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16. Abstract A review of current practice for signing on toll facilities is presented. A new chapter for the Texas Manual of Uniform Traffic Control Devices includes route markers, advisory plaques, guide signs, and independent route assemblies. Typical layout drawings for a variety of toll facilities are also included. Research activities regarding the comprehension of the signs in the new chapter included eight focus groups in three Texas cities which explored driver understanding of toll road traffic operations and payment options.			
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# **PRELIMINARY GUIDELINES FOR SIGNING ON TOLL FACILITIES**

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## **DISCLAIMER**

This research was performed in cooperation with the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation.

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## CHAPTER 1: BACKGROUND

With the signing of House Bill (HB) 3588, TxDOT entered the business of toll roads in earnest. Even before this landmark legislation, Texas was home to 145 miles of non-interstate system toll road, 17 toll bridges, and 1 tunnel (1). Texas is poised to be a leader in innovative freeway operations through the implementation of major projects such as the managed lanes on the new IH 10 Katy Freeway in Houston and the toll route SH 130 bypassing Austin. The first Trans Texas Corridor construction contracts were recently awarded. This project sets new precedents both in road financing and in the state's approach to dealing with congestion in urban areas due to through traffic. New projects are being developed by local Regional Mobility Authorities (RMAs) to toll managed lanes parallel to free lanes, direct connect ramps, loop bypass roads, and through routes at congested interchanges. The entire transportation community is watching Texas as we enter these new areas. As the most visible aspect of these new roads to the traveling public, traffic control devices can influence driver acceptance of the entire roadway.

All of these new operating strategies have the potential to violate driver expectancy concerning a free, unobstructed route. Effective communication with drivers is necessary to maintain safety, operations, and revenue. The 1980 *Texas Manual on Uniform Traffic Control Devices* (TMUTCD) provides the traffic control principles and strategies that should guide all roadways, including toll roads (2). Unfortunately, neither the TMUTCD nor the federal *Manual on Uniform Traffic Control Devices* (MUTCD) contains any language specific to toll roads (3). One published article in the traffic engineering literature attempts to address some traffic control device issues but mainly serves to highlight the many areas of inconsistency (4). The new edition of the TMUTCD issued in 2006 contains a new chapter, 2J, which begins to address signing issues for toll facilities (5). This project contributed to the development of the new chapter.

### STANDARDS DEVELOPMENT EFFORTS

Technically, MUTCD guidelines govern toll road operations. In practice, however, many toll facilities have deviated from the manual, in particular in the area of guide signing, in order to achieve a distinctive look for the facility. This problem has not been as prevalent on the toll

roads in Texas as compared to other facilities throughout the country. However, several toll facilities in Texas were already built or contracts had been let when the 2006 TMUTCD was published, and therefore they do not adhere to those guidelines. The professional association of toll road operators in Texas, *TeamTX*, has recently begun efforts to bring more uniformity to traffic control devices in our state (6). In addition, the International Bridge, Tunnel, and Turnpike Authority (IBTTA) also recognizes the need for improved uniformity and guidance. Their representative to the National Committee on Uniform Traffic Control Devices (NCUTCD) recently organized a special session at their facilities management meeting to address this issue (7, 8).

The Federal Highway Administration (FHWA) also recognizes the need to improve the MUTCD sections on preferential lane use. Beginning with high occupancy vehicle (HOV) traffic control, FHWA has sponsored several projects in the past few years. Carroll, Fuhs, and Obenberger (9) highlighted the special needs for HOV signs and pavement markings and contributed new layouts for HOV facilities for the Millennium MUTCD. The FHWA traffic control device pooled fund study recently sponsored a study examining driver comprehension and detection of symbols and signs marking electronic toll collection (ETC) lanes (10). This study focused on color combinations and recognition of the various facility logos to mark ETC lanes at toll plazas.

Two current FHWA projects address broader traffic control issues for toll facilities. One project identifies traffic control strategies at toll booth plazas (11). It was prepared by consultants from Wilbur Smith in partnership with FHWA. This comprehensive report includes sections on geometric design of weaving areas, channelization of toll lanes, and design and placement of impact attenuators. It also contains sections on signing and pavement markings. The signing chapter makes recommendations for sequencing of guide signs in advance of a plaza following the principles of the MUTCD. It also addresses regulatory and warning signs in and around plazas. The pavement marking chapter is most concerned with lane lines and does not address horizontal signing applications such as lane assignment.

The other ongoing FHWA project is being conducted by Dr. Susan Chrysler and Dr. Beverly Kuhn of Texas Transportation Institute (TTI). This work, currently under review by FHWA, developed a cross-cutting study and primer of operational issues for managed lanes. Two tasks are specific to traffic control devices. One created a driver decision-making model

which identifies key decision points and the information required to choose whether or not to use a managed lane. The second task was to create a state-of-the-practice document for signing and markings for managed lanes facilities in the United States and abroad. As part of this task, the research team is creating a research needs document as well. This work builds on an earlier TxDOT-sponsored project (0-4160 *Operating Freeways with Managed Lanes*) which also addressed traveler information needs and research needs for traffic control devices (12, 13).

With the lack of guidance in the MUTCD, some agencies have created their own sign standards and policies. In Texas, the North Texas Tollway Authority (NTTA) commissioned a sign policy document which is used by their design consultant to ensure uniformity throughout their system (14). The Florida Department of Transportation includes two brief sections in their *Traffic Engineering Manual* devoted to traffic control device design and placement for toll facilities (15). Florida parallels Texas in many ways in that they are trying to standardize a variety of existing legacy toll facilities throughout their state. They are struggling with transponder interoperability, logo development, and uniformity of signs.

## STATE OF THE PRACTICE

Toll facilities are not limited to the United States. As with the individual states in the United States, the individual countries of Europe have developed their own signing practices. With the development of the European Union, universal standards for key signs are being developed, including those for toll roads. This standards work is ongoing. South Africa includes some signs for toll roads in their sign manual (16). Figure 1 below shows one particularly interesting symbol sign and is defined as: “*The Pay Toll regulatory sign R132 imposes a mandatory requirement that drivers of vehicles shall only proceed on a public road designated as a toll road if they are able to pay the toll charge and that they shall pay the toll charge at the toll plaza or plazas concerned.*”



**Figure 1. South African Toll Road Symbol.**

Modern toll roads are increasingly moving toward the open road tolling concept, allowing payment only by electronic tags. In Europe, a symbol has been developed for use at toll plazas to indicate that payment is accepted by electronic tag. Figure 2 shows an example of such a symbol in use in Denmark and Sweden in the top left quadrant of the sign.



**Figure 2. Electronic Tag Symbol Used in Denmark and Sweden.**

## **RESEARCH TOPIC AREAS**

TxDOT Project 0-4160 *Operating Freeways with Managed Lanes* identified several research needs in the areas of traffic control devices. This project also conducted several focus groups with Texas drivers to gauge their understanding of managed lanes operations concepts. In conducting these focus groups, the importance of effective traffic control devices became clear. Several key operational and design factors emerged from this project as needing further study. These issues formed the initial list of research topic areas for the current project.

### **Route Naming and Numbering**

This is a fundamental issue for wayfinding, addressing, map making, and reference markers. It is especially critical for existing roads, or parts of roads, that are being converted to toll facilities. Take, for example, an existing controlled-access freeway with adjoining frontage roads with signalized intersections – a hypothetical road called US Highway 123. One scenario may be that the RMA plan for US 123 calls for a complete conversion of the controlled-access lanes to toll with the frontage roads becoming the free alternative. This seemingly simple

operating strategy has a significant cascade of effects on terminology used for all the neighboring roadways.

- If US 123 becomes Toll 123, does that mean the frontage roads are now US 123? If so, all the signs on the frontage roads must be changed to the new route marker and all signs on intersecting roadways must be changed, possibly to include reference to both US 123 and Toll 123.
- If the frontage road is now US 123, what happens to the addresses for the businesses on that road? This is especially critical for emergency services and reference markers for crash reports.
- Should the signs directing drivers to US 123 notify drivers that it is not a controlled-access freeway? This is an issue at the transition point between free and tolled sections of the same roadway.

For exclusive toll facilities, the problems are somewhat less, but standards need to be developed to guide the naming of facilities. Should the word “toll” appear in all named facilities (e.g., Sam Houston Tollway)? Should the word “toll” appear on all route marker assemblies?

For parallel managed lane facilities, Project 0-4160 addressed the naming issue somewhat in the focus groups. Drivers reported that if they were driving in the managed lanes on the Katy Freeway, they would still consider themselves to be “on IH 10.” Given this cognitive state, signs directing drivers from the managed lanes (“Katy Toll Road”) to IH 10 are unclear. If drivers already think they are on IH 10, a sign telling them to exit to IH 10 will be confusing. Current sign standards, however, call for this type of exit signing.

## **Design of Signs**

TxDOT has already decided on a unique TxTAG logo to indicate that a facility is open only to vehicles equipped with this particular transponder for ETC. This logo could be used as an auxiliary plaque on standard guide signs or could be redesigned into a full-span banner across the top of signs. A policy is needed regarding the use of the logo or banner on warning, regulatory, and route marker signs.

Another method of notifying drivers that they are on a separate facility is through the use of a unique background color. When shown layouts of parallel managed lane facilities, focus

group participants strongly endorsed the use of a unique color. While the research team is not advocating the use of purple in the absence of any research, the industry use of purple is expanding because of E-ZPass signs used throughout the Northeast United States. This color stands to become the *de facto* standard and has spread to pavement markings, lane use control signal color, and background for colored changeable message signs. Figure 3 shows some current applications of purple throughout the country. The Harris County Toll Road Authority (HCTRA) has requested permission to experiment with purple background guide signs on their facilities and on direct connect ramps serving their roads. An evaluation of these signs by TTI is currently under way. A clear decision regarding the use of purple is needed. This decision must be made in the context of national activity and future interoperability of transponders nationwide.



**Figure 3. Use of Purple for Markings and Signs for Toll Facilities.**

### **Advance Notice of Access Points**

Another topic addressed in Project 0-4160 was drivers' desire to be notified of exit points out of the managed lane. Focus group participants reported that they expected to be told before entering a managed lane if the lane does not provide access to major intersecting roads. A map may show the intersection of major routes, but direct access may not be provided from the toll lanes. Signing at the transition point from free to tolled sections, as well as signing from intersecting roadways, must provide drivers with the information that no access to the



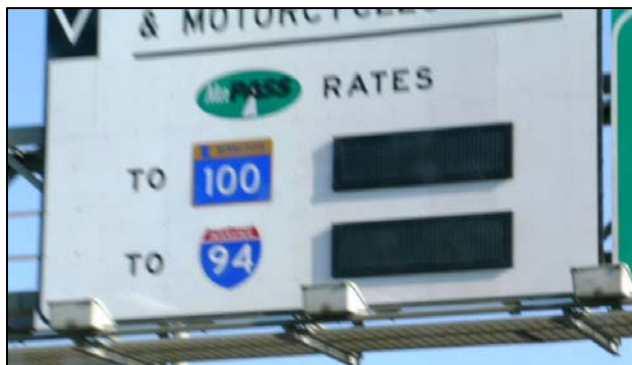
intersecting route is available. Likewise, positive guidance to that intersecting route must be provided by listing access to major intersecting roads served by the last free exit.

Similarly, drivers reported reluctance to use unfamiliar managed lanes, especially barrier separated facilities, because they did not know the final and intermediate access points. Clearly, use of a facility can be increased, and consequent revenue can be generated, by clear notice of egress points. This is true for notice access to large traffic generators (e.g., airports, hospitals) as well.

### **Pricing Notification**

A policy decision beyond the scope of traffic signs is the question of whether or not the operating agency is obligated to notify drivers of the toll schedule in advance. But it does serve as an example of how key policy questions arise during the analysis of traffic control device strategy. One approach, used by HCTRA on the Westpark Tollway, is to simply post the price on a small white-on-blue sign below each ETC gantry. This works when there is no differential pricing by vehicle type. The problem quickly multiplies when variable pricing by axle is in operation.

For long-haul facilities, such as the Trans Texas Corridor and SH 130, the issue of displaying the price by destination is raised. The Minnesota Department of Transportation, on their IH 394 managed lane, has prices based on two exit points. Their sign shows the prices to the intermediate exit at SH 100 and to the terminus at IH 94 (see [Figure 4](#)). For a facility with just two exits, this is a feasible solution. San Diego is struggling with this issue currently in the design of the extension of the IH 15 managed lanes. This facility will eventually have seven exit points with distance based pricing. In addition, the price per mile changes based on current traffic levels. One method they are considering is to post price information as a price per mile. Clearly, there are driver comprehension questions with the type of sign shown in [Figure 4](#).



**Figure 4. Minnesota I-394 Differential Pricing.**  
*(photo courtesy of Jim McCarthy, FHWA, St. Paul MN).*

### Lane Assignment

Although open-road electronic tolling is clearly the direction Texas is heading, lane assignment for payment is still an issue. Some facilities may have pull-out lanes for HOVs to use in order to obtain a credit on their toll account. Other facilities may allow cash payments, but only through parallel pull-out lanes as used in Colorado and Oklahoma (see [Figure 5](#)). One proposal ultimately rejected for Loop 49 in Tyler called for on-site sale of prepaid toll stickers for drivers not subscribed to TxTAG. These stickers could be sold in drive-up vending machines similar to automatic teller machines in lanes adjacent to the facility.



**Figure 5. Colorado E470 Cash Pull-Out Lanes.**  
*(photo courtesy of Wilbur Smith Associates)*

There are traffic control device issues for traditional toll plazas with a mix of electronic, automatic, and manual collection lanes. Many of these issues are being addressed by the current FHWA project ([II](#)). The use of changeable message signs which can dynamically assign the form of payment to a lane in response to traffic conditions is gaining use throughout the country.

The price of full-matrix color light-emitting diode (LED) changeable message signs is dropping and agencies are beginning to use them to manage their lanes better to accommodate the high number of ETC customers during peak commute times (see [Figure 6](#)).



**Figure 6. Electronic Lane Assignment Sign in New Jersey.**  
*(photo courtesy Wilbur Smith Associates)*

#### **ADDITIONAL RESEARCH TOPICS IDENTIFIED THROUGH PLAN REVIEW**

The initial list of guideline topics derived from the literature review was augmented through review of preliminary schematics for toll facilities throughout the state. Some of these guidelines were included in Chapter 2J of the TMUTCD released in March 2006. These research team reviews included staff from the TxDOT Traffic Operations Division and District Engineering staff. In most cases, the schematics had been prepared by consulting engineers. Schematics reviewed in the first year of the project included:

- Loop 1604 – San Antonio
- Loop 1 North – Austin
- SH 130 – Austin
- US 290 – Austin
- US 183 – Austin
- SH 121 – Dallas
- IH 30 – Dallas

- IH 820/IH 35W/SH 183 – Fort Worth
- Loop 49 – Tyler
- IH 10 Managed Lanes – Houston
- SH 249 – Houston

By identifying where consulting engineers had trouble applying general MUTCD principles to these new facilities, candidate guideline topics were identified. These plan reviews also helped identify research and focus group topics throughout the first year of the project.

## CHAPTER 2: DEVELOPMENT OF A TOLL ROAD CHAPTER FOR THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

A new edition of the TMUTCD was issued in March of 2006. The TxDOT Traffic Operations Division developed a new chapter in the Signing Section to address signing for toll roads. This new chapter was designated Chapter 2J. This chapter will continue to evolve in future revisions of the TMUTCD.

Prior to development of the chapter, TxDOT investigated logos and program names for the state-wide electronic toll collection system (17). This project involved three focus groups in the Austin area. They were presented with a variety of terms for TxTAG including “Texas Tollways,” TxToll, TollWay, and TxWay. The focus groups preferred TxTAG. Researchers also asked the groups to respond to a few preliminary route shield designs that the TxDOT Texas Turnpike Authority Division developed. One of those tested was ultimately selected for the new Texas toll route shield which includes the route number along with a three-color Texas flag logo in the lower left corner next to the word TOLL in medium blue letters.

Figure 7, taken from the 2006 edition of the TMUTCD, shows a variety of route shield, regulatory, and guide sign designs for use on toll facilities. In keeping with the principles of the MUTCD, several features can be highlighted:

- Route marker shields maintain their unique shapes and colors within a new TOLL frame.
- All signs regarding payment are considered regulatory and thus have a white background.
- Guide signs are green background.
- Warning messages are yellow background.

The subsequent figures in Chapter 2J show how these elements can be applied through general layout drawings for a variety of situations.

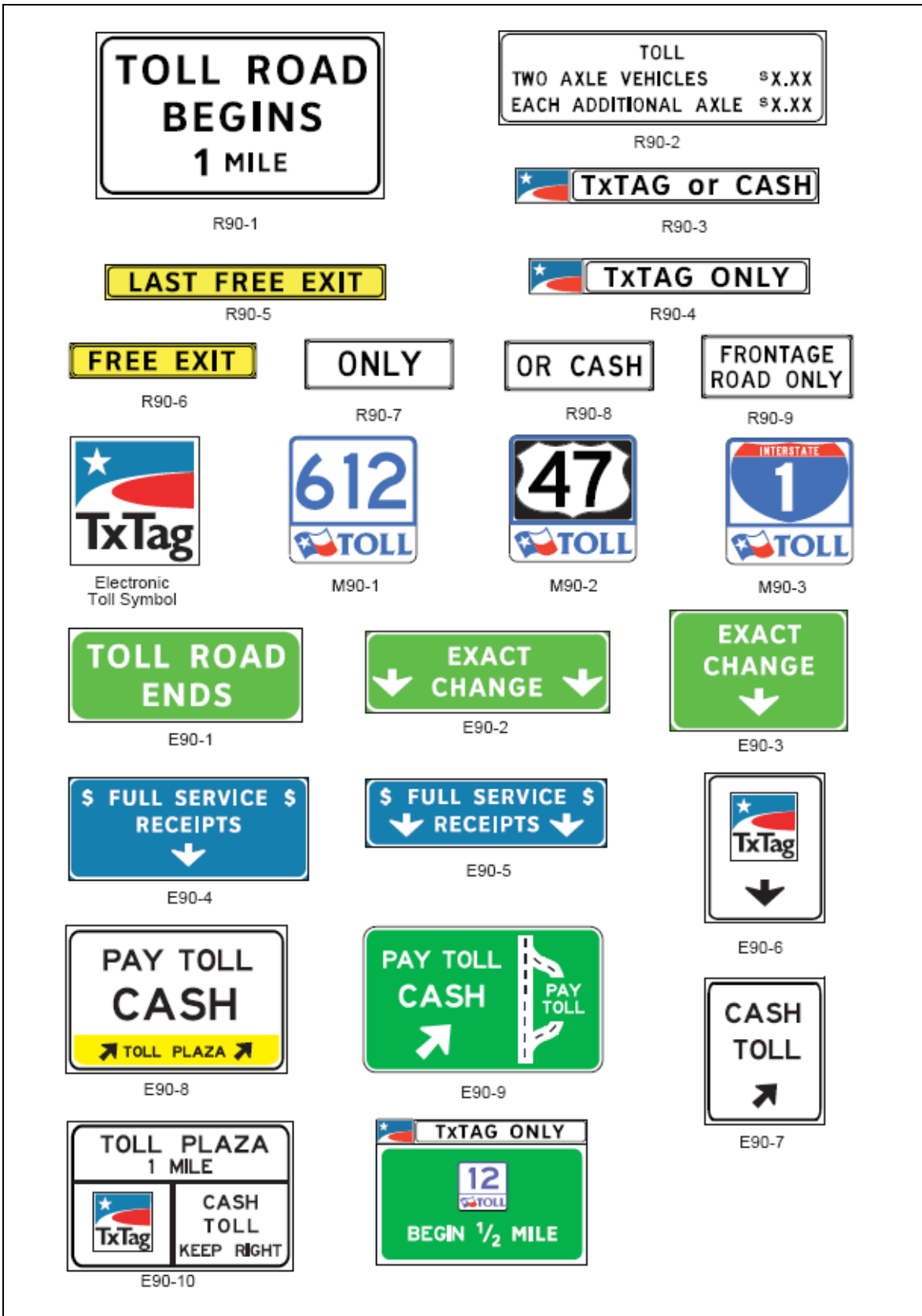


Figure 7. Figure 2J-1 from the 2006 TMUTCD–Toll Road Signs.

Two examples of exit signing from a conventional freeway to a tolled facility are shown in [Figure 8](#) and [Figure 9](#). Both figures feature the use of the TxTAG banner across the top of the advance guide and exit direction signs. Figure 2J-2 illustrates the case where the intersecting toll road accepts both cash and electronic payment. In this case the banner indicates TxTAG or CASH. Figure 2J-3 illustrates an electronic-only toll road. In both cases, a free exit to the adjoining free frontage road of the intersecting route is indicated prior to the direct connect ramp to the toll road. In addition, Figure 2J-3 illustrates the case where the toll road is served by concurrent routes, requiring two route markers. In practice, cardinal direction indications would likely be added adjacent to the route markers as on conventional freeway signing.

Some districts have considered tolling congested interchanges while providing free passage through the intersection along frontage roads. This situation is illustrated in Figure 2J-4 in the TMUTCD (see [Figure 10](#)). In this case, the last free exit before the tolled section is indicated. The destinations listed on this exit sign are for both the parallel free route and the intersecting cross street. The regulatory TOLL ROAD BEGINS sign is used as a first indication of the transition to a tolled section. The second advance guide sign then uses the toll route shield and the TxTAG banner to inform drivers of the transition. At the gore location, a pull-through sign is placed next to the exit direction sign.

A managed lane facility is illustrated in Figure 2J-5 (see [Figure 11](#)). In this situation, parallel inside lanes are tolled. These lanes could be separated from the general purpose lanes by a barrier wall, delineator posts, or pavement markings. Figure 2J-5 shows conventional text advance signs for a left exit which utilize the toll route shield containing the same route number as the adjacent general purpose lanes.

A typical diamond interchange between a surface road and a toll road is shown in Figure 2J-6 (see [Figure 12](#)). This layout shows the use of the TxTAG plaque on an independent route assembly below the route marker. This drawing also illustrates that the cardinal direction word and directional arrow changes to white on blue when accompanying an interstate shield.

An entrance to a toll road from a frontage road is shown in Figure 2J-7 (see [Figure 13](#)). This illustrates the application of the FRONTAGE ROAD ONLY supplemental plaque. This plaque reinforces to drivers that the free route stays on the frontage road which implies a lower speed, frequent driveways, and traffic signals. The route markers for the toll route and frontage road route are separate. The toll route assembly would be placed in the gore.

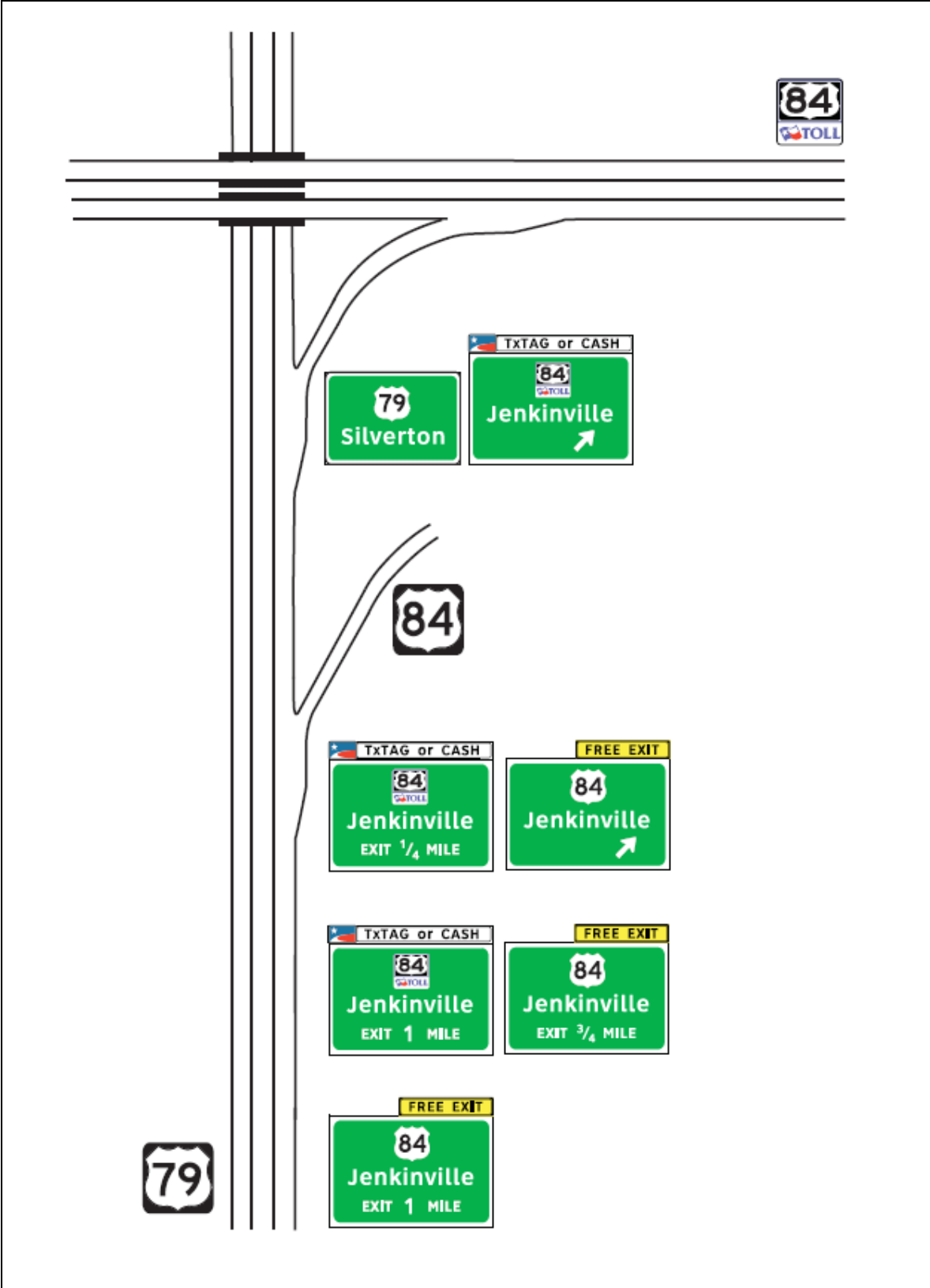


Figure 8. Figure 2J-2 from the 2006 TMUTCD-Non-Toll Roadway with Exit to Toll Roadway.



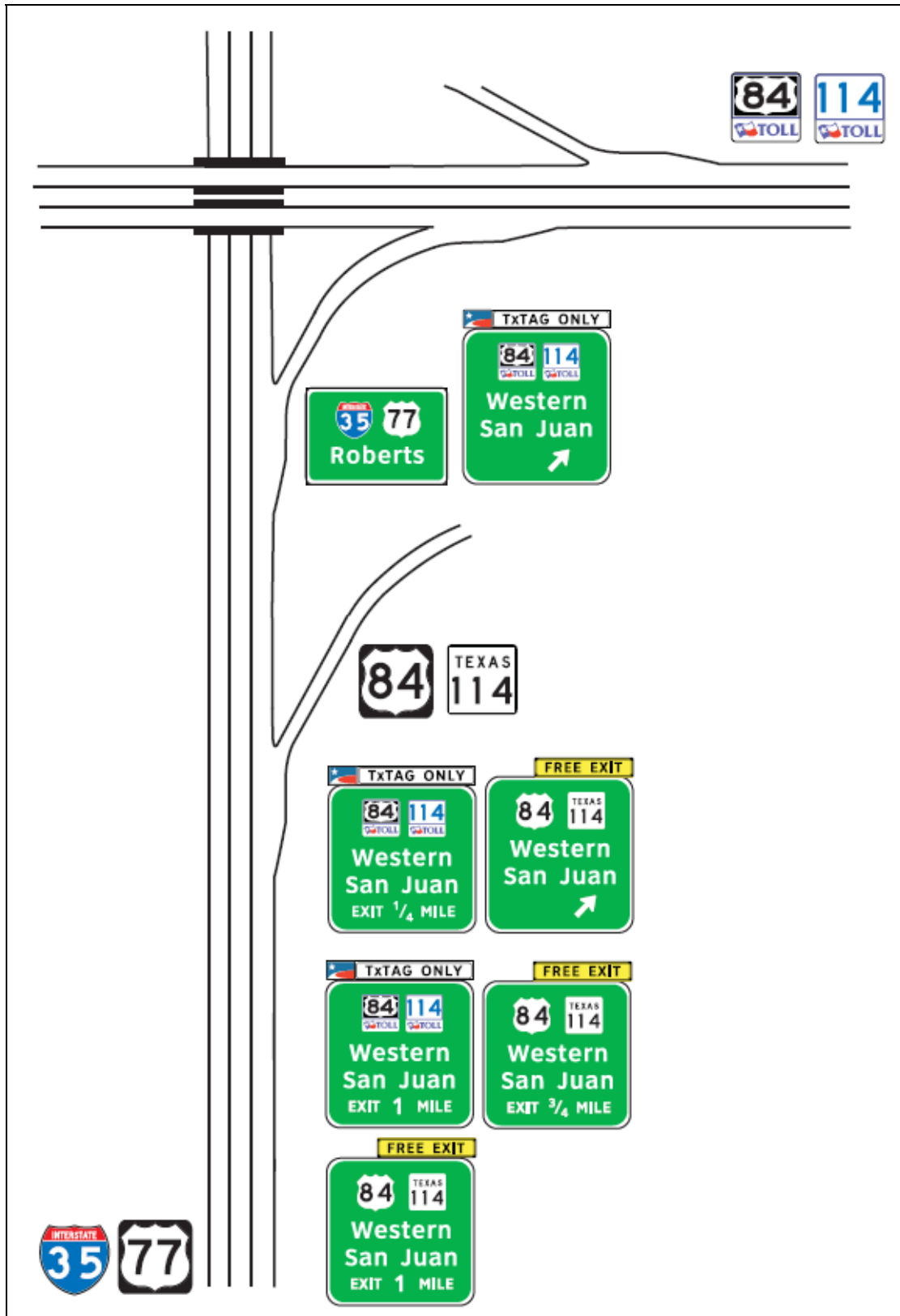


Figure 9. Figure 2J-3 from the 2006 TMUTCD-Non-Toll Roadway with Exit to Concurrent Toll Roadway.

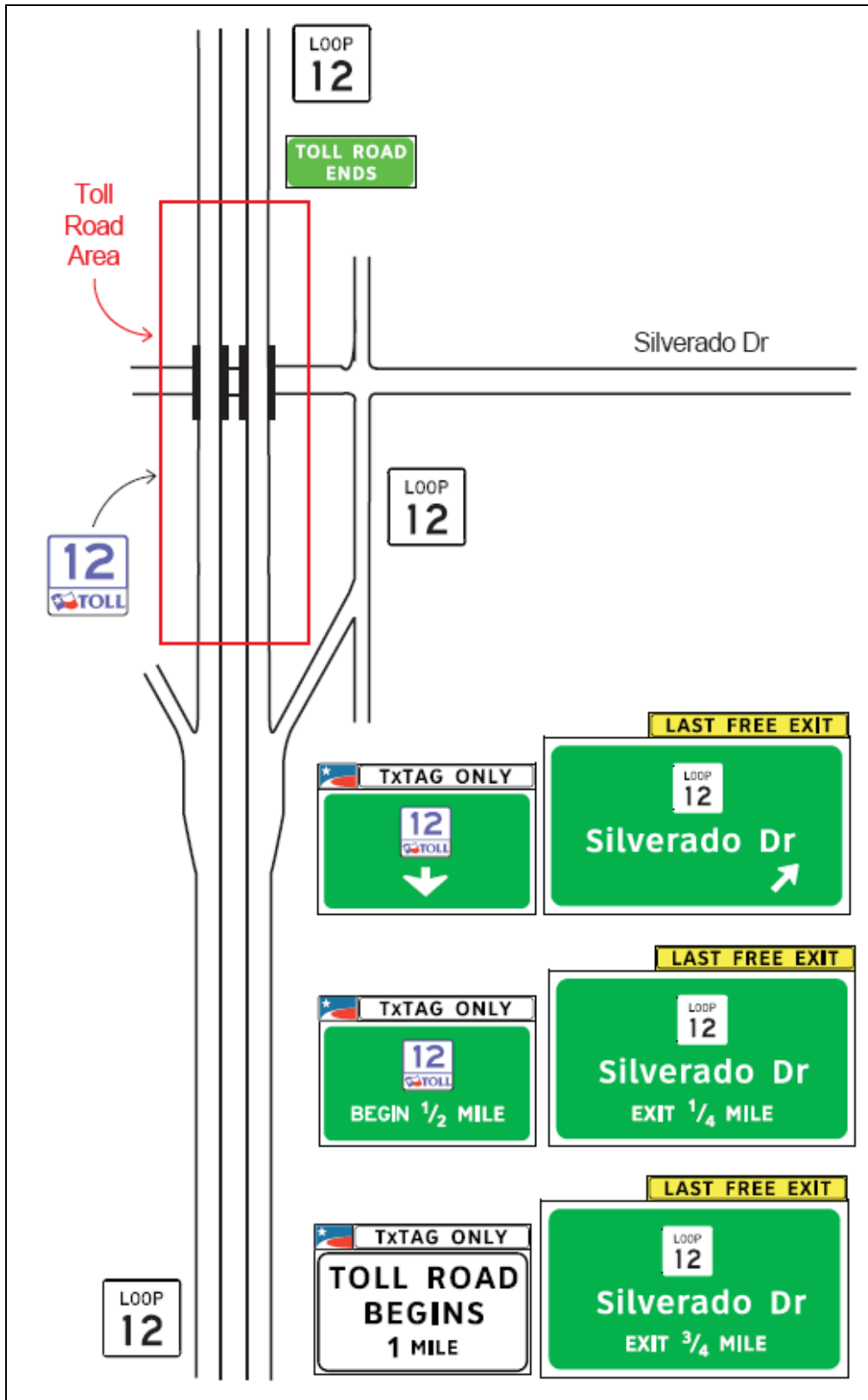


Figure 10. Figure 2J-4 from the 2006 TMUTCD-Non-Toll Roadway Converts to Toll Roadway.

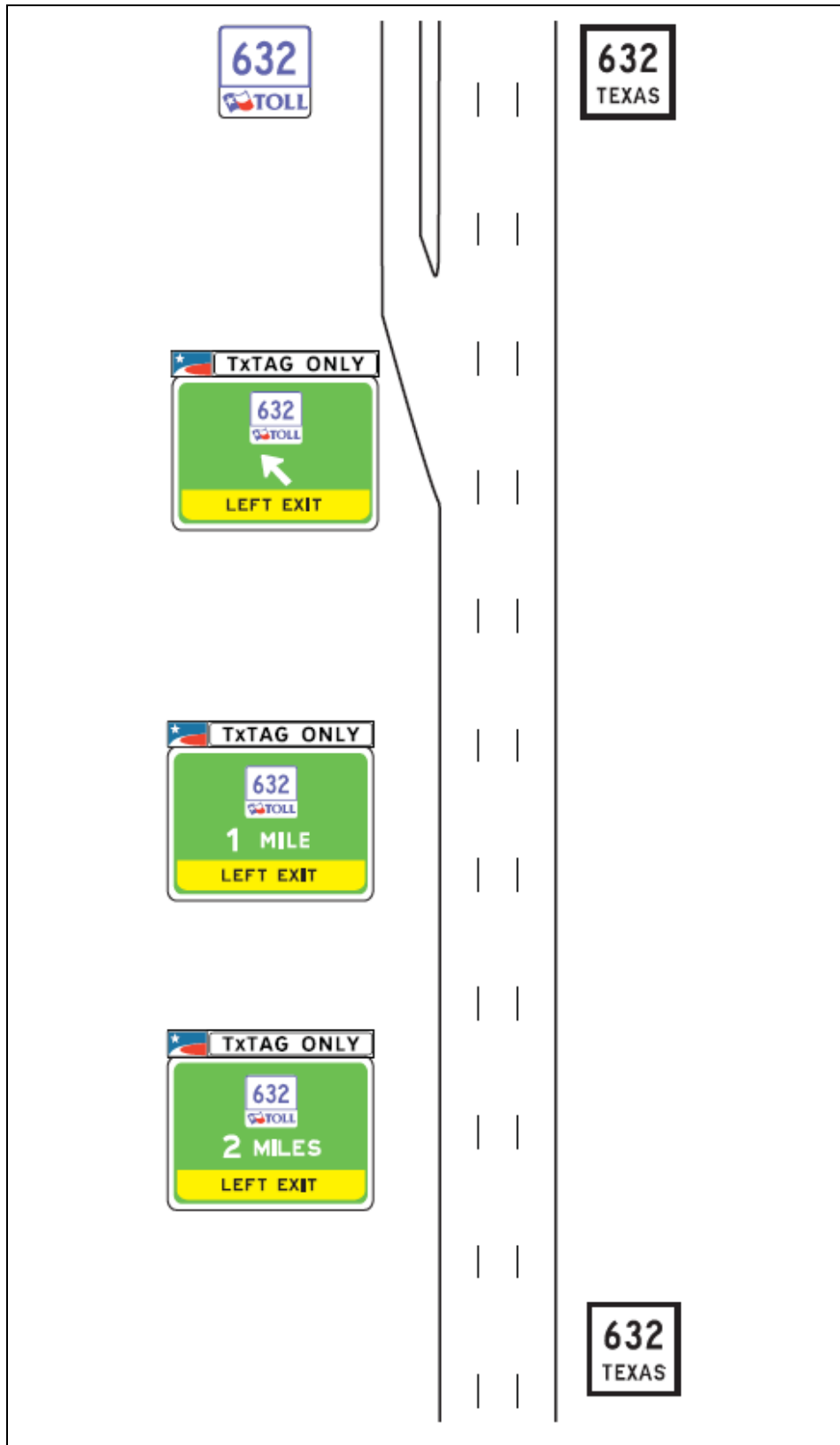


Figure 11. Figure 2J-5 from the 2006 TMUTCD-Non-Toll Roadway with Left Exit to Toll Lane.

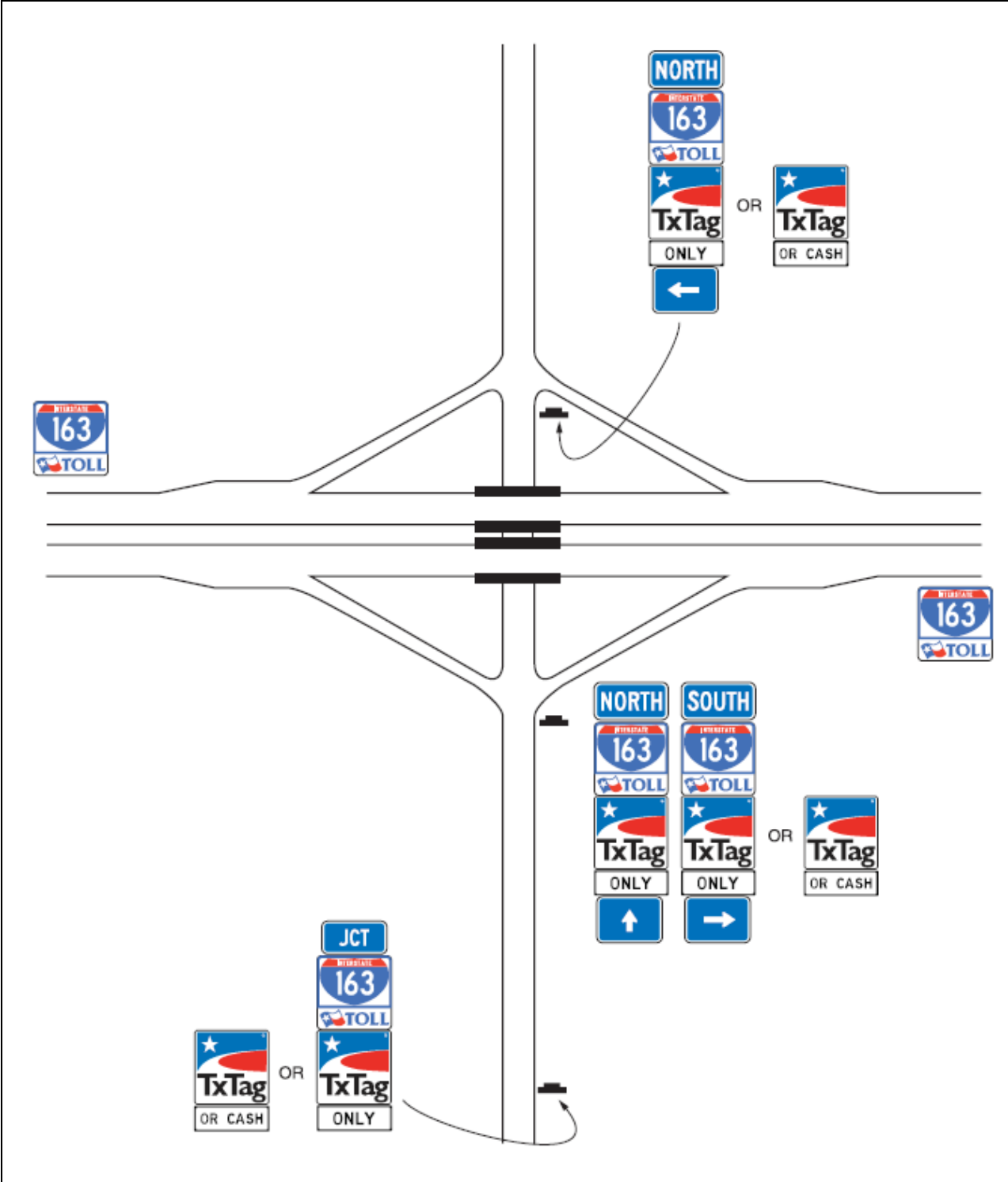


Figure 12. Figure 2J-6 from the 2006 TMUTCD-Signing for Non-Toll Conventional Highway to Toll Road Interchange.

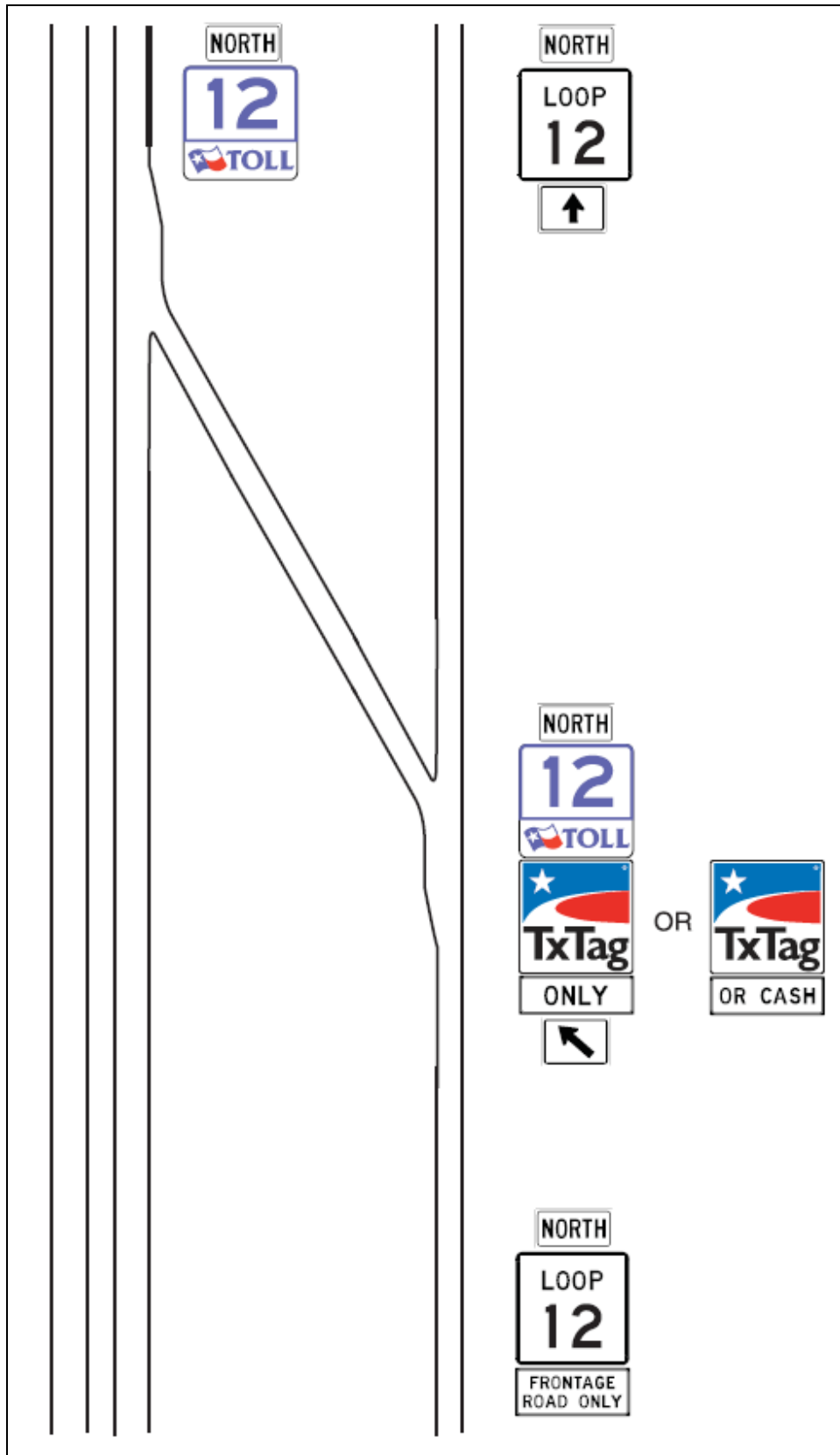


Figure 13. Figure 2J-7 from the 2006 TMUTCD-Toll Independent Mount Signing.

For open road tolling applications, those vehicles with electronic tags do not have to stop at toll plazas. Cash-paying customers are required to pull into adjacent plaza areas as illustrated in Figures 2J-8A and 2J-8B (see [Figure 14](#) and [Figure 15](#)). In reviewing other states with similar designs, two signing approaches were discovered. Since there was no research on driver comprehension of these signs, both sign layouts were included in the current version of the TMUTCD until such research could be completed. These signs were included in the first year of this research project. The layout shown in Figure 2J-8A uses exclusively regulatory signs in advance of the cash pull-out lanes. The exit direction sign includes a yellow banner, similar to an EXIT ONLY banner, with the words TOLL PLAZA. Figure 2J-8B uses a diagrammatic guide sign as the second advance sign. The intent of this is to reinforce to drivers that they will immediately re-enter the facility after paying the toll. In both cases, the toll rate schedule signs are ground-mounted on the off-ramp. The lane assignment signs over the payment lanes are color-coded with green applying to exact change and blue indicating full service.

For mainline toll plazas, Figure 2J-9 (see [Figure 16](#)) illustrates the use of regulatory signs in advance of the plaza area. The electronic payment lanes are to the left of the plaza with a TxTAG ONLY sign over each individual lane. The toll rate schedule sign is positioned as the lanes widen for the plaza.

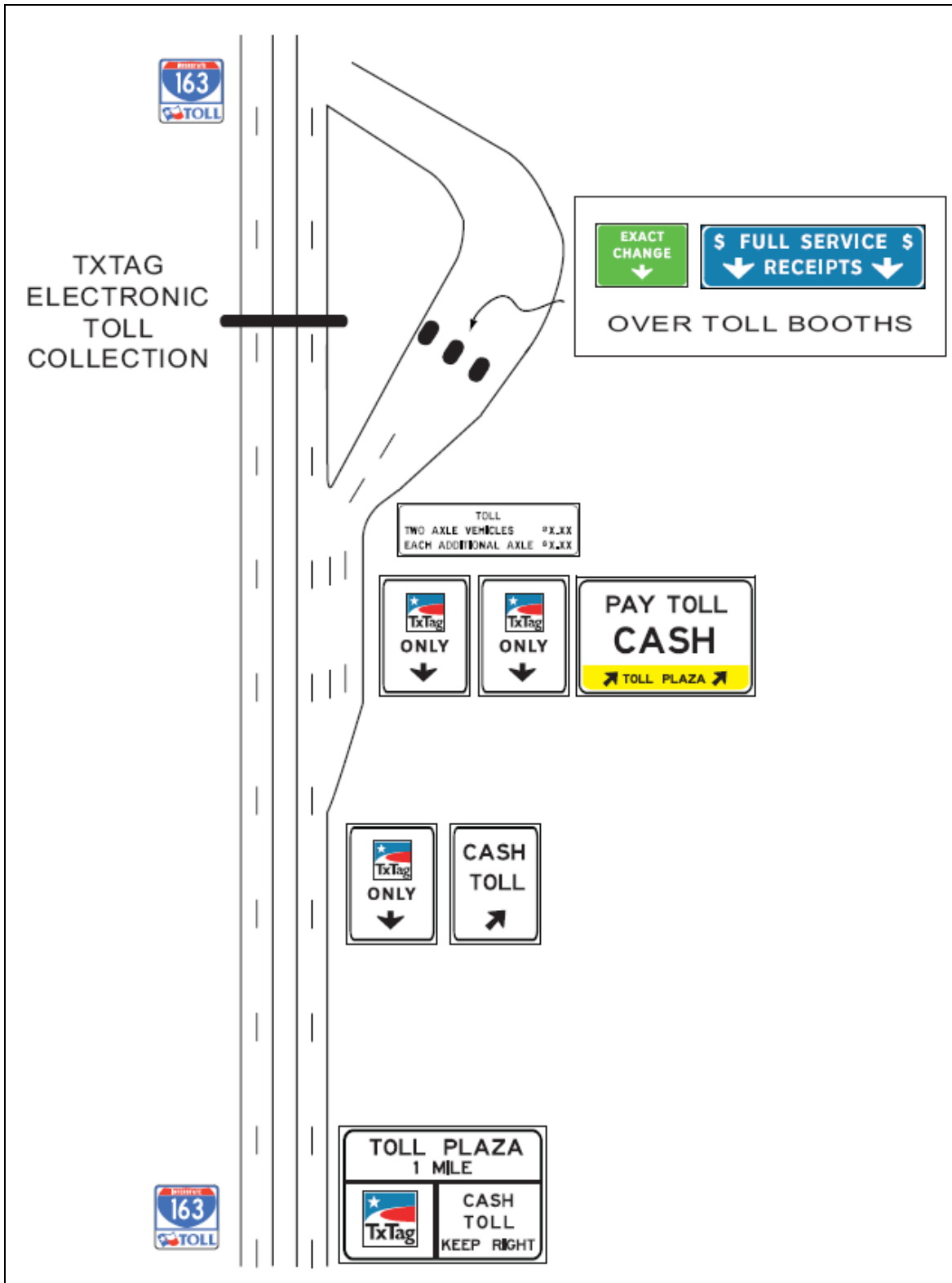


Figure 14. Figure 2J-8A from the 2006 TMUTCD-Toll/Cash Plaza off Mainlanes (Option A).

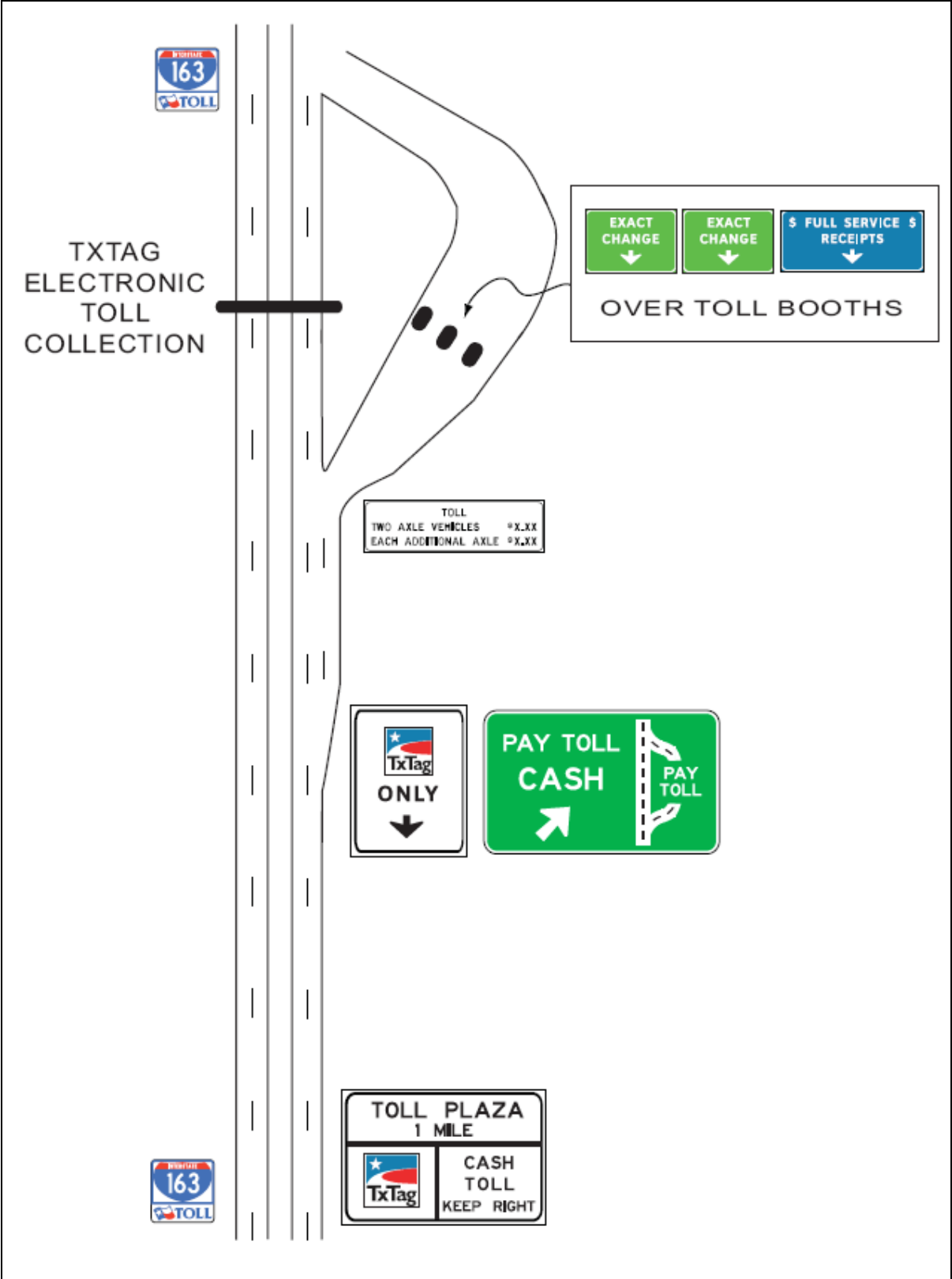


Figure 15. Figure 2J-8B from the 2006 TMUTCD-Toll/Cash Plaza off Mainlanes (Option B).



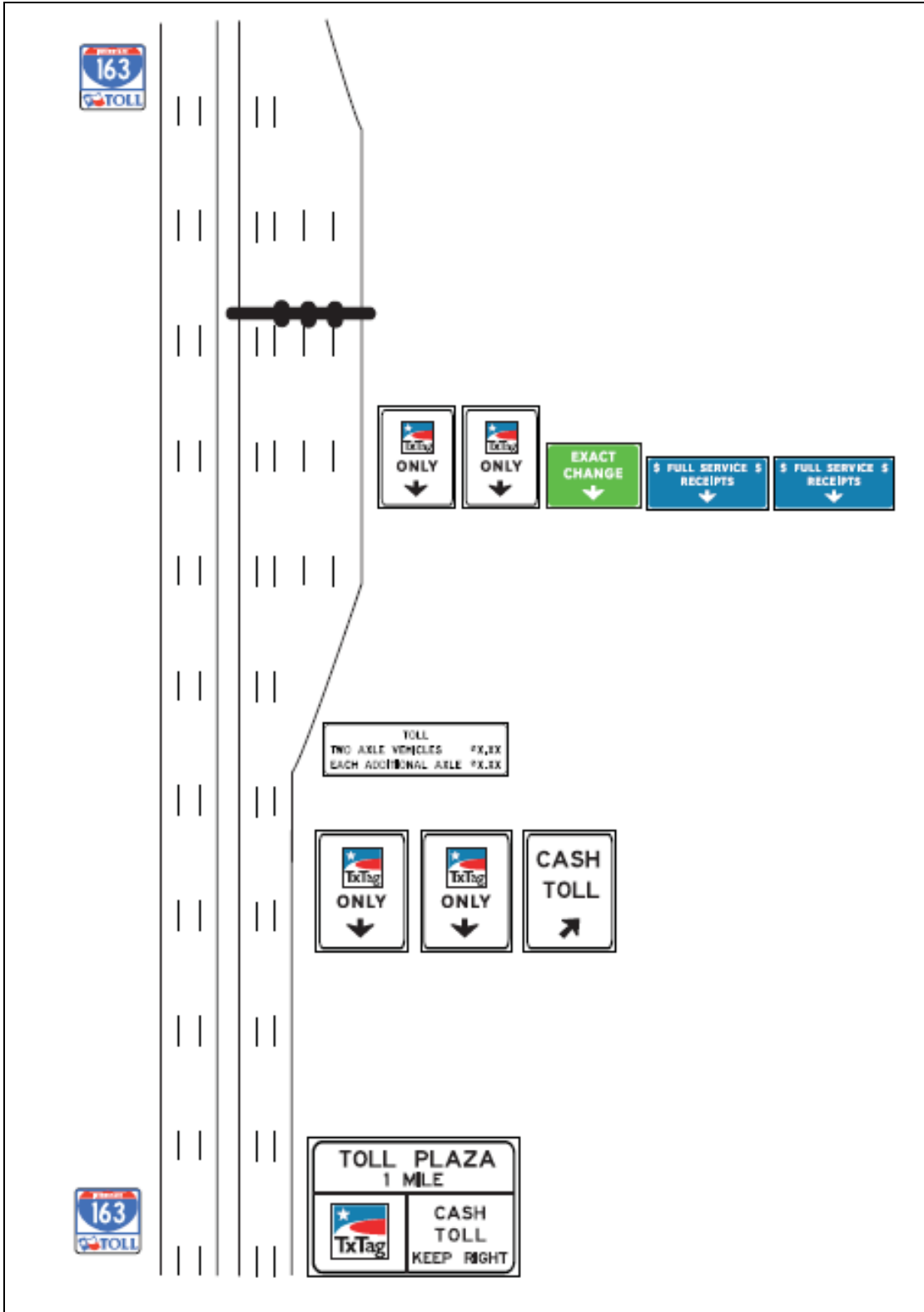


Figure 16. Figure 2J-9 from the 2006 TMUTCD-Toll/Cash Plaza on Mainlanes.



## **CHAPTER 3: FOCUS GROUP RESEARCH OF DRIVER COMPREHENSION**

In order to assess driver understanding of the new sign designs included in Chapter 2J of the TMUTCD, focus group research was conducted. These discussions were primarily evaluations of specific sign designs, but also allowed assessment of comprehension of the traffic operations associated with new types of toll facilities. These included parallel high occupancy/toll (HOT) lanes, toll roads with continuous parallel frontage roads, and video tolling.

### **PARTICIPANTS**

A total of 69 Texas drivers participated in the focus groups, 24 men and 45 women, ranging in age from 19 to 80. Researchers conducted the focus groups in TTI offices in Arlington, Austin, San Angelo, and Houston. [Table 1](#) shows a complete breakdown of the demographics of the drivers. [Figure 17](#) shows that each focus group consisted of 8-12 people. Participants were asked to indicate the frequency with which they used toll facilities in Texas and in other areas of the country and whether or not they owned a toll tag. Participants received \$50 for their attendance at the two hour session.

**Table 1. Demographics of Focus Group Participants.**

<b>City</b>	<b>Total Number</b>	<b>Number of Men</b>	<b>Number of Women</b>	<b>Age Range</b>	<b>Number who had a toll tag</b>
Arlington	19	7	12	19-64	7
Houston	18	3	15	22-76	8
Austin	17	7	10	20-57	0
San Angelo	15	6	9	20-80	0



**Figure 17. Focus Group Session in Arlington.**

## **DISCUSSION TOPICS AND COMMENT SUMMARY**

The focus group relied on a PowerPoint presentation which consisted of sign drawings, typical layouts, and photographs that had been digitally edited to include new sign designs. The facilitator worked from the same script for each group. In this section of the report, each group of slides on a particular topic is presented, along with a summary of the comments on that topic. The full transcripts of the focus groups are presented in the [appendix](#).

Discussion topics for the focus groups were identified through discussions with members of the project advisory team. Researchers selected specific sign and roadway designs after reviewing preliminary plans for toll facilities throughout the state.

The focus group facilitator presented images of signs and roadways to the groups to prompt discussion on particular operational issues and sign design components. A projector displayed the images via computer on a screen in the conference rooms where the focus groups took place. The images were created by a variety of means. In some cases, a drawing of a sign was taken directly from a preliminary schematic sheet. Some pages from TMUTCD Chapter 2J were copied directly from the manual. In many cases, researchers digitally edited photographs or

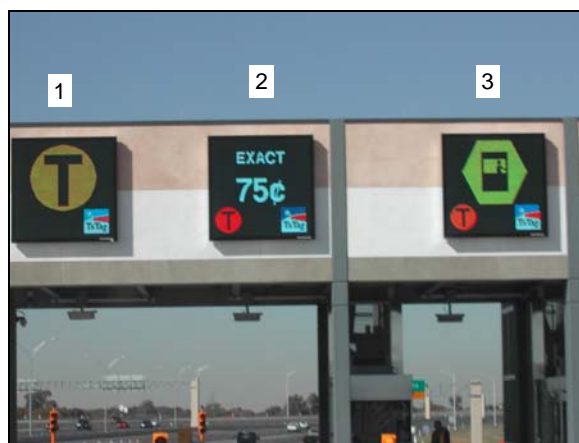
sign images in order to present signs in a roadway context and to present different versions of the same sign.

The first two cities, Arlington and Austin, saw an identical set of 32 slides. Based on those discussions, researchers created some additional versions of signs that were included for the Houston and San Angelo groups, which saw a total of 39 slides. The topics and slides are presented below. The first three slides showed welcome messages and procedural details.

### **Toll Plaza Forms of Payment**

The first four slides focused on toll plaza operations. This set gave the facilitator an opportunity to assess participant’s understanding of current toll facilities. After each slide was discussed, the facilitator provided the “correct” answers regarding form of payment and plaza operations to ensure that all participants were on equal footing for further discussions.

The first slide was a photograph of an actual toll plaza on the “super-connector” portion of the President George Bush Turnpike in Dallas (see [Figure 18](#)). Numerals mark the lanes to ease discussion. Participants in the Arlington area almost universally recognized the large T in an orange circle which represents the electronic tag used by the NTTA. Participants in the other two cities did not recognize the photo as being from Dallas. Many Austin and Houston people guessed that it meant an electronic tag of some kind, though they were not certain. Other interpretations of the T included “trucks” and “tokens” and “Texas.”



**Figure 18. Focus Group Slide 4 Showing Toll Plaza Payment Options.**

In general, there was a great deal of misunderstanding about how toll tags operated. Among those who did not have a tag (roughly 22 percent of our total number of participants), nearly all did not understand the debit card nature of the operation. Many believed that a user

somehow pre-pays for a number of uses, not for a dollar amount, similar to a punch card. This implies that they also believed that each tolling point charged the same amount. A few believed that the toll tag was an “all you can ride” monthly pass, similar to a bus pass.

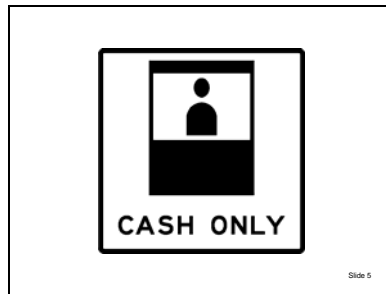
Nearly everyone objected to the use of two logos for electronic payment. They thought a single standard should be used across the state. This sentiment was echoed in later discussions of static sign designs.

For Lane 2, everyone understood the exact change message, but several were confused about the addition of the toll tag logos. About two-thirds understood the concept of a multiple forms of payment lane. Those who understood that cash was accepted also understood that there would be no attendant present and that coins would be required.

The symbol shown in Lane 3 is used by NTTA to designate full service lanes where an attendant is present to dispense change and receipts. Several non-toll road users, at least one in each group, thought that Lane 3 was for information or sales of electronic tags.

The participants were asked for their general impression of the legibility and appearance of these electronic signs compared to traditional static signs they had seen elsewhere. Most people thought the signs were good and they liked that they were large. Several thought the small tag logos would be difficult to read. A few people worried that electronic signs would allow a plaza to be reconfigured too easily, leading to inconsistent lane assignment throughout the day and across various plaza locations. Drivers wanted the same lane assignment at all plazas (e.g., tags to the left, full service to the right). In general, they felt that no additional signage concerning violation fees, speed limits, or other regulatory or guide information was needed at the plaza. They recognized that traffic is weaving and changing speeds in these areas and further signs could be distracting.

The next slide (see [Figure 19](#)) showed an alternate design for the attended lane symbol. This design came from a preliminary plan for Loop 1 North in the Austin District. Most people understood that the symbol was of a person in a booth. Many preferred the NTTA design which shows the outstretched arm of the attendant and felt that the arm conveyed “pay me.” Most participants understood that the symbol in Slide 5 meant that change and receipts would be available. Nearly everyone felt that you could not pay with an electronic tag with this sign.



**Figure 19. Focus Group Slide 5 Showing Attendant/Cash Symbol.**

Another symbol from the same plan set, indicating multiple forms of payment, was also shown (see [Figure 20](#)). This symbol caused much misunderstanding in all the cities. Many people thought that this was a lane that dispensed tags, “it looks like the little man is selling you a tag,” was a common comment. Others thought it looked like the symbol for information booth (a lowercase dotted i), so that lane must be where you can get information about the TxTAG. After some discussion, people understood the concept of multiple forms of payment. They felt that if a plaza used a symbol like [Figure 19](#) for the cash only lanes, drivers would focus on the CASH ONLY message and not necessarily associate the person icon with that function. So when they see the person icon in [Figure 20](#), they do not immediately recognize it as a cash function. They felt that the sign could be improved by including the word CASH somewhere or just listing CASH or TAG rather than using the TxTAG logo. Throughout the entire set of slides, participants frequently reported that the colorful TxTAG logo caught their eye and they did not really look at the rest of the sign.



**Figure 20. Focus Group Slide 6 Showing Attendant/Tag Symbol.**

## Open Road Tolling

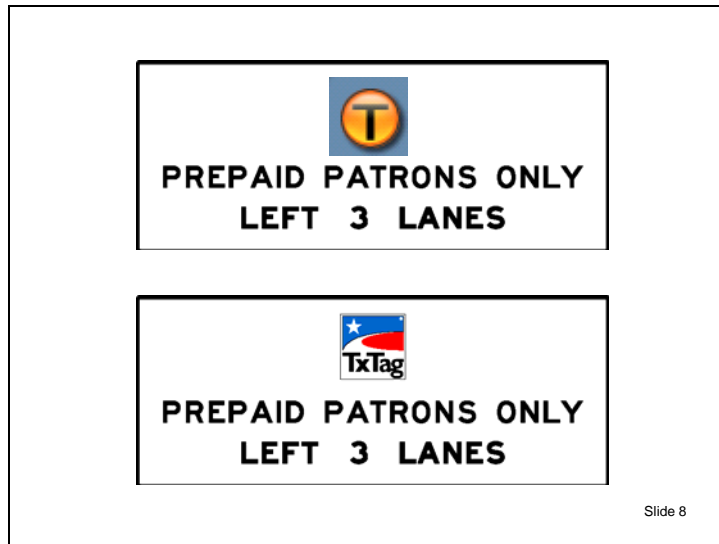
Researchers included the next slide to introduce the concept of open road tolling. [Figure 21](#) shows a wider view of a toll plaza in Dallas which included barrier separated lanes for tag users.



**Figure 21. Focus Group Slide 7 Showing Full Plaza with Open-Road Tolling Lanes on Left.**

Next, [Figure 22](#) displaying advance signs to designate lanes for open road tolling was shown. The message “Prepaid Patrons Only” was drawn from preliminary plans for State Highway (SH) 130 in Austin. Many of the focus group participants did not understand the word patron and those that did reported that they felt most other drivers would not understand it. Several participants were insulted by the term patron because they felt it was condescending and implied that drivers had made a choice about using the road when, in reality, they had no other options. The term prepaid was also confusing and many felt that it was not a real word or should be hyphenated.

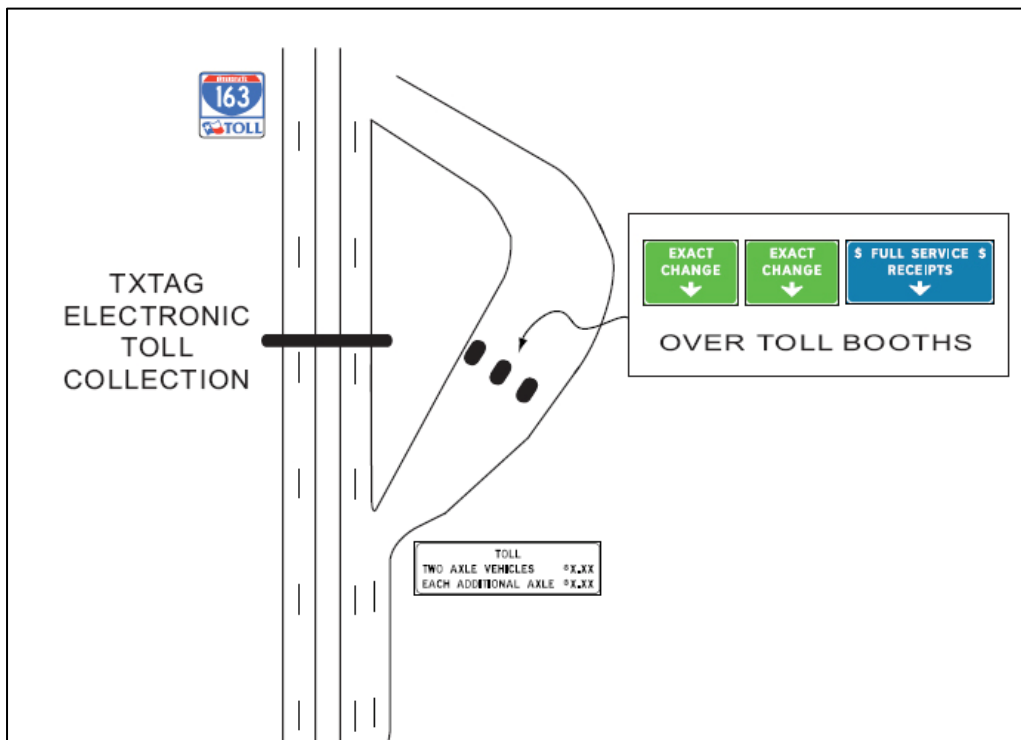




**Figure 22. Focus Group Slide 8 Showing Open-Road Tolling Lane Assignment.**

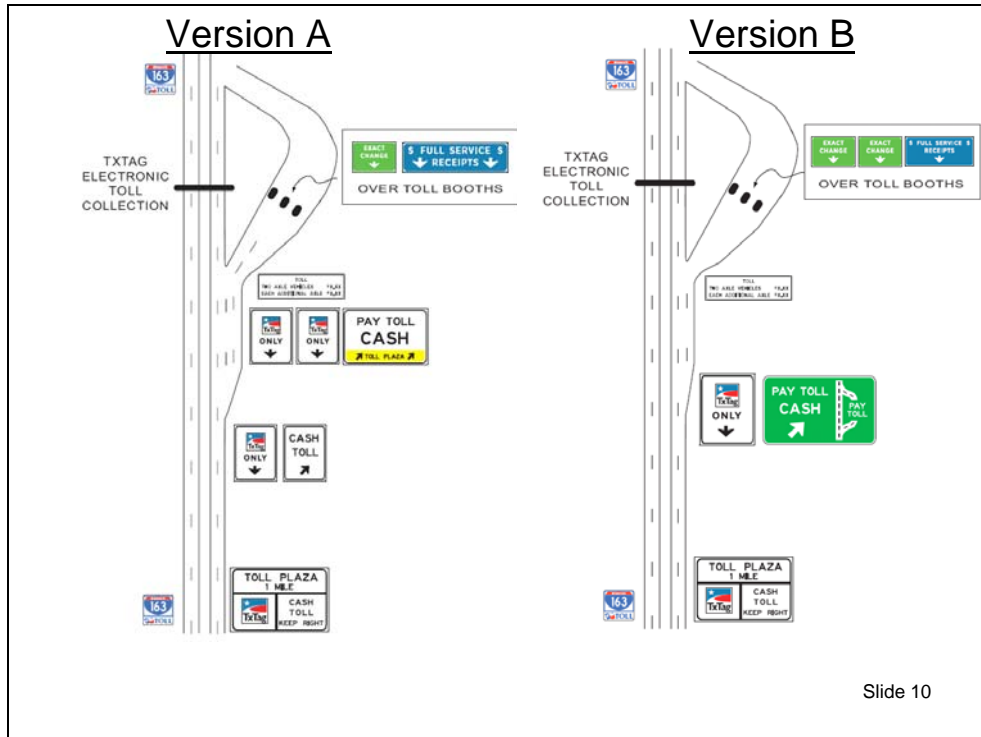
### Cash Pull-Out Lanes

The next topic discussed was the operation of open road tolling facilities which provide pull-out lanes for non-tag holders. The facilitator first explained how these roads would operate by showing a close up of a pull-out from Figure 2J-8A of the TMUTCD. The direction of traffic was shown and the concrete median barrier was added (see [Figure 23](#)).



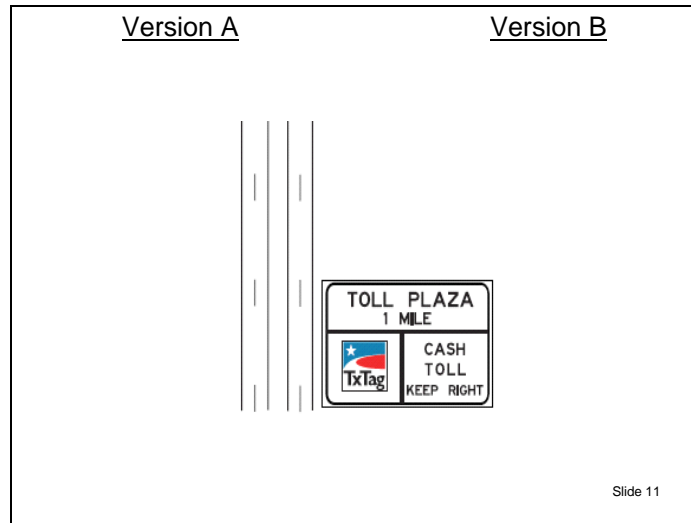
**Figure 23. Focus Group Slide 9 Showing Details of Cash Pull-Out Lane.**

The TMUTCD contains two versions of Figure 2J-8 which show different advance sign sequences for cash pull-out lanes. The next portion of the discussion compared these two drawings side by side. After an overview slide was shown (Figure 24), each sign was discussed in detail. Researchers prepared large posters which contained the drawings from Figure 2J-8 A and B to provide a constant reminder of the full sequence and hung them in the room.



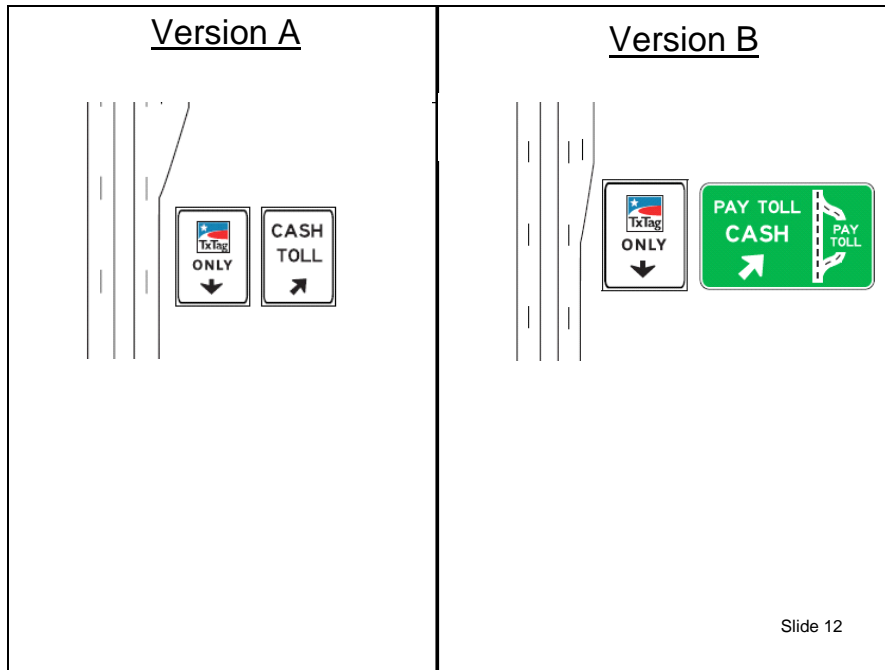
**Figure 24. Focus Group Slide 10 Showing TMUTCD Figures 2J-8 A and B.**

The 1 Mile advance sign was discussed first (see Figure 25). This sign is identical for both versions shown in the TMUTCD.



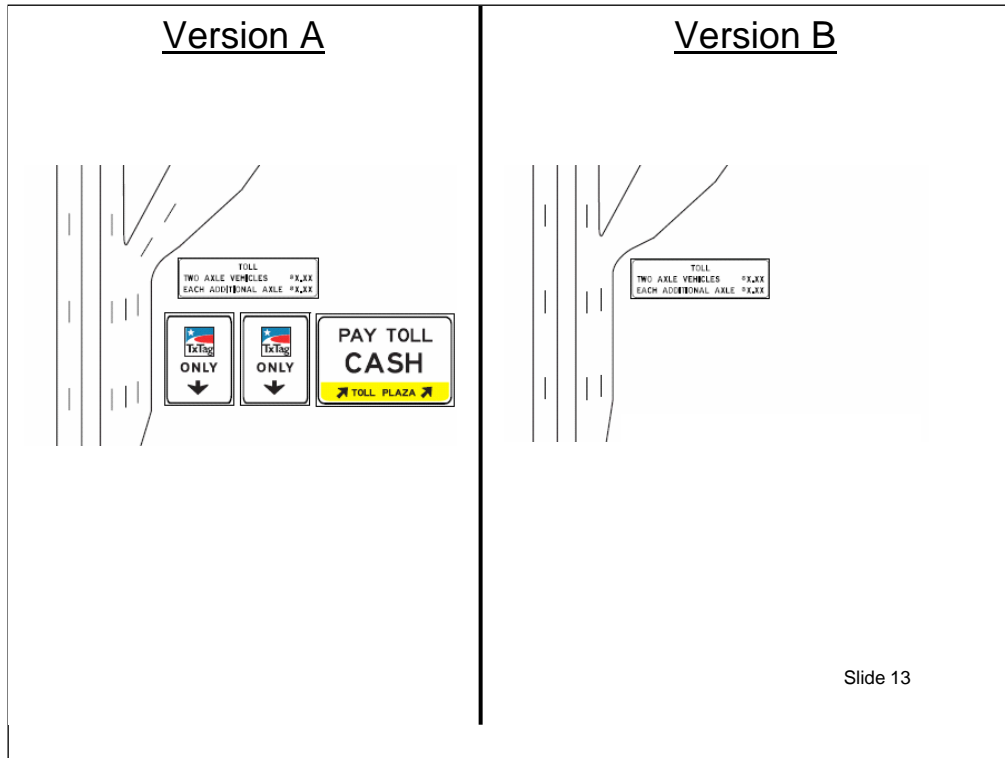
**Figure 25. Focus Group Slide 11 Showing 1 Mile Advance Sign for Cash Pull-Out.**

The group discussed the second advance signs next. Version A contains regulatory signs only, while Version B contains a diagrammatic guide sign illustrating the return lane configuration (see [Figure 26](#)). The sign in Version B is similar to those in use in Oklahoma and Colorado. The groups were split as to which version they preferred. Some felt strongly that the diagrammatic sign was very helpful, while others thought the sign was too busy and difficult to understand. Upon seeing the green guide sign, several participants in each of the groups volunteered that they liked the association of the green color with cash payments. Many suggested that the initial advance sign display a green panel in the lower right corner to allow drivers to match the green color of the two advance signs in Version B.



**Figure 26. Focus Group Slide 12 Showing Exit Direction Signs for Cash Pull-Out Lanes.**

Ramp signs were discussed next. Version A contains lane assignment signs to be displayed overhead at the gore, while Version B has no additional signs at this point (see [Figure 27](#)). Most participants liked the TxTAG lane assignment signs at this decision point. They also appreciated the large letters of the word CASH on the exit direction panel.



**Figure 27. Focus Group Slide 13 Showing Lane Assignment Signs at the Gore for Cash Pull-Outs.**

### **Frontage Road Entrance Signing**

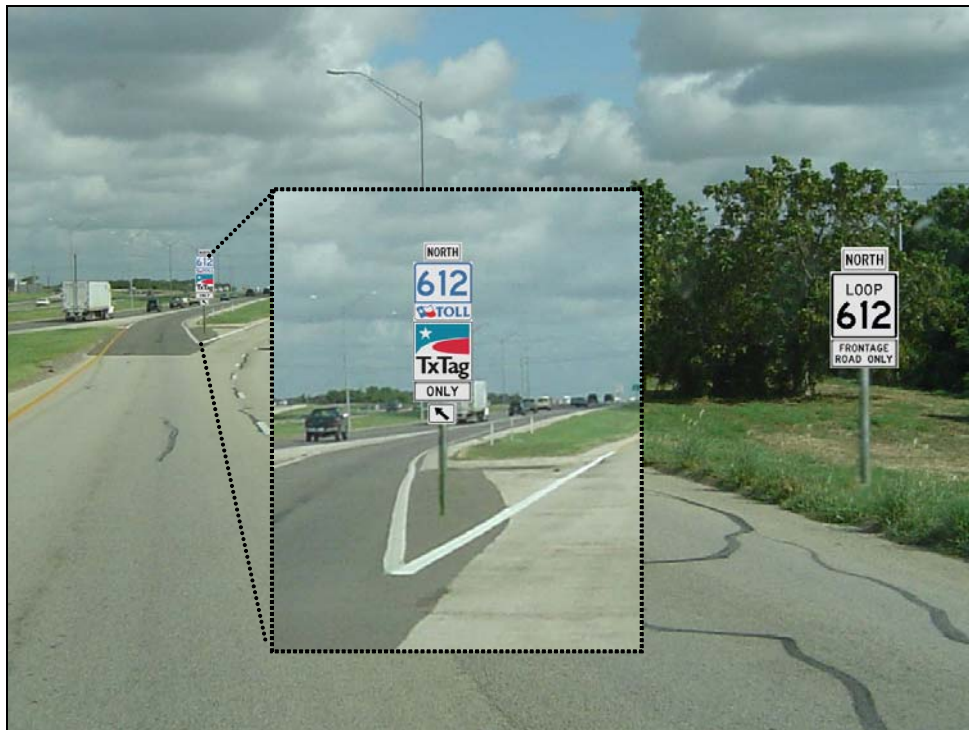
The next topic was announced by a text slide which read “A different kind of toll road” (Slide 14). Many plans for expansion of existing freeway facilities call for a change of those roads to tolled and the frontage roads functioning as free alternatives to the numbered toll route. The initial discussion in this topic area focused on drivers’ understanding of those operations. After open discussion on this topic, the facilitator explained the actual operation and began discussion of specific sign designs.

The first slide of this section (see [Figure 28](#)), gave an overview photo of a frontage road entrance ramp. This photo had been digitally edited by the researchers to include representative signs from the TMUTCD.



**Figure 28. Focus Group Slide 15 Showing Frontage Road Entrance Ramp.**

The next two slides (Slides 16 and 17) showed close up views of each of the signs. During the discussion, a composite slide illustrating both signs was displayed (see [Figure 29](#)).

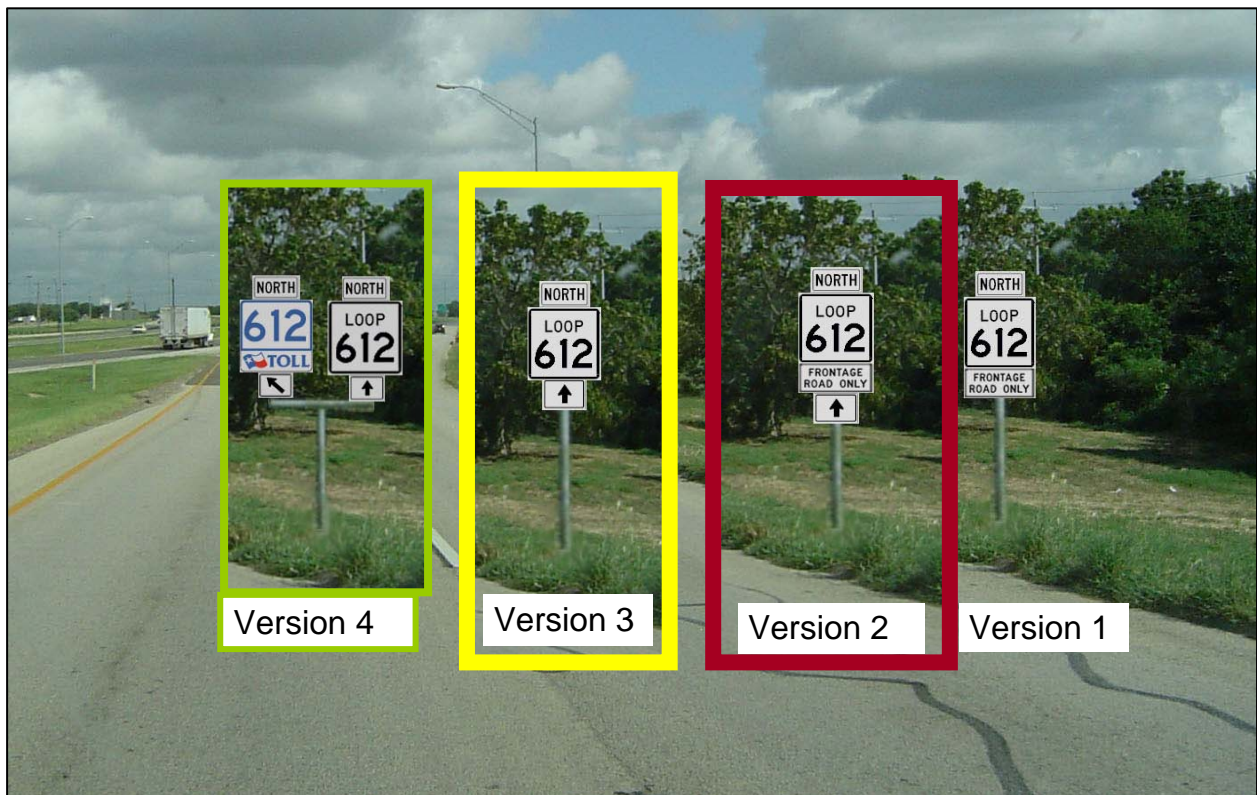


**Figure 29. Focus Group Slide 17 Showing Advance and Exit Direction Signs from Frontage Road Ramps.**

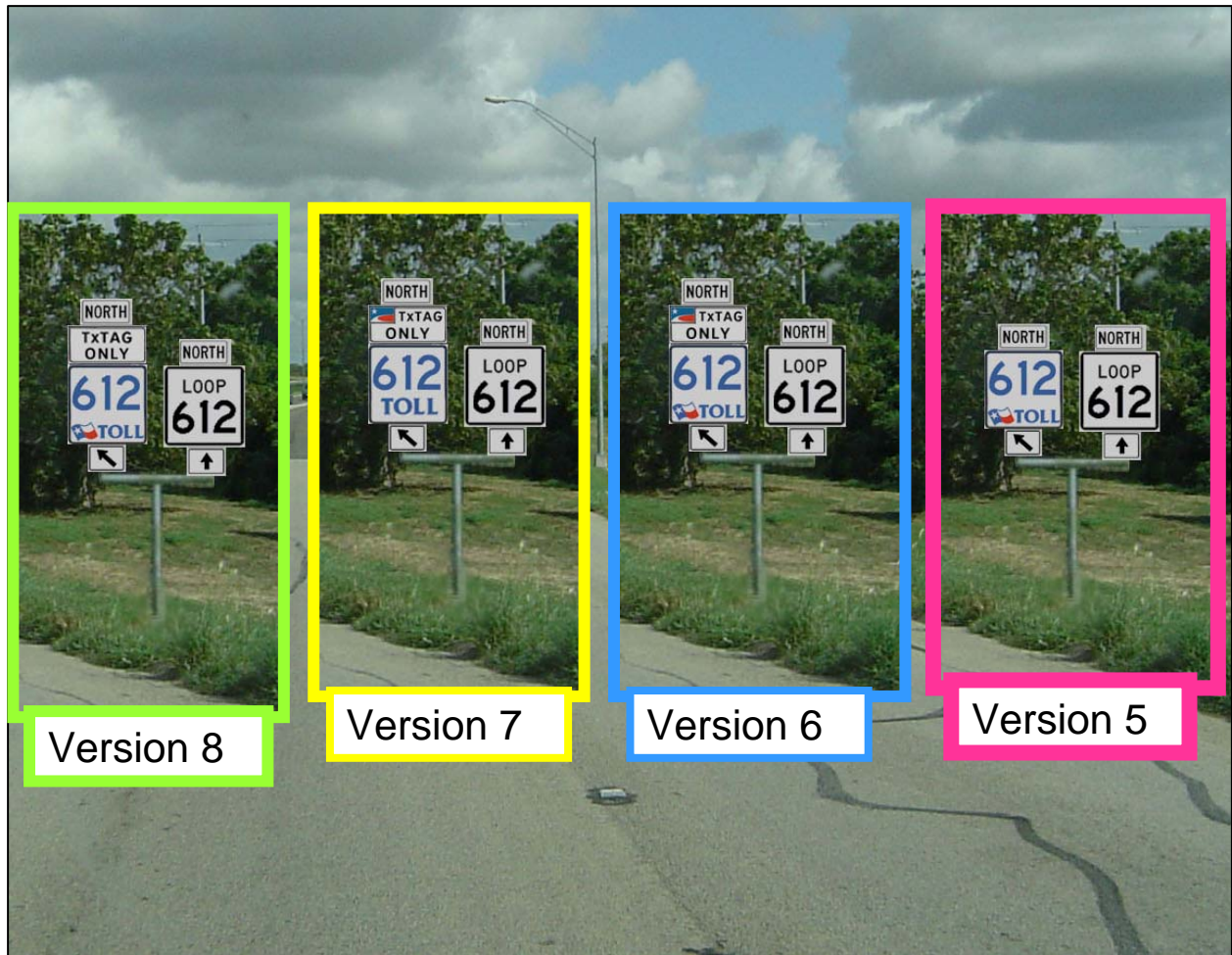
The next slide showed alternate versions of the through route assembly sign in succession through animation. Each of the versions appeared sequentially and a short discussion followed

each successive version (Figure 30 shows all versions revealed). The groups understood the operation of the free frontage roads paired with the toll road. They endorsed the use of the FRONTAGE ROAD ONLY plaque because it conveyed that users of that route would encounter slower traffic, signals, and driveways. In general, participants did not like the use of the up arrow for the Loop 612 sign. Several felt that the arrow was directing motorists toward some downstream access point to Loop 612. Participants indicated that they appreciated the advance notice of the toll route shown in Version 4. They felt that having the toll route marker only at the gore did not give them adequate notice. Many wanted some notice of TxTAG only at this location.

Following the Arlington and Austin sessions, researchers developed additional versions of these signs and shared them with Traffic Operations Division personnel. These new versions were included in the Houston and San Angelo sessions (see Figure 31).



**Figure 30. Focus Group Slide 20 Showing Alternate Versions of Frontage Road Route Signage.**

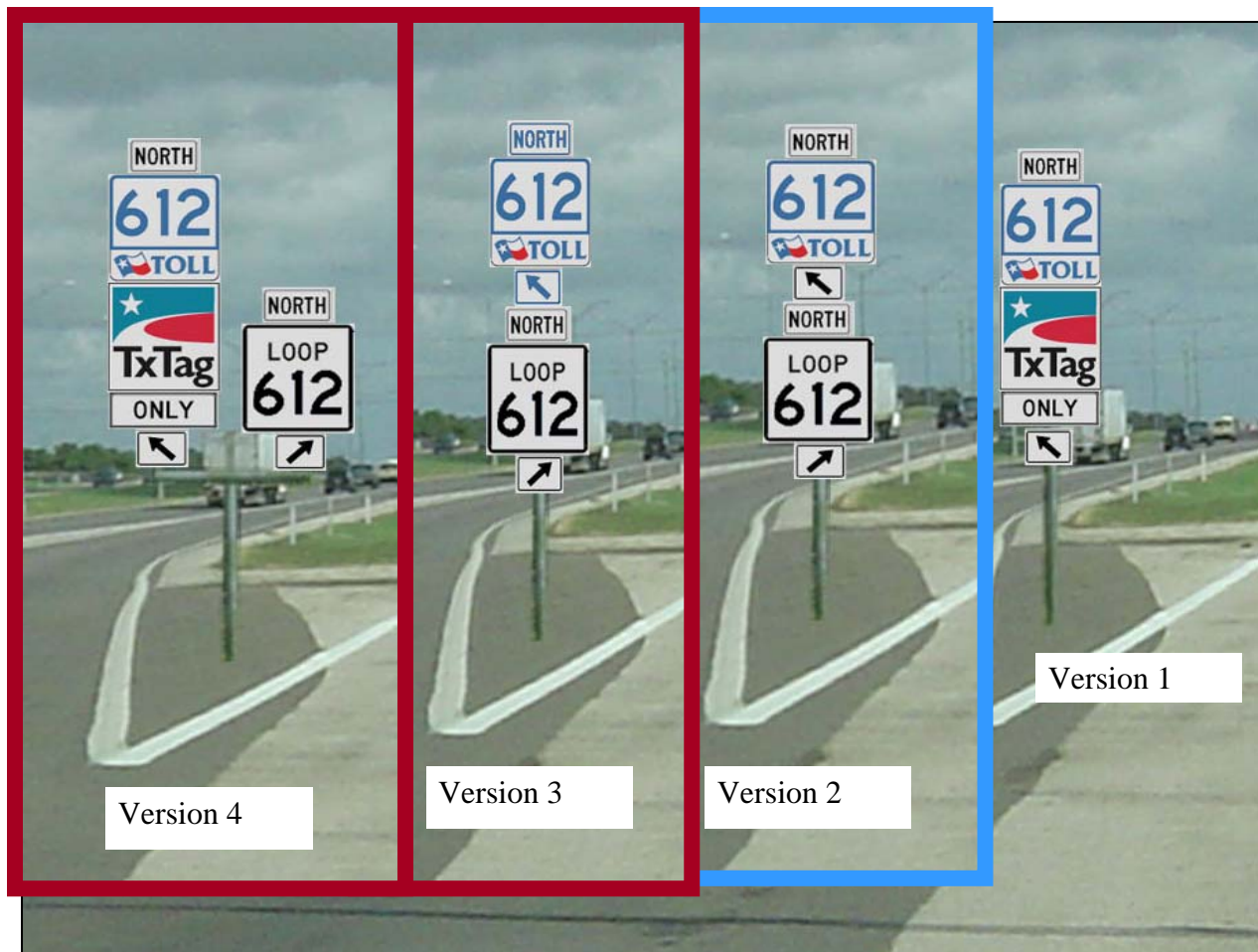


**Figure 31. Additional Versions of Frontage Road Signs Included in Houston Sessions.**

In the versions shown in [Figure 31](#), the route marker was modified by removing the horizontal line between the route number and the TOLL message at the bottom. This was done to try to integrate the number and message better. Participants liked the addition of the TxTAG only message present in Versions 6-8. They did not like the two logos appearing in Version 6 and felt that the small red portions of the logos were distracting. They felt that the logo should appear only once on the sign assembly. Version 7 was preferred over Version 8 because the word TOLL was more prominent by removing the Texas flag from the bottom line.

Alternate forms of the exit direction sign positioned in the gore were discussed. [Figure 32](#) presents the four versions.





**Figure 32. Focus Group Slide 21/22 Showing Alternate Versions of Entrance Ramp Signing.**

Version 1 is what is currently in the TMUTCD (Figure 2J-7). Drivers preferred this version over the others, but many found the TxTAG only panel to be too dominant. The multiple colors are so eye-catching that they felt they only saw that plaque and not the route number. Participants universally disliked the other versions. They felt that there was far too much information and that the arrows pointing in opposite directions were confusing. At least once in each session, someone suggested that these signs would quickly be struck by a confused motorist making a last minute maneuver.

For the Houston and San Angelo sessions, researchers developed and added one additional version of the entrance ramp sign showing an overhead structure for the discussion. An overview slide of the ramp configuration was shown (Figure 33) followed by a close up view of the overhead sign. The ground-mounted gore sign was included in the photo for comparison purposes. Participants liked the overhead sign and felt that it could be seen from a greater

distance. It also served as a gateway to the toll road, clearly marking a transition. Everyone agreed that if an overhead sign was used, the ground-mounted assembly should be removed. It should be noted that an overhead sign in the gore location would require a safety treatment in practice.



**Figure 33. Overhead Entry Sign Included in Houston Sessions.**

### **Video Tolling**

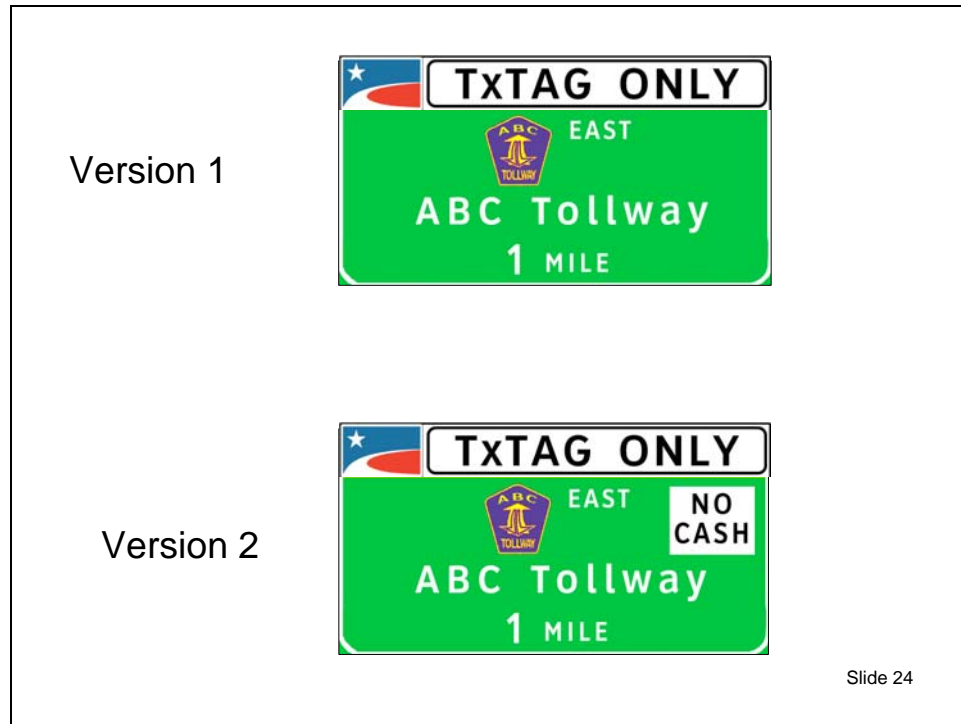
Next, researchers introduced the concept of video tolling. Before the operation was explained, the facilitator showed a sign proposed for Loop 49 in the Tyler District (Figure 34). The discussion focused on drivers' understanding of the vehicle symbols and the phrase "No Tag." Almost universally, participants felt that the column for TxTAG prices was unnecessary and could be deleted. The vehicle logos were generally understood, but most participants felt that this was too much information. They felt that the price for a two-axle vehicle would be sufficient and that drivers of multi-axle vehicles would understand that they would pay more. After discussion, the facilitator explained the operation of video tolling.



**Figure 34. Focus Group Slide 23 Showing Video Tolling Pricing.**

The next discussion topic concerned freeway advance signs on ETC-only facilities (see [Figure 35](#)). Some other agencies (e.g., Maryland Transportation Authority) have designs which call for both a positive message (Tag Only) and prohibitive message (No Cash). The TMUTCD does not currently include the prohibitive message. The two versions of the guide sign shown in the slide present alternate ways of conveying the exclusive message. In addition, the facilitator asked participants whether or not drivers thought a video tolling system would be in place after seeing such signs.

Participants appreciated the NO CASH panels, but many thought that the sign was too busy with the multiple color panels. Most felt that TxTAG ONLY was sufficient to convey that cash was not accepted. The groups expressed great concern over the idea that different facilities would operate differently. They felt that if video tolling was in place, then the TxTAG ONLY wasn't really appropriate. Participants in San Angelo, a rural area, felt that the word "toll" in and of itself implied cash payment. They did not like the word "toll" used in conjunction with any electronic payment system.



**Figure 35. Focus Group Slide 24 Showing Direct Connect Ramp Signing for Toll Facilities.**

### **Managed Lanes Facilities**

The group also discussed mainlane slip ramp entrances to managed lane facilities (see [Figure 36](#)). Participants did not like the electronic sign inset on shown in the picture. Most initially read the sign as saying “Free \$2.00.” In other words, they read the sign vertically, not horizontally, connecting the occupancy with the price. This is likely due to the prominence of the dynamic message sign (DMS) component, which is likely exaggerated in the illustration. The lack of cohesion of the different sign elements is certainly of concern. Future research will re-design this sign to include the occupancy and price both within the DMS panel.

Beyond the design of the sign components, participants also found that there was too much information present on this sign. Many drivers did not understand the message “To Voss Road.” Many thought that this meant that the express lane terminated at Voss Road. They did not understand that this text was intended to convey that the prices shown applied to the segment between this entry ramp and Voss Road.



**Figure 36. Focus Group Slide 26 Showing the Entrance Sign for Managed Lanes Facility with Differential Dynamic Pricing.**

### **Advanced Traveler Information**

In the decision model laid out in Project 0-4160 (12), TTI researchers identified comparative travel times as desirable pieces of information to aid decision making. This concept was presented to focus group participants through a sign designed by the researchers (see Figure 37). Participants liked this sign in general; they especially appreciated the comparison it facilitated. The groups were about evenly split as to whether a travel time sign should come before or after a price sign in an advance sign sequence. Most participants would like the travel time to be displayed at least a half mile in advance of a ramp.



**Figure 37. Focus Group Slide 30 Showing the Comparative Travel Time Sign Developed by the Researchers.**

For facilities with multiple access points and variable pricing, traveler information can become quite complicated. The facilitator first presented the groups with a small map explaining an example corridor (see [Figure 38](#)). The group was then shown the target sign and asked how much it would cost to go to Sterling Avenue. Consultants to the San Diego Association of Governments (SANDAG) have proposed a sign similar to the one shown in [Figure 39 \(18\)](#). Participants unanimously found this sign terribly confusing. In most sessions, the group burst out laughing when this sign was shown.

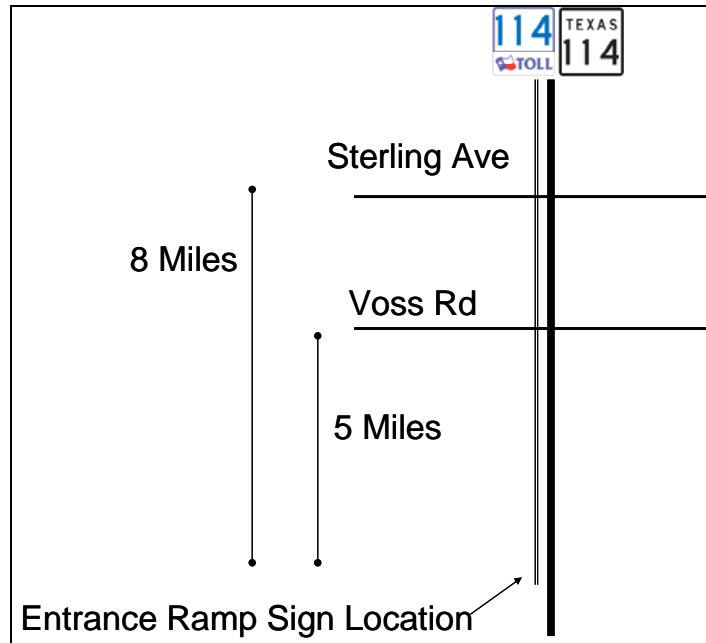


Figure 38. Focus Group Slide 31 Showing Example Corridor Map.

Figure 39. Focus Group Slide 32 Showing the Travel Time and Price Slide Adapted from San Diego Plans.





## **CHAPTER 4: PRELIMINARY GUIDELINES FOR SIGNING FOR TOLL ROADS**

As described above, the initial list of guideline topics derived from the literature review was augmented through review of preliminary schematics for toll facilities throughout the state. The focus group research helped prioritize these topics and identified new ones as well. Some of these guidelines were included in Chapter 2J of the TMUTCD released in March 2006.

The current chapter presents more detailed typical layout drawings for some of the toll facility types included in the TMUTCD. It also presents the outline for the future final guidelines document.

The final report on this project, to be completed in 2007, will include as products a complete set of typical layout drawings for a wide variety of roadway configurations. Below is a draft outline of the guidelines document. This draft outline is presented to inform the reader of the scope of the final guidelines and to invite comments for other topics.

### **OUTLINE OF FINAL GUIDELINES DOCUMENT**

#### **Key to formatting in outline:**

---

1. **TYPE OF FACILITIES** (titles/names are working titles/names, certainly open for discussion)
    - a. **Subset**
      - i. **Description of the guideline that will be included in the document**
        1. *Comments on what the guideline may include*
- 

1. **Exclusive Toll Facilities** – only mainlanes, discontinuous or no frontage roads (like SH 130)
  - a. **TYPE OF ACCESS**
    - i. **Entrance**
    - ii. **Exit (typical)**
    - iii. **Exit (with a lane drop)**
    - iv. **Exit (left)**
    - v. **Exit (exclusive toll facility to exclusive toll facility)**
    - vi. **Exit – last free exit**

- vii. **Signing for Non-Toll Conventional Highway to Toll Road Interchange**
    - 1. *Figure 2J-6 from 2006 TXMUTCD*
  - viii. **Non-Toll Roadway with Exit to Toll Roadway**
    - 1. *Figure 2J-2 from 2006 TXMUTCD*
  - ix. **Non-Toll Roadway with Exit to Concurrent Toll Roadway**
    - 1. *Figure 2J-3 from 2006 TXMUTCD*
  - x. **Non-Toll Roadway with Left Exit to Toll Lane**
    - 1. *Figure 2J-5 from 2006 TXMUTCD*
2. **Toll Facilities with Concurrent Toll-Free Frontage Roads** (like Proposed US 290 and SH 121). In these situations, the frontage road receives the normal route designation (e.g., US 290) while the limited access lanes receive the toll route designation (e.g., US 290 Toll).
- a. **Focus on Frontage Road**
    - i. **Typical Signing for an Entrance Ramp to a Toll Lane from a One-Way Frontage Road – Diverge Condition**
      - 1. *Similar to Figure 6-1 of the draft Freeway Signing Handbook, also look at 2006 TXMUTCD Figure 2J-7 for guidance in drafting the scenario*
    - ii. **Typical Signing for an Entrance Ramp to a Toll Lane from a One-Way Frontage Road – Lane Drop Condition**
      - 1. *Similar to Figure 6-2 of the draft Freeway Signing Handbook*
    - iii. **Typical Signing for an Exit Ramp from a Toll Lane to a One-Way Frontage Road – Dedicated Lane Available Due to Lane Reduction Upstream of the Ramp**
      - 1. *Similar to Figure 6-4 of the draft Freeway Signing Handbook*
    - iv. **Typical Signing for an Exit Ramp to a One-Way Frontage Road – Dedicated Lane Available**
      - 1. *Similar to Figure 6-5 of the draft Freeway Signing Handbook*
    - v. **Cross-Street Route Marker Signing for Left-Direction Entrance Ramp Located on the Far-Left Frontage Road and Right-Direction Entrance Ramp Located on Near-Right Frontage Road**

1. *Similar to Figure 6-18 of the draft Freeway Signing Handbook*

**b. Focus on Toll Road**

**i. Non-Toll Roadway Converts to Toll Roadway**

1. *Figure 2J-4 from 2006 TXMUTCD*

**ii.** Exit (with a lane drop)

**iii.** Exit (left)

**iv.** Exit (exclusive toll facility to exclusive toll facility)

**v.** Exit (concurrent route)

**3. Integrated Shared Facilities – Separate Toll Lanes/Managed Lanes in same Carriageway as General Purpose Lanes.**

**a. BARRIER SEPARATED**

**i. Typical Entrance at a Terminal to a Barrier Separated Toll Lane**

1. *Entrance only lane*

**ii. Typical Exit at a Terminal from a Barrier Separated Toll Lane**

1. *Exit only lane*

**iii. Typical Midstream Entrance and Exit to a Toll Lane**

**iv. Typical Direct Access Entrance Ramps from Frontage Road**

1. *Could be a t-ramp, drop ramp, flyover ramp, or y-ramp*

**v. Typical Direct Access Exit Ramp from a Barrier Separated Toll Lane**

1. *Could be a t-ramp, drop ramp, flyover ramp, or y-ramp*

**b. BUFFER SEPARATED**

**i. Typical Entrance at a Terminal to a Buffer Separated Toll Lane**

1. *Entrance only lane*

**ii. Typical Exit at a Terminal to a Buffer Separated Toll Lane**

1. *Exit only*

**iii. Typical Midstream Entrance and Exit of a Buffer Separated Toll Lane**

1. *Similar to the HOV lane being used on I-635*

**iv. Typical Midstream Entrance and Exit of a Buffer Separated Toll Lane When the Distance to next Exit is Critical**

1. *Signing in toll lane must include information on needing to exit so that the driver can access the upcoming exit from general purpose lanes*
- v. **Typical Midstream Entrance Only to a Buffer Separated Toll Lane**
  1. *May exist in the future*
- vi. **Typical Midstream Exit Only from a Buffer Separated Toll Lane**
  1. *Proposed for Loop 1 Managed Lanes*

## **EXAMPLES OF LAYOUT DRAWINGS**

The final guidelines document will contain layout drawings for all of the situations listed in the above outline. In addition to the research report, Microstation files of each scenario will be delivered to TxDOT Traffic Operations Division. These typical layouts will be drawn to scale, with dimensions shown. They will be used to supplement and clarify the guidance present in Chapter 2J of the TMUTCD.

At this point in the research project, there is enough consensus between the research findings and Traffic Operations Division staff to show typical layouts for three scenarios.

### **Scenario 1. Transition from Conventional Freeway to Toll Road.**

Some proposed toll facilities are extensions of existing freeways. One example of this is the Loop 1 North part of the Central Texas Turnpike Project. Drivers traveling on the freeway who wish to avoid paying a toll will need to exit before the tolled section begins. [Figure 40](#) shows the typical layout drawing for this scenario. This figure portrays a situation similar to that addressed by Figure 2J-4 in the TMUTCD.

### **Scenario 2. Exit from Toll Road to Non-Tolled Cross Street with Toll Plaza on Exit Ramp**

A common design and operation of toll roads is to place small toll plazas on exit ramps. This is typically done for minor exits located between mainline toll plazas. SH 130 and SH 45 each have examples of this type of operation. [Figure 41](#) shows the signing needed for such a situation. The toll pricing regulatory sign is ground-mounted along the exit ramp.

### **Scenario 3. Toll Gantry Located Before a Major Interchange**

Signing along toll roads generally follows the same guidelines as conventional freeways.

[Figure 42](#) illustrates how to sign when a toll road has a major interchange with a non-tolled road.

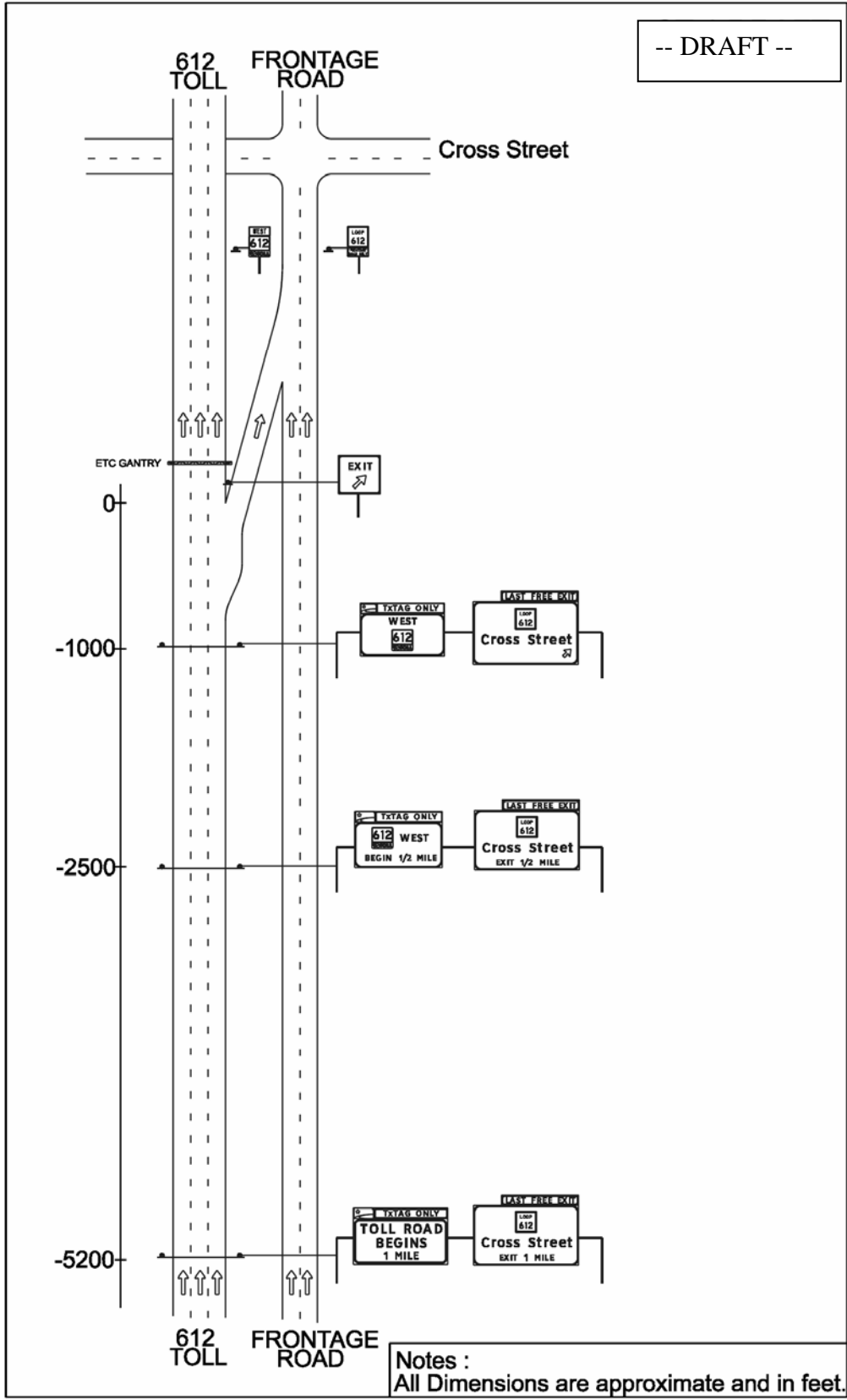
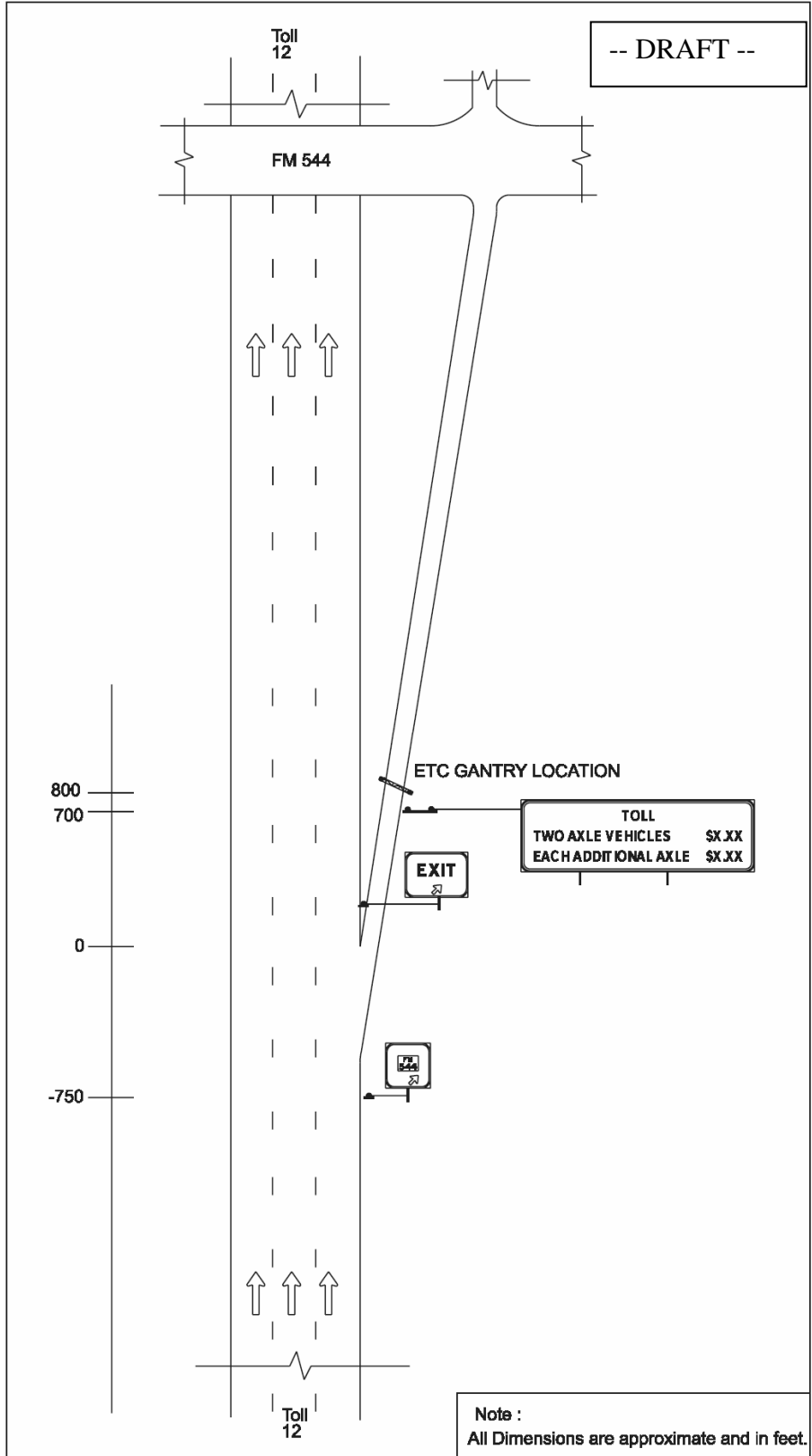


Figure 40. Typical Layout for Transition from Conventional Freeway to Toll Road.



**Figure 41. Typical Layout for Exit from Toll Road to Non-Tolled Cross Street with Toll Plaza on Exit Ramp.**

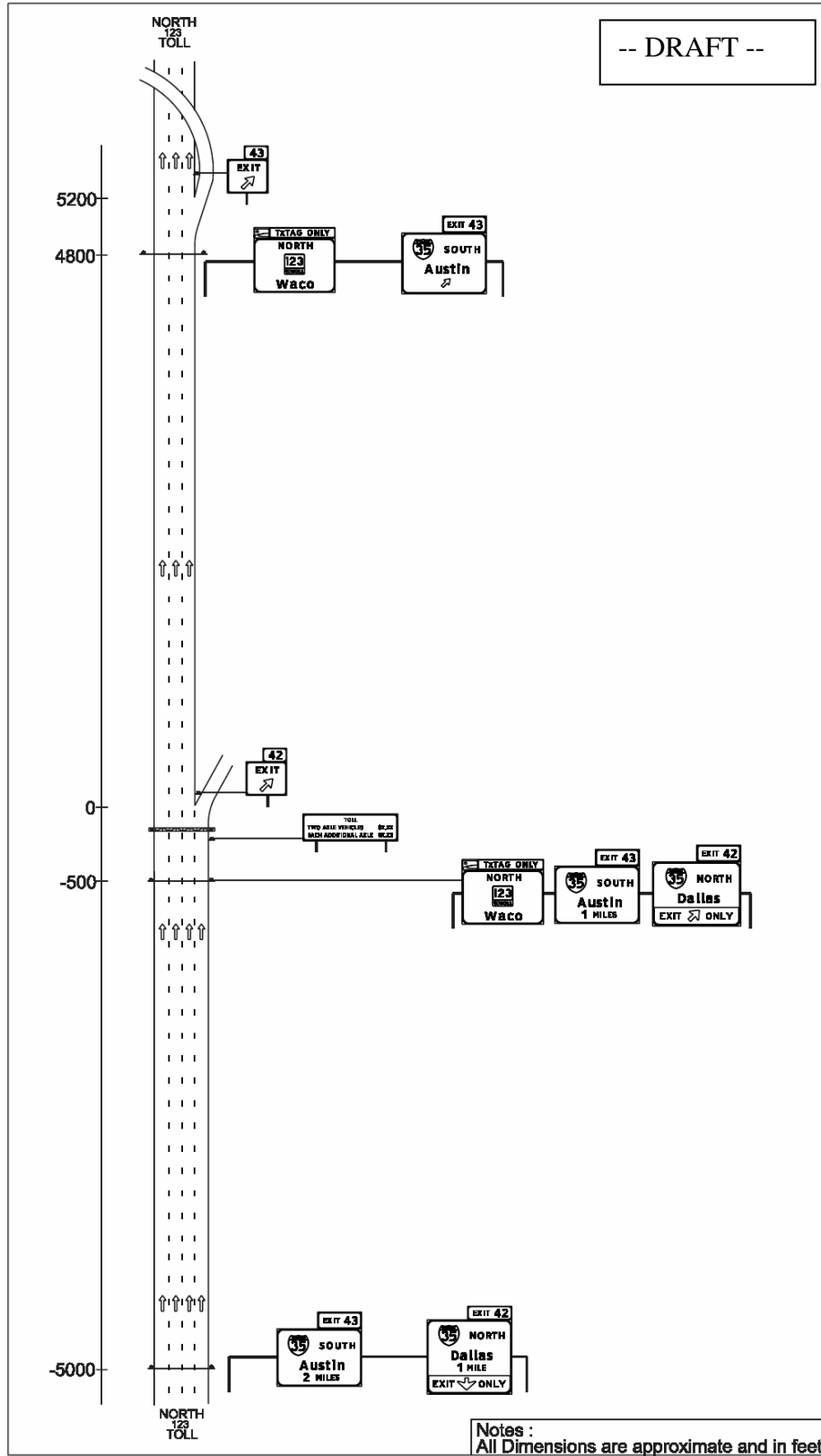


Figure 42. Typical Layout for Toll Gantry Located Before a Major Interchange.



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**APPENDIX**  
**FOCUS GROUP TRANSCRIPTS**



This Appendix contains the transcripts of the 6 focus groups conducted for this project:

1. July 31, 2006 Arlington, TX
2. August 1, 2006 Arlington, TX
3. August 24, 2006 Austin, TX
4. August 25, 2006 Austin, TX
5. August 28, 2006 Houston, TX
6. August 29, 2006 Houston, TX
7. September 27, 2006 San Angelo, TX
8. September 27, 2006 San Angelo, TX

The PowerPoint slides used as aids in the focus groups can be found in the body of the report and also in the first focus group's transcript from July 31<sup>st</sup>.



**0-5446 : Toll Road Signs - Focus group  
Arlington, July 31st 2006.**

The focus group study was conducted at the TTI Arlington office and 10 people showed up for the focus group study.

1. lives Arlington. Drives thru toll roads at least once a month and has a tag.
2. lives in Arlington and has a tag and been using toll roads for few years.
3. lives in Candela and no toll tag and does not drive through toll roads.
4. Lives in Arlington. Has a toll tag, but does not drive through toll roads very frequently.
5. Has a toll tag, but occasionally drives through a toll road.
6. lives in Fort Worth and does not have a toll tag.
7. lives in Candela. Doesn't drive on toll roads and doesn't have a tag.
8. Drives on toll roads several times a month and has a toll tag.
9. has a toll tag, but does not drive.
10. does not have a tag.

Ten people that showed up for the focus group study were a mix of drivers familiar with toll roads and those not so familiar with toll roads. Of the drivers present, 1, 2, 5, and 8 had toll tags and drove occasionally on toll roads. 3, 6 and 10 did not have a tag and never used a toll road before. 9 had a tag but never drove on a toll road. Most of the drivers live and work in Arlington.

**Slide 4**

The following photo of a toll plaza in the Dallas area, was shown to discuss the different modes of paying a toll in the Dallas area.



Q: What does the sign above lane 1 mean?

A: Most murmuring No idea.

Q: What is the T symbol?

A: 8 and 5 thought it was a TxDOT system of paying.

Q: Does it mean that you need both?

A: 8 – No, you can have either one. 3 – No idea!

Q: Have you ever seen a TxTAG logo?

- A: 2,3,4,5,7,9 and 10 never seen a TxTAG logo.
- Q: How about Lane 2?  
A: 5 – either way: whether with your toll tag or with change.
- Q: Whether there's an attendant there or not?  
A: 1, 2 – No.
- Q: Can you get in there with a dollar bill?  
A: 1 – You will get a ticket if you get in with a dollar bill.
- Q: How about Lane 3?  
A: 3 – you can get change there.  
7 – you can use your dollar bill.
- Q: Whether there's an attendant there or not?
- Q: Are there any other ways to pay the toll in the Dallas area?  
A: 1, 2 and 8 – credit card  
3 – you can violate and pay for it later.  
10 – Not sure about writing a check.
- Q: Do you think any other information should be presented to drivers over toll plaza lanes like this ?  
A: 5 – Lane designation should be more clear. I.e., more advance signing.  
6 – Teenagers should be taught about toll road signs and tags in drivers' ed etc.  
10 – change made other description would make lane 3 sign more clear.  
10, 9 – Advance warning about violation.  
7,5 – it would be more helpful if the signs say something like “Toll tags are fine.”  
1 – Speeds limit.
- Q: is it necessary to have a sign that says you can get receipts?  
A: 9 – Receipt is an obvious inference if you understand a person is at the booth.
- Q: DO you need information about violation. E.g., 150\$ ticket for violation etc.  
A: 7 – Not much place to read more information.
- Q: What do you think of the design of these signs?  
Are they legible?  
Are the colors good?
- Q: Do the symbols make sense?  
A: 9 – the T logo might confuse people who do not have a tag.
- Q: How is the cash lane symbol?  
A: 3 – Depends on from how far you can see it.
- Q: Do you like these electronic signs better or worse than the regular signs that have been at the plazas ?  
A: 2,8 – They are easier to see at night.

### Slide 5

The following slide was shown to signify that there is an attendant in the toll booth and that only cash is accepted, not tags.





Slide 5

Q: Has anyone ever seen a sign like this?

A: 3 – No, I don't understand it.

Q: Is it better or worse than the sign on lane 3 in the previous slide?

A: 3, 5 – Cash only is better. Likes words better.

10,9 – Like the words, but do not like the person. The person in the previous slide looked more like a person.

Q: Is "Cash Only" enough or do we need the person symbol and text.

A: 2, 3 – both convey the message better.

1 – Just the text, change made would convey the message better.

Q: If you had a toll tag, could you still use this lane?

A: 7 – If you had a "T" one.

3 – yes, if they have a sensor to read the toll tag.

Couple of people think that maybe you can, but the toll tag users say they want to see their symbol on the sign.

### Slide 6

The following slide was shown to indicate a mixed-payment lane, cash or tag.



Slide 6

Q: How about this sign? What does it mean? Do you think most people will understand the combination ?

A: 1 – it means tag or cash.

7- arm used in last slide for lane 3, confirms change made.

9 – this symbol confuses to exact change

10,7,5 – don't like this sign.

### Slide 7

The following slide was shown to talk about Open Road Tolling which will lead into the drawings on the wall concerning the cash pullout lanes.



Q: Taking a broader shot of the toll plaza, what is speed in the area under “T”?

A: 1 – High speed, 40 mph. Needs a sign that says it is a high speed.

Q: In future toll roads, you will be able to go through without stopping with a toll tag and they would be called open toll roads. In order to pay cash, you will have to pull out into a rest area kind of place and then get back on the toll road.

A: 2,4 – Feels pulling out for paying is not safe, especially for unfamiliar drivers.

### Slide 8

The following slide was shown to identify the issue of interoperability and advance signing.



Slide 8

Q: What does PREPAID PATRONS mean to you?

A: 9 – Too wordy.

10,5,4 – toll tags only is more clear.

Q: Do you think all toll agencies should use a single symbol or logo for their toll tags if they all work together ?

A: Most of the drivers, nod head.

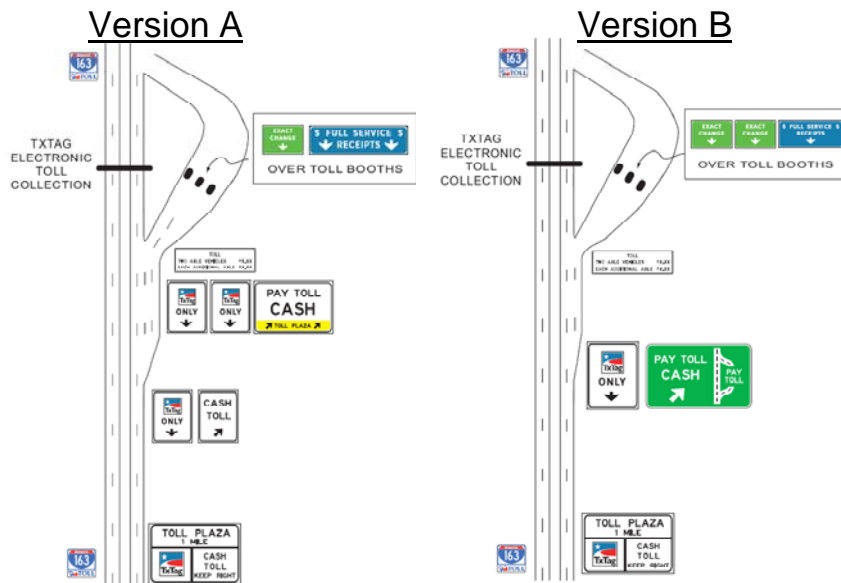
1,3,5,7 – all toll roads should have same tags.

1 – different tags add to the confusion.

### Slide 10

The following slides explained how the road would be configured for tolling where one would have to pull out to pay cash. i.e. People with tags would stay in their lanes and

people paying cash would go to toll booth area. Two versions of these signs are discussed.



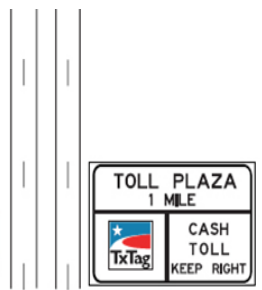
Slide 10

**Slide 11**

Q: The first sign drivers would see is the same for both versions. What do you think of this sign?

Version A

Version B



Slide 11

A: 10 – looks fine

Q: Does it prepare you for the configuration up ahead?

A: 10, 9 – understands that you have to be in right lane if you want to pay cash.

1 – Needs more visual guidance on lane designation. Something that would graphically show which lane leads to which type of payment.

2 – Exit right would be helpful.

6 – Cash toll keep right needs to be bigger and more identifiable. Clubbing the three signs together is confusing for unfamiliar drivers.

5 – The text “Exit, would make it better.

10 – “Exit” may confuse people as they want to come back onto the toll road.

Q: Why do you think this sign has a white background, rather than another color?

A: 1 – it adds clarity.

Q: What do you think the white background means? Do you think it should be another color?

A: 1 – it is a standard for information.

7 – finds white and black good for information. Adding color adds panic!

Q: Do you think it should be called “Plaza” or is there a better name for the configuration up ahead?

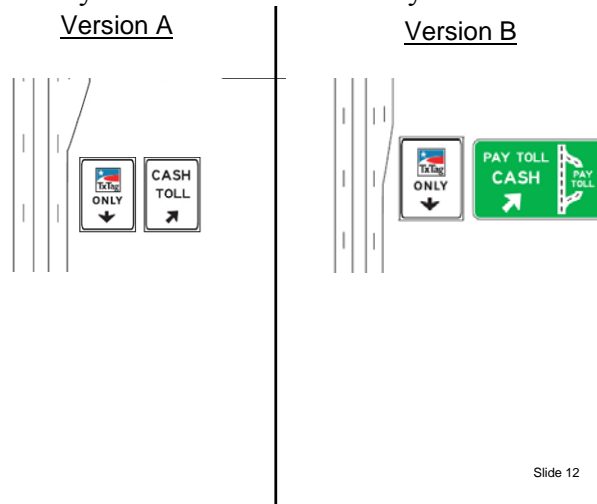
A: 5 – finds “plaza” appropriate.

Q: Do you like the phrase CASH TOLL or is there a better term to use.

A: 2,3,4,5,8 – Do not like “Cash Toll.” “Change Made” or “Cash only” seems better.

## Slide 12

Q: The next set of signs would be located just before the pull-out lane starts, as shown in the drawings. Which one do you like best overall? Why?



A: 2,4,5,9,10 – like version B better.

Q: Which one does a better job explaining that this is an off-and-on lane, that drivers will re-enter the toll road immediately?

A:10 – Version B tells you that you will get back on the toll road.

Q: In Version A, do you think some drivers might think they are exiting the toll road altogether?

A: 1,2,3,4,5 – Version A does not convey that you will come back on the toll road.

Q: In Version B, does it bother you that one sign is white and one is green? Do you think the colors of the sign are trying to tell you anything?

A: 2 – the text “Only” will make it clearer.

2,3,5,9 – Like sign with person.

7 – With person symbol, it is understood that you do not need exact change.

10 – Use of dollar symbols to convey cash.

Q: Is there any other information you think should be posted at this location ?

A: 10 – Toll rate.

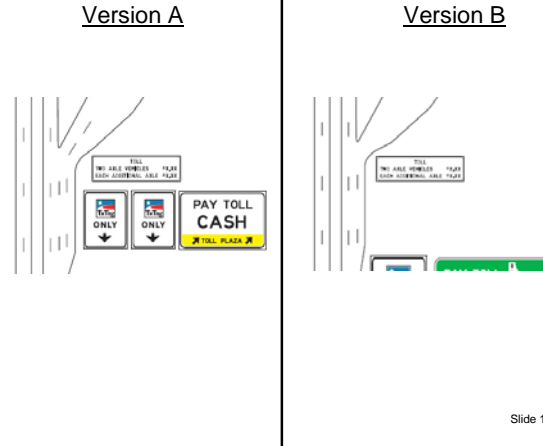
9 – Not much information needed at the plaza, as most drivers would have made their decision by then.

1,5 – More advance warnings.

9 – speed limit signs for people exiting to pay toll.

### Slide 13

Q: Here's the last set up signs on the approach to the tolling area:



Q: In Version A there are signs over all the lanes when the road widens for the pull-out. Version B does not have these signs. Do you think these additional signs are necessary? Are they a good idea ? Any downside to them?

A: Everyone likes the additional signs as it ensures that you are in the correct lane.

Q: In Version A, there is a yellow banner at the bottom of the sign. Have you seen a yellow banner with upward arrows like this before? Where?

A: 6 – yes, at exits. This yellow banner makes you realize that you need to get off the road.

10 – at exits.

Q: Do you like the words TOLL PLAZA in that yellow banner?

A: 10 – seems like you need to exit for toll plaza.

Q: Do you think it explains good enough that if you have a tag you don't need to go to the toll plaza?

A: Most said yes.

Q: The flipside of that is if you're from out of town and don't have a tag, does it explain good enough that if you DON'T have a tag you MUST exit?

A: 3 – it says tag only, so it is clear.

10 – yes, it does.

Q: Do you think the toll rate signs are necessary?

-Is this the right place for them?

- Should they be sooner?

A: 7,10 – they are needed but in advance.

4,5 – Not needed.

Q: Given their position shown, on the side of the road at the pull out to the toll booths, do you think those prices apply to the TxTAG users too ? Should they only be at the toll booths and not on the TxTAG fast lanes ?

A: 8 – Only people paying cash would want to know that. So it should be for people who are exiting. Depending on how long the ramp is, it should be known ahead of time.

### Slide 15

The following slides are shown from the perspective of driving along a frontage road.



Discussion will be to get at the understanding of free frontage road – tolled mainlane. After that's established, the details of the signs will be discussed.

Q: How do you think this road operates ?

A: 4,5 – not sure.

3 – You can go without a toll tag.

9 - Not clear while driving.

1 – you can get on and pay a toll later.

Q: Have you ever seen or heard about a road working like this?

A: 8 - on 121.

Q: What do you think of the route names? Toll 612 for mainlanes, and Loop 612 for frontage roads.

A: 1,2 - Both the signs should say the same thing for consistency. E.g. Toll should be on top of 612 as in loop 612 in the given slide.

8 – separating 612 and toll does not convey that both belong together.

Q: Do you think most people will understand that the two routes go to the same places, that they're next to each other ?

A: 3,7 – the sign has too much information. 612 is very predominant, which takes the attention off other things on the sign. Moreover, “Only” is very small and cannot be noticed.

2,3,4,5 – Could not understand the whole sign, the sign is too busy.

Q: Do you think most people will understand that you cannot pay cash on Route Toll 612, that a tag is required ?

A: 6 – thinks you can pay cash on the toll road.

3 – would not understand. The whole sign is too busy. As soon as I spot 612, I am not able to see anything else on the sign.

Q: What other kinds of information would you like to see at an entrance like this?

A: 9 – Advance sign for tag only, or something like “ If you exit/enter you will pay.”

**Slide 18**

The following slides were shown for understanding of the free frontage road sign.

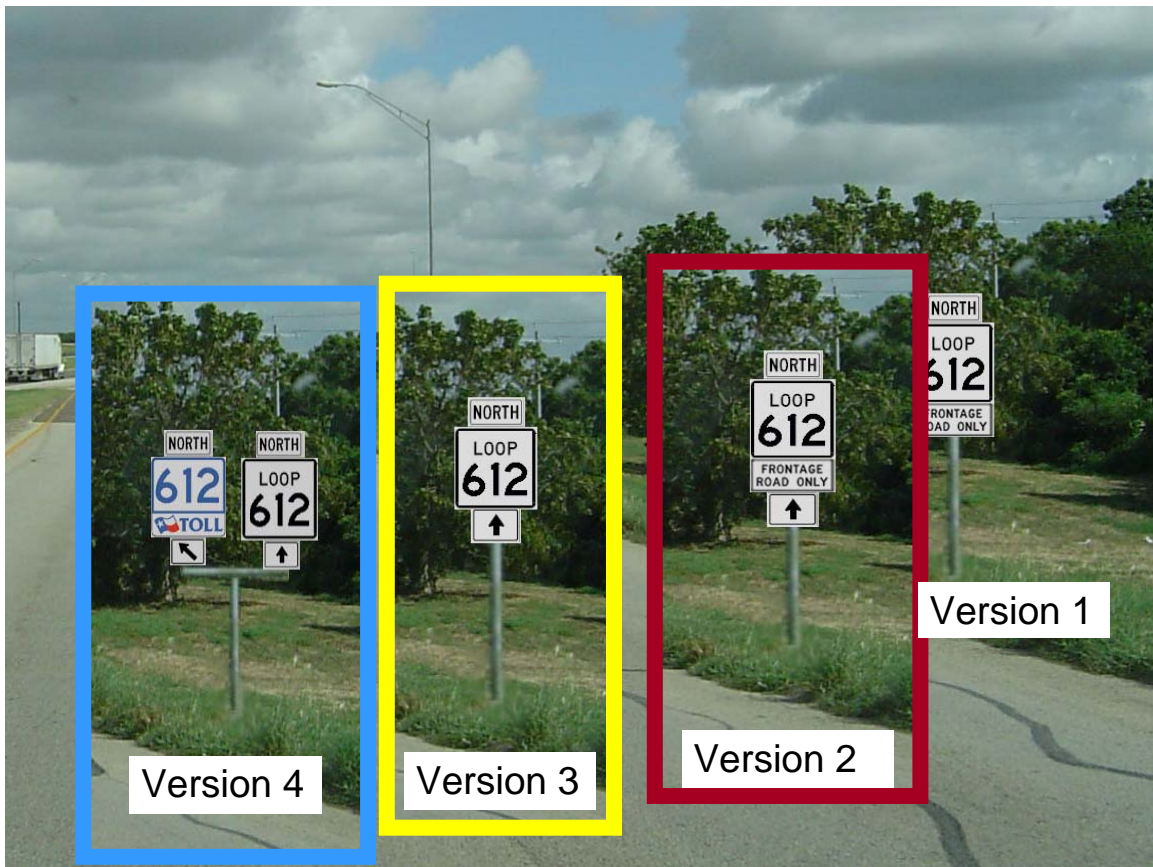
Q: One of the versions that has an additional arrow at the bottom showing the straight ahead direction. Do you think the arrow is necessary?

A: 2,3,5,7 – Yes, people look at the numbers more than the words on the sign.

Q: Here’s another version of the sign. We’ve removed the words Frontage Road Only and left the arrow. Do you think the sign needs the small message at the bottom FRONTAGE ROAD ONLY ?

A: 10,5,4,7 – like version 3. They do not like the phrase “Frontage Road” on the sign.

**Slide 20**

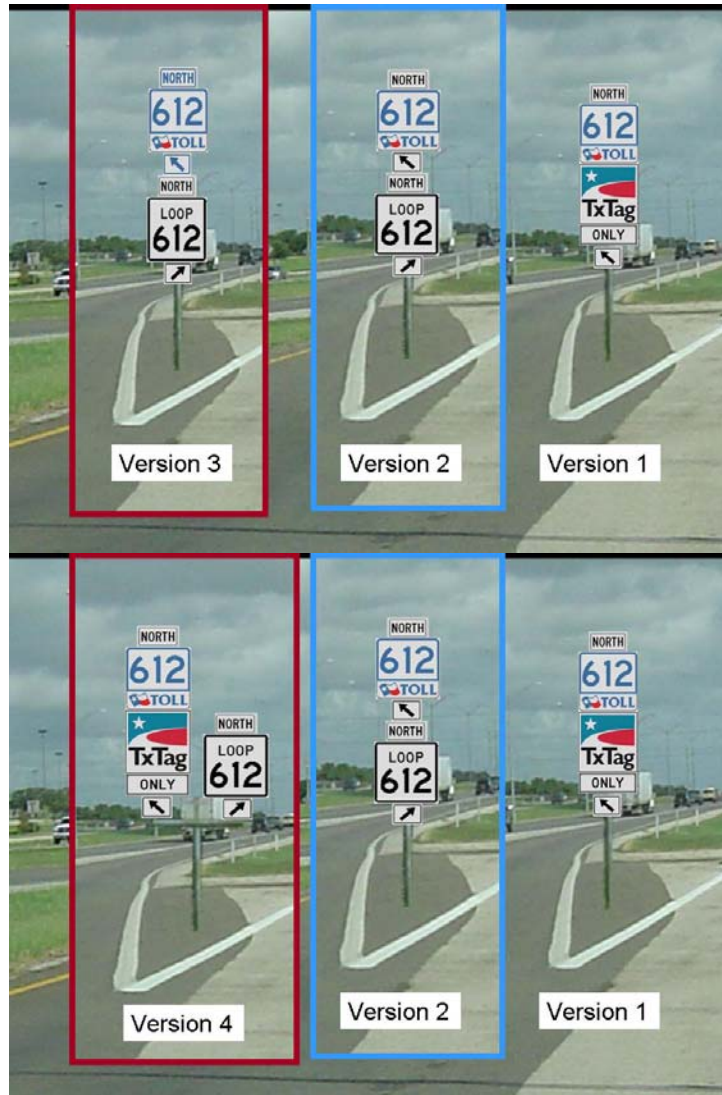


Q: How about version 4?

A: All agree that version 4 is much better than the previous 3 versions.

**Slides 21, 22**

The following slides showed various versions for the tolled mainlane sign.



Q: You'll notice that the TxTAG ONLY part of the sign is missing in Version 2. In different versions of the sign, both the toll and the Loop route are shown. What do you think of this sign?

A: 1- version 1 has too much information. TxTAG symbol is not required.

3,4,5 – Tag only

Most – contradiction between the two arrows in version 2.

3 – take the line between 612 and toll and make it a big rectangle instead of two.

Q: Will they take cash?

A: 3,10 – would not know.

Prompt for:

- Is it too many little parts?
- Are the arrows pointing different ways confusing?

Q: Is it confusing have the same route number on the same post?



In version 2 the words and numbers for Toll 612 are in blue, but the word NORTH and the arrow were black. In version 3, NORTH and the arrow for the toll route are blue to match the numbers on the toll route sign.

Q: Do you think drivers would have even noticed the mis-matching colors in Version 2 ?

A: Most did not.

Q: Do you think Version 3 is better? Does the blue arrow make it seem more like it belongs to the top route number for Toll 612?

A: Most said no, it makes the sign worse.

Q: Which sign stands out more in Version 3, does the black letters on the Loop 612 sign make is stand out more than the blue?

A: the line dividing 612 and toll conveys that they don't belong together.

This sign is similar to Version 2, but the TxTAG only part of the sign is on it. (Version 4)

Q: How important do you think that message is?

A: 1- TxTAG is not needed.

10,2 – Tag only is needed for clear information.

Q: Does the word TOLL on the top part of Version 2 explain that you must have a tag in order to get on Toll 612?

A: Most said no.

1,5,9 – A gateway or gantry like structure would alert drivers about the toll road. Something that would say tag only would be better.

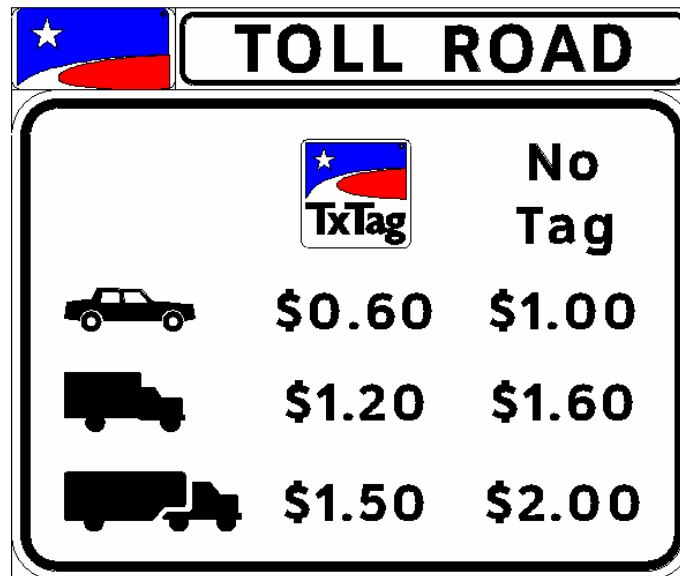
Q: Do you think that's too much to look at on one sign post?





A: most agree.

10 – yes, it will be better if these two are separated.

### Slide 23

The following slide shows a sign that might appear before a tolling area on a road.



		No Tag
	\$0.60	\$1.00
	\$1.20	\$1.60
	\$1.50	\$2.00

Q: If you saw this sign, what type of configuration would expect to be coming up?

A: 3 – pay cash at a booth.

Q: Would anyone expect a cash booth?

A: 7,9 – Does not expect a booth.

5 – Having both TxTAG and price on the same sign is confusing.

Q: What does the word NO TAG mean to you?

A: 2,9,10 – think it means cash.

1 – you will be billed later by the license plate number.

Q: What do the vehicle symbols on the left mean to you?

A: 1 – Price per axle.

3 – does not cover all types of vehicles.

Q: Would you like to see a sign like this before you ever get on the toll road?

Remind them that currently, toll rates are not posted at entrances to the roads, only at the plazas.

A: some said – yes, they would like to know the price before entering. Some said, they would not care.

Q: Do you think this sign explains pay-by-plate adequately?

A: 5 – That sign does not convey pay-by-plate.

3 – Does not care if it's the same amount.

Most did not understand.

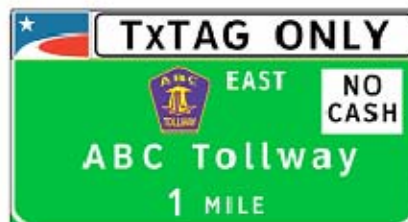
#### Slide 24

The following slide shows a sign that you may see on a freeway one mile before there's a ramp that would connect to ABC tollway.

Version 1



Version 2



Q: If you were from an area that had this “No Tag” system that takes photos of your license plate, would you expect to be able to get on ABC Tollway without the TxTAG ?

A: 9 – Confuses to breaking rule. Wants to know penalty for violation.

Q: If you have an NTTA tag in your car, do you think you can use this road?

A: 1,2,3 – NO, cannot use the road with an NTTA tag.

Q: Is the Version 2 better at conveying that you must have a tag to use the ABC Tollway?

A: most felt version 2 was better.

Q: Do you think that the NO CASH panel clutters up the sign too much?

A: 1- looks the same.

#### Slide 26

This slide shows an entrance to a HOT lane. There would be several signs advising of the upcoming entrance starting a mile back. The black part of the sign would be an electronic changeable message sign section where the current price could be shown.



Q: What do you think of this sign?

A: 1 – understands that it is a HOV lane.

2 – not able to match 3+ and DMS part of the sign.

Q: Is it too much information all at once?

A: 7 – too much information. Not sure if you can get on without an EZ tag.

Q: Do you know where this sign might be located?

A: Most did not know.

Q: What do you think the purple pentagon in the upper left corner is?

A: No one recognized the logo.

Q: What do you think the name or number is of the main lanes next to the HOT lane?

A: Most – not sure.

Q: What does the symbol 3 + mean?

A: 2,8 – more than 3 people in the vehicle makes it a HOV.

5 – there should be a line separating the category and price.

Q: What does all others mean?

A: Most, not sure if you can get into the lane without a tag and less than 3 people in the vehicle.

Q: What does “To Voss Road” Mean

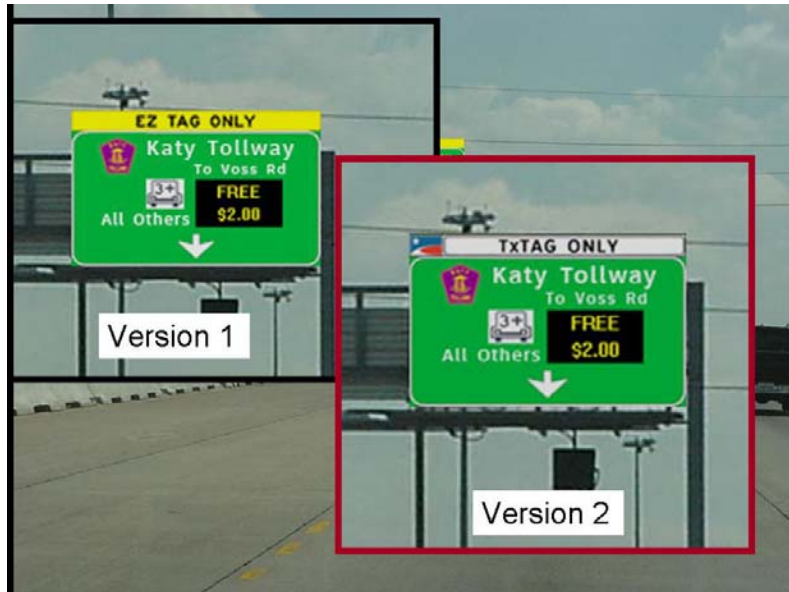
A:1 – to Voss road HOV is free and to all others, it costs \$2.00

Q: What does EZ Tag mean? Do you think you could use this lane with your NTTA tag or your TxTAG?

A: Most, not sure.

### Slide 27

This slide shows another version where, instead of EZ TAG ONLY, the sign says TxTAG ONLY.



Q: Do you think this does a better job of explaining which tags are allowed? Would you understand that your NTTA tag would work here when it says TxTAG only?

A: Most said they would not understand.

**Slide 28**



Q: Would you expect that Toll Interstate Route 1 shown above would go to the same destinations and have the same exits as Free Interstate Route 1?

A: Most said yes.

2,9 – Do not need route number on the toll road, as it says the destination.

**Slide 29**

Staying with the idea that there could be a road that has a parallel toll route, this slide will talk about how you would choose whether or not to use that toll route.



Q: What would affect your decision to use the HOT lane or not ?

A: 9 – Traffic.

1 – speed.

10 – if I would not understand the signs, would not take the toll road.

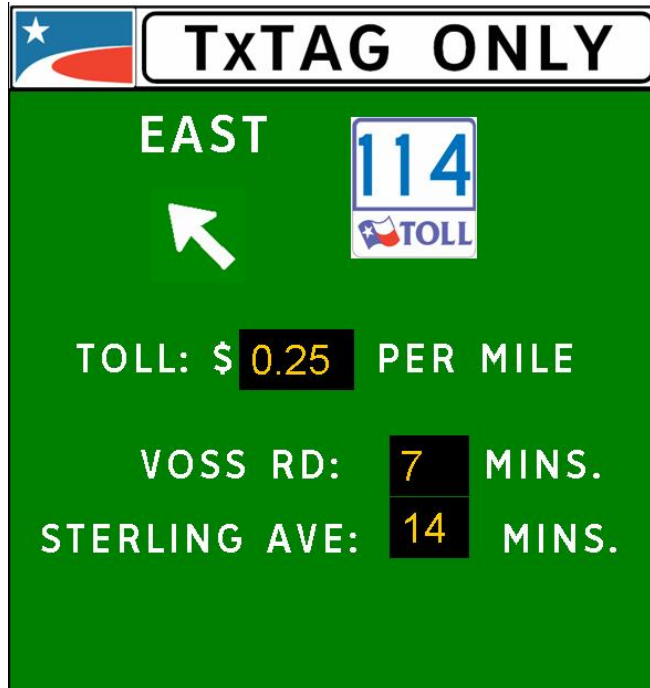
### Slide 30



Q: This sign just tells you how long it takes to get to Voss Road, which is the next exit which is 5 miles away. Let's pretend there are more exits after that. Would you like to know the time to the second exit also?

A: Most said no, already too much information.

### Slide 32



Q: What do you think of this sign?

A: Most people say, No.

Q: What is it trying to tell you?

A: 3,4,5,7 – no clue!

10 - \$2.00 to sterling

Q: So how much would it cost you to go to Sterling Avenue?

A: 10, 5 – do not like to do math in the middle of traffic.

Q: Here's a sign that is showing price and travel time to two exits. Do you think most drivers could understand this sign?

A: Most say too much information.

Q: Is it more important to you to have the comparison between the toll lanes and the free lanes like in the last one we saw (page up if needed) OR to have the travel times to the next two exits as shown in this sign ?

A: 10 – comparison helps in decision taking, but having information for next two exits is not necessary.

**0-5446 : Toll Road Signs - Focus group 2**  
**Arlington, Aug 1<sup>st</sup> 2006.**

The focus group study was conducted at the TTI Arlington office and 9 people showed up for the Focus group study.

1. doesn't travel on tollroads
2. lives in Arlington, does not travel tollroads
3. lives in Granbury, does drive on tollroads, and does have a tag
4. lives in south ft worth, tries not to drive on tollroads, does not have a toll tag
5. Been on toll roads as a passenger, including Oklahoma, does not have a toll tag
6. lives in Hurst, does not drive on tollroads
7. lives in Arlington, does not normally drive on tollroads
8. lives in Arlington, occasionally drives on tollroads, but does not have a toll tag
9. haven't driven on any toll roads

**Slide 4**

For the following photo of a toll plaza in the Dallas area, was shown to discuss the different modes of paying a toll in the Dallas area

Q – Looking at this sign, looking at lane #1, what does the sign above that lane mean?

2 people – toll tag

Q – What about this little square at the bottom, anyone seen this symbol before?

No one was

Q -What about lane #2, what's required to drive that lane?

6,2 – exact change

7- or the toll tag

Q - What about lane #3?

-There's somebody there to make change

Q - if you think you were driving thru lane #2, could you show up with a dollar bill?

no

Q -but #3, you'd be able to? Someone would be there to take your dollar bill?

Yes, but it's not very clear

Q - is there a way to make it more clear?

Have "change made" on the sign

Q - explains the TxTag....now, what all do you think you can use for lane 2?

Exact change, toll tag, TxTag

Q – has anyone heard of any other ways to pay a toll in the Dallas area?

4- you can run it and get billed later

2 – are these exactly how they appear? Those are terrible, the #1 symbol appears to be like a gas station or something, it means nothing to me. #2, is ok, but not consistent enough for what's needed, and #3 doesn't have enough information for what's needed

Q - what about the colors?

2 – the colors are terrible, #1 needs to be a little brighter, #2 is not too bad, #3,

- needs to be brighter (someone agrees, sometimes you can't read these)
- Q – are you talking about the electronic signs in general?  
Any of them  
For somebody that's never traveled the toll, what does that (the circle w/ the T) mean, and how much?
- Q - so if you have different cities that have different logos, is that ok, or is the TxTag a better option?  
4-Why don't they put the graphic at the bottom and at the top, put in English what it is?  
Confusion over one T being red and one green  
What if you have no idea what that means, and you're speaking a different language?
- Q – what if there was more education on TV, and the newspapers...would that help  
2,6,7 would help  
7- there should be more signing before you get there  
3- agrees with 7, and it would be helpful to have the same symbols throughout the State

### **Slide 5**

The following slide was showed to signify that there is an attendant in the toll booth and that only cash is accepted, not tags.

- Q – what do you think this sign means?  
Manned tollbooth Cash Only, no credit cards, no checks, Cash only
- Q – so do you think you could go through If you had a tag?  
Several – no
- Q – do you think people would understand that there's a person there to take their cash?  
Yes's
- Q – do you like this symbol better than one like the first slide?  
Yes's  
That looks better than the first one  
About 6 like the second one better  
Coloring's better on second one  
Like the combination of text and the symbol

### **Slide 6**

The following slide was showed to indicate a mixed-payment lane, cash or tag.

- Q – now if you saw this version, what do you think this sign means?  
You have to have a tag  
I think you could go through with a tag or a person
- Q – So you could go through without a tag, maybe if you just had cash?  
Maybe  
Maybe you can buy a tag in that lane



I think when you see “Cash only” you realize there’s a little person in the booth,  
but  
when you see this symbol, you know longer know what that implies (others agree)  
Q – if you had the T-tag, do you think you could come thru this both?  
Not sure’s  
I’m wondering if they had the T in one corner and the TxTag in the other if that  
would help

### **Slide 7**

The following slide was shown to talk about Open Road Tolling which will lead into the drawings on the wall concerning the cash pullout lanes.

Q – There are some lanes over there to the left of this barrier...what’s going on over there?

Toll tag only

Q – explains that those lanes will not have to reduce their speed, and other customers will have to pull off to the right

Q – anybody seen a system like this?

no

### **Slide 8**

The following slide was shown to identify the issue of interoperability and advance signing.

Q – what do these signs mean to you?

If you have a toll tag, you can keep on going on the left

Q – everyone understand “prepaid patrons”?

Not really

Q – better way to word that?

Toll Tag Only

b/c even I have a toll tag, but it’s not prepaid...I use it and I get billed

Q – Is it ok for Dallas to use their logo

Use Tx Tag (a few agree)

The first one should say “Dallas Toll Tag only”

### **Slide 10**

The following slides explained how the road would be configured for tolling where one would have to pull off to pay cash. The two versions are discussed.

Q – explains drawings

### **Slide 11**

Q – What do you think of this sign? Is it informing you well enough of the road configuration coming up?

It doesn’t say how much

It doesn’t say the TxTag is on the left side, even though we know it’s on the left

side, it doesn't say left  
Keep Left  
Two left lanes

Q – What do you think about the white background and the colors of this sign?

Fine

Q – what about the words Toll Plaza?

We've used that for so many years, I would keep it (others agree)

Toll Booths

Q – what about the phrase Cash Toll?

Exact Change has been used in the past

**(TAPE IS RECORDED OVER HERE) only hand notes here**

6 – wants to know cost

7,8 – TxTag users do not need to know price

4 – needs yellow to know to keep right

### **Slide 12**

6 – Version A is better, B, too much green and detail on green

3 – B does a better job of telling you you're getting back onto the toll road

Q – Do you like the green color?

5 – info signs are green

Easier to read

Q - would you like any other info at this point? Price?

No reply

8 – you can put the amount on version B, b/c it says Pay Toll twice

Q – Do you need to know the speed limit?

4 – good idea if it's going down

8 – lots of info already, if needed, put it earlier

Q – what about the types of payment accepted?

Too early

### **Slide 13**

8 – too much

3 – sequence of A is good, could have “Toll Plaza Exit” in the yellow like you usually see with the yellow

7 – could be confusing if you don't want to exit from the tollroad

5 – don't put too much info for unfamiliar drivers

3 – tag people won't pay attention to price signs

1 – won't understand which lane to get into with TxTag, needs left on the sign  
(talking about the overhead TxTag only signs)

**(TAPE IS RECORDING PICKS UP HERE)**

Q – Do you think you could use the left lanes with the Dallas toll tag?

- Would need both symbols
- Q – do we need price at this point?  
Well, we have it on the little sign  
6 – but your eyes are having to divert  
3 – you could put cost on the pay toll CASH sign

### Slide 15

- Q – Do you understand how this road operates by looking at these signs?  
No's
- Q – What would you think was going on?  
You have to have some kind of tag if you want to get on  
7 – 612 is tolled if you want to use it  
Others agree
- Q – so you get that from the sign?  
If you're right up there and stop and look at it  
Why is it redundant to have the Tx Flag Toll, and the TxTag Only, why does it have to have both  
3 - I've never seen anything like this, so will there eventually be a toll plaza, or a toll booth? What's stopping anyone from getting on that?
- Q – do we think that once you get on, up the road, there will be a booth?  
4,5 don't know if there's a booth  
3, 6 it's says Tag Only  
7 – the numbering system for these roads should be different
- Q – so is the confusion, that there's a Loop 612, and a 612 toll...do you get the impression they're both still going to the same destination?  
Yes's  
You need more information on the frontage road side, explaining what your choice is
- Q – do we think frontage road is a bad term?  
Yes's  
1 – I've never seen that term until recently, I thought it was the name of a road, I don't know what it means

### Slide 20

- Q – Version 2, adding the arrow?  
Not doing anything  
Doesn't say anything about "Free" 612, or No Cost, and not even say Frontage Rd, or "No Fee"  
You should just call is loop 612 and then have a sign saying "Tollway"...in my mind roads are free, unless you tell me otherwise, so I need to know the roads I'll be paying on
- Q – Version 3, dropping frontage, leaving arrow?  
But it still isn't providing the information you're asking for to distinguish between paying and not paying
- Q – Version 4, is this confusing that there are two 612 norths?

Not for people who understand toll roads  
Q – Which one you like the best  
Everyone 4

### **Slides 21, 22**

Q -You'll notice that the TxTAG ONLY part of the sign is missing in Version 2. In different versions of the sign, both the toll and the Loop route are shown. What do you think of this sign ?

Too much information, TxTAG sign too big and prominent.

People are used to reading from left to right, not top to bottom, so the sign placement makes it harder to read.

Q - Are the arrows pointing different ways confusing?

Not clear which arrow belongs to which sign.

Arrows are not big enough.

Q - Is it confusing have the same route number on the same post?

Everyone says yes.

None of the signs say clearly that frontage road is free.

Q - In version 2 the words and numbers for Toll 612 are in blue, but the word NORTH and the arrow were black. In version 3, NORTH and the arrow for the toll route are blue to match the numbers on the toll route sign. Do you think drivers would have even noticed the mis-matching colors in Version 2?

Too confusing to help in decision making.

Q – This sign is similar to Version 2, but the TxTAG only part of the sign is on it. (Version 4). How important do you think that message is?

The positioning of the sign makes it a little more clear.

Q - Do you think that's too much to look at on one sign post?

TxTAG symbol is too big.

TxTAG symbol and toll sign, both are not required.

### **Slide 23**

Q - Here's a sign that might appear before a tolling area on a road. If you saw this sign, what type of configuration would expect to be coming up?

You pay more if you don't have a tag.

Not all categories are covered by the sign, for example motorcycles.

Q - What does the word NO TAG mean to you?

You can pay by cash.

You can pay the bill later.

Q - What do the vehicle symbols on the left mean to you?

You pay according to axle.

Q - Do you think this sign explains Pay by Plate or Video Tolling concept adequately?

Most say no. some do not like the concept.

### **Slide 24**

Q - Here's another type of sign that you may see on a freeway one mile before there's a ramp that would connect to ABC tollway. If you were from an area that had this "No

Tag” system that takes photos of your license plate, would you expect to be able to get on ABC Tollway without the TxTAG?

No, you cannot get onto the tollway without a tag.

If you have an NTTA tag in your car, do you think you can use this road?

Most said no, because different tags do not work for different systems.

Some thought TxTAG meant Texas license plate.

Q - Is the Version 2 better at conveying that you must have a tag to use the ABC Tollway?

Most found it better.

Some said, it has too much information, but to the point.

Some did not like the purple ABC toll way symbol, as no one would recognize it.

Q - Do you think that the NO CASH panel clutters up the sign too much?

Some felt, it is required for people who do not understand TxTAG.

Some felt, “NO CASH” is not required when “TxTAG Only” is written.

### **Slide 26**

Q - This photo shows an entrance to a HOT lane. There would be several signs advising of the upcoming entrance starting a mile back. Let’s take a closer look at the sign  
The black part of the sign would be an electronic changeable message sign section where the current price could be shown. What do you think of this sign?

Free and \$2.00 should be separated by a line or different color.

Something should point 3+ to FREE to help understand the sign.

Words are better than graphics; it is difficult to shift from one to another.

Q - What does the symbol 3 + mean?

Some think it is free for more than 3 people.

Some think it is free for 3 or more people.

Q - Does that mean you can go in the lane if you are alone in your car?

Some said yes. But, you can get in only if you have a tag.

Q – What does “To Voss Road” Mean?

Where you exit.

Some not sure when you need to pay again.

Q - What does EZ Tag mean ? Do you think you could use this lane with your NTTA tag or your TxTAG ?

Most people do not know what EZ TAG means.

People do not understand why one needs tag, when it is free.

### **Slide 30**

Q – What do you think this sign is trying to tell you ?

Most have not seen them.

Q – Would you want to see the price on the sign as well ?

Most said yes.

Q – This sign just tells you how long it takes to get to Voss Road, witch is the next exit which is 5 miles away. Let’s pretend there are more exits after that. Would you like to know the time to the second exit also ?

Most said no, one exit at a time.  
Some like two exits.

**Slide 32**

Q – So, let's pretend that after Voss Road, the next exit is Sterling Avenue. It's 8 miles from this point. What do you think of this sign?

If you do not know the distance between Voss Rd and Sterling Ave., this does not help.

It does not tell about the free general purpose road.

Most did not like the cost per mile idea. People like cost per exit.

Q – What is it trying to tell you?

Too much information.

Q – Do you think most drivers could understand this sign?

Most did not understand.

Information with miles and minutes would confuse drivers.

Some wanted toll, but not the time on the sign.

**5446: Toll Road Signs Focus Group # 1**  
**Austin, Aug 24<sup>th</sup> 2006.**

The focus group study was conducted at the TTI Austin office and 8 people showed up for the Focus group study.

- 1– from south Austin, sometimes drive on Houston toll roads, no tag
- 2 –same as 1
- 3 –central Austin, only drive on toll roads when out of state
- 4 –Cedar Park, familiar with tollroads from the north part of the US and occasionally in Houston, no tag
- 5 –Pflugerville, drive on a tollroad once or twice in Chicago
- 6 –NW Austin, go to Houston and drive on tollroads 2-3 times a year, and I’ve been on Chicago’s tollroads, no tag
- 7 –Pflugerville, experienced tollroads in Houston
- 8 –east side of Austin, drive toll roads once every 2-3 years, I don’t have a tag

**Slide 4**

For the following photo of a toll plaza in the Dallas area, was shown to discuss the different modes of paying a toll in the Dallas area

Q- If you were driving in Dallas, would you understand what the sign in lane 1 would meant?

- have to have a tag
- tag only

3- If I was a foreigner I would think I’d have to have Texas tags (others agree)

Q - What do you think lane 2 means?

- exact change
- pay your toll
- would be bad if you got in the wrong lane, what are you going to do

Q – Do you think there would be a person there to take your money?

- no’s
- it wouldn’t hurt to have “no attendant” under it

Q – What does lane 3 mean?

- somebody’s there
- you can get a receipt
- What are the little “T”’s

Q - What do you think the T means?

- toll
- Tag
- TZ

Q - a general tag, or anyone is specific?

- Texas Tag

Q - If you have a tag you think that will make the arm go up?

- no
- if you have a TX tag, you can use it to go through

-it will automatically send a signal?

- that's what I think

Q - any other info, no attendant, receipt given?

- is there one that would be trucks only? Another lane?

1- what does the T stand for? (S explains)

### **Slide 5**

The following slide was shown to signify that there is an attendant in the toll booth and that only cash is accepted, not tags.

Q - explains, anyone seen?

-no's

Q - what do you think it means?

-no credit card

-no tag

-someone is there if you need a receipt

-cash only

### **Slide 6**

The following slide was shown to indicate a mixed-payment lane, cash or tag.

-Why is there a man on there if you need a TxTAG?

- to get a receipt

That's the purpose of the tag is so you don't have to get a receipt

Q - do you think this means you can only use a tag?

-4 say yes

-someone is there to give you directions

Q -explains the sign, Do you think it does a good job?

-no's

- could add "and/or"

-add "all services" available, or "full service"

### **Slide 7**

The following slide was shown to talk about Open Road Tolling which will lead into the drawings on the wall concerning the cash pullout lanes.

Q - what do you think the area behind the wall is?

-city buses

-HOV lane

-the don't have to pay

8- tags only area

Q – explains the picture

### **Slide 8**

The following slide was shown to identify the issue of interoperability and advance signing.



- Q - what do you think of the wording, is the symbol enough?  
 -people who are illiterate, or might not read too well, might not know what that mean
- Q -any other ideas?  
 -Prepaid only  
 -and something saying the left three lanes, and something with full service for the Right
- Q - word "tag" ok?  
 2- "prepaid tag"  
 6-prepaid only (others agree)
- Q - how about "toll tag"?  
 1- that sounds better  
 6 -"all TX tags"  
 Q - "all Texas Toll Tags"?  
 8 - if every area has it's own logo, that could be confusing

### **Slide 10**

The following slides explained how the road would be configured for tolling where one would have to pull off to pay cash. The two versions are discussed.

- Q - explains cash pullout area
- Q - what do you think?  
 4- "cash toll, keep right" confuses me, can I give a \$5 bill and get change, or just throw in my money
- Q - what does the TxTAG logo mean?  
 1 - it tells me to stay left  
 2 - but it doesn't say that (others agree) people need that word
- Q - what do you think of the black on white?  
 - you can see it better  
 2 - isn't that consistent with what exists?  
 8 -if you have a TXTAG, why would you have to pass through a toll plaza
- Q - explains
- Q - is there a better word to use than plaza?  
 -"booth," several agree  
 6- the first time you go through it might confuse you, but the second time will help  
 3 - I need longer than 1 mile to change lanes  
 2- it's only going to happen to you one time, they you'll know the rules

### **Slide 12**

- 1 - the one on the right is a little clearer  
 6 - I would just say "cash" and "pay toll"  
 4- there's a distinct difference  
 8 - Pay station (others like)

Q – you think this explains it's for cash customers?

- cash only
- non tag holders
- all say no

Q - which sign is clearer that you're not exiting the tollway

- all but 2, says B
- 2 – I have a problem with B, Why is there a straight line?
- All – B tells that you are getting back on better
- 4 – put a dashed line on the TxTag only side

Q – on B, one side is white, and one's green, what do you think of that?

- green is much clearer
- 3 – green is better, b/c it's colorful
- 1 – it separates the cash and tag lines
- I like station better than toll

Q – so on the other signs, should the cash side be green?

Several like

Q – any other info you'd like to see posted?

- 1 – don't confuse you
- 4 – cash vs change, still unsure
- 3 – markers to tell you to exit

Q – something in the ground?

Q – price of the toll here?

- 4 – definitely, any time you have the word cash, you should have it
- many want price earlier than later

### Slide 13

3 – I like A better (someone agrees)

Q – toll plaza on A?

- 4 – the word plaza makes me think of stores
- booth
- station

Q – looking at the toll rate sign on the ground, do you think the toll rates apply to cash?

- 4 – it has to be cash
- 1 – tags have already paid money
- 3 – I want that sign green

Q – if you don't have a tag, do you think you must exit?

Q- if someone was from out of state and saw this sign...?

- 3 – she'd pull off, b/c she didn't have a Texas Tag
- 1 – the TxTAG logo doesn't look like a license plate

### Slide 16

Q - what do you think this means?

- 1 – it means the only way you can take that road is if you have a tag (other's agree)
- 6 – you can't pay cash
- 4 – I didn't see "Toll," I focused on "Tag"

- 6 – you can take out the little flag next to Toll
- Q - explains the signs. What would you expect to see on the free lanes?
  - 2 – traffic lights
  - 4 – it'll take longer
  - intersections
- Q – What about the route names, is it confusing that they are numbered the same?
  - Most say they're good
    - you don't want to think you're on the wrong road b/c there's no sign on the frontage road
- Q – what about the info at the entrance?
  - 8 – it's too close together, not distinct, 612 toll is not visually as clear as the frontage road sign
  - 4 – doesn't toll mean you can pay cash? (others disagree)
  - 1 – it's telling you it's a toll road only
  - After looking, most decide you can get on with both a tag and money
  - 2 – Why not put Toll where North is?
  - Can I go on there if I don't have a TxTAG?
- Q – explains
  - 1 – take “Toll” off (many agree)
- Q – what about “No Cash”?
  - no's
  - don't make it negative, make it positive

**Slide 18**

- Arrow – clearer
- Not necessary
- For those that don't read as well
- Version 2 –like
- Version 3
- no's

**Slide 19 -**

- 3 – I don't like it, needs to say “Tag Only”
- Get the word “toll” off it
- Q - is it confusing to have the same route number?
  - Most – no
  - 4 – what if a truck blocked my way?

**Slide 20**

- 3 – version 4 is fine if there are two notices
- 4 – need two signs in case one is blocked
- 8 – also, you should specify “tags only”
- 3 – add “tag only”, and “frontage only” on version 4
- 4 – and put the sign on both sides of the road
- 4 – she switched her answer to version 3 as her fav

**Slide 21**

Version 2 – lots of no's

That sign wouldn't last 2 weeks!

Q - what's wrong with this version?

- the two different directions of arrows

Version 3

Q - see the difference?

1 – Blue

Q - does this help?

No's

Still too much

**Slide 22**

Version 4

Better than the other three

Too close to the entrance

4 – take “Toll” off of it

3 – I like Version 1

4 – it needs to be before the entrance

Q – is 4 too much to look at?

All-yes

**Slide 23**

1 – why do you have a price for the tag on the sign?

Q – explains the type of sign

Q – does the sign need the price for the tag?

All – no

1 – the TxTAG column can be eliminated

4 – agrees (others do to)

Q – do you like the drawings of the vehicles?

All – like

**Slide 24**

1 –that's what the sign should have said (“TxTAG ONLY”, referring to the frontage road slides)

Q – explains the sign

Version 1

Q – do you like the “TxTAG ONLY”?

People like

Cut and dry

Self explanatory

Version 2

1- not bad

2 -agrees

3- likes the first one (4 agrees- don't put the thought of cash in my head)

6 – there's no question with this one

### **Slide 25**

Q – explains HOV and SOV lanes

Q - should SOVs be allowed to use this at certain times?

2 – no (others agree)

8 – that defeats the purpose

6 – in California it's dependent on the time of day

No time of day that we don't have traffic anymore

8 – this is about money, huh?

How do you pay the toll?

Q - explains the concept

1 – I think that's a good idea

### **Slide 26, 27**

6 – “Free \$2.00”?

2-3+ is free

That's not fair

Q - explains the HOT lane

They should be allowed to pay \$2, that's just the state making money

Q - do you think this is too much info overall?

-no, just presented badly

That's confusing

Q - what do you think the purple pentagon means?

1 – Beltway 8

Q – do you need a schedule?

1- if it's for certain hours (others agree)

8 – what if you put \$2.00 first, and flipped it?

6 – block (arrange) it differently

Q – what about adding a line to separate the road info from the pricing?

-yes's

Q - what road do you think this is to the right?

Katy freeway, I-10

Q – what does “to Voss Rd” mean?

1 – you have to get off at Voss

6 – agrees

5 – I'd assume the toll road ends at Voss rd

4- so can you get off before Voss rd?

Version 2 “Tx TAG ONLY”

6 – should say “EZ Tag”, b/c people from Houston might get confused, (then she changes her mind)

1 – statewide it needs to be the same logo (all agree)

### **Slide 28**

Q - what do you think the road on the right is?

1 – I-1 (all agree)

Q - would you expect this road to parallel the other the whole way?

- 1 – only as far as Voss Rd
- 4 – are there other exit points?
  - 2 – yes

Q - explains the exit points

- 1- separate “Katy Tollway” from the schedule

### **Slide 29**

Q – So which path do you take?

- 1- if traffic on the right is stopped, the left
- 4 – more comfortable going the familiar route
- 8 – the free side
- 1 – if it’s your regular commute, you’re be more familiar with either
- 6 – I’d be afraid of getting stuck on the left

Q – do you need more info?

- 5 – if there’s an exit before Voss
- 8 – travel times

### **Slide 30**

- 4 – take “Toll” off and leave TxTAG ONLY

Q - how far up would you want this sign?

- minimum ½ mile (several agree)

Q – would you want the price?

- Yes’s
- 2 – better to put it at 1 mile

Q – how big of a time difference is needed for you to choice Voss rd?

- 2 – minimum 5 minutes

Q - do you want to know how far it is to Voss rd?

- 3 – doesn’t matter, need 1 or the other
- 6 – I would like the minutes

### **Slide 31**

Q - explains the segments

### **Slide 32**

Q – how much would it cost to get to the exits?

- 7 – it’s a lot to process while driving
- 4 – I want it computed for me

Q – is it more important to have the time comparison between lanes, or the distance to the two exits?

- 4 - ?
- 3 – free and toll

## **Toll Road Signs - Focus Group # 2**

### **Austin, TX August 25, 2006**

The focus group study was conducted at the TTI Austin office and 10 people showed up for the Focus group study.

1. live in Pflugerville right along 685 and has not had any experience with toll roads except for in Houston. Once the toll road is built in front of her neighborhood she is expecting to use a toll road more frequently.
2. Lives in North Austin. No experience with toll roads.
3. Lives off I 35 North. No experience driving on toll roads.
4. Lives in North Austin. Only experienced toll roads in Houston few times and her husband was driving. He once ran through a toll road gate without stopping.
5. South of Anderson Lane. Run into toll roads only while traveling and without a toll road tag.
6. Lives in Northwest Austin. Never been on a toll road.
7. Lives in Cedar Park. Have driven on toll roads traveling and in Houston.
8. New to Austin. Driven on I30 in Dallas when it was a toll road and in Houston.
9. Lives in Austin and drives the toll road in Houston to the airport quite a bit.
10. Little Springs outside of Lockhart. Have driven on the toll roads in the Houston area.

#### **Slide 4**

Discussing the different ways to pay a toll.

Q: What does the sign above lane 1 mean?

A: Two people think that it means you need a tag.

Q: What kind of tag?

A: Texas tag(??? Not sure here hard to hear)

Q: What do you think the orange or yellowish color means?

A: 2 asks if the color has to do with a certain city.

Q: If you saw that sign (the one above lane 1) and you didn't have a tag would go through that lane?

A: Majority of group answers No.

A: But if you look at the other two it should tell you not to go in that lane.

Q: What about lane 2 what does that sign mean?

A: Have exact change or have the tag.

Q: Does every one else think the same?

A: Many respond with a yes.

Q: What about lane three what does that mean?

A: Get a receipt. Get change. Use tag.

A: 3 thinks you could buy a tag.

Q: Can you think of any other ways you could pay a toll?

A: Charge it. Debit Card. Write a check.

Q: What other information do you think should be displayed at a toll plaza area?

A: A description of the T if they are not from that area or toll roads they would need a brief description of what the T means.

A: Something in reference to a prepaid tag or already validated tag or something to that effect. It should say this lane is only available to people who have paid by the month already or something like that.

A: The words “only tag” on the sign.

A: When I looked at it I thought the T meant toll and TxTag. Don’t know what TxTag really means.

Q: Where should this info be where you pay?

A: 3 – Info maybe ahead of toll plaza so that they know what lane to be in, what time to change lanes if they have too.

A: Would be alright if it’s visible right before you get there because normally I’ve seen people slow down right before getting to toll depending on the traffic and you want to try and figure out what’s going on. Slow down enough to have time to read the signs.

Q: Would anyone like to see the word “receipt”?

A: 3- Would like to see the word receipt.

A: I automatically thought that I didn’t need exact change when I saw the sign – the picture of the man is enough.

Q: Would you like to see something that says “violation 100 dollar fine if you don’t pay toll”?

A: 5 -Oh yes that should be before you get there.

A: The people in the left lane aren’t going to slow down. So if there is too much there to read they aren’t going to be able to get it all.

A: 7 – Don’t want too much information at the plaza.

### **Slide 5**

The next slide was shown to signify that there is an attendant in the toll booth and that only cash is accepted, not tags.

Q: What do you think of this sign?

A: Cash only (this was said by several)

A: 5-Can make change

A: Won’t take a credit card, debit card, or check.

Q: if you had a tag could you still use this lane?

A: No’s all around.

A: 7-Assume could not toss in but would have to hand in money.

Q: Does everyone else think that – that there is someone there?

A: Several respond Yes.

### **Slide 6**

The following slide was shown to indicate a mixed-payment lane, cash or tag.

Q: What about this sign what does it mean?

A: You have to have a tag.

A: 1 – cash or tag.

A: 7 – buy a tag.

Q: How many people think it means tag only?



A: 3

A: If it's tag only why would the guy be in there?

Q: How many people think they are selling tags in there?

A: 7

Q: And what about paying cash and use the tag?

A: 7- Well you would have to have cash to buy the tag or whatever you pay with. Naturally you're handing money in but your getting a receipt.

A: 4- The logo overrides the other part of the sign. My eyes only caught the red of the logo and not the little man in the toll booth.

### **Slide 7**

The following slide was shown to talk about Open Road Tolling which will lead into the drawings on the wall concerning the cash pullout lanes.

Q: What do you think is happening over here behind this wall?

A: They are going the other direction.

A: Those are for more than two or whatever people.

A: HOV lane

A: 5 – its an on ramp entering toll

A: 7 – sensors reading tag with car going at full speed. Someone else agrees.

### **Slide 8**

The following slide was shown to identify the issue of interoperability and advance signing.

Q: What do you think of that word “prepaid patrons”?

A: 3 – already paid

A: 10 –already have paid tag

Q: What do you think of the word “patrons”?

A: 8 – high dollar word – members only word

A: 9- might throw people off – might not be an English speaker

A: Would only need the word TX tag and then you wouldn't need so much writing

A: 7 – only have tx tag only and 3 left lanes

A: 4 – leave out the word patrons and have only prepaid

Q: What about the word “prepaid”?

A: you should know if you had one (all around consensus)

A: 6 – knew if you had a TXtag

A: If it just had the TXtag logo and you didn't know what it meant you would not go in that lane

A: 10 – Does the TXtag go on the license plate or on the window?

Q: Where do you think it goes?

A: 1 – hang from the mirror

A: 7 – where scanner can pick it up.

A: It would have to be stationary if it was hanging from the mirror it wouldn't work.

Q: What made you think license plate?

A: 10 – Small little tag, on the news they were talking about this stuff people were spraying on their license plate and then the scanner couldn't pick them up.

A: so if you have this tag on your window and you see a sign with the same picture on it you will know what lane to be in. Back to kindergarten a square goes with a square.

Q: If you don't have one and never heard of one. If you are driving to Kansas and there is something called Kpass what would you think?

A: Well my license plate says Texas and I know I'm from Texas and I haven't ever heard of Kpass so I know I can't go in there.

### **Slides 9-11**

The following slides explained how the road would be configured for tolling where one would have to pull out to pay cash. i.e. People with tags would stay in their lanes and people paying cash would go to toll booth area. Two versions of these signs are discussed.

Q: Do you think this sign adequately conveys that if you are going to pay cash that there is going to be a pullout up ahead?

A: 1 & 5 – cash only keep right

A: Is that the only choice you can't charge this or debit this?

A: 3 It makes sense it doesn't make you think that you are going to pull out but it does let you know that you need to be in the right lane and then after you get there you would notice that you are pulling out.

A: 8- can Tx Tag be in the right lane – have exit toll plaza or exit one mile

A: I'm pretty sure you can be in the right lane with a Txtag.

A: Why wouldn't you be able to? You have already paid so if you were accidentally in that lane it shouldn't be a problem.

A: 1 – would have to wait

Q: if it said exit one mile would you think "I don't want to get off the road"?

A: 3- use detour 1 mile instead

A: we do it all the time if I want to get in that lane I do it even if it means separate, merge off, exit.

A: 6 – if green sign is above the lane just follow the signs if the sign is beside the road it is a lot more confusing than if it was above the road

A: 1 – would it be misleading if it said cash toll pay right?

### **Slide 12**

This slide would be located just before the pull-out lane starts

Q: On slide 12 which version conveys the message better?

A: right side

A: 10 – gives the picture so you can see it

A: 7 – A

A: 8 – like arrows

A: B1 – would go with the one on the left

Q: How many like A and how many like b?

A: A got 4 votes and B got 6

A: 9 – when I first looked at B I had to study it to make sure the road was not breaking off. Looks strange to me the pay toll needs to have a toll building instead.

Q: What do you think it means that there are different color signs on these two versions?

A: 10 – the green stands out more – the one where you have to pay cash

A: 3 – green makes me think of money.

A: 4 – leave the green and remove the graphic

A:6 – green would confuse

A:8- all guide signs green

Q: is there anything else you would add?

A: a dollar sign would do it

A: no tag

A: somewhere it has to say cash only

A: a dollar sign might make people think they could charge it

A: say cash only keep right lane

A: no tag would make me think that I could use a charge card

Q: Anything else?

A: 8- speed limit sign

A: 1-amount

### **Slide 13**

Q: On this slide which version would you rather?

A: 1,7 – doesn't understand the axle info

A: 9,10 - arrows indicate # lanes and is very straight forward

Q: Should it be green?

A: No because you have the yellow across the bottom so it points it out

A: 9 – consistent with exit sign but it doesn't confuse people

A: 5- sign for each lane

A: all agree tags left others right

A: all agree cost earlier

### **Slide 15**

Q: What do you think is happening here?

A: 10 – tag only – get on with a tag

A: 7 – toll or regular

A: 5 – toll means pay any way

A: 6 – frontage road free

A: tag only if you don't stay on frontage road

A: 6 – looks free on the right and blue/toll means toll road – looks like if it's a toll road it will be blue

A: 1 – to get on toll road need tag

A: if I stay in right lane still in toll road since it says toll road under 612

A: misleading

A: if you don't have a tag you have to stay on frontage road

A: 5 – remove the word “toll” from the 612 sign

A: When I first looked at that I saw was 612 and Texas tag only I didn't see the stuff in the middle

A: 8 – north only

A: 2 – move the only under the toll

A: if it doesn't say toll and only says tx tag I might not know that I was going to pay

A: 10- take the toll and move it below Tx tag and over only

A: 6 – most roads are free it makes sense to only put toll if you are going to pay

A: if I'm not from Texas and it doesn't say toll I would not know that TxTag meant that I was going to have to pay

A: put toll booth then you get on if you are going to pay cash

A: Is it toll both only, you go north only, or only tx tag??

A: 9 – too much information in one spot

A: 3 - first thing that I noticed is the Thtag part

### Slide 18

Q: Do you think that the frontage road and the road on the left go to the same places?

A: yes they both say 612

A: One problem is that if you are in the far lane and you see that sign you will shot across and cause a wreck

A: 9- this one says loop does the other one say loop?

A: Will 612 turn into old 612?

A: which 612 do I take?

A: I think that is a question of knowing where you are going.

Q: what other kinds of info should be at an entrance like this?

A: 6 - I want to know where the cash people pay. Are you just not a lot to drive on the road? Do you have to take the poor road just because you don't have a tag?

A: 7 – maybe on a separate sign it should say no cash

A: it should say no cash

A: there is so much stuff on that one pole

Q: let's look at another variation – added an arrow

A: 8 - what does frontage road mean to all?

A: I want to get on the highway I want to go fast

A: I am not used to toll roads I see frontage road only am going huh?

A: 7-remain on the frontage road stay on the frontage road. Take frontage road off and leave the arrow.

A: no tag stay here

A: isn't it going to turn into loop 610? Its not going to stay a frontage road forever.

A: Frontage road makes me think the slow lane and not the highway and I'm going to move into the lane going to the highway and then I'm going to realize that I don't have a thtag and I'm in trouble.

Q: Does this arrow make you think that up ahead I'm going to have a ramp that takes me to loop 612?

A: Yes it does.

A:6- to me the one on the right makes me think that I'm already on 612 an arrow sounds like when your in a small town and you have to follow the arrows to get back to the highway.

A: 7-it could be either way to me I'm going to get to 612 either I'm on it or its directing me to it. I don't care which.

A: 4- No difference.

Q: which one do you like best?

A: less wording.

A: I like the arrows. They help me.

A: 3-no arrow, no frontage.

## Slide 20

Q: what about this version (both routes on same post)?

A: oh I like this

A: that makes sense.

A: that's much better.

A: doesn't say tntag on it. (said by many different people)

A: no tntag logo

A: what if you don't have a tag and you think you can pay cash?

A: if you're in that right lane.

A: everybody thinks it's just a toll and it doesn't tell you how to pay.

Q: let's say you live five miles down that road and you were giving directions to your house. How would you call those roads?

A: stay in the right hand lane

A: follow the sign that says loop to 612 north.

A:8- you've got loop above and toll below it would it be more confusing if you had them both read like loop 612 and toll 612

A: 1-too much

A:3- no flag and add tntag logo.

A: put tntag only

Q: so here are all 4 we've been discussing which one do you like better?

A: i like version 4

A: I like version 4 too

A: version 4

A: No one wanted #1 or #2, one person like #3 and 9 people liked #4

A: toll means that you can pay anyway

A: 8-incorporate tx tag into toll #s

A: 5 - that tx flag and that toll should be tntag all the way toll to means always mean you can pay some kind of way unless they tell you

A: if you make all your toll signs blue you could catch on that if 612's sign is blue that means I'm going to be paying some toll

A: have a sign that says cash or tntag

A: if they use blue its tntag only and if they use green its tntag plus cash

A: it depends on how many things you have to color code.

A: you need four

A: put both of them together (referring to 3 & 4)

A: 7 – 612 over logo  
A: 3 - remove north and toll  
A: leave up the toll leave up the north and in black ink put up 612  
A: we know we are on 612  
A: 6- is there going to be something before these signs warning that the toll is txtag only? This is the first indication that you need a tag.  
A: I think I would think I could pay cash.  
A: that's way on version 4 I like the idea of taking the flag and the toll out and putting a little txtag sign.

### **Slides 21 & 22**

The following slides showed various versions for the tolled main lane sign.

Q: what about this signs?

A: when I drive I only look at the signs that are at my eye level so I would see the 612 and not even look at the stuff on the top

A: there's nothing that says txtag only it says toll

A: people need something so they can decide before this

A: the tallness that gets me

Q: what if it was side by side?

A: ya that would be better.

A: decide before ramp

A: keep this but make it more compact – version 4

A: 6 – Complex further back

A: redesign 612 toll/txtag

### **Slide 23**

The following slide shows a sign that might appear before a tolling area on a road.

Q: What do you think of this system?

A: This would have to be a long sign

A: there is no way you can tell me all that

A: I'm not going to stop and read the sign.

Q: What do you think of the sign?

A: that makes sense

A: where is this sign going to go

A: so with a txtag you can drive all you want

A: yes it works like a debit card

A: 1 – not too much on one sign its pretty much self explanatory

A: 3 – in my opinion it makes me think that I'm going to be stop and paying unless of course when I got my txtag they explained it too me

A: you should no if you don't have a tag or not

Q: would you be fishing in your purse for a dollar?

A: most: need to get money out – it doesn't say no cash.

A: toll means there is a way to pay

A: ya I didn't know

- A: I think it is implied that if you don't have a tag you pay a dollar
- A: I like the pictures
- Q: if you were towing your camping trailer would you expect to pay the same as the car?
- A: yes, because you're still not driving an eighteen wheeler
- Q: So if we only had that first line do you think those people in the bigger vehicles would know they had to pay more?
- A: no
- A: no
- A: and the car could indicate your driving
- A: 6- all should know how much to pay
- A: what if you are pulling a camper?
- A: 9 -I see this and think there is going to be a booth.

#### **Slide 24**

The following slide shows a sign that you may see on a freeway one mile before there's a ramp that would connect to ABC tollway.

- Q: Would you expect that you would get a bill in the mail if you saw this and didn't have a tag?
- A: Probably, if you already knew.
- A: in this hometown does it say tag only?
- A: I would be scared to get on the road.
- Q: Do we need this version? (version 2 )
- A: the top one I would think no cash
- Q: So maybe we don't need the extra words?
- A: 2, 7, 10, 1, 3- No question that no cash
- A: it's a little bit more clear.
- A: on version 1 most of agree that you can't pay cash but you do get some of those people that just don't get it.
- Q: going back to previous slide (slide 23) how can we explain that we have a video system and you will get a bill if you don't have a txtag?
- A: put a camera icon on the upper left hand corner
- A: you can always put "will be billed"
- A: or just put "billed"
- A: or usually when you read "billed" you think mailed
- A: the camera so they know they are being watched
- A: "bill mailed"
- A: What about the cars that don't have a front license plate?
- A: it catches the back license plate
- A: what about putting an email envelope icon on it?
- A: some people might not know what that means
- A: a camera and an envelope would not make sense to me
- A: 1 – Tx tag or Fee mailed on a sign before
- A: no toll booth
- A: 1 – or bill mailed one of the two

A: fee mailed makes me think that you have to send in the money not that you are going to get a bill

Q: What about pay by plate?

A: everyone laughed at that

A: 8 – need to educate the public – like on television

### **Slide 26**

This slide shows an entrance to a HOT lane. There would be several signs advising of the upcoming entrance starting a mile back. The black part of the sign would be an electronic changeable message sign section where the current price could be shown.

Q: Let's talk about the signs for that today.

A: Free 2 dollars

A: does it say Free 2 dollars

A: free 2 dollars oh my gosh!

A: 8 - if it's 3+ your free all others 2 dollars

A: that took everybody awhile

A: 7 – free and \$2.00 should be in separate boxes

A: there is too much going on

A: the box with Free and 2 dollars catches your eye

A: 6- could you have the whole thing electronic?

Q: I want to talk about the individual parts of this?

A: it means three passenger plus

A: its eztag only

A: no you can't pay cash

A: its ez tag only

A: 1 – too busy

Q: To voss road means?

A: "too Voss road"

A: I think that toll road goes all the way from Katy to Voss

A: exit to Voss road

Q: does it end at Voss?

A: no that's just where you get off

A: no I think that's where it ends

A: to get to Voss road it will cost you two dollars and if you go past Voss you will have to pay another fee

Q: What's the name of this road?

A: 5- probably I 10

A: wouldn't we already know that?

A: it doesn't just have one name?

Q: Is this road on the right a toll road?

A: It doesn't look like it

A: I have not a clue



**Slide 27**

This slide shows another version where, instead of EZ TAG ONLY, the sign says TxTAG ONLY.

Q: Do you think that we should have the txtag to work everywhere? If you had a txtag would you think it could work?

A: no

A: most people won't read their papers when they get them

A: make txtag everyway to make it simpler

Q: do you think the tags should have the local flavor like Austin tag or no?

A: one tag only

A: I like the one tag because when you go somewhere else then I'm like I don't have that!

A: no local flavor

**Slide 28**

Q: What's the name of the road on the right?

A: 5- I think its I 10

A: it says 1

A: it only says 1

A: is it like that 612 from before?

Q: do you think that this lane does a better job of conveying that this lane I want toll follow interstate 1 toll but that they are next to each other and they go to the same place.

A: yes because somewhere on the right hand sign there is going to be a sign that says Voss road.

A: Why HOV and then you said HOT?

A: because its both high occupancy and toll.

**Slide 29**

Staying with the idea that there could be a road that has a parallel toll route, this slide will talk about how you would choose whether or not to use that toll route.

Q: How are you going to decide on a daily basis whether or not to pay?

A: how much traffic and how much time I have

A: if you are sailing along but if you are sitting there

Q: would you like to know the price of the toll sooner than right here?

A: yes

A: you could make a better decision

Q: would you like to know what's after Voss road?

A: no

A: no that's too information

Q: What if Voss road is five miles down the road and where you want to go is actually four miles would you want to go down pass it and then come back?

A: that depends on how heavy the traffic is

A: if I have a turn around

A: that's a good question

- Q: Would you like to know the travel time to the next exit?  
A: yes that would be nice  
A: I wish Austin would do that  
A: you wouldn't need it on the toll way just on the free part

**Slide 30**

- Q: Here is a sign that is showing both routes. What do you think of this?  
A: 8 – like both  
A: 10- could be a wreck on toll.  
Q: Would you like to see these signs before or after the prices?  
A: 3 - price first so that I know if I'm going to be paying  
A: 9 – I think I would want to know the price first  
A: 6 for price first and 4 for time first  
A: time is money

**Slide 32**

- Q: I'm showing you a sign that is combining the price and the time. How much does it cost to go to sterling?  
A: that is hard.  
A: I have to do math while I'm driving!  
A: 2.50, 3.50  
A: Instead of minutes have it in miles because people are going to think that it is in miles and try to do the math  
A: to alleviate the calculated all together just put Voss road 3 dollars instead of having them do the calculation while they are driving because that is too much. That is too much going on.  
A: 1 – don't want calculations on road  
A: 7 – not miles – think it is  
A: math while you drive is a very big distraction  
A: 3 – too much at once  
A: especially if you are in a highway  
Q: go back to the video question do you think that applies here?  
A: no way of knowing  
A: either you are going get a bill or a ticket

**454466 – Toll Sign Focus Group # 1**  
**Houston, TX**  
**August 28, 2006**

The following focus group was conducted at the TTI Office in Houston, TX, 11 people showed up.

- 1 lives in Sugarland – drives on toll roads - has EZ tag.
- 2 lives on the North side in Spring. – has EZ tag – Harris and Sam Houston toll Road
- 3 Live near Cypress – uses toll road has EZ tag
- 4 Lives near Bellair and Hwy 6 – Doesn't have EZ tag but uses husband's when out of town.
- 5 Has EZ tag; Lives in the area, uses it frequently
- 6 east side of Houston, don't use beltway, no EZ tag
- 7 lives nearby and use the toll road, has EZ tag
- 8 Lives in the area, use the toll road, has EZ tag
- 9 Lives in the Woodlands, use toll roads once in a while
- 10 Lives in Tomball, no EZ tag, uses toll road often
- 11 Lives in Cypress, uses toll road everyday, EZ tag

**Slide 4**

- Q. Any think that lane 3; they are selling tags.
  - A. all no
- Q. What do you think about the sign and the colors? Compared to what you already see?
  - A. 6 – Lane 1 is too dark
  - 4, 5 – Lane 2 is better than any of them
- Q. These are bigger then they look.
  - A. 9 – First I think that the third one is too busy driving up at 60 mph there is too much to see at once.
- Q. Would you rather see text? Full Service? Any other info that should be on the signs?
  - A. All no
- Q. is there any other way you can pay a toll?
  - A. 3 – voucher, if you don't have any money.
  - 4 – That reminds me I have one in my purse I have to mail back

**Slide 5**

- Q. Here is another type of sign, what do you think it might mean?
  - A. 3 – That guy will give you change if you need it. There is an attendant there.
- Q. Can you pay with a tag there?
  - A. All no
- Q. Does it have a coin hopper?
  - A. All no

### Slide 6

Q. What about this one on slide 6.

All – Cash or tag

Q. Anyone thinks that there is a person selling tags?

A. All no

Q. Here is a wider view of the toll plaza. Do you like these electronic signs better or worse?

A. 11,5,10 – that is too busy

6 – with an electronic sign a bulb can go out and the sign will not look right.

Where with a sign you don't have to worry about that.

Q. Area to the left – Tag symbol at the top – what do you think that area is used for?

A. 8,6 – Express lanes

Q. do these people have to slow down?

A. All no

A. 3 – the people in that left lane are not going to slow down either.

4 – what is the difference between the two T on the far left and that one on the right.

### Slide 7

Q – Imagine a pulled back version of this picture that if you have a tag you don't have to get into this toll plaza.

9 - is there a difference between the two colors

Q – no just a bad slide

Q – What do you think about the lane closed one?

A 6 – its obvious

8 – that is the advantage with an electronic sign versus just a sign. Where with an electronic sign we will know. If its just a sign we won't know if its open or an attendant is there or not.

3 – at least with a sign they don't move those around as much so you get used to going to the same lane all the time. I can see a problem if those were moved every week, would cause confusion.

Q. Does everyone understand open road tolling? Like Westpark you have to have a tag? How many knew that?

A. 9 did

Q- explains about the pull out – pay toll that way if you have a tag you can just go fast through the cameras. Basically punish the non tag holders and make them slow down and pay the toll. Safety issues.

Q. This orange T is for Dallas. You are used to the purple. TX Tag is for all of the TXDOT roads. Your tag will work on this road. In general about the phrase “pre paid patrons”

A. 8 – that is horrible it just should have a sign only left two lanes. Way too many words.

### Slide 8

“Pre paid patrons”

Q. Anybody else

A. 4 – I don't like it. Too many words when you are driving especially if you can't see, too many words.

8 - It may be the fact that we are already used to ours, because when you go down the left three lanes are for EZ tag. It is crisp and to the point.

Q. Do you object to the fact that you're a patron?

A. All yes

3 – I am not paying by choice.

Q. Do you think that there should be some standardization?

A. All yes

8,9 – If you could come up with a unified symbol for both the TX tag and EZ tag that would be good. TX tag would be great because it would be known all over TX.

– They could make it universal

11 – Or electronic tag left three lanes.

### Slide 9-12

The following slides explained how the road would be configured for tolling where one would have to pull off to pay cash. The two versions are discussed

Version A.

Q. What do you think about this sign

A. 5,4 – self explanatory, liked to the point

Q. does it prepare you for the road ahead?

A. 11 – Yes

9 – I know that if I have to pay cash I have to get in the right lane stay there and pay and have more instructions ahead

Q. Why do you think the sign has a white background?

A. 8 – its informational

Q. What so you think of the phrase Toll Plaza?

A. 3 – to me it tells me it's ahead.

Q. is there another phrase that you could use?

A. 8 – Toll Booth

5 – Plaza is just a fancy spin on it I don't think people really care.

6,9 – Toll Point – clear and to the point

3 – Toll collections sound good

Q. What other info would you want on this sign?

A. All no – simple so far

Q. would you like to know the price?

A. 4- not yet

7 – I'm on the toll road it really doesn't matter

Q. A lot of you have EZ tag, but think of the snow birds that we get every year. Do you think Cash toll is telling them you don't have a tag you got to get off?

A. 9- I think at this point it really wouldn't matter if I needed to get off or not I would be worried about what options I would have.

7 – Throwing a must in there would be good – cash toll must keep right – so they know they have to

Q. next sign – what one do you like better?

- A. all liked the green one – associate green with money  
 3 – a - know if I have to pay cash I have to move over to the right – B – if you look at it for a while you know what it means, if I miss the first one I can double back around. People get on the highway the wrong direction. It'd probably cost a lot more to make.
- Q. This is pay toll cash and the other is cash toll  
 A. 6- Cash toll is better
- Q. why  
 A. 6 – it sounds illiterate – the sign – pay toll cash does not flow well with the brain.  
 8 – If you have cash toll then you have to think if I go this way I'm paying cash.
- Q. Why did you like b better?  
 A. 2 – Because people with the cash must exit
- Q. Several people like the different colors on slide 11 would you like the panel to be green?  
 A. 9 – that would be too busy, I like the white and black  
 1 – I think it would be easier to read, that is the first sign you see. It needs to be simple then the next sign you see change the colors
- Q. Is there any other info you need  
 A. 9 – Amount  
 1,7,8,6 – yeah the amount would be nice
- Q. what about speed limit?  
 A. 3 – after you pay
- Q. would you like to know what kind of payments  
 A. 3 – it says cash  
 11 – Speed is go with the flow or get run over

### Slide 13

- Q. what do you think about the last set of signs over the lanes  
 A. 8 – right at the exit would be a good place to have that info. Just because some people think a little slower, they are still unsure at this point that tells you what lane to be in – 5 & 6 agree.
- Q. What do you think about the yellow toll plaza part?  
 A. 6,7,5 like it  
 5 – like you said other people don't pay attention till the last second. If you look up with the arrow pointing to the right it is easier to see what you are doing.  
 1 – looks like the other exit signs
- Q. Do you think that it should say non tag holder should exit?  
 A. 6 – just should say cash toll. It is still comprehensive. Just sounds like cash toll sounds better  
 7 – as long as cash is bigger than everything else. It's the main keyword  
 9 – I think like if my grandmother came down and drove no matter what she is not getting a tag. She is going to pay cash; she doesn't live here. But for those who drive everyday who would have to get off and on everyday I would get annoyed and just go buy a tag. No matter what the sign said.

**Slide 15 - 28**

Q. this is for people who don't know the difference. That is why we are worried about this sign. Lets talk about a different sign. Let talk about these two frontage road signs. What are they telling you?

A. all – tag members only

Q. How many people think tag only?

A. Everybody

Q. So does the frontage road go to the same place?

A. All yes

Q. What would you expect if you didn't have a tag?

A. lots of lights; lots of people turning in and out.

Q. Have you ever seen or heard of a road working like this?

A. If its tag only?

Q. Both tag only and the frontage road parallel.

A. 8 – we have it like that with Beltway 8 which is the frontage road and Sam Houston which is the toll road.

Q. do you think people understand that?

A. 8 - When I moved here 5 years ago I though the beltway was the toll road.

Now that I have been here I know that the beltway is the frontage road.

7 – especially up north then its not a toll road anymore

Q – you guys are very savvy about toll roads down here.

6 – half of us angry about the toll roads we know a lot about them.

9 – Doesn't Hardy have a frontage; at least part of the way?

Not much but part of the way

Q. do you think that most people think that know at no cash is accepted.

A. all yes

6 – I feel like I would want a sign further back that would tell me that.

9 – it does say toll

Q. So does toll mean cash?

A. 2 -TX tag only.

9 – I can see where it would be confusing with TX tag and not EZ tag. I can see it going either way.

10 – I can see where toll means you can pay cash but then it does say tx tag only.

It may be confusing for some.

Q. do you think that – I'm going to show you a lot of different signs – what other information should be on this sign before they get on this toll road.

A. 3 – the word only should be larger.

8 – I agree with him and take off the toll that says TX tag only that says enough.

4 – that is what I was thinking too.

Q. You don't need the word toll on there, I think I have a version like that.

A. 9 – what about when you are driving and they put out those white strips to

warn you. What about having those on the ramp to warn you to pay attention.

Q What about writing 610 on the road

A. 8 – that's nice.

Q. or toll you know what I'm talking about?

A. all yes

- Q. Let's look at another different version. Do you think we need an arrow?  
 A. all no
- Q. what if we just put the arrow?  
 A. all no
- Q. Why not?  
 A. 8 – I like the frontage road because it makes clarification on where you are going.
- Q. if you saw version 3 would you think that there is a ramp for loop 612?  
 A. all yes
- Q now we put them side by side – what do you think?  
 A. 9 – it provides a warning  
 8 – needs to be further back.  
 1 – I still like the frontage road better than the arrow only  
 5 – I would put tag only or something or they won't know otherwise.
- Q. So if you saw this would you think you could pay cash?  
 A. all yes
- Q. Now the only change is a very little change.  
 A. 8 – I like the line  
 6 – Don't like the line  
 3 – I think that when you have the frontage road only if you weren't from the area you might wonder “why would I want to pay when I can take the free loop”
- Q. because you think there is a freeway still coming?  
 A. 3 – yeah another access point coming.
- Q. now it is getting pretty busy (V6)  
 A. 6 – take toll off and put TX tag only on the bottom so it is right there in your face.
- Q. Now we made toll bigger.  
 A. All no seemed to agree you don't need TX tag and toll
- Q. now they are all lined up do you like between 7 and 8 which do you like  
 A. all liked 7  
 6 – I think it looks more busy but people make the association with the sign
- Q Let look at the sign of the version 2  
 A. All too busy. It is just waiting for it to be run over.  
 9 – when you are driving at 50 mph you will never get to the bottom of reading it before you have to enter the toll road.
- Q. Does anyone see the difference between 2 & 3  
 A. All blue, arrow
- Q. does that help?  
 A. 8 – it's so busy you're not going to see it.
- Q. now we put TX tag back in just side by side  
 A. 9 – better than version 2  
 8 – if you took off Toll and shrunk TX tag it would be alright.
- Q. Do you find yourself focusing on TX tag immediately?  
 8 – you are also going to see the first thing that catches you eye and TX tag does the color will always catch your eye
- Q. Now we are going to put it overhead



- 9 – if you put it overhead then you don't need the little one.
- Q. that was one of my questions; here is a closer one of that. So you are saying we don't need this.
- A. Yeah,
- Q. so do you think it is necessary for the larger structure overhead.
- A. All no
- 11 – if it were more lanes or a busier part of the road then maybe but your looking at one lane going in
- Q what do you think of this banner going across the top?
- A. 11 –didn't like
- 6 – I like it because of the large only
- 4,9,8 - liked it because it was clear. And different from the rest.
- Q. I don't think we got a ground flow of support for the idea of this big overhead sign; did anyone like it?
- A. 9 – if I wasn't from this area it would be very clear
- 5 – I'm looking at it from that standpoint and it seems pretty clear to me also.

### Slide 23

- Q. If you saw this sign what kind of configuration would be coming up?
- A. 5 – that's a lot to read in a short amount of time.
- 3 – You're going to have a TX tag and a cash lane.
- 6 – I would think if they already have a TX tag they don't need to know how much they are going to pay.
- 11,1 – agrees
- 2 – That a good point
- 8 – Take away the no tag, just leave cash, that will tell you what you are paying
- Q. Do you think we need the symbols on the left?
- A. All yes
- 4 - the first thing I would do is find my car.
- 3 – it's easier than the axle thing. I would leave the TX tag price up there because even though I wouldn't use it I would think I'm getting a better deal than paying cash.
- Q Do you think it would encourage more people to get a tag.
- A. 3 – I would think so
- Q. How many agree that; that's a lot on a sign?
- A. All yes
- Q the word no tag mean what? Does it mean that I can pay cash up ahead.
- A. All yes
- 3 – If you change no tag to can then that would mean that you would have pay cash then you don't have a tag
- Q. Would you like to see a sign like this before you get on a toll road?
- A. All yes
- 6 – then people would see if they didn't get a TX tag then they could be saving money. Where as with EZ tag has changed so much over the years, that you were saving money and paying a monthly fee. At another point you paying and still paying monthly fee.

Q. What this is trying to tell you is that if you don't have a tag then there is no toll booth, but they will get a picture of your car and send you a bill in the mail.

A. 9 – I don't know if I would put not tag, I think I would put violation charge.

And put it at the booth before you get on.

Q. Around here there is a violation – this is not a violation – it's another way to pay – So what we are saying is this is another form of payment.

A. 11 – Auto Bill

Q. What about a camera picture?

A. 10- That would be better than no tag. That no tag makes me think I can pay later.

Q. Any body else have any ideas?

A. Big Brother

Q. Pay by plate

A. 4 – liked

Q. Video Tolling

A. all no

#### **Slide 24**

Q. Lets say you see this sign and it say HP toll TX tag only.

**454466 – Toll Sign Focus Group # 2**  
**Houston, TX**  
**August 29, 2006**

The following focus group was conducted at the TTI Office in Houston, TX, 6 people showed up.

- 1 –Lives in Montgomery – Does use toll - EZ tag
- 2 –Lives in Northwest Houston – Uses toll - no EZ tag
- 3 –Lives near – uses toll - Has company EZ tag
- 4 –Lives in Cypress near 290 – uses toll - no EZ tag
- 5 –Live in Cypress – no tolls and no EZ tag
- 6 –Live in Cypress – uses toll – no EZ tag

**Slide 4**

Q. What does lane #1 mean?

A. ez tag or token

Q. what do you think TX tag is

A. 2 - same as TX tag

Q. if you had quarters could you be here

A. all no

Q. How about lane 2

A. Both cash and tag

Q. How about lane 3

A. a change lane or EZ tag lane

Q. did you think anyone is selling tags

A. all no

Q. do you think there is another way to pay the toll?

A. 3 – just in using the toll I would assume not.

2 – I think you can get a bill later for being on the toll w/o a tag.

5 – Maybe TX tag could have a debit card you could use every time you use it.

Q. Is there any other info that should be given?

A. 6 – an address of where you could get an EZ tag

1 – I want less info as I speed up to the plaza

Q. What do you think of the signs?

A. 3, 1 – I had to know what the fist 2 were before I know what the T meant. So I don't know if I will have the time to think that fast when I get into the plaza area.

2 – the T is confusing

**Slide 5**

Q. What do you think this means?

A. – 6 – exact change

5 full service

Q. can you pay with a tag and do you think most people understand this symbol?

A. 1 – NO

3 – looks like the movie theater guy

**Slide 6**

Q. What about this one?

A. Most said that you had to have both

Q. Is this someone selling tags?

A. Most were confused

Q. any comments on the color

A. red and black not good

**Slide 7**

The slide was shown to talk about Open Road Tolling which will lead into the drawings on the wall concerning the cash pullout lanes.

Q. What do you think is happening over behind the wall?

A. 3 - They have ez tag

4,5, – HOV lane

1,6 – city workers or construction workers

2 – merge lane – off of a ramp

Q. Do you think that each city should have its own symbol for the toll road or should there be just one for the whole state

A. All – it would be easier to have just one.

**Slide 8**

The slide was shown to identify the issue of interoperability and advance signing.

Q. what about the word “pre paid patrons”

A. most didn’t like

Q. What about patrons?

A. 6 , 1 don’t mind it don’t even know what patrons is

**Slide 9-11**

The slide explained how the road would be configured for tolling where one would have to pull out to pay cash i.e. People with tags would stay in their lanes and people paying cash would go to the toll booth area. Two versions of these signs are discussed.

Q. Do you think that the sign adequately conveys that if you are going to pay cash that there is going to be a pullout up ahead?

A. 2 – I went to Kansas and they have the same system and it was confusing. This looks like you have to pay regardless. I think we many not be used to seeing it.

1,4 – it doesn’t say that but if you don’t have a tag then you need to get out.

3 – I like the sign with the arrow that tells you what lane to be in.

Q. Do you think that people would be exiting when they really don’t want to get off?

A. Most thought that

5 – Cash toll should be changed to full service.

Q. Does it mean anything to you that it is white.

- A. all no
- Q. Should it be another color?
  - A. all no
- Q. Toll Plaza, what do you expect to see?
  - A. 1 - Toll booth
- Q. Is there another word besides Plaza?
  - A. Station
  - 6- Plaza means shopping center
- Q. Any other phrase to use if you don't have a tag
  - A. Change toll or money toll or coin toll
- Q. What about no tag / tag
  - A. either was fine

**Slide 12-13**

- Q. what one do you like better
  - A. All version B
- Q. Why?
  - A. 1 – has a diagram, get off and pay, very clear
  - 6 – tells you that you are in the right lane.
- Q. Do you think that the right side of the sign (arrow) is clear or do we need the diagram?
  - A. all liked the diagram
- Q. Pay – Do we need to use on both signs
  - A. Most said no.
- Q. What about the colors
  - A. All liked green
- Q. Would you like to see version A back
  - A. Most agreed
  - 1- I like that it tells you how far the plaza is.
- Q. Is there something else we can put on this sign that tells you there is a plaza
  - A. all wanted to keep the green diagram on the sign
- Q. Between Version A & B would we need the second set
  - A. all agreed.
- Q. What about tolling zone
  - A. all no
- Q. What about the yellow banner? Where do you see this?
  - A. Some didn't know
- Q. Do you think if you have a tag you don't need to go to the toll plaza?
  - A. all yes
- Q. what if you don't have a tag
  - A. all said yes
- Q. if we put exit only are you getting off?
  - A. 1 – Yes I would.
  - 6 – If you were used to it.
- Q. would you rather see a sign repeated
  - A. all yes
- Q. Do you think between the two do you need the toll rate

- A. 1 – yes and they should be sooner
- 2 - I agree
- Most agreed that you should know ahead of time.
- Q. if you had a tag do you think you would have to pay those prices.
- A. If you read the info that come with EZ tag then you would know.

**Slide 15-28**

The slides are shown from the perspective of driving along a frontage road.

- Q. What do you think is happening?
- A. Most said that it is confusing.
- 3 – reminds me of another toll way
- Q. have you seen a road like this?
- A. most said no
- Q. Do you think both the feeder and the main lane go to the same place?
- A. Didn't know may go to a different place
- Q. If you had cash could you get on?
- A. all no
- Q. any other info you would like to see?
- A. all no
- 5 – this is too confusing
- 1 – all should have the same wording
- Q - explains the difference between the two signs and they both goes the same place. If you want to go on the fast lane you have to pay the toll.
- A. 1 – if you go on the toll you have to pay cash or have a tag?
- Q. Yes
- A 1 – If I was an out of townner I would be mad that I couldn't get on this road because I don't have a tag. I think it should be cash and TX tag.
- 3 – I agree
- Q. Here is another version of this sign now we added an arrow?
- A. 3 – not necessary
- Q. do we need the frontage road only
- A. All yes
- Q. in version 3 do you think there is an entrance somewhere else
- A. all yes
- Q Version 4,5,6,7, 8
- A. Most liked this one better
- Q. the only difference in these TX Tag does it help
- A. all yes
- 1 – they need to know that they can't have cash to get on.
- 5 – Right when they get to the split there will be more accidents
- 1 – if there was an 18 wheeler next to you in the other lane you would never see that sign.
- Q. Toll is bigger now
- A. 5 – is better and not going to the flag
- 6 – trying to read the sign takes too long
- 1 – the sign is too busy

- Q. Here are all of them together.  
 A. Most thought 7 was better than 8 do need to be consistent. The TX flag would get the flag and tag confused. The toll symbol should be the flag. Signs needed to say frontage road.
- Q. Let talk about the sign with the big TX tag would you like to see the flag gone?  
 A. No one liked version 2  
 2 – I think of rain and swerving
- Q. here is 2&3 what's the difference?  
 A. none of them liked it
- Q In version 4 do you like the side by side and arrow?  
 A. Most said that they like the side by side better than up and down, need the tx tag, signs need to be smaller.  
 A. 4 - I like 612 side by side so you know what your getting into.
- Q. what about overhead or do we need one on the ground  
 A. Most liked the ground
- Q. Do you like overhead  
 A. 2 – yes because you can see it further back  
 3 - if you miss the one on the right you can look up.  
 1 – I think if both are over the entrance I think you could stay on the loop
- Q. would you like to see the arrows all across the lanes  
 A. 3,6 – I like the arrows even at the airport so you know your in the right one.
- Previous slides were lost in tape.

### **Slide 23**

- Q. What if you saw this before a tolling road area.  
 A. 1 – I think if you have a tag you already know how much your going to spend.  
 2 – When I look at it I think I have to pay the tx tag part and the no tag part  
 3 – I see advertisement of you had the tag
- Q. what type of lane configuration would you expect to see coming up, toll plaza or pull out?  
 A. 1 – You have no clue
- Q. what does the no tag mean  
 A. 1 – you don't have tx tag
- Q Does it mean cash?  
 A. all yes
- Q. Who all thought there was a place to pay for tolling?  
 A. Most didn't know.
- Q. What about the idea of putting something on the sign to let you know if you don't have a tag you can still use this road.  
 A. Toll assistant
- Q. Pay later, pay by plate, video tolling – what about that?  
 A. Most didn't understand what all of this was.
- Q. On this sign there is no one that will take your money  
 A. most didn't like that
- Q. You have to have a tag or pay later

A. 5 – I have money and if I have to pay later then that would be able to save that money

Q This is for the safety of the people who have to sit in those booths.

When is later

A. Most didn't know but a campaign about it would be good. A lot of info to put on one sign

Q. Maybe have a sign with a photo on it.

A. 6 – Yes

1 – what about theft.

#### **Slide 24**

Q. This might be a sign warning you about the ramp coming up, can you pay cash on this road, are they going to take a picture of you plates and send you a bill

A. Most said no

Q. Version 2 can you pay cash

A. Most said no

Q. Do you think no cash is necessary or is tx tag enough

A. 1 TX tag enough

#### **Slide 25-28**

Q How many people know about HOV lanes?

A. Everybody

Q any one use them

A. most all no

Q. Do you think they save time?

A. 1 – Sometimes they are not a straight shoot. Sometimes they are more out of the way.

Q. Do you think it saves less time?

A. 3 – Yes because we use the 290 HOV on a Fri afternoon and it saves us a lot of time.

Q. Do you think that single occupancy should be able to use the HOV lanes if there was a crash?

A. 1 – Yes

5 – Yes I wanted to use it coming in to this but he didn't want to.

Q. The type of Toll road I want to talk about is HOT lane where a single occupancy car can use the lane for a fee.

A. 4 – That's a great idea but everyone will want to use it so there is not point to the lane

1 – there would have to be a minimal speed limit.

5 – I know in GA their HOV lane is like all together a different lane.

Q. What about this sign?

A. Most replied Free – 2.00 dollars – and would need to separate with a line

3 – I get it now you have to read up and down and not side to side – a little confusing

4 – this one is confusing

1 – I agree



- Q. what road is over here to the right?  
A. Most said I-10
- Q. Why  
A. Because it says Katy Freeway. Most of them really get confused what the names of the roads being called something else.
- Q. What do you think to Voss Rd. means?  
A. 4,5 – Exit or drops you there
- Q. Does the road end at Voss Rd.  
A. 1 – Could  
3 – It ends at Voss Rd. – it doesn't say it goes any where else  
4 – to Voss only
- Q. Can you pay cash on this road?  
A. 1,6 - no  
5 – tag only
- Q. So does the 2.00 mean cash money?  
A. Most said no  
5 – If I wanted to get on by myself I would have to pay the 2.00.  
2 – When you get on it will charge your tag 2.00
- Q. that's true –  
A. 1 – How is the electronic thing is going to know how many people I have in my car.
- Q. If you are in HOV do you think you have to have a tag to get in?  
A. 2 - Yeah  
3 – If I didn't already know I would think I would have to have a tag to get on but if you have 3+ you can get on for free.
- Q. Here is another version with TX tag and question on that?  
A. 3 – TX tag I would have to get used to the words.
- Q. What about the route name? What road is that to the right?  
A. Most said I-1
- Q. Does this do a better job of explaining that this road follows the I-1? Or do you think the name is the problem?  
A. 5 – for the out of town people it does not say HOV it only says 3+.
- Q Do you think if you were explaining this road to someone how would you be able to do it? What is the primary function of this road? Is it a toll or HOV?  
A. 1 - Both  
4,3 – look at it like it's a HOV – to get people to car pool – when you open it up to single defeats the purpose.
- Q. What if you had a tag out by 1960 – What would you want to know before you paid the 2.00?  
A. 3 – where am I getting off – I'm afraid when I get on I don't know where it will put me – I'm afraid I will miss my exit.  
4 – Agrees and will spend 10 more min on the road then to get lost  
2 – the HOV lane now it only one lane and if there is an accident then you don't really save any time – needs a message sign to let you know this
- Q. what other information would you like?  
A. Most said time was most important.

Q. Do you like the CMS Signs

A. Most said they liked knowing how long it took to get to those place and believed that they were accurate

**Slide 30**

Q. Would you like the time on the main lane and toll lane?

A. Both

Q Where would you want this back?

A. 4 – further back so if you want to get out you could.

Q so what is this sign telling you?

A 2,4 – its giving you the time to Voss – Very clear

Q. do you think it ends at Voss?

A. 2 – I think you have to get back on

Q. Would you like to know the price now?

A. it should be under the price but depended on if you were late/early

Q Is that too much to add to sign

A. 1 – works for me

**Slide 32**

Q. How much to get to Sterling?

A. Most guessed at the price, you would have to put the mileage back up.

Q. Is it better to know the time compared to the price?

A. 4 – time and compression.

**454467: Toll Signs -Focus Group**  
**San Angelo, TX September 27, 2006**

The following focus group was conducted in San Angelo at the Concho Valley Council of Governments the following participated.

- 1 San Angelo – Used to live in Dallas, familiar with toll roads – No Tag
- 2 San Angelo – sisters in Dallas & Houston – No tag
- 3 San Angelo – Ex Military – travels a lot with toll roads. – No tag
- 4 San Angelo – Knows nothing about toll roads.
- 5 San Angelo – lived in Dallas – familiar with tolls – no Tag.
- 6 San Angelo – lived in Dallas – had a tag.
- 7 San Angelo – Visited Houston – no tag

**Slide 1**

Q: Shows photo of toll plaza. What do you think that means under lane 1?

- 1 for tag
- 4 Texas; no idea
- 7 toll lane

Q: What about lane 2?

- 6,7 – you need quarters; exact change
- 6 – No attendant

Q: If you had tag could you go through?

- 7,3 – no
- 2 – no, the T sign is red, to me that means stop

Q: If it was the same color could you?

- 2 yeah

Q: Why do you think you could not use a tag there?

- 7 – keeps traffic flowing well, no attendant,

Q: What about lane 3?

- 5 – Change

Q: Which lane would you go to?

- 2 – lane 3; you could also get advice from a person
- 3 – middle one; not sure

Q: Are there other ways to pay?

- Debit card
- 3 – token or punch card or buy one there

Q: Do you think this man is selling tags?

- Depends on how long that transaction takes.
- 6 – if you have no money will they take you name and bill you

Q: What do you think this TX Tag means?

- 6 – not familiar with it.
- 2 – advertising

Q: What do you think in general about the signs?

- 3 – they could be more colorful.
- 2 – I would want a sign before this to tell me what lane to be in.
- 1 – what about an electrical outage, that would be a mess if you had alternative

signage that would help.

### **Slide 2**

Q: This is another slide what would be above a toll plaza; what do you think it means?

3 Cash only

1 you can't write a check

Q: Do you think you can use your tag here?

All no

6 – that would be one of the advantages of having a tag; using any lane that you want.

7 – I think the cash lane would be slower than the tag lane so you would want to use the tag lane.

Q: Do you think most people understand the symbol to mean there is an attendant?

All yes

1 – guy with his hand out that is more for someone who has a language barrier; that could be interrupted as an information booth;

6 – with his hand out he wants to help in some way

Q: Do you think you could go through this lane if you had a tag?

3 – with a TX tag – yes

Q: Do you think you could pay cash in this lane?

5 – You have no way of knowing without it saying so.

1 – I don't know that it is clear.

Q: Do you think this is the TX tag information booth?

All no

### **Slide 7**

Q: What about the far left hand side; with the small wall and the other lanes. Sue goes on to explain about Dallas and having the accounts charged to your credit card. This lane is for the tag holders, why would you choose to go over there?

3 – its faster

1 – are you talking about the two far left walls

Sue – yes – the two left lanes

1 – that would be for an 18 wheeler to pay more for the toll.

2 – I would use it so I don't have to slow down. Looking at all those lines would be confusing so I would just go to the attendant.

Q: Has any one ever driven on a road like this where if you have a tag you never have to slow down? If you want to pay cash you would have to pull over.

2 – How would they enforce that?

### **Slide 8**

Q: Sue goes on to explain that they take pictures of your car. Then you would be sent a violation. Sue wanted to talk about the advanced pre paid signs. Do you think these are good or bad signs??

1 – Yes

5 – little more color to them but self explanatory

7 – the problem I have with too much signage is that when you drive 55mph with

traffic children cell phones you have a lot to process and look very quickly. Why can't there be a sign for the people who don't know what is going on. 95 percent already know who drive the road everyday what about a sign for the 5 percent who don't know.

Q: you would rather have the right two lanes as cash and leave the rest alone. Anybody else?

Q: What about pre paid patrons?? What does that mean?

3 – they are pre paid and they already have that tag.

1 – patrons is ok, but pre pay is better

2 – I'm not offended with patrons but it does seem cold.

6 – Just pre paid only is all you need

5 – the top sign is confusing because some don't know what that symbol means.

Q: Because Houston and Dallas have their own toll road symbol and they have introduced TX tag some say they should just have a T up there

5 – Yeah that is all that is needed

Q: Do you think it should say toll.

5 – I think you should have a T and some with cash toll

6 – if you happen to look down and then up to see pre paid you may get confused and have to pre pay.

4 – you have lost me.

### **Slide 11**

Q: let's pretend we build a new toll road. If you have cash here is where you have to pull off, what do you think of this sign

6 – I like it

1 – I think it needs an arrow for the people who do not read

2 – along with the arrow wouldn't a cash or dollar symbol be helpful

4 – stay to the right and have my money ready

3 – I think I would want a dollar symbol or picture.

Q: What do you think of the word toll plaza?

4 – better toll road than plaza

3 – Toll booth I think plaza would throw it off.

Q: What about if you had a tag and you go underneath this lane what do you think?

5 – needs to be there for the unfamiliar driver

### **Slide 12**

Q: Let's look at these signs that would be a half mile out. What do you think?

5,2 – I like the one on the right, gets your eyes attention.

4 like the one on the right

Q: Do you think part of the sign should be green?

All yes it would look better

7 –you already have toll up there all you need is cash

2 – In place of toll you can put the dollar sign

Q: they test the dollar sign and people think it means cash money bills they think it can be coins, some you have to have coins.

5 – in place of toll couldn't you put 75 cents.

- Q: Would you like to know the amount a mile back  
 All agreed  
 7 – Sure anything that would make it easier.
- Q: For those of you who like version A why?  
 7 – Would make cash green but it is a simple sign.
- Q: Make cash toll green?  
 7 – Yes I'm driving and looking at it at 60mph
- Q: If we put up Version A do you think people will be exiting and not be able to get back on?  
 1 – they may, but if they have to pay a toll they may get off. What I don't like about B is that it says pay cash toll – then pay toll – you have to go here and there – drivers don't like that- make it to where I can understand it I'm not stupid.
- Q: part of why B was to show that it is still connected you just drive thru  
 1 – if your going to do that then do it in the far sign and then when you exit you don't need the next sign.  
 7 – or you could just show you can get off and back on.  
 1,7 we understand we are paying a toll
- Q: Any other info that we need?  
 2,1 – rate  
 6 – speed  
 7 – if its an exit there has to be a place where you have to slow down  
 3 – Wouldn't that already be there?

### Slide 13

- Q: Now in version A – they would be over the lanes – Do we need this sign?  
 3 – too much  
 1 – I would say that is so helpful because you have some people who don't pay attention to what they are doing so I like this.  
 7 – I'm with 3 its too much, you should already be paying attention  
 2 – I'm with 1 sometimes I come up to things and second guess myself so this is pretty clear. I would change the second sign to green to be consistence. The colors don't match.  
 4 – I like a lot of colors something that will catch your eye
- Q: Does anyone recognize the yellow arrow sign?  
 6,2, - I haven't seen one like this.
- Q: Do you think that it dose a good enough job explaining that you don't need to go into the plaza? What if you had a tag?  
 7 – When you get a tag doesn't it tell you what you can and can't do?  
 7,5 – it should be standardize through the whole state of TX so that you wouldn't be confused through out the whole state.  
 2 – the ones who have the tag already know so it will be second nature to them.
- Q: Does this sign do a good enough job to let people know that they have to get off you can't go over here? Is this enough?  
 5 – I don't think you need the toll road sign, you need a green sign.  
 7 – I think 2 has an excellent idea it needs to be a green cash sign.

Q: Do you think the price signs need to be on the ramp? Where do you think they need to be?

1 – you can put cash toll arrow and cars one dollar – big trucks need to pay more to get to the toll booth

2 – why do you use the terminology in axels instead of passenger cars and trucks? No one refers to their cars as axels vehicles.

Q: Does everyone know what 2 axel means?

Car or truck – all

### **Slides 15 & 16**

Q: I'm going to show you two slides that were taken from the perspective of driving along the frontage road.

### **Slide 17**

Q: What do you think is going on here?

2 – if you get on you have to pay

7 – it's a toll road

3 – it's a toll and you have to have an electronic tag

Q: What if you want to go on 612 and not pay

1,5,3 – have to stay on the frontage road but # 5,1,2, say that it is really not clear.

5 – the top part says toll the bottom says tag – where do the people that have to pay cash go. The frontage road they don't always go through.

2 – what is it TX tag or toll only

7 – why is that sign not 300 ft back, I'm not swerving to see it.

1 – that is a very busy sign and not very clear

5 – the only thing clear on that sign is that your going wrong

Q: Okay if you want to go on the loop you must have a tag or pay the toll, but if you don't want to pay and don't have a tag you have to take the frontage road

3 – the toll word needs to be bigger if your going to pay for it

Q: We are going to look at a lot of different version to help convey quickly. Do you think that people are going to understand that the two are going to the same place?

7 – they should, I don't know how much clearer you have to be.

3 – there should be an interstate up there somewhere; you should be able to pick it up.

### **Slide 18**

Q: Let's look at some different signs. What about adding an arrow?

3 – okay

7 – doesn't hurt

Q: Do you thing it is necessary?

1 – I think it would be confusing for someone from out of town because they see the sign with two different directions and an older person would be second guessing themselves. Thinking they were lost or missed it.

Q: Here is a version with only a arrow.

1 - no

2 – I like that one best of all because it is visual, not much information and version 2 - to me too much information – I like version 3

5 – if your going to fast you cant see version 2.

1 – I would like to see the word free or no toll road.

6 - it could say north loop 612 no toll

Q: Do you think version 3 means that there is a ramp to take you to 612?

1 – that is what is say and when it says toll you will get confused.

### Slide 19

Q: Here is a different on

4 – which way do I want to go? You're going to have to make it clearer. You Q: have to say if you go this way you have to pay if you go this way its free.

3 – the arrows are pointing which way you need to go.

7 – why can't you put north on the center of both signs

Q: Would you like to see the word free under 612 toll?

1 – that would make is super clear

2 - then like he said put north centered

Q: Do you think it's confusing to be calling them the same #

3 – yes your going the same direction

6 – yes

Q: Here is version 5 – all we did is take out a line – what do you think?

5 – I like that one better

6 – why does one say loop and the other doesn't

### Version 6

1 – that's a lot to take in

2 – my questions is lets say I want to get on the toll road I can't get on because I don't have TX tag. You should put TX tag only on all the signs.

5 – What is the purpose of the toll road if you can't use it.

2 – Just put TX tag only and leave toll off

1 – I think it would confuse the older driver coming through not knowing what TX tag is. Just make sure it is free.

Q: These are cleaned up –

2 – I say take toll away because if you tell me toll I would think I have the option to pay and go.

6, 1 – You can get rid of the flag – we know we live in Texas

Q: Here are some comparisons; out of all of them which one do you like better?

4, 6 – likes 4

7 - # 7

5 – I don't like the word toll

2 – If I can't use that road then tell me; I like version 4 but I would put TX tag only and not toll.

Q: Do you think it is a good thing to warn people that they are on a frontage road?

4 – I like both

1 – I think # 3 is really clear



## Slide 21

Q: Let see if we can get this any better – Version 2

Nobody likes

5 – what the arrow

3 – too much there

7 – Don't like

### Version 3

5 – Won't notice arrow

7 – now you getting silly

5 – why do you need color; black and white has worked fine for years

### Version 4

6 – how high is this sign and will you be able to see it over a high SUV will you be able to see it if not its useless.

4 – I think you should separate them, one further back, just tell about the toll.

2- I'm a simple man – I would just put 612 TX tag only and the arrow

## New Slide – Green Sign

6 – I like that

5 – you could see that from far off.

Everyone like this sign

2 – I like you put TX only real big

3,4 – real clear sign

6 – you could make 612 bigger if you took out all the extra stuff out

TAPE STOPS – FROM HERE ON BY NOTES ONLY .....

## Cost Slide

5 – Size of car & TX tag & no tag different rates

2 – Why know rates if one tag already – w/o tag why I care

6 – Didn't need to know tag rate again

5 – Advertise to use TX tag cheaper – get a break –

7 – Agrees

2 – put cars in the middle of colors

4 – agrees flip columns

## Car Symbol

4,3, yes like the symbol – need bottom ones

Two rules and symbol say two different things

## # No Tag

3 – no elections

6 – TX tag & Tag word

3 – thinks down road cash will be taken – No Tag = cash money?

6 – over lane if wide

## Slide 23

3,4 – too much

**Pay by mail**

- 5,3,7 – don't like idea or receiving charges
- 6 – Enforcement needed? Send to registered vehicle – not fair
- 4 – don't like – pay toll booth operator
- 2 – do credit or debit cards
- 3 – can't go

**Slide 24**

- 6 – not if TX Tag only
- 3 – bottom little cheesy
- 5 – visitors billed
- 3 – Stolen car problem
- 6 – No signs @ all, seems okay – Line T or Tign
- 2 – Want to know you'll be charges – violated

**Slide 26**

- 7,5,3 – yes – HOV lane – we know this
- 6 – How does HOV work
- 7 – thinks should be able to use HOV w/size others – NO use w/one person.

**Pay toll?**

- 6 – didn't think we need to pay to use
- 4 – have to have money?
- 5 – isn't it already part of the road
- 2 – no, rush should be able to use.

**HOT lanes**

- 3,6 – question – lottery

**Slide 26**

- 2,6 - FREE \$2.00?
- No knowledge of Katy toll way

**Slide 28**

- Q: Road to right?
- 3 – exit left
- 2 – to right – Hwy 1
- 7 – too much info

**# 28 –**

- 3 – route 1 stay to the right
- 3,4 – hard to get off in the middle
  - #1 too small
- 7 – confused stay to the right

5 – Free \$2.00  
Everyone stays to the right

**Slide 29**

Q: What does that mean? 3+  
5 – confusing

**Slide 30**

Q: Time Difference  
7 – Be 7 min. route  
6 – Change?  
1 – visitors – 5 min not worth it  
6 – what's up with different types of signs  
2 – want to know before the time

**Slide 32**

Q: Trying to combine the 2 slides  
3 – TX tag local only  
2 – comfortable or not? Open or not



**454467 : Toll Signs Focus Group 2**  
**San Angelo, TX September 27, 2006**

The following focus group was conducted in San Angelo at the Concho Valley Council of Governments the following participated.

- 1 – San Angelo – On Occasion – No Tag
- 2 – San Angelo – used to live in Kansas – No Tag
- 3 – San Angelo – No Tag
- 4 – San Angelo – Dallas toll – No Tag
- 5 – San Angelo – Visit Dallas – No Tag
- 6 – San Angelo – No Tag
- 7 – San Angelo – some experience with tolls for the Military
- 8 – San Angelo – not a lot of experience with tolls

**Slide 4**

Q: What does lane 1 mean?

- 4 – You have a tag
- 5 – Toll
- 3 – If you have a tag, that's the lane you need to be in.

Q: What about lane 2

- 2,3 – have to have cash
- 7 – if you don't have cash go to lane3

Q: If you have a tag could you use lane 2?

- All yes
- 4 – you can use it on all the lanes

Q: What about lane 3?

- 6 – a person who has no idea what they are doing

Q: Information Booth?

- All no
- 2 – have the exact change or tag
- 7 – Collection booth or if you have exact change

Q: Anybody think they are selling toll tags?

- 6 – I have never driven on a toll road that sold a tag. You have to go somewhere else.
- 7 – People don't what to have to stop and wait; they want to get in and out fast.
- 2 – That would crate a traffic jam.

Q: What do you think in general these signs looks, good, bad, color, Symbol.

- All said okay looked good.
- 5- Why don't they have a sign that says TAG in large letters

Q: would that be better?

- 3 – they you could see the symbol
- 6 – Tag is so small on there.
- 3 – If you lived in that area you would know

5 – The #3 looks like a construction site

7 – I think a person who had tag and ran into lane 3 would get a little irritated who had to wait in line for people to pay their toll.

DA – I think it would be hazardous.

Q: Here is another version – What do you think this one means?

Slide

2 – you need to stop and give change

1 – would that be an addition to exact change

2, 6, 4 – an attendant booth or toll booth

Q: Do you like one better than the other?

4 – Slide 5 is better to see

8 – I like the black and white one better

### Slide 6

Q: here is one with the tag – What do you think that means?

4 – You have to have a tag on you vehicle the toll tag

Q: If I want to pay cash could I go in that lane?

4 – Now it just say TX tag only I would have to find a lane that would say cash only.

2 – If you had the tag why would you go through the attendant booth?

2 – It's confusing.

1 – I think it would be comparable to lane 3

7/6 – If you are using a tag you should know what lane you need to be in.

Q: Has anyone seen the TX tag logo, what does it mean?

2 – Electronic monitoring tag, when you vehicle passes the toll booth you will be charged someway.

Q: Back to slide 4 – Why do you think it has a big T and TX tag; are they two different things.

1 – I think the big round T is universal.

5 - Is there a universal toll symbol?

7 – Maybe people would think that you could use the tag anywhere you go.

Q: Should there be the same symbol for Texas

All agree

3 – Why put a T on it just use TX tag and be done with it.

### Slide 7

Q: Why do you think those people are over there?

3 – Express lanes for car pooling

8 – Official vehicles

2 – HOV

6 – like they do at Baltimore Harbor

### Slide 8

2 – the top one is confusing; you know what the TX tag looks like you get a bill from them – I don't like the T

1 - The simple thing to do is only need if multiple.

- 5 – I think the red white and blue catch my eye.
- Q: What about pre paid patrons?
  - 2 – I think it is a little lengthy; people are going to have to slow down to read the \ sign. Its pre pay only.
- Q: Do we need pre pay or just have tag only
  - 6 – TX tag left 3 lanes
  - 2 – Make the TX tag logo larger
  - 3 – Do they make you pre pay or do you pay it.
- Q: Explains how it charges your card
  - 5 – What if someone gets in the wrong lane?
- Q: Explains about the cameras
  - 7 – You have to make sure the signs are out far enough and more than one sign out.
- Q: Do you think a sing like this should be above the road or on the ground?
  - 7 – over the road
  - 2/1 – over the road and in your line of sight.

### Slide 9

- Q: – Explains about the pull off and pay.
  - 4 – that is dangerous
  - 2 – When you have people behind you going 60 or 70 mph and on the interstate then w/ merging traffic
  - 8 – it doesn't even give you extra lanes to get in.
  - 4 – If it is safe then it would be a good idea. Everyone would have their own lanes
  - 2 – What is the advantage to the loop over the straight line?

### Slide 10

- Q: Explains the slide
  - 1 – I think they are good but you might want to have the signage a little better
  - 2 – all should be overhead – to let people know there is a toll plaza ahead to slow down a little bit
  - 5 – I think you should keep left for TX tag
- Q: Why do you think this sign has a white background instead of another color?
  - 8 – informational
  - 6 – It a regulatory sign.
- Q: the word Plaza; is toll plaza the right word?
  - 7 – it's a fancy word but more people associate with booth.
  - 2 – Booth would signify one, plaza would mean more than one
  - 8 – Terminal
  - 2 – It still a toll place
- Q: Do you like cash toll?
  - 3 - I think so
  - 2 – it's short and sweet
  - 6 – and it does not require exact change.
  - 1 – are they going to take credit cards and debit cards?

- Q: Would you like to use cards?  
 1 – I don't carry a lot cash with me.  
 5 – What happens when you don't have enough cash?
- Q: Explains how some towns a different  
 5 – Bump and go  
 6 – Some barriers won't go up unless you have the exact change.
- Q: Instead of cash would no tag or non tag be better  
 7 – too confusing –

### Slide 12

- Q: Which sign do you like better?  
 5 out of 8 liked A  
 2 – B lets you know you will be diverted off the highway.  
 6 – A is simpler and B has more information
- Q: which one does a better job at explaining about the pull off?  
 1 /4 – B
- Q: what we are concerned about is A might make people think they are exiting and aren't going to get back on  
 6 – you usually see all the lanes to a toll booth and you know you are going to have to pay that before you get off.  
 2 – lane markers
- Q: Do you like in version B the cash sign is a different color.  
 1 – green not good  
 8 – distracting  
 5 – more to process  
 6 – stay with black and white
- Q: Any other info needed on the sign?  
 6 – amount that you have to pay  
 1,2,6 – exiting can be a problem  
 6 – pay depends on distance
- Q: Would you like to know the form of payment that is accepted?  
 1 - the amount above would be good.  
 3 – if you get into CC that would be time consuming.  
 2 – what happens when it is declined?  
 6 – can't imagine a toll booth taking a credit card.

### Slide 13

- Q: Version A & B  
 6 – good so everyone know just exactly where to go  
 Everyone agrees
- Q: yellow banner  
 2 – Caution  
 3 – Information
- Q: do you think that this set of signs does a good job of informing that if you have a tag you don't need to go to the toll plaza  
 All yes



- Q: If I have cash – would you like to see must exit.  
 All yes – must exit  
 1 – good enough
- Q: Rate sign  
 5 – Nice to know ASAP  
 2 – put as far back as possible  
 2 – Dollar amount further back - Sign on both sides  
 3 – if you have a sign like that you can't read it at 70 mph  
 2 – Doesn't matter if you have the tag or not.
- Q: Do you think that price applies to both the cash and TX tag?  
 2 – they should have it through the mail or something. Give them a card for the wallet  
 3 – Why would the price change?  
 7 – Add speed bumps
- Q: What about axels  
 6 – Not sure about axles.
- Q: Do we need to put that whole list.  
 1 – need more info closer to the booth  
 2 – If it is going to have a separate area or loop then put it on the sign, TX tag people can get it in the mail
- Q: let's talk about a different kind of road

### Slides 15-17

# 17

- Q: What is going on here?  
 4 – Toll you have to pay the loop you don't
- Q: Do they go to the same place?  
 4 – Yes
- Q: If you had cash could you get on?  
 4 – it says toll or TX tag only
- Q: When you say and or do you think you can pay?  
 7 – I think I would find a toll booth along the road somewhere.  
 2 – To me that would be where business would be, you wouldn't have to pay a toll if you stayed right. TX tag only  
 6 – you can't pay cash there you have to have a tag
- Q: Does toll mean cash  
 1/7 – I agree but I don't think that is what you see when you glance at it  
 8 – If I didn't have a tag I wouldn't get on because I not familiar with it.  
 6 – The toll means the TX tag – I don't belong on that road  
 5 – TX tag dominates  
 1 – Toll Only  
 2 – Toll Plaza
- Q: you have to have a tag to be on this road.  
 Get rid of the word toll  
 3 – that discrimination
- Q: What about the route #

- 5 – 2 – I would be afraid to take the frontage road
- 6 – 612 is all the same
- Q: Any other info needed at the entrance?
  - 1/6 – No not if you have TX tag
- Q: Do you think No cash would work?
  - 2 – Take the Toll off
- Q: Version with arrow
  - 2 – unnecessary, you already know what way you are going
  - 6/7 – Don't need the arrow
- Q: here is one with just an arrow
  - 1 – if you took the frontage road off it give you the feeling you can go on both.
  - 5 – when I see frontage road I think I going into commercial development
- Q: Version 3 trying to guide you a different way to 612.
  - All no
  - 3 – Why would you have to have only frontage road
  - 6 – you have two different roads and that's good.
  - 1 – Toll Hwy and encourage people to stay on the frontage road
  - 2 – I think it would take you longer to get through the frontage road so I if you had the TX tag you would stay there.
- Q: Version 4
  - 2 – Take the toll part off and put the TX tag on there
  - 7 - agrees

### **Slide 21**

- Q: Version 1
  - 2 – needs to be visible
  - 1 – Does blue mean toll road
- Q: yes – version2
  - 3 – confusing
  - 2 – too much on it
  - 1 – NO TX tag part
  - 2 – version one is much clearer the 2
  - 6 – someone at the last second my decide to go on that road with TX tag
- Q: Version 3
  - 2 – blue arrow
  - 1 - # are different
  - 2 – colors
- Q: Version 4
  - 8 – no
  - 6 – they are too close to the exit.
- Q: Slide with green overhead
  - 1 – I think it says you better have a TX tag to get on
  - 3 agrees
- Q: Do you like the overhead one?
  - 2 – overhead is clear
  - 7 / 2 Put TX tag only on the green sign

- Q: Do you like the white banner on the green or all one color  
2 – Green is reflective
- Q: Say we only have the overhead sign  
2 – I think we need the TX tag symbol
- Q: Does the banner catch your eye  
All agree
- Q: Here is a different kind of sign in advance of a tolling area  
3 – I don't think the tag people need to know this – 2 & 4 Agree
- Q: would you like to know what kind of lanes there are  
6 – not on this one – I think on this one instead of not tag  
8 – Extra lanes  
1 – Correct change would make it nice  
6 - I would take no tag out and put cash only.
- Q: what does no cash mean to you  
5 – I get the impression I can buy a tag there. Can you?
- Q: Pictures of vehicles  
All agree that pictures are better than axles.
- Q: if you were driving would you think it is too much info?  
7 – Yes
- Q: should it be over to or to the side of the road  
1 – Side of road
- Q: 3 said that he didn't need to tell the price for TX tag , anyone agree.  
All agree  
2 – That information should have been sent to them when they got the tag. If the rates change send another letter.  
5 – Where do you buy them
- Q: explains where you can get them

### **Slide 23**

- Q: explains about the cameras taking a picture and sending you a bill. What do you think about that? Do you think that is clear?  
1 – no  
2 – to me it say if you have a TX tag you going to get off a little cheaper.
- Q: there is going to be someone there to collect money. Anyone have any idea how to get that across, pay by mail, video tolling.  
1 – People w/o tag better approach
- Q: 7 later  
Not real clear  
2 – I'm struggling with the idea of pay later-  
8 – I would leave I tin  
1- Avoid enforcement – then get billed
- Q: Explains the picture of a camera shooting the back of a car  
2 – Camera sounds like a good idea
- Q: here is another sign you would see before you would enter the road; would you assume that that camera system would work here  
6 – only TX tag would work

- 1 – a universal sign would be good
- Q: would you get on a road if you saw this sign?  
7/5 – probably not
- Q: would you think there would be a cash toll?  
All no
- Q: Do we need to add something?  
6 – Visitors are not going to go on that road.
- Q: How many people know about HOV lanes? Any one used HOV?  
1-2 used
- Q: Do you think they save time?  
7/6 – yes  
2 – More swifter traffic
- Q: Have you noticed there are not very many cars in them.  
7/6 – no cars in the HOV  
3 – yes
- Q: Pay toll to ride HOV?  
3 – yes  
2 – there are some that have concrete barriers the you cant get into there  
3- you have to know where to get on and off, that's why there aren't many cars
- Q: this is another idea of a HOV lane? HOT lane  
Free \$2.00  
3+
- Q: Everybody know what 3+ means  
2- 3 or more people  
What a EZ tag
- Q: Explains Houston tag. Would you think you can use TX tag on this road?  
3/2 – Nothing on the sign that says you can and I would get rid of the Texas flag background.  
1 – real time over first
- Q: What do you think the pentagon symbol is?  
2 – EZ tag  
3 – tollway  
8 – Katy toll way
- Q: what road do you think we are on now?  
8 – I 10 ?  
3 – I 10
- Q: What road is to the right  
8 I 10
- Q: what about Voss Rd  
2 – that indicates that it goes to Voss Rd. If you want to get off before don't get on stay to right  
1 – agrees
- Q: Anyone thinks it ends at Voss RD or keep going  
4 – Keeps going.
- Q: If I kept going pass Voss RD how much would it cost me?  
2 – you would need another sign at Voss Rd

- 1 – add 3+ and all others to electronic part.
- Q: Which path to take
  - 6 – depends on the amount of people you have.
  - 2/3 – Unknown where the exits are
  - 1 – Mess on the right – might
  - 8 – stay to the right
  - 6 – I would look at my map to see where Voss Rd is.
  - 5 – Trap stay to left – too much to process for a visitor
  - 7 – it's going parallel
  - 2 – left lane to be express
- Q: back to parallel
  - 7 – I would take it first
- Q: What other things would you like to know? Travel Time Difference.
  - 1- I like that a lot

TAPE LOST SOUND – NOTES FROM HERE ON

- Q: How far out before entrance
  - 2/3 – 1 mile
  - 7 <sup>3</sup>/<sub>4</sub> mile
  - 1 - Time before price? 5 people
  - 6 – Price before time? 3 people
  - 1- put cost and time together
  - 1 – later add how much 3+
  
- 2/4 – separate signs – Price & time
  - 2 – too much math and to calculate – etc.
  - 1 – can't do calculations
  - 6 - # of rules not needed
  - 1 – Price