to the language and understanding for all our customers.

DESTINATION SHIPPING INFORMATION & NOTIFICATION ADDRESSES

“Ship To” Location Address	Primary Person to Notify (Phone)	Secondary Person to Notify (Phone)	Acceptable Delivery (Times)
WisDOT Central Sign Shop 3609 Pierstorff St. Madison, WI 53704	Bob Hunt (608) 246-3270	Matt Rauch (608) 246-5305 (desk) (608) 516-6319 (cell)	(M-F) 7:00am - 3:00pm
SE Region West Allis Sign Shop 935 S. 60 th St. West Allis, WI 53214	Dennis Newton (414) 750-0257	Gary Wolf (414) 266-1164	(M-F) 7:00am - 2:00pm
NE Region Green Bay Sign Shop 944 Vander Perren Way Green Bay, WI 54304	Mike Frewerd (920) 492-5653	Tom Tilleman (920) 492-4135	(M-Th) 8:00am - 3:30pm No Friday Deliveries
NC Region Wis Rapids Sign Shop 2841 Industrial Street Wis. Rapids, WI 54495	Randy Dankemeyer (715) 421-8370	Greg Smith (715) 421-8009	(M-Th) 7:00am - 4:00pm No Friday Deliveries
SW Region LaCrosse Sign Shop 3550 Mormon Coulee Rd. La Crosse, WI 54601	Iver Peterson (608) 785-9060 cell (608) 792-1475	Eric Glindinning (608) 785-9909 cell (608) 792-3644	(M-Th) 7:00am – 3:30pm No Friday Deliveries
SW Region Madison Sign Shop 3601 Pierstorff St. Madison, WI 53704	Jeff Holloway (608) 246-3268	Maria Cole (608) 246-5624	(M-Th) 7:00am - 3:30pm No Friday Deliveries
NW Region Eau Claire Sign Shop 5009 USH 53 South Eau Claire, WI 54701	Steve Allard (715) 855-7671	Matt Reddy (715) 839-3786	(M-Th) 6:00am - 4:00pm No Friday Deliveries
NC Region Rhineland Sign Shop Hanson Lake Road Rhineland, WI 54501	Randy Dankemeyer (715) 421-8370	George Nicolaus (715) 421-8006	(M-Th) 6:00am - 2:00pm No Friday Deliveries
NW Region Spooner Sign Shop W7102 Green Valley Road Spooner, WI 54801	Steve Allard (715) 855-7671	Matt Reddy (715) 839-3786	(M-Th) 6:00am – 4:00pm No Friday Deliveries

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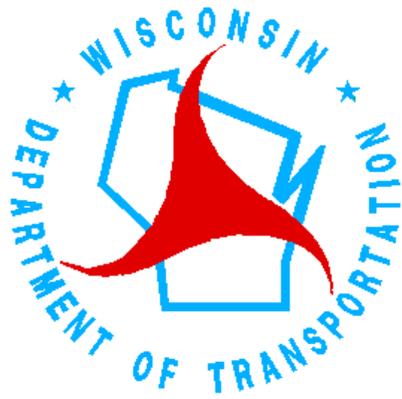
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Exhibit 2	TAM SD 36 – Eye Protection
Exhibit 3	TAM SD51 – Protective Headgear – Hard Hats
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SECTION 1

**GENERAL
SIGNING
GUIDELINES**



I. SAFETY & TRAINING

A. PERSONNEL SAFETY

All Department of Transportation (DOT) personnel are required to follow the safety policies stated in the DOT Transportation Administrative Manual (TAM). These safety policies are strongly encouraged to be followed by county and contractor personnel. This Safety Manual is located under Sub Part "E" of the TAM Manual. All personnel *should* be familiar with the important safety guidelines and policies listed below.

Safety Guidelines and Policies

Transportation Administrative Manual

TAM SD30 - Foot Protection (See Exhibit 1)

TAM SD36 - Eye Protection (See Exhibit 2)

TAM SD51 - Protective Headgear - Hard Hats (See Exhibit 3)

TAM SD57 - High Visibility Safety Apparel (See Exhibit 4)

Hazard Warning Information - Treated Wood Management (See Exhibit 5)

(Material Safety Data Sheets *should* be requested from the wood post vendor)

Vehicle Lighting Schemes (See Exhibit 6)

Traffic and Worker Safety Schemes (See Exhibits 7 through 9)

Barricades and Signs for Mainline Closures Standard Detail Drawings

(See Standard Detail Drawings 15C2-4 A through C)

Signing Guideline Pocket Manual (Currently being developed)

Flagger Handbook

B. WORKER VISIBILITY

All personnel exposed to traffic **shall** wear a reflectorized safety vest at all times while on or along the roadway. Special attention **shall** be made to make sure the vests are in good condition and still very visible. It is highly recommended that reflective safety pants be worn during nighttime hours and whenever higher worker visibility is desired. (See Exhibit 4)

C. EMPLOYEE TRAINING RECOMMENDATIONS

All agencies doing work for the DOT *should* make sure their employees are properly trained in the following areas.

1. Field Operations Awareness. DOT personnel on field assignment **shall** be instructed on the required use of safety vests, head protection and safety shoes, as well as any other Department policies and/or practices guiding field crew operations. All counties and contractor personnel **shall** also be required to use

safety vests and recommend use of head protection and safety shoes as well as any other safety devices.

2. Shop Tools. Shop personnel *should* receive proper instruction prior to using any shop power tools or power equipment such as power saws, drills, welders, chipping hammers, etc.
3. Major Equipment Operations. Personnel *should* be thoroughly trained before they attempt to operate digger derricks, forklifts, cranes, or other aerial devices.
4. Utilities Locate. All employees *should* be instructed on how to use Wisconsin Diggers Hotline One Call System.
5. Retraining. Personnel *should* receive retraining on major equipment, digger derricks, cranes, aerial devices and forklifts through on the job training and refresher courses.

D. VEHICLE SAFETY

1. Licensing. Drivers will be required to meet all State and Federal regulations pertaining to licensing and operation of State vehicles. The requirement of the Commercial Drivers License *may* apply to certain personnel.
2. Pre-trip Inspections. Vehicle operators *should* perform a pre-trip inspection each day.
 - a. The following are example items that *should* be inspected on ALL vehicles.
 - Brakes
 - Tires
 - Engine cooling system - radiator and fan belts
 - Fluid levels - engine oil, transmission fluid and radiator coolant
 - Fire extinguisher(s)
 - First aid kit
 - Back-up alarm
 - Safety warning devices (lights, signs and cones) - check for cleanliness and suitability for use in the field.
 - b. The following are example items that *should* be inspected on digger derricks, cranes and bucket trucks.
 - Winch lines
 - Boom out-of-cradle warning lights and buzzers
 - Hydraulic lines and fittings - check for leaks or loose fittings

REPAIR OF HYDRAULIC LINES TO DOT OWNED VEHICLES IS TO BE PERFORMED BY TRAINED SERVICE TECHNICIANS OR DEALER MECHANICS.

3. Equipment Inspections Equipment **shall** be inspected as required by law. The booms and buckets on digger derricks and aerial personnel buckets **shall** be inspected by a contractor specializing in the testing and inspection of this kind of equipment.

E. WORK AREA TRAFFIC CONTROL

All traffic control **shall** be in compliance with the MUTCD and the Wisconsin Supplement and Departmental policies.

1. Vehicle Warning Lights. It is necessary to provide a high degree of visibility in order to alert the motoring public of sign crew operations on and along the highway. Therefore, vehicles used in highway signing operations **shall** be equipped with at least two (2) yellow, high intensity rotating beacons, clearly visible from the front, rear and both sides of the vehicle. These beacons **shall** be placed as high as possible on each vehicle. Vehicles **shall** have all warning lights operating when stopped, or moving slowly along any highway. Warning lights *should* NOT be displayed while the vehicle is traveling at highway speeds or when traveling between jobs. See Exhibit 6 for examples of vehicle lighting schemes.
2. Work Area Schemes For the safety of the traveling public as well as workers, it is necessary to give the traveling public advance warning of conditions they are approaching. Schemes for traffic control are located in Exhibits 7 through 9 of this manual. These schemes illustrate proper vehicle placement, and the use of signing and cones in an ideal work area environment. Some conditions that *should* be considered for the quantity and placement of warning devices are listed below.
 - Traffic Volumes at the time the work is being performed.
 - Speed of the traffic.
 - Visibility. Check visibility in advance of the work area from both directions; especially around curves and over hills. Position workers and work vehicles to provide for maximum visibility.
 - Weather conditions.
 - Length of time activity will take.
 - Location of equipment and personnel.

It is important to consider all of these conditions when setting up the work area. When conditions are less than ideal, additional advance warning signs or devices *should* be added to the traffic control layouts. In some cases, the work *should* be deferred until the conditions are more favorable.

All lane closures on two lane roadways require flagging of traffic as well as advance signing and cone placement in the work area. (See Flaggers manual for proper flagging procedures. One is provided on the inside of the front cover of this manual.) Remember that all flaggers **shall** use stop/slow paddles, in accordance with the Flagging Handbook.

An encroachment into a lane of traffic *may* require cones and/or flagging. The amount of encroachment, the volume and speed of passing vehicles will determine traffic control measures required. For example, a cone *may* be sufficient to mark the point where an outrigger makes contact with the pavement outside the overall width of the truck. (See Exhibit 7 through 9)

F. PUBLIC SAFETY

When performing sign work or any activity along the highway, it is necessary to make an effort to stay out of the motoring public's way. Workers *should* park vehicles off the road as far as practical. Care *should* be taken to not block the vision of existing traffic control devices such as stop signs and signals. Workers *should* be aware of the potential for blocking the vision of motorists entering highways at crossroad intersections or driveways. Work activities *should* be performed with an assumption the motorist does not know what the workers are going to do. Preplanning the work activity minimizes confusion to the motorist and reduces the risk of creating unnecessary hazards to the public and to the crew.

G. UTILITIES

1. Utility Locates. Prior to any digging operations it is the responsibility of the crew or authorized personnel to contact Diggers Hotline. Personnel **shall** be familiar with Diggers Hotline requirements for digging.

A UTILITY LOCATE SHALL BE MADE BEFORE ANY DIGGING IS PERFORMED!

State law requires all underground facilities become members of the one call system, Diggers Hotline. The initial contact will usually be to "Diggers Hotline", which coordinates the locating of many of the utilities having underground service lines throughout the state.

Wisconsin Statutes, Section 182.0175, requires that "ANYONE" who engages in or is responsible for the preparation of plans and specifications for non-emergency excavation or demolition must provide reasonable advance notice, **NOT LESS THAN THREE (3) WORKING DAYS** prior to the start of excavation or demolition of the intent to excavate or demolish and the start date, to the owners

of the transmission facilities in and near the construction area, whose facilities *may* be affected by excavation or demolition.

The following is a five-point plan for utility locates before digging in the highway right-of-way, which covers the routine steps required by Diggers Hotline:

- a. Prepare a plan or work location sketch or drawing. Indicate the radius around the stake or lath for "MARKING INSTRUCTIONS" for the Diggers Hotline contact.
- b. At each locate site, mark with a stake or by painting on the pavement or shoulder of the highway. Use WHITE paint on the pavement where it is not possible to use a stake. White is the approved color for ribbon, flags or paint when marking sign locations for utility locates. It is recommended that the Regions use the "WDOT SIGN" ribbon when marking sign locations for utility locates.
- c. Identify the exact location by measuring the distance from the nearest intersecting street or highway. Indicate which side of the highway the locate is on.
- d. Contact Diggers Hotline to request the area to be located. Retain ticket number for a minimum of six years after work is completed. It is recommended that you keep this ticket information while borings are being done, so if you encounter a problem you have the information readily available. It is also recommended that all who are unfamiliar with Diggers Hotline practices make an initial contact with Diggers. First study the TICKET FORMAT to become acquainted with the process. Diggers Hotline has several ways to submit locate requests.
- e. Investigate the possibility of other utilities having services at the locate site.

NOTE: Utilities are required to update the Diggers maps once a year, so if you have a location with an area that looks like the ground has been disturbed, check to see if there *may* have been a new utility installed. This utility information *may* have not gotten into the computer files yet.

- Check Utility Identification List with Regional Utility Coordinator. All Regions have Utility Identification Lists available through their Utility Coordinators.
- Call other public utilities of sewer and water.
- Check with DOT electrical crews for relocations of signal or flasher cable locations.

2. Utility Damage Procedure. Damage prevention is the ultimate goal. As stated above it is essential to get clearance from utilities before doing any digging.

The following is a list of crew priorities:

- ❑ BEFORE YOU DIG, CONFIRM UTILITIES HAVE BEEN LOCATED

IF UTILITY DAMAGE OCCURS:

- ❑ CALL THE UTILITY FROM A SAFE LOCATION AS SOON AS POSSIBLE.
- ❑ CLEAR AREA IF NECESSARY.
- ❑ EXTINGUISH ALL FIRE SOURCES; BE MINDFUL OF LOSS OF LIFE.
- ❑ NOTIFY EMERGENCY SERVICES (IF NECESSARY).
- ❑ NOTIFY SUPERVISOR.
- ❑ BE AVAILABLE ON OR NEAR THE SITE UNTIL REPAIR CREW ARRIVES.

Crews *should* carry a telephone list of utilities that have lines in their area. *Should* damage occur to a utility during the course of digging, the following outlines the emergency procedures crews *should* use:

If the utility is:

a. Natural gas:

1. STOP, remove all ignition sources (turn off truck engine, all lights, all power tools or equipment) and prohibit smoking. Keep area clear of bystanders.
2. Call the local fire department or emergency services.
3. Call the affected natural gas line company. Leave a crewmember at the site to keep the area clear and to keep bystanders away.
4. Notify supervisor of damage and status.
5. Warn bystanders to stay away from site and upwind of the leak.

6. If ignition occurs, let it burn unless lives are in danger. Putting out the fire without shutting off the source of the leak *may* make the situation more dangerous.

b. Telephone, cable TV, sewer or water etc.:

1. Where cables are cut, DO NOT REACH OR LOOK INTO THE HOLE OR TOUCH THE DAMAGED LINES. Treat any line or cable as if it were live power.
2. Call utility repair service. Leave a crewmember at the site to maintain security of the area.
3. Do not back-fill or fill in the hole.
4. Notify supervisor of damage and status
5. Warn bystanders to stay clear of area

c. Overhead and Underground Electrical

1. DO NOT TOUCH LINE OR LOOK INTO HOLE. Do not touch equipment and ground at the same time. Remain on the platform if at all possible. Jump clear only in an emergency.
2. Notify utility
3. Notify supervisor
4. Warn bystanders to stay clear of area

H. PLANNING FOR SPECIAL CONDITIONS

Crews *may* encounter special problems with traffic control due to unforeseen traffic volumes or unusual sign site locations (concrete or black top shoulders or terraces, etc.). Crews *should* be prepared to deal with these or determine the best course of action relative to personal and public safety and the Department's responsibilities. Crews *should* follow the Traffic and Worker Safety Schemes as closely as possible (See Exhibits 7 through 9) particularly as they relate to lane closures.

I. MAJOR EQUIPMENT OPERATIONS

It is recommended that field operations that involve digger derricks or bucket trucks will NOT be performed with fewer than two crew persons on the job site.

Personnel operating digger derricks, bucket trucks, fork lifts and any other cranes or lifting devices *should* receive training before operating such equipment.

Signing crews using digger derricks need to be alert that bystanders or other crew personnel are clear of the area before starting and during operations.

HAVING A UTILITY LOCATE CLEARANCE DOESN'T NECESSARILY MEAN ALL DANGER HAS BEEN REMOVED.

Derrick operators must be aware of overhead lines to be certain the boom or its attachments remain the required distance away from the overhead lines.

Operators *should* remain on the derrick operator's platform during any digging or lifting operations. In the event of a contact with an electrical cable the operator is grounded to the truck. If the operator makes contact with the ground and the truck at the same time he or she *may* receive an electrical shock. Exercise additional caution when using a remote controlled digger.

Operators **shall** employ the equipment's outrigger systems before lifting the boom of derricks, buckets or cranes from the stow cradle supports.

Warning devices *should* be maintained operational to alert the operator that the boom is out of cradle. Special devices have been installed to advise the operator whenever the boom is out of cradle and the power takeoff (PTO) has been disengaged.

Digger derricks, buckets and cranes *should* NOT be moved with the boom out of cradle. These units **SHALL NOT EVER BE MOVED WHEN THE PTO IS ENGAGED**. To do so endangers the operator and the equipment, as the equipment is not designed to function in this condition.

II. SIGN TYPES

There are three types of signs that are installed and maintained for the DOT.

Type I signs consist of demountable copy message on extruded aluminum base material, typically mounted on steel I-beams. Examples include large green freeway interchange guide signs, and supplemental freeway traffic generator guide signs.

Type II signs consist of direct applied message on either plywood or sheet aluminum base material, typically mounted on wood or steel posts. Examples include ground-mounted regulatory and warning signs, and smaller guide signs for conventional highways.

Type III signs consist of demountable copy message on either plywood or sheet aluminum base material, typically mounted on wood or steel posts. Type III signs are normally used for temporary guide signing on improvement projects. These signs are destination-orientated and usually have white lettering on green background. Examples include temporary interchange guide signs used during a construction project.

III. SIGN CLASSIFICATIONS

A. REGULATORY SIGNS

Regulatory signs give notice of traffic laws and convey the rules of the road. Regulatory signs typically have a red or white background.

B. WARNING SIGNS

Warning signs alert the attention of the driver to special conditions on or adjacent to a highway or street that *may* require an important driving decision or action. Warning signs typically have a yellow background.

C. SCHOOL SIGNS

School signs are used to alert the motorist to school locations and the posted school speed limit. School Signs typically have a fluorescent yellow/green background.

D. GUIDE SIGNS

These signs are directional and informational. They are used to direct the motorist to their destination and to inform them about various service facilities and other points of interest along the highway. Guide Signs typically have a green background, and directional assemblies are typically black on white background or white on blue background.

E. RECREATIONAL SIGNS

These signs are informative for the traveling public not familiar to an area to get to their destination. Recreational Signs typically have a brown background.

F. TOURIST INFORMATION SIGNS

These signs are informative signs used to guide motorists to service type areas. Tourist Informational Signs typically have a blue background.

IV. STORAGE & HANDLING OF SIGNS

Signs **shall** be shipped with the sign face protected either by cardboard or slip-sheeting paper taped to the sign. Signs **shall** be shipped in bundles no more than three feet in height.

For storage of signs, signs **shall** be stored vertically on edge with slip-sheeting paper between each sign to protect the face of each sign. The Region Sign Shops are encouraged to minimize the amount of inventory on hand, which will result in less dollars being stored on the shelves and less manpower to maintain. In addition, a smaller inventory will help to rotate stock properly to ensure that signs are placed out in the field as soon as possible and not aging in the shop.

Guidance as to what types of signs *should* be stored at the Region Sign Shops and the Central Office Sign Shop are shown in Exhibit 24.

V. OPERATIONAL STANDARDS & GUIDELINES

This section sets forth the Standard Policies in detail for specific problem areas of signing operations.

These manuals are available on the Wisconsin DOT website in the “Traffic Operations Manuals Library.”

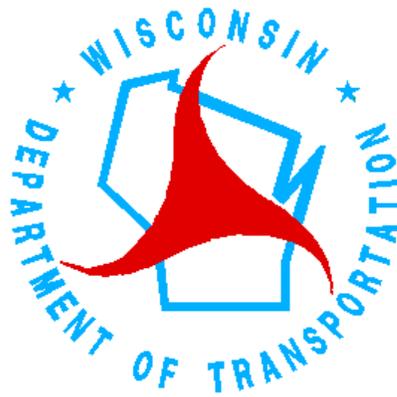
Sign crews **shall** be familiar with the following manuals:

- Manual on Uniform Traffic Control Devices (MUTCD)
also available at: <http://mutcd.fhwa.dot.gov/>
- Wisconsin Supplement to the MUTCD
- Wisconsin Traffic Guidelines Manual (TGM)
- Standard Design Details
- Standard Sign Plates
- Standard Sign Installation Details (SDD Section)
- Wisconsin DOT Standard Specification for Highways and Structure Construction



SECTION 2

**FIELD &
MAINTENANCE
CREWS**



I. PRIORITY OF ACTION

A. KNOCKDOWN AND REPAIR RESPONSE

1. **STOP and YIELD Signs.** STOP signs and YIELD signs are the most important signs. If a STOP or YIELD sign is reported down it is to be considered life threatening and extreme steps **shall** be taken to get it back up, even if it means using temporary supports. This includes overtime, nighttime, weekends and holidays. Whatever is necessary to get the sign back up as quickly as possible **shall** be done. A temporary repair **shall** be made immediately and a permanent repair **shall** be made within 10 working days, or as agreed upon with Regional Traffic Section.
2. **Regulatory, Warning and School Signs.** Second priority goes to Regulatory, Warning and School Signs. These signs, when reported damaged or knocked down, require prompt scheduling of repairs. Careful judgment is needed to evaluate the importance of each situation. In some cases, signing is repeated (or redundant). Signs that are recognized as being critical to motorist safety are those that require the motorist to be alert to a specific change in the road or a potential hazard. Temporary repair **shall** be made immediately, during normal business hours with permanent repairs being made within 10 working days, or as agreed upon with Regional Traffic Section.
3. **Guide Signs.** Guide signs are directional and informational type signs. They are less critical with respect to scheduling damage repairs. Repairs on these signs *should* be made as crew schedules permit. Every effort **shall** be made to ensure temporary repairs last until permanent repairs are made.
4. **Recreational & Tourist Signs.** Repairs to these signs **shall** be made as the crews schedule permit. Efforts *should* be made to protect sign from further damage.

All signs that have been damaged *should* be replaced, contact your Regional contact for these signs. WisDOT **shall** provide all permanent signs. For sign repairs or replacements, Counties **shall** replace the posts and signs in kind unless directed to do so otherwise. All temporary sign repairs **shall** meet National Cooperative Highway Research Program (NCHRP) 350 Crash Test Requirements. Temporary repairs **shall** be made to try and achieve same standards as for permanent repairs. Refer to the Knockdown and Repair Report in Exhibit 12.

B. ADDITIONAL CONSIDERATIONS

Field and maintenance crews need to be aware of some additional characteristics of signing situations relative to determining the priority of repairs on knocked down signs:

- The sign type and classification.
- Accident history of the sign knockdown location. Recurrent damage or knockdown of a particular sign *should* be reported to Regional Signing Coordinator. It *may* signify a problem needing additional remedial action.
- Traffic volumes and speed at the location.
- Estimated impact on the motorist or pedestrians with the sign being out of service.

The sign crews need to stay abreast of MUTCD changes that come about as to the signs, the typical rule of thumb is to replace “in kind” is generally true, but not always. Call your Regional contact with any questions; they are there to help.

II. FIELD OPERATIONS

Signing operations *may* require timeframe restrictions for the completion of work performed in higher volume areas. A list of restrictions *may* be provided to the county or you *may* check with your Regional contact for the restrictions. Signing field operations are comprised of a number of functions and activities. Coordination needs *should* be in place in order to accomplish the goals of the unit in installing and maintaining the highway guidance system.

Daily work plans are prepared by the supervisor or designated authority, and assigned to the crew(s). Before leaving for the field, the crew performs the pre-trip inspection of the vehicle and re-supplies stocks of signs, hardware and any special tools required to perform the day’s activities. The crew *should* also have on board all safety equipment required for performance of field operations. (See TAM Safety Directives in Exhibits 1 through 4)

A. ROUTINE SIGN INSTALLATION ACTIVITIES

For all County Signing activities, Counties will be provided with all signs by DOT. It **shall** be the responsibility of the County to provide all necessary posts and mounting hardware for installation of the signs, unless other arrangements have been made with the Region. All signs removed are the property of the DOT and arrangements **shall** be made for the delivery of signs back to Regional sign shops. Signs can be either discarded into Regional dumpsters or returned banded on pallets, this includes all plywood and aluminum signs. Plywood and aluminum signs **shall** be separated.

1. Patrol. Crews generally have a daily work plan, which establishes the route to be traveled each day. Knockdown temporary repairs will be the responsibility of the Counties, however, any sign found down by DOT staff will have this information forwarded to their respective county contacts. **NO CREW SHALL LEAVE THE SITE OF A DOWNED STOP OR YIELD SIGN, A TEMPORARY OR PERMANENT REPAIR SHALL BE MADE IMMEDIATELY.**

Field and maintenance crews *should* be watchful for and report findings to Regional Signing Coordinator:

- missing signs
- signs showing face material failures,
- obsolete signs or signs which are not needed
- vandalized signs or posts, defaced, gunshot or broken
- maintenance or contractor damaged signs or posts
- posts that are too short
- bent or leaning posts
- sign meets MUTCD specifications

- a. Missing Signs. In situations where a sign is missing, it is important that crews determine precisely what sign is to be installed so as not to convey an inappropriate message to the motorists. Crews *should* check with their DOT Regional contact to determine what sign is missing and what action needs to be taken.
- b. Unnecessary Signs. Signs which are no longer needed, such as HIGH WATER, BUMP, DIP, LOOSE GRAVEL, LOW SHOULDERS, SCHOOL BUS STOP, temporary road restrictions, etc., *should* be removed as soon as they are no longer needed.

DO NOT REMOVE ANY SIGNS WITHOUT DIRECTION OR APPROVAL FROM YOUR DOT REGIONAL CONTACT.

- c. Non-Standard Signs. Each Standard Sign has certain design criteria established by the MUTCD or the Department, and is installed for the purpose of conveying a specific message. Any sign deemed obsolete or nonstandard *should* be removed or replaced with the appropriate sign only under the direction of the Regional contact. If you have questions contact your Regional Signing Coordinator.

Standardization of design, placement and uniformity of application are equally important. The MUTCD, Wisconsin Supplement, Traffic Guidelines Manual, Standard Sign Code, Standard Plate Book and Standard Design and Installation Details establish these specifications and guidelines.

- d. Vandalized Signs. Signs or posts that have been vandalized *should* be repaired. High priority signs **shall** be replaced immediately under the above noted replacement policy. Signs, which have their faces painted out, shot with firearms, have stickers on them or damaged by thrown objects are typical examples of vandalism.
- e. Damaged Signs. County plowing and mowing operations sometimes damage signs. Private contractors *may* also damage signs during construction. Damage from these operations can cause a sign to lose its reflectivity and be ineffective. Signs so damaged *should* be reported to the Region. If repairs are made they **shall** be reported to your Region by filling out the County Sign Repair Report (Exhibit 11).

Counties must return damage claim tags to the Regional contact in order to recover damage claims. For repairs with tags, Counties need to fill out both the County Charges Worksheet Form DT1785, formerly the Repair Charges for Vehicle Damage form (Exhibit 13) and the County Sign Repair Report (Exhibit 11).

Maintenance of Type I signs will be performed by a contractor for DOT. However the need *may* arise to have the counties secure Type I sign knockdowns so they are not a hazard to the motorist. This work would consist of securing the sign and posts in the right of way so they are outside the clear zone not affecting traffic. The Region *may* contact the county for assistance in securing Type I knockdowns.

- f. Posts: Broken, Short, Bent or Leaning. Counties *should* continue to make temporary repairs to broken posts as covered in the Routine Maintenance Agreement (RMA).

Such repairs make it possible to get the sign back in operation without having to dig and there-by not require a utility locate. A temporary repair requires the sign be the same height and placement as necessary for permanent sign installations.

Posts set for any temporary signing are to be installed using the same standards, for height and off-set, as permanent signing installations.

It is important to use signs in good condition and properly installed which will convey a clear message to the motorist day and night.

2. New Signs. For locations of new signs typically a work order will be provided by a Regional contact (see Exhibit 10), the area then will be staked by the DOT. Crews performing the installation **shall** make sure the signs are at proper distances, which are outlined in the MUTCD and Wisconsin Supplement and can

also be found in the Standard Detail Drawings Section. Crews **shall** contact Digger's Hotline prior to digging. Crews need to check to make sure sign is facing in the proper direction for traffic it is intended and sign *should* be at proper heights, offsets and use of proper mounting hardware according to the sign installation standard detail drawings. Similarly, when crews are installing any new sign they need to recheck to see that the proper sign is installed and conveys the correct message, especially for curves, turns or any potential dual message signs, i.e., DIVIDED HIGHWAY or DIVIDED HIGHWAY ENDS.

3. County Maintenance Agreement (CMA). This can refer to the traffic (TMA), routine (RMA), or discretionary maintenance agreement (DMA) depending on the type of contract, an example CMA is in Exhibit 14. Counties will be given the Annual Sign and Post Replacement list (see Exhibit 15) from the Region. For locations where a new post is required, the County representative **shall** call Diggers Hotline prior to digging. Where the annual replacement contract does not call for a new post to be installed and the existing post is too short, bent or leaning, the County crew **shall** discuss with their Region for changes.

The Annual Sign and Post Replacement list **shall** indicate the size of the sign to be installed and the approximate length of post to be used. Post size, depth in ground and spacing are to be in accordance with the Sign Installation Standard Detail Drawings.

To accurately determine the post length, slope of the shoulder must be taken in to account. Use of hand level or measurement by eyeing across from the edge of the roadway to a tape measure, projecting from the bottom of the dug hole will show required measurement needed to be added for slope (see Typical Installation Detail A4-3 or A4-4).

4. Attaching Signs. Signs are attached to the posts using lag bolts or machine bolts. Signs are to be mounted so as to project 1" to 1-1/2" above the top of the post.

All signs **shall** have a nylon washer used under the metal washer to reduce damage caused by the twisting of the sheeting under the pressure of tightening the bolts (see Standard Detail A4-8). Care is needed to be sure not to over tighten bolts used in attaching signs to the posts to avoid damaging the reflective face. Especially when using power equipment such as electric impact wrenches. Nylon washers will be provided to the counties by the DOT.

Standard signs are fabricated using sheet aluminum or High Density plywood. Aluminum signs are usually pre-drilled with mounting holes. Plywood signs usually have to be drilled before mounting. When drilling plywood signs be sure to find the center of the sign prior to drilling. Drill mounting holes *should* be 7/16" in diameter and typically be 2" from the top and bottom edge of the sign.

When attaching to the post it is important to keep the sign square on the post. Attach the bolt to the top of the sign first. Then square the sign on to the post before attaching the lower bolt. Pre-drilling of the post while the squaring the sign is recommended.

5. Setting the Post. Once the post is placed in the hole check to see that the sign is the proper height and the sign is square with the roadway, facing the proper direction for traffic the sign is intended. The posts *should* be backfilled completely and tamped in place, using 6" layers while keeping the post plumb. It is recommended that a level be used during this process.

Breakaway holes **shall** be drilled on all 4"X6" wood posts (see SDD A4-11). The breakaway holes do not need to be drilled if the posts are located behind a concrete barrier or guardrail. Postholes **shall** be backfilled with suitable material.

B. DETOUR AND CONSTRUCTION SIGNING

The majority of detours are planned and will be done by contract. Small and emergency type detours performed by the counties need to be in accordance with the MUTCD. The Department *may* provide signs for detours. See SDD 15C2-4 A through C for typical detour signing installation.

C. REPORTING SYSTEMS

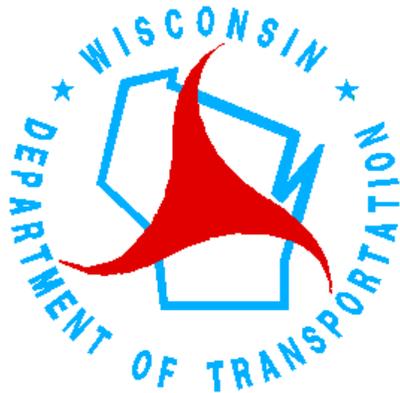
1. All DOT daily work and maintenance activities are to be reported on the SignView field activity form. (See Exhibit 16 for an example of the form)
2. Repair Records for Accidents/Broken Posts and Signs are to be filled out and sent to the Regional shops monthly or as agreed upon with your Region. Refer to the County Sign Repair Report in Exhibit 11.
3. Annual Sign and Post Replacement List will be given to the Counties at the time the maintenance agreement is drafted. As the County completes the work, they **shall** send an updated copy of the list to the Regional contact weekly. Refer to the example Annual Sign and Post Replacement List in Exhibit 15.
4. The Regions *may* periodically provide the Counties with a new sign and post work order, see Exhibit 10. These forms need to be filled out and sent to the Region upon completion.
5. Any counties with repair charges for vehicle damage with accident claim tag numbers **shall** fill out the County Charges Worksheet form DT 1785 (see Exhibit 13 for an example of the form) and send it to the Region as soon as practical. Forms can be obtained from your Regional Signing Coordinator.

6. Knockdown and Repair Report (Exhibit 12) is a way to record incoming calls for knockdowns or repairs and Diggers Hotline ticket information on a single form. This form is provided for your convenience and does not need to be returned to the Regional Sign Shop.



SECTION 3

**SIGN
REPLACEMENT
&
MAINTENANCE**



I. REGIONAL SIGN COORDINATOR PLANNING

Regional Signing Coordinators and/or the Regional Traffic/Signing Engineer will determine methods to achieve the desired level of effort needed for annual sign replacements. Regions will compile a list of signs/posts that need to be replaced and arrange for the completion of this work. Regions will determine the budget dollars necessary to complete the projects. Some of the criteria used to identify individual sign replacement are:

1. age: date tag
2. face material: engineer grade - 7 years, high intensity grade - 12 years
3. sign condition: good, fair or poor
4. conformance: meets criteria and warrants
5. appropriateness of the message

SignView can be used as an aid to evaluate the above criteria.

A. COUNTY MAINTENANCE AGREEMENTS

Ideally, counties will be given route segments of the signs and/or posts needing replacement, from a beginning to end or point to point, and for both directions of travel. A Traffic Maintenance Agreement (Project ID 00XX-01-65) is to be used for planned sign maintenance work or work on a sectional approach (XX is the county number). A Routine Maintenance Agreement (RMA) is also to be used for replacement/repair of knocked down or damaged signs, where a damage claim is not applicable. The scheduling of the sign replacements will be left to the county. Counties will then be able to schedule their crews to what best fits their needs. WisDOT, however, is requiring that all sign replacements of the CMA be done by November 15 of the year contracted unless another date is agreed upon. See Exhibit 14 for an example of a TMA. Listed below is the guidance for the preparation and execution of TMAs.

1. Specifically, the following signing activities can be classified into the following county maintenance agreements:

<u>Charge to Damage Claim #0077-0X-00**</u>	<u>Charge to RMA #</u>	<u>Charge to TMA* # 00XX-01-65 (Activity Code 086)</u>
Damage Claim – Replace Sign	Damage Due to Vandalism	Routine Maintenance – Replace Sign
Damage Claim – Replace Sign & Post	Weather Related Damage	Routine Maintenance – Replace Sign & Post
Damage Claim – Replace Post Only	Damage Due to Lawnmowers	Routine Maintenance – Replace Post Only
Hit & Run – Replace Sign	Damage Due to Snowplows	Routine Maintenance – Relocation
Hit & Run – Replace Sign & Post		Straightened Post &/or Assembly
Hit & Run – Replace Post Only		

*For installation of new signs (i.e. School Bus Stop Ahead, New Speed Zones, Political Sign Requests, etc.) it is recommended that the Regions hold back on giving out 10% of their planned TMA work to account for these expenditures. Once the end

of the year approaches, and not all of the 10% withheld TMA dollars are used up, the counties could be provided the extra work to utilize these dollars.

** "X" designates the number for the Regional office where the counties submit invoices to:

1 – Madison	4 – Wisconsin Rapids	7 – Rhinelander
2 – Waukesha	5 – La Crosse	8 – Superior
3 – Green Bay	6 – Eau Claire	

For Emergency Sign Installations, if there are not sufficient dollars left in the TMA 00XX-01-65 account, RMA dollars can be used to install these signs.

For Routine Surveillance of Signs, no dollars *should* be allocated for a county to do this work. It is part of the Patrol Superintendents job just like with any of our other highway maintenance features.

It is very important that the county charge the proper project ID for the work that they are performing. Any associated posts, fleet and personnel costs shall be charged to the proper project ID as well.

Periodically, the Department may have needs for the County to install signs for special projects. For these cases, the Department will provide a special project ID for Counties to charge their labor, fleet and material costs. Some example special projects may include:

White Arrowboards (Trans 200)	0080-02-63*
TODS Signing:	0080-02-53
Heritage Signing:	0080-02-62
Ski Area Signing:	0080-02-61
Improvement Project <u>Permanent</u> Signing	(ID set up based on Improvement Project)
Improvement Project Detour Signing	(ID set up based on Improvement Project)

*For White Arrowboards (Trans 200 signs), once counties have completed charging costs to Project ID 0080-02-63, they will need to invoice the requestor. Checks shall be made payable to the Wisconsin Department of Transportation. The applicant should send the checks to: Wisconsin Department of Transportation, Attn: John Noll, PO Box 7986, 4802 Sheboygan Avenue, Room 501, Madison, WI 53707.

The County should only repair damaged White Arrowboards when directed to do so by the sign owner. If the county is requested to perform repairs, all county costs for repairs shall be charged to the 0080-02-63 project ID and appropriate invoicing shall be submitted by the county to the requestor.

2. Estimation of RMA dollars is difficult because this type of work is un-predictable. Mother nature has a lot to play into this. Annual RMA dollars are put together on an annual basis from input from the Systems Planning and Operations (SPO) Chiefs and the Operations Delivery Program (ODP) Committee. The Regional sign shops *may* or *may* not be asked to provide input for RMA's. RMA budgets are estimates.
3. Estimation of TMA dollars. On an annual basis (prior to October 1 of the calendar year) the Regional Sign Shops *should* submit a cost estimate for the next calendar year signing TMA's, by December 1. These cost estimates need to be submitted to your Operations Supervisor and SPO Chief. The TMA's are normally signed by January 1 of the calendar year they are put into effect. However, some years *may* vary due to budgetary conditions. The TMA budgets are estimates.
4. The Regional shops need to provide the following items to their SPO Supervisors/Chiefs for a TMA budget estimate:
 - Material Costs (i.e. Posts and Mounting Hardware)
 - County Labor Costs
 - County Fringe Benefit Costs
 - County Equipment Costs
 - Add on of 4½ % For County Administrative Fee (this rate is set for all counties)
 - Annual Listing of Sign and Post Replacement (Example Shown in Exhibit 15).

Notes: Some Regions have indicated that they will provide all posts and mounting hardware. If this is so, you *should* still add \$500.00 on your TMA estimate for Unlisted Highway Materials to cover any unexpected material costs.

5. Detailed breakdown of county costs including county labor, fringe benefit and equipment costs *may* be obtained from the Region or Central Office Program Management personnel. The Regional shops can contact Central Office Program Management personnel at any time with questions on the TMA process.
6. Counties *should* use the county charge code of 86 (Routine Sign Repair) for all TMA work. For RMA work, the counties *should* use the charge code of 81 (Permanent Sign Repair) or 85 (Temporary/Emergency Sign Repair).
7. The Annual Sign and Post Replacement List (Exhibit 15) *should* identify location on respective segment routes, including the direction of travel. The counties performing CMA will be given a listing identifying the sign by code, the message displayed and location for the signs needing replacement.

B. IMPROVEMENT/REFURBISHMENT PROJECTS

Listings *should* identify location on respective improvement project in both directions of travel. The listing will be provided to the designer to be included in the construction project plan. See Exhibit 15 for an example of the listing.

C. DEPARTMENT ROUTINE SIGN REPLACEMENT PROJECTS

Inspections *should* be performed by area signing personnel and/or the Regional Traffic/Signing Engineer experienced in evaluating sign condition and who are knowledgeable about the types, classifications and priority of desired replacement.

II. FIELD INSPECTIONS

The Region **shall** update SignView when performing field inspections. SignView will be used to produce a report for all signs scheduled for replacement.

When assessing sign installation condition, evaluators *should* watch for:

1. cracks, stains, darkening on the face, rust streaks
2. age of the sign from the sticker on the back of the sign
3. quality of reflective sheeting
4. sticker on back of sign to identify sheeting manufacturer
5. condition of the post
6. correctness of the installation: height, offset, location
7. retro-reflectivity: *should* be greater than allowable minimums
8. general condition: tight on the post, position in relation to highway
9. appropriateness of mounting: height, offset, plumbness, visibility
10. if the sign is still applicable for field conditions

A night evaluation is more effective for determining sign reflectivity. It will reveal conditions not easily seen in the daylight. Night evaluations are not always possible. Devices that can be used for checking sign retro-reflectivity during daylight are:

- mirrors and sunlight
- high powered lights
- field type retro-reflectometers.

III. ORDERING SIGN REPLACEMENTS

Signing Coordinators **shall** schedule sign ordering based on the timeliness of the scheduled replacements. Regions ordering signs for the counties *should* plan far enough in advance to allow Central Office feasible time to order and receive signs for annual contracts. The signs *should* arrive far enough in advance so as to provide ample time for checking the new signs for appropriate messages and putting the fieldwork schedule in operation.

Regions *should* plan replacement or resigning from the route evaluation listing. Signs *should* be ordered according to the planned work schedule in order to avoid over stocking in the Region's storage.

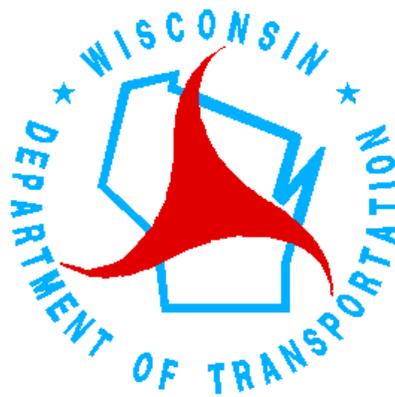
Prior to ordering signs, the sign coordinators *should* review appropriateness of the sign message to see if it is still applicable and meets standards.

As a general rule, sign replacements *should* be performed through a field operations work plan, thereby reducing overlapping of driving and unnecessary travel. However, signs of high priority **shall** be attended to as quickly as practicable, refer to Priority of Action in the field and maintenance crew supplemental section.



SECTION 4

IMPROVEMENT & REFURBISHMENT PROJECTS



I. SIGNING PROJECTS

Project signing work requires some of the same preparation as daily work. In addition, the work plans are reviewed to evaluate the need for special or unusual requirements, extra personnel and/or crew coordination, assignment and coordination of special equipment, extra traffic control devices, coordination with utilities, and other project related concerns. Area Signing Coordinators and/or the Regional Traffic/Signing Engineers are available to meet with project staff with any concerns. The Project Manager's responsibility is to make sure signs have been done to WisDOT standards.

II. FIELD REVIEW OF DETOUR AND CONSTRUCTION SIGNING

The Regional traffic section will review detour and construction signing and will report any signing deficiencies to the Project Manager. It is the intent of our traffic section to provide the Project Manager with assistance to help answer the questions they *may* have. Contact your Regional representative for assistance.

1. Preparation. Advance notice **shall** be given to the Regional Signing Coordinator prior to the installation of detour signing. Detour and construction signing on local roads **shall** comply with TGM 6-10-20. (See Exhibit 19)
2. Coordination. Project Managers *should* contact the Regional Signing Coordinator prior to the opening of any detour to arrange for coordination and review. Any detour used for longer than two weeks **shall** have all signs on that route upgraded to Department standards, which includes but not limited to the placement of no passing zones.
3. Temporary Installation of Signs and Posts. Signs and posts used for detour and construction projects are to be installed with the proper sign height, offset and breakaway standards as is required in Part 6 of the MUTCD. This kind of signing often creates hazardous situations since the regular traffic is unfamiliar with it. It is therefore important to use signs in good condition and that they are properly installed to convey a clear message to the motorist during the night and day. Consideration *should* be made to the needs that the existing signs in the field *may* need to be moved or relocated to properly convey a clear message to the motorist.

See Part 6 of the MUTCD, the Wisconsin Supplement and standard detail drawings 15C2-4A through 15C2-4C for reference to typical signing used for detours.

III. PERMANENT PROJECT SIGNING

A. INITIAL REVIEW OF PROJECT WITH REGIONAL SIGN SHOP

1. The Project Manager **shall** include a representative from the Regional Sign Shop and/or Regional Traffic/Signing Engineer in the project pre-construction meeting when the project involves replacement of permanent signs.
2. The Project Manager **shall** make every effort to review project plans with a representative from the Regional Sign Shop and/or Regional Traffic/Signing Engineer and project signing contractor prior to the installation of permanent signs on the project. This could include review of contractor staking of sign locations.

B. INSPECTION OF SIGNS AND POSTS

1. The Project Manager **shall** ensure all wood or steel posts used meet specifications as outlined in the Wisconsin DOT Standard Specifications for Highway and Structure Construction, latest edition as bid. Signs **shall** be inspected for proper spelling, letter and overall sign size as shown on the plan details and that the sign sheeting material is in conformance with what is on the attached detail(s). Unless specified in the project, all permanent signs, posts and associated mounting hardware **shall** be new.
2. The Project Manager **shall** ensure that a date and sheeting identification code sticker has been affixed properly to the back of the sign and that the vandalism sticker has been affixed correctly to the front of the sign (see standard detail drawing).
3. For Type I signs, the Project Manager **shall** ensure that all extruded panel attachment bolts are in place according to plans and specifications.
4. Texts and borders **shall** be riveted on Type I signs in accordance with the Wisconsin DOT Standard Specifications for Highway and Structure Construction, latest edition as bid.

C. INSTALLATION OF SIGNS AND POSTS

1. Attaching Signs. Signs are attached to the posts using lag bolts or machine bolts. Signs are to be mounted so as to project 1" to 1-1/2" above the top of the post.

All signs **shall** have a nylon washer used under the metal washer to reduce damage caused by the twisting of the sheeting under the pressure of tightening the bolts. (See SDD A4-8) Care is needed to be sure not to over tighten bolts used in attaching signs to the posts to avoid damaging the reflective face. Especially when using power equipment such as electric impact wrenches.

Standard signs are fabricated using sheet aluminum or high-density plywood. Aluminum signs are usually pre-drilled with mounting holes. Plywood signs usually have to be drilled before mounting. When drilling plywood signs be sure to find the center of the sign prior to drilling. Drill mounting holes *should* be 7/16" in diameter and typically be 2" from the top and bottom edge of the sign.

When attaching to the post it is important to keep the sign square on the post. Attach the bolt to the top of the sign first. Then square the sign on to the post before attaching the lower bolt. Predrilling of the post while squaring the sign is recommended.

When banding signs to posts, the Project Manager **shall** ensure that the work is being done in accordance with SDD A5-9 Sign Banding Details.

2. Setting the Post. The Project Manager **shall** ensure that post is set to the correct depth (see SDD's A4-2 through A4-4). Once the post is placed in the hole check to see that the sign is the proper height and the sign is square with the roadway, facing the proper direction for traffic the sign is intended. The posts **shall** be back filled with suitable materials, and tamped in place, using 6" layers while keeping the post plumb. It is recommended that a level be used in this process.

Breakaway holes **shall** be drilled on all 4"X6" wood posts (see SDD A4-11). The breakaway holes do not need to be drilled if the posts are located behind a concrete barrier or guardrail.

Attached in Exhibit 36 is a project checklist that *should* be used by Project Personnel in the inspection of permanent signing on improvement projects.

D. RETURN OF OLD SIGNS TO REGIONS

All Type II signs that are removed on improvement projects are property of the DOT and **shall** be returned to the Regional Sign Shop by the contractor, unless otherwise specified in the plan. The contractor **shall** contact the Regional Sign Shop a minimum of three (3) working days in advance to coordinate return of signs. Signs **shall** be separated by plywood or aluminum and returned to the Region banded to pallets or they *may* be placed directly into recycle bins.

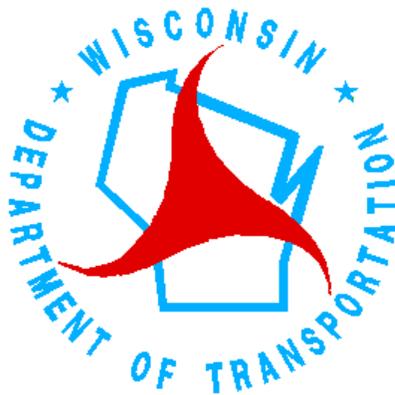
E. REPAIRING/REPLACING KNOCKDOWN SIGNS

All signs broken or knocked down by the contractor **shall** be replaced/repared in accordance with DOT Standards by the contractor at their expense. For knockdown and replacement of signs, the contractor **shall** follow the priorities of action found on page 2-1 of this manual.



SECTION 5

**STANDARD
DETAIL
DRAWINGS**



LIST OF STANDARD DETAIL DRAWINGS

SDD A2-1S Route Markers & Components in Typical Assemblies
SDD A4-1 Typical Installation of Type I Signs
SDD A4-2 Typical Installation of Signs on 3 or More Posts
SDD A4-3 Typical Installation of Permanent Type II Signs on Single Posts
SDD A4-3B Typical Sign Post Box-Outs
SDD A4-4 Typical Installation of Type II Signs
SDD A4-6 Installation of Exit Number Panels
SDD A4-7 Type I Sign Connection to Overhead Sign Support
SDD A4-8 Attachment of Signs to Posts
SDD A4-9 Tubular Steel Sign Post
SDD A4-10 Sign Mounting on Barrier Wall
SDD A4-11 4" X 6" Wood Post Modifications
SDD A5-9 Sign Banding Details
SDD R1-1F Folding Stop
SDD Vandalism Sticker and Date Tag Placement
SDD 15C2-4A Barricades and Signs for Mainline Closures
SDD 15C2-4B Barricades and Signs for Mainline Closures
SDD 15C2-4C Barricades and Signs for Mainline Closures

A2-1S - ROUTE MARKERS & COMPONENTS IN TYPICAL ASSEMBLIES

TYPICAL ASSEMBLIES

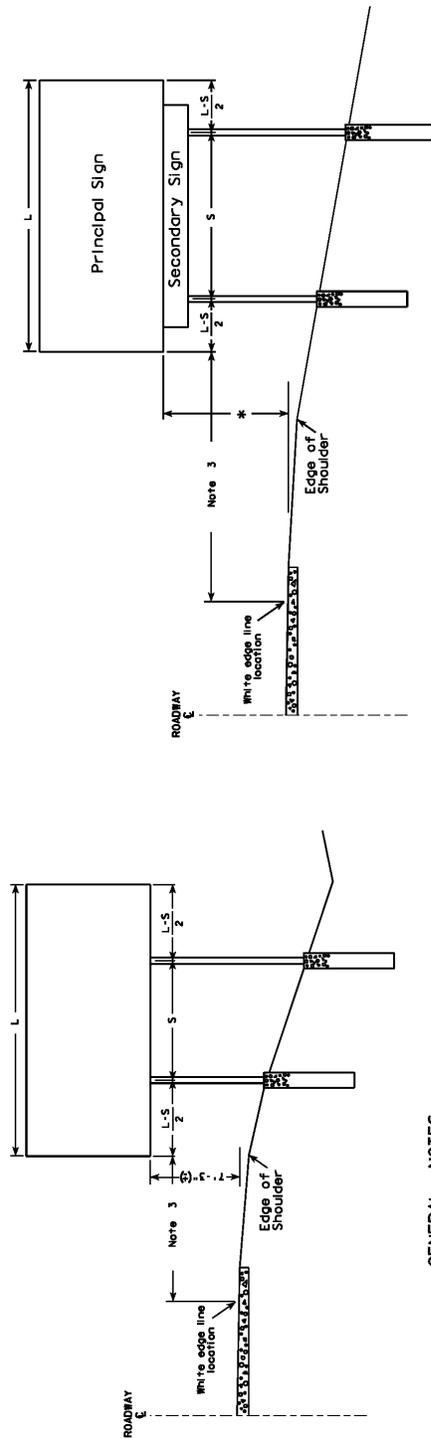
NOTES

1. Signs are Type II - Type H Reflective - reference M1S DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
 - Background - Black Non-reflective
 - Message - see Note 5
3. Message Series - See Note 5
4. Corners shall be square or rounded if base material is plywood. If base material is metal the corners shall be rounded.
5. The colors and message spacing on each marker shall be according to the applicable route marker panel specifications.
6. Certain marker heads require the component pieces to be the same color. As an example, all the components used with an MI-1 Interstate marker shall be blue.
7. Single panel J-assemblies shall only be used with route marker shields that are same size. If the route marker shields are different size use multiple piece component.
8. Route assemblies that have 24 inch route shields and have dimensions greater than 48 inches both vertical and horizontal shall have one horizontal splice between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 inches or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
9. Route assemblies that have 36 inch shields and have dimensions greater than 48 inches both vertical and horizontal shall have two horizontal splices. One horizontal splice shall be between the cardinal direction and route shields and the other horizontal splice shall be between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
10. All Vertical J Assemblies are given a Sign Code of JV
11. For JV Assemblies that have a mixture of Interstate and non Interstate shields, arrows and cardinals shall be white on blue.

ROUTE MARKERS & COMPONENTS IN TYPICAL ASSEMBLIES

APPROVED: *Matthew L. Rauch*
 WISCONSIN DEPT OF TRANSPORTATION
 For the Traffic Engineer
 DATE: 2/06/14 PLATE NO. A2-1S-B

A4-1 - TYPICAL INSTALLATION OF TYPE I SIGNS



GENERAL NOTES

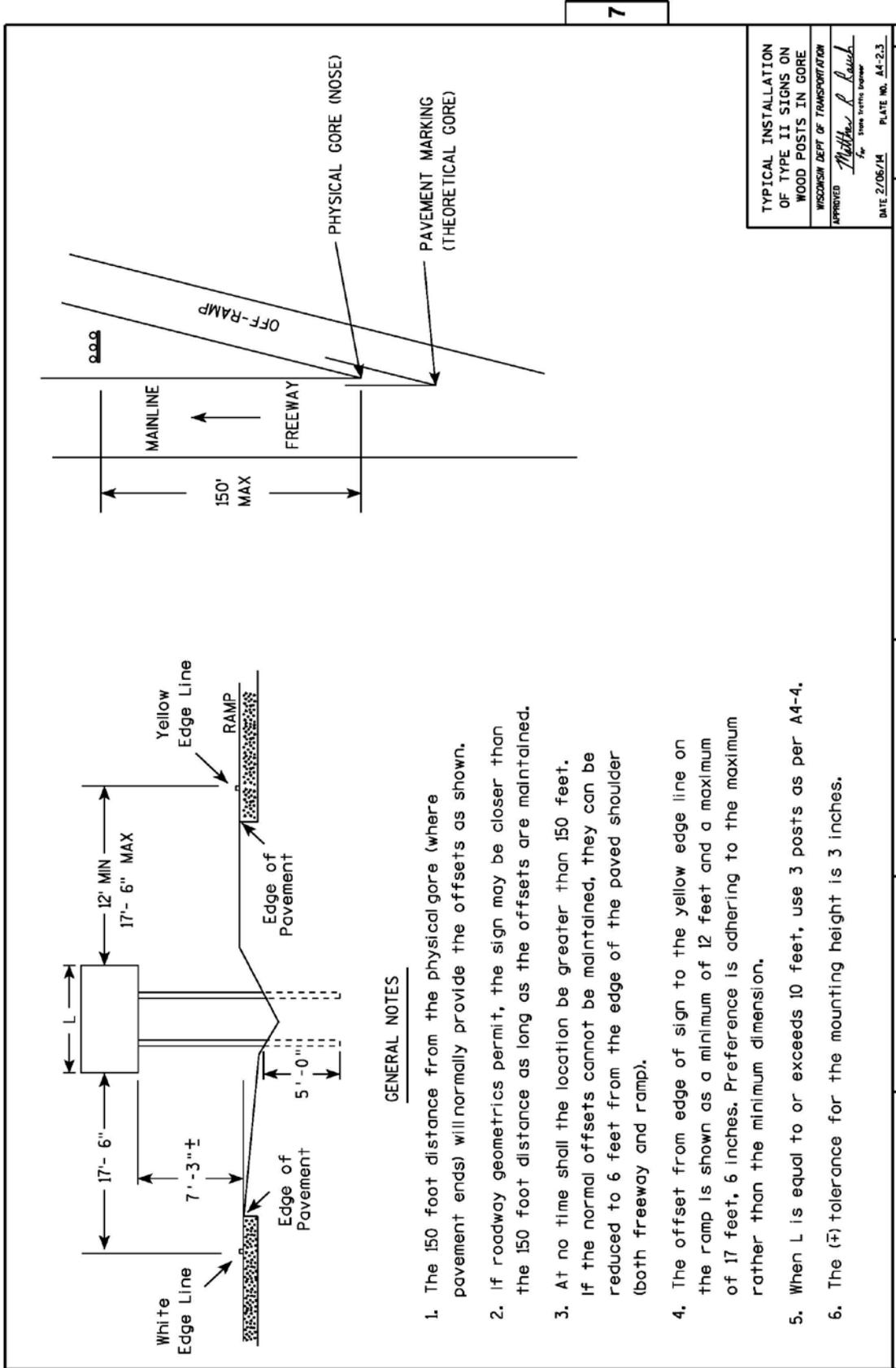
1. For a 2 post installation, S equals 3L/5, but shall not be less than 9 ft.
2. For a 3 post installation, S equals 5L/7, but shall not be less than 18 ft., and the space between any two posts shall not be less than 9 ft.
3. Unless noted in the plan, the sign offset distance shall be a minimum of 17'-6", desirable 30'-0".
4. The (±) tolerance shown on this sheet is 3 in.
5. The vertical sign height clearance detailed is measured from the bottom of the sign to the near edge of pavement.
6. Post lengths shown in the miscellaneous quantities are estimated lengths. The contractor shall verify post lengths at the time of final grading.
7. Refer to the Traffic Guidelines Manual for further guidance on minimum vertical clearance requirements.

* Clearance is 8'-3" (±) when the secondary sign is 3 ft. or less in height. For secondary signs larger than 3 ft., the clearance to the bottom of the secondary sign shall be 5'-3" (±).

TYPICAL INSTALLATION OF TYPE I SIGNS	
WISCONSIN DEPT. OF TRANSPORTATION	
APPROVED <i>Matthew L. Rauch</i> for State Traffic Engineer	
DATE 4/02/08	PLATE NO. A4-1.2
PROJECT NO:	SHEET NO: E

FILE NAME: I:\C:\Users\Project\17-1183010\A4-1.DGN PLOT DATE: 02-APR-2008 15:49 PLOT BY: GIL-DP WISDOT/CADD'S SHEET 42

A4-2 – TYPICAL INSTALLATION OF TYPE II SIGNS ON WOOD POSTS IN GORE



GENERAL NOTES

1. The 150 foot distance from the physical gore (where pavement ends) will normally provide the offsets as shown.
2. If roadway geometrics permit, the sign may be closer than the 150 foot distance as long as the offsets are maintained.
3. At no time shall the location be greater than 150 feet. If the normal offsets cannot be maintained, they can be reduced to 6 feet from the edge of the paved shoulder (both freeway and ramp).
4. The offset from edge of sign to the yellow edge line on the ramp is shown as a minimum of 12 feet and a maximum of 17 feet, 6 inches. Preference is adhering to the maximum rather than the minimum dimension.
5. When L is equal to or exceeds 10 feet, use 3 posts as per A4-4.
6. The (±) tolerance for the mounting height is 3 inches.

TYPICAL INSTALLATION OF TYPE II SIGNS ON WOOD POSTS IN GORE

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew J. Raich*
for Steve Livette, Director

DATE 2/06/14 PLATE NO. A4-2.3

A4-3 – TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

URBAN AREA

2' Min - 4' Max (See Note 6)

7'-3" (±)

Curb Flowline

White Edgeline Location

Outside Edge of Gravel

RURAL AREA (See Note 2)

6'-3" (±)

White Edgeline Location

Outside Edge of Gravel

D

URBAN AREA

2' Min - 4' Max (See Note 6)

6'-3" (±)

Curb Flowline

White Edgeline Location

Outside Edge of Gravel

RURAL AREA (See Note 2)

5'-3" (±)

White Edgeline Location

Outside Edge of Gravel

D

** The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.

* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

POST EMBEDMENT DEPTH

Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

GENERAL NOTES

1. Signs wider than 4 feet, 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
5. Minimum mounting height for signs mounted on traffic signal poles is 5' - 3" (±). Offset distance shall be consistent with existing signs or consistent throughout length of project.
6. The (±) tolerance for mounting height is 3 inches.
7. Folding stop signs (R1-F) shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series) & End of Road Markers (W5-56 & W5-56A) shall be mounted at a height of 4'-3" (±).

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT. OF TRANSPORTATION

APPROVED: *Matthew R. Louch*
For State Traffic Engineer

DATE: 9/26/13 PLATE NO. A4-3UB

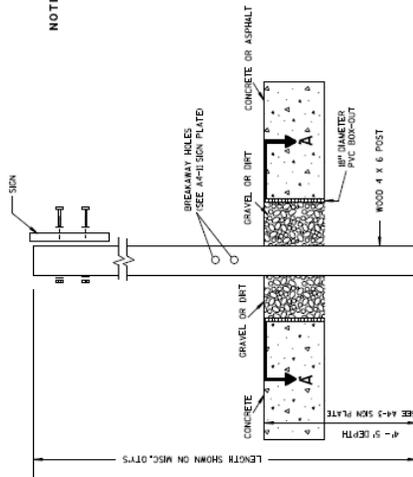
PROJECT NO:

HWY:

COUNTY:

SHEET NO: **E**

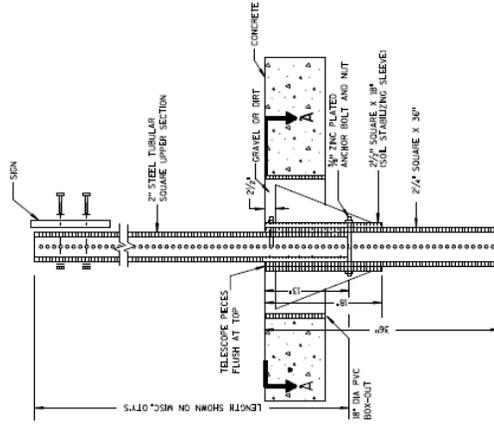
A4-B3 – TYPICAL SIGN POST BOX-OUTS



ELEVATION VIEW

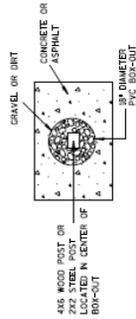
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- NOTES: 1. ALL MATERIAL TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION
2. SEE SIGN PLATE A4-8 FOR SIGN HARDWARE REQUIREMENTS
3. 18 INCH X 18 INCH SQUARE BOX-OUTS MAY BE USED FOR INSTALLATIONS IN EXISTING CONCRETE OR ASPHALT LOCATIONS.



ELEVATION VIEW

DETAIL OF STEEL 2 X 2 SIGN POST IN BOX-OUT



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION
APPROVED *Matthew P. Rausch*
for State Traffic Engineer
DATE 1/27/14 PLATE NO. A4-3B.1

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**

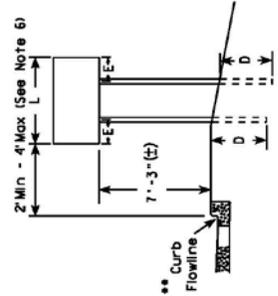
A4-4 – TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

GENERAL NOTES

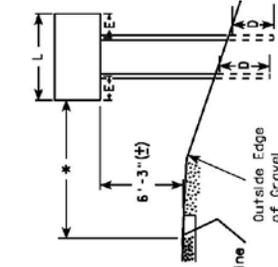
1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
2. See tables below for required number of posts.
3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
4. The (±) tolerance for mounting height is 3 inches.
5. Minimum mounting height for J assemblies (A4-5) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. Folding stop signs (R1-F) shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
8. The Double Arrow sign (W2-J) shall be mounted at a height of 2'-3" (±). The Chevron sign (W7-B), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series) & End of Road Markers (W5-56 & W5-56A) shall be mounted at a height of 4'-3" (±).

- * 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.
- ** The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.
- *** See A4-3 sign plate for signs 4' or less in width or less than 20 S.F. in area.

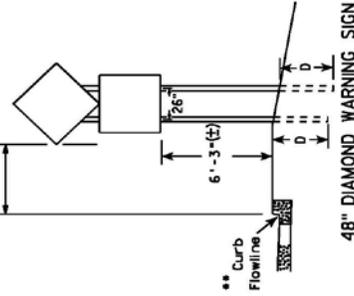
URBAN AREA



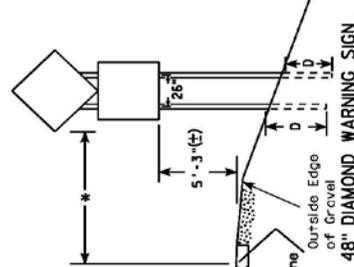
RURAL AREA (See Note 3)



URBAN AREA (See Note 6)



RURAL AREA (See Note 6)



SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)

L	E
Greater than 48" Less than 60"	12"
60" to 120"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)

L	E
Greater than 48" Less than 120"	12"
120" to 168"	L/5

SIGN SHAPE OTHER THAN DIAMOND (FOUR POSTS REQUIRED)

L	E
168" and greater	12"

POST EMBEDMENT DEPTH

Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew L. Rausch*
for State Traffic Engineer

DATE 4/29/14

PLATE NO. A4-4.13

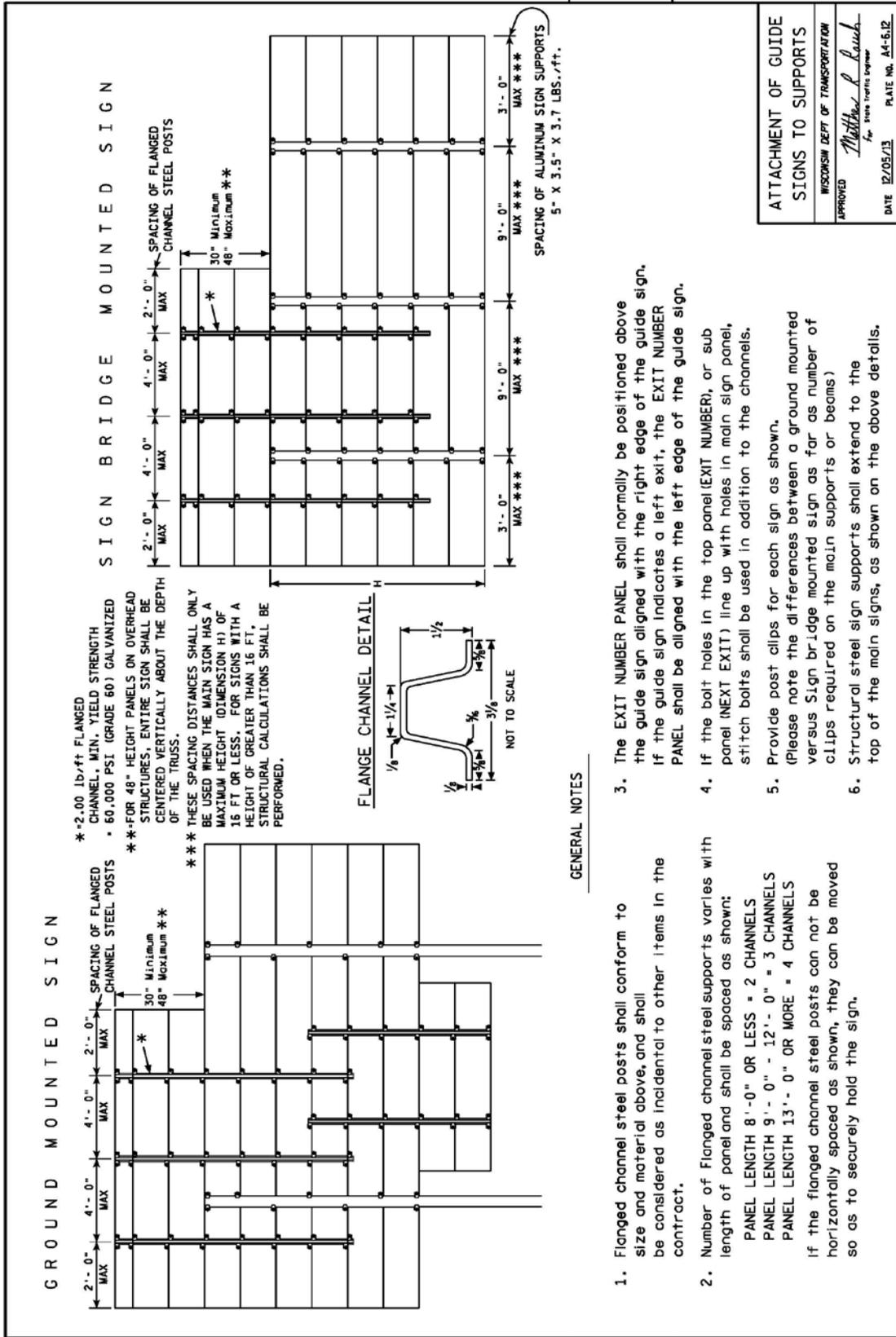
PROJECT NO: _____ COUNTY: _____ HWY: _____ SHEET NO: **E**

FILE NAME: C:\NCE\11WA\Projects\11-41510\A44.DGN PLOT BY: hmc,jo PLOT NAME: _____ PLOT SCALE: 1:107.021305:1:000000 WISDOT/CADD SHEET 42

7

7

A4-6 – ATTACHMENT OF GUIDE SIGNS TO SUPPORTS



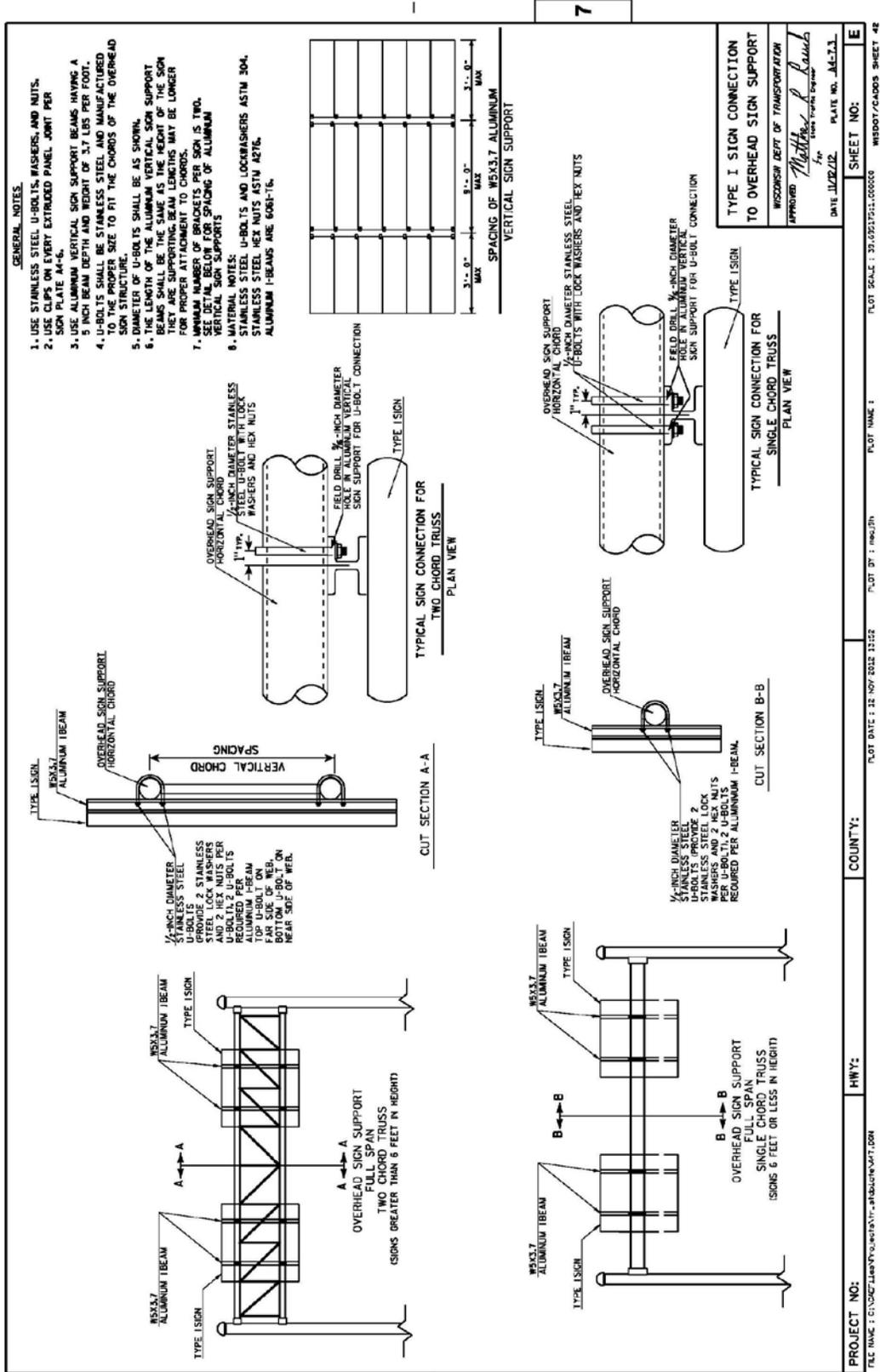
* = 2.00 lb./ft. FLANGED CHANNEL, MIN. YIELD STRENGTH 60,000 PSI (GRADE 60) GALVANIZED
 ** FOR 48" HEIGHT PANELS ON OVERHEAD STRUCTURES, ENTIRE SIGN SHALL BE CENTERED VERTICALLY ABOUT THE DEPTH OF THE TRUSS.
 *** THESE SPACING DISTANCES SHALL ONLY BE USED WHEN THE MAIN SIGN HAS A MAXIMUM HEIGHT (DIMENSION H) OF 16 FT OR LESS. FOR SIGNS WITH A HEIGHT OF GREATER THAN 16 FT, STRUCTURAL CALCULATIONS SHALL BE PERFORMED.

GENERAL NOTES

1. Flanged channel steel posts shall conform to size and material above, and shall be considered as incidental to other items in the contract.
2. Number of Flanged channel steel supports varies with length of panel and shall be spaced as shown:
 PANEL LENGTH 8'-0" OR LESS = 2 CHANNELS
 PANEL LENGTH 9'-0" - 12'-0" = 3 CHANNELS
 PANEL LENGTH 13'-0" OR MORE = 4 CHANNELS
 If the flanged channel steel posts can not be horizontally spaced as shown, they can be moved so as to securely hold the sign.
3. The EXIT NUMBER PANEL shall normally be positioned above the guide sign aligned with the right edge of the guide sign. If the guide sign indicates a left exit, the EXIT NUMBER PANEL shall be aligned with the left edge of the guide sign.
4. If the bolt holes in the top panel (EXIT NUMBER), or sub panel (NEXT EXIT) line up with holes in main sign panel, stitch bolts shall be used in addition to the channels.
5. Provide post clips for each sign as shown. (Please note the differences between a ground mounted versus Sign bridge mounted sign as far as number of clips required on the main supports or beams)
6. Structural steel sign supports shall extend to the top of the main signs, as shown on the above details.

ATTACHMENT OF GUIDE SIGNS TO SUPPORTS
 WISCONSIN DEPT OF TRANSPORTATION
 APPROVED *Matthew P. Pouch*
 for State Traffic Engineer
 DATE 12/05/13 PLATE NO. A4-6.12

A4-7 – TYPE I SIGN CONNECTION TO OVERHEAD SIGN SUPPORT



PROJECT NO: _____ COUNTY: _____ HWY: _____ SHEET NO: _____ E

FILE NAME: C:\2012\LANE\PROJECTS\A4-7 - STANDARD\A4-7.DWG PLOT DATE: 12 NOV 2012 12:52 PLOT BY: J. HANSEN PLOT NAME: I

PLOT SCALE: 1/8" = 1'-0" WISDOT/CADDIS SHEET 42

A4-8 – ATTACHMENT OF SIGNS TO POSTS

WOOD POSTS (4" x 4" or 4" x 6")
LAG SCREWS - 3/8" X 3"
MACHINE BOLTS - 5/16" X 6-1/2" or 7" Length w/ nuts
SQUARE STEEL POSTS (2" x 2")
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts
RIVETS - 5/16" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON for all Type H signs.

Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

- a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
- b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require the use of 3 fasteners.

Washer Placement when Sign Has Other Than Type H or Type F Face

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT. OF TRANSPORTATION

APPROVED *Matthew R. Rausch*
For State Traffic Engineer

DATE 3/23/10. PLATE NO. A4-B.7

PROJECT NO: _____

FILE NAME: I:\SUBPROJECTS\VF-ATLANTA\A4-8.DWG

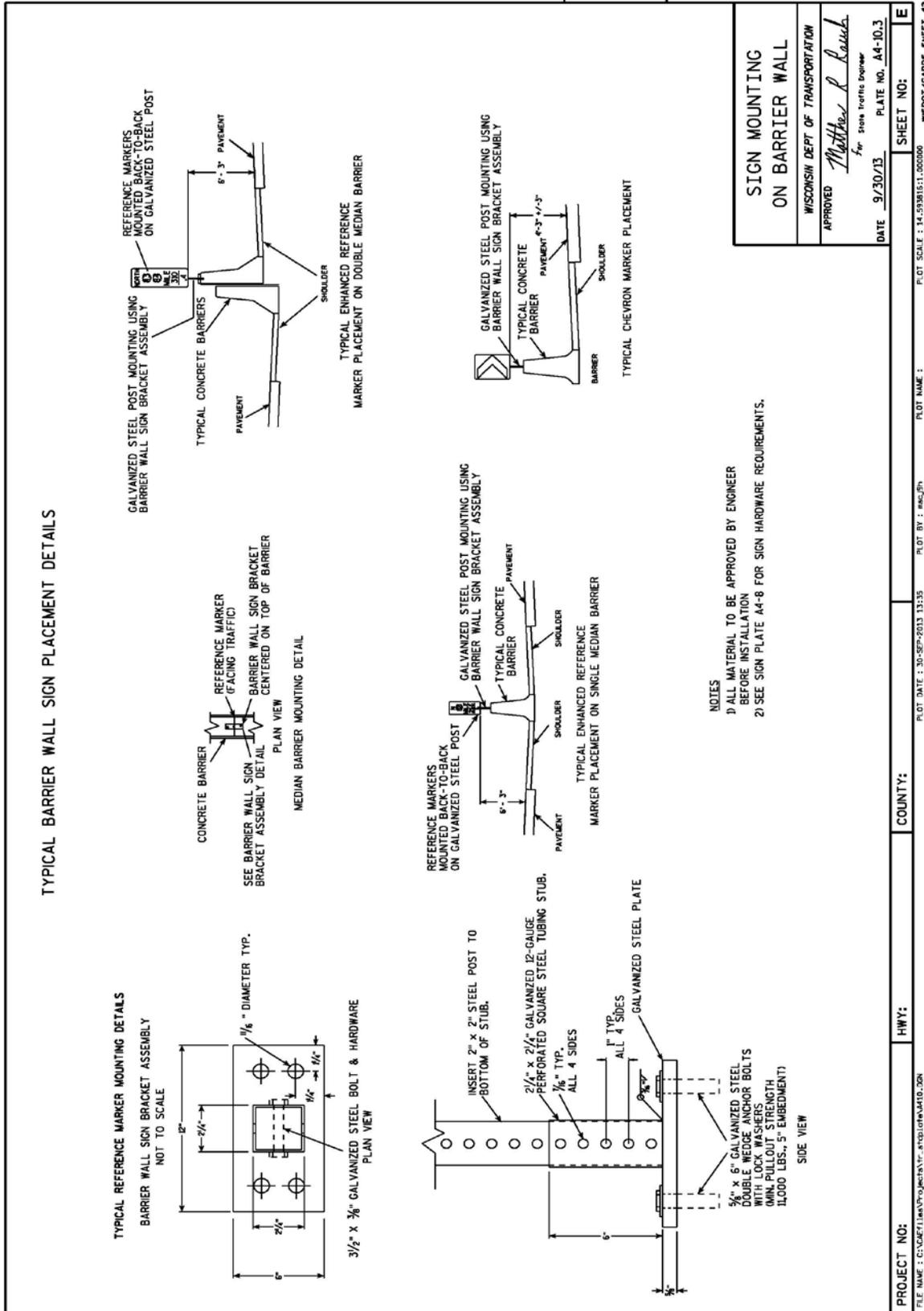
PROJECT DATE: 2-23-MAR-2010 10:15

PLOT BY: J. G. JPM

SHEET NO: _____

REPORT/CADDS SHEET 42

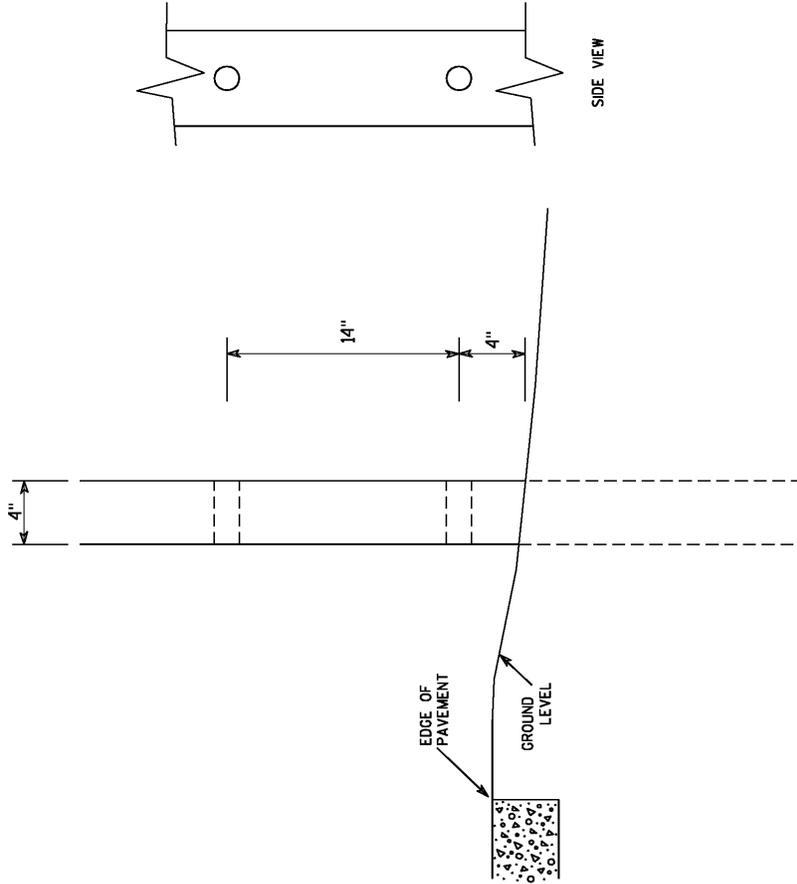
A4-10 – SIGN MOUNTING ON BARRIER WALL



A4-11 - 4 X 6 WOOD POST MODIFICATIONS

GENERAL NOTES

- 1. All 4 x 6 Wood Posts shall be modified by having two 1 1/2" diameter holes drilled perpendicular to the roadway centerline.



7

7

4 X 6 WOOD POST MODIFICATIONS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Christa J. Spivey</i> State Traffic Engineer
DATE	3/27/97
PLATE NO.	A4-11.2
SHEET NO:	E

PROJECT NO: _____ COUNTY: _____ HWY: _____

FILE NAME: C:\Users\PROJECT\NT-810\GFW\A4.11.DGN

PLOT DATE: 10-NOV-2005 10:09 PLOT BY: DOTSJA PLOT NAME: _____ PLOT SCALE: 1/6-2013/3/11-000000 WBDOT/CADD/S SHEET 42

A5-9 – STANDARD SIGN BANDING DETAILS

BANDING

"J" ASSEMBLY
SEE TYPICAL PANEL INSTALLATION SHEET

CHANNEL
SEE TYPICAL PANEL INSTALLATION SHEET

SINGLE SIGN

WASHER PLACEMENT

STAINLESS STEEL BRACKET
CADMIUM PLATED STEEL BOLT
1/4" CADMIUM PLATED STEEL WASHER (SEE WASHER PLACEMENT DETAIL)
STAINLESS STEEL BAND
BOLT DOES NOT GO THROUGH BAND
CHANNEL
DETAIL A
DETAIL B

nylon washer
steel washer

GENERAL NOTES

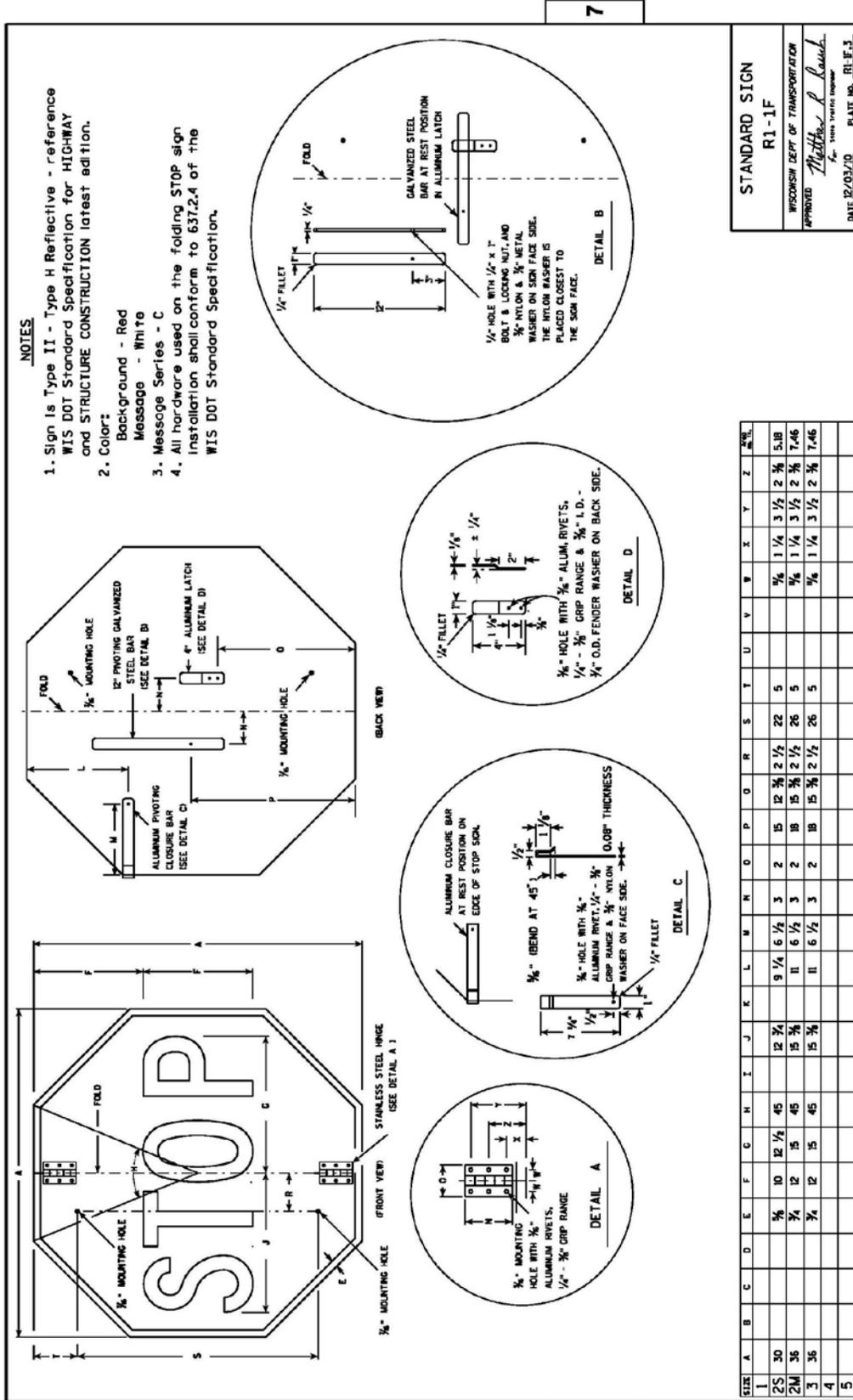
1. Any sign over 3 feet in width shall use the v-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be 3/4" in width and 0.025" thickness.

WASHERS (ALL POSTS) -
 1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
 1-1/4" O.D. X 3/8" I.D. X .080 NYLON
 FOR ALL TYPE H SIGNS

STANDARD SIGN SIGN BANDING DETAILS	WISCONSIN DEPT OF TRANSPORTATION
APPROVED <i>Matthew P. Lauch</i> for TRANSPORTATION DIVISION	DATE 8/16/13
PLATE NO. A5-9.3	SHEET NO. E

PROJECT NO: _____ COUNTY: _____ HWY: _____
 PLOT DATE: 10-20-2013 11:27 PLOT BY: T. PROSAR PLOT SCALE: 31-7489942-00000

R1-1F - STANDARD SIGN FOLDING STOP



NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
 Background - Red
 Message - White
3. Message Series - C
4. All hardware used on the folding STOP sign installation shall conform to 637.2.4 of the WIS DOT Standard Specification.

STANDARD SIGN
 R1-1F
 WISCONSIN DEPT OF TRANSPORTATION
 APPROVED: *Matthew R. Rausch*
 DATE 12/02/10 PLATE NO. (R)-E-3

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	HWY.
1																											
2S	30	10	12	1/4	45	12	3/4	15	12	3/4	3	2	15	12	3/4	2	1/2	22	5	5	1/4	3	1/2	2	3/8	5.18	
2M	36	12	15	45	15	3/4	45	15	15	3/4	3	2	18	15	3/4	2	1/2	26	5	5	1/4	3	1/2	2	3/8	7.46	
3	36	12	15	45	15	3/4	45	15	15	3/4	3	2	18	15	3/4	2	1/2	26	5	5	1/4	3	1/2	2	3/8	7.46	
4																											
5																											

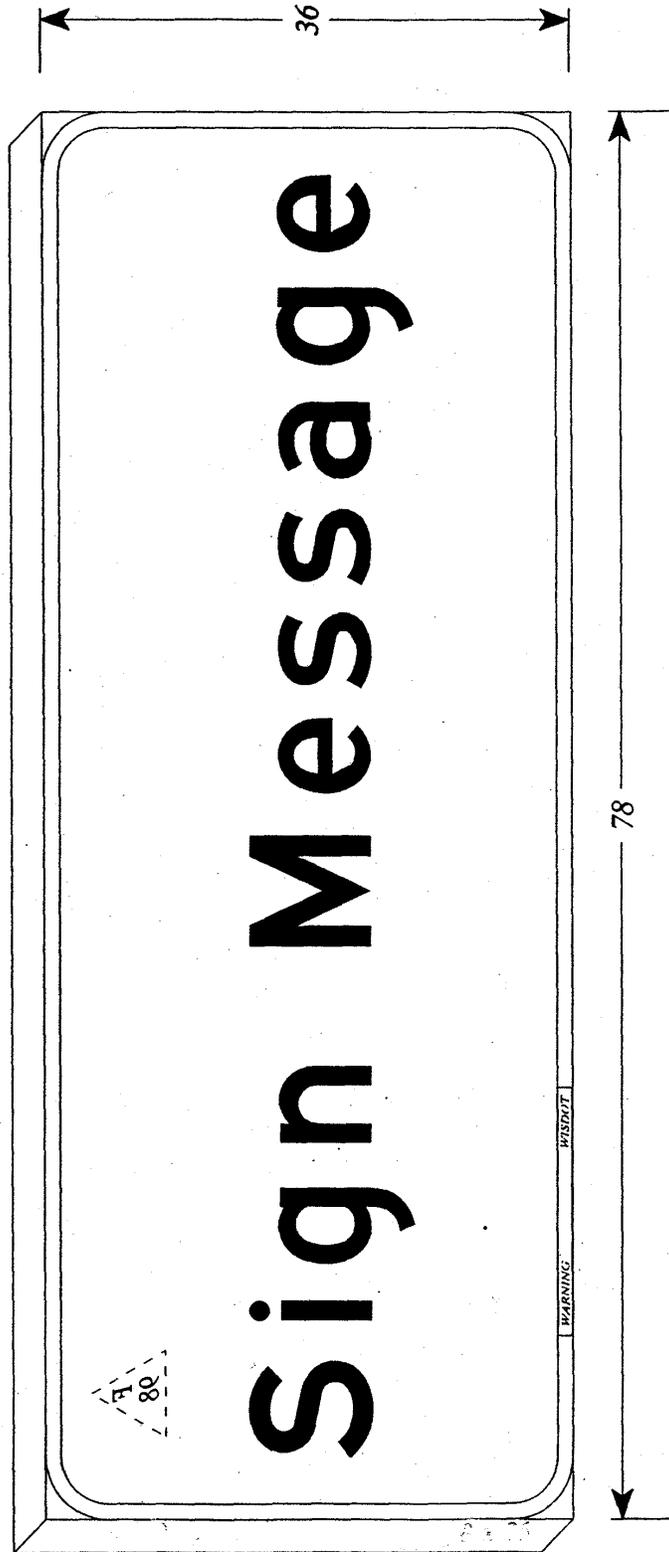
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HWY: _____

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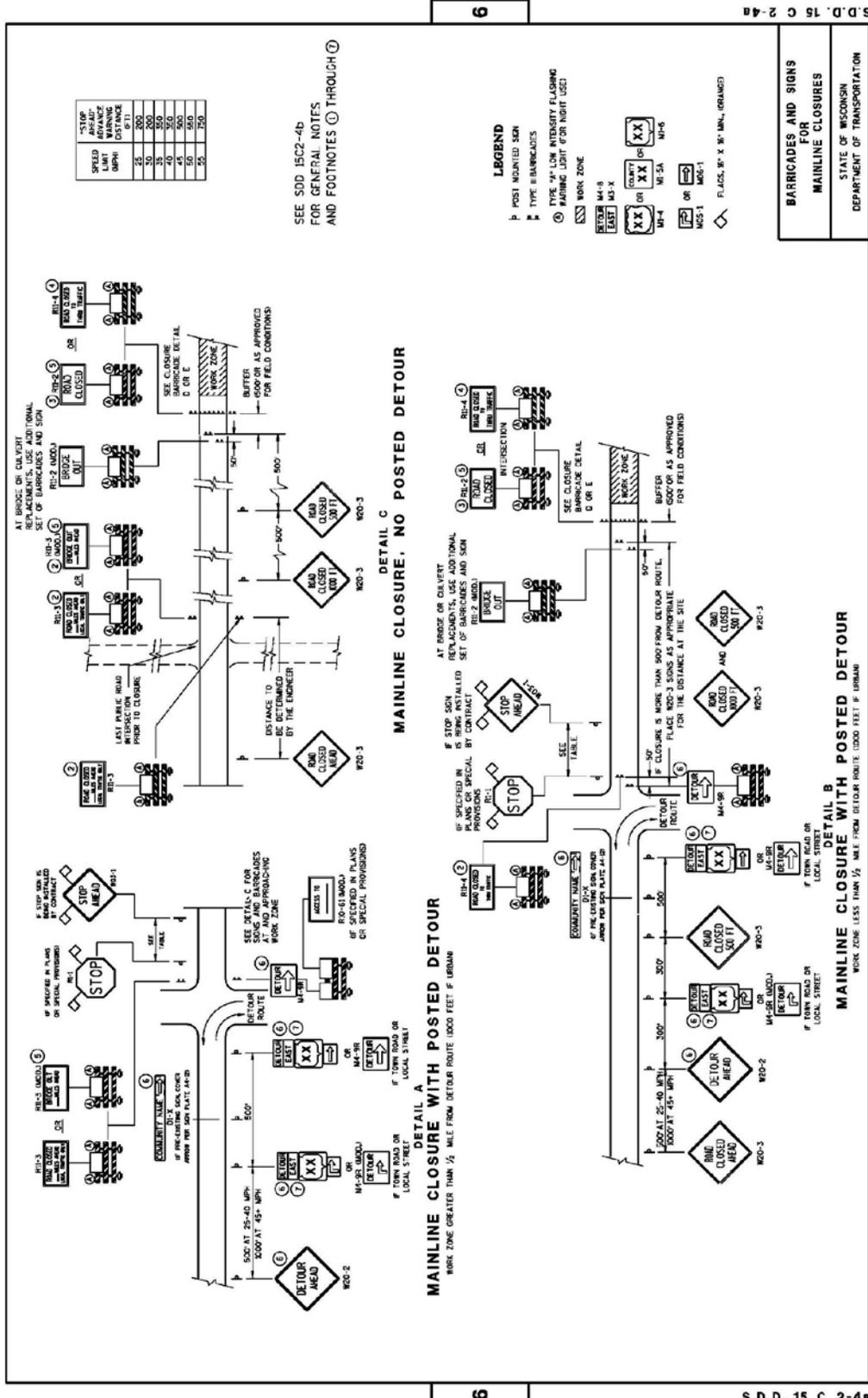
VANDALISM STICKER & DATE TAG PLACEMENT

 *Date tag on BACK of sign
near upper right corner*



*Warning Sticker on FACE of sign,
on the sign border, approx. 10in. from left edge*

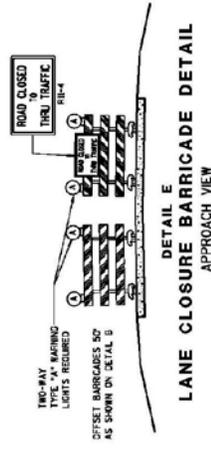
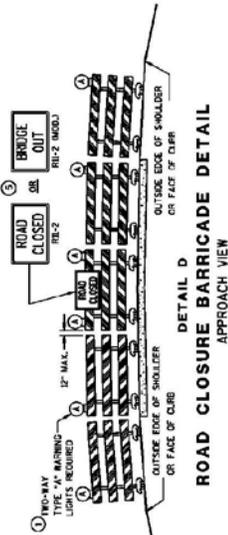
SDD 15C2-4A – BARRICADES & SIGNS FOR MAINLINE CLOSURES



SDD 15C2-4B – BARRICADES & SIGNS FOR MAINLINE CLOSURES

GENERAL NOTES

- 1 THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND BARRICADES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- 2 ANY SIGNS TEMPORARY OR EXISTING WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.
- 3 THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLECT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.
- 4 BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.
- 5 SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NOTICES MAY BE MOUNTED ON PORTABLE SUPPORTS.
- 6 ALL TYPE B BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL D FOR FULL ROAD CLOSURES.
- 7 TYPE "M" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADES.
- 8 THE RR-2, RR-3, RR-4 AND RR-5 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.
- 9 THE REFLECTIVE SHEETING USED ON RR-2, RR-3, RR-4, RR-5 AND RR-6 SIGNS SHALL COMPLY WITH SUBSECTION 837.22.2 OF THE STATUTE SPECIFICATIONS.
- 10 "W" AND "M" SIGNS ARE THE SAME AS "M" AND "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- 11 ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW.
 - RR-2 SHALL BE 48" X 30"
 - RR-3, RR-4 AND RR-5 SHALL BE 60" X 30"
 - RR-6 SHALL BE 60" X 48"
 - M-1 AND M-2 SHALL BE 24" X 36" OR 36" X 24" IF NEEDED TO MATCH EXISTING SIGNS.
 - M-3 AND M-4 SHALL BE 24" X 24" OR 24" X 36" IF NEEDED TO MATCH EXISTING SIGNS.
 - M-5 AND M-6 SHALL BE 24" X 24" OR 24" X 36" IF NEEDED TO MATCH EXISTING SIGNS.
 - M-7 AND M-8 SHALL BE 24" X 24" OR 24" X 36" IF NEEDED TO MATCH EXISTING SIGNS.
 - RR-1 SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
 - RR-1 SHALL BE 24" X 36"
- 12 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN APPROX. 8-FOOT LIGHT SPACING.
- 13 THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.
- 14 FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.
- 15 FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SET LANE CLOSURE BARRICADE DETAIL E.
- 16 FOR BRIDGE OR OVERTAKE REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON RR-2 AND RR-3 SIGNS.
- 17 INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR SIGN TO BE IN LINE WITH THE EXISTING ROUTE MARKER ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- 18 EXIST CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN, USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.



SEE SDD 15C2-1a FOR LEGEND

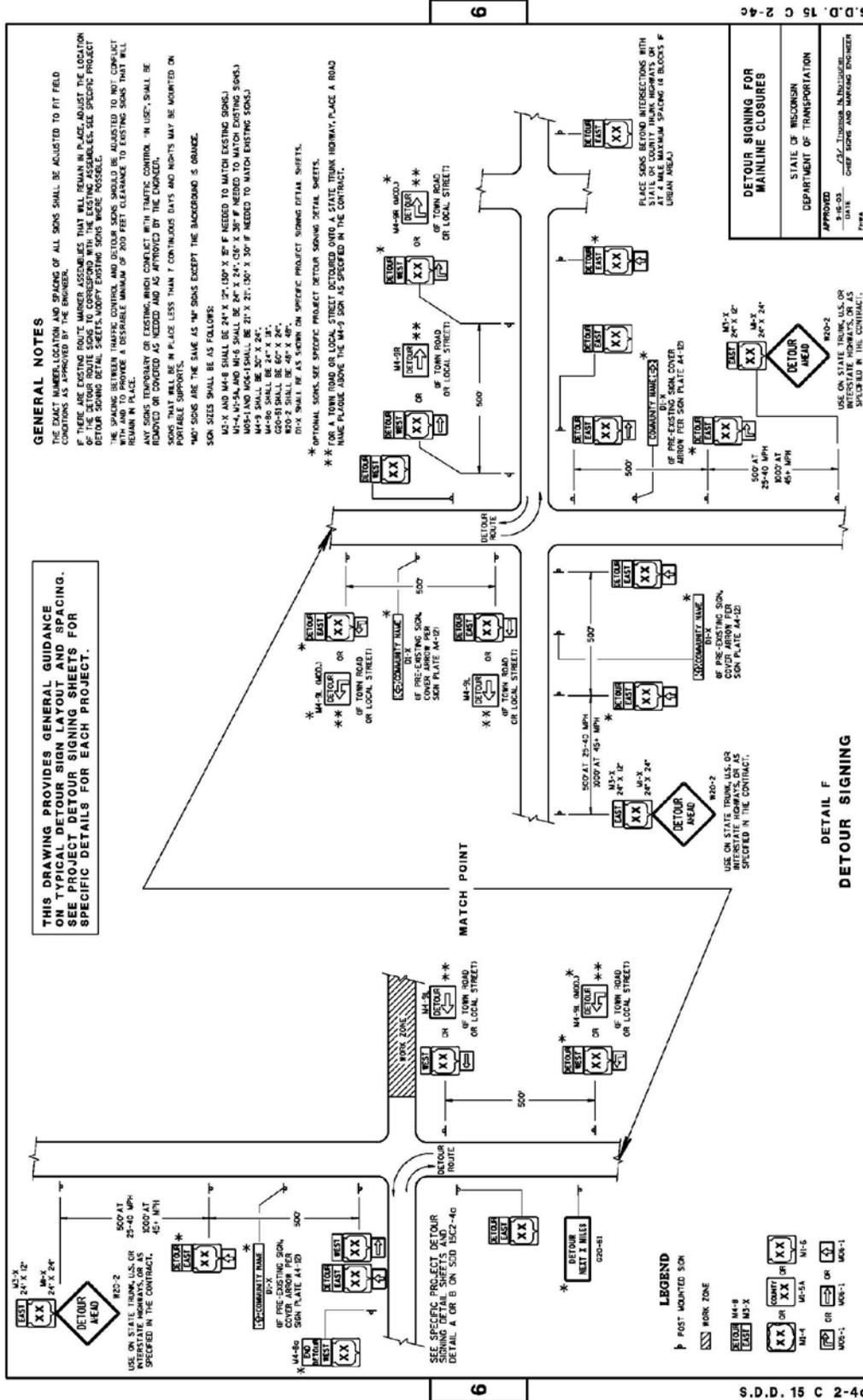
S, D, D, 15 C 2-4B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
C	STATE OF WISCONSIN
2	DEPARTMENT OF TRANSPORTATION
15	APPROVED
D	DATE
16	BY
15	FOR
C	BY
2-4B	FOR

6

6

S.D.D. 15 C 2-4B

SDD 15C2-4C – DETOUR SIGNING FOR MAINLINE CLOSURES



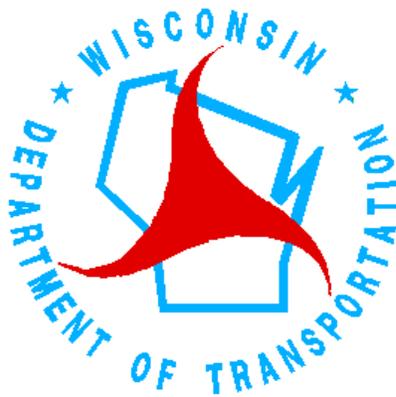
S
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SECTION 6

EXHIBITS



LIST OF EXHIBITS

Exhibit 1	TAM SD30 – Foot Protection
Exhibit 2	TAM SD 36 – Eye Protection
Exhibit 3	TAM SD51 – Protective Headgear – Hard Hats
Exhibit 4	TAM SD57 – High Visibility Safety Apparel
Exhibit 5	Hazard Warning Information – Treated Wood Management
Exhibit 6	Vehicle Lighting Schemes
Exhibit 6	Vehicle Lighting Schemes
Exhibit 7	General Notes for Traffic and Worker Safety
Exhibit 8	Work Schemes for Vehicle Totally Off the Pavement and with Slight Encroachment
Exhibit 9	Work Schemes with Flaggers
Exhibit 10	Work Order Form
Exhibit 11	County Sign Repair Form
Exhibit 12	Knockdown & Repair Report
Exhibit 13	County Charges Worksheet DT 1785
Exhibit 14	Sample Signing TMA
Exhibit 15	Annual Sign and Post Replacement List Example
Exhibit 16	SignView Field Activity Form Example
Exhibit 17	Miscellaneous Quantity Example
Exhibit 18	Typical Stop Line Application
Exhibit 19	TGM 6-10-20 Signs and Marking – Local Roads
Exhibit 20	Guidelines for the Advanced Placement of Warning Signs
Exhibit 21	Quick Sign Reference Sheet
Exhibit 22	County Checklist
Exhibit 23	Improvement Project Checklist
Exhibit 24	WisDOT Typical Warehoused Signs

WISCONSIN DEPARTMENT OF TRANSPORTATION
SAFETY DIRECTIVE SD30**SUBJECT: FOOT PROTECTION****Issued: 07/09/02****ORIGINATOR: Bureau of Management Services
Safety & Health Section****Supersedes: 02/15/95**

Authority	Commerce 32 and OSHA 1910.136 require the use of protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole, and where such employee's feet are exposed to electrical hazards.
Training Requirements	Training on the use of and care for foot protection is required prior to use. This <i>may</i> be done by a supervisor familiar with the equipment. In addition, the Safety & Health Section offers a course in Personal Protective Equipment Basics.
When & Where Required	All field, shop and lab personnel shall wear the appropriate foot protection for the type of work conditions they are exposed to.
Types of Protective Footwear	<p>Protective footwear shall be selected for the type of job being performed and shall be designed and manufactured to protect the feet from injury and conform to ANSI Z41.1-1991. (See form DT1700 <i>Employee Foot Protection Certification</i>)</p> <p>Most areas will require the use of a steel-toe boot or shoe; however, electricians shall wear a fiberglass-toe boot or shoe. Additional care <i>should</i> be taken into account when working on uneven, slippery or greasy surfaces.</p> <p>The Department shall provide strap-on metal foot guards for occasional use where steel-toe protection is required.</p> <p>Protective footwear shall be purchased by the employee and worn when required. Refer to applicable bargaining agreement or compensation plan for possible reimbursement.</p>
Program Responsibility	The Safety & Health Section is responsible for the administration and coordination of this program.
Employee Responsibility	All employees, including supervisory personnel who are exposed to foot hazards shall wear approved foot protection and be properly trained.
Supervisory Responsibility	Supervisors are to ensure that foot protection is worn at all times in areas where there are hazards that could cause injury to the feet and that training requirements are met and documented.

END OF DOCUMENT

WISCONSIN DEPARTMENT OF TRANSPORTATION
SAFETY DIRECTIVE SD36

SUBJECT: EYE/FACE PROTECTION

Issued: 07/09/02

**ORIGINATOR: Bureau of Management Services
 Safety & Health Section**

Supersedes: 02/20/01

Authority	Commerce 32 and OSHA 1910.133 require the use of appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
Training Requirements	Training on the use of and care for eye/face protection is required prior to use. This may be done by a supervisor familiar with the equipment. In addition, the Safety & Health Section offers a course in Personal Protective Equipment Basics.
When & Where Required	Eye protection with permanently attached side shields is required for, but not limited to, all employees whose job assignment exposes them to potential eye hazards. (As stated in the "Authority" above) Approved safety goggles must supplement non-approved prescription glasses or sunglasses when employees are exposed to eye hazards. Eye protection is not required while riding in an enclosed vehicle.
Types of Eye/Face Protection	Eye protection shall be selected for the type of job being performed and shall be designed and manufactured to protect the eyes from injury and conform to ANSI Z87.1-1989. All approved safety glasses will have the ANSI Z87.1 marking on the lens, frames and permanently attached side shields. Face/Splash Shields or Goggles shall be used when working with or around liquid chemicals, acids or caustic liquids, chemical gases or vapors. Goggles shall also be used in conjunction with prescription glasses while employee is awaiting delivery of prescription safety glasses and requires temporary eye protection. Sunglasses with attached side shields that meet the ANSI Z87.1 may be worn by employees whose eyes are exposed to glare either from the sun or other external sources. Safety sunglasses are not required while riding in an enclosed vehicle.
Program Responsibility	The Safety & Health Section is responsible for the administration and coordination of this program.
Employee Responsibility	All employees, including supervisory personnel who are exposed to eye/face injuries shall wear approved eye/face protection and be properly trained.
Supervisory Responsibility	Supervisors are to ensure that eye protection is worn at all times in areas where there are hazards that could cause injury to the eyes and that training requirements requirements are met and documented.
	END OF DOCUMENT

WISCONSIN DEPARTMENT OF TRANSPORTATION
SAFETY DIRECTIVE SD51

SUBJECT: HEAD PROTECTION – HARD HATS

Issued: 07/09/02

**ORIGINATOR: Bureau of Management Services
Safety & Health Section**

Supersedes: 06/18/97

Authority	Commerce 32 and OSHA 1910.135 require the use of a protective helmet when working in areas where there is a potential for injury to the head from overhead hazards and/or falling objects. Each affected employee when near exposed electrical conductors which could contact the head shall wear a protective helmet designed to reduce electrical shock hazard.
Training Requirements	Training on the use of and care for hard hats is required prior to use. This <i>may</i> be done by a supervisor familiar with the equipment. In addition, the Safety & Health Section offers a course in Personal Protective Equipment Basics.
When & Where Required	All employees who are exposed to potential injuries to the head from overhead and/or side impact shall wear appropriate head protection. Head protection is not required when riding in an enclosed vehicle. NOTE: State Patrol Personnel are required to wear Bump Caps during under vehicle bus or MCSAP inspections (see SD51-A).
Type of Head Protection	Minimum standards for hard hats shall meet OSHA 1910.135 & ANSI Z89.1 1986 Class A, B.
Program Responsibility	The Safety & Health Section is responsible for the administration and coordination of this program.
Employee Responsibility	All employees, including supervisory personnel who are exposed to potential head injuries shall wear approved head protection and be properly trained.
Supervisory Responsibility	Supervisors are to ensure that head protection is worn at all times in areas where there are hazards that could cause injury to the head and that training requirements are met and documented.

END OF DOCUMENT

WISCONSIN DEPARTMENT OF TRANSPORTATION
SAFETY DIRECTIVE SD57

SUBJECT: HIGH VISIBILITY SAFETY APPAREL

Issued: 6/23/05

**ORIGINATOR: Bureau of Business Services
 Risk & Safety Unit**

**Supersedes: 07/01/01
 07/09/02**

Authority	Commerce 32.39 Exposure to traffic requires employees who work on highways; roads, streets or their easements shall wear a traffic safety vest.
Training Requirements	Training on the use of and care for high visibility safety apparel is required prior to use. A supervisor familiar with the equipment may do this. In addition, the Risk & Safety Unit offers a course in Personal Protective Equipment Basics.
When & Where Required	<p>Approved safety vests are required by all employees working on the pavement, shoulder or ditch of any active roadway carrying traffic.</p> <p>Approved safety vests and pants are required to be worn by employees during the hours of darkness (<i>½ hour before sunset & ½ hour after sunrise</i>) or during low visibility.</p> <p>Per ANSI 107-1999, wearing high visibility pants in addition to the vest is recommended when working on or near highways where the vehicular operating speed is in excess of 55 MPH.</p> <p>NOTE: The State Patrol (DSP) has developed policies and procedures and is exempt from this Safety Directive. All DSP staff shall follow all pertinent DSP policies and procedures.</p>
Types of High Visibility Safety Apparel	<p>High Visibility Safety Apparel shall meet or exceed ANSI 107-1999. It shall be a vest or vest and pants of a strong yellow-green material with patterns and material approved by the Department's Safety Manager.</p> <p>The high visibility T-shirt provided by the Department and approved by the Department's Safety Manager may be worn during situations not mentioned above in the "When & Where Required" section.</p>
Program Responsibility	The Risk & Safety Unit is responsible for the administration and coordination of this program.
Employee Responsibility	All employees, including supervisory personnel who are involved in work situations where high visibility is essential for personal safety shall wear approved safety apparel and be properly trained.
Supervisory Responsibility	Supervisors are to ensure that high visibility safety apparel is worn at all times as required and that training requirements are met and documented.

END OF DOCUMENT

Treated Wood Management

The three most common types of treated wood are pentachlorophenol (penta), creosote and chromated copper arsenate (CCA). These treatments were used to protect wood from insects and decay. Precautions must be taken when handling old treated wood products. NEVER BURN treated wood products, treated wood must be disposed of properly. Use safety precautions when handling old treated wood.

WisDOT no longer uses any new treated wood posts. Our current wood post contract specifies the non-toxic ACQ treated red pine.

Surplus of old treated wood:

- Person's taking old treated wood should be provided with this fact sheet.

Usage Precautions:

Do not use treated wood where the wood may become in contact with food or animal feed. **DO NOT USE TREATED WOOD:**

- For structures or containers for food or silage
- For cutting boards, counter tops or picnic tables
- In bee hive construction
- Where it may come in direct or indirect contact with public drinking water

Treated wood should not be used where it will be in frequent or prolonged contact with bare skin. **DO NOT USE TREATED WOOD:**

- For chairs, benches or other outdoor furniture

Handling Precautions:

1. Wear leather gloves to avoid splinters. If the wood is wet, rubber gloves are recommended.
2. After working with treated wood before eating, drinking or using tobacco products, wash hands and any exposed areas thoroughly.
3. Avoid frequent and prolonged inhalation of sawdust from treated wood. Perform sawing and machining outdoors. Thoroughly clean up any treated wood dust created indoors or out.
4. If sawdust accumulates on clothing, launder before reuse. Wash clothes separately from other household clothing.
5. When using powered equipment, wear safety glasses or goggles to protect eyes from flying particles.

Disposal:

DO NOT BURN TREATED WOOD

Dispose of treated wood at municipal solid waste landfills.

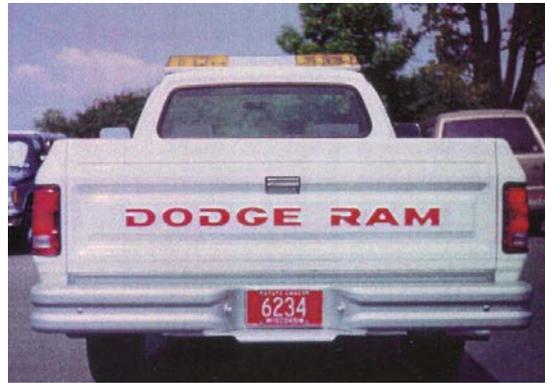
VEHICLE LIGHTING SCHEMESTypical WisDOT Sign Vehicle Lighting Schemes

Exhibit 6a	Sign Truck
Exhibit 6b	Pick-Up Truck
Exhibit 6c	Signing Flatbed

SIGN TRUCK



PICK UP TRUCK



SIGNING FLATBED



USE OF TRAFFIC WORKER SAFETY SCHEMES

LOCATION OF WORK AREA	SCHEME NUMBER	TRAFFIC CONDITION	WORK ZONE VISIBILITY	ROADWAY TYPE
Totally out of traffic lane	17 & 18	Any	Any	2 or Multi Lane
Slight Encroachment	17 & 18	Any	Adequate	2 or Multi Lane
One Flagger Operation	24	Light	Adequate	2 Lane
Two Flagger Operation	25	Heavy	Adequate	2 Lane
Two Flagger Operation	Fig. 6H-10	Any	Not Adequate	2 Lane
Encroachment into lane, less than 10' lane	*	Any	Any	Multi Lane

* For appropriate traffic control see figures in MUTCD or consult District Section, this will usually require extra assistance in providing Traffic Control

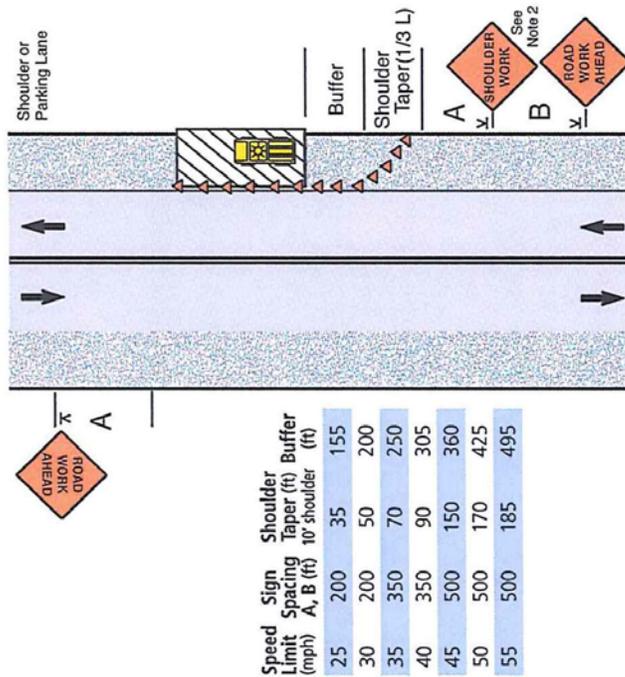
GENERAL NOTES FOR TRAFFIC AND WORKER SAFETY

1. Traffic Control shown on the drawings is considered as minimums
2. The Vehicle is considered to be part of the work area.
3. **Traffic Conditions** are considered to be Light if there are gaps in the Oncoming traffic to allow vehicles in the blocked lane to pass the work area without stopping traffic in the oncoming lane.(typically < 400 ADT)

Traffic Conditions are considered heavy if there are not sufficient gaps to allow vehicles in the blocked lane to pass the work area without stopping traffic in the oncoming lane. (Typically 400 ADT or more)
4. **Work Zone Visibility** is based on speed, light, and weather conditions as related to the ability of the motorist to react to the hazard.
5. **Work Duration** is considered to be *short* duration if the work activity will take one hour or less. Work duration is considered to be *long term* if the work activity takes longer than one hour.
6. Traffic control sign size is 48" x 48" . Traffic control signs **shall** be fluorescent orange prismatic reflective. Signs and supports **shall** meet NCHRP 350 crashworthy criteria. The height of traffic cones **shall** be a minimum of 28".
7. Vehicle warning lights are to be activated all times a vehicle is at a work sight.
8. These schemes are meant to be used for Daylight traffic control only.
9. The stop/slow paddle is to be used in flagging schemes.

SCHEME 17

Work on Shoulder or Parking Lane

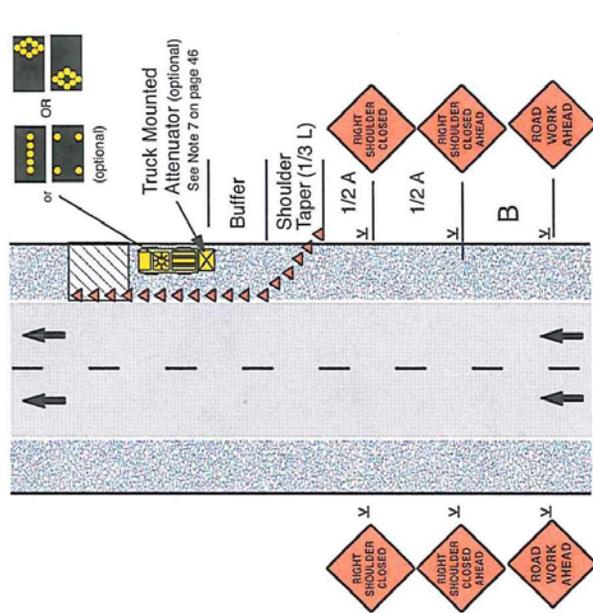


Notes

1. Encroachment into the traffic lane is allowable, but a 10-foot minimum travel lane width should be maintained. A lane closure should be considered if there is encroachment on roads with speeds greater than 35 mph, or for other conditions where workers, equipment, or the work activity would benefit from the lateral buffer (see pages 22 and 23).
2. If there is encroachment into the traffic lane, a ROAD NARROWS sign may be used instead of SHOULDER WORK. For roads with low volume, the SHOULDER WORK or ROAD NARROWS sign can be omitted.
3. For short duration work (60 minutes or less), the channelizing devices may be omitted if a vehicle with activated high intensity lights is used. For short duration work with no lane encroachment, the signs may also be omitted.
4. Workers, UTILITY WORK AHEAD, SHOULDER WORK AHEAD, or SURVEY CREW signs may be used instead of SHOULDER WORK or ROAD WORK AHEAD.
5. When work area is at least 2' from traffic lane on roads with low volume and speeds of 35 mph or less, the sign on opposite side can be omitted.

SCHEME 18

Shoulder or Parking Lane Closed on Divided Roadway

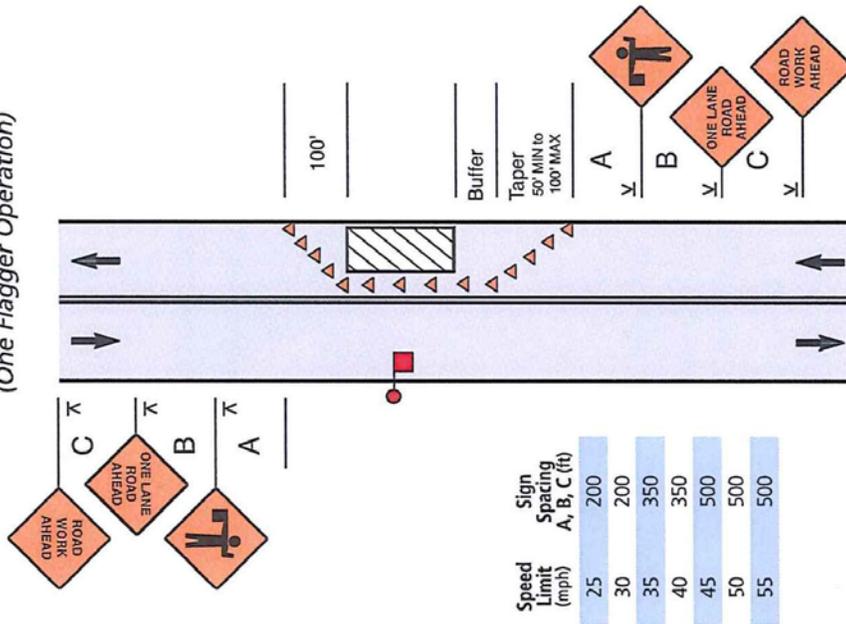


Notes

1. SHOULDER CLOSED signs should be used on limited-access highways where there is no opportunity for disabled vehicles to pull off the traveled way.
2. For short-term stationary work, one SHOULDER CLOSED warning sign can be omitted.
3. For short duration work (60 minutes or less), the channelizing devices can be omitted if a vehicle with activated high intensity lights is used. For short duration work with no lane encroachment, the signs can also be omitted.
4. UTILITY WORK AHEAD or Workers signs can be used instead of the warning signs shown.
5. If the parking lane is used as a traffic lane follow the lane closure layout. See page 32.

SCHEME 24

Lane Closure on a Two-Lane Road with Low-Volume
(One Flagger Operation)

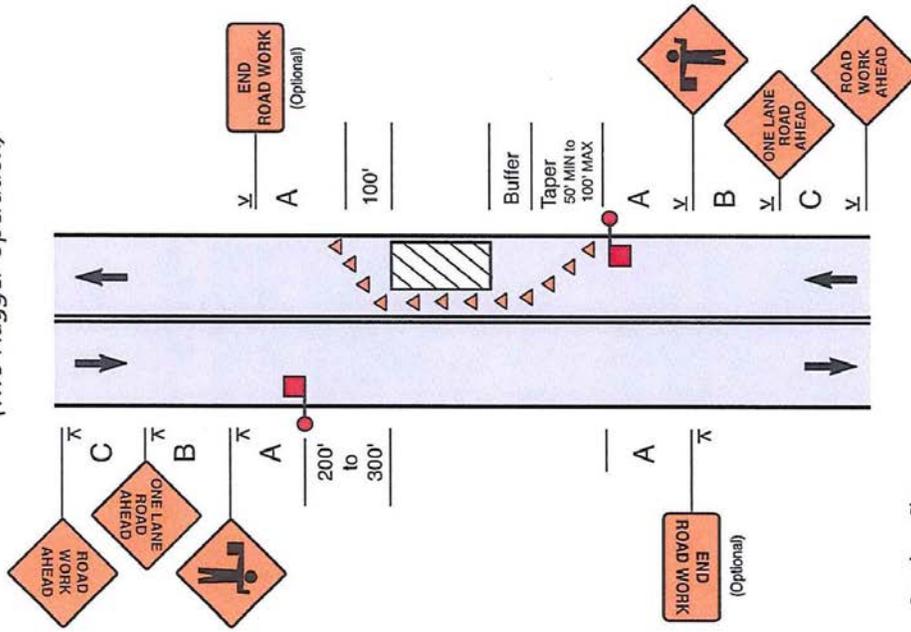


Notes

1. A single flagger may be adequate for roads with low volumes that have short, straight work areas. Where one flagger is used, the flagger should be visible to approaching traffic from both directions.
2. Set the buffer area lengths based on space at the site. The total length of the temporary traffic control zone must be short enough that drivers can see approaching traffic beyond the work area.
3. The flagger shall use approved flagging procedures according to the MUTCD and as shown on page 56.
4. For short duration work (60 minutes or less), the ROAD WORK AHEAD sign may be omitted.

SCHEME 25

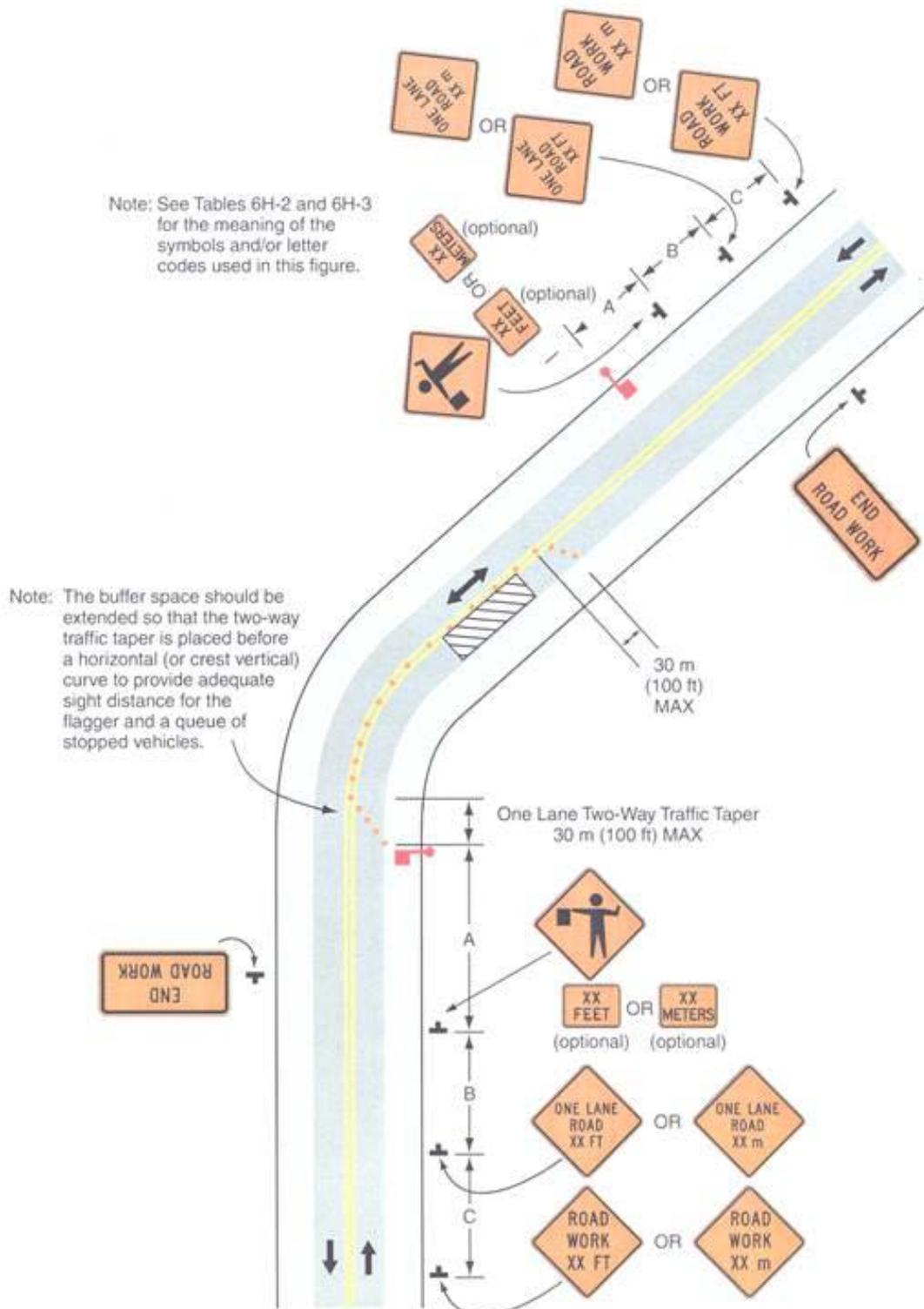
Lane Closure on a Two-Lane Road
(Two Flagger Operation)



Notes

1. The flaggers shall use approved flagging procedures according to the MUTCD and as shown on page 56.
2. For short duration work (60 minutes or less), the ROAD WORK AHEAD sign may be omitted.

Figure 6H-10. Lane Closure on Two-Lane Road Using Flaggers (TA-10)



Typical Application 10

WORK ORDER

County: _____

Date Reported: ____/____/____

Route: _____

Travel Direction: NB / SB / EB / WB

Sign Location: Crossroad / Island / Left side / Median / Ramp / Right side

Distance / Direction to Nearest Crossroad: _____

Work Requested: _____

Marker # _____ in Sign View

Record # _____ in Sign View

↑ To be filled out by WisDOT Region

↓ To be filled out by County

Sign Replaced: YES / NO

Date Repaired: ____/____/____

Sign Code	Sign Size & Length	Sign Date

Base Material: Wood / Aluminum

Sheeting: A / F

MFG Date of Sign: New _____

Reused _____

Post Replaced: YES / NO

Post Type: Wood / Steel Post / Steel Tube

Number of Posts Replaced: _____

Comments: _____

Submit to WisDOT Regional Sign Shop upon completion.

KNOCKDOWN & REPAIR REPORT

Date Called in: _____ Who Called: _____ Town: _____

Type of Sign: _____ Damage to: SIGN / POST

Temporarily Placed: YES / NO Sign Missing: YES / NO

Street Address/Road Location: _____

Nearest Intersection Name: _____

Distance & Direction from Nearest Intersection Road: _____

Repaired By: _____ Date: _____

DIGGER'S HOTLINE INFORMATION FORM

Phone Number: 1-800-242-8511 **Emergency Watchdog**
Contact: _____

Date Called: _____ Start Date & Time: _____

Replacing Sign Posts For: State DOT
County _____
Town/Village/City _____

Town Range & Section: _____

Marking Instructions: _____

Ticket Number: _____

List of Utilities: _____

SAMPLE SIGNING TMA

DISCRETIONARY MAINTENANCE AGREEMENT

WASHINGTON COUNTY

CALENDAR YEAR 2003

The State of Wisconsin Department of Transportation (hereafter called the Department) authorizes the maintenance project herein described, and the above designated County, represented by its County Highway Committee and Highway Commissioner, agrees to perform such operations and furnish such materials as listed below. It is understood that the maintenance services authorized under this agreement shall be accomplished in compliance with state and federal law and under the general direction of the Department. Payment for services provided under this agreement shall be made to the County based on actual labor, including fringe benefit costs, machinery allowances as specified in the current MAINTENANCE MANUAL, CHAPTER 5, and material purchases authorized by the Department. Such payment shall be made upon presentation of accounts itemized and verified in accordance with regulations of the Department.

In connection with the services provided under this agreement, the County agrees not to discriminate against any employee or applicant for employment because of sex, age, race, religion, color, handicap, physical condition, developmental disability as defined in s.51.05(5) or national origin. This provision shall include, but not be limited to the following: employment upgrading, demotion or transfer; recruitment or recruitment advertising; lay off or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The County further agrees to post in a conspicuous place, available for employees and applicants for employment, notices setting forth these provisions.

The disclaimer language as contained in the State Highway Maintenance Manual is included in this agreement by reference. The County is obligated to provide services under this agreement only to the extent it receives Department funding for the same. The Department recognizes that the County does not warrant that maintenance funds provided by the Department are sufficient to provide for a uniform level of service or standard of state highway maintenance applicable to all situations. Certain factors, including expressed within this manual impossible to achieve.

PROJECT ID	COUNTY ACCT. NO.	DESCRIPTION	AMOUNT
0066-38-20	53321	TRAFFIC SIGNING NON INTERSTATE	\$ 32,500
		ESTIMATED COUNTY COSTS	\$ 32,500

DATE: _____

ESTIMATED AMOUNT BUDGETED

COUNTY LABOR	\$ 20,480
COUNTY EQUIPMENT	\$ 10,240
COUNTY MATERIALS	\$ 500
ADMINISTRATIVE SUPPORT	\$ 1,280



 County Highway Commissioner

TOTAL COUNTY COST \$ 32,500

Approved for DEPARTMENT OF TRANSPORTATION

 District Director Date

 Director, State Highway Maintenance Date

E-M-605B 11-86

State of Wisconsin / Department of Transportation

REVISED
DISCRETIONARY TRAFFIC MAINTENANCE AGREEMENT

WASHINGTON COUNTY
CALENDAR YEAR 2003

PROJECT ID: 0066-58-20 (NONINTERSTATE)

GENERAL SIGNING AT VARIOUS LOCATIONS ON THE STATE TRUNK HIGHWAY SYSTEM IN WASHINGTON COUNTY

FURNISH ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE FOR YEAR AROUND PERMANENT REPAIR AND REPLACEMENT OF ALL KNOCKDOWNS, DAMAGED SIGNS, SIGN SUPPORTS, DELINEATORS AND THE INSTALLATION OF NEW AND RELOCATED SIGNS AS DIRECTED BY THE DEPARTMENT OF TRANSPORTATION ON THE STATE TRUNK HIGHWAY SYSTEM IN WASHINGTON COUNTY FOR THE PERIOD BEGINNING JANUARY 1, 2003 AND ENDING DECEMBER 31, 2003. THIS RESPONSIBILITY WILL EXCLUDE OVERHEAD AND GROUND MOUNTED SIGNING FOR WHICH THE COUNTY MAY NOT HAVE THE PROPER EQUIPMENT TO PERFORM THE REQUIRED TASKS.

THE ESTIMATED COSTS ARE BASED ON CURRENT LABOR AND EQUIPMENT RATES ON FILE WITH THE DEPARTMENT OF TRANSPORTATION AND INCLUDE ANTICIPATED SMALL TOOL ALLOWANCE AND RECORD AND REPORT ALLOWANCE.

SIGNS, POSTS AND INCIDENTAL HARDWARE WILL BE FURNISHED BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION. ALL REPLACEMENTS WILL BE MADE AT THE ORIGINAL SIGN LOCATION UNLESS APPROVAL TO RELOCATE IS GIVEN BY THE DEPARTMENT. THE COUNTY WILL BE RESPONSIBLE FOR RECORD KEEPING REQUIRED BY THE DEPARTMENT; CONTACTING DIGGERS HOTLINE OR ANY APPLICABLE UTILITIES FOR LOCATE PRIOR TO DIGGING; ASSEMBLY AND ERECTION OF HIGHWAY SIGNS; STORAGE OF DEPARTMENT FURNISHED INVENTORY MATERIALS INCLUDING INSIDE STORAGE OF SIGNS; AND ALL REQUIRED WORK ZONE TRAFFIC CONTROL. ALL SIGNING WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE WISDOT SIGNING GUIDELINES MANUAL.

CONTACT PEOPLE WITH THE DEPARTMENT WILL BE DENNIS NEWTON OR STEVEN BOWE AT (414) 266-1164

HIGHWAY	LOCATION	LENGTH	UNIT PRICE	QUANTITY
STH VARIOUS	VARIOUS LOCATIONS ON THE STATE TRUNK HIGHWAY SYSTEM IN WASHINGTON COUNTY	.00	/	
STATE FURNISHED MATERIALS				
COUNTY FURNISHED MATERIALS			\$	500
COUNTY LABOR			\$	20,480
SALARY			\$	12,310
FRINGE			\$	8,170
OVERTIME				
COUNTY EQUIPMENT			\$	10,240
ADMINISTRATIVE SUPPORT			\$	1,280
			TOTAL PROJECT COSTS	<u>\$ 32,500</u>

CHARGES FOR THIS WORK SHALL BE SUMMARIZED BY THE FOLLOWING ACTIVITY CODES:

81 PERMANENT SIGN REPAIR
85 TEMPORARY/EMERGENCY SIGN REPAIR
95 BACK PAY

DISCRETIONARY MAINTENANCE AGREEMENT
COUNTY FURNISHED MATERIALS

WASHINGTON COUNTY

Project Id	Description	Quantity	Unit	Estimated Unit Price	Budget
Amount 0066-38-10	UNLISTED HWY MATERIALS	N/A	LUMP SUM	\$ 500.00	\$ 500.00

SAMPLE

SIGNVIEW FIELD ACTIVITY FORM EXAMPLE

Office [Icons]

CartéGraph Navigator - SIGNview - [Field Form Short]

File Edit View Forms Filters Records Actions Reports Tools Window Help

Signview

Signs
Home
Administrator

Location

Back 10 Forward 10

District: District 1
 Region: Northeast
 County: Dane
 Route: _151N
 Site ID:
 Marker: 48.99 mi
 Position: Median
 Travel Direction: North
 Sign Direction: South
 Offset:
 Speed Zone: 40 mph
 ID: autonum-1325
 Ver4 Rec Num: 5017
 Sign Bridge Number:
 Last Date Inspected:
 Date of CD:

Sign Description

Sign Code: M1-94
 Code Attachment:
 <sym>\m194.jpg

 Description: Crossroad Name
 Size Width: Height:
 Base: Plywood
 Face: Type H - High Intensity
 Message: Die-cut Letters
 Order Line 1: Chuck Spang Drive
 Order Line 2:
 Order Line 3:
 Order Line 4:
 Order Line 5:
 Order Line 6:
 Lettering Size:
 Order Notes:
 Mfg Date:
 Mfg Code:
 Sign Overlay:
 Sign Overlay Date:
 Comments:
 Sign Rating:

Support Description

Type II Sign Posts

Support ID:
 # of Signs: 1 - The Current Sign
 Post 1:
 Post 2:
 Post 3:
 Post 4:
 Anchor Assembly:
 Support Rating:
Type I Sign Posts

Length 1:
 Length 2:
 Length 3:
 Type Beam:

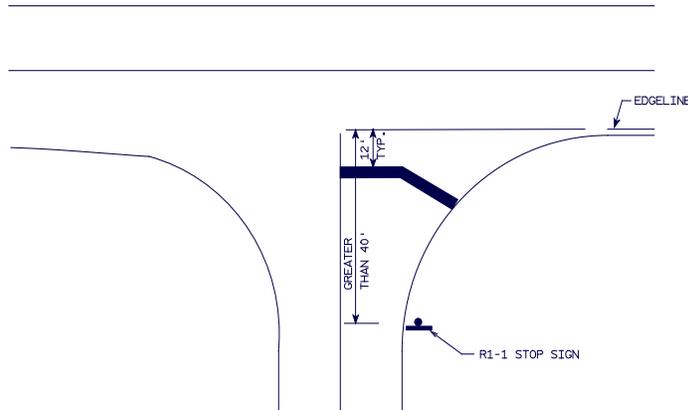
Activity Information

Current Project #:
 Fleet #:
 Man Hours:
 Assisting Crew:
 Work Order #:
 Performed By:
 Event Activity: Correct Data Entry Errors
 Event/When Ended: 09/26/2001
 Entered By: Steve Zouski
 Why: Update Current Info
 Next Scheduled Contract Year:
 Retired:

Diggers Hotline Info

City:
 Township:
 Range:
 Section:
 Quarter Section:
 Utility Cautions:
 Locate Comments:
 Ticket Number:

TYPICAL STOP LINE APPLICATION



TYPICAL STOP LINE APPLICATION

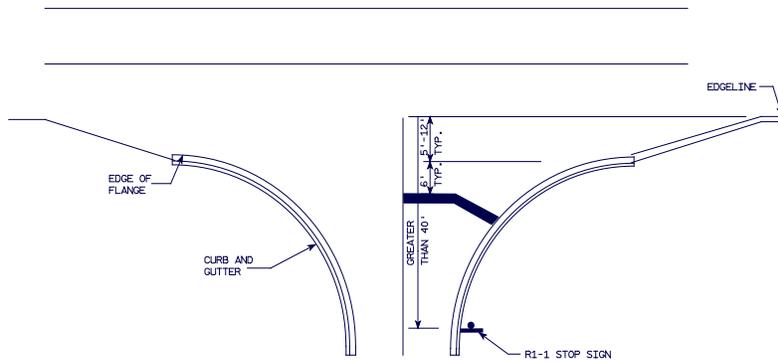
NO CURB AND GUTTER

NOTE:
IF STOP SIGN IS LESS THAN OR EQUAL TO 40' FROM THE EDGE LINE THEN NO STOP LINE IS REQUIRED.

- 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE PROJECT ENGINEER BASED ON VISIBILITY AND SIGHT LINES.

STOP LINES REQUIRED WHERE:

- LARGE RADII - SEE STOP LINE APPLICATION DETAIL
- OFFSET LEFT TURNS WHERE STOP BAR FOR LEFT TURN IS SET BACK FROM THRU MOVEMENT.



TYPICAL STOP LINE APPLICATION

CURB AND GUTTER APPLICATION

NOTE:
IF STOP SIGN IS LESS THAN OR EQUAL TO 40' FROM THE EDGE LINE THEN NO STOP LINE IS REQUIRED.

- 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE PROJECT ENGINEER BASED ON VISIBILITY AND SIGHT LINES.

STOP LINES REQUIRED WHERE:

- LARGE RADII - SEE STOP LINE APPLICATION DETAIL
- OFFSET LEFT TURNS WHERE STOP BAR FOR LEFT TURN IS SET BACK FROM THRU MOVEMENT.



State of Wisconsin
Department of Transportation

Traffic Guidelines Manual

ORIGINATOR State Traffic Engineer		6-10-20
CHAPTER 6	Work Zone Traffic Control	
SECTION 10	Detours	
SUBJECT 20	Signing and Marking – Local Roads	

GENERAL

When a local or county road is used as a STH detour route, the geometric characteristics of that route such as shoulder or pavement width or alignment often times are less than the characteristics of the STH route. Despite these conditions, the local road has been chosen as a detour route because it is the best alternative. Although the geometric standards *may* not be able to be upgraded, traffic control devices such as signing and marking *should* be upgraded to the same standards as the STH system. Exceptions are outlined below.

SIGNING

Concern has been expressed that local jurisdictions will incur some liability if signs are placed on their routes as an upgrade of their current standards during a STH detour and then removed. WisDOT General Counsel has determined that temporarily upgrading the signing along the local route does not place a liability upon the local municipality. (See attached December 3, 1991)

WARNING AND REGULATORY SIGNING

The signing along the detour route, Stop Signs, No Passing zone pennants, Curve, Turn and other warning and regulatory signs **shall** be installed along the route as if the detour route were a state trunk highway. If the detour will be in place less than two weeks, the District will determine to what extent, if any, the signing will be upgraded. In the case of an emergency detour, the signing will be upgraded as soon as possible depending on the anticipated duration of the detour.

JUNCTION AND REASSURANCE ASSEMBLIES

Orange auxiliary arrows and detour auxiliary plaques **shall** be used in route marker assemblies in advance of and along the detour route. Reassurance markers **shall** be placed after every major intersection or at a spacing not to exceed two miles in rural areas and two blocks in urban areas.

QUALITY OF SIGNS

The condition of the signs used along the detour route **shall** be such that the signs have good daytime visibility and nighttime reflectivity. Care must be taken to ensure the signs are in good enough condition to command the respect and attention of motorists. This is especially important on detour routes since typically motorists who are unfamiliar with the route are depending on these signs for guidance.

REMOVAL OF DETOUR SIGNING

Some of the signs along the route *may* have been added to upgrade the route to STH signing standards. The local Jurisdiction *may* not wish to have these signs retain in place after the detour is no longer in place. Sign removal *should* be dependent on the wishes of the local Jurisdiction.

PAVEMENT MARKING

The condition of the marking *should* be such that it provides daytime and nighttime visibility and *should* be approximately equal in quality to that prevalent on State Trunk Highways.

CENTER LINE AND EDGE LINE MARKING

Unless the detour will be in place less than two weeks, the edge line and center line marking along the detour route *should* be in general agreement with WisDOT policy for marking on the STH System. If the detour will be in place less than two weeks, the District will determine which, if any, markings need to be upgraded.

NO PASSING ZONE MARKING

Since local jurisdictions do not have the same No Passing zone criteria as the STH System, in some cases, the No Passing zones *may* need to be relocated using STH criteria. The District is responsible for determining if the difference between local and STH criteria used when locating the zones differs enough to warrant remarking of the zones.

REMOVAL OF DETOUR PAVEMENT MARKING

If the marking along the route has been upgraded it is up to the District and the local jurisdiction to determine if the marking *should* stay in place. Marking removal can be accomplished by contract or by resurfacing the roadway upon the completion of the detour.



Wisconsin Department of Transportation
Office of General Counsel

MEMORANDUM

To: Lee F. Crook
 From: Jim Thiel *Jim Thiel*
 Date: December 3, 1991
 Subject: Policy on Detour No Passing Marking; OGC 91-456

You asked whether the policy of marking state trunk highway detours on local roads with the yellow and black NO PASSING ZONE warning pennants causes a legal problem of liability for the local agency when the detour is removed and the pennants are removed.

It is my opinion that the answer is NO, if the pennants are removed at the request of the local agency when the detour is removed. The reason is that installation of the NO PASSING ZONE pennant is a discretionary, policy decision on local roads by local governments. The local government traffic engineers can most appropriately decide what they want, i.e. no-passing zone pavement markings or black and white DO NOT PASS signs or combinations of the above and the NO PASSING ZONE pennants.

The Manual on Uniform Traffic Control Devices (MUTCD), paragraph 2C-38 deals with the NO PASSING ZONE sign (W14-3). It says the NO PASSING ZONE sign "should be used on two-lane roads to warn of the beginning of no-passing zones identified by either conventional pavement markings or DO NOT PASS signs or both." Our Wisconsin supplement to the MUTCD says "The W14-3 No Passing Zone sign shall be used on State Trunk Highways to designate no-passing zones." Paragraph 1A-5 of the MUTCD defines "shall" as a "mandatory condition. Where certain requirements in the design or application of the device are described with the "shall" stipulation, it is mandatory when an installation is made that these requirements be met." It defines "should" as "an advisory condition. Where the word "should" is used, it is considered to be advisable usage, recommended but not mandatory." Therefore use of the NO PASSING ZONE pennant is discretionary by local governments on local roads.

In considering whether to ask WISDOT to remove the pennants when the detour is removed, the local government is in the best position to make the policy decision whether uniformity of marking on the local system outweighs any marginal benefit of retention and maintenance of NO PASSING ZONE pennants when the STH detour is removed. There is no statutory requirement imposed on local governments to install or maintain NO PASSING ZONE pennants. There is no ministerial, mandatory duty for local governments to install them on local roads under the MUTCD. The local government may decide to retain the signs and maintain them as a safety precaution to the traveling public. Although there is no local, legal duty to erect them in the first instance, if the local government decides to keep them after the detour is removed, a court might decide there is a local, common law duty to maintain the signs in good condition if the court decides the public has developed a right to rely on their continued presence.

cc: Pete Rusch, Julie Neebel, Chuck Spang, Gerry Roth

Wisconsin MUTCD Supplement
Table 2C-4 Guidelines for Advanced Placement of Warning Signs
 (English Units)

Posted or 85 th – Percentile Speed	Advanced Placement Distance ¹								
	Condition A: Speed reduction and lane changing in heavy traffic ²	Condition B Deceleration to the listed advisory speed (mph) for the condition ⁴							
		0 ³	10	20	30	40	50	60	70
20 mph	225 ft	N/A ⁵	N/A ⁵						
25 mph	325 ft	150 ft	100ft	N/A ⁵					
30 mph	450 ft	200 ft	150 ft	100 ft					
35 mph	550 ft	250 ft	200 ft	175 ft	N/A ⁵				
40 mph	650 ft	300 ft	275 ft	250 ft	175 ft				
45 mph	750 ft	400 ft	350 ft	300 ft	250 ft	N/A ⁵			
50 mph	850 ft	550 ft	425 ft	400 ft	325 ft	225 ft			
55 mph	950 ft	750 ft	500 ft	475 ft	400 ft	300 ft	N/A ⁵		
60 mph	1100 ft	1000 ft	575 ft	550 ft	500 ft	400 ft	300 ft		
65 mph	1200 ft	1000 ft	650 ft	625 ft	575 ft	500 ft	375 ft	N/A ⁵	
70 mph	1250 ft	1000 ft	650 ft	625 ft	575 ft	500 ft	375 ft	375 ft	
75 mph	1350 ft	1000 ft	650 ft	625 ft	575 ft	500 ft	375 ft	375 ft	100 ft

Notes:

1. The distances are adjusted for a sign legibility distance of 175 ft for Condition A. The distances for Condition B have been adjusted for a sign legibility of 250 ft, which is appropriate for an alignment warning symbol sign.
2. Typical conditions are locations where the road user must use extra time to adjust speed and change lanes in heavy traffic because of a complex driving situation. Typical signs are Merge and Right Lane Ends. The distances are determined by providing the driver a PIEV time of 14.0 to 14.5 seconds for vehicles maneuvers (2001 AASHTO Policy, Exhibit 3-3, Decision Sight Distance, Avoidance Maneuver E) minus the legibility distance of 175 ft for the appropriate sign.
3. Typical condition is the warning of a potential stop situation. Typical signs are Stop Ahead, Yield Ahead, ~~or~~ Signal Ahead and Intersection Warning signs.
4. Typical conditions are locations where the road user must decrease speed to maneuver through the warned condition. Typical signs are Turn, Curve, Reverse Turn, or Reverse Curve.
5. No suggested minimum distances are provided for these speeds, as placement location is dependent on site conditions and other signing to provide an adequate advance warning for the driver.

COUNTY CHECKLIST

- Diggers Hotline contacted
- Site located for utilities
- Proper safety attire worn
- Proper Work Zone Traffic Control
- Proper Sign Installation
 - Sign placement (facing correct direction).
 - Post height (per the A4-1, A4-3, A4-4 or A4-9 sign plates).
 - Post depth (per the A4-3, A4-4 or A4-9 sign plates).
 - Sign offset (per the A4-1, A4-2, A4-3 or A4-4 sign plates).
 - Sign height (per the A4-1, A4-2, A4-3 or A4-4 sign plates).
 - 1 ½” diameter breakaway holes drilled through 6” face of 4” x 6” posts (per A4-11 sign plate).
 - Post not showing above sign (top of post should be approximately 1-2” below the top of sign).
 - Post plumbness.
 - Sign squared on post.
 - Correct multiple post spacing (per A4-4 sign plate).
 - Post hole adequately backfilled and compacted in 6” layers.
- Proper banding clamps, straps or mounting hardware used (per the A4-8 and A5-9 sign plates).
- Completeness of County Work Report
 - Manufacturing date, code and size noted on report
 - Note missing or additional signs in the field not included on the report and include manufacturing date, code and size.
- Damage claim tag/number and Motor Vehicle Report to Region Sign Shop
- Storage of scrap signs.
- Return of scrap aluminum signs to Region Sign Shop.

PROJECT INSPECTOR CHECKLIST

- ❑ Initial contact with Region Sign Shop Representative
- ❑ Proper Work Zone Traffic Control
- ❑ Proper Sign Location
 - ❑ Visibility
 - ❑ Spacing
- ❑ Proper Post Installation
 - ❑ Certification of wood post preservative treatment (per Sections 634.2.1 and 507.2.2.6 of the Standard Construction Specifications). Provide copy of certification to Region Signing Coordinator.
 - ❑ Post height (per the A4-1, A4-3, A4-4 or A4-9 sign plates).
 - ❑ Post depth (per the A4-3, A4-4 or A4-9 sign plates).
 - ❑ Proper size boxouts in asphalt and concrete (per Section 634.3.2 of the Standard Construction Specifications).
 - ❑ 1 ½” diameter breakaway holes drilled through 6” face of 4” x 6” posts (per the A4-11 sign plate).
 - ❑ Post not showing above sign (top of post should be approximately 1-2” below the top of sign).
 - ❑ Post plumbness.
 - ❑ Correct multiple post spacing (per the A4-4 sign plate).
 - ❑ Post hole adequately backfilled and compacted in 6” layers.
- ❑ Proper Sign Installation
 - ❑ Certification of proper sign sheeting and base material. Provide copy of certifications to Region Signing Coordinator.
 - ❑ Message, spelling, letter height, face material and size in accordance with plan details.
 - ❑ Overhead Sign Support, Type II sign bracket in accordance with Approved Products List (per Section 637.3.3.3 of the Standard Construction Specifications).
 - ❑ Sign placement (facing correct direction).
 - ❑ Sign offset (per the A4-1, A4-2, A4-3 or A4-4 sign plates).

- ❑ Sign height (per the A4-1, A4-2, A4-3 or A4-4 sign plates).
- ❑ Sign squared on post.
- ❑ Date Tags attached to back of sign, in upper right corner, for Type II and III signs and lower right corner, for Type I signs (per Section 637.2.3.6 of the Standard Construction Specifications).
- ❑ Vandalism sticker placed on front of sign (per Section 637.2.3.5 of the Standard Construction Specifications).
- ❑ Proper banding clamps, straps or mounting hardware used (per the A4-8 and A5-9 sign plates).
- ❑ Notice of additional work needed.
- ❑ Proper storage of scrap signs.
- ❑ Return of Type II scrap signs to Region Sign Shop, including sorting of aluminum and plywood and disassembly of J-panels (per Section 638.3.4 of the Standard Construction Specifications).
- ❑ Submittal of as-built plans to Region Sign Shop.

Wisconsin DOT Typical Warehoused Signs

Sign Code				Description	Stored by C.O. Signs	Stored by Regions
D9-2	24in x 24in	X	X	Hospital	x	x
E5-1	60in x 48in	72in x 60in	X	Exit (Arrow)	x	x
E5-1-A	72in x 60in	90in x 60in	108in x 60in	Exit Number (Arrow) 1-4 Digits	x	
M1-1	24in x 24in	36in x 36in	X	Interstate Shield	x	x
M1-1-A	30in x 24in	45in x 36in	X	Interstate Route Marker (3 digit)	x	x
M1-4	24in x 24in	36in x 36in	X	US Route Marker		x
M1-5-A	24in x 24in	36in x 36in	X	County Marker		x
M1-6	24in x 24in	36in x 36in	X	State Route Marker		x
M1-6-B	24in x 24in	36in x 36in	X	State Route 32 Marker		x
M1-91	24in x 24in	X	X	Lake Superior Circle Tour	x	x
M1-93	24in x 24in	X	X	Lake Michigan Circle Tour	x	x
M1-95	24in x 24in	X	X	Frontage Road Marker		x
M1-96	24in x 24in	X	X	Great River Road Marker	x	x
M1-97	24in x 24in	X	X	Kettle Moraine Drive Marker	x	x
M2-1	21in x 15in	30in x 21in	X	Junction Marker	x	x
M3-1	24in x 12in	30in x 15in	X	NORTH Cardinal Route Marker	x	x
M3-2	24in x 12in	30in x 15in	X	EAST Cardinal Route Marker	x	x
M3-3	24in x 12in	30in x 15in	X	SOUTH Cardinal Route Marker	x	x
M3-4	24in x 12in	30in x 15in	X	WEST Cardinal Route Marker	x	x
M4-1	24in x 12in	30in x 15in	X	Alternate Marker	x	x
M4-1-A	24in x 12in	30in x 15in	X	ALT	x	x
M4-2	24in x 12in	30in x 15in	X	By-pass Marker	x	x
M4-3	24in x 12in	30in x 15in	X	Business Route Marker	x	x
M4-5	24in x 12in	30in x 15in	X	To	x	x
M4-6	24in x 12in	30in x 15in	X	End	x	x
M4-8	24in x 12in	30in x 15in	X	Detour		x
M4-8-A	24in x 18in	30in x 24in	X	END DETOUR		x
M4-9-L	30in x 24in	X	X	Detour Sign with LEFT Arrow		x
M4-9-R	30in x 24in	X	X	Detour Sign with RIGHT Arrow		x
M4-10	24in x 12in	30in x 15in	X	On Ramp	x	x
M4-20-L	24in x 24in	36in x 36in	X	Use Left Lane	x	x
M4-20-R	24in x 24in	36in x 36in	X	Use Right Lane	x	x
M5-1-L	21in x 21in	30in x 30in	X	Advance Arrow Left Turn	x	x
M5-1-R	21in x 21in	30in x 30in	X	Advance Arrow Right Turn	x	x
M5-2-L	21in x 21in	30in x 30in	X	Advance Arrow Left Bent	x	x
M5-2-R	21in x 21in	30in x 30in	X	Advance Arrow Right Bent	x	x
M6-1	21in x 21in	30in x 30in	X	Arrow - RIGHT, LEFT, OR AHEAD	x	x
M6-2	21in x 21in	30in x 30in	X	Arrow Tilt Right or Left	x	x
M6-4	21in x 21in	30in x 30in	X	Directional Arrows Left - Right	x	x
M6-5	21in x 21in	30in x 30in	X	Directional Arrows DIAGONAL	x	x
M6-6	21in x 21in	30in x 30in	X	Directional Arrows LA/UA COMBO OR UA/RA	x	x
M6-7-L	21in x 21in	30in x 30in	X	Dir Arrow Ahead Dia Left	x	x
M6-7-R	21in x 21in	30in x 30in	X	Directional Arrow - Ahead & Diagonal RIGHT	x	x
MB2-1	21in x 15in	30in x 21in	X	JCT - BLUE	x	x
MB3-1	24in x 12in	30in x 15in	X	North - BLUE	x	x
MB3-2	24in x 12in	30in x 15in	X	East - BLUE	x	x
MB3-3	24in x 12in	30in x 15in	X	South - BLUE	x	x
MB3-4	24in x 12in	30in x 15in	X	West - BLUE	x	x
MB4-1	24in x 12in	30in x 15in	X	Alternate	x	x
MB4-1-A	24in x 12in	30in x 15in	X	ALT	x	x
MB4-5	24in x 12in	30in x 15in	X	To - BLUE	x	x
MB4-6	24in x 12in	30in x 15in	X	End - BLUE	x	x
MB5-1-L	21in x 21in	30in x 30in	X	Advanced Left Turn Arrow	x	x
MB5-1-R	21in x 21in	30in x 30in	X	Advanced Right Turn Arrow	x	x
MB5-2-L	21in x 21in	30in x 30in	X	Advance Arrow LEFT Bent	x	x
MB5-2-R	21in x 21in	30in x 30in	X	Advance Arrow Right Bent	x	x
MB5-51-L	21in x 21in	30in x 30in	X	Advance Arrow Ahead Left Ahead	x	x
MB5-51-R	21in x 21in	30in x 30in	X	Advance Arrow Ahead Right Ahead	x	x
MB6-1	21in x 21in	30in x 30in	X	Arrow - RIGHT, LEFT, OR AHEAD	x	x
MB6-2	21in x 21in	30in x 30in	X	Arrow - TILT RIGHT OR LEFT	x	x
MB6-4	21in x 21in	30in x 30in	X	Directions Arrow - LEFT/RIGHT	x	x
MB6-5	21in x 21in	30in x 30in	X	Direction Arrow - DIAGONAL	x	x
MB6-6	21in x 21in	30in x 30in	X	Direction Arrow - LA/UA COMBO OR UA/RA	x	x
MB6-7-L	21in x 21in	30in x 30in	X	Dir Arrow Ahead Dia Left	x	x
MB6-7-R	21in x 21in	30in x 30in	X	Direction Arrow Ahead Dia Right	x	x
MG2-1	21in x 15in	30in x 21in	X	JCT - Great River Rd.		x
MG3-1	24in x 12in	30in x 15in	X	North - Great River Rd.		x
MG3-2	24in x 12in	30in x 15in	X	East - Great River Rd.		x
MG3-3	24in x 12in	30in x 15in	X	South - Great River Rd.		x
MG3-4	24in x 12in	30in x 15in	X	West - Great River Rd.		x
MG4-5	24in x 12in	30in x 15in	X	To - Great River Rd.		x
MG4-6	24in x 12in	30in x 15in	X	End - Great River Rd.		x
MG5-1-L	21in x 21in	30in x 30in	X	Advanced Left Turn Arrow - Great River Rd.		x
MG5-1-R	21in x 21in	30in x 30in	X	Advanced Right Turn Arrow - Great River Rd.		x
MG5-2-L	21in x 21in	30in x 30in	X	Advance Arrow LEFT Bent - Great River Rd.		x
MG5-2-R	21in x 21in	30in x 30in	X	Advance Arrow Right Bent - Great River Rd.		x

MG6-1	21in x 21in	30in x 30in	X	Arrow - RIGHT, LEFT, OR AHEAD - Great River Rd.		x
MG6-2	21in x 21in	30in x 30in	X	Arrow - TILT RIGHT OR LEFT - Great River Rd.		x
MG6-4	21in x 21in	30in x 30in	X	Directions Arrow - LEFT/RIGHT - Great River Rd.		x
MG6-5	21in x 21in	30in x 30in	X	Direction Arrow - DIAGONAL - Great River Rd.		x
MG6-6	21in x 21in	30in x 30in	X	Direction Arrow - LA/UA COMBO OR UA/RA		x
MG6-7-L	21in x 21in	30in x 30in	X	Dir Arrow Ahead Dia Left - Great River Rd.		x
MG6-7-R	21in x 21in	30in x 30in	X	Direction Arrow Ahead Dia Right - Great River Rd.		x
MO4-1	24in x 12in	30in x 15in	X	Alternate - ORANGE		x
MO4-1-A	24in x 12in	30in x 15in	X	ALT		x
MO5-1-L	21in x 21in	30in x 30in	X	Advance Arrow - LEFT Turn - ORANGE		x
MO5-1-R	21in x 21in	30in x 30in	X	Advance Arrow Right Turn		x
MO5-2-L	21in x 21in	30in x 30in	X	Advance Arrow - LEFT Bent - ORANGE		x
MO5-2-R	21in x 21in	30in x 30in	X	Advance Arrow Right Bent		x
MO5-51-L	21in x 21in	30in x 30in	X	Advance Arrow Ahead Left Ahead		x
MO5-51-R	21in x 21in	30in x 30in	X	Advance Arrow Ahead Right Ahead		x
MO6-1	21in x 21in	30in x 30in	X	Arrow - RIGHT, LEFT OR AHEAD - ORANGE		x
MO6-2	21in x 21in	30in x 30in	X	Arrow - TILT RIGHT OR LEFT - ORANGE		x
MO6-4	21in x 21in	30in x 30in	X	Directional Arrow - LEFT & RIGHT - ORANGE		x
MO6-5	21in x 21in	30in x 30in	X	Directional Arrow - DIAGONAL - ORANGE		x
MO6-6	21in x 21in	30in x 30in	X	Directional Arrow-LA/UA or UA/RA combo - ORANGE		x
MO6-7-L	21in x 21in	30in x 30in	X	Dir Arrow Ahead Dia Left		x
MO6-7-R	21in x 21in	30in x 30in	X	Dir Arrow Ahead Dia Right		x
MR1-99	24in x 24in	X	X	Rustic Road Marker	x	
R1-1	30in x 30in	36in x 36in	48in x 48in	Stop	x	x
R1-1-F	30in x 30in	36in x 36in	X	Stop (Folding)	x	x
R1-2	36in x 31in	X	48in x 42in	Yield	x	x
R1-2-RU	X	X	48in x 48in	Yield (Rollup)	x	x
R1-3	18in x 6in	X	X	3 Way	x	x
R1-4	18in x 6in	X	X	All Way	x	x
R1-51	30in x 18in	X	X	Right Turn No Stop	x	x
R1-52	36in x 15in	42in x 18in	X	Traffic on [10] Does Not Stop	x	x
R1-52-A	40in x 15in	48in x 18in	X	Oncoming Traffic Does Not Stop	x	x
R1-52-C	36in x 15in	42in x 18in	X	Cross Traffic Does Not Stop	x	x
R1-52-L	42in x 15in	54in x 18in	X	Traffic From Left Does Not Stop	x	x
R1-52-R	42in x 15in	54in x 18in	X	Traffic From Right Does Not Stop	x	x
R2-1	24in x 30in	36in x 48in	48in x 60in	Speed Limit _ MPH	x	x
R3-1	24in x 24in	30in x 30in	36in x 36in	No Right Turn Symbol	x	x
R3-2	24in x 24in	30in x 30in	36in x 36in	No Left Turn Symbol	x	x
R3-3	24in x 24in	30in x 30in	36in x 36in	No Turns	x	x
R3-4	24in x 24in	30in x 30in	36in x 36in	No U-Turn Symbol	x	x
R3-4-A	X	X	36in x 12in	Except Maintenance And Police Authorized Vehicles	x	x
R3-4-B	X	X	36in x 48in	No U Turn Sign combined with Maint. and Police Veh	x	x
R3-7-L	30in x 30in	36in x 36in	48in x 48in	LEFT Lane Must Turn LEFT	x	x
R3-7-R	30in x 30in	36in x 36in	48in x 48in	Right Lane Must Turn Right	x	x
R3-7-S	48in x 30in	X	X	Left [2] Lanes Must Turn Left	x	x
R3-53-L	24in x 30in	24in x 30in	X	Left Turn Only	x	x
R3-53-R	24in x 30in	24in x 30in	X	Right Turn Only	x	x
R3-55-L	24in x 30in	36in x 48in	X	Left Turn Lane With Down Right Arrow	x	x
R3-55-R	24in x 30in	36in x 48in	X	Right Turn Lane With Down Left Arrow	x	x
R3-56	24in x 30in	36in x 48in	X	Left Turn Lane with Down LEFT Arrow	x	x
R3-58	24in x 30in	36in x 48in	36in x 48in	Form Single Line	x	x
R4-3	24in x 30in	36in x 48in	48in x 60in	Slower Traffic Keep Right	x	x
R4-7	24in x 30in	36in x 48in	X	Keep Right	x	x
R5-1	30in x 30in	36in x 36in	X	Do Not Enter	x	x
R5-1A	36in x 24in	42in x 30in	X	Wrong Way	x	x
R5-1-C	30in x 30in	36in x 36in	X	Do Not Enter (Clipped Corners)	x	
R5-57	36in x 36in	X	X	Pedestrians Etc, Prohibited	x	x
R5-57-B	36in x 30in	X	X	Beyond Next Exit	x	x
R5-98	42in x 24in	X	X	No Trespassing State of Wisconsin	x	x
R6-2-L	24in x 30in	X	X	One Way Left Arrow	x	x
R6-2-R	24in x 30in	X	X	One Way RIGHT Arrow	x	x
R6-3	30in x 24in	X	X	Divided Highway Crossing Sign and Intersection	x	x
R6-3-A	30in x 24in	X	X	Divided Highway Crossing T Intersection	x	x
R7-1-D	18in x 24in	24in x 30in	X	No Parking Any Time - Double Arrow	x	x
R7-1-L	18in x 24in	24in x 30in	X	No Parking Any Time - LEFT Arrow	x	x
R7-1-R	18in x 24in	24in x 30in	X	No Parking Any Time - RIGHT Arrow	x	x
R7-8-A	12in x 18in	18in x 24in	X	Reserved Parking, Handicapped, This Space	x	
R7-8-L	12in x 18in	18in x 24in	X	Reserved Parking Handicapped Symbol - LEFT Arrow	x	
R7-8-R	12in x 18in	18in x 24in	X	Reserved Parking Handicap - RIGHT Arrow	x	
R8-7	48in x 36in	X	X	Emergency Stopping Only	x	x
R10-3BD	9in x 12in	X	X	To Cross Push Button [Double Arrow]	x	x
R10-3BL	9in x 12in	X	X	To Cross Push Button [Left Arrow]	x	x
R10-3BR	9in x 12in	X	X	To Cross Push Button [Right Arrow]	x	x
R10-4-BD	9in x 12in	X	X	Push Button For Walk Signal [Double Arrow]	x	x
R10-4-BL	9in x 12in	X	X	Push Button For Walk Signal [Left Arrow]	x	x
R10-4-BR	9in x 12in	X	X	Push Button For Walk Signal [Right Arrow]	x	x
R10-11-B	24in x 24in	30in x 30in	X	No Turn On Red	x	x
R10-65-L	X	24in x 30in	X	Left Lane Signal		x
R10-65-R	X	24in x 30in	X	Right Lane Signal		x
R11-2	48in x 30in	X	X	Road Closed	x	x
R55-58	24in x 24in	X	X	Wayside Closed		x
R55-58-A	44in x 8in	X	X	Closed Panel - Use W/D5-61 & D5-62		x
R59-51	36in x 36in	48in x 48in	X	Stop for Bus Flashing Lights	x	x

S1-1	30in x 30in	36in x 36in	X	School Advance	x	x
S3-1	30in x 30in	36in x 36in	48in x 48in	School Bus Stop Ahead	x	x
S4-51	24in x 48in	X	X	School Speed Limit	x	x
W1-1-L	36in x 36in	48in x 48in	X	Left Turn	x	x
W1-1-R	36in x 36in	48in x 48in	X	Right Turn	x	x
W1-2-L	30in x 30in	36in x 36in	X	Left Curve	x	x
W1-2-R	30in x 30in	36in x 36in	X	Right Curve	x	x
W1-3-L	36in x 36in	X	X	Left Reverse Turn	x	x
W1-3-R	36in x 36in	X	X	Right Reverse Turn	x	x
W1-4-L	30in x 30in	36in x 36in	X	Left Reverse Curve	x	x
W1-4-R	30in x 30in	36in x 36in	X	Right Reverse Curve	x	x
W1-5-L	30in x 30in	36in x 36in	X	Left Winding Road	x	x
W1-5-R	30in x 30in	36in x 36in	X	Right Winding Road	x	x
W1-6	48in x 24in	60in x 30in	96in x 48in	Night Arrow (Single)	x	x
W1-7	48in x 24in	60in x 30in	96in x 48in	Night Arrow (Double)	x	x
W1-8	18in x 24in	24in x 30in	30in x 36in	Chevron	x	x
W1-8-A	48in x 18in	X	X	Roundabout Chevron Bank	x	x
W1-13L	48in x 48in	X	X	Tippy Truck Symbol - Arrow to the Left	x	x
W1-13R	48in x 48in	X	X	Tippy Truck Symbol - Arrow to the Right	x	x
W2-1	30in x 30in	36in x 36in	48in x 48in	Cross Road	x	x
W2-2	30in x 30in	36in x 36in	48in x 48in	Side Road (90 Degrees)	x	x
W2-3	30in x 30in	36in x 36in	48in x 48in	Side Road (Skewed Angle)	x	x
W2-6	30in x 30in	36in x 36in	X	Circular Intersection Sign	x	x
W2-6-P	30in x 15in	36in x 18in	X	Roundabout Ahead Plaque	x	x
W3-1	36in x 36in	48in x 48in	X	Stop Ahead	x	x
W3-2	36in x 36in	48in x 48in	X	Yield Ahead	x	x
W3-3	36in x 36in	48in x 48in	X	Signal Ahead	x	x
W3-4-RU	48in x 48in	X	X	Be Prepared To Stop (Roll-up)	x	
W3-5	36in x 36in	48in x 48in	X	Speed Limit _ Ahead [Arrow]	x	x
W3-50	48in x 48in	X	X	Ramp Metered When Flashing	x	x
W4-1	36in x 36in	48in x 48in	X	Merging Traffic Symbol (Right)	x	x
W4-1-L	36in x 36in	48in x 48in	X	Merging Traffic Symbol [LEFT]	x	x
W4-2-L	36in x 36in	48in x 48in	X	Lane Reduction Transition Symbol - [LEFT Lane]	x	x
W4-2-R	36in x 36in	48in x 48in	X	Lane Reduction Transition Symbol - RIGHT	x	x
W4-3-L	36in x 36in	48in x 48in	X	Merge - Added Lane from LEFT	x	x
W4-3-R	36in x 36in	48in x 48in	X	Merge - Added Lane from RIGHT	x	x
W4-6	36in x 36in	48in x 48in	X	Entering Roadway Added Lane	x	x
W5-2	36in x 36in	X	X	Narrow Bridge	x	x
W5-52-L	12in x 36in	18in x 54in	X	Clearance Striper Down Right	x	x
W5-52-R	12in x 36in	18in x 54in	X	Clearance Striper Down Left	x	x
W5-53-D	4in x 12in	X	X	Narrow Bridge Lead in Marker with Delineators	x	
W5-53-S	4in x 12in	X	X	Narrow Bridge Lead in Marker with Type H Sheeting	x	
W5-54-D	18in x 18in	X	X	Clearance Marker with 9 Delineators	x	
W5-54-S	18in x 18in	X	X	Clearance Marker with Type H Sheeting	x	
W5-55-C	3in x 3in	X	X	Clear Delineator	x	x
W5-55-Y	3in x 3in	X	X	Yellow Delineator	x	x
W5-56	18in x 18in	X	X	End of Road Marker with RED Delineator	x	
W5-56-A	18in x 18in	X	X	End of the Road Marker WITHOUT Delineators	x	
W6-1	36in x 36in	48in x 48in	X	Divided Highway Ahead Symbol	x	x
W6-2	36in x 36in	48in x 48in	X	Divided Highway Ends Symbol	x	x
W6-3	36in x 36in	48in x 48in	X	Two-Way Traffic Symbol	x	x
W7-1	30in x 30in	36in x 36in	X	Hill	x	x
W8-1	30in x 30in	36in x 36in	X	Bump	x	x
W8-1-A	30in x 30in	36in x 36in	X	Bumps [MORE THAN ONE BUMP]	x	x
W8-2	30in x 30in	36in x 36in	X	Dip	x	x
W8-4-RU	48in x 48in	X	X	Soft Shoulder	x	
W8-5	30in x 30in	36in x 36in	X	Slippery When Wet Symbol	x	x
W8-7-RU	48in x 48in	X	X	Loose Gravel	x	
W8-8	30in x 30in	36in x 36in	X	Rough Road	x	x
W8-9	30in x 30in	36in x 36in	X	Low Shoulder	x	x
W8-11-RU	48in x 48in	X	X	Uneven Lanes	x	
W8-12-RU	48in x 48in	X	X	No Center Stripe	x	
W8-52-RU	48in x 48in	X	X	Grooved Pavement	x	
W8-54	30in x 30in	36in x 36in	X	Watch for Fallen Rocks	x	x
W8-58	30in x 30in	36in x 36in	X	High Water	x	x
W9-1-L	30in x 30in	36in x 36in	48in x 48in	LEFT Lane Ends	x	x
W9-1-R	30in x 30in	36in x 36in	48in x 48in	Right Lane Ends	x	x
W10-1	36in x 36in	48in x 48in	X	Railroad Crossing	x	x
W10-1A	24in x 12in	X	X	Exempt (See R 15-3 Also)	x	x
W10-2	36in x 36in	X	X	Cross Road Tracks LEFT/RIGHT Side	x	x
W10-3	36in x 36in	X	X	Side Road Tracks LEFT/RIGHT Side	x	x
W10-4-L	36in x 36in	X	X	T Intersection with Tracks on LEFT Side	x	x
W10-4-R	36in x 36in	X	X	T Intersection with Tracks on RIGHT Side	x	x
W11-1	30in x 30in	36in x 36in	X	Bicycle Symbol with Helmet	x	x
W11-2	30in x 30in	36in x 36in	X	Pedestrian Crossing Symbol	x	x
W11-3	30in x 30in	36in x 36in	48in x 48in	Deer Crossing Symbol	x	x
W11-4	30in x 30in	36in x 36in	X	Cattle Crossing Symbol	x	x
W11-5	30in x 30in	36in x 36in	X	Farm Machinery Symbol	x	x
W11-6	30in x 30in	36in x 36in	X	Snowmobile Crossing Symbol	x	x
W11-8	30in x 30in	36in x 36in	X	Fire Station Truck Crossing Symbol	x	x
W11-22	30in x 30in	36in x 36in	X	Recreational Trail Crossing	x	x
W12-1-D	24in x 24in	30in x 30in	X	Double Down Arrows	x	x
W12-1-L	24in x 24in	30in x 30in	X	Down Arrow [LEFT]	x	x

W12-1-R	24in x 24in	30in x 30in	X	Down Arrow [RIGHT]	x	x
W13-1	18in x 18in	24in x 24in	X	Advisory Speed Plate (Yellow Back)	x	x
W14-1	30in x 30in	36in x 36in	X	Dead End	x	x
W14-3	48in x 36in	64in x 48in	X	No Passing Zone	x	x
W16-7L	24in x 12in	30in x 18in	X	Left Diagonal Downward Pointing Arrow (Yellow)	x	x
W16-7R	24in x 12in	30in x 18in	X	Right Diagonal Downward Pointing Arrow (Yellow)	x	x
W16-9P	24in x 8in	36in x 14in	48in x 18in	AHEAD Plaque (Yellow)	x	x
W20-1a-RU	48in x 48in	X	X	Road Work Ahead (Roll-up)	x	
W20-2a-RU	48in x 48in	X	X	Detour Ahead (Roll-up)	x	
W20-3amod-RU	48in x 48in	X	X	Ramp Closed Ahead	x	
W20-4a-RU	48in x 48in	X	X	One Lane Road Ahead (Roll-up)	x	
W20-7a-RU	48in x 48in	X	X	Flagger Symbol (Roll-up)	x	
W20-7b-RU	48in x 48in	X	X	Be Prepared To Stop (Roll-up)	x	
W20-55a-RU	48in x 48in	X	X	Left Lane Closed Ahead (Roll-up)	x	
W20-58a-RU	48in x 48in	X	X	Right Two Lanes Closed Ahead (Roll-up)	x	
W20-59a-RU	48in x 48in	X	X	Left Two Lanes Closed Ahead (Roll-up)	x	
W20-5a-RU	48in x 48in	X	X	Right Lane Closed Ahead (Roll-up)	x	
W21-1a-RU	48in x 48in	X	X	Workers Symbol Message (Roll-up)	x	
W21-2-RU	48in x 48in	X	X	Fresh Oil (Roll-up)	x	
W21-3a-RU	48in x 48in	X	X	Road Machinery Ahead (Roll-up)	x	
W21-5-RU	48in x 48in	X	X	Shoulder Work (Roll-up)	x	
W21-6-RU	48in x 48in	X	X	Survey Crew (Roll-up)	x	
W21-51-RU	48in x 48in	X	X	Mowing Operations Ahead (Roll-up)	x	
W25-2	24in x 30in	X	X	Oncoming Traffic May Have Extended Green	x	x
W57-51	30in x 15in	36in x 18in	X	Next ___ Miles	x	
W57-52	36in x 24in	X	X	___ Miles Ahead	x	
WF16-7L	24in x 12in	30in x 18in	X	Left Diagonal Downward Pointing Arrow (Fluorescent)	x	x
WF16-7R	24in x 12in	30in x 18in	X	Right Diagonal Downward Pointing Arrow (Fluorescen	x	x
WF16-9P	24in x 8in	36in x 14in	48in x 18in	AHEAD Plaque (Fluorescent Yellow Green)	x	x
WO1-4BL-RU	48in x 48in	X	X	Double Reverse Curve Arrows (LEFT)	x	
WO1-4BR-RU	48in x 48in	X	X	Double Reverse Curve Arrows (RIGHT)	x	
WO1-4L-RU	48in x 48in	X	X	LEFT Reverse Curve	x	
WO1-4R-RU	48in x 48in	X	X	RIGHT Reverse Curve	x	
WO3-2-RU	48in x 48in	X	X	Yield Ahead (Roll-up)	x	
WO4-2L-RU	48in x 48in	X	X	Pavement Width Transition Symbol (LEFT)	x	
WO4-2R-RU	48in x 48in	X	X	Pavement Width Transition Symbol (RIGHT)	x	
WO6-3-RU	48in x 48in	X	X	Two-Way Traffic	x	
WO8-1a-RU	48in x 48in	X	X	BUMPS	x	
WO8-1-RU	48in x 48in	X	X	BUMP	x	
WO8-2-RU	48in x 48in	X	X	DIP	x	
WO8-8-RU	48in x 48in	X	X	Rough Road (Roll-up)	x	
WO8-9-RU	48in x 48in	X	X	Low Shoulder (Roll-up)	x	
WO8-52-RU	48in x 48in	X	X	Grooved Pavement (Roll-up)	x	
WO8-58-RU	48in x 48in	X	X	High Water - Orange (Roll-up)	x	