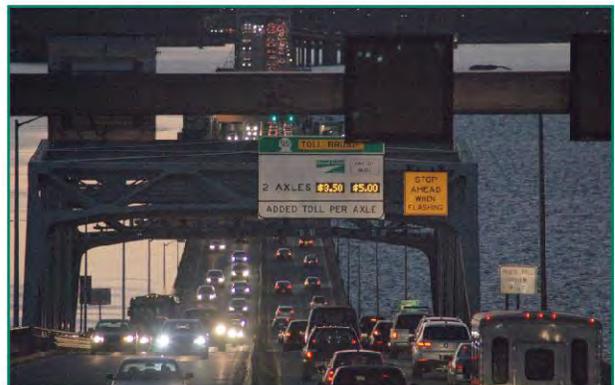




Washington State  
Department of Transportation



# Toll Signing Design Guidance Document

March 26, 2014

## FOREWORD

The Toll Signing Design Guidance Document is intended to provide instruction and guidance for preparing Contract Plans, Special Provisions and Estimate packages for highway construction project.

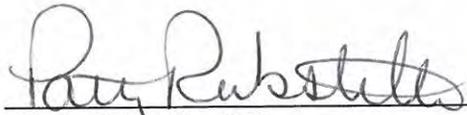
Updating this document is an ongoing process and revisions will be issued as required.

Questions, comments, improvements and ideas are welcome.



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# TOLL SIGNING DESIGN GUIDANCE

## 1. INTRODUCTION AND PURPOSE

The objective of this document is to provide guidance on what signing is needed on corridors that include toll facilities. This document shall be used in coordination with the Manual on Uniform Traffic Control Devices (MUTCD) and the WSDOT Sign Fabrication Manual. It has been developed from lessons learned from previous toll signing projects executed by WSDOT Northwest Region and WSDOT Toll Division as well as other toll facility implementations across the United States. Use of this document will help clarify sections of the MUTCD in regards to specific toll facilities in Washington State. All required sign placement and spacing must be adhered to.

This document is authored by the WSDOT Toll Division with concurrence from WSDOT Headquarters and Region Traffic Offices. The WSDOT Toll Division and Region Traffic Office must be involved in the design and approval process for all Toll Signing.

## 2. GENERAL TOLL SIGNING DESCRIPTION

### 2.1. Toll Rate Signs

Each toll facility requires the installation of toll rate signs to inform drivers of the current toll rate they will pay for using the facility. The type of toll rate sign required will depend on the toll facility's classification and how toll rates are applied. The three existing facilities currently operating in Washington State are classified as 1) fixed-priced, single-point open road toll; 2) variable-price, single-point open road toll; and 3) variable-price, multi-point express toll lane(s) (or high occupancy toll (HOT) lane(s)).



Figure 1: Toll Rate Sign Detail

Toll rate signs are regulatory signs that typically include other warning and information elements. The WSDOT Toll Division and Region Traffic Office must be involved in the design process and will approve all toll rate sign layouts. Below are examples and guidelines to help aid in the design of toll rate signs.

#### 2.1.1. Fixed-Priced, Single-Point Open Road Toll Rate Sign

A fixed-price, single-point open road toll system's toll rates remain constant for varying vehicle sizes at all times of the day. The Tacoma Narrows Bridge (TNB) on SR 16 is an example of this type of facility. Since the toll rate does not change, a static toll rate sign is placed overhead on mainline SR 16 just prior to the toll zone. Figure 2 shows the existing toll rate sign on TNB.



*Figure 2: Tacoma Narrows Bridge Toll Rate Sign*

Static toll rate signs display what a two axle vehicles will pay using the *Good To Go!* and Pay By Mail methods. The text *ADDED TOLL PER AXLE* is included to clarify that vehicles with more than two axles will pay an amount greater that what is shown. The toll rate sign in Figure 2 includes the Cash/Credit payment method because the current TNB toll facility also features toll booths. Toll booths are not anticipated on future toll facilities.

### 2.1.2. Variable-Price, Single-Point Open Road Toll

A variable-price, single-point open road toll system has a toll rate that changes throughout the day. The SR 520 Evergreen Point Floating Bridge is an example of this type of facility. Since the toll rate changes frequently, a hybrid toll rate sign is placed overhead on mainline SR 520 at the toll zone. It is important to place hybrid toll rate signs as close to the toll zone as possible in order to reduce the possibility of toll rates changing between the moment the driver views the rate on the sign and the time they cross through the toll zone. The hybrid sign consists of a static portion where text does not change accompanied by the appropriate quantity of variable message sign (VMS) panels that display the current toll rate. Figure 3 shows the existing toll rate sign on the SR 520 bridge.



*Figure 3: SR 520 Bridge Toll Rate Sign*

Hybrid toll rate signs display what a two axle vehicle would pay using either the *Good To Go!* or Pay By Mail method. The text ADDED TOLL PER AXLE is included to clarify that vehicles with more than two axles will pay an amount greater than what is shown. The VMS panels must be large enough to display a minimum of six characters (e.g. "\$10.25"). This will allow a price from \$0.00 to \$99.99 to be displayed without modification of the sign.

### 2.1.3. Variable-Price, Multi-Point Express Toll Lanes

Variable-priced, multi-point express toll lanes can be very complex and vary greatly from single-point open road toll facilities. Drivers who use express toll lanes are charged a toll rate based on many factors, such as entrance and exit destinations, traffic congestion and vehicles occupancy. Drivers either choose to pay a toll by entering express toll lanes at access points or continue in the general purpose (GP) lanes for free.

Toll rate signs are needed before the express toll lanes<sup>1</sup> begin, at accesses throughout the facility for designated access system (restrictive buffer) and more frequently throughout the corridor for open-continuous systems (no buffer). On designated access systems, toll rate signs placed at each access allowing ingress into the express toll lanes need to be placed overhead at the end of the restrictive buffered area before the access begins. On open-continuous express toll lane facilities, toll rate signs also need to be placed overhead and specifically at locations where fare zones begin/end in addition to distance intervals that mirror designated access systems. These signs are intended to inform drivers of the current toll rates and assist the driver's decision of whether or not to enter the express toll lanes.

Toll rate signs for express toll lanes traditionally display toll rates based on specific destinations using the express toll lanes. Please see the MUTCD Section 2G.17 for details and further design guidance of toll rate signs for express toll lanes. A detail of the toll rate signs placed on the I-405 Express Toll Lanes is shown in Figure 4.

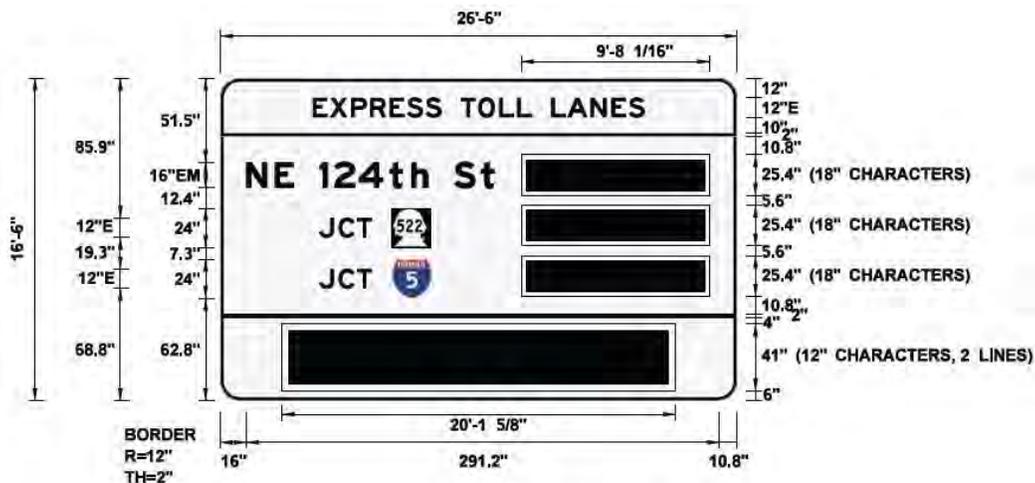


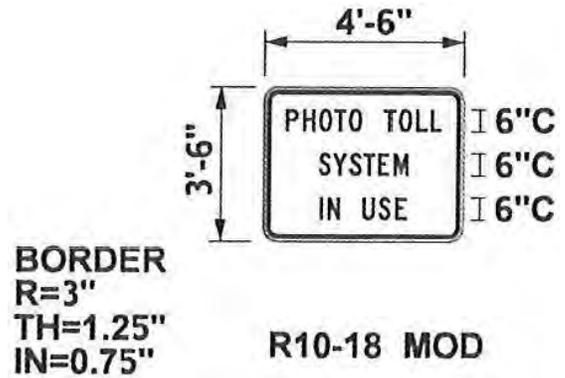
Figure 4: I-405 Toll Rate Sign Detail

<sup>1</sup> Express toll lanes are commonly referred to as High Occupancy Toll (HOT) lanes.

## 2.2. Photo Toll System In Use

Pursuant to the Revised Code of Washington 46.63.160, all locations where a photo enforcement system is used must be clearly marked by placing signs in locations that clearly indicate to a driver that they are entering a zone where traffic laws are enforced by a photo enforcement system. To accommodate this, regulatory signs must be installed in the vicinity of the image capture systems on toll facilities.

The regulatory sign's text reads: PHOTO TOLL SYSTEM IN USE. The text is black on a white background. A detail from a sign on the SR 520 bridge is show in Figure 5.



*Figure 5: Photo Toll System In Use Sign Detail*

These signs need to be installed in a location that precedes all toll zones where images are captured. They can be installed on the toll gantries themselves or post mounted in advance of the gantries by means that are consistent with the WSDOT Standard Plans. Examples of existing signs on current toll facilities are shown in Figure 6 and Figure 7.



*Figure 6: Photo Toll System In Use Sign on SR 16*



*Figure 7: Photo Toll System in Use Sign on SR 520*

### 2.3. Payment Method

Payment method signs need to be installed prior to each toll facility to inform drivers of the different opportunities they have to pay for a toll. Each new toll system will need to be analyzed to determine the design of a payment method sign. It is not anticipated that future toll facilities will contain manual toll booths so it is important to have these signs to reduce the traveling public's confusion. Coordination with the WSDOT Toll Division is required to determine the design of these signs.

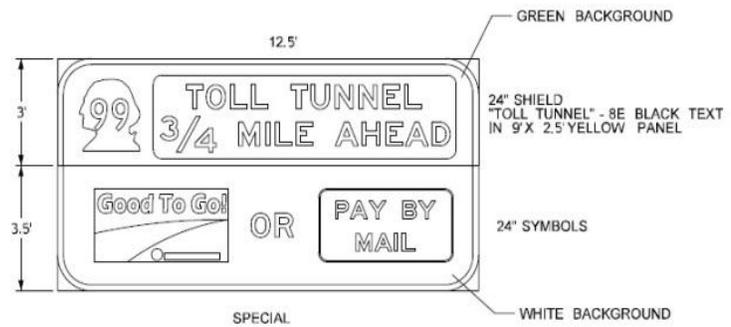


Figure 8: Payment Method Sign Detail

The SR 520 Toll Collection System allows transponder based and photo toll bill payment methods. Signs were designed to include a toll warning along with the *Good To Go!* and Pay By Mail logos. An example sign detail from the SR 99 Toll Tunnel Project is shown in Figure 8.

Payment method signs consist of multiple elements. The guide portion of the sign has a green background that includes the state route marker and is accompanied by toll warning text that is black on a yellow background. New toll systems will need to identify the proper warning message in order to reflect the roadway system on which the toll facility is located (i.e. TOLL TUNNEL vs. TOLL BRIDGE). The lower portion of the sign includes the *Good To Go!* and Pay By Mail logos on top of a white background. Placement of these signs needs to be between the last on-ramp leading to the toll zone and the toll zone itself. An example of a payment method sign located on SR 520 is shown in Figure 9 and Figure 10.



Figure 9: Payment Method Sign on SR 520

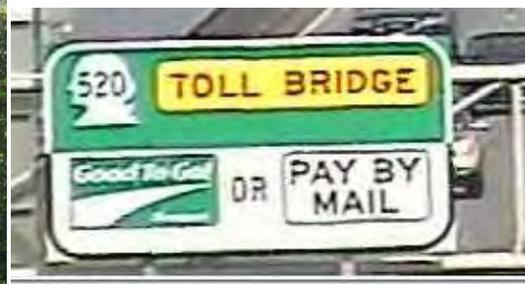


Figure 10: Payment Method Sign on SR 520

### 2.4. Toll Warning on Guide Signs

On corridors that require drivers to pay a toll to travel on or across the corridor, it is very important to provide advance notice of the toll. This is done on open road toll facilities such as the SR 520 bridge and the Tacoma Narrows Bridge by placing toll related warnings within guide signs to alert drivers of an upcoming toll.

Guide signs that display a destination (city, airport, hospital, etc.) that includes the route marker for the corridor that would lead a driver through a toll facility shall include a toll warning. This includes advance guide signs (1 mile, ½ mile, etc.), guide signs at off-ramp gore areas, and pull-through guide signs. In addition to guide signs on mainline routes, arterial guide signs that direct drivers in the direction of a toll facility shall also include the toll warning. When deciding where to place these warnings, a general guide line is to have a driver view at least two but ideally three or more of these warning signs before reaching a point where the driver is not able to redirect their route to avoid the toll. These points would be the last exit before the toll zone on the mainline route and the on-ramp from the closest interchange in the direction of the toll zone without a chance to exit beforehand. Since each toll corridor is different, an analysis shall be performed to determine the toll signing project area in which these guide signs are included.

The SR 520 bridge and Tacoma Narrows Bridge, toll warning text within a guide sign reads: TOLL BRIDGE. New toll system will need to identify the proper warning message in order to reflect the roadway system on which the toll facility is located (i.e. TOLL TUNNEL vs. TOLL BRIDGE). The text is black on a yellow background and is placed within a guide sign. Sign details from the SR 520 Toll Signing Project are shown below.

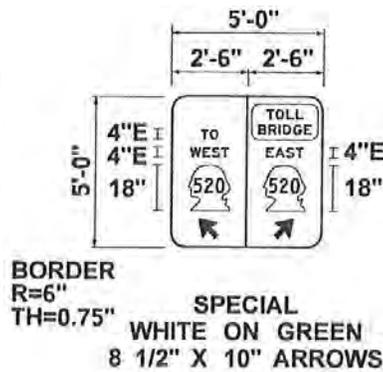


Figure 11: Toll Warning on Guide Sign Detail

Figure 12: Toll Warning on Guide Sign Detail

Figure 13: Toll Warning on Guide Sign Detail

The toll warning signs can be mounted in numerous ways that are consistent with the WSDOT Standard Plans. Signs that have been installed on the SR 520 corridor are shown below.



Figure 14, 15, 16 and 17: Toll warnings on guide signs on SR 520

## 2.5. Last Exit Before Toll

Full open road toll facilities that require drivers to pay a toll must include signs that warn drivers of the last opportunity to exit the corridor before paying the toll. This is done on open road toll facilities such as the SR 520 bridge and TNB. The warning sign should be installed in conjunction with the guide signs at the last possible exit before the toll zone.

The warning sign's text reads: LAST EXIT BEFORE TOLL. The text is black on a yellow background and is typically placed as a banner on top of the guide sign associated with the last fee exit. Example sign details from the SR 520 Toll Signing Project are shown in Figure 18 and Figure 19.

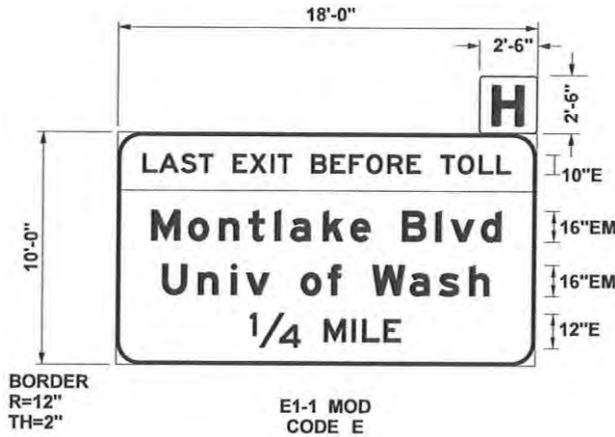


Figure 18: Last Exit Before Toll Sign Detail



Figure 19: Last Exit Before Toll Sign Detail

The last exit before toll sign is placed on each advance and gore guide sign leading to the exit. The signs can be mounted in numerous ways that are consistent with the WSDOT Standard Plans. Examples of existing signs on the SR 520 corridor are shown below.



Figure 20, 21 and 22: Last Exit Before Toll Signs on SR 520

## 2.6. Vehicles Entering Ramp Will Pay Toll

On-ramps that lead directly to a mainline roadway that contains an open road toll facility without an opportunity to exit before a driver reaches the toll zone need to be signed with a message that informs drivers that if they do enter the ramp, they will be required to pay a toll. These signs have been added to the SR 520 bridge corridor to reduce driver confusion and frustration of paying unwanted tolls. The signs are located on an arterial route prior to these on-ramps to create an opportunity for drivers not to enter, allowing them to travel another route if desired.

The sign's text is black on a yellow background and reads: VEHICLES ENTERING RAMP WILL PAY TOLL. The *Good To Go!* and Pay By Mail logos are included on the sign to correlate the sign's warning with the different methods that a driver will pay the toll if the ramp is entered. A sign detail from the SR 520 Toll Signing Project is shown in Figure 23.



Figure 23: Vehicles Entering Ramp Will Pay Toll Sign Detail

The size of these signs should be determined according to the MUTCD and local municipal specifications on which arterial route the sign is located. An example of an existing sign located on Lake Washington Blvd. for the SR 520 bridge is shown in Figure 24.



Figure 24: Vehicles Entering Ramp Will Pay Toll Sign for SR 520

## 2.7. Toll Warning, X Mile Ahead

On single-point, open road toll facilities, signs that show the distance to the toll zone(s) are placed on the mainline routes generally two or more miles in advance. This enables driver to determine if their destination is before or after the toll facility. This also clarifies where a toll zone is on a route since toll booths are no longer installed.

This sign consists of multiple elements. The guide portion of the sign has a green background that includes the state route marker and is accompanied by toll warning and destination text that is black on a yellow background. New toll systems will need to identify the proper warning message in order to reflect the roadway system on which the toll facility is located (i.e. TOLL TUNNEL vs. TOLL BRIDGE). The lower portion of the sign includes the *Good To Go!* and Pay By Mail logos on top of a white background. A detail of a sign located on SR 520 is shown in Figure 25.

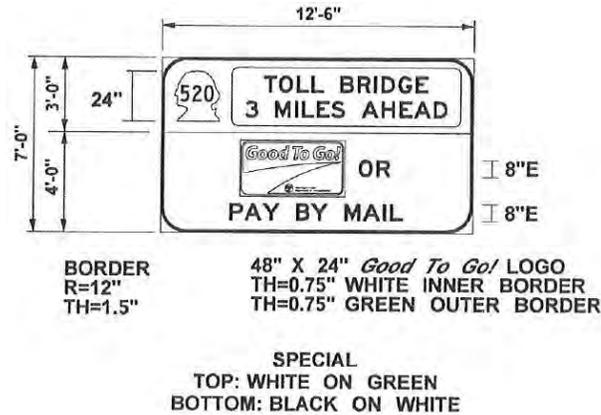


Figure 25: Toll Warning, X Miles Ahead Sign

The signs can be mounted in various ways that are consistent with the WSDOT Standard Plans. An example of an existing sign located on the SR 520 corridor is shown in Figure 26.



Figure 26: Toll Warning, X Miles Ahead Sign on SR 520

### 3. EXPRESS TOLL LANE SPECIFIC SIGNS

The 2009 MUTCD Sections 2G.16-18 describe signing for Priced Managed Lanes. The WSDOT Toll Division used these sections as a starting point in the sign design for an express toll lane corridor in an effort to stay consistent with other priced managed lanes across the United States. However, the MUTCD does not provide specific guidance on how to sign proposed express toll lanes in Washington State due to unique policies and business rules. The sections below supplement the MUTCD by providing signing guidance for express toll lanes in Washington State.

### 3.1. ETL Access Signs

Current configurations of existing and proposed express toll lanes include designated access points throughout the corridor which enable drivers to enter and exit the express toll lanes legally. Similar to advance notice signs for traditional exits, these access points also need to have advance signing. Figures 2G-21, 22 and 23 in the 2009 MUTCD show different layout methods for providing advance notice of an access point.

Specific signing differences from the 2009 MUTCD that WSDOT has adopted regarding access signing are as follows:

#### Sign Design

- The signs shall have black text on a white background
- “Express Toll Lane(s)” shall be shown as the top banner on all access signs
- The *Good To Go!* logo and the Pay By Mail Logo shall be shown in the middle of the sign with the words “Added Toll” placed directly below the Pay By Mail Logo
- The word “Entrance” shall be used on signs for notification of the beginning of the express toll lanes
- The word “Access” shall be used on signs for notification of an ingress into the express toll lanes after the express toll lanes have begun

#### Sign Placement

- At a minimum there shall be at least a 1 mile and ½ mile advance entrance signs as well as a point of entry (arrow) sign prior to the beginning of the express toll lanes
- At a minimum there shall be at least a ½ mile advance and point of access (arrow) signs prior to an ingress point within the express toll lanes
- All signs mentioned above shall be placed overhead, above the general purpose lanes nearest to the express toll lanes

Figure 27 below shows a proposed detail for a ½ mile access sign to be placed on the I-405 Express Toll Lanes corridor.



*Figure 27: ETL Access Sign Detail*

### 3.2. ETL Local Exits Signs

Current configurations of existing and proposed express toll lanes include designated access points throughout the corridor which enable drivers to enter and exit the express toll lanes legally. In order to avoid drivers from illegally exiting the express toll lanes, signs need to be installed to notify drivers which egress they need to use to exit the ETLs into the GP lanes and then on to their desired exit. Figure 2G-25 in the 2009 MUTCD illustrates FHWA’s guidelines for providing notice of an egress point that guides drivers to their desired mainline exit.

Specific signing differences from the 2009 MUTCD that WSDOT has adopted regarding local exit signing are as follows:

#### Sign Design

- “Local Exit(s)” shall be shown in black text on a white background as the top banner on all local exit signs
- All mainline exits that cannot be legally maneuvered to after passing the upcoming egress point must be included on the local exits signs for that egress point. This information will be located on the lower portion of the sign in white text on a green background.

#### Sign Placement

- At a minimum there shall be at least a ½ mile advance and point of egress (arrow) signs prior to an egress point
- All signs mentioned above shall be placed overhead, above the express toll lane(s) nearest to the general purpose lanes

Figure 28 and Figure 29 show proposed details for proposed local exit signs to be placed on the I-405 Express Toll Lanes corridor.



*Figure 28: ETL Local Exit Sign Detail*



*Figure 29: ETL Local Exit Sign Detail*

### 3.3. ETL Express Exit Signs

Express toll lane corridors may include direct access exits from the ETLs directly to an interchange. These are typically left exits and are known as express exits. These exits are signed similarly to an HOV direct access exit with a few modifications. Figure 2G-26 and 27 in the 2009 MUTCD illustrates FHWA’s guidelines for signing an express exit from an express toll lane.

Specific signing differences from the 2009 MUTCD that WSDOT has adopted regarding express exit signing are as follows:

#### Sign Design

- Express exit signs shall have black text on a white background
- “Express Exit” shall be shown as the top banner on all express exit signs
- The route marker or street name that is being exited to shall be shown under the banner

#### Sign Placement

- At a minimum there shall be at least a 1 mile and ½ mile advance as well as a point of exit (arrow) signs prior to an express exit
- All signs mentioned above shall be placed overhead, above the express toll lane(s)

Figure 30 and Figure 31 show proposed details for proposed local exit signs to be placed on the I-405 Express Toll Lanes corridor.



Figure 30: ETL Express Exit Sign Detail



Figure 31: ETL Express Exit Sign Detail

### 3.4. Other Considerations

Business rules and policy decisions are ever changing as more express toll lane systems are implemented. These decisions directly affect the signing needs for the corridor. Specific examples of these future considerations are open-continuous access express toll lanes, evolving payment methods, express toll lanes within a single open roll toll point, carpool policy decisions, the use of Active Traffic Management signs within an express toll lane and the future need to transition from one toll facility into another. The result of these decisions will require immense coordination with the WSDOT Toll Division during the initial phases of the sign design process.

## 4. ADDITIONAL TOLL SIGNING

### 4.1. Good To Go! Information

Rules and concepts of tolled corridors are new to many Washington State drivers and they can potentially be confusing. Drivers will want to know where express toll lanes and open road toll facilities are located, if they can use them and what they need to do to use the facilities properly.

For all toll systems to be successful in attracting and informing users, *Good To Go!* informational signing is needed to inform drivers where to get basic information about each toll facility. It is essential to have information signs that identify the *Good To Go!* tolling program and provide a phone number where drivers can get information about the toll corridor or set up a *Good To Go!* account in order to use a facility to their benefit.

*Good To Go!* informational signs need to be installed on each tolled corridor and can be employed in a variety of ways. Two different sized signs have been installed throughout the SR 520 corridor to inform drivers of the toll on the SR 520 bridge. Larger signs have been installed over mainline SR 520 at the I-5 and I-405 interchanges. Smaller signs have also been on the shoulders of mainline SR 520 closer to the toll zones. Sign details from the SR 520 Toll Signing Project are shown in Figure 32 and Figure 33.



Figure 32: Large Good To Go! Sign Detail

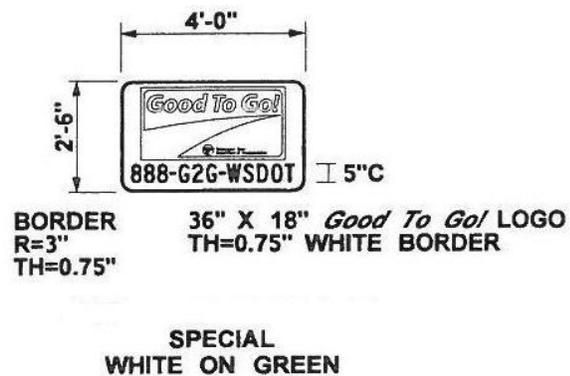


Figure 33: Small Good To Go! Sign Detail

The signs can be mounted in various ways that are consistent with the WSDOT Standard Plans. Examples of existing informational signs located on the SR 520 corridor are shown in Figure 34 and Figure 35.



Figure 34: Large Good To Go! Sign on SR 520



Figure 35: Small Good To Go! Sign on SR 520

## 4.2. Travel Time Signs

Hybrid travel time signs that reference the corridor in which a driver would travel through a toll facility shall include a toll warning. This will provide drivers with toll information for the route on which they choose to travel in addition to the projected travel times.

Travel time signs that reference the SR 520 bridge have the toll warning text within the static portion of the travel time sign reads: TOLL BRIDGE. New toll systems may need to identify the proper warning message in order to reflect the roadway system on which the toll facility is located (i.e. TOLL TUNNEL vs. TOLL BRIDGE). The text is black on a yellow background. Sign details from the SR 520 Toll Signing Project are shown in Figure 36 and Figure 37.

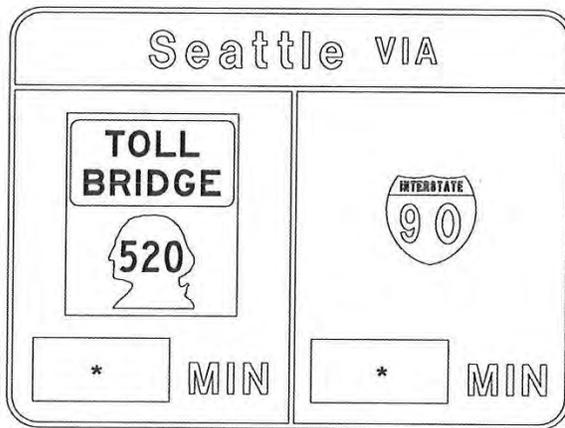


Figure 36: Travel Time Sign Detail for SR 520



Figure 37: Travel Time Sign Detail for SR 520

Existing hybrid travel time signs can be supplemented with plaques if there is enough space on the sign. Examples of existing supplemented travel time signs for the SR 520 toll are shown in Figure 38 and Figure 39.



Figure 38: Travel Time Sign for SR 520

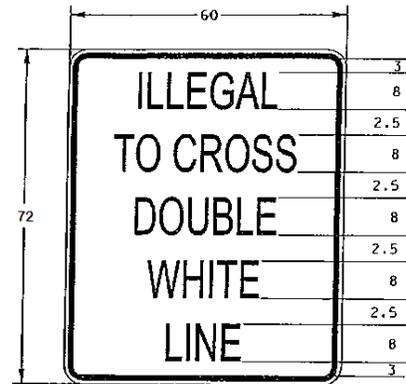


Figure 39: Travel Time Sign for SR 520

### 4.3. Illegal to Cross Double White Line

Express toll lane and HOT lane facilities can include a buffer that prohibits the movement of vehicles from the general purpose (GP) lanes to the toll lanes and vice versa. This is currently employed using a continuous double white line. Regulatory signs need to be installed throughout a corridor with double white lines to reinforce and alert drivers that changing lanes across the lines is illegal. This signing is consistent with the Washington Administrative Code (WAC) 468-95-240.

The regulatory sign's text reads: ILLEGAL TO CROSS DOUBLE WHITE LINE. The text is black on a white background. A detail from a sign on SR 167 is shown in Figure 40.



**BLACK ON WHITE**

Figure 40: Illegal to Cross Double White Line Sign Detail

On SR 167, these signs occur throughout the corridor with the frequency of roughly three signs per mile. They are placed in the median and the outside shoulder. In order to inform drivers in both the tolled lanes and GP lanes of the intent of the double white line buffer, effective placement of these signs is critical.

These signs can be mounted in numerous ways that are consistent with the WSDOT Standard Plans. Examples of existing signs installed on SR 167 are shown in Figure 41 and Figure 42.



Figure 41: Illegal to Cross Double White Line Sign on SR 167



Figure 42: Illegal to Cross Double White Line on SR 167

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