



Traffic Engineering, Operations, & Safety Manual

Chapter 2 Signing

Section 25 Field Crew Guidance

2-25-1 Field Crew Guidance and Contacts

March 2020

PURPOSE

This subject 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 is to install signs to provide a 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 signing installation and replacement or sign repair activities done by others under the direction of the Wisconsin Department of Transportation through its Regions. It is inherent these guidelines promote safety of the motorist, safety for the improvement and maintenance crews and standardization of practices toward uniform application and appearance statewide.

Improvement project crews and maintenance crews will perform their operations in accordance with the Wisconsin Manual on Uniform Traffic Control Devices, Traffic Engineering, Operations & Safety Manual and other Department policies as referenced within.

The Department recognizes these guidelines *may* require adjustments and revision as they are implemented.

SIGN TYPES

There are two types of signs that are installed and maintained for the DOT:

- Type I signs are on an extruded aluminum base material, typically mounted on steel I-beams.
- Type II signs consist of direct applied message sheet aluminum base material, typically mounted on wood or steel posts.

SIGN CLASSIFICATIONS

Regulatory signs give notice of traffic laws and convey the rules of the road. Regulatory signs typically have a red or white background. Examples are stop signs, speed limit signs, wrong way signs, etc.

Warning signs alert the attention of the driver to special conditions on or adjacent to a roadway that *may* require an important driving decision or action. Warning signs typically have a fluorescent yellow background. Examples include curve warning signs, no passing zone signs, stop ahead signs etc.

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.

Guide 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.

Recreational signs are informative for the traveling public not familiar to an area to get to their destination. Recreational Signs typically have a brown background. Examples are historical marker signs and boat landing signs.

Tourist information signs are informative signs used to guide motorists to service type areas. Tourist Informational Signs typically have a blue background. Examples of these signs are TODS.

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 stored vertically on edge.

Signs that *may* be stored at County shops:

- Mandatory (max of 6)
 - Stop Signs (30x30 and 36x36)
 - Yield (36x31)

Signs **shall not** be stored at the Region except those necessary for the electricians. Scrap aluminum signs **shall**

be returned to the Distribution County. The Distribution County will return all scrap aluminum signs to BSI.





















SIGN VERIFICATION

Check all signs in against the sign shipper received at the time of delivery. Call and/or email you region rep or BTO Shop Coordinator(DOTBTOSignOrders@dot.wi.gov) with any questions.

a. Acceptable Abbreviations

Highway	Hwy	Circle	Cir	Lane	Ln
Parkway	Pkwy	Road	Rd	Trail	Tr
Boulevard	Blvd	Street	St	Court	Ct
Avenue	Ave	Place	Pl	Drive	Dr
Terrace	Ter				

b. Arrow Abbreviations

Left Arrow		[LA]	Right Arrow		[RA]
Tilt Left Arrow		[TL]	Tilt Right Arrow		[TR]
Up Arrow		[UA]	Double Arrow		[DBA]
Down Left Arrow		[DL]	Down Right Arrow		[DR]
Left Turn Arrow		[LT]	Right Turn Arrow		[RT]
Left Bent Arrow		[LB]	Right Bent Arrow		[RB]
Ahead & Left Arrow		[U/LA]	Ahead & Right Arrow		[U/RA]
Left and Tilt Right		[LA/TR]	Tilt Left and Right		[TL/RA]
Ahead and Tilt Left		[UA/TL]	Ahead and Tilt Right		[UA/TR]
Tilt Down Left and TR		[DL/TR]	TL and Tilt Down Right		[TL/DR]

c. J-panels

How to organize J-panels (Refer to [A2-1s](#) for the correct codes):

1. Direction of arrow:



AND



2. IH, USH, STH, CTH, Business Routes, Alt Routes, To, Tours, Hospitals



Number (lowest number first)

INSTALLING SIGNS

County Maintenance Agreements

Counties will be given corridors of the signs and/or posts needing replacement from the Region. For locations of new signs the work order will be provided by a Regional contact, the area then will be staked by the DOT. 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 and at proper heights, offsets and use of proper mounting hardware.

The scheduling of the sign replacements shall be completed within 75-days of receiving the sign or July 1st whichever comes later. The region does have discretion to extend this time based on a very high numbers of signs or post replacements.

A detailed breakdown of county costs including county labor, equipment, number of signs, and number of posts **shall** be shown on all invoices.

The following signing activities can be classified into the following county maintenance agreements (XX denotes county unless otherwise noted):

1	Adams	25	Iowa	49	Portage
2	Ashland	26	Iron	50	Price
3	Barron	27	Jackson	51	Racine
4	Bayfield	28	Jefferson	52	Richland
5	Brown	29	Juneau	53	Rock
6	Buffalo	30	Kenosha	54	Rusk
7	Burnett	31	Kewaunee	55	Sawyer
8	Calumet	32	La Crosse	56	Sauk
9	Chippewa	33	Lafayette	57	St. Croix
10	Clark	34	Langlade	58	Shawano
11	Columbia	35	Lincoln	59	Sheboygan
12	Crawford	36	Manitowoc	60	Taylor
13	Dane	37	Marathon	61	Trempealeau
14	Dodge	38	Marinette	62	Vernon
15	Door	39	Marquette	63	Vilas
16	Douglas	40	Milwaukee	64	Walworth
17	Dunn	41	Monroe	65	Washburn
18	Eau Claire	42	Oconto	66	Washington
19	Florence	43	Oneida	67	Waukesha
20	Fond du Lac	44	Outagamie	68	Waupaca
21	Forest	45	Ozaukee	69	Waushara
22	Grant	46	Pepin	70	Winnebago
23	Green	47	Pierce	71	Wood
24	Green Lake	48	Polk	73	Menominee

Activity Code 081 for Permanent Sign Repair and 085 Temporary/Emergency Sign Repair

- RMA 00XX-01-61 Damaged signs **without** a break ticket and Adopt a Highway
- Damage Claim 0077-0x-00 Damage signs **with** break ticket (X designates the number for your region)
 1. Madison
 2. Waukesha
 3. Green Bay
 4. Wisconsin Rapids
 5. La Crosse
 6. Eau Claire
 7. Rhinelander
 8. Superior
- 0080-02-63 White Arrowboards*
- 0080-02-53 TODS Signing*
- 0080-02-61 Ski Area Signing

Activity Code 086 Permanent Sign Replacement

- TMA A project number will be provided though MPM
- DMA 00XX-58-22 Discretionary Maintenance Agreements

*For White Arrowboards and TODS signs the County *should* collect the checks made payable to the Wisconsin Department of Transportation and send the checks to: Wisconsin Department of Transportation, Attn: Casey Amans, 3609 Pierstorff St, Madison, WI 53704. The County *should* only repair damaged White Arrowboards or TODS signs when directed to do so by the sign owner.

Improvement/Refurbishment Projects

A listing of signs may be provided by the Signing Coordinator to the designer to be included in the construction project plan. The listing *should* identify location on respective improvement project in both directions of travel. A special ID is set up for all improvement projects.

FIELD OPERATIONS

WisDOT **shall** provide all permanent signs. 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 aluminum signs removed are the property of the DOT and arrangements **shall** be made for the delivery of signs back to the Central Office Sign Shop. Signs **shall** be returned banded on pallets or on red carts. Any signs put on a cart for transport back to Madison **shall** be placed so the back of the sign is against the metal to protect the face of the sign from further damage.

Routine Maintenance Sign Installation Activities

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. **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 and/or CO Sign Shop:

- 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
- bent or leaning posts
- correctness of installation (height, offset, location, visibility, plumbness)
- sign meets WMUTCD specifications

2. Installing 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 Sign Plate A4-8). Do not over tighten bolts.

Standard signs are fabricated using sheet aluminum. Aluminum signs are usually pre-drilled with mounting holes. Aluminum signs 78" or more in width **shall** have channel steel stringers installed.

Ensure that post is set to the correct depth (see Sign Plate 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.

When attaching the sign 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.

Breakaway holes **shall** be drilled on all 4"x 6" wood posts (see Sign Plate A4-11). The breakaway holes do not need to be drilled if the posts are located behind a concrete barrier or guardrail.

PRIORITY OF ACTION FOR KNOCKDOWNS

1. STOP and YIELD Signs.

These 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. 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.

3. Guide Signs, Recreational & Tourist Signs

Guide, recreational, and tourist signs are directional and informational type signs. They are less critical with respect to scheduling damage repairs. Temporary repairs are not necessary for these types of signs.

All signs that have been damaged *should* be replaced, contact your Region Sign Coordinator for these signs. All temporary sign repairs **shall** be a WisDOT approved sign post..

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 WMUTCD. The Department will provide signs for these detours.

REPORTING SYSTEMS

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.

Annual Sign and Post Replacement List will be given to the Counties. As the County completes the work, they **shall** send an updated copy of the list to the Regional.

The Regions *may* periodically provide the Counties with a new sign and post work order. These forms need to be filled out and sent to the Region upon completion.

Any counties with repair charges for vehicle damage with accident claim tag numbers **shall** fill out the County Charges Worksheet form DT 1785 and send it to the Region as soon as practical. Forms can be obtained from your Regional Signing Coordinator.

Knockdown and Repair Report 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.

REQUIRED NUMBER OF POSTS

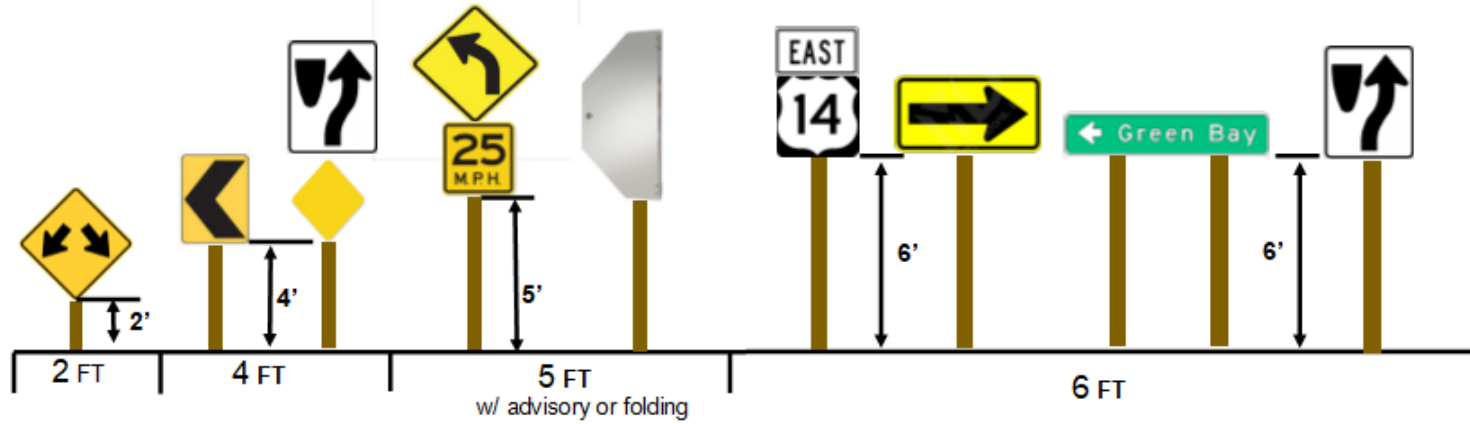
4x6 Wood Posts		
Number of Posts	Length (Rectangle/Square)	Comments
1	$L \leq 48"$	
2	$48" < L \leq 108"$	
3	$108" < L \leq 144"$	Posts spacing shall be $> 3.5'$

4x6 Wood Posts	
Number of Posts	Diamond
1	24", 30", 36"
2	48"

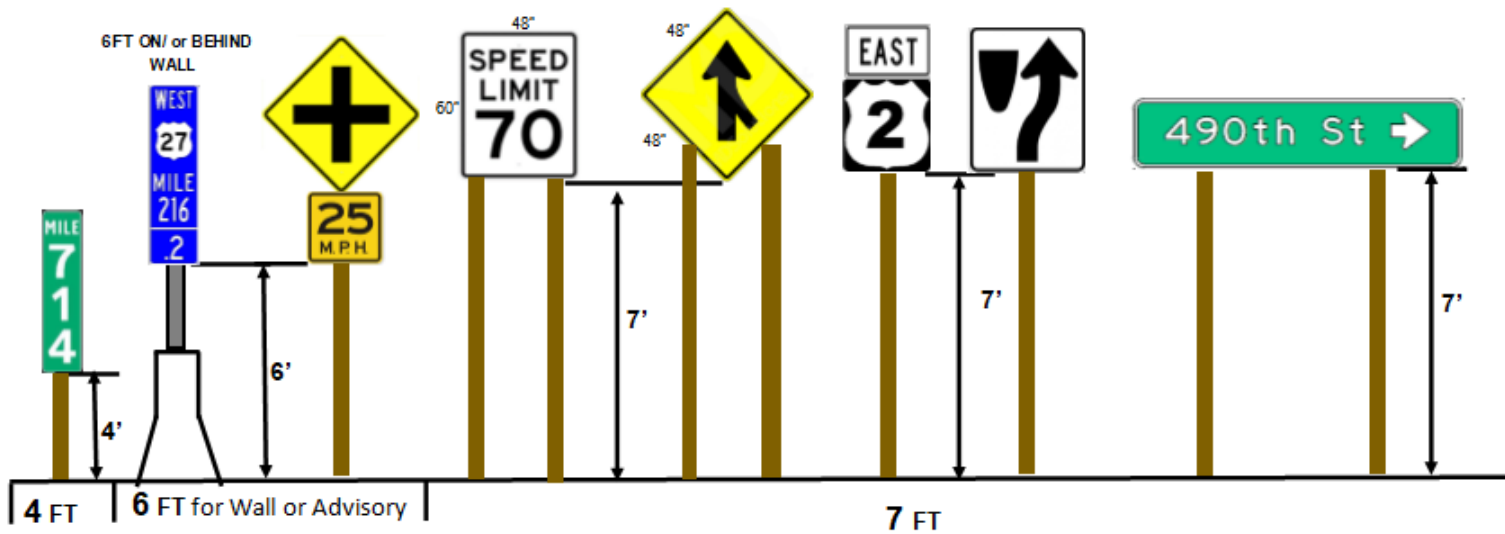
2x2 Square Steel Posts	
Number of Posts	Area (ft ²)
1	≤ 9
2	$9 < x \leq 18$
3	$18 < x \leq 27$

STANDARD INSTALLATION

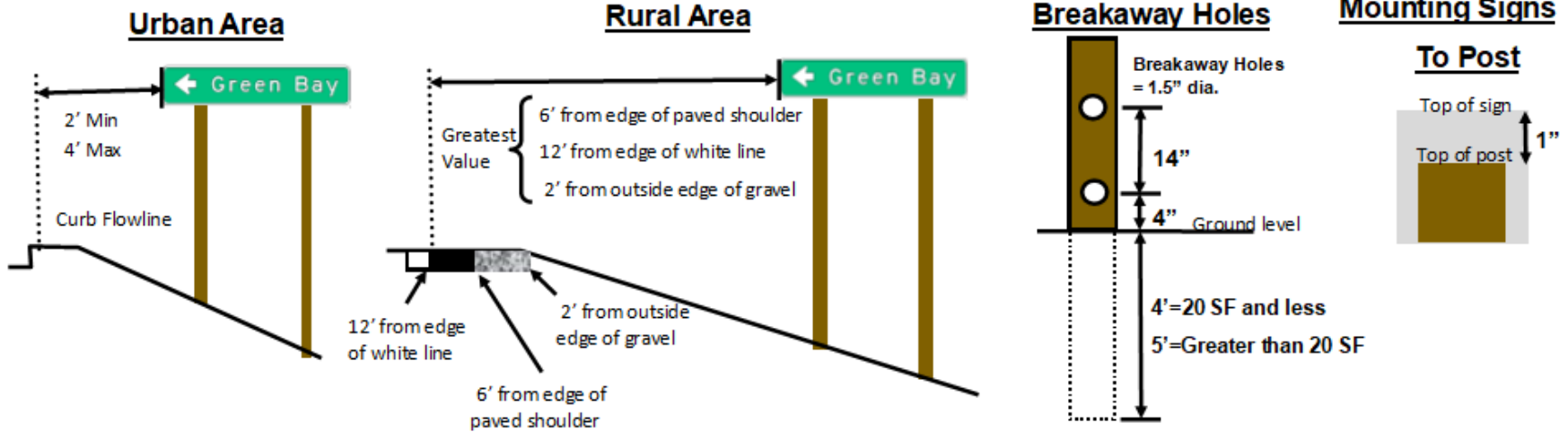
Standard Installation for Rural Highways



Standard Installation for Freeways , Expressways & Urban Highways



ALL heights are measured from top of pavement not the ground.



No Stringers: ≤72"
72" Stringers: 78", 84" or 90" Signs
90" Stringers: 96", 102" or 108" Signs
108" Stringers: 114", 120" or 126" Signs
126" Stringers: 132", 138" or 144" Signs



EXAMPLES OF CORRECT VS. INCORRECT INSTALLATIONS

Incorrect	Correct
	
	
	
	
	
	
	

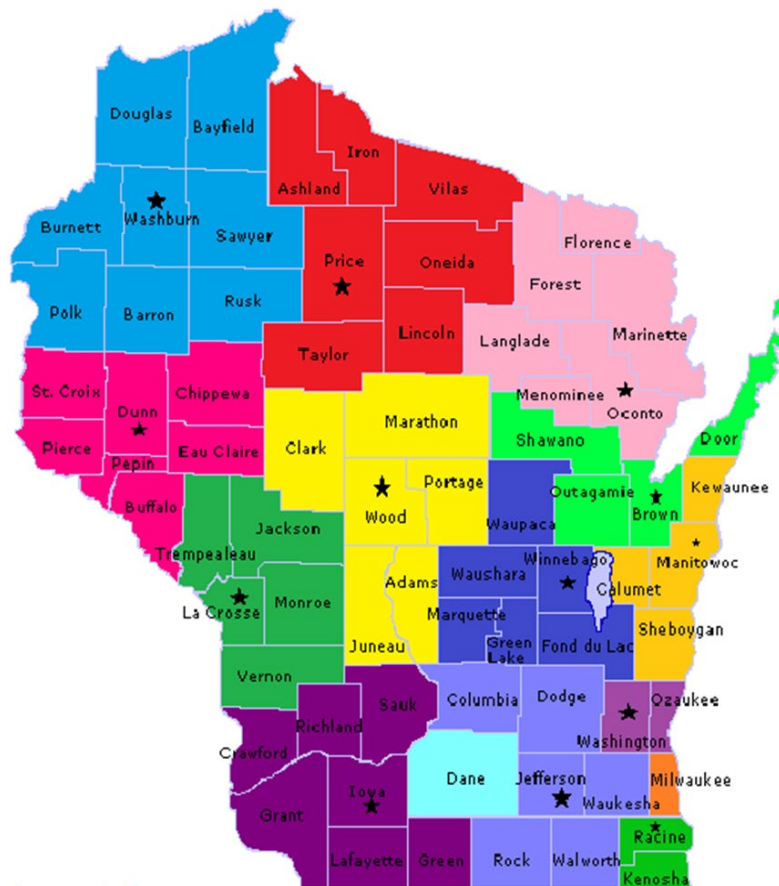


CONTACTS

DOT Contacts			
Region	Contact Person	Number	Email
WisDOT CO Sign Shop 3609 Pierstorff St Madison, WI 53704	Jon Eldridge Casey Amans Jeannie Silver. Ryan Mayer	608-246-3270 608-245-5344 608-246-5408 608-246-3810	jonathan.eldridge@dot.wi.gov dotbtosignorders@dot.wi.gov casey.amans@dot.wi.gov jeannie.silver@dot.wi.gov ryan.mayer@dot.wi.gov
	Iver Peterson Kory Keppel	608-785-9060 608-792-6204	iver.peterson@dot.wi.gov kory.keppel@dot.wi.gov
SW Region- Madison 3601 Pierstorff St Madison, WI 53704	Jeff Holloway Timm Punzel	608-246-3268 608-246-5352	jeffrey.holloway@dot.wi.gov timm.punzel@dot.wi.gov
SE Region- West Allis 935 S. 60th St. West Allis, WI 53214	Dennis Newton Jenny Buckett Chuck Saldivar	414-750-0257 414-750-2427 414-750-1682	dennis.newton@dot.wi.gov Jennifer.buckett@dot.wi.gov Chuck.saldivar@dot.wi.gov
NE Region- Green Bay 944 Vander Perren Way Green Bay, WI 54304	Tom Tilleman Mark Janke	920-492-4135 920-492-5981	thomas.tilleman@dot.wi.gov mark.janke@dot.wi.gov
NC Region- Wis Rapids 2841 Industrial St Wis Rapids, WI 54495	Al Smith Chris Stimac	715-421-8364 715-421-7387	alan.smith@dot.wi.gov christopher.stimac@dot.wi.gov
NC Region- Rhinelander Hanson Lake Rd Rhinelander, WI 54501	Al Smith Chris Stimac	715-421-8364 715-421-7387	alan.smith@dot.wi.gov christopher.stimac@dot.wi.gov
NW Region- Spooner W7102 Green Valley Rd Spooner, WI 54801	Steven Allard Gary Eisold	715-577-1259 715-450-9093	steven.allard@dot.wi.gov gary.eisold@dot.wi.gov
NW Region- Eau Claire 5009 USH 53 South Eau Claire, WI 54701	Steven Allard Gary Eisold	715-577-1259 715-450-9093	steven.allard@dot.wi.gov gary.eisold@dot.wi.gov

Sign Distribution County Contacts			
County	Contact Person	Number	Email
Iowa 1215 N. Bequette St. Dodgeville, WI 53533	Randy Sudmeier	608-574-2936	randy.sudmeier1@iowacounty.org
Jefferson 1425 S. Wisconsin Drive Jefferson, WI 53549	Tyson Barns	920-674-7390 920-723-7269	TysonB@jeffersoncountywi.gov
Washington 900 Lang St. West Bend, WI 53090	Tim Pfeifer Kevin Schweizer	262-335-4440 262-483-3079 262-335-5027	tim.pfeifer@co.washington.wi.us Kevin.schweizer@washington.wi.us
Milwaukee 10190 West Watertown Plank Rd Wauwatosa, WI 53226	Douglas Decker	414-333-3291	douglas.decker@milwaukeecounty.wi.gov
Racine 14200 Washington Ave. Sturtevant, WI	David Prott	262-534-6400	david.prott@goRacine.org
Winnebago 901 W. CTH Y Oshkosh, WI 54903	Chuck Griedl	920-232-1718 920-420-9412	c.griedl@co.winnebago.wi.us
Manitowoc 3500 STH 310 Manitowoc, WI 54220	Greg Grotegut Ryan Drumm Fritz Emme	920-683-4345 920-323-5520 920-683-4351 920-683-4347 920-323-6513	Gregorygrotegut@co.manitowoc.wi.us Ryandrumm@co.manitowoc.wi.us Fritzemme@co.manitowoc.wi.us
Brown 2198 Glendale Ave Green Bay, WI 54303	Dave Delvaux Andrew Sell	920-662-2176 920-662-2174	Delvaux_DJ@co.brown.wi.us sell_al@co.brown.wi.us
Oconto 202 Van Dyke St Oconto, WI 54153	Vanessa Peters	920-834-6885	vanessa.peters@co.oconto.wi.us
La Crosse 301 Carlson Rd. West Salem, WI 54669	Ron Brueggen Keith Pack	608-792-8053 608-421-8875	rbrueggen@lacrossecounty.org kback@lacrossecounty.org
Dunn 3303 USH 12 E Menomonie, WI 54751	John Sworski Dustin Binder	715-308-3430 715-556-2293	jsworski@co.dunn.wi.us dbinde@co.dunn.wi.us
Wood 555 17th Ave Wisconsin Rapids, WI	Brandon Dammann Barry Hamm	715-421-9039 715-424-7408 715-213-0856	bdammann@co.wood.wi.us bhamm@co.wood.wi.us
Washburn 1600 CTH H Spooner, WI 54801	Steve Flach	715-635-4459 715-635-4480	sflach@co.washburn.wi.us
Price 704 N Lake Ave Phillips, WI 54555	Chuck Fisher Joe Baratka	715-339-2355	chuck.fischer@co.price.wi.us joe.baratka@co.price.wi.us

Sign Distribution Counties



2-25-2 Field Crew Safety and Training

May 2017

PERSONAL SAFETY

All Department of Transportation (DOT) personnel **and** any personnel working for the state are required to follow the safety policies stated in the DOT Transportation Administrative Manual (TAM). DOT, county, and contractor personnel **shall** wear:

- Eye Protection: (TAM SD 36)
 - Safety glasses with attached shields
- Foot Protection: Steel-toe boot or shoe (TAM SD30)
- Protective Headgear: (TAM SD 51)
 - Hard hat
- High Visibility Safety Apparel: (TAM SD 57)
 - ReflectORIZED Safety Vest at all times on or along the roadway
 - ReflectORIZED Safety Pants during nighttime hours.

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

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

EMPLOYEE RECOMMENDED TRAINING

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

1. Field Operations Awareness
2. Shop Tools
3. Major Equipment Operations
4. Utilities Locate. Call Diggers Hotline 811
5. Retraining
6. Vehicle Safety and Inspection

WORK AREA TRAFFIC CONTROL

All traffic control **shall** be in compliance with the WMUTCD and Departmental policies. See Standard detail drawings.

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 **SHALL NOT** be displayed while the vehicle is traveling at highway speeds or when traveling between jobs.

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. Remember that all flaggers **shall** use stop/slow paddles.

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.

PUBLIC SAFETY

Workers **shall** 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. Work activities *should* be performed with an assumption the motorist does not know what the workers are going to do.

UTILITIES

Utility Locates. Diggers Hotline (811) **shall** be called and located before any work is performed. They *should* be given at least a 3 working day notice.

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:

1. Prepare a plan or work location sketch or drawing. Indicate a 25 foot radius around the stake or lath for "MARKING INSTRUCTIONS" for Diggers Hotline.
2. At each locate site, mark with a stake or by painting the pavement or shoulder of the highway. White or pink are the approved colors for ribbons, flags or paint when marking sign locations for utility locates.
3. 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.
4. Contact Diggers Hotline to request the area to be located. Retain ticket number for a minimum of six years after work is completed.
5. Investigate the possibility of other utilities having services at the locate site.

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

- 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.

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.

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.

ACRONYMS & DESCRIPTIONS

HMA - Hot Mix Asphalt

MSDS - Material Safety Data Sheets

PCC - Portland Cement Concrete

PMC - Pavement Marking Coordinator

TMA - Traffic Maintenance Agreement

Type H Sheeting - Prismatic High Intensity

Type F Sheeting - Prismatic High Intensity Fluorescent Sheeting