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16. Abstract This report summarizes the delivery and results of a one-day pilot workshop conducted at the Texas Department of Transportation (TxDOT) Waco District office in August 2010. This workshop was based on material developed for research project 0-6208, "Preserving the Functionality/Asset Value of the State Highway System." This report includes the organization of the workshop, lists the topics covered, describes feedback and suggestions received, and identifies refinements and other changes that are suggested for future deliveries of this workshop.					
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**DELIVERY OF PILOT WORKSHOP ON PRESERVING AND
ENHANCING THE FUNCTIONALITY OF HIGHWAYS IN TEXAS**

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DISCLAIMER

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 Federal Highway Administration (FHWA) or the Texas Department of Transportation (TxDOT). This report does not constitute a standard, specification, or regulation. The research supervisor in charge of this project was Edwin N. Hard.

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1.0. INTRODUCTION AND BACKGROUND

Functionality of the state highway system is at the core of the mission of the Texas Department of Transportation (TxDOT). Functionality is most frequently considered to include the operational capacity, efficiency, and reliability of the highway system. However, it includes more—effective planning and design of the highway system as well as maintenance of safety, infrastructure, and right of way (ROW). Information included in research project 0-6208, *Preserving the Functionality/Asset Value of the State Highway System*, was developed from research conducted into highway functionality and methods and practices that are used to provide, preserve, restore, and enhance state highway functionality.

A one-day workshop was developed from the research project material and additional examples. The primary source of material covered in the workshops was research report 0-6208-1, *Preserving the Functionality/Asset Value of the State Highway System: Technical Report*, and 0-6208-P1, *Guidebook on Preserving the Functionality of Highways in Texas*. The workshop was intended to present methods and examples that would lead participants into using the techniques where and when applicable to preserve or improve functionality. However, it was also intended to encourage discussion and interaction among representatives of different area transportation agencies that could facilitate or encourage easier cooperation in the future.

One pilot delivery of the workshop was presented at TxDOT's Waco District office August 24, 2010, to test the workshop's effectiveness and to identify potential improvements. This report describes the contents of the workshop, discussions, and written suggestions offered by the participants, and changes that were subsequently made to the workshop materials.

The workshop provided training, guidelines, examples, resources, and case studies on functionality and how to preserve, restore, and enhance component parts of highway functionality, including:

- Planning and design.
- Operations.
- Safety.
- ROW.

Due to the time limitations, maintenance was not addressed in the workshop. In addition to presenting methods and practices that could help TxDOT maintain a high level of functionality for the Texas highway system, the workshop was intended to stimulate conversation about specific examples within the host district and also questions about both material presented and examples that were shown.

The intended audience for this workshop was a combination of TxDOT, city, county, Metropolitan Planning Organization (MPO), and other local agency staff. However, appointed and elected officials could also benefit and the level of presentation was such that lay agency representatives could easily grasp almost everything presented. One of the ingredients to successfully maintain a high level of highway system functionality is interagency cooperation and coordination. The workshop demonstrated the need for cooperation and coordination. The

Waco pilot workshop drew a cross-section of technical staff of such agencies. No appointed or elected officials attended. Key areas covered in the workshop included:

- An overview of highway functionality.
- Functionality in planning and land development.
- Operational functionality.
- ROW and functionality.
- Safety and functionality.

Several examples and case studies were presented and discussed. In addition, one in-class exercise was assigned and conducted, with the participants splitting into groups of 2 or 3 people. This provided the participants with an opportunity to apply what they had seen to a hypothetical but typical example of both current and expected conditions.

2.0. PILOT WORKSHOP LOCATION AND ATTENDANCE

The pilot workshop, originally announced to be held on February 24, 2010, was conducted on August 24, 2010, in the TxDOT Waco District office. The research supervisor discussed the attendance objectives with the district office Director of Transportation Planning and Development (technical and administrative staff from TxDOT, cities, counties, and MPOs in the Waco District). In the end, a decision was made to send invitations to those who had attended a prior workshop in Waco. Those invitations were transmitted by the Texas Transportation Institute (TTI). [Figure 1](#) shows the workshop invitations sent by e-mail using the flyer.

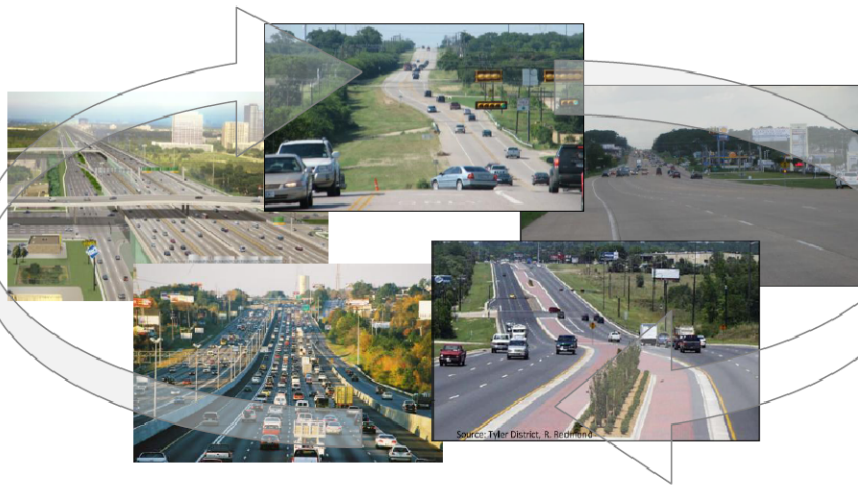
PRESERVING THE FUNCTIONALITY OF HIGHWAYS IN TEXAS

February 24, 2010

8:30 am – 4:00 pm

TxDOT Waco District Office, Operations Conference Room
100 S. Loop Drive
Waco, TX

Join us for a **one-day workshop** about preserving and enhancing highway functionality and how TxDOT, cities, counties, and MPOs can work together in this area.



The workshop will cover:

- The importance and benefits of preserving highway functionality.
- Functionality as it relates to planning, design, operations, right of way, and safety
- How to preserve and enhance highway functionality
- Case studies and lessons learned



Ed Kabobel, TxDOT, (254) 867-2731 or EKABOBE@dot.state.tx.us

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Brian Bochner, TTI (979) 458-3516 or b-bochner@tamu.edu



Figure 1. Workshop Invitation.

Nine people participated in the workshop. [Appendix A](#) contains the sign-in sheet. The workshop was held in a district office training room.

3.0. WORKSHOP AGENDA

The workshop began with a brief introduction of the workshop lead instructor (Ed Hard, project research supervisor), co-instructor (Brian Bochner, project research engineer), and Eric Li (project research scientist) followed by introductions of each of the participants. Each person provided their name, position, and employing organization.

Each participant was given a workshop binder containing a hard copy of all presentation slides plus the project guidebook. [Table 1](#) shows the agenda. The workshop was scheduled to run between 8:30 a.m. and 4 p.m. with a 1½ hour lunch and two 15-minute breaks. An exercise was planned for early in the afternoon. It was anticipated that the exercise would require about 45 minutes, or perhaps longer if it generated a lot of discussion or questions. The workshop got off to a late start due to a couple of late arrivals. The workshop ended about 10 minutes late.

The workshop generated questions and discussions. Several of those resulted from instructor questions to the participants, usually beginning from a request for examples of where a particular technique may have been used in the host district. Some of the discussions were extended by spin-offs to additional examples or more depth about the example first introduced.

The exercise asked participants (in teams of 2 to 3 people) to develop strategies to preserve and enhance functionality of a state highway that extends as a five-lane road with two-way left turn lane (TWLTL) through the middle of a city, but which is freeway both east and west of the city. The in-town section of the highway is projected to have increasing traffic volumes that may ultimately require a freeway section all the way across the city. Participants were asked to develop a strategy based on their own knowledge or material discussed in the workshop up to that point (after about 60 percent of the material was presented). Timing of the workshop was scheduled to head off post-lunch doldrums by getting the participants active. The exercise schedule produced the desired result.

[Figure 2](#) shows the front of the training room. Almost all material was shown on a projection screen using PowerPoint®. Participant workbooks also contained hard copies of the slides. [Figure 3](#) shows some of the participants working in teams to do the exercise. [Figure 4](#) shows one of the teams presenting their solution to the assigned problem.

While the workshop was completed in about the total estimated time, some modules ran long while others were shortened. The exercise required a little more than an hour to yield enough conclusions and recommendations to present. The planning and land development module also ran longer than originally expected. The operations module was compressed to complete the morning material by the designated lunchtime. The ROW and safety modules were also compressed a little to accommodate the longer exercise. Discussions—a good result of a workshop—also contributed to some of the morning extensions. The instructors feel that some adjustments are needed to better distribute time between modules.



Figure 2. Waco Training Room during the Morning of the Workshop.



Figure 3. Teams Working on Exercise.



Figure 4. One Team Presenting Their Exercise Solution.

Table 1. Waco Pilot Workshop Agenda.
Preserving and Enhancing the
Functionality of Highways in Texas

August 24, 2010
8:30 a.m. – 4:00 p.m.
Waco District Office
100 S. Loop Drive, Waco, Texas

Module	TOPICS
Opening 8:30- 8:45	Welcome and Introductions <ul style="list-style-type: none"> • Basis for Workshop • Functionality Definition and Components
1 8:45-10:00	Functionality in Planning and Land Development <ul style="list-style-type: none"> • MPO and Statewide • TxDOT Planning and Design Practices • District Involvement in Local Planning • SH 105 Case Study
Break 10:00 – 10:15	
2a 10:15-11:30	Operational Functionality <ul style="list-style-type: none"> • Operational Practices • Operations Performance Measures • Causes of Operational Deterioration • Countermeasures
LUNCH 11:30 – 1:00 (on your own)	
2b 1:00-2:15	<ul style="list-style-type: none"> • Operational Functionality Program • Countermeasure Examples • Exercise
Break 2:15-2:30	
3 2:30–3:15	Functionality Considerations in Right of Way and Utilities <ul style="list-style-type: none"> • Right-of-Way Acquisition • Right-of-Way Protection • Utility Accommodations • IH-10 Katy Freeway Case Study
4 3:15-3:45	Safety and Functionality <ul style="list-style-type: none"> • Safety Performance Measures • Causes of Safety Deterioration • Countermeasures for Safety • Road Safety Audits
Closing 3:45-4:00	Participant Feedback

4.0. DISCUSSION OF NOTE

There were a number of important observations made during the workshop that can shed light on how highway and street functionality is viewed and how important it is to TxDOT. The following statements distill the contents of some of these conversations or comments.

- In conjunction with the slide that suggests establishing a statewide policy on non-traversable medians (NTM), transportation agencies really should have a policy regarding when to replace TWLTLs.
- Related to the slide on median studies, a suggestion was made to include in the workshop information on effects of increased U-turns at remaining median openings after some openings are closed or a TWLTL is replaced by a NTM.
- In conjunction with the slide on local comprehensive plans, include a discussion about how to protect a highway from strip development that causes operations to deteriorate over time.
- Arterial street ROW should be recommended for 120 ft to fully accommodate six lane highways and streets.
- Communities (in urban areas) should coordinate development of corridor master plans to develop systems of functionally effective thoroughfares. Most existing corridor plans are aesthetically oriented.
- Cities should have adopted comprehensive plans and thoroughfare plans to guide future development and reserve ROW for future roads. Cities will have difficulties protecting future ROW without these plans.
- Cities and counties should involve TxDOT in the preliminary plat reviews along or near state highways so TxDOT ROW can be protected and access associated with new development or redevelopment meets TxDOT guidelines.
- Cities need to develop local street systems so TxDOT routes can carry mainly longer trips and local streets carry local trips.
- The workshop does a nice job of bringing together a number of things TxDOT is, or should, be doing regularly.
- TxDOT area engineers must have the trust and confidence of the local agencies they work with. They should also work closely with city and county officials in the platting process. The Waco District does this.

Some of these comments could be reflected in the revised version of this workshop. Others would make good instructor questions.

5.0. SUMMARY OF WORKSHOP EVALUATIONS

The research team provided a course evaluation form to participants to complete at the conclusion of each workshop. [Table 2](#) shows the form. Each participant was asked to provide candid input with the understanding that the forms would be anonymous and that the input would be used to improve and refine the workshop. Five participants completed and returned a form.

Two identified themselves as TxDOT employees, two identified themselves as non-TxDOT employees, and one omitted employer identification.

Table 2. Workshop Evaluation Form.

**Preserving and Enhancing the Functionality of Highways in Texas
Pilot Workshop Evaluation Form**

We would appreciate your thoughtful completion of all items on this evaluation. Your comments and suggestions will be of considerable value in our continuing efforts to improve our course presentations. Thank you.

Date: _____ Instructors: Ed Hard and Brian Bochner, Texas Transportation Institute

PART ONE: Please circle the number you felt best indicates the value and usefulness each session had for you. Ask yourself, “Was the information presented in this session something valuable that I can use in my Work?” Circle 5 to indicate the highest value and usefulness and circle 1 for the lowest.

- 1 Very poor (Not valuable for useful at all)**
- 2 Poor**
- 3 Average**
- 4 Good**
- 5 Very good (Very valuable and useful)**

<p>Opening Session: Welcome and Introductions (8:30–8:45)</p> <ul style="list-style-type: none"> • Basis for Workshop • Functionality Definition and Components 	<p align="center">1 2 3 4 5</p>
<p>Module 1: Functionality in Planning and Land Development (8:45–10:00)</p> <ul style="list-style-type: none"> • MPO and Statewide • TxDOT Planning and Design practices • District Involvement in Local Planning • SH105 Case Study 	<p align="center">1 2 3 4 5</p>
<p>Module 2a: Operational Functionality (10:15–11:30)</p> <ul style="list-style-type: none"> • Operational Practices • Operations Performance Measures • Causes of Operational Deterioration • Countermeasures 	<p align="center">1 2 3 4 5</p>
<p>Module 2b: Operational Functionality (1:00–2:15)</p> <ul style="list-style-type: none"> • Operational Functionality Program • Countermeasure Examples • Exercise 	<p align="center">1 2 3 4 5</p>
<p>Module 3: Functionality Considerations in ROW and Utilities (2:30–3:15)</p> <ul style="list-style-type: none"> • Right of Way Acquisition • Right of Way Protection • Utility Accommodations • IH-10 Katy Freeway Case Study 	<p align="center">1 2 3 4 5</p>
<p>Module 4: Safety and Functionality (3:15–3:45)</p> <ul style="list-style-type: none"> • Safety Performance Measures • Causes of Safety Deterioration • Countermeasures for Safety • Road Safety Audits 	<p align="center">1 2 3 4 5</p>

Table 2. Workshop Evaluation Form (continued).

PART TWO: Evaluate the overall workshop below by circling the number that best describes how you feel:

1 – Strongly disagree 2 – Disagree 3 – No Opinion 4 – Agree 5 – Strongly agree

Course content feedback	1	2	3	4	5
Course covered training objectives	1	2	3	4	5
Course properly covered subject matter	1	2	3	4	5
Course advanced my knowledge or skills in the subject area	1	2	3	4	5
Course provided knowledge or skills I can apply in workplace	1	2	3	4	5
Course met my expectations	1	2	3	4	5
I would recommend this course to others	1	2	3	4	5

List at least two of the most valuable things you learned in the course:

Suggestions for improving the course:

Additional comments:

Check one (Optional): _____ TxDOT Employee or _____ Non-TxDOT employee

Thank you for your time!

Table 3 shows the composite ratings of workshop module usefulness based on the returned forms. A “1” indicates a very poor rating. A “5” indicates that the module was very good, valuable, and useful. Ratings for all modules equaled or exceeded “4” (good).

Table 3. Participant Ratings of Workshop Modules.

Workshop Module	Average Rating
Opening Session: Welcome and Introductions <ul style="list-style-type: none"> • Basis for Workshop • Functionality Definition and Components 	4.33
Module 1: Functionality in Planning and Land Development <ul style="list-style-type: none"> • MPO and Statewide • TxDOT Planning and Design practices • District Involvement in Local Planning • SH105 Case Study 	4.67
Module 2a: Operational Functionality <ul style="list-style-type: none"> • Operational Practices • Operations Performance Measures • Causes of Operational Deterioration • Countermeasures 	4.50
Module 2b: Operational Functionality <ul style="list-style-type: none"> • Operational Functionality Program • Countermeasure Examples • Exercise 	4.00
Module 3: Functionality Considerations in ROW and Utilities <ul style="list-style-type: none"> • Right of Way Acquisition • Right of Way Protection • Utility Accommodations • IH-10 Katy Freeway Case Study 	4.50
Module 4: Safety and Functionality <ul style="list-style-type: none"> • Safety Performance Measures • Causes of Safety Deterioration • Countermeasures for Safety • Road Safety Audits 	4.00

A second part of the form was used for rating particular characteristics of the workshop. Table 4 shows the ratings. The ratings had a similar range 1 to 5, with 5 being best. All characteristics rated between 4.0 and 4.5.

Table 4. Participant Ratings of Overall Value.

Characteristic	Average Rating
Course content, feedback	4.25
Course covered training objectives	4.40
Course properly covered subject matter	4.40
Course advanced my knowledge or skills in the subject area	4.25
Course provided knowledge or skills I can apply in workplace	4.00
Course met my expectations	4.25
I would recommend this course to others	4.50

The third part of the evaluation form asked for participants to answer questions in their own words. Responses were as follows (edited for style and conciseness):

1. List at least two of the most valuable things you learned in the course.
 - Need to preserve functionality of highway/streets.
 - Afternoon exercise.
 - How utilities and ROW affect projects.
 - Roles each agency can and should play.
 - What is involved in project development.
2. Suggestions for improving the course.
 - None.
 - More interaction.
 - More examples; perhaps videos.
 - Adapt exercise to a real case in each district where the workshop is presented (suggestion from conversation).
3. Additional comments.
 - Outstanding real examples of concepts being taught.
 - Extremely beneficial for coordination among agencies.
 - Great for DOT personnel; good for MPO and city officials to hear. They need to be more involved.
 - Very beneficial for all types of transportation professionals.

6.0. PARTICIPANT FEEDBACK ON RECOMMENDATIONS

Recommendations presented in the workshops were those of the TTI instructors based upon the research and not those of any district or division of TxDOT. A few of the workshop suggestions and recommendations generated supportive discussions. Most recommendations are included in one place or another either in TxDOT policy, practice, or manuals. However, some

are not currently normal practice within TxDOT and some are under the jurisdiction of local agencies and TxDOT can only participate through coordination.

[Section 5.0](#) of this report identifies some recommendations that may deserve more emphasis even though they may not be specific TxDOT policy. One example is TxDOT coordination and participation in platting and other development reviews along or affecting TxDOT facilities. Another is recommending 120-ft ROW for all arterial streets.

No recommendation made during this pilot workshop drew objections from the participants. Most were either in previously reviewed research project documentation or drawn from recognized resources produced by the Federal Highway Administration, or by or for other state or national departments of transportation.

7.0. WORKSHOP REFINEMENT

Participant Suggestions

Participants suggested that more interaction and more examples could improve the workshop. Module 1 had the most discussion and also had the highest participant rating. That module ran much longer than anticipated in the schedule. Module 2b was comprised almost totally of examples, but was a little rushed due to a late start and received the lowest rating.

Requests for more examples and more discussion are common for this type of workshop. A few slides were deleted from the revised workshop PowerPoint slides to make more time for discussion. This will also leave more time for discussion of examples.

Changes

Refinements to Presentation Material

As mentioned previously, some slides were deleted to make more time available for discussion and also more complete discussion of examples. Nearly all slides deleted were from Modules 1 (Planning and Land Development) and 4 (Safety). Module 1 ran well over the scheduled time and Module 4 was intended to be a concise summary of a very large topic that could have its own one-day workshop.

Time Allocations

Two segments ran much longer than originally anticipated: Module 1 and the exercise. The exercise needed more time, so it has been extended in the revised agenda shown in [Table 5](#). Module 1 has been extended, but some material has also been removed. Module 2a, which was presented in less than 45 minutes in Waco has been shortened. This change should permit more conversation and a little more time to discuss the examples.

Table 5. Revised Workshop Agenda.

Preserving and Enhancing the Functionality of Highways in Texas

Module	TOPICS
Opening 8:30–8:45	Welcome and Introductions <ul style="list-style-type: none"> • Basis for Workshop • Functionality Definition and Components
1 8:45–10:15	Functionality in Planning and Land Development <ul style="list-style-type: none"> • MPO and Statewide • TxDOT Planning and Design Practices • District Involvement in Local Planning • SH 105 Case Study
Break 10:15–10:30	
2a 10:30–11:30	Operational Functionality <ul style="list-style-type: none"> • Operational Practices • Operations Performance Measures • Causes of Operational Deterioration • Countermeasures
LUNCH 11:30–1:00 (on your own)	
2a 1:00–1:15	<ul style="list-style-type: none"> • Operational Functionality Program • Countermeasure Examples
Exercise 1:15–2:30	<ul style="list-style-type: none"> • Exercise
Break 2:30–2:45	
3 2:30–3:15	Functionality Considerations in Right of Way and Utilities <ul style="list-style-type: none"> • Right-of-Way Acquisition • Right-of-Way Protection • Utility Accommodations • IH-10 Katy Freeway Case Study
4 3:15–3:45	Safety and Functionality <ul style="list-style-type: none"> • Safety Performance Measures • Causes of Safety Deterioration • Countermeasures for Safety • Road Safety Audits
Closing 3:45–4:00	Participant Feedback

Exercise Options

The exercise presented in the pilot was a generic example formulated to be easy to perform, but requiring use of some of the material presented. While relatively easy to understand, it was not as engaging as an exercise drawn from the Waco area might have been. The workshop participants, in response to a question from the instructors, generally felt the exercise was worth the time spent. Hence, it appears that two options could be considered for improving the exercise: (1) refining the pilot workshop exercise, or (2) creating exercises for each area prior to delivery of the workshop.

Refinement of Original Exercise

The original exercise did not provide enough information for the participants to feel comfortable making very many recommendations. For example, it did not describe the adjacent land uses along the corridor. If the original exercise is retained, more background information should be provided. The sample existing cross-section also confused a few participants, so it should be clarified. [Appendix B](#) contains the revised exercise handouts for this option. The appendix includes a revised exercise instruction sheet, a map of a hypothetical city, pictures of existing conditions along the state route in question, and sheets for participants to use to indicate short-, medium-, and long-term strategies. [Appendix B](#) also includes the instructors' assessment of applicable strategies for the exercise.

Alternative Exercise

An alternative approach to the exercise would be to select a corridor in the workshop district (well known if possible so all participants are familiar with it). This could be done from the instructors' personal knowledge of an area or with assistance from a district staff member. To make the exercise workable, one instructor would need to do a field reconnaissance sufficient to understand key features and needs of the corridor, take some photos, and discuss the corridor and its problems or needs with the appropriate district staff member, and write up the exercise statement. In all likelihood, this would require at least one day in the district and a half day to create the exercise plus any travel costs.

In the view of the instructors for the Waco workshop, the second option could be more effective. It would also increase the cost of each workshop by \$1,500 to \$2,500 depending on travel requirements. If this workshop is carried forward as an implementation project, the two options can be discussed with the Research and Technology Implementation Office staff and a decision made as to how to proceed.

8.0. CONCLUSION

Based on the feedback received, it appears that this workshop was largely successful in achieving the objective of presenting the research findings in a way that could motivate implementation by district and local agency staffs. Most participants thought the material was valuable and usable. As stated by one participant, "This workshop compiles a lot of things we should be doing into one package."

The material presented is applicable for both TxDOT and local agencies. This was apparent from the discussions that transpired during the workshop. TxDOT, city, and MPO staff

underlined the need and benefits for the agencies to work together, and in this workshop, it was quite apparent that they do and would continue work together.

The pilot workshop needs some minor refinements to optimize the value to TxDOT and other transportation agency personnel. Those refinements have been made. Two options exist for the exercise and one of those has been refined to make it more effective.

**APPENDIX A
WORKSHOP SIGN-IN SHEET**



Preserving and Enhancing the Functionality of Highways in Texas

August August 24, 2010
 8:30 am - 4:30 pm
 TxDOT Waco District Office
 100 South Loop Dr.
 Waco, TX 76704-2858

	Name	Organization	Phone #	e-mail
1	Rick Char Hon	City of Waco	254-750-6637	rickc@ci.waco.tx.us
2	Tommy Spruill	CITY OF HARKER HEIGHTS	254-953-5600	tgspruill@ci.harkerheights.tx.us
3	Ed Kabobel	TxDOT - Waco	254 867 2731	Edward.Kabobel@txdot.gov
4	Andy Petter	TxDOT - Waco	254/867-2740	andy.petter@txdot.gov
5	Blair Hargrove	TxDOT - Abilene	325-676-6810	blair.hargrove@txdot.gov
6	Chouchette Humphreys	KTMPO	254-770-2381	chouchette.humphreys@ktmco.org
7	Richard J. Skopik	TxDOT - WACO	254-867-2701	richard.skopik@txdot.gov
8	NORMAN HOGUE	CITY OF WACO	254-750-6638	NORMAN@CI.WACO.TX.US
9	GREG MAUTEK	TxDOT - WACO	254-867-2703	greg.mautek@txdot.gov
10				

**APPENDIX B:
REVISED WORKSHOP EXERCISE HANDOUTS**

REVISED WORKSHOP EXERCISE INSTRUCTIONS

DEVELOP A SHORT, MEDIUM, AND LONG RANGE HIGHWAY PRESERVATION/ENHANCEMENT STRATEGY

For the existing east-west highway shown on the attachment, recommend a short, medium, and long range strategy to preserve the functionality of the highway for the next 50 years and beyond.

You will see that the highway segment shown has four different cross-sections:

- Segment 1 (westernmost): 4 lane freeway
- Segment 2: at-grade 4 lanes plus TWLTL; the DOT has approved an upgrade to a 4-lane freeway when needed
- Segment 3: at-grade 4 lanes TWLTL
- Segment 4: 4 lane freeway

The cross-section for segments 2 and 3 are as shown on the cross-section on the attachment.

Your assignment is to create a strategy to preserve as well as you can and enhance as needed the highway's functionality. Consider three periods:

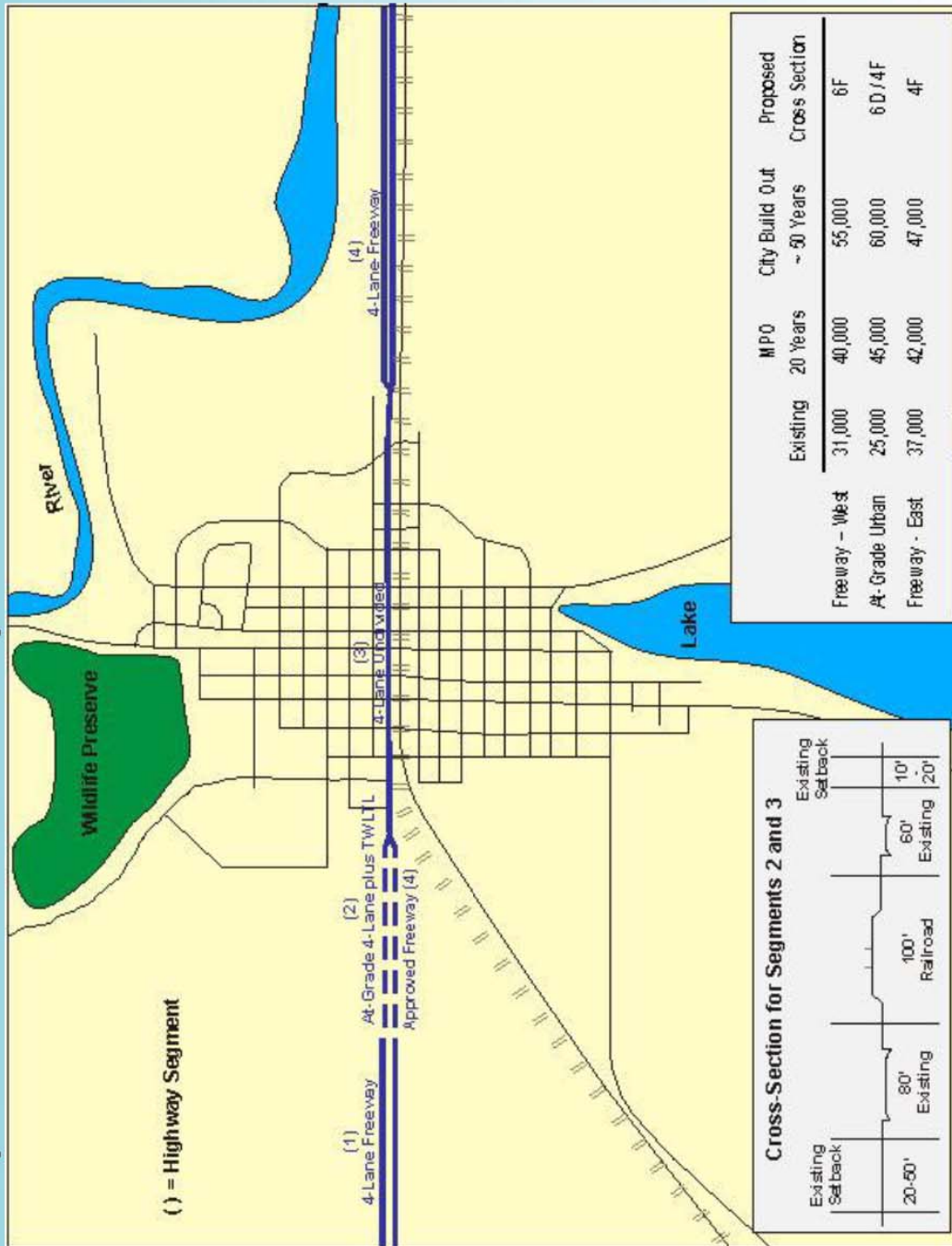
- Short-term: 0–5 years
- Medium term: 5–20 years
- Long term: 20–50 years

Notice that both 20 and 50 year traffic projections have been provided on the attachment, so have ultimate cross-sections that have been proposed by the city and/or MPO.

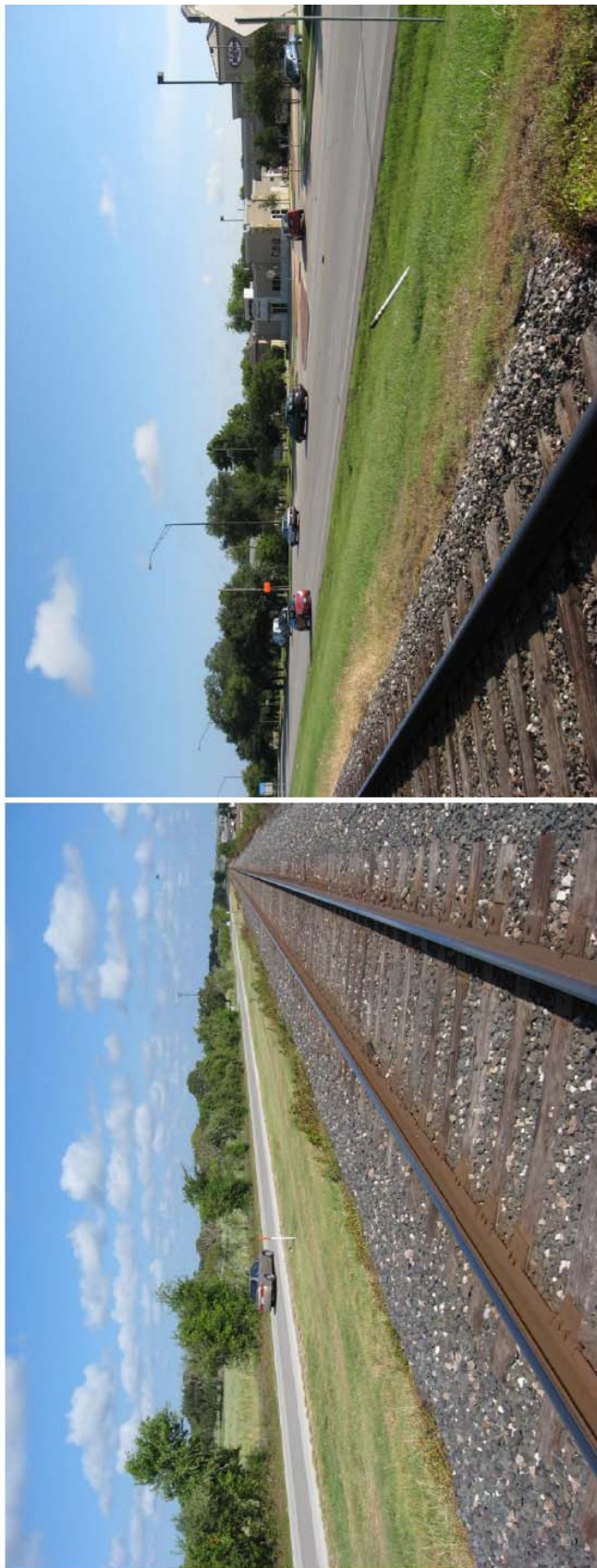
The land uses on the north side of existing segment 3 are primarily retail and apartment buildings that back up to the setback line. On the south side of the local street south of the railroad track, most land is undeveloped; some parcels have older service buildings or apartment buildings that back up to the setback line. At present there is no land use master plan for the corridor.

Please use the “Strategy Sheet” to show your strategy.

Develop A Functionality Preservation Strategy



Develop A Functionality Preservation Strategy



Looking west with highway on right and local street on left of rail line



Existing state highway

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Strategy Sheet

Short, Medium, and Long Range Strategy for a Sample State Highway

Time Period			Strategy	Comment
Short	Medium	Long		
			Planning and development coordination	
			Access management	
			Traffic operations	

Strategy Sheet (continued)

			Minor roadway improvements	
			Major roadway improvements	
			Right of way actions	
			Other	

Instructors' Assessment of Applicable Strategies

Time Period			Strategy	Comment
Short	Medium	Long		
✓			Planning and development coordination	
✓			Develop partnerships w/city, RR, other stakeholders	Facilitate cooperation, coordination
			Develop long range plan for corridor land use, etc.	Both sides of RR tracks
✓	✓	✓	Development overlay district	Manage development and reserve ROW for long term configuration
✓	✓	✓	DOT assists city development review	
✓	✓	✓	Make sure freeway ROW is on city's adopted thoroughfare plan and that city protects the future ROW	
			Access management	
	✓	✓	Raised medians	
✓	✓	✓	Increased driveway spacing	
✓	✓	✓	Increased intersection spacing	Consider future interchange locations
✓	✓	✓	Increased spacing of median openings	
✓	✓	✓	Driveway consolidation	
			Traffic operations	
✓	✓	✓	Traffic signal coordination	
	✓	✓	Peak period turn restrictions	
	✓	✓	Longer spacing between traffic signals	
			Minor roadway improvements	
	✓	✓	Double left turn lanes	
	✓	✓	Right turn lanes	
✓			Turn lane storage for when RR gates closed	Avoid queues in through lanes
	✓		If most crossings to remain, convert to 1-way pairs	Increase capacity with existing streets
			Major roadway improvements	
	✓		Widen to 6 lanes with median or convert hwy and local street to 1-way arterial pair	1-way pair may alleviate or postpone need for freeway
	✓		Improve and increase use on parallel arterials/collectors	
	✓		Railroad grade separations	
		✓	Relocate railroad to future center of freeway	
		✓	Upgrade to freeway with 2-lane frontage roads	
			Right of way actions	
✓	✓	✓	Preserve right of way for future freeway	
✓	✓	✓	Make funds available for protective purchases when needed	
✓	✓	✓	Acquire right of way through dedication, donation	
	✓	✓	If needed, expand ROW to south	Much less development on south side
			Other	
	✓		Complete "early environmental"	For freeway and interim 6 lanes

