Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FHWA/TX-09/0-6076-1		

4. Title and Subtitle	5. Report Date
COORDINATION AND SAFETY PROCEDURES FOR MAIL DELIVERY ON ROADWAYS WITHOUT SHOULDERS: TECHNICAL REPORT	February 2009 Published: August 2009
	6. Performing Organization Code
7. Author(s) Dale L. Picha and Brooke R. Ullman	8. Performing Organization Report No. Report 0-6076-1
9. Performing Organization Name and Address Texas Transportation Institute The Texas A&M University System College Station, Texas 77843-3135	10. Work Unit No. (TRAIS)
	11. Contract or Grant No. Project 0-6076
12. Sponsoring Agency Name and Address Texas Department of Transportation Research and Technology Implementation Office P.O. Box 5080 Austin, Texas 78763-5080	13. Type of Report and Period Covered Technical Report: May 2007 – April 2008
	14. Sponsoring Agency Code

15. Supplementary Notes

Project performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration.

Project Title: Coordination and Safety Procedures for Mail Delivery on Roadways without Shoulders

URL: http://tti.tamu.edu/documents/0-6076-1.pdf

16. Abstract

This research utilized interviews, focus groups, and surveys of U.S. Postal Service (USPS) and Texas Department of Transportation (TxDOT) employees to determine safety and coordination issues related to mail delivery on rural, two-lane highways without shoulders. Numerous crashes involving letter carriers have prompted this effort to identify ways to reduce the exposure of rural letter carriers on these types of highways, as well as to recommend innovative ways to improve coordination between the two agencies.

This report contains the results and recommendations from that effort. Researchers addressed the following specific issues:

- mailbox placement design standards;
- mailbox turnout design criteria;
- U.S. Postal Service efforts to improve safety for their rural letter carriers;
- Texas Rural Letter Carriers' Association input on ways to improve safety for their members; and
- current TxDOT practices related to mailbox installation, turnout design, and coordination efforts with the U.S. Postal Service.

This report includes data findings from the various studies and recommendations for improving safety for rural letter carriers, as well as ways for TxDOT and the USPS to improve coordination efforts.

17. Key Words	18. Distribution Statement
Mailbox Installation, Mailbox Turnout, Rural Highway Safety	No restrictions. This document is available to the public through NTIS: National Technical Information Service Springfield, Virginia 22161 http://www.ntis.gov

19. Security Classif.(of this report)	20. Security Classif.(of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	46	

COORDINATION AND SAFETY PROCEDURES FOR MAIL DELIVERY ON ROADWAYS WITHOUT SHOULDERS: TECHNICAL REPORT

by

Dale L. Picha, P.E., PTOE
Associate Research Engineer
Texas Transportation Institute

and

Brooke R. Ullman, P.E.
Assistant Research Engineer
Texas Transportation Institute

Report 0-6076-1
Project 0-6076
Project Title: Coordination and Safety Procedures for Mail Delivery on Roadways without Shoulders

Performed in cooperation with the
Texas Department of Transportation
and the
Federal Highway Administration

February 2009
Published: August 2009

TEXAS TRANSPORTATION INSTITUTE
The Texas A&M University System
College Station, Texas 77843-3135

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. This report is not intended for construction, bidding, or permit purposes. The engineer in charge of the project was Dale L. Picha, P.E. #85552.

ACKNOWLEDGMENTS

This project was conducted in cooperation with TxDOT, FHWA, and the United States Postal Service (USPS). The authors wish to acknowledge the members of the Project Monitoring Committee (PMC), who contributed their input and experience to help make the project successful:

- Ms. A. Rory Meza, P.E., TxDOT Design Division, Project Coordinator;
- Ms. Jan Heady, P.E., TxDOT Dallas District, Project Director;
- Mr. Dan Fleischman, P.E., TxDOT Amarillo District, Project Advisor;
- Mr. Craig Miser, P.E., TxDOT Paris District, Project Advisor;
- Mr. Doug Skowronek, TxDOT Traffic Operations Division, Project Advisor;
- Ms. Carla Baze, TxDOT Maintenance Division, Project Advisor;
- Ms. Cynthia Landez, P.E., TxDOT Design Division, Project Advisor;
- Mr. Jim Gautney, U.S. Postal Service, Project Advisor;
- Mr. Robert Brown, U.S. Postal Service, Project Advisor;
- Ms. Jennifer Kutscher, U.S. Postal Service, Project Advisor;
- Mr. Scott Wright, U.S. Postal Service, Project Advisor;
- Mr. William Campbell, U.S. Postal Service, Project Advisor;
- Mr. Robert Fair, Texas Rural Letter Carrier's Association, Project Advisor;
- Ms. Jackie Glancy, Texas Rural Letter Carrier's Association, Project Advisor; and
- Ms. Jenny Lewallen, Texas Rural Letter Carriers' Association, Project Advisor.

In addition, the authors and Project Advisors wish to express their appreciation to the Texas Rural Letter Carriers' Association for their time and input in this project.

TABLE OF CONTENTS

Page

LIST OF FIGURES

Page

LIST OF TABLES

Page

CHAPTER 1. INTRODUCTION

The Texas Department of Transportation (TxDOT) maintains nearly 50,000 centerline miles of rural, two-lane highways. Approximately 7500 of these centerline miles are rural highways without shoulders (*1*). Many of these rural highways were originally designed with much lower design speeds than current operating speeds within limited rights of way, and with very narrow cross sections. Furthermore, the roads are generally not consistent with all of the current design standards for roadway construction. These restrictive geometric design features were consistent with roadside development and vehicle operating characteristics at the time of their construction; however, these features (horizontal and vertical curves, lane widths, right-of-way width, sight distance, cross slopes, etc.), combined with today's higher operating speeds and increased development density in formerly rural areas have contributed to a significant safety exposure issue for slow-moving or stopped service vehicles on these rural highways.

Slow-moving vehicles, such as delivery trucks, school buses, farm equipment, and letter carrier vehicles, have long been a safety issue that TxDOT has attempted to mitigate in rural areas. The speed differential between the stop-and-go nature of their operations and the normal traffic stream, the lack of a shoulder refuge, and the oftentimes multi-tasking nature of these activities creates a higher potential for conflicts and crashes with regular, higher-speed highway users. Despite the efforts of TxDOT and others through engineering, policy, and community outreach, slow-moving vehicles remain a safety issue that needs addressing.

The primary objectives of the research undertaken in this project were to improve the safety of rural letter carriers and the motoring public on narrow, two-lane roadways and to develop ideas for improved coordination of activities between TxDOT and the United States Postal Service (USPS) during design and construction of roadways.

PROBLEM STATEMENT

Although TxDOT has made vigorous efforts over the years to identify safety issues for rural letter carriers on rural, two-lane highways without shoulders and to establish policies and standards for rural mailbox design and placement, safety issues still remain. The exposure of USPS employees in slow-moving delivery vehicles continues to increase as development in rural areas generates higher traffic volumes on two-lane highways without shoulders. This in turn

creates increased turning movements, and more rural mail stops on these roadways further exacerbated the potential for conflict and crashes with the traffic stream.

Customer service can also be compromised for rural letter carriers during construction and maintenance activities along an established delivery route. It is critical for customers to continue to receive mail, but construction and maintenance activities on these highways can delay service. TxDOT and USPS have determined that improved policies and guidelines are necessary to improve coordination of their work activities and schedules so that they can meet customer service and efficiency goals.

Through this project, the researchers evaluated USPS and TxDOT practices, identified areas of concern and potential improvements for both agencies, and developed recommendations to improve safety and coordination between both agencies.

BACKGROUND

United States Postal Service

Of the types of slow-moving vehicles using Texas highways, no other agency or business is more present, recognizable, and relied upon throughout the year than the USPS. There are currently 5757 rural letter carriers in the state of Texas (*2*). The nature of their business requires slow-moving operations for delivery purposes, which is in direct conflict with the intentions of nearly every other motorist they come into contact with throughout their day. This speed differential, combined with a lack of shoulders, limited sight distance, and mailbox placement close to the edge of a roadway, are prevalent safety issues in many rural areas.

Moreover, the USPS has always prided itself on the unofficial “rain, sleet, or snow” motto for customer service. Rural mail delivery is no exception. However, construction and maintenance activities that occur on rural roadways can not only disrupt or delay mail delivery, but can also make delivery unsafe for the rural letter carrier if the temporary mailbox is placed appropriately with respect to construction activity and work zone traffic control. Letter carriers may also have to change their typical mapped route, which affects their overall delivery schedule, route access, and time on the route.

Multi-Tasking Requirements of Rural Letter Carriers

To further complicate matters, USPS employees have numerous responsibilities when delivering mail in rural areas. First, most rural letter carriers drive their own vehicle and therefore have the responsibility of maintaining a safe vehicle for travel and use. Additionally, only a small percentage of rural letter carriers have modified vehicles such that they can perform driving tasks such as acceleration, braking, and steering maneuvers from the right side of the vehicle to accommodate the delivery of mail (also referred to as a right-hand drive vehicle). Rural letter carriers who do not have this vehicle modification typically sit in the middle of the front seat of their vehicle and perform driving tasks on the left side of the vehicle while delivering mail from the right side window. This driving arrangement is prevalent with rural letter carriers, and special training is available to drivers so that they can perform tasks as safely as possible when not in a right-hand drive vehicle; however, researchers have concerns regarding the safety of the driving task in this situation, especially on a high-speed rural roadway.

Additionally, while all letter carriers pre-sort their customers' mail prior to beginning their delivery routes, most city carriers have the convenience of compartmental space for organizing and storing their sorted mail in their agency-assigned vehicles. Conversely, rural letter carriers most often must retrofit their own vehicles with storage bins or simply use their front seat, dashboard, or floorboard for stacking and storing the mail. Such a system can add time (or headway) for each stop and is compounded by pedal and steering wheel control, resulting in increased complexity of the driving task. This increased driving task complexity also adds exposure time for the driver when they are stopped in a traffic stream.

Speed as a Contributing Factor to Crashes

Multiple studies have demonstrated that speed differential between vehicles, rather than the actual speed of the vehicles themselves, is the driving factor most closely linked to crash frequency and causation. As early as 1964, Solomon demonstrated a U-shaped relationship between crash involvement rate and travel speed, indicating that vehicles traveling at much higher or lower speeds than the average speed of traffic were much more likely to be involved in a crash (*3*). Cirillo, and West and Dunn have reported similar findings (*4*, *5*). In fact, drivers traveling at much lower speeds than the average speed of traffic (typically entering or preparing to turn from the travel lane) experienced some of the highest crash involvement rates in these

data. Although mail carriers were not explicitly examined in these studies, their frequent stops and starts as they make deliveries (often in the lane of traffic if no shoulders are present for them to pull onto) are believed to make them comparable to the slow-speed traffic examined in those studies.

Safety Improvements for Rural, Two-Lane Highways

In 2003, the Texas Legislature passed House Bill (HB) 3588 that enabled new financing tools for TxDOT to plan and construct more highway improvements projects (*6*). A major portion of the funding identified in this bill was earmarked to address high priority safety issues, and rural areas were a primary focus for this program.

Prioritization of potential projects was based on a benefit-to-cost ratio through TxDOT's Hazard Elimination and Safety (HES) Program. This program compares the "benefits" of reducing certain types and severity of crashes at a specific location to the "cost" of constructing such improvements. The goal of the HES Program is to mitigate the highest frequency and most severe types of crashes on Texas highways (i.e., there had to be a crash history at a location in order for there to be funding for any type of improvement).

TxDOT and the research community identified one type of project for this program as widening narrow, rural, two-lane highways, many with very narrow or no shoulders. The result was that nearly half (an estimated $300 million) of the program funds were spent in 90 counties in Texas to widen approximately 1,500 centerline miles of these types of roadways. This program has made great strides toward improving the safety of rural letter carriers; however, there are still issues to be addressed.

State-of-the-Practice Review

When considering the significance of the problem for both TxDOT and USPS, very little documentation exists with respect to the safety of rural letter carriers and interagency cooperation efforts. There has been significant research and testing over the years to develop guidelines for mailbox supports that are crashworthy, for properly erecting mailboxes in public rights of way, and for constructing mailbox turnouts that provide a safe refuge for letter carriers on high-speed roadways without shoulders. In fact, the American Association of State Highway and Transportation Official's (AASHTO) *A Guide for Erecting Mailboxes on Highways* (*7*) has essentially been adopted by all state departments of transportation and countless local agencies

as a standard for installing and maintaining mailboxes. This document addresses the need for uniform design standards for transportation agencies to follow so as to comply with USPS needs while delivering mail. Furthermore, TxDOT has adopted their own design standards, consistent with AASHTO, that provide additional details for mailbox types, spacing, supports, and foundations, as well as turnout design criteria (*8*).

Mailbox Design

Researchers reviewed AASHTO, TxDOT, and USPS recommended practices for various mailbox design criteria, including mounting height and placement criteria that provide the safest conditions for letter carriers. Researchers found that some minor inconsistencies exist, but not to a degree that would compromise safety. Table 1 summarizes these findings related to rural mailbox design criteria.

Table 1. Mailbox Design Criteria.

Agency	Mailbox Placement	Mailbox Height (inches)	Face of Mailbox from Edge of Travelway (feet)
AASHTO	Far Side of Driveway/ Right side of Road	36 to 42	8 to 12
TxDOT	Right Side of Road	42	0 to 12
USPS	Right Side of Road	41 to 45	not available

One other notable point that researchers identified during this review was that placing a mailbox on a high-speed, high-volume roadway is generally discouraged. However, this placement cannot always be avoided, especially in rural areas. The desire of the USPS is that mailboxes should be placed for the safety and convenience of the letter carrier to allow for mail delivery without the carrier needing to leave the vehicle and without requiring a backing maneuver.

Turnout Design

An all-weather surface such as a shoulder or improved area along a high-speed, two-lane roadway is a desirable design feature for rural letter carriers. There is unquestionably a safety benefit for carriers if there is a safe refuge along the roadway, especially if there is not a clear line of sight equivalent to recommended safe stopping sight distances approaching the mailbox locations. AASHTO and TxDOT both provide basic design criteria for mailbox turnouts, and both vary only slightly with respect to turnout widths. Table 2 shows the AASHTO recommendations that give turnout width as a function of the roadway volume.

Table 2. Mailbox Turnout Design Criteria (*7*).

Highway Type and Volume	Width of All-Weather Surface of Turnout or Shoulder (feet)	
	Preferred	**Minimum**
Rural Highway ADT[a] over 10,000 vpd[b]	>12	10
Rural Highway ADT = 1,500 to 10,000 vpd	12	8
Rural Highway ADT = 100 to 1,500 vpd	10	8
Rural Highway ADT under 100 vpd	8	6

[a] Average Daily Traffic (ADT)
[b] Vehicles per Day (vpd)

Conversely, TxDOT's mailbox turnout standards recommend 6 feet as a "desirable" width of the all-weather surface, with no consideration given for roadway volume. This turnout width would only be equivalent to AASHTO's minimum recommended width for a very low volume rural roadway. However, in most cases, especially on rural, two-lane highways, there is usually not sufficient right of way to accommodate a greater width, especially considering that a recommended 6:1 side slope and appropriate drainage must be installed along the roadway.

CHAPTER 2. ASSESSMENT OF USPS PRACTICES

The USPS in Texas is considered part of the USPS Southwest Area, which also includes the states of New Mexico, Oklahoma, Arkansas, and Louisiana. The Southwest Area is further divided into eight Customer Service Districts, four of which are in Texas. These four districts include the following:

- Fort Worth District (northwest and north central Texas);
- Dallas District (northeast Texas);
- Rio Grande District (west, central, and south Texas); and
- Houston District (southeast Texas).

In each district, there are numerous post offices, each managed by a postmaster who oversees the operation of each station and supervises the managers and carriers (city and rural) assigned to work out of that station. The postmaster ensures implementation of agency-wide management and safety policies and is the point of contact with the public and other agencies with regard to day-to-day operations. The postmaster is also generally familiar with all the unique delivery routes and delivery points within his/her post office area.

METHODOLOGY OF ASSESSMENT

Researchers conducted an assessment of the USPS to gain better insight and understanding of their mail delivery practices. To gain this input, the researchers visited with USPS managers and with members of the Texas Rural Letter Carriers' Association (TxRLCA). Through these efforts, the researchers were able to gain an understanding of daily practices and standard operating procedures related to USPS safety policies, driver training, and rural mail delivery.

USPS PRACTICES

Researchers contacted several USPS managers and conducted site visits with them to assess their safety and interagency coordination and communication practices. It was important to establish a good understanding of the responsibilities and challenges that the USPS managers face in their jobs, especially with respect to rural letter carrier safety, to understand how these

could be addressed or improved through this research project. The following summarizes the key findings of this assessment.

Safety Issues/Programs

Safety Managers in each of the four Texas districts work cooperatively to maintain a safe working environment for their letter carriers. Their work includes:

- developing driver training programs and written safety protocols;
- conducting route assessments to identify potentially hazardous delivery point locations, vehicle maneuvers, and roadway or traffic conditions;
- developing procedures to track vehicle crashes and job-related injuries; and
- conducting annual safety inspections for the letter carriers.

As of 1992, letter carriers are no longer required to pass a specific driving exam to become a USPS mail carrier; however, the USPS has developed a comprehensive approach to improving safety for their employees in the workplace and on their routes. The USPS offers many opportunities to their employees for improving their driving skills and knowledge, thereby increasing their safety. Some of these opportunities are:

- defensive driving courses,
- weekly safety meetings,
- driver training facilities to practice right-hand drive vehicle maneuvering,
- various types of media presentations (e.g., videos, publications, etc.) to encourage safe and attentive driving, and
- safe driving awards.

The USPS Southwest Area recently undertook a task to develop a standard operating procedure for safety in rural areas (*9*). One part of this procedure was to develop a checklist for an annual safety inspection. The safety inspection is to be done yearly and identifies the number of locations along a rural route where the following types of hazardous features are present:

- uncontrolled left-hand turns (no STOP sign or traffic signal),
- U-turn locations,
- mailbox placement that requires carrier to walk or drive across a street,
- mailbox placement that requires a backing maneuver,
- obstructed view of approaching traffic,

- obstructed view of the carrier, and
- posted speed limits of greater than 50 miles per hour.

Figure 1 is a sample of this annual safety inspection.

Extension/Relocation Consideration	Answer	Resolution
If approved, how many families will benefit from the extension?		
If approved, how many miles will be added to the carrier's line of travel?		
What type of delivery has been established in the contiguous area? (curb or central)		
Is this a state maintained road?		
Will the Department of Transportation erect this mailbox?		
If this is a high-speed road (>30 mph) will the carrier be able to get the delivery vehicle completely off the roadway?		
Does the carrier have an unobstructed view of approaching traffic?		
Does approaching traffic have an unobstructed view of the delivery vehicle?		
Would this extension create an unsafe left-hand turn?		
Would this extension create an unsafe U-turn?		
Would this extension require the carrier to walk across the street?		
Would this extension require the carrier to back their vehicle?		
Would this extension require travel on a private road not maintained by the state?		
If it is a private road, how many families will be served?		
If it is a private road, do you have a written commitment to maintain the road?		
Would this extension require travel on a private drive?		
Will this mailbox be closer than 100 ft to an intersecting road?		

Figure 1. Sample Delivery Point Checklist (*9*).

The annual inspection also includes consideration of whether the delivery location has the following:

- limited visibility,
- lack of shoulders or all-weather refuge surface along the road,

- higher speed limit, and/or
- a condition that places the employee at greater risk.

USPS Coordination Efforts

District Managers and local postmasters work daily to improve intra-agency coordination efforts, as well as coordination with other entities and agencies. If at any time a letter carrier identifies a potential hazard, that carrier is to notify the postmaster so that the site and/or condition(s) can be documented for review. This issue is then addressed by the postmaster who can initiate coordination with their local TxDOT office to resolve the issue if necessary. This practice is not only a means of improving conditions for the letter carrier, but also serves as a good measure to protect the agency from a tort liability claim.

TEXAS RURAL LETTER CARRIERS' ASSOCIATION

Rural letter carriers throughout the nation are members of the Rural Letter Carriers' Association, a union that represents their interests with the USPS in terms of labor practices and salary negotiations. In Texas, the rural carriers are members of TxRLCA, a union of over 5000 members.

Rural letter carriers service over 5700 rural mail delivery routes in Texas. On these routes, there is an average of 523 delivery points per route. Researchers worked with the members of the TxRLCA to assess safety and coordination issues from the perspective of the rural letter carrier. To accomplish this, researchers attended the TxRLCA State Convention in Odessa, Texas (June 2007), and the TxRLCA Booster meeting in Austin, Texas (October 2007). At both of these meetings, researchers held focus groups to discuss various safety issues with the members in attendance.

Through these focus groups, researchers identified numerous safety issues. These issues were recurrent at both meetings, and the TxRLCA members have been active with their own efforts to lobby and promote changes to improve the safety of rural mail delivery. The following is a summary of what researchers identified as being significant safety issues.

Vehicle Fleet

Most rural carriers drive their personal vehicle for mail delivery, as opposed to USPS Long-Life Vehicles (LLVs). The LLVs are a specially designed, right-hand drive van that is more visible and clearly marked as a postal vehicle. The USPS is replacing some urban delivery LLVs with alternative fuel vehicles and as this occurs, moving the LLVs to rural routes that have similar driving conditions (e.g., paved roads).

The Southwest Area of the USPS provides rural letter carriers with strobe lights that are assigned to the rural route and maintained by the local postmaster. Currently, USPS is prohibited from using strobe lights in any color but amber. There is a concern among letter carriers that this color of lighting does not provide as much protection as similar white strobes used on school buses and other municipality vehicles. In addition to the provided strobe lights, many carriers purchase sign placards for their vehicle from various third-party suppliers. This method of individually purchasing vehicle signing has resulted in a situation where little to no standardization in size, shape, or color exists for these placards. It was noted that this lack of uniformity leads to motorist confusion about the slow-moving nature of the rural carrier's vehicle.

Replacement Carriers

All letter carriers, rural and city, drive their designated delivery routes. Typically the regular route carrier delivers mail five days a week on a given route and a replacement (or substitute) carrier is responsible for the sixth day. Additionally, when rural carriers are on vacation or have to miss work assignments on a particular day, a replacement carrier takes their place. Replacement carriers are part-time employees and may be less familiar with the route than the regular carrier, and as such, are at an even greater risk to potential roadway hazards.

CHAPTER 3. TXDOT PRACTICES

One of the primary tasks of this research was to investigate TxDOT's current practices with regard to mailbox design, placement, and maintenance in rural areas. To accomplish this task, researchers conducted an online survey of TxDOT area engineers. This chapter documents the survey findings.

SURVEY PROTOCOL

Researchers developed a survey instrument consisting of 13 questions to identify TxDOT current practices relating to the installation of mailboxes on rural, two-lane highways. More specifically, the researchers were interested in:

- installation policies and procedures,
- mailbox turnout criterion,
- mailbox placement, and
- coordination between TxDOT and USPS.

Researchers limited the survey to this number of questions to ensure that it did not encompass too much of a participants' time and thereby discourage completion of the survey. The entire survey should have taken participants no more than 10 minutes to complete. A copy of the survey questions can be found in the Appendix.

The online survey format was developed using Transportation Surveyor and was distributed to all TxDOT area engineers via email with a description of the research project and a link to the survey website. The survey was distributed to 224 area engineers; however, only 81 engineers logged into the website (36 percent) with only 43 or fewer (19 percent) responding to each question of the survey. It should be noted that the participant had the option to not respond for each question and to continue on in the survey.

RESULTS

The following sections detail the results of the online survey for each of the four areas of interest identified. Note that the number of respondents changed throughout the survey; therefore, all responses are given as percentages of responses.

Installation Policies and Procedures

There were a total of 38 individuals that answered the survey question detailing their procedural steps for handling a new mailbox installation request. Of these responses, 55 percent (21) said they followed the department policy in some form. Since this question was open-ended the terminology differed somewhat; however, the TxDOT procedure is as follows. TxDOT will furnish, install, and maintain mailbox supports, free of charge for new mailbox placements on state highways, as long as the citizen provides a USPS-approved mailbox (*10*). However, this policy also states TxDOT staff can remove mailboxes that are not on crashworthy supports or otherwise create a hazard for the motoring public in terms of poor placement along a highway. Additionally, the policy notes that a mailbox can be removed if it is not placed at an acceptable lateral offset from the edge of the travel way.

There were two exceptions within the responses as compared to the standard procedures outlined above. These involved the installation of the mailbox and the pole. These individuals stated that they provided the mailbox support with installation instructions to the citizen and that the citizen then did the installation themselves. Others reported they gave the citizen the option of installing the support and mailbox themselves or having someone from the TxDOT maintenance section do the installation for them.

Other process steps of interest that were mentioned by individuals while addressing this question were as follows:

- an employee will check the new location when installing a new mailbox to ensure that there is an all-weather surface at the site for the mail carrier to use to pull out of traffic;
- personnel make a field visit to determine if there are any unusual site conditions (site distance, geometry, type of mount needed, etc.);
- install mailbox by TxDOT Mailbox standards; and
- a field visit determines if it is necessary to take action for the construction of a mailbox turnout.

Mailbox Turnout

Mailbox turnout funding can be acquired in several different ways. Two of these ways require that either the area citizens or a local developer fund the construction of the mailbox turnout area on a highway where there are narrow shoulders. This is done through the driveway permitting process. Table 3 shows the percentage of area engineers responding to the online survey who stated that this type of funding had been previously used in their district.

Table 3. Mailbox Turnout Funding.

Response (n=43)	**Citizen Funded (%)**	**Developer Funded (%)**
Yes	5	9
No	86	82
Not Sure	9	9

The information gathered from the area engineers implies that although alternative funding methods are available and known to TxDOT, they are not commonly employed in the development of mailbox turnout areas.

A primary concern in this survey was to identify what criteria were currently being used in the decision-making process for mailbox turnouts and to determine if TxDOT engineers would like to have a more established set of criteria on which to base these decisions. When asked to select from a set list of criteria, as shown in Table 4, for use in justification of mailbox turnout the results were as shown. Survey participants could select as many or as few of the responses as were appropriate for their situation.

Table 4. Current Mailbox Turnout Establishment Criteria.

Criteria	Percent
New Construction to Widen Highway	30
US Postal Service Request	30
Maintenance Supervisor Recommendation	26
High-Speed Roadway	24
Sight Distance Limitation to Mailbox/Driveway	21
High-Volume Roadway	19
Funding Availability	19
Citizen Request	16
Crash History on Highway Related to Rear-End Crashes or Near Misses with Mail Carriers	15
Other TxDOT Staff Request	15
Multiple Mailbox Installations Only	14
Other	3

As seen in Table 4, the two most commonly cited criteria used in mailbox turnout justifications are requests from the USPS and new construction in the area of the mailbox turnout area. This is not an unexpected finding as construction times are typically the least costly and most efficient means of implementing new features to a roadway. Furthermore, the USPS would be the most likely source to identify areas where turnout areas would be justified and necessary for the safety of both mail carriers and the driving public. This result emphasizes the need to make a coordinated effort between the USPS and TxDOT personnel in identifying appropriate requests for inclusion during upcoming construction or maintenance efforts. Other physical roadway elements identified by participants were:

- high speeds,
- sight distance limitations, or
- high volumes on the highway where the turnout was being considered.

The second part of this questioning was to identify if there was a desire for establishing more set criteria for mailbox turnout placement to be given in the TxDOT *Roadway Design Manual (11)*. Figure 2 shows the responses of the participants somewhat or strongly agreeing for four different conditions where criteria could be established.

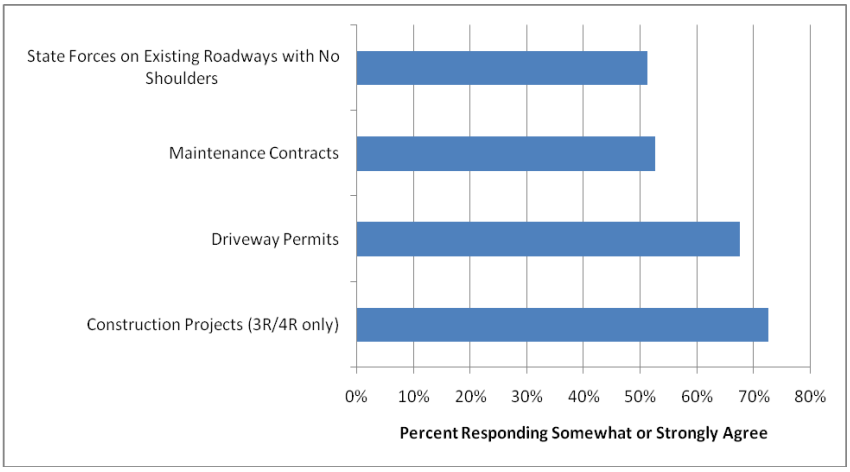


Figure 2. Desirability of Mailbox Turnout Criteria.

There was no one situation where participants overwhelmingly agreed that criteria should be established. However, all of the conditions had over 50 percent of the participants either somewhat or strongly agreeing that there should be criteria and for the construction project condition; 73 percent believed that criteria should be established. However, for roadways without shoulders (which was of primary concern to this research), 40 percent disagreed with establishing specific criteria for the construction of mailbox turnouts.

If turnout criteria were to be established, researchers also wanted to identify what information was believed to be important for inclusion. Participants were asked to rank 14 different criteria (10 engineering and 4 non-engineering elements) based on a scale from 1 to 5, where 1 was no importance and 5 was very important. Figure 3 shows the percentage of participants ranking each criterion either as “important” or “very important.” (n= between 41 and 43).

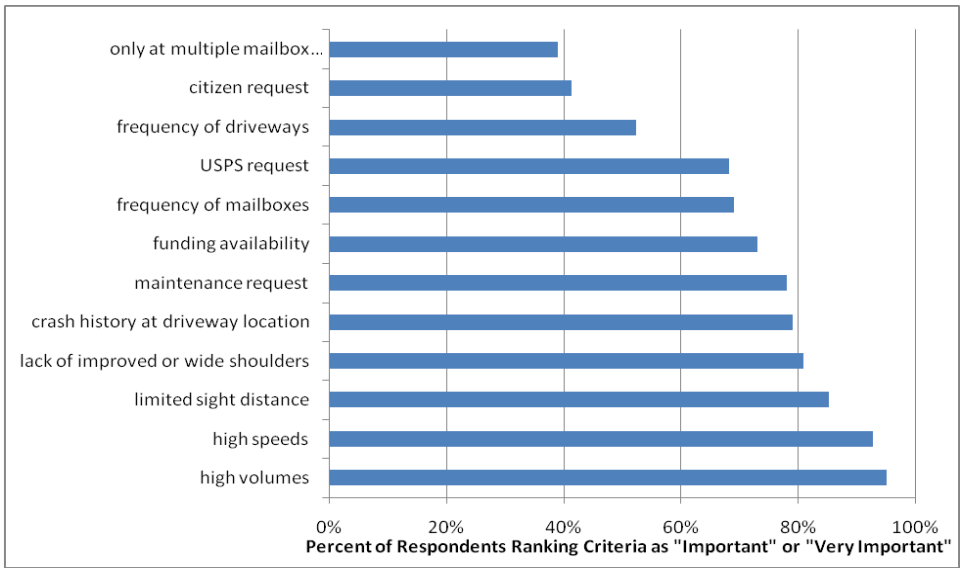


Figure 3. Mailbox Turnout Criterion Ranking.

The criteria that garnered the least support (i.e., 50 percent or less of the respondents thought they were important) for inclusion mailbox turnout guideance were:

- only using turnouts when there are multiple mailboxes,
- citizen requests, and
- the frequency of driveways.

Conversely, standard engineering criteria (limited sight distance, high speeds, and high volumes) were deemed as important by most (i.e., 85 percent or higher) of the participants. One reason for this preference may be because the survey participants are familiar with these types of elements as criteria for decision making as well as ease of identification of these elements in evaluation of possible installation sites.

Individual Mailbox Placement

During the survey of current practices, there were two questions directed specifically at decision making for individual mailbox placement with relation to driveways. The first question inquired as to whether the participant's office had installed or permitted the installation of mailboxes on the opposite side of the roadway from the relative driveway to allow for access in that direction of travel (See Figure 4 for illustration of this situation.).

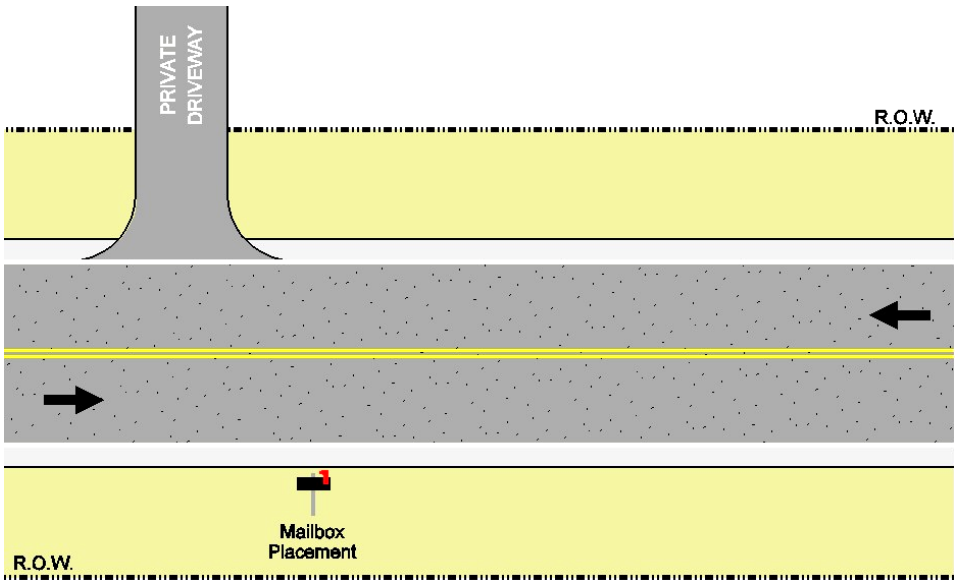


Figure 4. Mailbox Placement on Opposite Side of Roadway.

All of the engineers who participated in the survey indicated that they had not installed or allowed the installation of such a mailbox placement in their area. Based on this information, the survey then progressed to ask them about typical mailbox placement on the same side of the roadway as the given driveway. In this case, researchers were interested first in finding out if there was a standard application within their area for either near or far side of the driveway (See Figure 5 for illustration of this placement.).

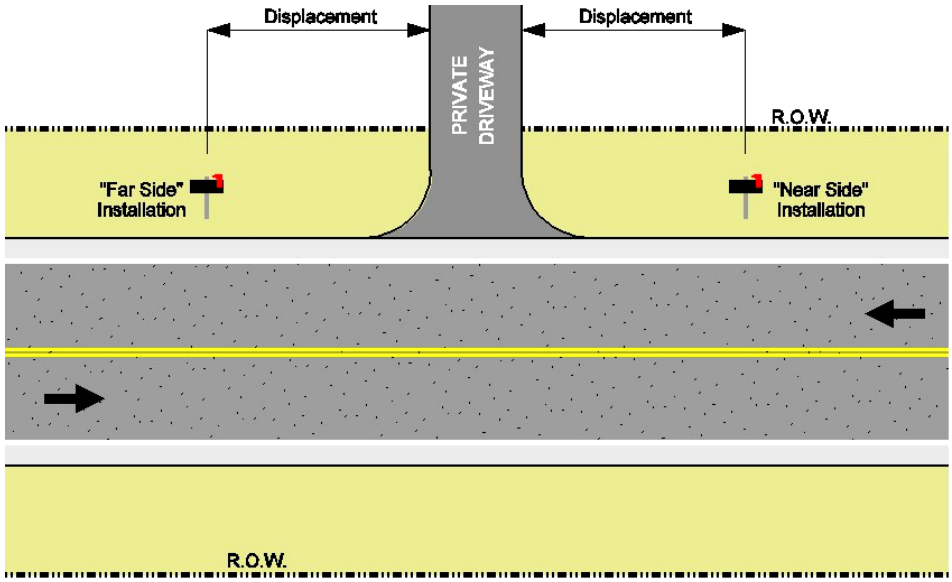
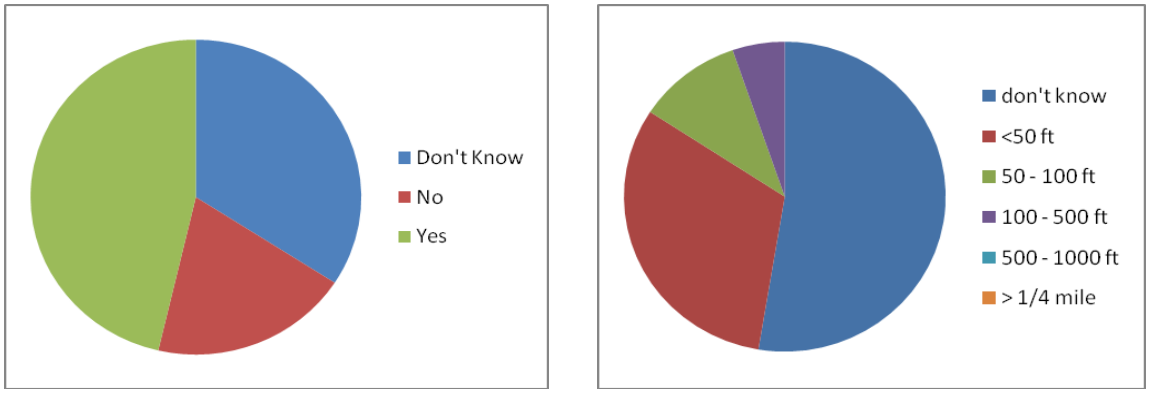


Figure 5. Mailbox Placement on Same Side of Roadway.

However, only 14 percent of respondents indicated that there was a standard application location, with 5 percent indicating it was the near side and 9 percent indicating it was the far side. Meanwhile, the majority of the participants (84 percent) stated that the mailbox placement was dependent upon the specific site conditions, which could include consideration of both safety and preference of the mail carrier, property owner, or both. The final participant (2 percent) was unsure of how the placement decision was made.

Finally, participants were asked to identify if they believed there should be a maximum displacement distance for mailboxes in relation to driveways. Figure 6 shows the responses of the participants to this line of questioning.



a) Initial Response **b) If yes, Maximum Distance**

Figure 6. Maximum Mailbox Displacement Distance.

The data collected through this effort indicate that there was no one definitive answer as to whether there should or should not be a maximum mailbox displacement distance. Such a finding is understandable, as there are no objective crash data available upon which to make such a judgment, and it is difficult to make safety decisions without specific site information. Nevertheless, researchers believe that there may be a practical distance that a mailbox should not be displaced before it becomes inconvenient to the property owner or mail carrier. Therefore, researchers recommend that mailbox displacement decisions continue to be made on a case-by-case basis with regard to safety concerns.

Coordination

The final section of the survey addressed the issue of coordination between TxDOT and USPS during design and construction activities. Initially, researchers queried individuals to identify if they had an established policy that involved coordination with USPS officials during these times. Fifty-nine percent of participants indicated that they have some type of policy or procedure for coordinating with local postmasters and/or letter carriers whenever upcoming work activities could affect mailbox installations. The majority (32 percent) stated they contact the postmaster during the design or planning phase of a construction project. Interestingly, of the remaining participants, only 9 percent notified local mail carriers of upcoming work in the area.

The remaining 41 percent (16 participants) that responded no to the above question were asked if they had any ideas on how to improve coordination between the postmasters and/or letter carriers. Of the 16, 10 had the following suggestions to improve coordination:

- communicate with the postmaster before construction,
- invite the postmaster to pre-construction meetings or other opportunities where they could offer input on upcoming activities,
- have regular coordination meetings between TxDOT and USPS personnel as with utilities, or
- notify a mail carrier prior to mailbox installation or construction.

The next questions addressed how often TxDOT contacted postmasters to attend pre-work and/or pre-construction meetings for projects that would affect mailbox installations. Table 5 shows that 10 percent of the individuals surveyed would always contact the postmaster for construction projects while half of that, or 5 percent, would always be contacted for maintenance projects. Those that would frequently or occasionally contact the postmaster ranged from 25 to 23 percent. The majority would very infrequently or never contact the postmaster, with 70 and 67 percent contacting the postmaster for maintenance and construction, respectively.

Table 5. Postmaster Contacted for Pre-Work and/or Pre-Construction Meetings.

Frequency	Project Type (n=39)	
	Maintenance	Construction
Always	5%	10%
Frequently	10%	20%
Occasionally	15%	3%
Very Infrequently	28%	36%
Never	42%	31%

When asked how often the local postmaster attended pre-work or pre-construction meetings if invited, half of the participants reported that postmasters never attended and 38 percent stated that they rarely attended. Only 12 percent stated that postmasters frequently or occasionally attended the meetings. There were no individuals that stated postmasters always attended meetings when invited.

Researchers also asked the participants to identify previous concerns that they had encountered during construction projects due to mail service delivery. Some of the more significant concerns were as follows:

- citizen or mail carrier not liking temporary mailbox location,
- maintaining required height and clearances,
- mail carrier stopped delivery,
- box locations create safety concerns for mail carrier, and
- difficulty in delivering mail during one-lane pilot car traffic control operations.

Additionally, survey participants offered the following suggestions on how to overcome some of the safety and/or operational concerns with rural mail delivery during work activities.

- Group mailboxes at one centralized location (suggestions: side street, turnout, outside work activity).
- Provide quality temporary mailbox mounts and require daily maintenance by the contractor.
- Ensure coordination among TxDOT, contractor, and mail carrier during construction.
- Supply temporary post office boxes during project duration.

- Include mail service in traffic control plans.
- Include postmasters in design phase discussions to get their buy-in regarding any plans for moving or changing routes during the construction period.

CHAPTER 4. RECOMMENDATIONS

The primary objectives of the research undertaken in this project were to improve the safety of rural letter carriers and the motoring public on narrow, two-lane roadways and to develop ideas for improved coordination of work activities between TxDOT and the USPS during design and construction of roadways.

RECOMMENDATIONS FOR TXDOT

Researchers recommend considering several issues for inclusion in the TxDOT *Roadway Design Manual* and/or the TxDOT *Construction Contract Administration Manual* (*11, 12*), including:

- where to place mailboxes with respect to driveways,
- when and where to use mailbox turnouts, and
- specific direction as to coordination with the USPS.

Researchers recommend the manuals state that mailboxes be placed on the right side of the roadway (from a driver's perspective) and never on the left side. Additionally, field conditions should dictate the selection of near side versus far side installation with respect to the driveway. This determination should be based primarily on sight distance while noting that rural letter carriers prefer that the mailbox be mounted on the far side of the driveway when possible. This preference for far side installation is so that a driveway's turn radius can be used as a refuge area when a turnout area does not exist.

The information collected during the TxDOT Area Engineer survey indicated TxDOT uses certain factors, such as traffic volume, roadway speed, and sight distance, when deciding on when and where to use mailbox turnouts. Researchers believe this process should be formalized for inclusion in the design manual. TxDOT would need to establish acceptable threshold criteria for each of these factors (e.g., a low-volume road is considered one with an ADT of less than 400 vehicles per day). In establishing such criteria TxDOT would be providing consistent guidance to designers and engineers statewide and thereby further standardizing driver and rural letter carrier expectations and improving roadway safety on two-lane roadways.

Researchers also recommend adding notes be to the manuals regarding early and frequent coordination with the postmaster for the area of a significant construction or maintenance project

being planned. This coordination could occur at Design Concept Conference (DCC) meetings, periodic utility coordination meetings, and/or pre-work/pre-construction meetings. Coordination may be necessary on more than one occasion, especially if long-term work zones are part of the planned activities for the area and if mailboxes are to be relocated to temporary mounts and/or locations. It is more than likely that these types of coordination meetings would occur anyway, so inviting the postmaster to participate would not add any additional financial burden or time constraint to the project. This early and frequent coordination on the part of TxDOT would ensure a safer delivery route for the letter carrier and a safer driving environment for the traveling public.

Additionally, researchers recommend reviewing current mailbox standard sheets to ensure that they reflect the most current engineering design criteria. For example, researchers noted in Chapter 1 that minor inconsistencies exist for mailbox mounting heights recommended by AASHTO, TxDOT, and the USPS.

RECOMMENDATIONS FOR USPS

With regard to the USPS, researchers recommend that postmasters and their letter carriers continue their annual safety inspections of letter carrier routes and continue documentation of potential safety hazards. Researchers also recommend that the USPS improve upon their current process by keeping local TxDOT contact information current and sharing the information they collect regarding potential safety hazards with the local TxDOT area engineer. By doing this, TxDOT can identify and prioritize local postmaster needs with regard to future highway improvements. The USPS should also continue their driver training and driver safety award programs that appear to have a positive impact on reducing vehicle-involved accidents and on-the-job injuries. Lastly, the USPS should consider adopting uniform criteria for the placement of strobes on vehicles and for the size, shape, color, and location of sign placards.

REFERENCES

1. Roadway Highway Inventory Network (RHINO) Database. Texas Department of Transportation, Austin, Texas, 2003.

2. Lanona Jackson, State Steward, Texas Chapter of the Rural Letter Carriers' Association, interviewed by Dale L. Picha, Texas Transportation Institute, February 28, 2007.

3. Solomon, D. Accidents on Main Rural Highways Related to Speed, Driver, and Vehicle. Bureau of Public Roads, Washington, D.C., July 1964.

4. Cirillo, J.A. Interstate System Accident Research Study II, Interim Report II. Public Roads, Vol. 35, No. 3, August 1968.

5. West, L.B., and J.W. Dunn. Accidents, Speed Deviation, and Speed Limits. Traffic Engineering, Vol. 41, No. 10, July 1971, pp. 52-55.

6. H.B. No. 3588, 78th Texas Legislature, regular session. Austin, Texas, June 1, 2003.

7. A Guide for Erecting Mailboxes on Highways. American Association of State Highway and Transportation Officials, Washington D.C., 1994.

8. Mailbox Standards MB-06(1) and MB-06(2). Texas Department of Transportation, Austin, Texas, 2006.

9. Standard Operating Procedures for Rural Delivery Extensions and Safe Placement of Rural Mailboxes. U.S. Postal Service, Southwest Area, June 2008, DRAFT.

10. Texas Department of Transportation, Mailboxes on State Maintained Highways. http://www.dot.state.tx.us/services/maintenance/mailboxes.htm, Accessed February 22, 2007.

11. Roadway Design Manual. Texas Department of Transportation, October 2006. http://onlinemanuals.txdot.gov/txdotmanuals/rdw/index.htm, Accessed: February 2009.

12. Construction Contract Administration Manual. Texas Department of Transportation, October 2007. http://onlinemanuals.txdot.gov/txdotmanuals/cah/index.htm. Accessed February 2009.

APPENDIX: SURVEY QUESTIONS

Question #1

What are your general procedural steps for handling a new mailbox installation request?

Identify Steps here:

Question #2

Do you have any specific installation/placement guidelines or policies for your Area or District for new mailbox installations (e.g., Memo from District Engineer, Director of Maintenance, etc.)?

☐ Yes — If yes, please explain.
☐ No
☐ No Answer

Question #3

Have you required a citizen or developer to construct a mailbox turnout on highways with narrow shoulders through a driveway permit?

Citizen	Developer
☐ Yes	☐ Yes
☐ No	☐ No
☐ Not Sure	☐ Not Sure

If Yes under either scenario, what criteria or justification were used to require the mailbox turnout?

Question #4

If specific criteria existed for constructing a mailbox turnout, rank the priority of the following to establish the need. Rank from 1 (No Importance) to 5 (Very Important)

Engineering Criteria

	1	2	3	4	5
Crash history at driveway location	☐	☐	☐	☐	☐
Frequency of driveways	☐	☐	☐	☐	☐
Frequency of mailboxes	☐	☐	☐	☐	☐
High speeds.....	☐	☐	☐	☐	☐
High volumes.....	☐	☐	☐	☐	☐
Lack of improved or wide shoulders.....	☐	☐	☐	☐	☐
Only at multiple mailbox installations	☐	☐	☐	☐	☐
Limited sight distance	☐	☐	☐	☐	☐
Other Criteria	☐	☐	☐	☐	☐
Other Criteria	☐	☐	☐	☐	☐

Non-Engineering Criteria

	1	2	3	4	5
Citizen Request.....	☐	☐	☐	☐	☐
U.S. Postal Service Request	☐	☐	☐	☐	☐
Maintenance Supervisor Request.....	☐	☐	☐	☐	☐
Funding Availability	☐	☐	☐	☐	☐

Question #5

Mailbox turnouts are similar to left-turn lanes on undivided highways in that they provide safe refuge for letter carriers and their mail customers.

Should there be established engineering criteria in TxDOT's *Roadway Design Manual* for constructing mailbox turnouts under the following conditions (similar to how there are criteria for left-turn lanes)?

	Strongly Agree			Strongly Disagree
With state forces on existing roadways with no shoulders?	☐ 1	☐ 2	☐ 3	☐ 4
With construction projects (3R/4R projects only)?	☐ 1	☐ 2	☐ 3	☐ 4
With Routine Maintenance Contracts?	☐ 1	☐ 2	☐ 3	☐ 4
With driveway permits?	☐ 1	☐ 2	☐ 3	☐ 4

Question #6

What criteria or justification have you used in the past to construct mailbox turnouts?

Check all that apply.

☐ Citizen request (written/verbal request)

☐ U.S. Postal Service request

☐ Maintenance Supervisor request/recommendation

☐ Other TxDOT staff request (D.E., Director, etc.)

☐ Multiple mailbox installations only

☐ Crash history on highway related to rear-end crashes or near misses with mail carriers

☐ Vertical or horizontal sight distance limitations to mailbox/driveway

☐ High speed on highway

☐ High volume on highway

☐ Funding availability

☐ New construction to widen highway

☐ Other

Question #7

Have you installed (or permitted the installation of) mailboxes on the opposite side of the driveway (i.e., left side of the highway in direction of travel) if site conditions required it?

☐ Yes (0)
☐ No (go to Question #8) (74)
☐ Not Sure (go to Question #8) (0)

If Yes, what site conditions required a mailbox placement on the opposite side of the driveway?

☐ Limited right of way on right side
☐ Limited or no shoulder on right side
☐ Side slope too steep
☐ Poor drainage
☐ Conflict with fixed objects (guard rail, culvert, trees, etc.)
☐ Sight distance issues
☐ Other

Question #8

Do you typically install (or permit the installation of) the mailbox on the "near side" or "far side" of the driveway?

☐ Always on Near Side of the driveway
☐ Always on Far Side of the driveway
☐ Depends on site conditions and what is safer for the letter carrier and citizen to deliver and pick up mail
☐ Other (fill in blank)

Is there a <u>maximum</u> displacement distance from the driveway in which you will move a single or multiple mailbox installation in order for it to be in a safer location?

☐ Yes, but not sure of a maximum distance
☐ Yes, and maximum distance is approximately
    ☐ < 50 feet
    ☐ 50 to 100 feet
    ☐ 100 to 500 feet
    ☐ 500 to 1,000 feet
    ☐ > ¼ mile
☐ No
☐ Not Sure

Question #9

Do you have an internal policy or procedure (written or otherwise) that involves coordination with local postmasters and/or letter carriers whenever mailbox installations could be affected by upcoming maintenance or construction activities?

☐ Yes (If Yes, explain)
☐ No — If No, do you have ideas on how to improve coordination?

Question #10

How often do you contact the local postmaster to attend pre-work and/or pre-construction meetings for projects that will affect mailbox installations?

<u>For Maintenance or State Force Work:</u>

☐ Always
☐ Frequently
☐ Occasionally
☐ Very Infrequently
☐ Never

Comments

<u>For Construction Projects:</u>

☐ Always
☐ Frequently
☐ Occasionally
☐ Very Infrequently
☐ Never

Comments

Question #11

If invited, how often does the local postmaster attend pre-work or pre-construction meetings?

☐ N/A (not typically invited)
☐ Always Attends
☐ Frequently Attends
☐ Occasionally Attends
☐ Very Infrequently Attends
☐ Never Attends

Question #12

Have you had any issues that have arisen during construction projects due to mail service delivery?

☐ Yes
☐ No

If Yes, explain

Question #13

Do you have suggestions for how to more safely and efficiently accommodate mail delivery during work activities?