Texas Reference Marker (TRM) System User's Manual
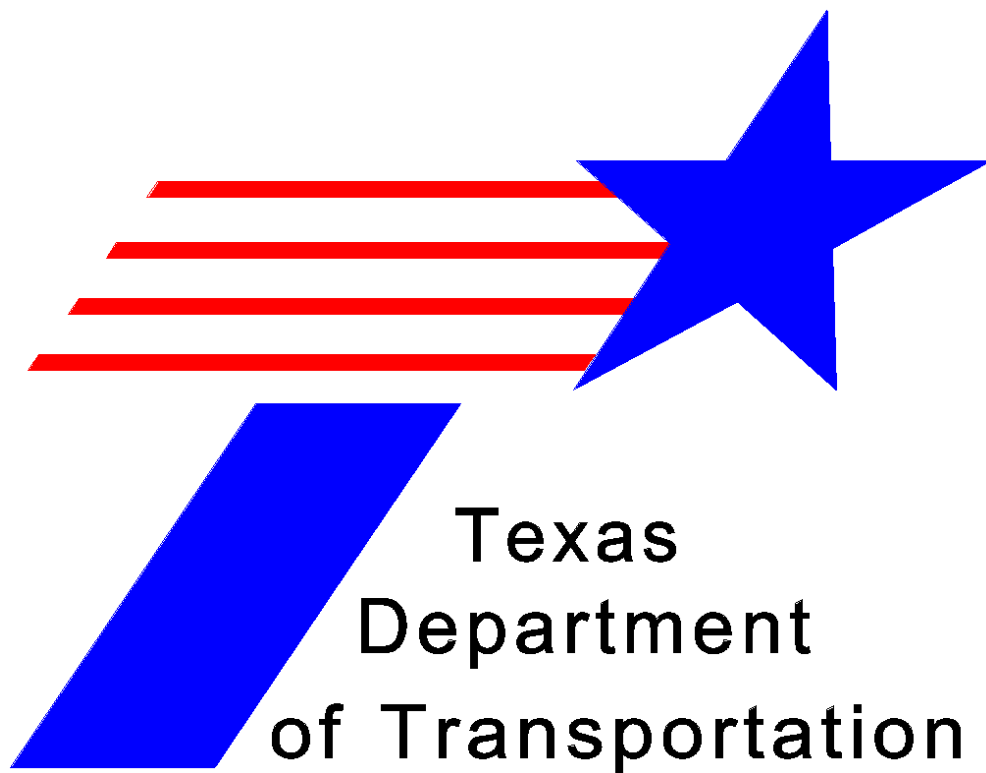
Texas
Department
of Transportation

Revised January 2005

Manual Notice 2005-1

From: James L. Randall, P.E.

Manual: *Texas Reference Marker System User's Manual*

Effective Date: January 01, 2005

Contents

The manual provides Texas Reference Marker (trm) System Highway Data File users with the necessary information to input data to, or extract data from TRM. This manual is contained in the Planning, Programming, Environmental collection of the TxDOT Online Manual System.

Changes

Chapters 1 and 2 - Changed   references from Design Division to Construction Division.

Chapter 3 - Changed references from Design Division to Construction Division and added information about the new User Information screen and the Board.

Chapter 4 - Added subsection for TRM Export instructions.

Chapter 6 - Updated TPP Highway Values to include all District Highway Status Values.

Chapter 7 - Updated instruction tables to reflect changes for inputting Reference updates.

Chapter 8 - Clarified constraints.

Chapter 10 - Updated of Travel responsibilities and Highway Values; Left/Right is now Shoulder Inside/Outside; Changed references from Design Division to Construction Division.

Chapter 12 - Updated Design and Route values.

Chapter 14 - Clarified references to the TPP website and updated graphics to reflect the look of the current.

Contact

Refer questions or suggestions to the Special Projects and Audit Branch of the Administration Section of the Transportation Planning and Programming Division.

Archives

Past manual notices are available in a [PDF archive](#).

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Chapter 1 — Texas Reference Marker System

Contents:

Section 1 — Introduction to TRM

What is TRM?

TRM is the acronym for the Texas Reference Marker System. This automated system documents the past, present, and future state-maintained highway network of on-system roadways in the State of Texas. The database contains:

◆   Mileage for every segment of the highway network

◆   All secondary designations of any roadway segment

◆   Administrative responsibilities of any roadway segment

◆   Any classifications assigned by federal or state authorities

◆   Configuration of all roadbeds for each route

◆   Physical properties of each highway and roadbed, including dimensions and materials.

Development of the TRM System

In 1988, the Highway Systems Functional Review Team identified some critical needs related to highway data:

◆   No common reference key for all highway related data

◆   A time delay for Roadway Information System (RIS) data input

◆   No single source of complete data for roadway data summaries (see Purpose *in Transportation Planning Policy Manual*, Section 3).

Administrative Order 30-88 (see also Reference in *Transportation Planning Policy Manual*, Section 3) called for the creation of a **department-wide, single location reference key**. The Texas Reference Marker project began in March 1989 to comply with this Order. The project fulfilled the following goals:

◆   Physically locating reference markers on the highway

◆   Providing a unique location reference using reference markers

◆   Providing a consecutive numbering scheme from the beginning to the end of the highway

◆   Requiring modifications to all current information management systems and other computer software that refer to highway locations, as practical, to the new highway reference marker system. All future software development will employ this new highway reference marking system

◆   Automating the Road Inventory 1 (RI-1) road logs (see <u>Summary</u> in *Transportation Planning Policy Manual*, Section 3).

<u>Transportation Planning and Programming Division</u> (TPP) implemented TRM in May 1995, when the division's TRM analysts and district Reference Marker coordinators began maintaining TRM.

Documents Establishing TRM

This table contains summaries of documents that established and provided procedures for the Texas Reference Marker System. This manual replaces these documents:

Documents Establishing TRM & Procedures

Summary
Administrative Order 30-88 "Establishment of a Highway Reference Marker Location System", dated 10/21/88—Designates the TRM Project to develop the automated system and redefines mileposts as reference markers. See *Transportation Planning Policy Manual*, Chapter 4, <u>Section 3</u>
Administrative Circular 1-90 "Procedure for Initial Installation of Uniform Reference Markers", dated 2/5/90—Provides verification and installation guidelines, asks the districts to appoint Reference Marker Coordinators, and furnishes Reference Marker sign specifications
Administrative Announcement 3-90 forwarding Minute Order 089979 and Minute Order 089979 designates Business Routes and establishes the statewide policy that all highways shall be signed as they are designated
◆ Administrative Circular 4-90 "Highway Designations and Posted Signs", dated 3/23/90—Explains Minute Order 89979 more thoroughly
Administrative Circular 16-90 "Procedure for Installation and Maintenance of Uniform Reference Markers", dated 8/20/90—Provides guidelines for assigning reference marker numbers to different highway situations and reviews Highway system hierarchy
Administrative Circular 8-92 "Roadway Information System (RIS) Data Maintenance", dated 6/11/92—Outlines TRM Data element and attribute (Divisions, Districts, and Joint)

Benefits of TRM

TRM addresses the critical needs related to highway data:

◆   Reference markers are physically located on the road. Some other forms of location (control-section-milepoint, link-node) appear only on special maps

◆   Data records are physically located in the field by relationship to posted reference markers

◆   The common key allows communication among other databases which employ the reference marker key

◆   Data corrections are more timely and more accurate because the district offices are responsible for data entry and validation

◆   Concurrent routes and on- and off- system links are defined for the first time in any automated file, creating a consecutive reference numbering scheme and seamless network

◆   TRM analysts add a route and most of its roadway-related data to TRM before the route opens to traffic.

What This Manual Provides

This manual provides TRM users with the necessary information to input data to or extract data from TRM, such as:

◆   A complete listing of data elements and their definitions. Terms defined in the TxDOT Glossary appear in red, underlined text; click on these terms to go to the definitions.

◆   Complete explanations of procedures necessary to input data and create and maintain the file

◆   Thorough explanations of the requirements and restrictions of the TRM database system operating environment

◆   Statements of responsibilities, sequencing, and the relationship of all offices involved in maintaining the file

◆   Thorough descriptions of the reports available through the TRM system

◆   Complete explanations of TRM error messages on data entry screens

◆   Appendix that defines values on the traffic query screen.

Section 2 — Key Points to Know

Responsibilities and Definitions for TRM

Construction Division (CST)—A Division of Texas Department of Transportation which oversees the highway construction and improvement program; provides service and expertise in materials quality and technology; and supports pavement management and pavement research projects. This Division is responsible for inputting highway load limit data into TRM (for more CST information click on this Internet address: http://www.txdot.gov/about_us/administration/divisions/cst.htm).

Districts—The 25 TxDOT "local" offices (for more information click on this Internet address: http://www.dot.state.tx.us/local_information/default.htm):

District-Id Values

Value	District	Value	District
01	Paris (PAR)	13	Yoakum (YKM)
02	Fort Worth (FTW)	14	Austin (AUS)
03	Wichita Falls (WFS)	15	San Antonio (SAT)
04	Amarillo (AMA)	16	Corpus Christi (CRP)
05	Lubbock (LBB)	17	Bryan (BRY)
06	Odessa (ODA)	18	Dallas (DAL)
07	San Angelo (SJT)	19	Atlanta (ATL)
08	Abilene (ABI)	20	Beaumont (BMT)
09	Waco (WAC)	21	Pharr (PHR)
10	Tyler (TYL)	22	Laredo (LAR)
11	Lufkin (LFK)	23	Brownwood (BWD)
12	Houston (HOU)	24	El Paso (ELP)
		25	Childress (CHD)

Office of Primary Responsibility (OPR)—The district or division office responsible for making decisions on behalf of the department with regard to use, classification, and protection of specific information contained on a resource. This manual explains, in each chapter, the responsibilities for making decisions regarding the use, classification, and protection of specific highway information contained on the TRM resource.

Office of Secondary Responsibility (OSR)—The district or division office with secondary responsibility for making decisions on behalf of the department with regard to use, classification, and

protection of specific information contained on a resource. This manual explains, in each chapter, the secondary responsibilities for making decisions regarding the use, classification, and protection of specific highway information contained on the TRM resource.

Texas Transportation Commission—The five-member Texas Transportation Commission governs the Texas Department of Transportation, which is headed by an executive director selected by the commission (for more commission information click on this Internet address: http://www.dot.state.tx.us/transcom/default.htm). The commission is responsible for approving all highway changes.

Transportation Planning and Programming Division (TPP)—A Division of TxDOT which administers planning funds and collects data on the state highway system (for more TPP information click on this Internet address: http://www.txdot.gov/about_us/administration/divisions/tpp.htm). TRM is one of the data collecting systems.

Official TRM Location Key

Access all data within TRM by Signed Highway, Reference Marker Group, and Roadbed-ID:

Signed Highway—Consists of the Signed Highway System + Signed Highway Number + Signed Highway Suffix. TRM ties all roadway information and reference markers to this route in:

◆ System—Represents the posted designation approved by the Texas Transportation Commission for a segment of highway.

NOTE: Roadway link is the only exception. If a linking situation occurs, the system stores all data and reference markers with the Linking Signed Highway System within the linked segment.

Values are listed in order of hierarchy:

◆

Signed Highway System Values

Value	Signed Highway System
IH	Interstate Highway
US	US Highway
UA	US Alternate Highway
UP	US Highway Spur
SH	State Highway (Includes NASA and OSR)
SA	State Alternate Highway
SL	*State Highway Loop (Includes Beltway)

Signed Highway System Values

Value	Signed Highway System
SS	*State Highway Spur
BI	*Business Interstate Highway
BU	*Business US Highway (Includes US Alternate)
BS	*Business State Highway (Includes SH Alternate)
BF	*Business Farm or Ranch to Market Road
FM	*Farm to Market Road
RM	*Ranch to Market Road
RR	*Ranch Road
PR	Park Road
RE	Recreation Road
RP	Recreation Road Spur
FS	*Farm to Market Road Spur
RS	*Ranch to Market Road Spur
RU	*Ranch Road Spur
PA	Principal Arterial Street System (PASS)
Interstate Highway Business Route and US Highway Business Route are **state designations** and therefore do not conform to AASHTO guidelines.
Routes marked with an (*) have equal value for signing, concurrent routing, data collection, and reference marker posting.

◆ Number—Identification number associated with the Signed Highway System. Valid values are subject to these constraints:

Highway Constraints

If Highway System...	Then...
	Reference Marker Number may be:
= IH	0000 to 9998
Does not = IH	0010 to 9998
	Highway Number may be:
= SH	0001 to 9999, NASA, or OSR
Does not = SH	0001 to 9999

Highway Constraints

If Highway System...	Then...
	Highway Suffix may be:
= PR	Blank, A to Z
= BI, BU, BS, BF	A to H, J to N, P to Z
Does not = PR, BI, BU, BS, BF	Blank, N, S, E, or W

◆   Suffix—Character added to the end of the Signed Highway Number to further partition the number or, in the case of business routes, to indicate geographical routing. Valid values are determined by the Signed Highway System as shown in the Highway Constraints table.

Reference Marker Group—Consists of the Reference Marker Number + Reference Marker Suffix + Signed Reference Marker Displacement:

◆   Number—Official number posted on the signed highway route. Used together with the other components of the Reference Marker Group to locate roadway data in TRM. Determine valid values by the function. TRM numbers markers from state line to state line and from western-most or northernmost point of the Highway origin. (South to north for interstate highway numbering.) Valid values, as shown in the Highway Constraints table, are: 0000 to 9999 (for interstate highways); 0010 to 9998 (for non-interstate highways)

◆   Suffix—Posted suffix character, if any, appended to the reference marker number on the signed highway route. Used together with the other components of the Reference Marker Group to locate data on the highway in TRM. Valid values, as shown in the Highway Constraints table, are: Blank (no suffix) or A thru Z.

◆   Sign—Symbol indicating the ascending or descending direction to a data feature or attribute from a posted reference marker. Valid values are: + (displacement in ascending reference marker direction) or − (displacement in descending reference marker direction).

◆   Displacement—Distance in miles from a posted reference marker on the signed highway route to a data feature or attribute. Used together with the other components of the Reference Marker Group to locate data on the highway in TRM. Valid values are: 00.000 to 99.999

Roadbed-Id—Data stored and processed per roadbed requires the Roadbed-ID as part of the location key. Data relating to the entire roadway does not use Roadbed-ID as part of its location key.

We use these terms throughout the TRM User's Manual.

Section 3 — Data Maintenance Responsibility

◆ Summary

In the past, many of the duties associated with maintaining roadway information were primarily the responsibility of TPP. Through TRM processing, TPP shares the responsibility of data mainte-nance with all district offices and `Construction` Division.

TPP's primary role is ensuring that the network alignment and highway mileages are accurate. **Both state and federal reporting rely on TRM** to provide the most current maintained-highway mileage accurately:

TPP Responsibilities

Assigns	The initial reference marker to any new roadway construction
Adds	◆ The initial reference marker on a new route ◆ The roadbed configuration of each new route or segment
Inventories	◆ New routes and new construction to existing routes ◆ All administrative-related data ◆ All curve and bearing-related data ◆ All concurrencies, on-system links, and off-system links ◆ The latitude, longitude, and elevation of each marker ◆ Traffic-related data
Removes	Routes or segments due to route realignment or redesignation
Creates/plots	Automated Road Inventory (ARI) diagrams
	Click this link for your district's TRM analyst.

The District's role is adding all data about the highways and their attributes and features:

District Responsibilities

Assures	Proper placement of reference markers on the construction plans
Inventories	◆ All pavement-related data attributes ◆ New or moved reference markers in the field and database; removes deleted reference markers from the field and database
Maintains	◆ ARI-related features (intersections, culverts, roadside features, etc) in the database ◆ District Maintenance data
Creates/plots	Automated Road Inventory diagrams; creates/modifies interchange drawings for the ARI diagrams

The `Construction` Division's role is:

CST Responsibilities

Inventory	Axle, gross, and tandem [load limits](#) for each route

Section 4 — Establishing a Route

Summary

The following is a summary of the steps TRM Users take to inventory a new route and input to TRM:

Establishing A Route

Step	Information
1	The district office drafts the construction plans. These plans contain at least one reference marker and its displacement from the beginning of the route to the ending of the route. To establish this marker number, the district office contacts its TPP TRM analyst indicating: ◆ the geographical location of the new route ◆ the location in miles from the beginning of the route to the new marker ◆ the overall route direction (north to south, west to east, etc). The TPP TRM analyst then determines the numeric value of the one marker.
2	TPP receives the construction plans. In the past, TPP received only the as-built final plans after the roadway was built. TPP now receives the initial construction plans to inventory before the district completes construction
3	TPP determines the network characteristics of the route diagrammed in the plans and enters these into TRM: ◆ The route alignment using the one reference marker from the plans ◆ The roadbed configuration of the route or route segment ◆ Any other roadway data which can be collected from the plans, such as curves, bearings, administrative-related data, etc.
4	The TPP TRM analyst informs the district TRM coordinator when he/she adds the route to TRM and that the route is now ready for district data input
5	District enters data to TRM. At this time, the route is considered under construction
6	District completes route and makes a final review of the data entered to TRM. Once they validate all data, the district sets the Highway Status to 5—Open to traffic, all district data entered
7	TPP enters any remaining data. TPP makes all final adjustments to the data and then sets the Highway Status to 6—Open to traffic, all data entered. The route is now considered officially open for traffic.

Chapter 2 — Feature Characteristics

Contents:

Section 1 — Key Points to Know

Identifying Characteristics

The TRM User must identify characteristics of the data features within TRM and apply those characteristics to each individual feature in a data matrix. This chapter describes the ADABAS Matrices that contain the system-required information you need to gather in order to update the system successfully.

Defined Characteristics

The Adaptable Data Base (ADABAS) matrices provide information to assist any user in selecting values, and entering and retrieving data from TRM:

ADABAS Matrix

Information Categories
ADABAS feature name
Feature's common name
Data Classification
Field Size
Feature Type
Roadbed Classification

Section 2 — ADABAS Feature Characteristics

Column Headers

Each of the defined data feature characteristics serve as column headers for data in the ADABAS matrix.

Feature Names

```
Feature Names is the ADABAS term for a TRM feature.  The system
uses this name to search for and retrieve the correct data records
for ad hoc reporting purposes.
```

EXAMPLE: CI-CURVE-TYPE-CODE

The Common Name is a term used in input instructions and more likely heard in everyday conversation than the ADABAS name.

```
EXAMPLE: 'Curve Type' is easier to say than 'CI-CURVE-TYPE-CODE'.
```

Data Classes

Three classes of data attributes/features in TRM are Key Data, Point Data, and Length Data:

◆   Key Data—Attributes/features used to search, process, and store records in the data file:

Key Data

Data	Description
Highway	◆ Signed Highway System ◆ Number ◆ Suffix, if any
From	◆ Reference Marker Number and Suffix closest to the beginning of the update ◆ Reference Marker Sign as positive if the direction to the beginning of the update is past the marker, or as negative if the direction to the beginning of the update is prior to the marker ◆ Reference Marker Displacement as the distance from the marker to the beginning of the update
To	◆ Reference Marker Number and Suffix closest to the ending of the update ◆ Reference Marker Sign as positive if the direction to the ending of the update is past the marker, or as negative if the direction to the ending of the update is prior to the marker ◆ Reference Marker Displacement as the distance from the marker to the ending of the update
Roadbed-Id	C, N, K, R, L, P, T, S, M, X, Y, A, B

◆   Point Data—**A** single location on the roadway at which the given data feature resides:

Point Data

Data	Description
Features such as Boundary Data, Maintenance Data, Marker Coordinates	◆ Use one reference marker number plus displacement EXAMPLE: Record the intersection of two routes by setting a value to the reference marker plus displacement where the centerline of each route meets. In Figure 2-1 below, Reference Marker 914 + a displacement of 1.474 (or Reference Marker 916 - a displacement of 0.528) is the location of the US 287/FM 1288 intersection.
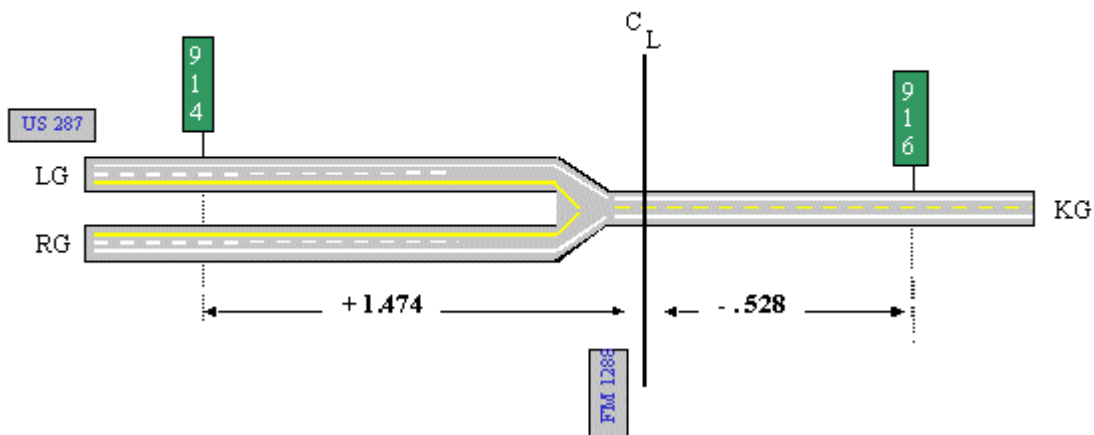
Figure 2-1.   FM 1288 intersects US 287 at Reference Marker 914 + 1.474 or Reference Marker 916 – 0.528.

◆   Length Data—The continuous value of a given feature from a beginning point to an ending point on the roadway. Input the value using two reference marker location points: the **from** Reference Marker plus displacement (beginning of the value) and the **to** Reference Marker plus displacement (ending of the value). The two types of length data are**:**

Length Data

Data	Description
Continuous	Values may change throughout an entire route, but there are no breaks or holes where no values exist. EXAMPLE: Values for features like Speed Limit Maximum begin and end consecutively throughout the entire route with no holes (see Figure 2-2 below).
Non-continuous	Values are not required to run consecutively throughout the route. Breaks or holes may exist. EXAMPLE: A secondary route can stop and start several times throughout the entire route (see Figure 2-3 below).
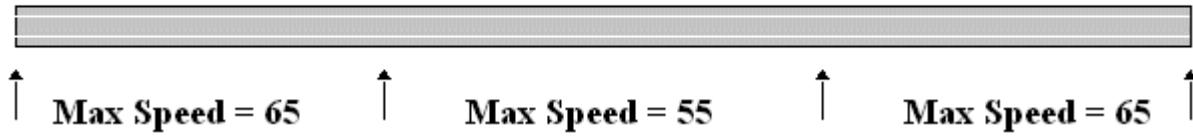
Figure 2-2. Speed limit 65 ends where 55 begins; then 55 ends where 65 begins again.
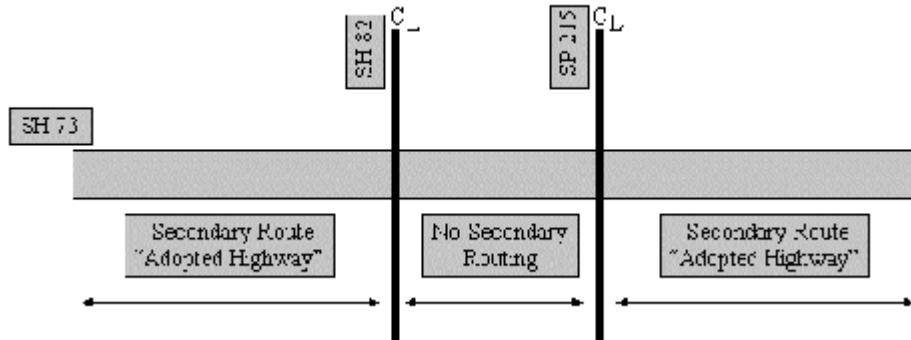
Figure 2-3. First Secondary Route ends at SH 82; no Secondary route between SH 82 and SP 215, then another Secondary Route begins at SP 215.

Field Size

Field Size is the number of characters or digits allowed in the feature. Those with a decimal indicate both the number of digits before the decimal and the number of digits after the decimal.

EXAMPLE: Reference Marker Displacement consists of two digits before the decimal and three digits after the decimal. The field size is '2.3'.

Roadbed Classes

Locate most data in TRM not only by Signed Highway + Reference Marker location, but also by Roadbed-Identification (see Figure 2-4).

CL

KG

LG   RG

XG LG   RG AG

XG MG LG   RG SG AG

XG PG MG LG   RG SG TG AG

YG XG PG MG LG   RG SG TG AG BG

CG = Centerline--All roadbeds; example: maintenance data and ROW
NG = All mainlane roadbeds
KG = Single roadbed (two-way traffic)

LG = Left Mainlane Roadbed   **RG = Right Mainlane Roadbed**
MG = Left Supplemental Mainlane Roadbed   **SG = Right Supplemental Mainlane Roadbed**
PG = Left Supplemental Supplemental Mainlane Roadbed   **TG = Right Supplemental Supplemental Mainlane Roadbe**
XG = Left Frontage Road   **AG = Right Frontage Road**
YG = Left Supplemental Frontage Road   **BG = Right Supplemental Frontage Road**

Figure 2-4. Diagram of all TRM Roadbed-IDS.

Depending on an attribute's roadbed classification, the system stores the value of a given feature either on all roadbeds of the route or only on some of the roadbeds. Attributes/ features have five general roadbed classes:

Roadbed Classes

Class	Descriptions and Examples
Roadbed-Specific (RB)	◆ Data values for the roadbed-specific feature reside on each physical roadbed within a given reference marker range on the route. ◆ Valid Roadbed-IDS: K, R, L, P, T, S, M, X, Y, A, and B. EXAMPLE: Speed Limit Maximum; within a given Reference Marker range, the system records the speed limit for each individual roadbed, even if the speed limit value is the same for all roadbeds.
Centerline (CL)	◆ One data value applies to all existing roadbeds within a given reference marker range. ◆ Valid Roadbed-Id: C. EXAMPLE: Secondary Route Designation; a given Reference Marker range includes all roadbeds with the one designation.

Roadbed Classes

Class	Descriptions and Examples
Combination main-lanes plus individual frontage roads (MF)	◆ One data value applies to all mainlanes within a given reference marker range. ◆ Within that same range, data values also reside on each individual frontage road. ◆ Valid Roadbed-IDS: ◆ N for the combined mainlane roadbeds K, R, L, P, T, S, M ◆ X, Y, A, and B for the frontage road roadbeds. EXAMPLE: Administrative System—in a given Reference Marker range, all mainlane roadbeds have the same value, but values are recorded for each individual frontage road roadbed separately.
Combination of the Left and Right Main-lanes (LR)	◆ One data value applies to the left and right mainlanes only. ◆ Valid Roadbed-Id: N. EXAMPLE: Only Median Type and Width are this class; medians are recorded between the left and right mainlanes of a highway.
Mixture (MX)	◆ Data values may apply to all physical roadbeds individually (roadbed-specific) or to the mainlanes combined plus each individual frontage road roadbed (combination mainlanes plus each frontage road). ◆ Valid Roadbed-Id: K, R, L, P, T, S, M, X, Y, A, and B for each physical roadbed or N, X, Y, A, and B for mainlanes combined plus frontage road roadbeds. EXAMPLE: Intersections—a highway intersects the left mainlane and not the right, or it crosses both the left and right, etc. The ARI diagram draws different symbols depending on whether the roadbed is N or a specific mainlane roadbed

For more detail on inputting Roadbeds, go to Chapter 8

Maintenance Responsibilities

Five areas of responsibility exist within TRM for maintaining and deleting data features:

TRM Maintenance Responsibilities

Responsible Office	Description
Transportation Planning & Programming Division **only** (TPP)	TPP has sole responsibility.
District offices **only** (DIS)	The specified district office has sole responsibility.
District Office **and** TPP (TPP/DIS)	The specified district office and TPP share responsibility. EXAMPLE: TPP is responsible for adding the first reference marker of a new route to TRM. From that point forward, the district office is responsible for that marker's maintenance.
`Construction` Division **only** (`CST`)	CST has sole responsibility.

TRM Maintenance Responsibilities

Responsible Office	Description
System Generated (SYS)	The TRM system maintains these records.

Section 3 — ADABAS Matrix

Why Use the ADABAS Matrices?

Use the following ADABAS legend and Matrices to help you input the correct, system-required information to TRM accurately and successfully.

ADABAS Legend

Use this legend to interpret the information in the ADABAS Matrix:

Legend for the ADABAS Data Matrix

Column	Description
ADABAS Attribute Name	The search name used to retrieve data records.
Common Name	Appears in instructions and on the TRM data screens.
Data Type	◆ K = Key field ◆ P = Point data ◆ L = Continuous Length data ◆ N = Non-continuous Length data
Field size	Number of digits before and after the decimal
Roadbed Classification	◆ RB = Roadbed-specific ◆ CL = Centerline ◆ MF = Combination mainlanes plus each frontage road ◆ LR = Combination of the Left and Right Mainlanes ◆ MX = Mixture ◆ CL/MF = Some values of this attribute are centerline, some are a combination of mainlanes plus each frontage road

TPP ADABAS Matrix

Use this ADABAS matrix to determine the attribute's data type, field size, and roadbed class that are TPP's maintenance responsibility:

TPP ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
AADT-ADJUST-CURRENT	Adjusted Current AADT	L	6	MF
AADT-CURRENT	Current AADT	L	6	MF

TPP ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
AADT-CURRENT-YEAR	Current Year AADT	L	8	MF
AADT-FOR-DESIGN-YEAR	Design Year AADT	L	8	MF
AADT-HISTORY	Historical AADT	L	6	MF
AADT-HISTORY-YEAR	History Year AADT	L	8	MF
ADMIN-SYSTEM-CODE	Admin System	L	1	MF
ATHWLD-PCT	ATHWLD –PCT	L	6	MF
ATHWLD-100-LBS	ATHWLD –100-LBS	L	6	MF
BASELINE-BEARING-GRP	Baseline Bearing Data	-	-	-
◆ BLB-TYPE-CODE	◆ Bearing Type	P	1	CL
◆ BLB-DEGREE-MEAS	◆ Bearing Degrees	P	2	CL
◆ BLB-MINUTES-MEAS	◆ Bearing Minutes	P	2	CL
◆ BLB-SECONDS-MEAS	◆ Bearing Seconds	P	2.1	CL
◆ BLB-DIRECTION-BEG	◆ Bearing Direction Begin	P	1	CL
◆ BLB-DIRECTION-END	◆ Bearing Direction Ending	P	1	CL
◆ BLB-NOTE	◆ Bearing Location	P	8	CL
◆ BOUNDARY-DATA-GRP	◆ Boundary Data	-	-	-
◆ BOUNDARY-TYPE	◆ Boundary Type	P	1	CL/MF
◆ BOUNDARY-NOTE	◆ Boundary Notation	P	30	CL/MF
◆ BOUNDARY-SKEW	◆ Boundary Skew	-	-	-
-	◆ Quad	P	1	CL/MF
-	◆ Type	P	1	CL/MF
-	◆ Angle	P	2	CL/MF
◆ BOUNDARY-BEGIN-END	◆ Boundary Begin End	P	1	CL/MF
CENSUS-PLACE-NBR	Census Place	L	5	MF
CITY-NBR	City Number	L	5	MF
CONTROL-SECTION	Control Section	L	6	CL
COUNTY-NBR	County Number	L	3	CL
CURVE-POINT-CODE	Curve Point	P	1	CL
CURVE-INFO-GRP	Curve Data	-	-	-

TPP ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
◆ Cl-CURVE-LENGTH	◆ Curve Length	P	2.3	CL
◆ Cl-CURVE-TYPE-CODE	◆ Curve Type	P	1	CL
◆ Cl-CURVE-DEGREE-GRP	◆ Curve Degree Angle	-	-	-
◆ Cl-CD-DEGREE-MEAS	◆ Curve Degrees	P	2	CL
◆ Cl-CD-MINUTES-MEAS	◆ Curve Minutes	P	2	CL
◆ Cl-CD-SECONDS-MEAS	◆ Curve Seconds	P	2.1	CL
◆ Cl-DELTA-GRP	◆ Delta Angle	-	-	-
◆ Cl-DELTA-DEGREE-MEAS	◆ Delta Degrees	P	3	CL
◆ Cl-DELTA-MINUTES-MEAS	◆ Delta Minutes	P	2	CL
◆ Cl-DELTA-SECONDS-MEAS	◆ Delta Seconds	P	2.1	CL
◆ Cl-DLT-LEFT-RIGHT-CODE	◆ Delta Left/Right	P	1	CL
◆ Cl-TS1-TANG ENT-LENGTH	◆ Tangent Length 1	P	2.3	CL
◆ Cl-TS2-TANGENT-LENGTH	◆ Tangent Length 2	P	2.3	CL
DESIGN-HOURLY-VOLUME	Design Hourly Volume	L	6	MF
DESIGN-YEAR	Design Year	L	8	MF
DIRECTIONAL-FACTOR	Directional Factor	L	3	MF
DISTRICT-ID	District-Id	L	2	CL
ELEVATION-MEAS	Elevation	L	4.2	CL
FIPS-URBAN-AREA	FIPS Urban Area Number	L	5	MF
FLEX-18KIP-ESAL	Flex 18KIP ESAL	L	6	MF
FUNCTIONAL-SYSTEM	Functional System	L	2	MF
GOVT-CONTROL-LEVEL-CODE	Govt Control Level	L	2	MF
HIGHWAY-DESIGN CODE	Highway Design	L	2	MF
K-FACTOR	K Factor	L	2	MF
LATITUDE-MEAS	Latitude	P	6.4	CL
LINK-REF-MARKER-GRP	Link Reference Marker Group	-	-	-
◆ LINK-REF-MKR-NBR	◆ Link Ref Marker Number	-	-	-
-	◆ Link Ref Marker Number	N	4	CL
-	◆ Link Ref Marker Suffix	N	1	CL

TPP ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
◆ LINK-REF-MKR-DISP	◆ Link Ref Marker Displacement	N	2.3	CL
LINK-SIGNED-Highway	Link Signed Highway	-	-	-
-	◆ Link Highway System	N	2	CL
-	◆ Link Highway Number	N	4	CL
-	◆ Link Highway Suffix	N	1	CL
LINK-TYPE-CODE	Link Type	N	2	CL
LINK-TYPE-NOTE	Link Notation	N	30	CL
LONGITUDE-MEAS	Longitude	L	7.4	CL
METRO-PLANG-AREA-NBR	Metropolitan Planning Area	L	3	MF
OFF-SYSTEM-LENGTH	Off-System Length	N	3.3	CL
RAILROAD-NBR	Railroad Number	P	7	mx
RIGID-18KIP-ESAL	Rigid-18KIP ESAL	L	6	MF
ROADBED	Roadbed-Id	N/K		RB
RURAL-URBAN-CODE	Rural/Urban Values	L	I	MF
SECONDARY-RTE-DESIG	Secondary Route Designation	N	1	CL
SIGNED-HIGHWAY	Signed Highway	-	-	-
◆ Highway-System	◆ Highway System	K	2	MX
◆ Highway-Number	◆ Highway Number	K	4	MX
◆ Highway-Suffix	◆ Highway Suffix	K	1	mx
SPECIAL-SYSTEM-CODE	Special System Value	L	2	CL
TRUCK-PCT-AADT	Truck PCT AADT	L	6	MF
TRUCK-PCT-DHV	Truck PCT DHV	L	6	MF

District ADABAS Matrix

Use this ADABAS matrix to determine the attribute's data type, field size, and roadbed class that are the districts'maintenance responsibility:

District ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
BASE-TYPE-CODE	Base Type	L	1	RB
CULV-FILL DEPTH –MEAS	Culvert Fill Depth	p	2	MX
CURB—TYPE-LEFT-CODE	Curb Type Left	p	1	RB
CURB—TYPE-RIGHT-CODE	Curb Type Right	p	1	RB
DIRECTION-OF-TRAVEL	Direction of Travel	L	1	RB
HIGHWAY-MAINT-STATUS-CODE	Highway Maintenance Status	L	2	CL
MAINT-FOREMAN-NBR	Maintenance Foreman Number	L	2	CL
◆ MAINT-DISTRICT	◆ Maintenance District	L	2	CL
◆ MAINT-SECTION	◆ Maintenance Section	L	2	CL
MEDIAN-TYPE	Median Type	L	1	LR
MEDIAN-WIDTH	Median Width	L	2	LR
NUMBER—THRU-LANES	Number of Through Lanes	L	2	RB
ROADBED—WIDTH	Roadbed Width	L	3	RB
SHLDR-TYPE-LEFT-CODE	Shoulder Type Left	L	1	RB
SHOULDER—USE-LEFT-CODE	Shoulder Use Left	L	1	RB
SHOULDER—WIDTH-LEFT-CODE	Shoulder Width Left	L	2	RB
SHOULDER—TYPE-RIGHT-CODE	Shoulder Type Right	L	1	RB
SHOULDER—USE-RIGHT-CODE	Shoulder Use Right	L	1	RB-
SHOULDER—WIDTH-RIGHT-MEAS	Shoulder Width Right	L	2	RB
SPEED-LIMIT—MAX	Speed Limit Maximum	L	2	RB
SPEED-LIMIT—MIN	Speed Limit Minimum	L	2	RB
SURFACE-TYPE-CODE	Surface Type	L	2	RB
SURFACE-WIDTH-MEAS	Surface Width	L	3	RB

TPP/District ADABAS Matrix

Use this ADABAS matrix to determine the attribute's data type, field size, and roadbed class that are TPP and the districts' maintenance responsibility:

TPP/District ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
HIGHWAY-STATUS-GRP	Highway Status Data	-	-	-
◆ HIGHWAY-STATUS-CODE	◆ Highway Status	L	1	RB
◆ HIGHWAY-STATUS-NOTE	◆ Highway Status Notation	L	30	RB
INTERSECTION-GRP	Intersection Data	-	-	-
◆ INT-FEATURE-TYPE	◆ Int Feature Type	P	2	MX
◆ INT-REF-MARKER-GRP	◆ Int Reference Marker Group	-	-	-
◆ INT-REF-MARKER-NBR	◆ Int Ref Marker Number	-	-	-
-	a. Int Ref Marker Number	P	4	MX
-	b. Int Ref Marker Suffix	P	1	MX
◆ INT-REF-MARKER-DISP	◆ Int Ref Marker Displacement	P	2.3	MX
◆ INT-ROADBED-ID	◆ Int Roadbed Id	P	2	MX
◆ INT-SIGNED-HIGHWAY	◆ Int Signed Highway	-	-	-
-	◆ Int Highway System	P	2	MX
-	◆ Int Highway Nbr	P	4	MX
-	◆ Int Highway Suffix	P	1	MX
◆ INT-TYPE	◆ Int Type	P	1	MX
REF-MARKER-DATE	Reference Marker Date	-	-	-
-	◆ Month	P	V	CL
-	◆ Day	P	V	CL
-	◆ Year	P	V	CL
REFERENCE-MARKER-GRP	Reference Marker Group	-	-	-
◆ REF-MARKER-NBR	◆ Ref Marker Number	-	-	-
-	◆ Ref Marker Number	K	4	CL
-	◆ Ref Marker Suffix	K	1	CL
◆ REF-MARKER-DISP	◆ Ref Marker Displacement	K	2.3	CL

TPP/District ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
ROADSIDE-FEAT-TYPE-CODE	Roadside Feature Type	P	1	RB
ROADWAY-FEATURE-GRP	Roadway Feature Data	-	-	-
◆ ROADWAY-FEATURE-CODE	◆ Roadway Feature Value	P	2	RB
◆ ROADWAY-FEATURE-BEGIN-END	◆ Roadway Feature Begin/End	P	1	RB
◆ ROADWAY-FEATURE-GRADE	◆ Roadway Feature Grade	P	1	RB
◆ ROADWAY-FEATURE-LEFT-RIGHT	◆ Roadway Feature Left/Right	P	1	RB
◆ ROADWAY-FEATURE-NOTE	◆ Notation	P	30	RB
◆ ROADWAY-FEATURE-SKEW	◆ Roadway Feature Skew	-	-	-
-	◆ Quad	P	1	RB
-	◆ Type	P	1	RB
-	◆ Angle	P	2	RB
ROW-WIDTH-MIN-MEAS	ROW Width Minimum	L	3	CL
ROW-WIDTH-USUAL-MEAS	ROW Width Usual	L	3	CL
STRUCTURE-NBR	Structure Number	P	14	MX

Construction Division ADABAS Matrix

Use this ADABAS matrix to determine the attribute's data type, field size, and roadbed class that are `Construction` Division's maintenance responsibility:

Construction Division ADABAS Matrix

ADABAS Attributes	Common Name	Data Type	Field Size	Rdbd Class
LOAD-LIMIT-AXLE	Load Limit Axle	L	6	RB
LOAD-LIMIT-GROSS	Load Limit Gross	L	6	RB
LOAD-LIMIT-TANDEM	Load Limit Tandem	L	6	RB

TRM System ADABAS Matrix

Use this ADABAS matrix to determine the attribute's data type, field size, and roadbed class that the TRM System maintains:

TRM System ADABAS Matrix

ADABAS Attributes	**Common Name**	**Data** Type	**Field** Size	**Rdbd** Class
CURVE-ID	Curve Id	P	7	CL
DIST-FROM-PREV-MARKER-NBR	Dist Between Markers	L	2.3	CL
DISTANCE-FROM-ORIGIN	Distance From Origin	L	2.3	CL
◆ HIGHWAY-STATUS-DATE	◆ Highway Status Date	L	8	RB
LINK-TYPE-BEGIN-END	Link Begin End	N	1	CL
NETWORK-CHANGE-BEGIN-END	Network Change Begin End	N	1	CL
NETWORK-CHANGE-NOTE	Network Change Notation	N	30	CL
NETWORK-REASON-CODE	Network Reason Code (1998 and before)	N	1	CL
NETWORK-TRACKING-CODE	Network Tracking Code	N	1	CL
NETWORK-UPDATE-DATE	Network Update Date	N	8	MX
NETWORK-UPDATE-TIME	Network Update Time	N	6	CL
OLD-REF-MARKER-GRP	Old Ref Marker	-	-	-
◆ Old-Ref-Marker-Nbr	◆ Old Ref Marker Number	N	4	CL
◆ Old-Ref-Marker-Suf	◆ Old Ref Marker Suffix	N	1	CL
◆ OLD-Ref-Marker-Disp	◆ Old Ref Marker Displacement	N	2.3	CL
OLD-SIGNED-HIGHWAY	Old Signed Highway	-	-	-
◆ Old-Highway-System	◆ Old Highway System	N	2	CL
◆ Old-Highway-Nbr	◆ Old Highway Nbr	N	4	CL
◆ Old-Highway-Suffix	◆ Old Highway Suffix	N	1	CL
OLD-ROADBED-ID	Old Roadbed-Id	N	2	CL
OLD-DIST-FROM-ORIGIN	Old Distance From Origin	N	2.3	CL
PREV-REF-MARK-NBR	Previous Marker Data	-	-	-
-	◆ Previous Ref Marker Number	P	4	CL
-	◆ Previous Ref Marker Suffix	P	1	CL
ROADBED-BEGIN-END	Roadbed Begin End	P	1	RB

Chapter 3 — TRM Operating Environment

Contents:

Section 1 — Key Points to Know

Texas Reference Marker System

The TRM System is an online database system used for updates, inquiries, and reports. This chapter details the steps to access TRM to maintain and query the database. To process and print ARI diagrams and reports, go to Chapter 4.

Authorized Users of the TRM System

The table below lists the main menu functions and the authorized users:

Main Menu Authorized Users

Main Menu Choice	TPP	District Offices	Construction Division	All Users
TPP Database Maintenance	Yes	No	No	No
District Maintenance	Yes	Yes	No	No
Construction Division Maintenance	Yes	No	Yes	No
Database Query	Yes	Yes	Yes	Yes
Highway Status Control Reports	Yes	Yes	Yes	Yes
Update Highway Status - Emergency Closing	Yes	Yes	No	No

Definitions

<E>—Press the enter key.

Update-Code—System-required value to distinguish among the different types of processes in TRM.

Network:

◆ **Change Begin/End**—Identifies the beginning or ending point of a change to an existing Signed Highway System or roadbed section: B (beginning point of change) or E (end point of change)

◆ **Change Notation**—Notation field used to explain changes to signed highways, roadbed-IDS, or reference markers on a given highway; 30 character text field

◆ **Reason Value**—System-generated field indicating reasons for a change to the signed highway, reference marker, or Roadbed-Id of a given route; **superseded** by Network Tracking Code

◆ **Tracking Value**—System-generated field indicates a network or marker add, update, or deletion from TRM

◆ **Update Date**—System-generated date to document changes made to either the Signed Highway, Reference Marker, or Roadbed-Id of a given route

◆ **Update Time**—System time documenting changes made to either the Signed Highway, Reference Marker, or Roadbed-Id of a given route:

◆

Network Tracking Descriptions

Value	Action	Value	Action
1	Add a Roadbed	19	Transfer Prtl Rte
2	Del a Roadbed	20	Add a Link-Concurrency
3	Upd a Roadbed-Updated/Deleted	21	Add a Link-On-Sys Link
4	Add a New Rte	22	Add a Link-Off-Sys Link
5	Add Cntg-Rte Beg	23	Upd Concurrency to On-Sys Link
6	Add Cntg-Rte End	24	Upd On-Sys Link to Concurrency
7	Add Cntg-Gap Beg	25	Upd Off-Sys Link
8	Add Cntg-Gap End	26	Del a Link-Concurrency/On- or Off-Sys Link
9	Add Non-Cntg-Rte Beg	27	Redes Whole Rte
10	Add Non-Cntg-Rte End	28	Redes Prtl Rte
11	Add Non-Cntg-Within a Gap	29	Redes Prtl Rte Rev
12	Add Fill Gap	30	Redes Cntg Beg
13	Add Marker	31	Redes Cntg Beg Rev
14	Del Marker-Corrected/Relocated	32	Redes Cntg End
15	Del Marker	33	Redes Cntg End Rev
16	Del Whole Rte	34	Redes Fill Gap
17	Del Prtl Rte	35	Redes Fill Gap Rev
18	Transfer Whole Rte	-	-

Logging On the Operating System

Enter TRM by logging on through the CICS mainframe facility. Double-click on the computer desktop Mainframe icon and the initial mainframe screen appears:

Figure 3-1. Initial mainframe screen.

From the initial mainframe screen, input 'CICS' and press <E>. The CICS log on screen appears:

Figure 3-2. CICS log on screen.

Input User Id and your top secret Password and press<E>. The Sign-on is complete screen appears:

Figure 3-3. Sign-on successful.

Input 'NAT2' at the cursor…

Figure 3-4. Letter case does not matter.

and press <E>. The Teleprocessing Applications screen appears:

Figure 3-5. The Teleprocessing Applications screen does not include an entry for TRM, but the system will accept TRMU or TRMI.

At Application Name:

◆   Input 'TRMU' to update data and press <E>.

◆   Input 'TRMI' for data inquiry and press <E>.

◆   Enter either one for ARI's and reports and press <E>.

The TRM Main Menu appears:

Figure 3-6. Begin TRM maintenance, queries, and report processing here.

```
TPP uses the TRM Message Board to provide the districts informa-
tional messages about the TRM system.

To view your mainframe user information, press <F5>:
```

Figure 3-7. User information screen.

For further processing instructions, go to one of the following sections in this chapter or to the specific manual chapter you need:

◆   [TRM Update Functions](#)

◆   [TPP Database Maintenance Menu](#)

◆   [District Database Maintenance Menu](#)

◆   [Construction Division Database Maintenance Menu](#).

Logging Off the Operating System

To exit, or log off, the TRM system, follow these steps:

From any screen within the TRM system, press <F12> (if you get the message "Screen data will be lost! Press PF12 to continue or PF11 to cancel", re-press <F12> to log off). You exit TRM and the Teleprocessing Applications screen appears:
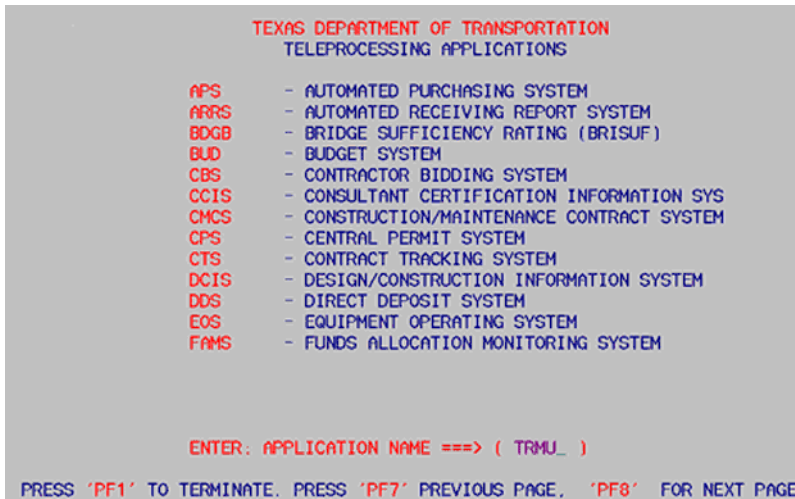
Figure 3-8. Terminate to exit NATURAL environment.

From the Teleprocessing Applications screen, press <F1>. The screen clears and the system displays a message indicating that you have successfully exited the NATURAL environment:

Figure 3-9. NATURAL termination successful.

Although you have exited the NATURAL environment, you must still exit the CICS mainframe session. Input 'CESF LOGOFF' and press <E>:

Figure 3-10. Press <E> to log off CICS.

The system returns to the initial mainframe screen.

Section 2 — Entry Screen Features

TRM Data Entry Screens

Using TRM data entry screens, process transactions involving several data exchanges of all attribute values necessary to:

◆ add data to

◆ update data

◆ delete data from

◆ access data on, or

◆ report data stored in TRM.

Description of Screen Components

All TRM data entry screens are similar in appearance and system response. Figure 3-11 shows a data screen with the different parts numbered…
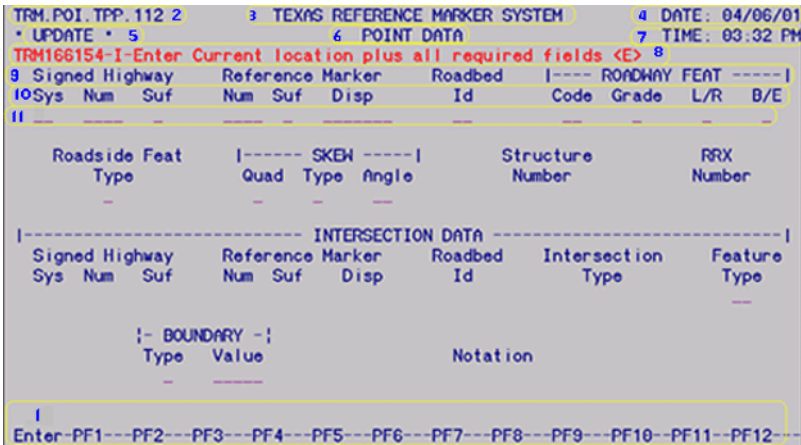
Figure 3-11.   Data entry screen 1.

…to correspond with the descriptions in this table:

TRM Data Entry Screen 1

Part	Description
1	Function Key Selections--<Function> Keys plus <E> available on each entry screen. Each key (except for <E>) has a one-word descriptor. The function key does not appear on a screen if it is not available.
2	Screen Identifier--a unique identification label for the screen composed of four parts, each separated by a period

TRM Data Entry Screen 1

Part	Description
3	System Title--name given to the system
4	Date--in the form MM/DD/YYYY
5	Update Function--Delete, Add, or Update
6	Screen Label--name given to a specific screen
7	Time--in the form HH:MM AP
8	Secondary Message Line--for either Information or Prompting messages.
9	Column Headers--labels for blocks of Data Element Headers
10	Data Element Headers--labels for individual Data Entry Fields
11	Data Entry Fields--point of entry for TRM data element values

Figure 3-12 shows another data screen with the different parts numbered…
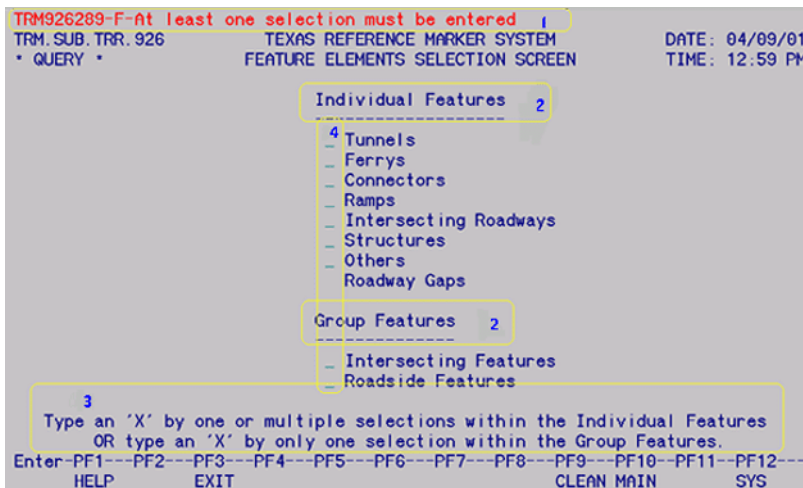
Figure 3-12. Data entry screen 2.

…to correspond with the descriptions in this table:

TRM Data Entry Screen 2

Part	Description
1	Primary Message Line--Used for (F)atal, (W)arning, or (I)nformational messages.
2	Choice Descriptions--selections for screens, reports, etc. These have either an alphabet letter or an underscore preceding the description.
3	Prompting Message Line--further instructions for entering selections or for pressing <E> or a PF key
4	Prompt Entry Field--point of entry for either the letter corresponding to a Choice Descriptor or for an X, depending on the request of the Prompting Message.

This table lists common screen characteristics:

Common Entry Screen Characteristics

Description
Cursor automatically tabs to each Data or Prompt Entry field when the previous field is full.
Control key takes the cursor down one row
Numeric elements need not be "zero-padded".   **Example**: Input '02.000' as '2'.
TRM assumes a <u>positive-signed</u> Reference Marker Displacement if you do not input a sign.
Required, optional, and non-applicable entry fields: ◆ You must enter Required fields. The system uses a required field to locate records for update or delete, or for creating records in TRM. Failure to input a required field results in the display of a fatal <u>error message</u>.   ◆ Leave Optional fields, in most cases, blank until you assign a value.   **Example**: Reference Marker Suffix is optional until you assign a suffix value; then it is required.   ◆ Never enter a Non-applicable field; an <u>error message</u> appears.
Select all <u>Update Functions</u>, Add, Update, or Delete, from a submenu. To change the update mode, you must exit to the appropriate Maintenance Menu.

Function Keys

Use Function Keys to perform a variety of operations, including exiting the system and updating TRM. The keys are a separate row located across the top of the keyboard, called PF, F, or Function keys. Across the bottom of each entry screen appears a list of all function keys available on that screen. If the description for the Function Key appears, the Function Key is available:
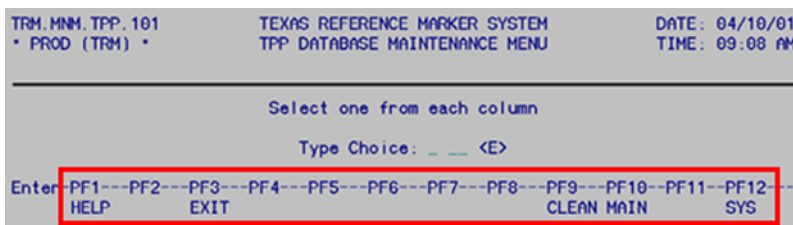
Figure 3-13. Function keys at bottom of screen.

All instructions in this manual use the abbreviation <F1> thru <F12> for the function keys:

Function Key Descriptions

Function Key	Descriptor	Description
F1	HELP	Screen or field-level help

Function Key Descriptions

Function Key	Descriptor	Description
F2	UPD	Update TRM with new/updated/deleted data
F3	EXIT	Return to previous menu
F7	PREV	Scroll back to the previous screen of data (Query processing only)
F8	NEXT	Scroll forward to the next screen of data (Query processing only)
F9	CLEAN	Clean the screen of all data and error messages
F10	MAIN	Exit to TRM Main Menu
F11	CANCL	Cancel current action
F12	SYS	Exit the TRM system

Negative Conversion Window

You may input the marker limit using positive or negative displacements. If entering a negative displacement, the negative conversion window appears after you press <F2>. This window shows the location with the equivalent marker number and a **positive** displacement, by which the data actually stores in TRM. Press <E> to clear the window and continue processing data transactions:

Figure 3-14. The negative conversion window displays the equivalent Reference Marker location with a positive displacement.

Numeric Entry Fields

Some numeric attributes in TRM have two characteristics: floating decimal and signed entry fields.

The floating decimal feature allows you to input the decimal point of a number anywhere in the entry field. As long as the numeric value entered falls within the range of the format specified for that field, the screen editor accepts the entry. An invalid entry yields an error message.

EXAMPLE: The format of the attribute Off-System Length is 3.3. This means that seven charac-
ter positions are available for entry into the field:

◆   Three maximum digits before the decimal

◆   One position for the decimal point

◆   Three maximum digits after the decimal.

This table identifies some valid and invalid values entered in the Off-System Length field:

Floating Decimals

Format of Off-System Length Field	Examples of Valid Entries	Examples of Invalid Entries	Reason Entry is Invalid
123.123	101.166	1301.16	Too many digits before the decimal
-	2.837	2.8337	Too many digits after the decimal
-	.244	.2.244	Too many decimals

Input either a positive (+) or negative (–) sign in the **signed entry field**. If entered, the sign always goes in the first Reference Marker **Displacement** entry field character position, which is the **only** signed entry field in TRM. The numeric value then begins in the second character position.

EXAMPLE: The format of Reference Marker Displacement is (±)3.3. Eight character positions are available for entry into this field:

◆   One for the (+) or (–) sign

◆   Three maximum digits before the decimal

◆   One position for the decimal point

◆   Three maximum digits after the decimal.

This table identifies some valid and invalid uses of the sign entered in the Reference Marker Displacement field:

Signed Entry

Reference Marker Displacement Format	Examples of Valid Entries	Examples of Invalid Entries	Reason Entry is Invalid
±123.123	–33.166	33–.166	Sign not in the first character position
-	+35	+ 35	Space is within the value
-	1.833	$11.833	Symbol is not (+) or (–)

Online Help Facilities

TRM offers online help facilities on all system screens.

Field Level Help provides assistance for a specific entry field. Place the cursor in the entry field and press <F1>. A pop-up window appears (see Figure 3-15) with the format of the field plus valid values; most indicate the Offices of Primary Responsibility:
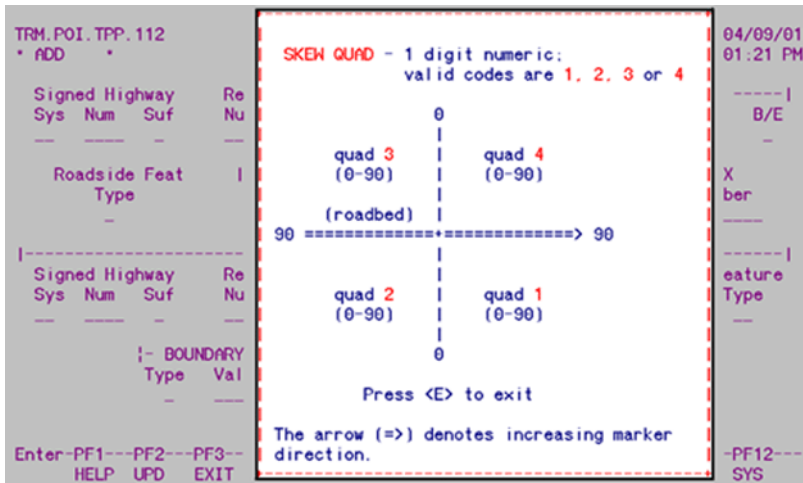
Figure 3-15. Cursor located the in SKEW Quad field.

Press <E> to return to the entry screen.

Screen Level Help provides assistance for all entry fields on the screen. Move the cursor off an entry field and press <F1>. A help screen appears (see Figure 3-16) for all entry fields on that screen. Press <E> to return to the entry screen:
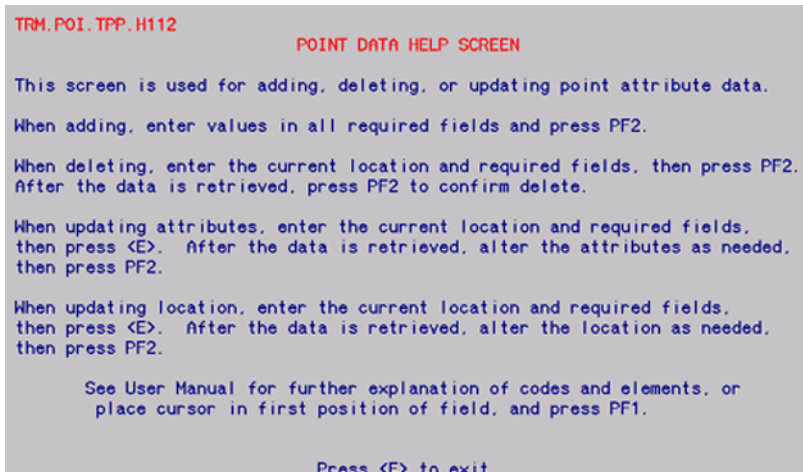
Figure 3-16. The Point Data screen level Help.

Section 3 — TRM Update Functions

Which Update-Code to Use?

The TRM system uses the Update-Code

to determine the transaction's Update Functions:

◆ Add function allows the system to add data attributes to TRM which do not exist in TRM

◆ Update function allows the system to change data attribute values currently TRM to new values

◆ Delete function allows the system to remove data attribute values currently TRM.

Functions per Data Classification

Each data class, described in , Section 2, uses different update functions:

Data Classes

Class	Description
Point Data	Uses any of the update functions: Add, Update, or Delete EXAMPLE: Add, update, or delete an on-system intersection
Continuous Length Data	Uses the Update function **only**. (Compare the Update function for continuous length data to painting a wall. Painting the wall from one point to another completely covers any other pre-existing colors or adds color for the first time to a bare wall.) EXAMPLE: In Figure 3-16 and Figure 3-17 below, a route segment contains no Surface Type value. Add a value by "painting" the segment with values using the Update function
Non-Continuous Length Data	Uses any of the three update functions: Add, Update, or Delete EXAMPLE: In Figure 3-18 and Figure 3-19 below, other values already exist. "Paint" over unwanted values with new values using the Update function
Easy-to-Remember Point Data and Length Data Difference	◆ POINT data and NON-continuous length data add to, update, or delete data at a single location point on a route ◆ Continuous length data updates a route between two points on a route
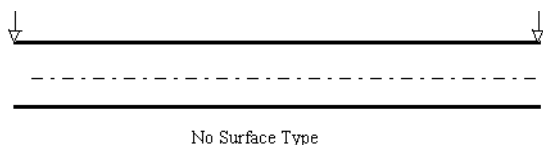
No Surface Type

Figure 3-17. Route with no Surface Type value.
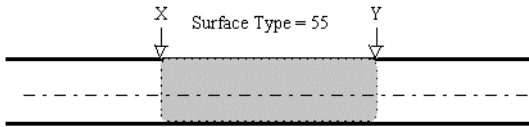
Figure 3-18. Route with Surface Type 55 input between locations X and Y.
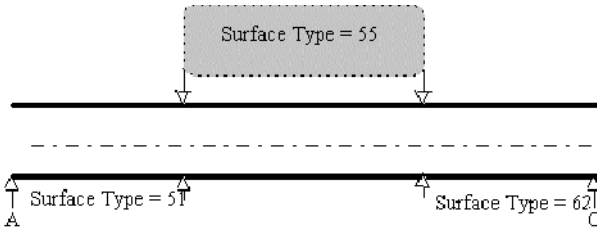
Figure 3-19. Surface Types 51 and 62 exist on route; input Surface Type 55 to change a segment within Types 51 and 62.
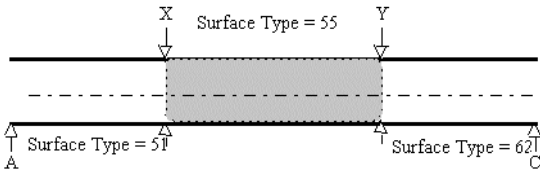
Figure 3-20. Route with Surface Type 55 input between locations X and Y.

TRM Update-Code

The Update-Code is a three-character field that dictates screen movement and system processing:

◆ **First Character identifies the Input Data:**

◆

Update-Code First Character

Value	Description
1	Length Data (TPP and District)
2	Point Data (TPP and District)
3	Highway Network Data (TPP only)
4	HPMS Data (TPP only)
5	Marker Coordinate (TPP only)

◆ Second Character identifies the Update Function:

◆

Update-Code Second Character

Value	Description
1	Delete
2	Add
3	Update

◆   Third Character identifies the Object of the Update Function:

◆

Update-Code Third Character

Value	Description
A	Routes
B	Contiguous route sections
C	Non-contiguous route sections
D	Fillers for roadway gaps
E	Marker Coordinates
F	Off-System transfers
G	Markers
H	Attributes
I	Linking route segments
J	Roadbeds

Combine these characters to create the Update-Code. In Figure 3-21, Update-Code 23H tells the system to Update Point Attributes:

```
TRM.MNM.TPP.101          TEXAS REFERENCE MARKER SYSTEM          DATE: 04/13/01
• PROD (TRM) •           TPP DATABASE MAINTENANCE MENU          TIME: 10:58 AM

 Input Form                          Update Codes

 1 = Length              1 = Delete            A = Routes
 2 = Point               2 = Add               B = Add Contiguous Section
 3 = Network             3 = Update            C = Add Non-Contig Section
 4 = HPMS                                      D = Add Fill to Gap
 5 = Marker Coordinates                        E = Marker Coordinates
                                               F = Delete Transferred
                                                   Route From TRM
                                               G = Markers
                                               H = Attributes
                                               I = Links
                                               J = Roadbed

                     Select one from each column

                     Type Choice: 2 3H <E>

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     HELP       EXIT                                  CLEAN MAIN       SYS
```

Figure 3-21. TPP Database Maintenance Menu selection.

Input Update-Code in the Type Choice field and press <E>. The appropriate submenu or data screen appears:

```
TRM.SUB.DTP.070          TEXAS REFERENCE MARKER SYSTEM          DATE: 04/16/01
• UPDATE •                   UPDATE SELECTION MENU             TIME: 11:18 AM




             _  Update Attribute Elements


             _  Update Attribute Location




             Type an 'X' by Choice: <E>




Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
     HELP       EXIT                                  CLEAN MAIN       SYS
```

Figure 3-22. The Update Selection Menu appears after entering Update-Code 23H.

Section 4 — TPP Database Maintenance

Input to Begin

From the TRM Main Menu, input selection in the Type Choice field and press <E>:

TRM Main Menu A

If function is...	Select…
TPP Database Maintenance	A

With selection A, the TPP Database Maintenance Menu appears:

```
TRM.MNM.TPP.101        TEXAS REFERENCE MARKER SYSTEM        DATE: 04/11/01
• PROD (TRM) •         TPP DATABASE MAINTENANCE MENU        TIME: 04:05 PM

Input Form                         Update Codes

1 = Length            1 = Delete           A = Routes
2 = Point             2 = Add              B = Add Contiguous Section
3 = Network           3 = Update           C = Add Non-Contig Section
4 = HPMS                                   D = Add Fill to Gap
5 = Marker Coordinates                     E = Marker Coordinates
                                           F = Delete Transferred
                                               Route From TRM
                                           G = Markers
                                           H = Attributes
                                           I = Links
                                           J = Roadbed

                 Select one from each column

                 Type Choice: _ __ <E>

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      HELP        EXIT                                 CLEAN MAIN        SYS
```

Figure 3-23. The TPP Database Maintenance Menu.

Input Update-Code in Type Choice fields and press <E> to add, update, or delete data.

Update Functions

This table shows all the combinations of Update-Codes for which TPP is responsible:

TPP Update Functions

If Update Value is…			Then function is…
1--Length Data	2--Add	A	Add new routes
1--Length Data	2--Add	B	Add contiguous route sections
1--Length Data	2--Add	C	Add non-contiguous route sections
1--Length Data	2--Add	D	Add fillers to roadway gaps

TPP Update Functions

If Update Value is…			Then function is…
1--Length Data	3--Update	H	Update length attributes
1--Length Data	1--Delete	H	Delete length/point attributes Curve
1--Length Data	2--Add	H	Add length/point attributes Curve
1--Length Data	3--Update	H	Update length/point attributes Curve
1--Length Data	1--Delete	J	Delete roadbeds
1--Length Data	2--Add	J	Add roadbeds
1--Length Data	3--Update	J	Update roadbeds
3--Highway Network Data	1--Delete	A	Delete route/route segments
3--Highway Network Data	1--Delete	F	Transfer route/route segments
3--Highway Network Data	3--Update	A	Update routes (route redesignation)
3--Highway Network Data	1--Delete	H	Delete secondary routes
3--Highway Network Data	2--Add	H	Add secondary routes
3--Highway Network Data	3--Update	H	Update secondary routes
3--Highway Network Data	1--Delete	I	Delete links
3--Highway Network Data	2--Add	I	Add links
3--Highway Network Data	3--Update	I	Update links
4--HPMS Data	3--Update	H	Update HPMS data
5--Marker Coordinates	2--Add	E	Add marker coordinates
5--Marker Coordinates	3--Update	E	Update marker coordinates

Follow instructions in the **TPP** Update Function Values table links to complete the function. For Update-Codes for which TPP and the districts are responsible, click this link.

Section 5 — District Database Maintenance

Input to Begin

From the TRM Main Menu, input selection in the Type Choice field and press <E>:

TRM Main Menu B

If function is...	Select…
District Database Maintenance	B

With selection B, the District Database Maintenance Menu appears:
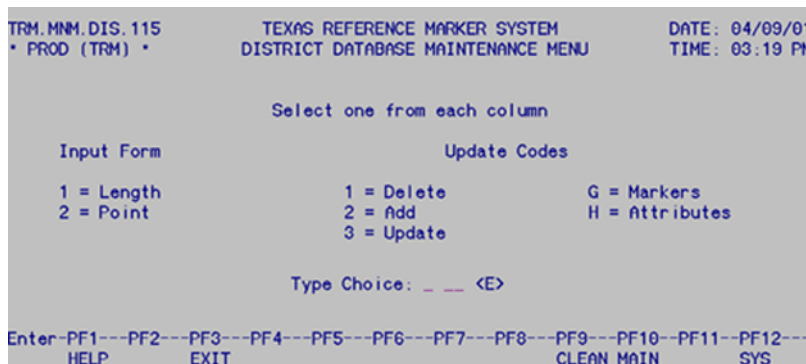
Figure 3-24. The District Database Maintenance Menu.

Input Update-Code in Type Choice fields and press <E> to add, update, or delete data.

Update Functions

This table shows all the combinations of Update-Codes for which TPP and the districts are responsible:

TRM and District Update Functions

If Update Value is…			Then function is…
1--Length Data	3--Update	H	Update length attributes
1--Length Data	1--Delete	H	Delete length attributes (Pavement and Administrative Data)
1--Length Data	2--Add	H	Add length attributes (Pavement and Administrative Data)
1--Length Data	3--Update	H	Update length attributes (Pavement and Administrative Data)

TRM and District Update Functions

If Update Value is…			Then function is…
2--Point Data	1--Delete	G	Delete reference markers
2--Point Data	2--Add	G	Add reference markers
2--Point Data	3--Update	G	Update reference markers
2--Point Data	1--Delete	H	Delete point attributes
2--Point Data	2--Add	H	Add point attributes
2--Point Data	3--Update	H	Update point attributes

Follow instructions in the **District** Update Function Values table links to complete the function.

Section 6 — **Construction Division Database Maintenance**

Input to Begin

From the <u>TRM Main Menu</u>, input selection in the Type Choice field and press <E>:

TRM Main Menu C

If function is...	Select…
CST Database Maintenance	C

With selection C, the Load Limit Data Screen appears:


```
TRM.LLD.DES.119        TEXAS REFERENCE MARKER SYSTEM      DATE: 04/09/01
• UPDATE •                  LOAD LIMIT DATA               TIME: 03:27 PM


Signed Highway     From Reference Marker    To Reference Marker    Roadbed
Sys  Num  Suf      Num    Suf    Disp       Num    Suf    Disp       ID
 __  ____  _       ____    _    _____    ____    _    _____     __

                   |------- LOAD LIMIT -------|
                    Gross      Axle      Tandem
                    _____    _____    _____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       HELP  UPD  EXIT                               CLEAN MAIN          SYS
```

Figure 3-25. Load Limit Data screen.

Follow instructions in Update Values of Load Limit Attributes at this <u>link</u> to complete the screen.

Update Functions

The Construction Division is responsible for updating all <u>Load Limit Axle</u>, Gross, and Tandem data as Length Attributes.

Section 7 — TRM Query

How to Query the TRM System

See real-time values of any particular attribute in the TRM Query facility.

From the TRM Main Menu, input 'E' for TRM Query and press <E>. The Database Query Selection Menu appears:
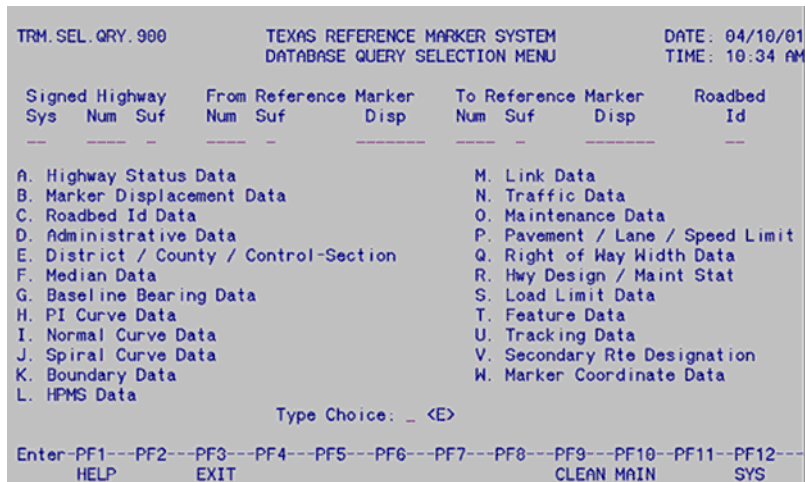
Figure 3-26.   Database Query Selection Menu.

This table lists the Required/Optional input fields on the Database Query Selection Menu:

Query Selection Menu Descriptions

Field	Required/Optional
Signed Highway	◆ System (Required) ◆ Number (Required) ◆ Suffix (Optional)
From Reference Marker	◆ Number (Required) ◆ Suffix (Optional) ◆ Displacement (Optional)
To Reference Marker	◆ Number (Required) ◆ Suffix (Optional) ◆ Displacement (Optional)
Roadbed-Id	Depends on Type Choice—See Query Selections Table
Type Choice	Required

Select features according to the corresponding letters or "Type Choices", input Required/Optional fields, and press <E>. The applicable query submenu or query data screen appears.

This table lists each feature type choice, the attributes or features available for that choice, and the valid Roadbed-IDS. The links go to a specific manual section or subsection containing information about your feature choice:

Query Selections

Type Choice	Attributes/Features Available	Valid Roadbeds
A. Highway Status	Highway Status Code, Date, and Notation	K, R, L, M, S, T, P, X, Y, A, B
B. Marker Displacement	Distance From Origin, From Previous Marker, Previous Marker Number	C or Blank
C. Roadbed-Id	Roadbed-Id, Roadbed Begin/End **NOTE**: Leave the Roadbed-Id field blank and all roadbed breaks display	K, R, L, M, S, T, P, X, Y, A, B or Blank
D. Administrative	Rural/Urban Code, FIPS Urban Area Number, Administrative System, City Number, Govt Control Level, Metropolitan Planning Area Number, Census Place Number, Functional System	N, X, Y, A, B
D. Administrative	Special System, MSA Class	C
E. District/County/ Control-Section	District-Id, County Number, Control-Section	C or Blank
F. Median Data	Median Width/Type	N
G. Baseline Bearings	Type, Beginning Direction, Degrees, Minutes, Seconds, Ending Direction, Location	C or Blank
H. PI Curve Data	Delta Degrees, Minutes, Seconds, Left/Right	C or Blank
Type Choice	Attributes/Features Available	Valid Roadbeds
I. Normal Curve	Point of Curvature, Point of Tangent, Delta Degrees, Minutes, Seconds, Tangent Length, Curve Degrees, Minutes, Seconds, Curve Length	C or Blank
J. Spiral Curve	Tangent to Spiral, Spiral to Curve, Curve to Spiral, Spiral to Tangent, Delta Degrees, Minutes, Seconds, Tangent Length 1 & 2, Curve Degrees, Minutes, Seconds, Curve Length	C or Blank
K. Boundaries	Begin/End, Type, Skew, Value, Notation	C, N, X, Y, A, B
L. HPMS	HPMS Current ID	N, X, Y, A, B
M. Links	Link Begin/End, Type, Signed Highway, Reference Marker limits, Off-System Length	C or Blank

Query Selections

Type Choice	Attributes/Features Available	Valid Roadbeds
N. Traffic	Current/History Year, Current/History AADT, Adjusted Current, Design Year, Design Hourly Volume, K-Factor, Directional Factor, Truck PCT AADT, Truck PCT DHV, ATHWLD 100 lbs., ATHWLD PCT, Flex/Rigid 18Kip	N, X, Y, A, B
O. Maintenance	Maintenance Section, District, Foreman Number	C or Blank
P. Pavement/ Lane/ Speed Limit	Speed Limit Maximum/Minimum, Roadbed Width, Base Type, Surface Width/Type, Number of Thru Lanes, Direction of Travel, Left/Right Shoulder Width, Type, & Use, Left/Right Curb Type	K, R, L, M, S, T, P, X, Y, A, B
Q. Right of Way Width	Right of Way Width Usual/Minimum	C or Blank
R. Hwy Design	Highway Design	N, X, Y, A, B
R. Maint Status	Maintenance Status	C
S. Load Limit	Load Limit Axle, Gross, Tandem	K, R, L, M, S, T, P, X, Y, A, B
Type Choice	Attributes/Features Available	Valid Roadbeds
T. Features	Cattle Guards, Connectors (no "N"), Culverts, Ferries, Gates, Historical Marker, Intersecting Roadways, Litter Barrel, Material Stock Pile, Over-head Sign, Pedestrian Passageways, Picnic Area, Pipe Lines, Railroads, Ramps (no "N") Roadside Rest Area, Scenic Overlook, Streams, Struc-tures, Telephone Lines, Test Site, Tourist Information Center, Traffic Monitoring Site, Transmission Lines, Tunnels, TxDOT Facility, Water Lines, Other Features, Other Intersecting Features, Other Roadside Features	K, R, L, M, S, T, P, X, Y, A, B, N
T. Features	Roadway Gaps	C
U. Tracking	Reason Code, Update Date/Time, Old Signed Highway, Reference Marker and Roadbed-Id, Old Distance From Origin, Notation	C
V. Secondary Route	Secondary Route Type, Begin/End, Notation	C
W. Marker Coordinates	Latitude, Longitude, Elevation	C

◆ If entering roadbeds CG or NG, the heading appears as **Route** B/E
◆ If entering a specific roadbed, the heading appears as **Rdbd** B/E
◆ Select any or all of the available attributes to display
◆ Only data values for those attributes selected display

When querying the system, keep in mind:

◆ If more than one data screen is available for viewing, the word "more..." appears in the **bottom right corner** of the screen and the <F8> key is available. To view these additional data screens, press <F8> to scroll forward and <F7> to scroll backward

◆ Change the Location Key Fields on the query data screen to other values and press <E>. New data values appear for the new Key Fields. Change the Roadbed-Id to an Id valid to the query selection

◆ To exit any screen, press <F3>.

Length Data Display

The TRM screen displays length data differently from point data because length data exists along the roadway from one point to another. We list examples of each characteristic below with an example including seven general characteristics at the end of this section:

Reference Marker Display. Only one reference marker location appears, representing the From and To marker range of attribute values. Records appear indicating the marker location where the length data value changed from one value to another. The value displayed at the marker location is the value that existed up to the point of change, not the value existing from the change forward.

Example 1: The value for Speed Limit Maximum changed from 55 to 65 mph at marker location 420 + 1.000. It changed back to 55 at marker location 466 + 0.773 for the remainder of the route. Three records appear to indicate the speed changes:

Example 1 Table

Reference Marker			Speed Limit Maximum	Explanation
Num	Suf	Disp	-	-
0420	-	1.000	55	55 up to this point
0466	-	0.773	65	65 up to this point
0518	-	0.830	55	55 to end of route

Specified Roadbed-Id. If the system requires Roadbed-Id, values display for that specified road-bed only. If the Roadbed-Id entered is not valid for other attributes on the same screen, their values appear as blank.

Example 2: Request data for roadbed XG on the Hwy Design/Maint Stat query selection. This roadbed is valid for Highway Design, but not for Maintenance Status. Therefore, no values appear for Maintenance Status:

Example 2 Table

Reference Marker			Highway Design	Maintenance Status
Num	Suf	Disp	-	-
0420	-	1.000	15	-
0436	-	1.533	30	-

Multiple Data Values. Multiple data values display together. Values for all attributes display on each record, even if the values for some attributes did not change. The values that did not change will repeat on each displayed record.

Example 3: Request District-Id and County Number from marker 400 + 0.000 to marker 450 + 0.000. The value for District-Id is 14 inclusively within the reference marker limits. Values for County Number, however, change several times. The value of 14 for District-Id repeats for each change in County Number:

Example 3 Table

Reference Marker			District Id	County Number	Explanation
Num	Suf	Disp	-	-	-
0420	-	1.000	14	246	246 up to this point
0436	-	1.533	14	227	227 up to this point
0450	-	0.000	14	106	106 up to this point

No Records Exist. If no records exist in TRM at the exact To marker limit, the system searches forward through the data until it finds a record containing the values existing on the route for the To point. The record displayed is the To marker limit with the values.

Example 4: Request marker limits 400 + 0.000 to 430 + 0.000 for Median Data. No physical records exist at 430 + 0.0 so the system searches forward until it finds a record. The first physical record is 456 + 0.299. Values at this location are rolled back and display at 430 + 0.000:

Example 4 Table

Reference Marker			Median Type	Median Width	Explanation
Num	Suf	Disp	-	-	-
0430	-	0.000	3	16	end of request

Null Break. A null break record appears where no values exist within a given range.

Example 5: Request for Speed Limit Maximum on RG roadbed within marker limits 420 + 0.000 to 450 + 0.000. A value of 55 was added from the beginning of the route up to 430 + 1.735 and again added from 440 + 0.000 to the end of the route. Three records display:

Example 5 Table

Reference Marker			Explanation	Speed Max
Num	Suf	Disp	-	-
0430	-	1.735	55	55 up to this point
0440	-	0.000	-	no value up to this point
0452	-	0.184	55	55 to end of route

Specified Roadbed Begin/End. If the specified roadbed begins or ends within the From and To marker limits, or if the route is interrupted due to a link or gap:

◆ Records display showing the beginning and/or ending of the roadbed or route. Without these beginning and ending records, it appears that data exists where the roadbed/route does not exist

◆ If the query request includes a specific roadbed, records display only when that roadbed exists. If the requested From and To marker range is greater than the limits of the roadbed, the first record displayed is the roadbed begin, and the last record displayed is the roadbed end

◆ Data values display at the ending of the requested roadbed/route just as they display at data breaks

◆ Data values do not display at the beginning (B) point.

Example 6: Request Speed Limit Maximum on XG roadbed within marker limits 390 + 0.000 to 450 + 0.000. Roadbed XG exists from marker 396 + 0.500 to 428 + 1.227 and again from 434 +

0.529 to 448 + 0.635. The values for Speed Limit Maximum changed from 55 to 65 at 436 + 1.533. Values appear at data breaks and at XG roadbed breaks:

Example 6 Table

Reference Marker			Rbd (Route)	Speed Max	Explanation
Num	Suf	Disp	-	-	-
0396	-	0.500	B	-	begin of XG
0428	-	1.227	E	55	end of XG; 55 up to this point
0434	-	0.529	B	-	begin of XG
0436	-	1.533	-	65	65 up to this point
0448	-	0.635	E	65	end of XG; 65 to end of route

Begin and End Records. The begin and end records may not appear in the order in which they occur on the roadway.

Example 7: Request data on RG roadbed within marker limits 410 + 0.000 to the end of the route. A roadway gap occurs at marker 434 + 0.529. The record breaks display as follows:

Example 7 Table

Reference Marker			Rbd B/E	Speed Limit Maximum	Explanation
Num	Suf	Disp	-	-	-
0428	-	1.227	-	55	-
0434	-	0.529	B	-	Roadbed begins again
0434	-	0.529	E	65	Roadbed ends
0500	-	1.533	E	65	-

NOTE: The record indicating that the roadbed begins again appears before the record indicating that the roadbed ever ended. For this reason, a warning message appears on the secondary message line stating: "Begin/End records may or may not appear in sequential order".

Example 8: The following example encompasses most of the characteristics of length data:

◆   A request for several pavement-related attributes on XG roadbed within marker limits 390 + 0.000 to 450 + 0.000

◆   Roadbed XG exists from marker 396 + 0.500 to 428 + 1.227 and again exists from 434 + 0.529 to 448 + 0.635

◆　The value for Surface Type changes from 52 to 53 at marker location 428 + 1.227, and then changes to 51 at marker location 436 + 1.533

◆　No Maximum Speed Limit is added to Roadbed XG

◆　Shoulder Width Left is not added between marker location 410 + 1.266 and 414 + 0.889. Otherwise, Shoulder Width Left is 12 feet for the entire route

◆　Roadbed XG is not valid for Attribute Q (added for purposes of this demonstration).

The query record appears as:

Example 8 Table

Reference Marker			Rbd B/E	Surf Tp	Shldr-L Wd	Speed Max	Feature Q	Explanation
Num	Suf	Disp	-	-	-	-	-	-
0396	-	0.500	B	-	-	-	-	Begin XG
0410	-	1.266	-	52	12	-	-	Width 12 to this point
0414	-	0.889	-	52	-	-	-	No width to this point
0420	-	1.000	-	52	12	-	-	Width 12 to this point
0428	-	1.227	E	52	12	-	-	End XG
0434	-	0.529	B	-	-	-	-	Begin XG
0436	-	1.533	-	53	12	-	-	Type 53 to this point
0448	-	0.635	E	51	12	-	-	End XG; Type 51

Chapter 4 — ARI & Report Processing

Contents:

Section 1 — Automated Road Inventory Diagram

What is an ARI?

ARI is the acronym for **Automated Roadway Inventory** diagram. It takes information from TRM and creates an automated straight-line diagram of the selected route:

◆ ARI replaces the previously hand-drawn RI-1 diagram, which is a visual roadway record by TPP, showing all highways maintained by the department

◆ ARI allows the TRM user to produce an accurate and current graphical representation of any desired segment of highway in TRM

◆ ARI is a computer-generated straight-line diagram of a highway that consists of two parts: graphics and text

- The graphics portion of the diagram appears across the middle of the page showing features and readings (DFO, DIS, or both) of the roadway

- The text appears above and/or below the graphics and shows roadbed specific and administrative attribute data. Click ARI diagram to view a sample ARI.

Processing an ARI involves steps in three different systems: TRM, ROSCOE Mainframe, and MicroStation software. Follow the input instructions to process an ARI diagram.

TRM System ARI Processing

Log on to TRM; the Texas Reference Marker System Main Menu appears:


```
A. TPP Database Maintenance
B. District Database Maintenance
C. DES Database Maintenance
D. Interchange
E. Database Query
F. Report Processing
G. Update Highway Status - Emergency Closing
H. TPP Administrative Maintenance

        Type Choice: █  <E>


TRM MESSAGE BOARD --------------------------------------
```
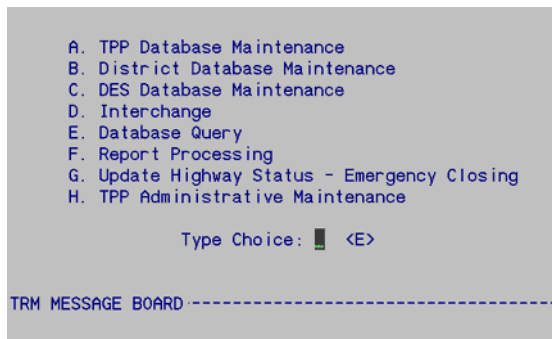
Figure 4-1. Texas Reference Marker System Main Menu.

Input an 'F' in **Type Choice** and press <E>; the Report Processing Selection Menu appears:
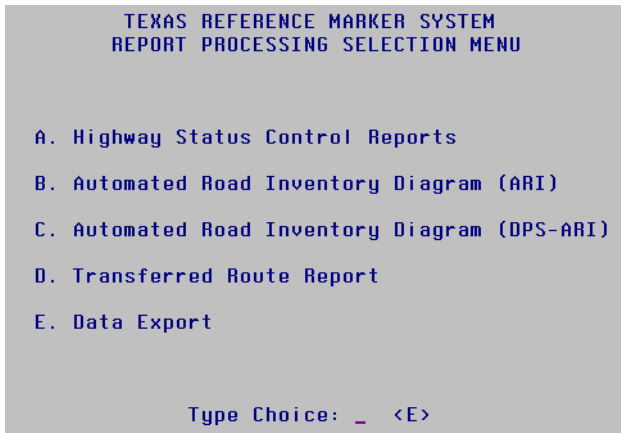
Figure 4-2. Report Processing Selection Menu.

For an ARI, input 'B' in **Type Choice** and press <E>; the Standard ARI File Name screen appears:
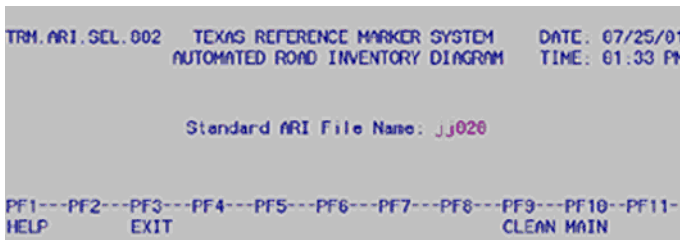
Figure 4-3. Standard ARI File Name screen.

Enter an **easy-to-remember** name for the file (i.e. IH035, US290; first character must be a letter) and press <E>; the File Transfer Information screen appears:
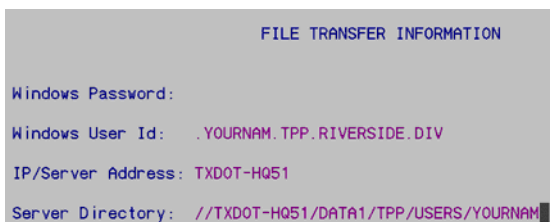
*Figure 4-4. The System enters the **IP Address** and **Server Directory** for you.*

Input your User Id and top secret **Windows** Password and press <E>; the Diagram Limits screen appears:
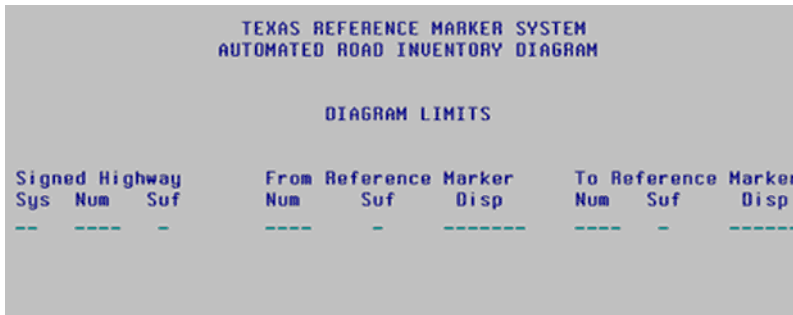
Figure 4-5. Diagram Limits screen.

This table lists the Required/Optional input fields on the Diagram Limits screen:

Diagram Limits Screen Descriptions

Field	Required/Optional
Signed Highway	◆ System (Required) ◆ Number (Required) ◆ Suffix (Optional)
From Reference Marker	◆ Number (Required) ◆ Suffix (Optional) ◆ Displacement (Optional)
To Reference Marker	◆ Number (Required) ◆ Suffix (Optional) ◆ Displacement (Optional)

Input all required plus any optional fields and press <E>. The system searches for information within the specific Signed Highway and Reference Marker range, then the TRM User Job Submission dialog box appears:
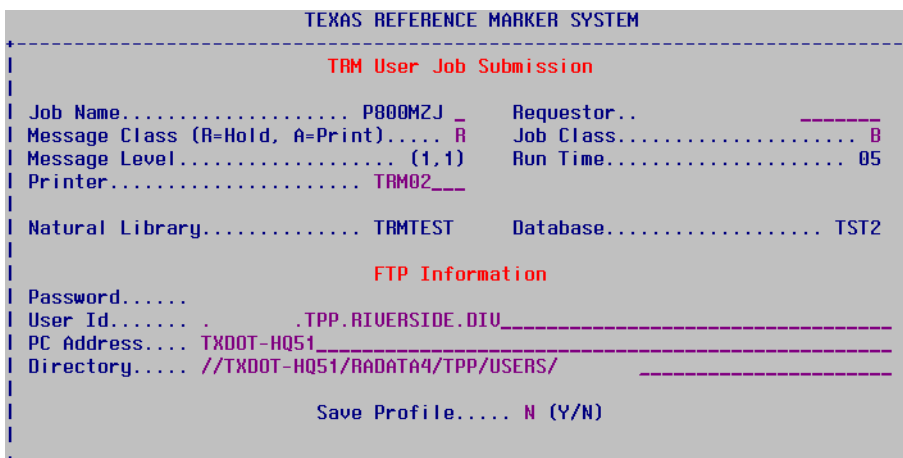
Figure 4-6. TRM User Job Submission dialog box.

This table explains the five input fields on the TRM User Job Submission dialog box:

Report Submittal Window

Field	Description	Format	Default Value	Valid Values
Requestor	Name of report requestor	19 alpha	None	All characters
Printer	VPS Printer Id assigned to the target mainframe printer	4 alpha	Default printer Id	Any valid printer Id
Msg Class	Value determines whether the system holds the output for review or prints automatically	1 alpha	None	(R)eview or (A)utomatic print
Job Name	Name given to the job for access in ROSCOE; the last character must be entered to differentiate one report from another	1 alpha	None	A-Z, 0-9
Save Profile	Value determines whether the system saves Requestor, Printer, and Msg Class fields	1 alpha	(N)o	(Y)es or (N)o

NOTE: After saving the profile, the values in the first three fields will always appear the same. If any of the fields change, save the profile again.

Make modifications to the TRM User Job Submission pop-up window and press <F2>.

Important: Remember the Job Name! You need it to identify your job in <u>ROSCOE</u> output.

Figure 4-7. Success message. Remember the Job Name!

A message indicates that the job was submitted successfully. Press <F12> to exit TRM and <u>log-off</u> the mainframe, then access the submitted job through ROSCOE.

ROSCOE ARI Processing

Follow these input instructions to continue processing the ARI thru ROSCOE:

Double-click on the computer desktop Mainframe icon and the initial mainframe screen appears. Input the name of your regional central ROSCOE site and press <E>:

Figure 4-8. Start-up page for mainframe sessions.

The ROSCOE signon screen appears:

Figure 4-9. ROSCOE sign-in.

Input your **Key (User Id) Number** and top secret **Password** and press <E>; continue pressing <E> through all message screens; a blank screen appears:

Figure 4-10. Blank screen for DOUT.

Input 'DOUT' at the cursor and press <E>; the PC.DOUT screen appears:

Figure 4-11. PC.DOUT screen.

At the cursor, input the **Jobname** from the TRM report process and press `<E>`; `all` jobs with your jobname appear along with the status of the jobs:
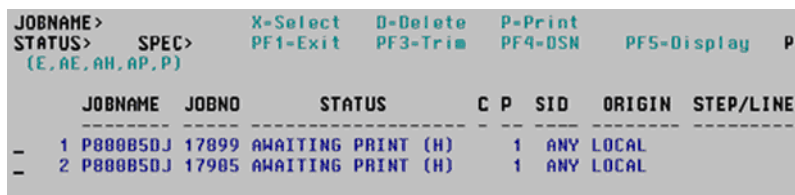
Figure 4-12. Jobname screen.

This table describes the Jobname screen:

DOUT Screen

Column	Description
JOBNO	System-assigned job number
JOBNAME	Name of the job entered in the TRM User Job Submission pop-up window
STATUS	Status of the job: ◆ AWAITING PRINT (H)—ready to review (msg. class = R) ◆ AWAITING PRINT—ready to print (msg. class = A) ◆ EXECUTING—running ◆ AWAITING EXECUTION—in queue waiting to run
C	Message Class--A, R, or blank
ORIGIN	Destination of output—this is the printer Id entered in the TRM User Job Submission pop-up window
Step	If STATUS of the job is EXECUTING, the queue position of the job is listed here [example: POS(2) means "queue position number 2"]
NOTE:	If the submitted job is message class = A (automatic print), the output goes to the printer named in the Job Submittal pop-up window. Do not continue with the next step

Select the job to review under the JOBNO column. If more than one job is listed, input the number of the job to review and press <F2>. If only one job is listed, press <F2>. The first page of the job appears:

Figure 4-13. Job Log screen.

To view the output, input 'NEXT FILE' to scroll forward through the job or 'PREV FILE' to scroll backward.

To exit this screen, input 'DOFF' at the cursor and press <E>; the system returns to the mainframe logon screen.

Continue to Generating an ARI Diagram; ROSCOE does not print the ARI.

Generating an ARI Diagram

Follow these input instructions to generate and plot (print) an ARI diagram.

Select the ARI icon on your computer desktop:

Figure 4-14. ARI Icon.

This opens the ARI MicroStation software that runs within the MicroStation PC environment. The Automated RI-1 screen appears. Press the <PF2> key to display the ARI toolbar:
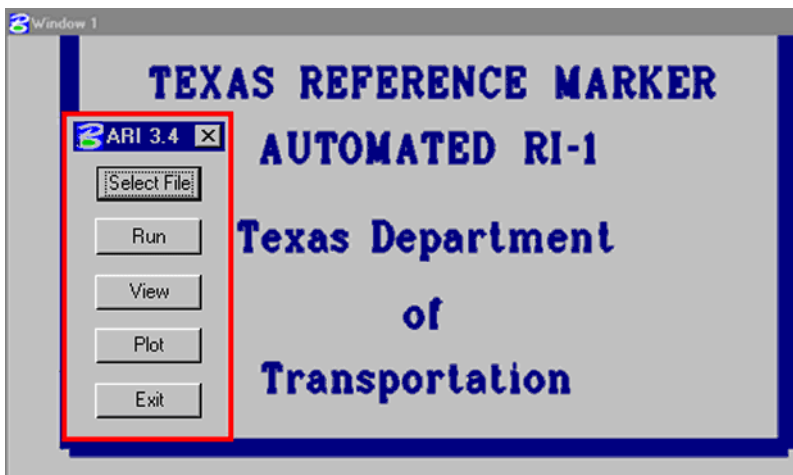
Figure 4-15. Automated RI-1 screen and ARI toolbar.

Choose 'Select File' on the ARI toolbar:

Figure 4-16. ARI Toolbar.

The File to Process window appears. Select the ".ri1" highway file you created in ROSCOE and select OK:
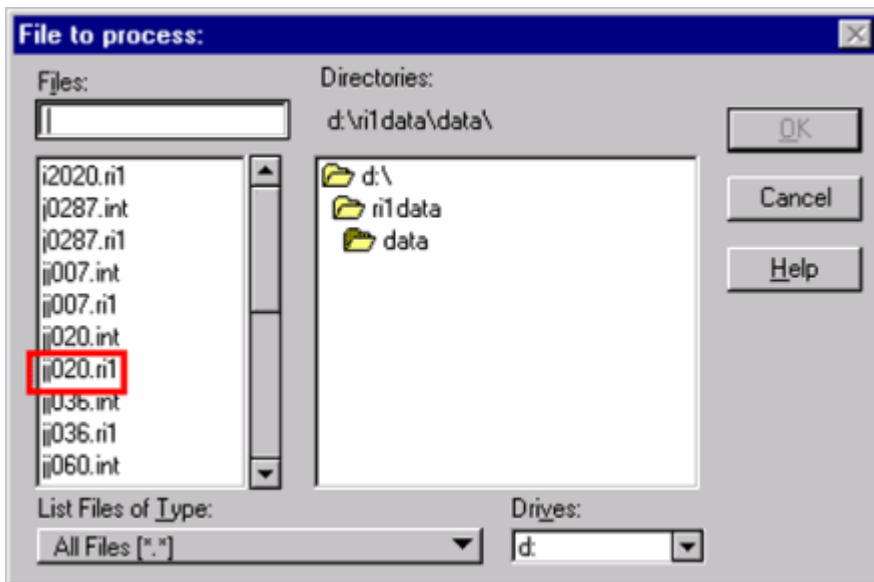
Figure 4-17. Example file selected.

On the ARI Toolbar, select 'Run':

Figure 4-18. 'Run' creates the ARI.

The Select Mode dialog box appears:

Figure 4-19. 'Auto' is a preset miles-per-page increment.

Select 'Auto' (preferred) for 0.5 mile per page or 'Manual' for any other mileage increment. If you select 'Manual', the Create DXF dialog box appears to allow you to change the miles per page and the mileage increment. On the Create DXF dialog box, select 'Miles/Page':
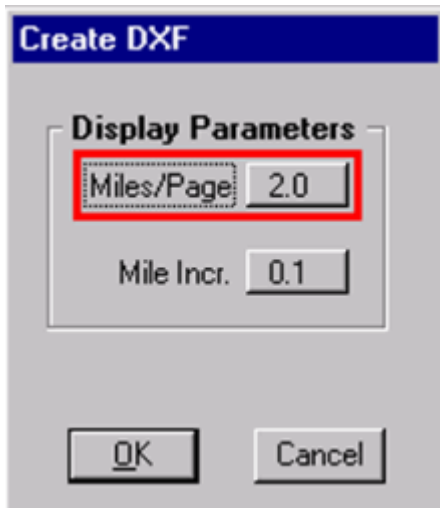
Figure 4-20. Select miles per page.

This drop-down box appears. Select the desired miles per ARI page (0.5 - 12.0):
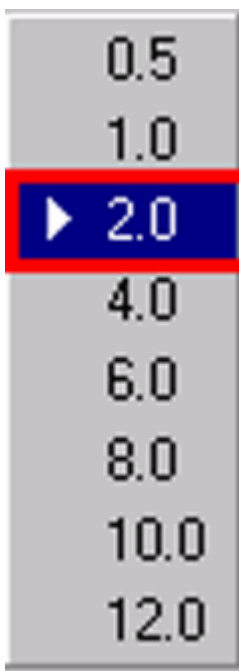
Figure 4-21. Select mileage.

On the Create DXF dialog box, select 'Mile Incr.':
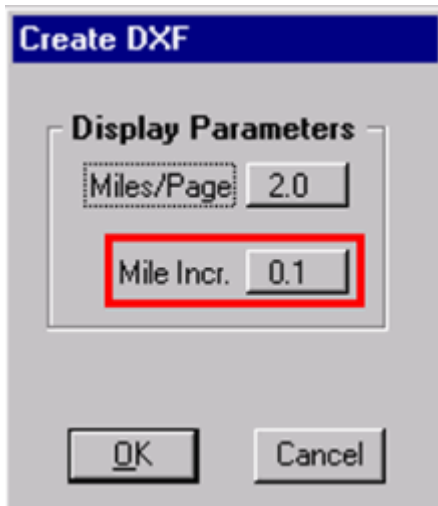
Figure 4-22. Select mileage increments.

This drop-down box appears. Select the desired mileage increment (0.1 - 1.0):
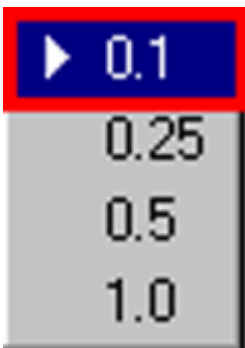
Figure 4-23. Select increment.

EXAMPLE: In the ARI diagram sample, the analyst selected 2 miles per page (shows the roadbed, attributes, and features for 2 miles of the roadway) at 0.1 mile increments (0.1, 0.2, 0.3, etc., scaled across the top of the diagram).

Select 'OK' to exit the Create DXF dialog box.

Figure 4-24. Select 'OK' or change choices.

The Open AutoCAD Drawing File window appears; select the ".dxf" file of the highway file you created in ROSCOE and select 'OK':
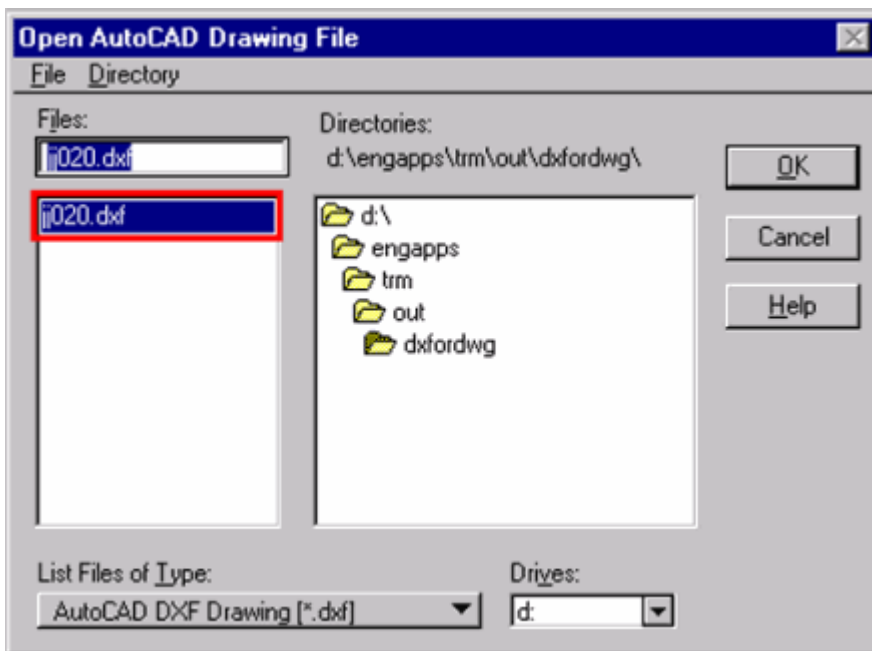
Figure 4-25. Example file selected.

The DWG/DXF Import dialog box appears. Select 'Open':
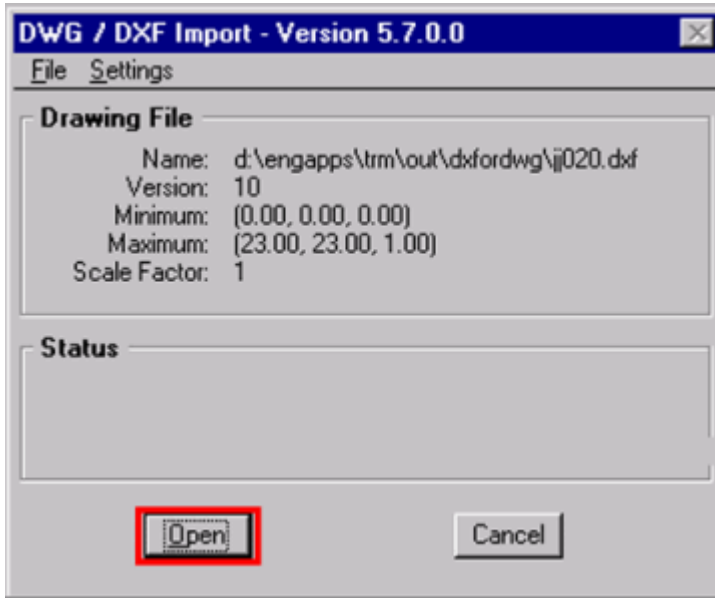
Figure 4-26. 'Open' processes the ARI.

This creates the ARI log sheets, which appear as in Figure 3-51:

Figure 4-27. This ARI contains 11 pages.

To customize the ARI, select 'View' on the ARI Toolbar:

Figure 4-28. 'View' changes which features appear on the ARI pages.

The View Settings dialog box appears:

Figure 4-29. Shows Distance Values and features options.

Select a 'Distance Value' of

◆   Reference Marker + <u>Displacement</u>

◆   Distance From Origin (<u>DFO</u>)

◆   Distance From Origin and Reference Marker + Displacement (DFO/Disp), or

◆   Milepoint only.

The 'Distance Value' determines how closely the ARI features appear:
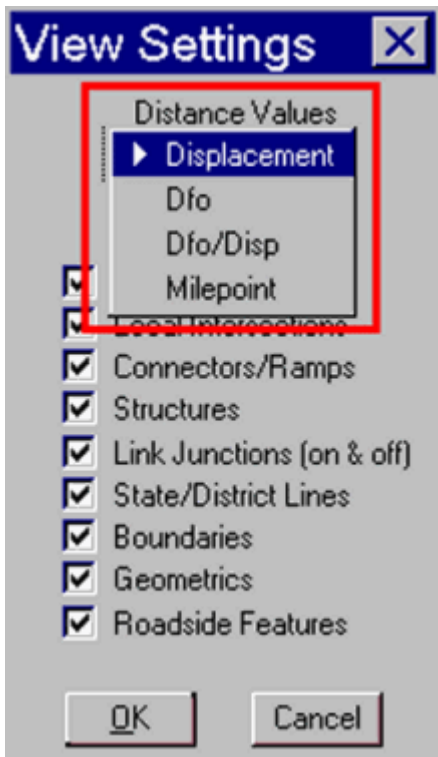
Figure 4-30. Select one from the list.

Select features to appear on the ARI by clicking the box beside the feature. Click on a check mark to remove it. When you finish selecting features, select 'OK':
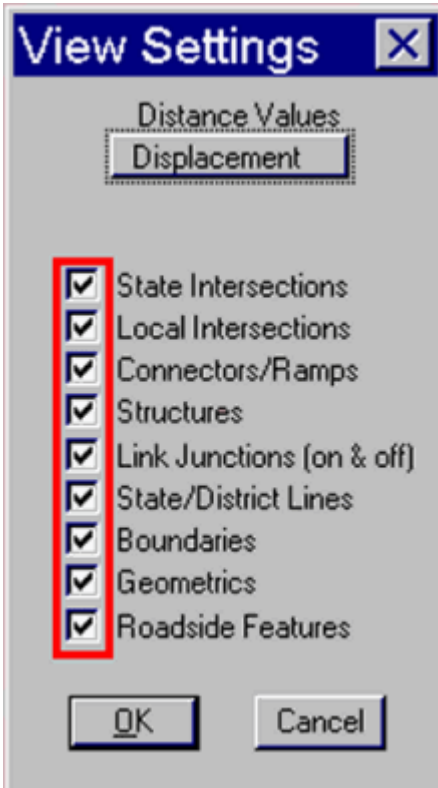
Figure 4-31. Select all or only a few to appear on the ARI.

Editing an ARI Diagram

At this point in creating an ARI, you may want to edit some of the features on the diagram to make it easier to read. This toolbar appears at the bottom of the ARI screen:

Figure 4-32. MicroStation view toolbar.

This table describes the various tools:

Editing in Microstation

Button	Select this button(s):
Update	After making changes to the diagram
Zoom In and Out	Make the view larger or smaller
Window	Draw a window around a small area to view in a larger screen
Fit View	Fit all the diagram pages on the screen

Editing in Microstation

Button	Select this button(s):
Move	Move a feature for clearer viewing
Copy	Copy a feature to place it elsewhere on the diagram
Delete	Delete a feature
Rotate	Rotate a feature for clearer viewing

For further instructions, please consult the MicroStation user's manual.

Plotting an ARI Diagram

On the ARI Toolbar, select 'Plot':
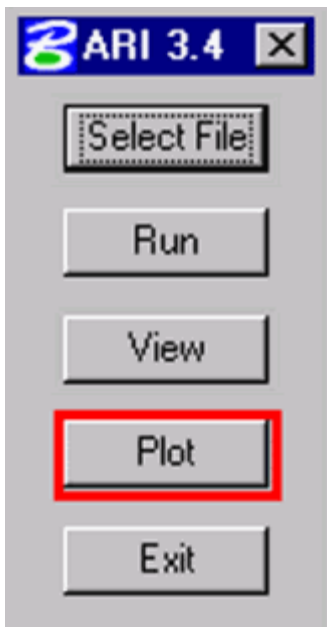
Figure 4-33. Plot = print.

This displays the Plot dialog box. Select 'Plotter':

Figure 4-34. Choose the plotter first.

The Local or Network plotting selection box appears:
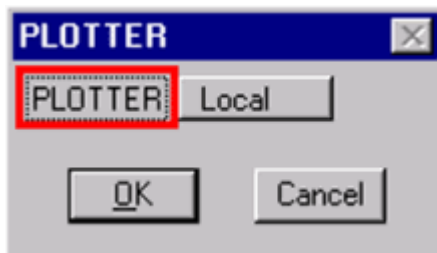
Figure 4-35. Select your choice of local or network.

Select a plotter by these guidelines:

◆ A **local** plotter connects to the LPT port of your PC

◆ A **network** plotter connects to a network printer defined in the print manager under Windows NT.

Select 'OK' on the plotter selection box, then select 'Create Plot' on the Plot dialog box:

Figure 4-36. This invokes the program that makes the ARI printable.

The system creates the plot files. Finally, select 'Send Plot':

Figure 4-37. Send plot to plotter/printer.

This sends the plot files to the plotter. A window appears showing which files are plotted and sent to the printer.

Select 'OK':

Figure 4-38.

and exit Microstation before generating another ARI:

Figure 4-39. Exit the ARI software, then exit Microstation.

Generating Another ARI Diagram

Windows NT takes over plotting the ARI after you send the files to the plotter. You may exit MicroStation and generate another ARI diagram before the plotting finishes. Return to the TRM Main Menu and repeat the process to produce another ARI diagram.

Section 2 — Available TRM Reports

About This Section

This section describes the steps to process data to access, view, and print reports from TRM and Online Document Viewing System (ODVS). The TRM reports are as current as the data in the system; the Mile Point-Reference Marker Equivalency Report is updated on ODVS monthly. Where a report name is in red underlined text, click that name to view an example of the report.

Emergency Closings

The Emergency Closings Report lists all route or route segments with Highway Status 7 (emergency closing). These route or route segments are closed temporarily for various reasons, including flood or hazardous material spills:

Emergency Highway Closings Report

Purpose	**Provides a timely list of temporarily closed routes**
Benefits	Provides work zone safety for the local district office and the Central Permit Office, who must determine traffic routing around the closed segment; provides protection for traveling public
Authorized User	Any user may access this report
Criteria Needed	None (Go to Report Processing)
Elements Listed on Report	◆ District Id ◆ County Number ◆ Signed Highway ◆ Roadbed-Id ◆ From Reference Marker limits (Number, Suffix, Displacement) ◆ To Reference Marker limits (Number, Suffix, Displacement) ◆ Date Closed ◆ Reason for Closing

Routes Opened by Districts

The Routes Opened by Districts Report lists all route or route segments with Highway Status 5 (Opened to Traffic—District). These route or route segments must contain all required district data:

Routes Opened by Districts Report

Purpose	Provides TPP with a list of routes containing all required district data. TPP enters remaining data required for the route to be open to traffic (Highway Status Code 6)
Benefit	Provides TPP with a complete list of route or route segments that still require final review before opening to traffic
Authorized User	Anyone with access to the TRM system
Criteria Needed	None (Go to Report Processing)
Elements Listed on Report	◆ District Id ◆ County Number ◆ Signed Highway ◆ From Reference Marker limits (Number, Suffix, Displacement) ◆ To Reference Marker limits (Number, Suffix, Displacement) ◆ Roadbed-Id ◆ Date Opened ◆ Notation (if any)

District Required Elements

The District Required Elements Report lists From and To Reference Marker limits of a specified route on a specified roadbed missing values of required elements in your Maintenance District only:

District Required Elements Report

Purpose	Provides each district with a list of required element value deficiencies
Benefit	Each line of data listed on the report is an update transaction. Enter these transactions directly into TRM maintenance screens to update TRM
Authorized User	The district is responsible for running this report, but any TRM user may run it
Criteria Needed	◆ Signed Highway ◆ From Reference Marker limits (Number, Suffix, Displacement) ◆ To Reference Marker limits (Number, Suffix, Displacement) ◆ Roadbed-ID: Valid values re K, R, L, M, S, P, T, X, Y, A, B, and C

District Required Elements Report

Purpose	Provides each district with a list of required element value deficiencies

Elements Listed on Report	◆ District ID
	◆ Signed Highway
	◆ Marker limits for missing values:
	  ● From Reference Marker limits (Number, Suffix, Displacement)
	  ● To Reference Marker limits (Number, Suffix, Displacement)
	◆ Roadbed-Id
	◆ Element Missing
	(Go to Report Processing)

Missing Attributes (listed only if deficient)	◆ Pavement Data
	  ● Base Type Values
	  ● Curb Type Left/Right
	  ● Number of Thru Lanes
	  ● Roadbed Width
	  ● Shoulder Type, Width, Use Inside/Outside
	  ● Speed Limit Maximum
	  ● Surface Type Values
	  ● Surface Width
	◆ Administrative Data
	  ● Highway Maintenance Status
	  ● Maintenance Foreman Number
	  ● Maintenance Section

A route or route segment cannot open to traffic (Highway Status 5 or 6) until the District and TPP input all required element values.

TPP Required Elements

The TPP Required Elements Report lists missing values of required elements from all Districts (see District Required Elements Report). A route or route segment cannot open to traffic (Highway Status 5 or 6) until TPP inputs all required element values:

TPP Required Elements Report

Purpose	Provides TPP with a listing of Reference Marker limits per route per roadbed that contains deficiencies in required element values
Benefit	Each line of data listed on the report is in itself an update transaction. Enter transactions directly into TRM maintenance screens to update TRM
Authorized User	TPP is responsible for running this report, but any TRM user may run it

TPP Required Elements Report

Purpose	**Provides TPP with a listing of Reference Marker limits per route per roadbed that contains deficiencies in required element values**
Criteria Needed	◆ Signed Highway ◆ From Reference Marker limits (Number, Suffix, Displacement) ◆ To Reference Marker limits (Number, Suffix, Displacement) ◆ Roadbed-Id: Valid values are C, N, X, Y, A and B

Elements Listed on Report	◆ District Id
	 ◆ Signed Highway
	 ◆ Marker limits for missing values:
	    ● From Reference Marker limits (Number, Suffix, Displacement)
	    ● To Reference Marker limits (Number, Suffix, Displacement)
	 ◆ Roadbed-Id
	 ◆ Element Missing
	 (Go to Report Processing)

Missing Attributes (listed only if deficient)	◆ Administrative System
	    ● City Number
	    ● Highway Design
	    ● Control-Section
	    ● County Number
	    ● District Id
	    ● FIPS Urban Area
	    ● Functional System
	    ● Govt Control Level
	    ● Metropolitan Planning Area Number
	    ● Right of Way Width Minimum/Usual
	    ● Rural/Urban Values.

Transferred Routes

The Transferred Routes Report lists all route or route segments deleted from the TRM system within a previous year but still traceable through off-system means. The system removes transferred routes from the TRM Database and stores them to another source:

Transferred Routes Report

Purpose	**Provides a list of all route or route segments which have been removed from the TRM system, but are kept for reporting purposes**
Benefit	Provides TPP a list of route or route segments to incorporate into some other automated inventory source
Authorized User	Any TRM user

Transferred Routes Report

Purpose	Provides a list of all route or route segments which have been removed from the TRM system, but are kept for reporting purposes
Criteria Needed	None (Go to Report Processing)
Elements Listed on Report	◆ Signed Highway ◆ From Reference Marker limits (Number, Suffix, Displacement) ◆ To Reference Marker limits (Number, Suffix, Displacement)

Although available, transferred routes and the need for this report are rare.

Mile Point-Reference Marker Equivalency

The Mile Point-Reference Marker Equivalency (MPRME) lists current Reference Marker + Displacement locations equivalent to control-section-milepoint locations:

Mile Point-Reference Marker Equivalency Report

Purpose	Provides a list of all routes within a county by control-section-milepoint location with the equivalent reference marker and displacement
Benefit	Provides user with a complete monthly list of equivalencies so the user may enter data to an accurate location
Authorized User	Any ODVS-authorized user (if you cannot access ODVS, please contact your Automation Administrator)
Criteria Needed	◆ District Id ◆ County Number (Go to ODVS Report Processing)
Elements Listed on Report	◆ District-Id ◆ County Number ◆ Signed Highway ◆ Control-Section ◆ Begin/End Milepoint ◆ Length ◆ Begin/End Reference Marker & Displacement ◆ Cycle Date ◆ From/To DFO

The data is listed by district number, then county number order.

TRM Data Export

TRM Data Export is a comma-delimited text file containing user-requested information. TRM stores the text file at a location determined by the user's File Transfer Protocol (FTP) information stored on the TRMARI TACS table:

TRM Data Export Text File

Purpose	**Provides a text file the user can import into various database, spreadsheet, and mapping programs**
Benefit	Provides user with a comma-delimited text file containing all the information the user requests
Authorized User	Any TRM user
Criteria Needed	◆ District Id ◆ Roadbed ID (Go to Data Export Processing)
Elements Included in Report	◆ County ◆ District ◆ Highway System & Number ◆ Control-Section ◆ One Marker for Point Data or From and To Markers for Length Data ◆ Highway System, Number, and Suffix ◆ A DFO for Point Data or From and To DFO for Length Data ◆ Roadbed-ID ◆ Data Date (last item on the output) ◆ Requested elements

Requested Elements Included in Report	◆ All Length Data and Point Data
	◆ Length Data
	  ● Pavement
	  ● Maintenance
	  ● Administrative
	  ● Secondary Route
	  ● Boundary
	◆ Point Data
	  ● Reference Marker
	  ● Feature/Intersection
	  ● Link

Section 3 — Report Processing

Printing a Report

Printing a report involves steps in different systems: TRM, the ROSCOE Mainframe, and ODVS. Follow the input instructions to process a report.

TRM Report Processing

Log on to TRM; the Texas Reference Marker System Main Menu appears. From the TRM Main Menu, input an 'F' in **Type Choice** and press <E>; the Report Processing Selection Menu appears:

```
         TEXAS REFERENCE MARKER SYSTEM
         REPORT PROCESSING SELECTION MENU


  A. Highway Status Control Reports

  B. Automated Road Inventory Diagram (ARI)

  C. Automated Road Inventory Diagram (DPS-ARI)

  D. Transferred Route Report

  E. Data Export



             Type Choice: _   <E>
```
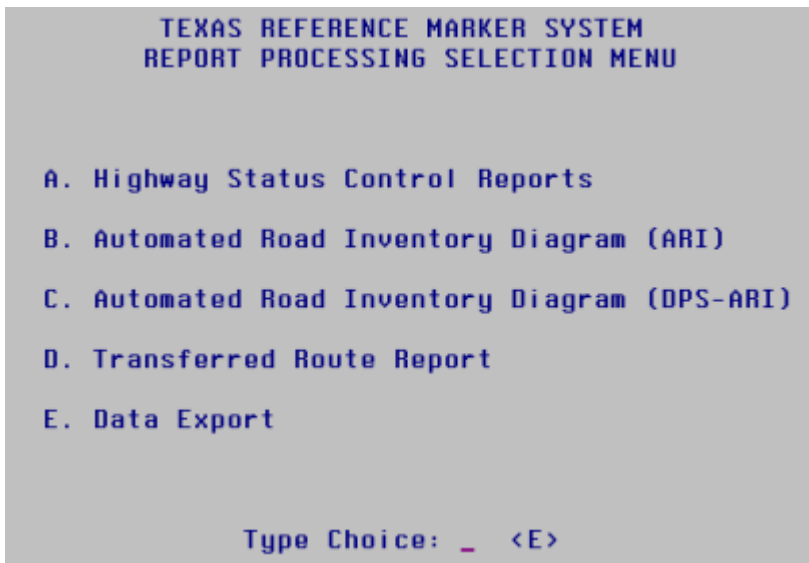
Figure 4-40. Report Processing Selection Menu

Input the report selection's letter in **Type Choice** and press <E>; for Highway Status Control Reports, another selection menu appears:

```
TRM.REP.SEL.406              TEXAS REFERENCE MARKER SYSTEM          DATE: 04/11/01
                            HIGHWAY STATUS CONTROL REPORT          TIME: 02:10 PM
                                   SELECTION MENU


                      A.   Emergency Closings

                      B.   Routes Opened By Districts

                      C.   District Required Elements

                      D.   TPP Required Elements




                           Type Choice: _ <E>



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
        HELP        EXIT                                   CLEAN MAIN        SYS
```
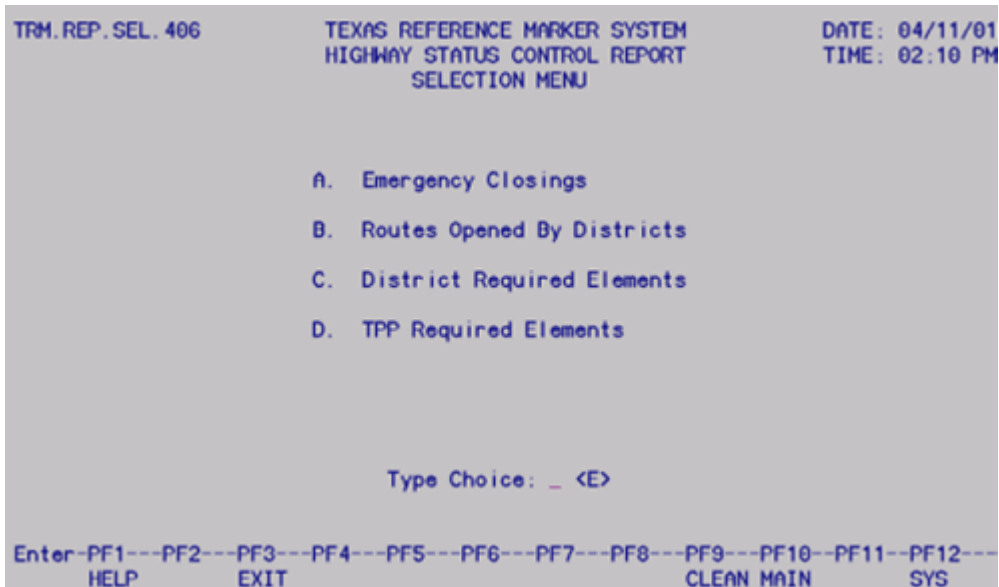
Figure 4-41. Status Control Report Selection Menu

Input the letter corresponding to the specific Highway Status Control report to process in **Type Choice** and press <E>; the TRM User Job Submission dialog box appears:

```
TRM.REP.SEL.406              TEXAS REFERENCE MARKER SYSTEM          DATE: 04/11/01
+---------------------------------+ ATUS CONTROL REPORT            TIME: 02:18 PM
I    TRM User Job Submission      I ECTION MENU
I                                 I
I Requestor_____  I
I Printer.............. YBT1_____  I
I Msg. Class (R=Hold, A=Print) A  I cy Closings
I                                 +----+
I Message Level.. (2,0)      I utes Opened By Districts
I Run Time....... 05         I
I Job Class...... B          I strict Required Elements
I Job Name....... P800MZJ _  I
I Database....... PRD3       I P Required Elements
I Natural Library TRM        I
I                            I
I Save Profile... N (Y/N)    I
+----------------------------+

                           Type Choice: B <E>



Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
          SUB                                              CANCL
```

Figure 4-42. TRM User Job Submission dialog box.

This table lists the five input fields on the TRM User Job Submission dialog box, their formats and default and valid values:

Report Submittal Window

Field	Description	Format	Default Value	Valid Values
Requestor	Name of report requestor	19 alpha	None	All characters
Printer	VPS Printer Id assigned to the target main-frame printer	4 alpha	Default printer Id	Any valid printer Id
Msg Class	Value determines whether the system holds the output for review or prints automatically	1 alpha	None	(R)eview or (A)utomatic print
Job Name	Name given to the job for access in ROS-COE; the last character must be entered to differentiate one report from another	1 alpha	None	A-Z, 0-9
Save Profile	Value determines whether the system saves Requestor, Printer, and Msg Class fields	1 alpha	(N)o	(Y)es or (N)o

NOTE: After saving the profile, the values in the first three fields always appear the same. If any of the fields change, save the profile.

Make modifications to the TRM User Job Submission pop-up window and press <F2>.

Important: Remember the Job Name! You need it to identify your job in ROSCOE output.

The Report Limits dialog box appears:
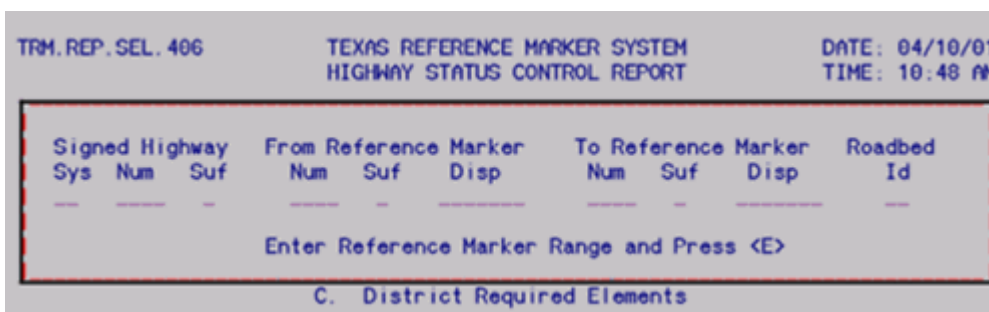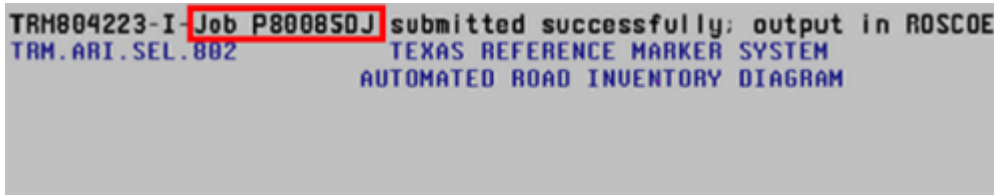
Figure 4-43. Report Limits dialog box

This table lists each of the Required/Optional input fields on the Report Processing Selection Menu:

Report Processing Screen Descriptions

Field	Required/Optional
Signed Highway	◆ System (Required) ◆ Number (Required) ◆ Suffix (Optional)
From Reference Marker	◆ Number (Required) ◆ Suffix (Optional) ◆ Displacement (Optional)
To Reference Marker	◆ Number (Required) ◆ Suffix (Optional) ◆ Displacement (Optional)
Roadbed-Id	Required

Input all required plus any applicable optional fields and press <E>. The system searches for information within the specific Signed Highway, Reference Marker, and Roadbed-Id range. A message indicates that the job submitted successfully. Press <F12> to exit TRM and access the submitted job through ROSCOE.

Figure 4-44. Success message

ROSCOE Report Processing

Follow these input instructions to continue processing your report thru ROSCOE.

From the mainframe session, input the name of your regional central ROSCOE site and press <E>:

Figure 4-45. Start-up page for mainframe sessions.

The ROSCOE signon screen appears:

Figure 4-46. Security screen.

Input your **Key (User Id) Number** and top secret **Password** and press `<E>; continue`
`pressing <E> through all message screens; a` blank screen appears:

Figure 4-47. Blank screen after message screens.

Input 'DOUT' at the cursor and press `<E>;  the` PC.DOUT screen appears:
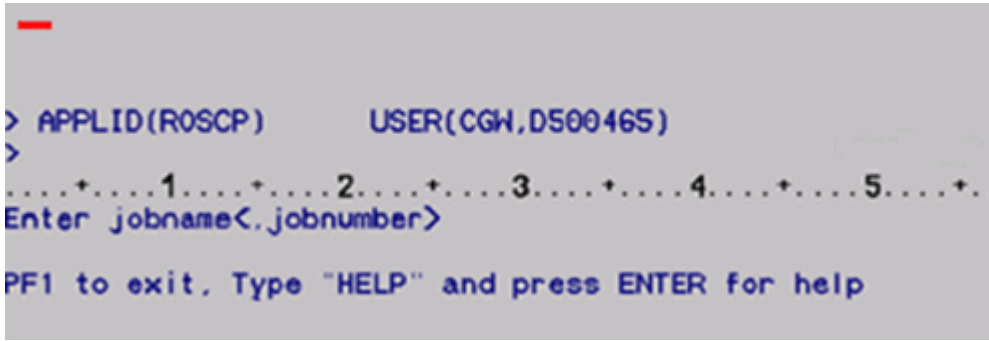
Figure 4-48. PC.DOUT screen.

At the cursor, input the **Jobname** from the first step and press `<E>;` all jobs with your jobname appear along with the status of the jobs:
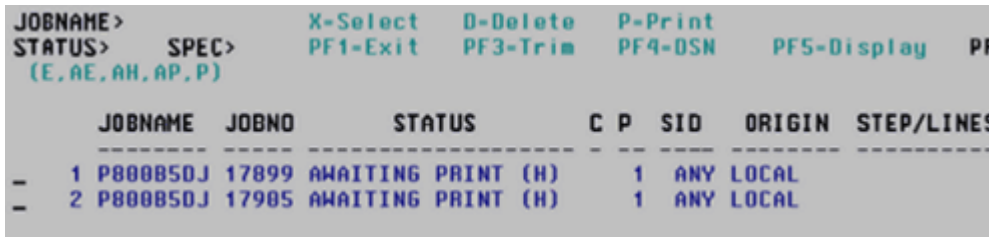
Figure 4-49. List of processed jobs

This table describes the Jobname Screen:

Jobname Screen

Column	Description
JOBNO	System-assigned job number
JOBNAME	Name of the job entered in the TRM User Job Submission pop-up window
STATUS	Status of the job: ◆ AWAITING PRINT (H)—ready to review (msg. class = R) ◆ AWAITING PRINT—ready to print (msg. class = A) ◆ EXECUTING—running ◆ AWAITING EXECUTION—in queue waiting to run
C	Message Class--A, R, or blank
ORIGIN	Destination of output—this is the printer Id entered in the TRM User Job Submission pop-up window
Step	If STATUS of the job is EXECUTING, the queue position of the job is listed here [example: POS(2) means "queue position number 2"]
NOTE:	If the submitted job is message class = A (automatic print), the output goes to the printer named in the Job Submittal pop-up window. Do not continue with the next step

Select the job to review under the JOBNO column:

◆   If more than one job is listed, input the number of the job to review and press <F2>

◆   If only one job is listed, press <F2>.

The first page of the job appears:

```
> APPLID(ROSCP)      USER(FQH,D500138)
> JOB(P800B5DJ,17899)SCRL FULL   COLS 00001 00073                       F
>        <...+....1....+....2....+....3....+....4....+....5....+....6..
         =========================== T O P ===========================
000001                       J E S 2   J O B   L O G  --  S Y S T E M   D
000002
000003 12.03.25 JOB17899 ---- THURSDAY,  18 JAN 2001 ----
000004 12.03.25 JOB17899   IEF677I WARNING MESSAGE(S) FOR JOB P800B5DJ
000005 12.03.27 JOB17899   TSS7000I D500138 LAST-USED 18 JAN 01 12:03
000006 12.03.27 JOB17899   $HASP373 P800B5DJ STARTED - INIT BWRK - CLA
000007 12.03.27 JOB17899   TSS7001I COUNT=02759 MODE=FAIL LOCKTIME=NON
000008 12.03.27 JOB17899   IEF403I P800B5DJ - STARTED - TIME=12.03.27
000009 12.03.28 JOB17899   -
000010 12.03.28 JOB17899   -JOBNAME  STEPNAME PROCSTEP      RC    EXCP
000011 12.03.28 JOB17899   -P800B5DJ STEP1                  04      42
000012 12.03.28 JOB17899   -P800B5DJ STEP2                  00      11
000013 12.05.55 JOB17899   -P800B5DJ STEP3      STEP1       00     635
000014 12.06.01 JOB17899   -P800B5DJ STEP3W2               00     111
000015 12.06.03 JOB17899   -P800B5DJ STEP3W3               00     109
000016 12.06.07 JOB17899   -P800B5DJ STEP3W4               00     111
000017 12.06.09 JOB17899   -P800B5DJ STEP3W5               00     108
```

Figure 4-50. First job page.

To view the output, input 'NEXT FILE' to scroll forward through the job or 'PREV FILE' to scroll backward.

Input 'STATUS' at the cursor and press <E>; the ROSCOE ALTER/STATUS PROCESSOR Print screen appears:

```
> APPLID(ROSCP)      USER(CGW,D500465)                    J PENDING
> STA(P800MZJA,14588)SCRL FULL  COLS 00001 00079
>....+....1....+....2....+....3....+....4....+....5....+....6....+....7....+
                        ROSCOE ALTER/STATUS PROCESSOR

JOB NAME    NO    FILE      LINE    PAGE/   LINE  FIND LIMIT  I/O COUNT
P800MZJA  14588     1         1       1       1     99999            9

NO MODIFICATIONS ALLOWED - JOB ONLY ELIGIBLE FOR RPS PRINT
(1)         (2) (3)                (4)        (5)
 A  FILE STA C  DEST         LINES FORM     CPY NOTES
 _     1  P A LOCAL             22 STND       1   JES2.JESMSGLG
 _     2  P A LOCAL             26 STND       1   JES2.JESJCL
 _     3  P A LOCAL             14 STND       1   JES2.JESYSMSG
 _     4  P A LOCAL              5 STND       1   STEP1.STEP1.CMPRINT
 _     5  P A LOCAL             12 STND       1   STEP2.SYSOUT
 _     6  P A LOCAL              4 STND       1   STEP3.STEP1.CMPRINT
 _     7  P A LOCAL             18 STND       1   STEP3.STEP1.CMPRT01
=========================== END OF OUTPUT FILES ===========================
```

Figure 4-51. ROSCOE ALTER/STATUS PROCESSOR print screen.

This table describes the ROSCOE ALTER/STATUS PROCESSOR/Print screen:

Print Status Screen Fields

Column	Description
A	◆ Enter a P to Print a specific file ◆ Enter an N for No Print
FILE	The sequential number of the file
STA	Status of the job: ◆ NOP--No Print--this file from the job will not print ◆ P--Print--this file from the job will print
C	Class for print status: A = Automatic, R = Review
DEST	Destination of output. This is the printer Id entered in the Job Submission pop-up window

Select the reports to print:

◆ To print only specific files from the job, tab to the underscores in Column A. Input 'P' on the underscore adjacent to each file to print and press <E>; `the` values under the **STA** column change to P for the selected print files

◆ To print all files, input 'ALTER JOB ALL PRINT' on the Command Line and press <E>; `the` values under the **STA** column change to P for all files.

To exit the ROSCOE ALTER/STATUS PROCESSOR screen without printing any files and return to the output job, press <F1>.

Input 'DETACH JOB' at the cursor and `press <E> to send the selected files to the printer; the` system deletes the job and exits the DOUT function.

Input 'OFF' at the cursor to exit `ROSCOE; the` system returns to the mainframe logon screen.

ODVS Report Processing

To access the Online Document Viewing System from the mainframe session, input 'ODVS' and press <E>:
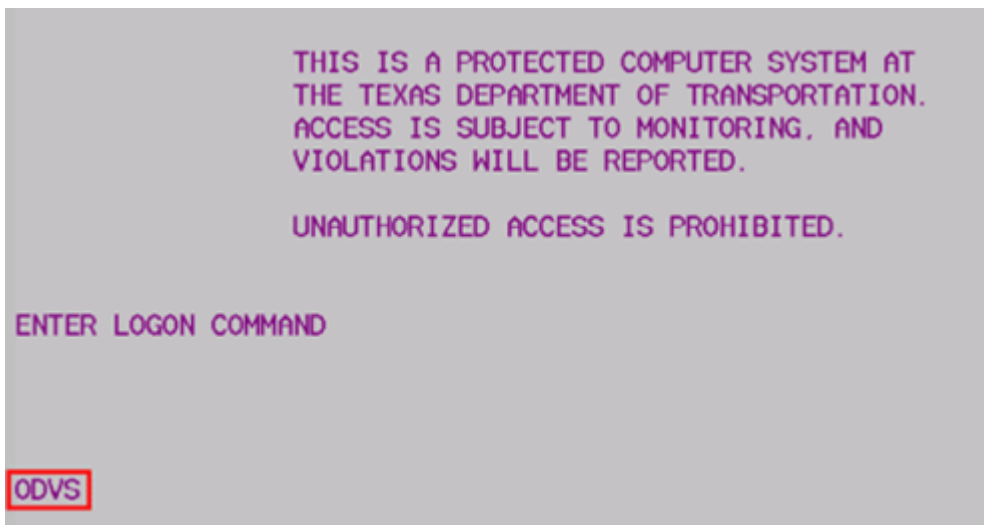
Figure 4-52. ODVS is the acronym for Online Document Viewing System.

The ODVS ViewDirect Screen appears. Input your Recipient (User) Id and top secret Password and press <E>:
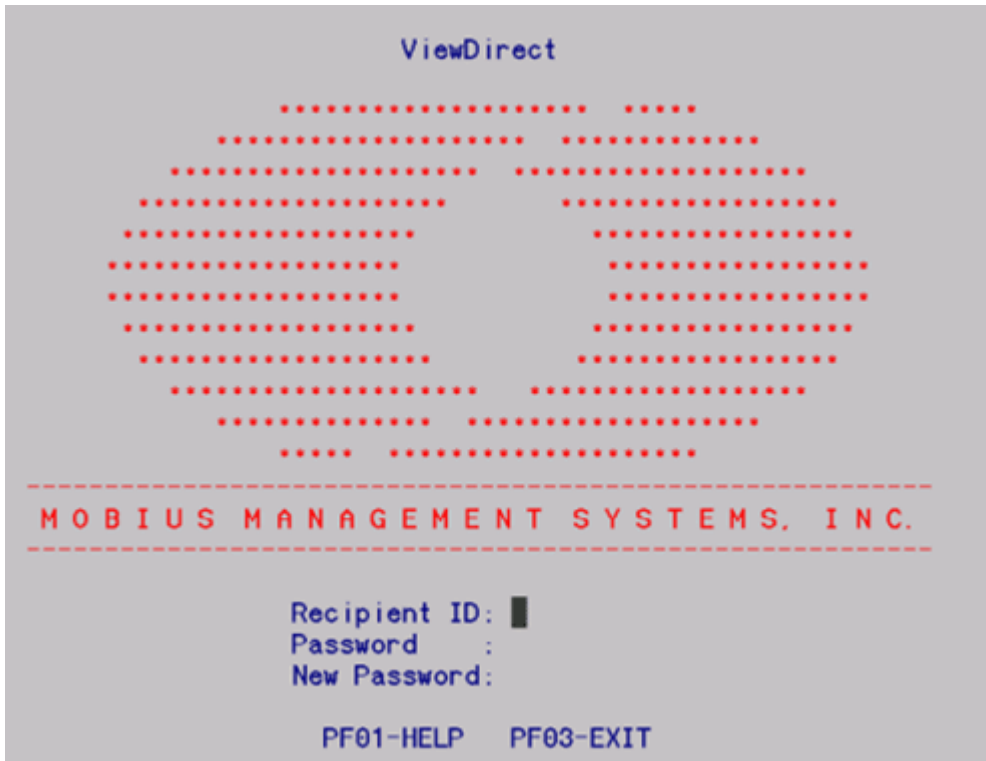
Figure 4-53. Security screen.

The Viewing Menu appears:
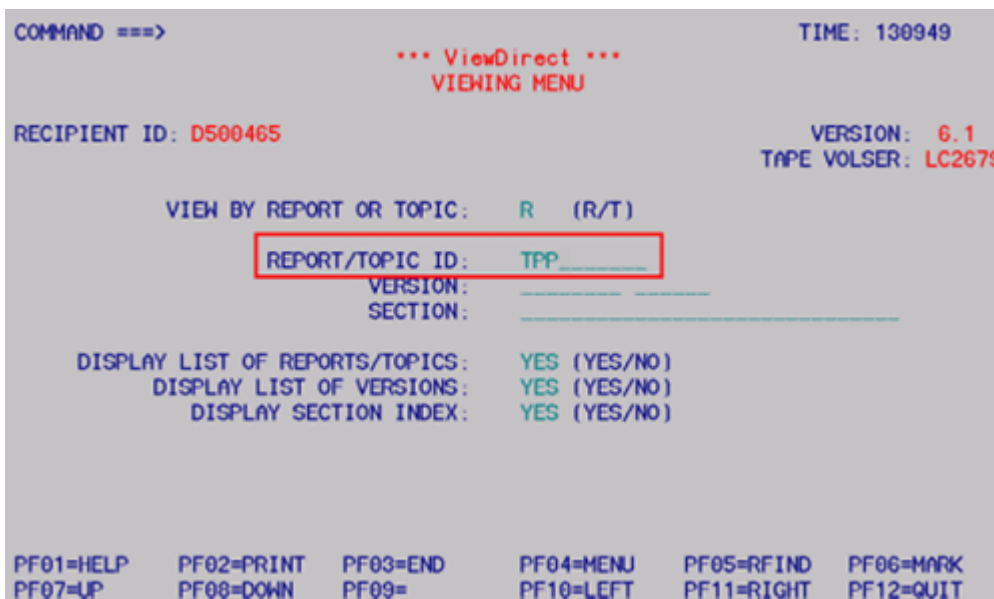
Figure 4-54. Viewing menu.

Input 'TPP' in the Report/Topic ID field and `press <E>; the` Reports list appears:

```
COMMAND ===>                                                    TIME: 131033
                              ••• REPORTS •••

OPTION REPORT ID   REPORT NAME
------ ---------   -----------------------------------------------------------
   _   TPP MPE YR  TPP YEAR END MILEPOINT EQUIVALENCY
   _   TPP MPEQ    TPP MILEPOINT EQUIVALENCY
   _   TPP MPR YR  TPP YEAR END FINAL MILEPT REFERENCE MARKER EQUIVALENCY
   X   TPP MPRME   TPP MILEPOINT REFERENCE MARKER EQUIVALENCY
   _   TPP RI      TPP STATE ROADWAY
   _   TPP RI YR   TPP YEAR END FINAL STATE ROADWAY
   _   TPP R439F   TPP TRM MISSING ELEMENTS REPORT
   _   TPP TLG YR  TPP YEAR END FINAL TRAFFIC LOG
   _   TPP TLOG    TPP TRAFFIC LOG
   _   TT 1997     TPP 1997 TT TABLES
   _   TT 1997I-C  TPP 1997 TABLE I BY COUNTY
   _   TT 1997I-D  TPP 1997 TABLE I BY DISTRICT
   _   TT 1998     TPP 1998 TT TABLES
   _   TT 1998I-C  TPP 1998 TABLE I BY COUNTY
   _   TT 1998I-D  TPP 1998 TABLE I BY DISTRICT


PF01=HELP      PF02=PRINT    PF03=END       PF04=MENU     PF05=RFIND    PF06=MARK
PF07=UP        PF08=DOWN     PF09=          PF10=LEFT     PF11=RIGHT    PF12=QUIT
```

Figure 4-55. Be sure to select MPRME and not one of the others beginning with "MPR"!

Input 'X' in the TPP MILEPOINT REFERENCE MARKER EQUIVALENCY field and `press`
`<E>; the` Report Versions Menu appears:

```
0727I-BEGINNING OF VERSIONS              0732I-END OF VERSIONS
COMMAND ===>                                                    TIME: 131233
                           ••• REPORT VERSIONS •••

REPORT: TPP MPRME   TPP MILEPOINT REFERENCE MARKER EQUIVALENCY

         OPTION    DATE       TIME      DEVICE    STATUS
         ------    --------   ------    ------    ----------------
           ×       20010419   123016    DISK      AVAILABLE
           _       20010216   140024    DISK      AVAILABLE
           _       20010118   153024    DISK      AVAILABLE
           _       20010118   150014    DISK      AVAILABLE
           _       20001114   123015    DISK      AVAILABLE
           _       20001016   113023    DISK      AVAILABLE
           _       20000929   113254    DISK      AVAILABLE
           _       20000815   130016    DISK      AVAILABLE
           _       20000712   093022    DISK      AVAILABLE
           _       20000613   100026    DISK      AVAILABLE
           _       20000525   153027    DISK      AVAILABLE
           _       20000420   140018    DISK      AVAILABLE


PF01=HELP      PF02=PRINT    PF03=END       PF04=MENU     PF05=RFIND    PF06=MARK
PF07=UP        PF08=DOWN     PF09=          PF10=LEFT     PF11=RIGHT    PF12=QUIT
```

Figure 4-56. The most current date here is April 19, 2001.

Input 'X' next to the most current date and `press <E>; the` Report Section Index appears:

Figure 4-57. Selected above is Paris District, Delta County; its MPRME report contains 4 pages.

Find the county you are looking for by <u>district</u> and County numbers. Press <F8> to scroll forward or <F7> to scroll backward. **Make a note of the number of pages in the report!** Input 'X' by your selection and press <E>; the first page of the MPRME for your county appears:

Figure 4-58. Page 1, far left side of the MPRME report for Delta County.

To view the complete page, press <F11> to move the view to the right and <F10> to move the view to the left. To print the MPRME, press <F2>; the Printing Menu appears:

Figure 4-59. Check the Online Printer ID so you can find your printout!

In the TO PAGE and NUMBER OF PAGES TO BE PRINTED fields, input the number of MPRME pages indicated on the Report Section Index. Press <E> twice to print the report.

To select another county, press <F4>.

To exit to mainframe session, press <F12>.

TRM Data Export Processing

Log on to TRM; the Texas Reference Marker System Main Menu appears. From the TRM Main Menu, input an 'F' in **Type Choice** and press <E>; the Report Processing Selection Menu appears. Select 'E' and press <E>; the Data Export Selection Submenu appears:

```
                    TEXAS REFERENCE MARKER SYSTEM
                    DATA EXPORT SELECTION SUBMENU

Range:          _   Statewide <default>      __   District Id (01-25)
-----
Data Type:      _   Centerline <default>      _    Roadbed Specific
---------


All Data:       _   All Length Data and Point Data
--------
                                          *   Press <E> for submenu

Length Data:  * _   Pavement Data
-----------   * _   Maintenance Data
              * _   Administrative Data
              * _   Secondary Route Data
              * _   Boundary Data

Point Data:     _   Reference Marker Data
----------    * _   Feature/Intersection Data
                _   Link Data
```

Figure 4-60. Select the data you want in your text file.

Input **Range**:

Range to Pull

Range	TRM selects…
Statewide	All districts—TRM users only
District	District's ID—any authorized user

Select the **Data Type**:

Data Type

Roadbed Type	Length data pulled from…
Centerline	TRM Monthly file
Roadbed Specific	TRM Monthly Roadbed file

Select the **Data** elements:

Data Elements

Data Type	TRM provides data for…
Length Data	◆ Pavement ◆ Maintenance ◆ Administrative ◆ Secondary Routes ◆ Boundaries
Point Data	◆ Reference Markers ◆ Features/Intersections

Press <E> to go to the submenus (if available) or PF2 to submit. If you select a submenu, select one or more submenu elements and press PF2 to submit.

The following graphics show the various submenu selections:

◆ Pavement Data Submenu
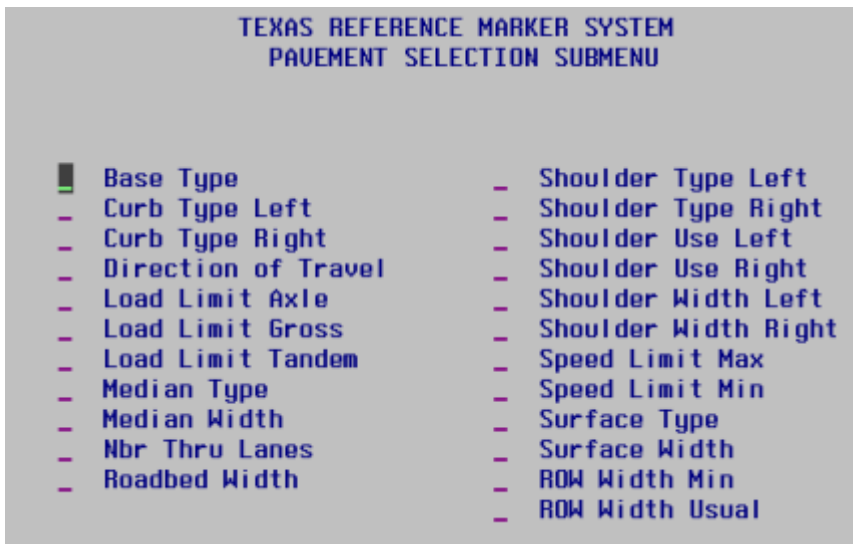
Figure 4-61. Select pavement data.

◆ Maintenance Data Submenu
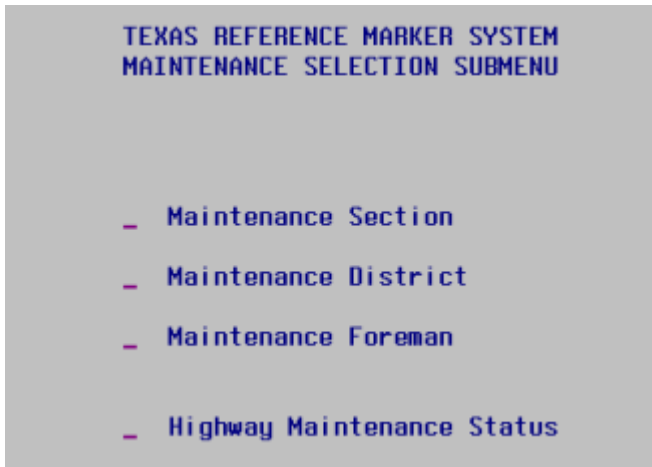
Figure 4-62.   Select maintenance data.

◆   Administrative Data Submenu
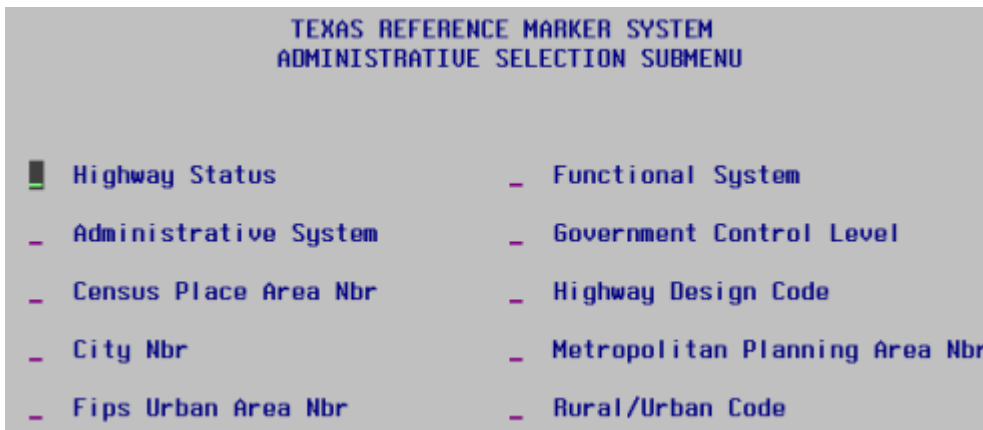
Figure 4-63.   Select administrative data choices.

◆   Secondary Route Submenu
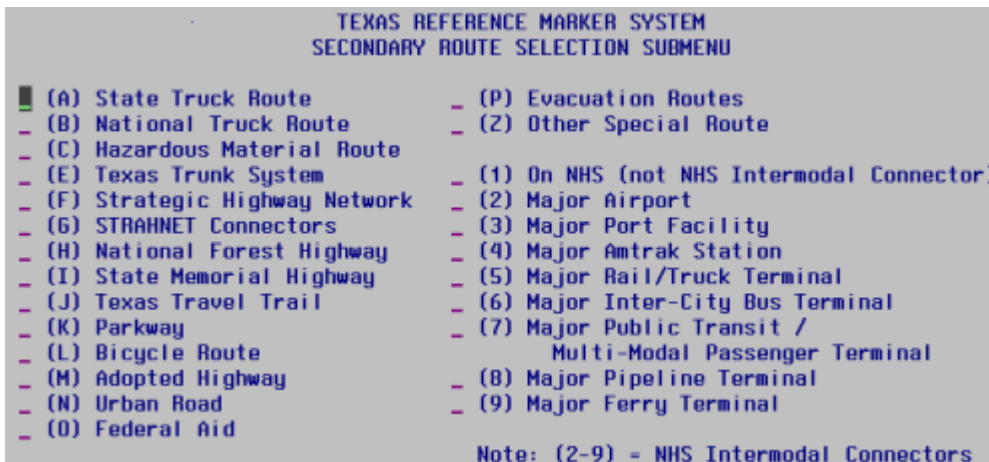
Figure 4-64.   Select secondary route data.

◆ Boundary Data Submenu
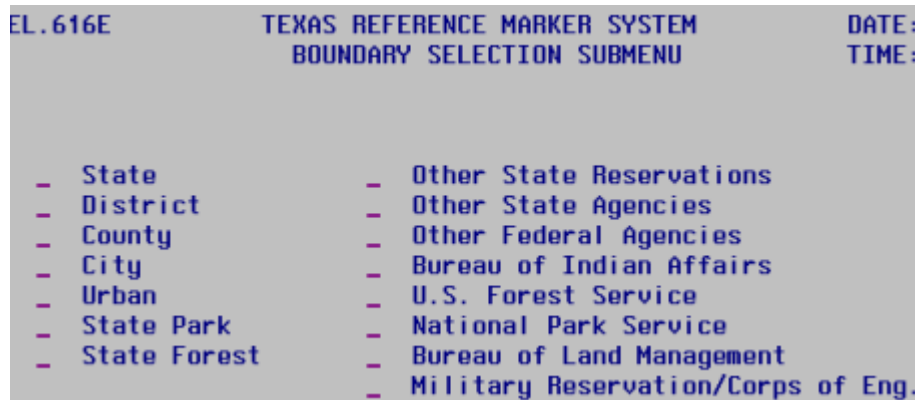
Figure 4-65.   Select boundary data.

◆ Feature Data Submenu

Figure 4-66.   Select roadway features.

◆ Intersecting Features Submenu
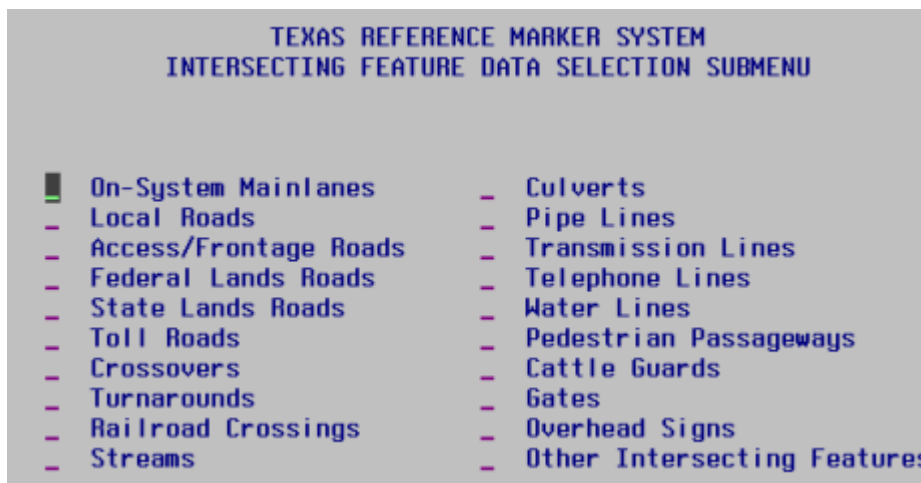
Figure 4-67.   Select intersecting features.

◆ Roadside Feature Data Submenu

```
                    TEXAS REFERENCE MARKER SYSTEM
                ROADSIDE FEATURES DATA SELECTION SUBMENU


    _ (A) Roadside Rest Areas          _ (I) Material Stock Piles
    _ (B) Picnic Areas                 _ (J) TXDOT Facilities
    _ (C) Tourist Information Centers   _ (K) Traffic Instrumentation
    _ (D) Scenic Overlooks             _ (L) Roadside Structures
    _ (E) Litter Barrels               _ (M) Fire Plug
    _ (F) Historical Markers           _ (N) Cemetary
    _ (G) Traffic Monitoring Sites     _ (O) Toll Booth
    _ (H) Test Sites                   _ (Z) Other Roadside Features
```

Figure 4-68.   Select roadside features.

After you make all selections, press PF2 to submit the batch job; the Job Submission window appears:

```
                    TEXAS REFERENCE MARKER SYSTEM
 +---------------------------------------------------------------------+
 |                    TRM User Job Submission                          |
 |                                                                     |
 | Job Name.................... P800MZJ _    Requestor..      _____  |
 | Message Class (R=Hold, A=Print)..... R    Job Class.................. B |
 | Message Level.................. (1,1)     Run Time................... 05 |
 | Printer..................... TRM02___                               |
 |                                                                     |
 | Natural Library............. TRMTEST      Database.................. TST2 |
 |                                                                     |
 |                    FTP Information                                  |
 | Password......                                                      |
 | User Id....... .      .TPP.RIVERSIDE.DIV_____    |
 | PC Address.... TXDOT-HQ51_____   |
 | Directory..... //TXDOT-HQ51/RADATA4/TPP/USERS/      _____    |
 |                                                                     |
 |                    Save Profile..... N (Y/N)                        |
 |                                                                     |
 +---------------------------------------------------------------------+
```
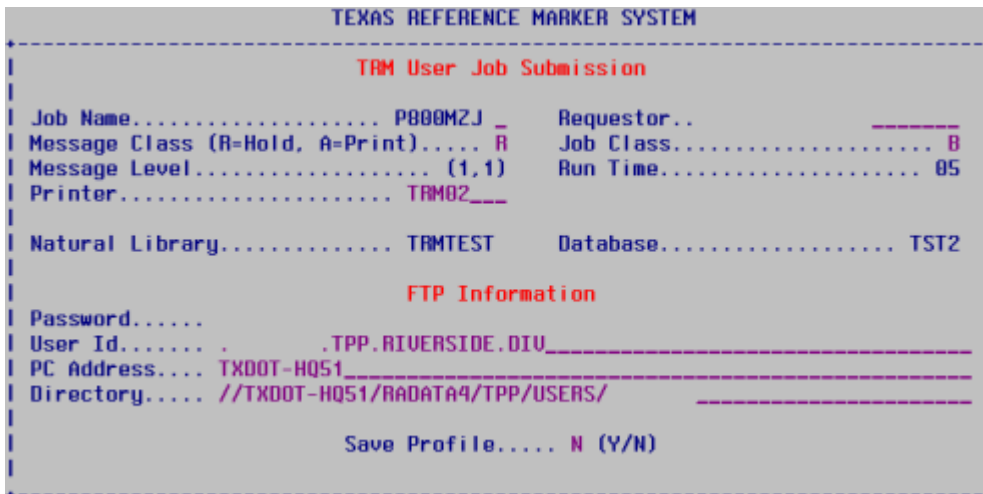
Figure 4-69.   Complete the Job Name and your top secret password.

This table lists the five input fields on the TRM User Job Submission dialog box, their formats and default and valid values:

Report Submittal Window

Field	Description	Format	Default Value	Valid Values
Request or	Name of report requestor	19 alpha	None	All characters
Printer	VPS Printer Id assigned to the target mainframe printer	4 alpha	Default printer Id	Any valid printer Id

Report Submittal Window

Field	Description	Format	Default Value	Valid Values
Msg Class	Value determines whether the system holds the output for review or prints automatically	1 alpha	None	(R)eview or (A)utomatic print
Job Name	Name given to the job for access in ROSCOE; the last character must be entered to differentiate one report from another	1 alpha	None	A-Z, 0-9
Save Profile	Value determines whether the system saves Requestor, Printer, and Msg Class fields	1 alpha	(N)o	(Y)es or (N)o

NOTE: After saving the profile, the values in the first three
       fields always appear the same. If any of the fields change,
       save the profile.

Make modifications to the TRM User Job Submission pop-up window and press <F2>.

Important: Remember the Job Name! You need it to identify your job in ROSCOE output.

Press PF2 to submit:
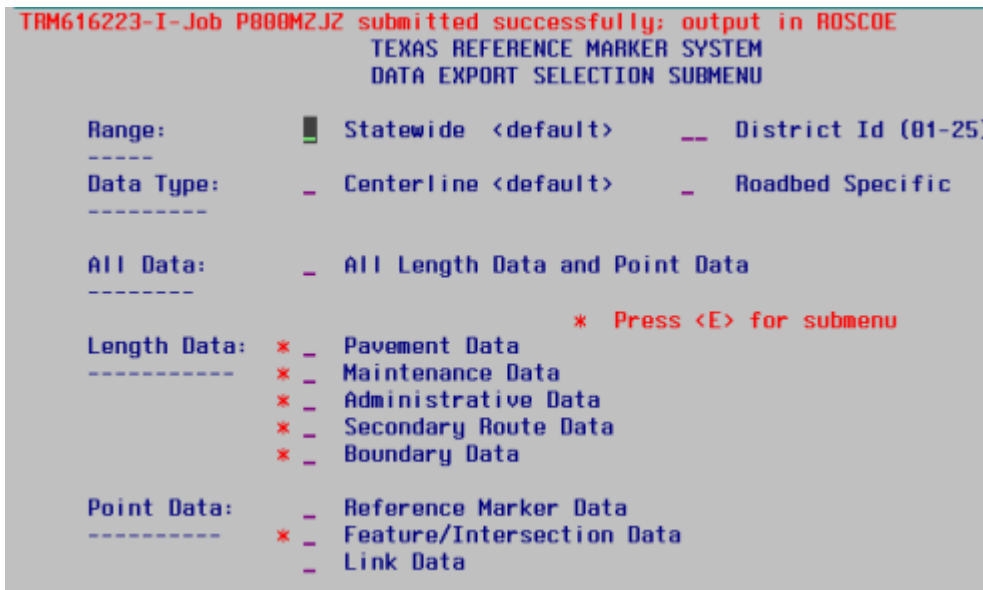
Figure 4-70. `Display message tells you that the output is in ROSCOE.`

…or PF11 to cancel and return to the last displayed screen.

You may then review the ROSCOE job output to ensure that the system downloaded to the FTP successfully (click here for instructions).

Chapter 5 — Routes

Contents:

Section 1 — Key Points to Know

Why Add, Delete, or Update a Route?

TRM **documents the current active designated highway network. This file is the sum of all** the identifiable, individual segments of highways throughout the state. New construction or roadway maintenance adds mileage or transfers mileage to the off-system, and route realignment causes the alignment and length of the route to change; deleting the realigned route segment creates a roadway gap.

This Chapter

This chapter describes the placeholder reference markers and instructions for adding, updating, and deleting highway segments.

Office of Responsibility

TPP is the Office of Primary Responsibility (OPR) for adding, updating, and deleting all mileage segments documented in TRM.

Click this link for your district's TRM coordinator.

Process from Letting to Final Input

This table describes the normal series of events for documenting a new highway or highway segment in TRM:

Documenting New Highway or Segment

Step	Action
1	The District lets the contract to construct the highway over its proposed location
2	Using the construction plans, TPP inputs data to establish the route in the data file
3	TPP and the responsible District office input all required data to fully document the route
4	The District accepts the highway for maintenance after project completion
5	TPP verifies all required data and sets the route as opened to traffic in TRM
6	TPP inputs a separate transaction if the value for District-Id, County Number, Control-Section, or Maintenance District varies within this new section

Distance From Origin Defined

Distance from Origin (DFO) is a system-generated value of distance from any point on a given route back to the **exact** beginning point of the route. This length includes lengths of all route segments linked with local roads and other signed highways occurring up to that point. Length is valid from 0000.000 to 9999.999.

Distance Between Markers Defined

Distance Between Markers is a system-generated value of distance from one reference marker to another.

Placeholder Markers 0000 and 9999

The system creates records of placeholder markers 0000 and 9999 which mark the exact beginning and ending of a route segment, respectively. If legitimate markers reside at the exact beginning or ending of a route, the system does not create the respective placeholder record markers.

Example 1: Route SH 333 is 2.000 miles in length. Reference Marker 44 is located 0.525 miles from the origin of the route. Because Marker 44 does not reside at either the exact beginning or ending of the route, the system creates placeholder records using markers 0000 and 9999 for the exact beginning and ending:

Example 1 Table

Ref Mkr	Distance from Origin
0000	00.000
0044	00.525
9999	02.000

Example 2: Route FM 1431 is 5.500 miles in length. Marker 434 is located at the exact beginning of the route. Because of that, the system does not create a record using marker 0000, only a placeholder record using markers 9999 for the exact ending:

Example 2 Table

Ref Mkr	Distance from Origin
0430	00.000
9999	05.500

Example 3: Route BF 1605-C is 2.372 miles in length. The first marker on the route is marker 204 and is located 0.007 miles from the beginning of the route. Marker 206 is located at the exact end-

ing of the route. Because of this, the system does not create a placeholder record using marker 9999 for the exact ending, only a placeholder record using 0000 for the exact beginning:

Example 3 Table

Ref Mkr	Distance from Origin
0000	00.000
0204	00.007
0206	02.372

Exception: Interstate Highways may have 0000 as a legitimate marker. However, TRM makes no distinction between placeholder 0000 and legitimate 0000. The TRM office of each district must keep track of the legitimate markers on Interstate routes.

Section 2 — Adding New Routes

New Route Defined

A New Route is a highway designated by the Texas <u>Transportation Commission</u> but not currently documented on TRM:

◆ Input new routes using the District-identified marker on the construction plans. Add this marker to the route without going through the Add Reference Markers process.

◆ Calculate the length of the new route as the displacement from the marker back to the beginning of the new route + the displacement from the marker to the ending of the new route (see Figure 4-1 below).

NOTE: If the system deleted a once-existing route from TRM and you are re-adding the deleted route using the same marker number(s), the marker added with the route must have the next sequential suffix from the previously deleted marker now residing in the TRM-Tracking file.
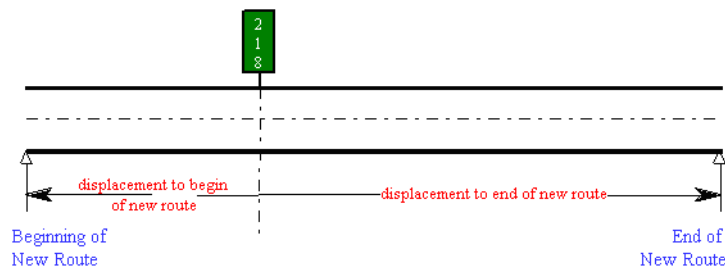
Figure 5-1.   Newly added route.

Input—Add New Route

Follow these input instructions to add New Route or Route Segment:

Add New Route Or Route Segment

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 12A and press `<E>`; the Job Location screen appears	-

Add New Route Or Route Segment

Step	Action	Input
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number</u>, and Suffix ◆ **From** Reference Marker <u>Number</u> of the one reference marker used to add the new route, (+) or (-) <u>Sign</u>, and <u>Displacement</u> **DO NOT INPUT** the "To" Reference Marker Number ◆ (+) or (blank) **To** Reference Marker Sign and Displacement
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ <u>District</u> Id ◆ County Number ◆ Control-Section from highway plans
4	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

System Response. While establishing the new route limits, the system automatically:

◆ Creates:

  ● a record with placeholder Reference Marker 0000, if the one marker is not located at the exact **beginning** of the route

  ● a record with placeholder marker 9999, if the one marker is not located at the exact **ending** of the route

◆ Calculates:

  ● <u>DFO</u> for the one marker and for placeholder markers 0000 and 9999 (where applicable)

  ● <u>Distance between markers</u> for the displacement between 0000 and the one marker, and for the displacement between the one marker and 9999 (where applicable)

◆ Copies the value of District-Id into the Maintenance District field.

Section 3 — Adding Contiguous Route Segments

Contiguous Route Defined

A Contiguous Route segment is a designated highway section adjoining a route already existing in TRM, creating a continuous route flow. New construction or route realignment adds this new section. The new contiguous segment may join an existing route:

◆   at the beginning of the route

◆   at the end of the route

◆   to the beginning of a roadway gap

◆   to the end of a roadway gap.

Input—At Beginning of Route

Input only the 'From' Reference Marker Number, which resides on the existing route, not the new segment. It is the marker closest to the **beginning** of the existing route.

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 5-2 below):

◆   The 'From' Displacement is the distance from the given marker back to the new beginning of the route. Always input this displacement as negative

◆   The 'To' Displacement is the distance from the given marker to the existing (former) beginning of the route. Unless the marker is at the exact beginning of the existing route, always input this displacement as negative

◆   The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.
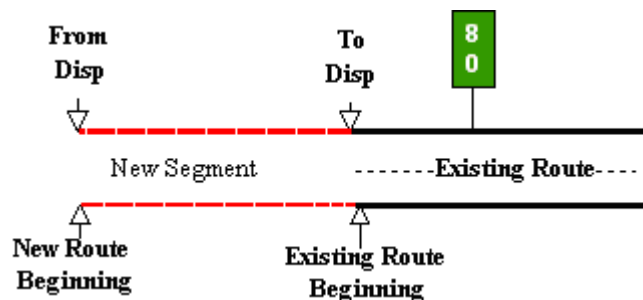
Figure 5-2. Add new segment to the beginning of an existing route.

Follow these input instructions to add at beginning of route:

Add Contiguous Route Segment At Beginning of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12B and press <E>; the Job Location screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number closest to the junction of the new and existing segments, (–) Sign, and Displacement **Do not input** the 'To' Reference Marker Number; it is automatically the same as the 'From' Reference Marker Number and Suffix ◆ (+) or (–) **To** Reference Marker Sign and Displacement
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ District Id ◆ County Number ◆ Control-Section from highway plans
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding this new contiguous segment, the TRM system automatically:

◆ Creates a new record with the placeholder marker 0000

◆ Adjusts:

  ● DFO for all existing markers as needed

  ● Distance between markers for all existing markers as needed

◆ Copies the value of District-Id into the Maintenance District field.

Input—At End of Route

Input only the 'From' Reference Marker Number, which resides on the existing route, **not** the new segment. It is the marker closest to the end of the existing route.

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 4-3 below):

◆   The 'From' Displacement is the distance from the given marker to the existing ending of the route

◆   The 'To' Displacement is the distance from the given marker to the new ending of the route

The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.
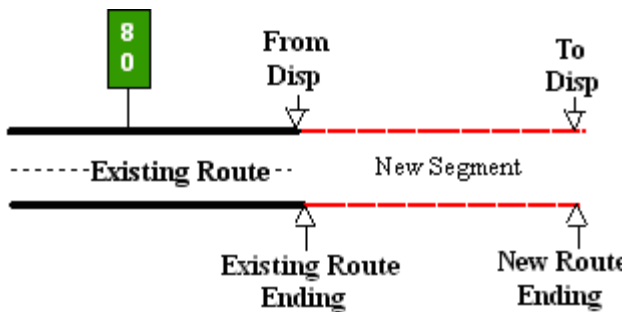
Figure 5-3.   Add new segment to the end of an existing route.

Follow these input instructions to add at end of route:

Add Contiguous Route Segment at End of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12B and press \<E\>; the Job Location screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number closest to the junction of the new and existing segments, (–) Sign, and Displacement **Do not input** this 'To' Reference Marker Number; it is automatically the same as the 'From' Reference Marker Number and Suffix ◆ (+) **To** Reference Marker Sign and Displacement

Add Contiguous Route Segment at End of Route

Step	Action	Input
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ District Id ◆ County Number ◆ Control-Section from highway plans
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding this new contiguous segment, the TRM system automatically:

◆ Creates a new record with the placeholder marker 9999

◆ Adjusts:

  ● DFO for all existing markers as needed

  ● Distance between markers for all existing markers as needed

◆ Copies the value of District-Id into the Maintenance District field.

Input—To Beginning of Roadway Gap

Input only the 'From' Reference Marker Number, which resides on the existing route, **not** the new segment. It is the marker closest to the **beginning** of a roadway gap, but resides sequentially **before** the gap.

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 5-4 below):

◆ The 'From' Displacement is the distance from the given marker to the existing beginning of the roadway gap

◆ The 'To' Displacement is the distance from the given marker to the new beginning of the roadway gap

The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.

NOTE: Do **not** use the **contiguous function** to fill a gap.
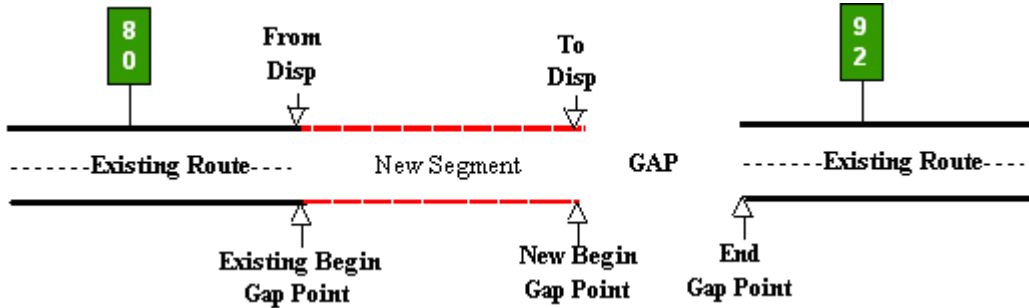
Figure 5-4. Add a new segment at the end of an existing route and at the beginning of a gap.

Follow these input instructions to add to beginning of roadway gap:

Add Contiguous Route Segment to Beginning of Roadway Gap

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12B and press <E>; the Job Location screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number, (–) Sign, and Displacement **Do not input** this 'To' Reference Marker Number; it is automatically the same as the 'From' Reference Marker Number and Suffix ◆ (+) **To** Reference Marker Sign and Displacement
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ District Id ◆ County Number ◆ Control-Section from highway plans
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding this new contiguous segment, the TRM system automatically

◆ Removes the old gap record and creates a new gap record at the 'To' Marker location; this is the new gap point

◆ Adjusts:

- DFO for all existing markers as needed

- Distance between markers for all existing markers as needed

◆ Copies the value of District-Id into the Maintenance District field.

Input—To End of Roadway Gap

Input only the 'From' Reference Marker Number. This marker resides on the existing route, not the new segment, closest to the end of a roadway gap and resides sequentially **after** the gap.

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 5-5 below):

◆ The negative 'From' Displacement is the distance from the given marker to the new ending of the roadway gap

◆ The negative 'To' Displacement is the distance from the given marker to the existing ending of the roadway gap

The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.

NOTE: Do **not** use the **contiguous function** to fill a gap.
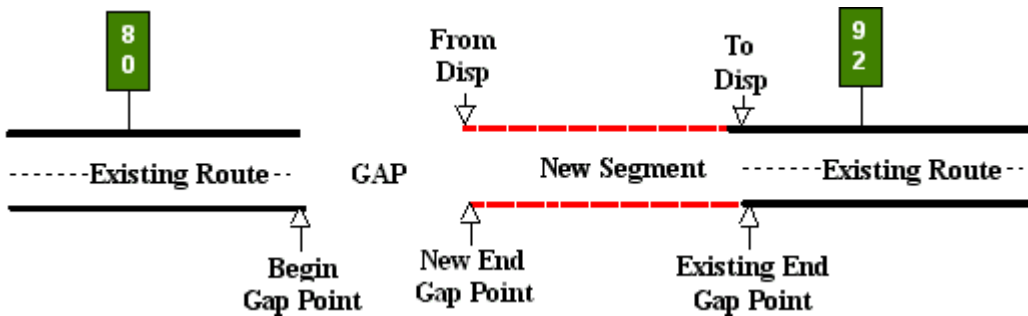
Figure 5-5.   Adding new segment at beginning of an existing route and at end of gap.

Follow these input instructions to add to end of roadway gap:

Add Contiguous Segment to End of Roadway Gap

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12B and press <E>; the Job Location screen appears	-

Add Contiguous Segment to End of Roadway Gap

Step	Action	Input
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number closest to the junction of the new and existing segments, (–) Sign, and Displacement **Do not input** the 'To' Reference Marker Number; it is automatically the same as the 'From' Reference Marker Number and Suffix ◆ (–) **To** Reference Marker Sign and Displacement
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ District Id ◆ County Number ◆ Control-Section from highway plans
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding this new contiguous segment, the TRM system automatically:

◆ Removes the old gap record and creates new gap record at the 'To' Marker location; this is the new gap point

◆ Adjusts:

- DFO for all existing markers as needed
- Distance between markers for all existing markers as needed

◆ Copies the value of District-Id into the Maintenance District field.

Section 4 — Adding Non-Contiguous Segments

Non-Contiguous Route Defined

A Non-Contiguous Route segment is a designated highway section which, when added, does not adjoin a route segment already existing in TRM, but is located on the proposed alignment of the completed route. Add this new section due to new construction or route realignment. The new non-contiguous segment may join an existing route:

◆   Before the beginning of the route

◆   After the ending of the route

◆   Within a roadway gap within the route.

Input—Before Beginning of Route

Input only the 'From' Reference Marker Number, which resides on the new segment; add it to the route without going through the Add Reference Markers process.

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 5-6 below):

◆   The 'From' Displacement is the distance from the given marker to the beginning of the new segment. This becomes the new **beginning** of route. This marker should **not** be at the exact beginning of the new segment

◆   The 'To' Displacement is the distance from the given marker to the ending of the new segment. This becomes the location of the beginning of a new roadway gap

The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.
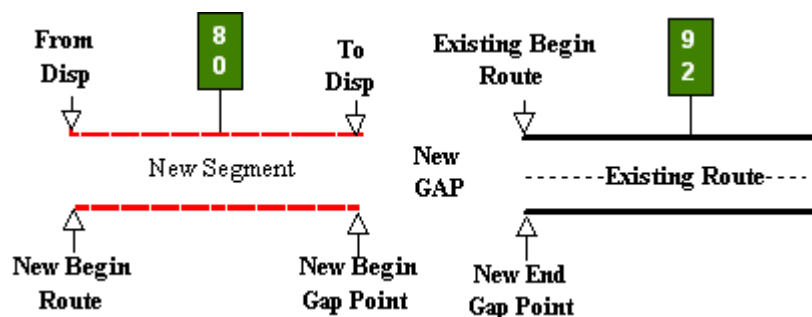
Figure 5-6. Adding a new segment before an existing route begins, creating a new gap.

Follow these input instructions to add before beginning of route:

Add Non-Contiguous Segment Before Beginning of Route

Step	Input	Action
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12C and press <E>; the Job Location screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number of the one reference marker used to add the new segment to TRM, (–) Sign, and Displacement **Do not input** the 'To' Reference Marker Number; it is automatically the same as the 'From' Reference Marker Number ◆ (+) or (Blank) **To** Reference Marker Sign and Displacement
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ District Id ◆ County Number ◆ Control-Section from highway plans
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding this new non-contiguous segment, the TRM system automatically

◆ Creates a record with placeholder marker 0000

◆ Adjusts:

- DFO for all existing markers as needed

- Distance between markers for all existing markers as needed

◆ Copies the value of District-Id into the Maintenance District field.

Input—After End of Route

Input only the 'From' Reference Marker Number, which resides on the new segment; add it to the route without going through the Add Reference Markers process.

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 5-7 below):

◆ The 'From' Displacement is the distance from the given marker to the beginning of the new segment. This becomes the location of the ending of a roadway gap

◆ The 'To' Displacement is the distance from the given marker to the ending of the new segment. This becomes the new **ending** of route

The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.
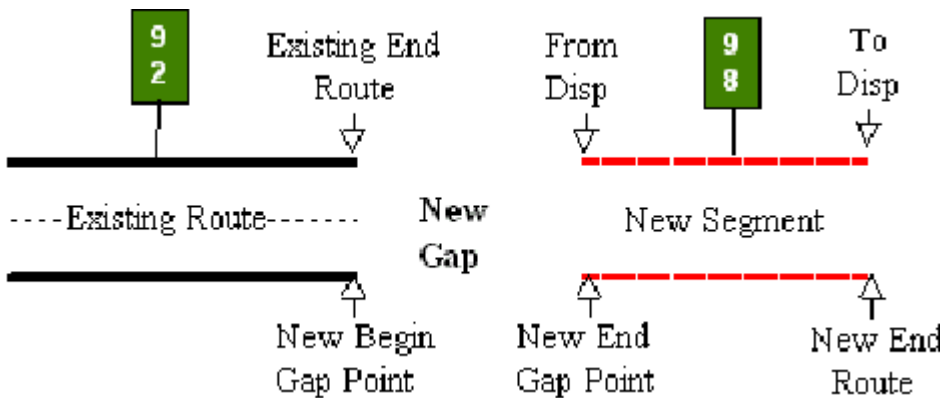
Figure 5-7. Adding a new segment after an existing route ends, creating a new gap.

Follow these input instructions to adding after end of route

Add Non-Contiguous Segment After End of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12C and press <E>; the Job Location screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number of the one reference marker used to add the new segment to TRM, (–) Sign, and Displacement **Do not input** the 'To' Reference Marker Number; it is automatically the same as the 'From' Reference Marker Number ◆ (+) or (Blank) **To** Reference Marker Sign and Displacement

Add Non-Contiguous Segment After End of Route

Step	Action	Input
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ [District](#) Id ◆ County Number ◆ Control-Section from highway plans
4	To input another [Update-Code](#), press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** [link](#)**)**	-

System Response. While adding this new non-contiguous segment, the TRM system automatically:

◆ Creates a record with placeholder marker 9999

◆ Adjusts:

- DFO for all existing markers as needed

- Distance between markers for all existing markers as needed

◆ Copies the value of District-Id into the Maintenance District field

Input—Within Roadway Gap

This procedure leaves the existing route with a roadway gap on either side of the new segment. Input only the 'From' Reference Marker Number, which resides on the new segment; add it to the route without going through the Add Reference Markers process.

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 5-8 below):

◆ The 'From' Displacement is the distance from the given marker to the beginning of the new segment. This becomes the location of the **ending** of a roadway gap.

◆ The 'To' Displacement is the distance from the given marker to the ending of the new segment. This becomes the location of the **beginning** of another roadway gap

The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.
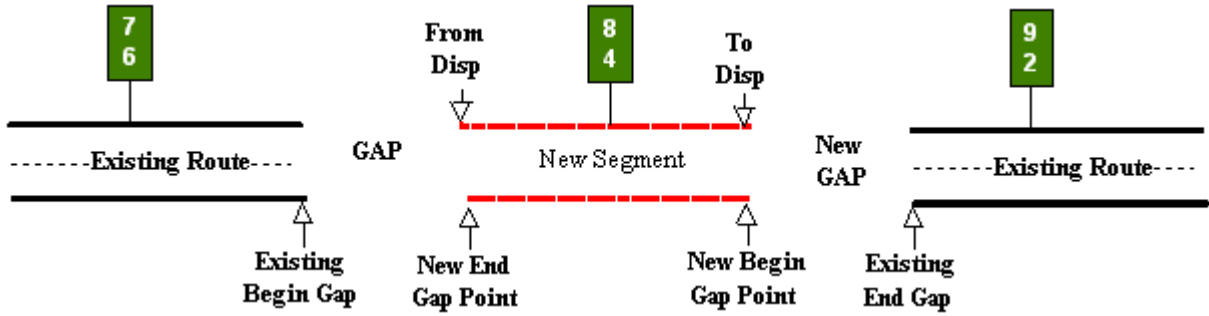
Figure 5-8.   Adding a new segment inside an existing gap, decreasing the existing gap and creating a new gap.

Follow these input instructions to add within roadway gap:

Add Non-Contiguous Segment within Roadway Gap

Action	Step	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12C and press <E>; the Job Location screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number of the one reference marker used to add the new segment to TRM, (–) Sign, and Displacement **Do not input** the 'To' Reference Marker Number; it is automatically the same as the 'From' Reference Marker Number ◆ (+) or (Blank) **To** Reference Marker Sign and Displacement as the distance from the marker to the end of the new segment
3	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ District Id ◆ County Number ◆ Control-Section from highway plans
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding this new non-contiguous segment, the TRM system automatically:

- Creates an additional roadway gap record in the TRM-FEATURE file at the ending of the new segment. The original gap record remains as it was

- Adjusts:
  - DFO for all existing reference markers past the new segment as needed
  - Distance between markers for all markers past the new segment as needed

- Copies the value of District-Id into the Maintenance District field.

Section 5 — Adding Gap Filler Segments

Gap Filler Segment Defined

A Gap Filler Segment is a designated highway section that connects two route segments that already exist in TRM, creating a continuous route flow. New construction or route realignment adds this new section. Prior to the addition of the gap filler, a gap existed in the route. The existence of non-contiguous route segments, partial route deletions, or partial route redesignations created this gap situation.

Input only the 'From'Reference **Marker Number, which resides on the existing route, not the new segment. It is the marker closest to the beginning** of a roadway gap, but resides sequentially **before** the gap.

Determining Length of Gap Filler

Determining the length of the new segment requires both the 'From' and 'To' Displacement fields (see Figure 5-9 below):

◆ The 'From' Displacement is the distance from the given marker to the existing beginning of the roadway gap, which is the beginning of the new segment

◆ The 'To' Displacement is the distance from the given marker to the ending of the new segment

The calculated length of the new segment is the difference between the 'From' Displacement and the 'To' Displacement.
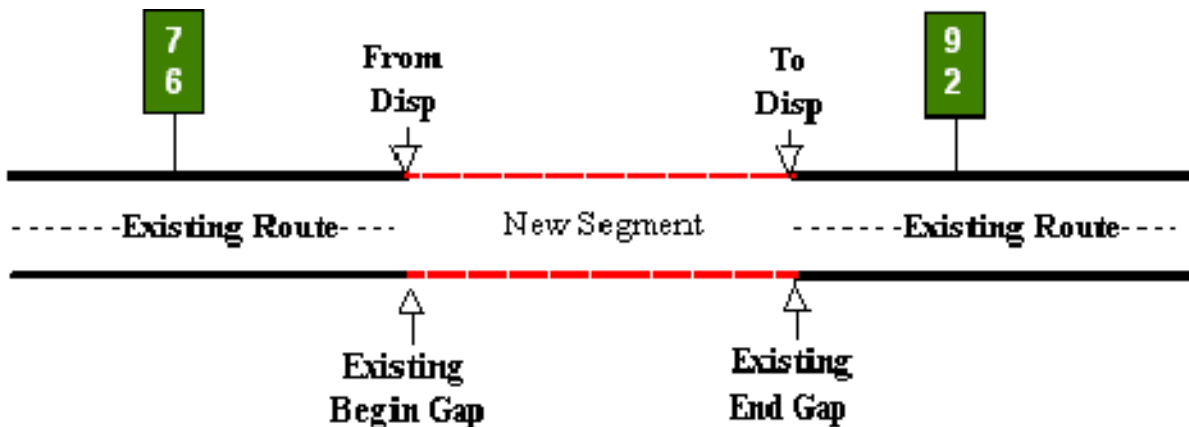
*Figure 5-9. Adding a new segment to fill in a gap between two existing segments of a route or routes.*

Input—Add Gap Filler

Follow these input instructions to add gap filler:

Add Gap Filler Segments

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12A and press <E>; the Job Location screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number, (+) Sign, and Displacement **Do not input** the 'To' Reference Marker Number ◆ (+) **To** Reference Marker Sign and Displacement
3	Input Feature Data fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ District Id ◆ County Number ◆ Control-Section from highway plans
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding this new fill segment, the TRM system automatically:

◆ Adjusts:

- DFO for all affected reference markers
- Distance between markers for all affected markers

◆ Removes the associated gap record located on the TRM-FEATURE file

◆ Copies the value of District-Id into the Maintenance District field.

Section 6 — Redesignating Routes

Route Redesignation Defined

Route Redesignation involves changing the Texas Transportation Commission-approved designation of a route or route segment to that of another Texas Transportation Commission-approved designation. The new designation is either new to TRM or increases the mileage of another highway already existing in TRM.

Important Redesignation Caution

CAUTION: Inputting a route redesignation is one of the more complicated and hazardous functions in TRM. Input this function improperly and lose data or place data incorrectly on the route!

Definitions

Old Distance From Origin—System-generated value of former Distance From Origin of a given reference marker. Length includes the lengths of all linked route segments with local roads and other signed highways occurring up to that point.

Old Reference Marker:

◆   Number—System-generated value of number formerly assigned as a reference marker, changed to the current Reference Marker Number. Determine valid values by the function

◆   Suffix—System generated suffix assigned to the Old Reference Marker Number, changed to the current Reference Marker Number

◆   Displacement—System-generated value of displacement from a Reference Marker Number to the beginning or ending of a change in signed highway or roadbed-id limits.

Old Roadbed-Id—System-generated identification of a Roadbed-Id formerly associated with a specific roadbed on a highway segment, changed to the current Roadbed-Id.

Old Signed Highway—Consists of the Old Signed Highway System + Old Signed Highway Number + Old Signed Highway Suffix:

◆   System—System-generated field of highway system associated with the Old Signed Highway, changed to the new Signed Highway System due to route redesignation

◆   Number—System-generated identification number associated with the Old Signed Highway System. This is part of the Old Signed Highway, changed to the current Signed Highway Number

◆ Suffix—Character appended to the Old Signed Highway Number that is associated with the Old Signed Highway; field changed to the current Signed Highway Suffix.

Previous Reference Marker Number and Suffix—System-generated Reference Marker Number posted on the signed highway route prior to another reference marker on the same Signed-Highway, with system-generated posted suffix character, if any, for the Previous Reference Marker.

Redesignation Reference Marker Group—Consists of the Redesignation Reference Marker Number + Redesignation Reference Marker Suffix + Redesignation Reference Marker Displacement:

◆ Number—Marker number closest to either the beginning or ending of a redesignated route segment. Used together with the other components of the Redesignation Reference Marker Group to identify the redesignated route segment

◆ Suffix—Character, if any, appended to the Redesignation Reference Marker Number. Used together with the other components of the Redesignation Reference Marker Group to identify the redesignated route segment.

◆ Sign—Symbol indicating the ascending or descending direction to either the beginning or ending of a redesignated route segment. Used together with the other components of the Redesignation Reference Marker Group to identify the redesignated route segment

◆ Displacement—Distance in miles from a posted reference marker on the Redesignation Signed Highway route to either the beginning or ending of a redesignated segment. Used together with the other components of the Redesignation Reference Marker Group to identify the redesignated route segment

Signed Highway—Consists of the Redesignation Signed Highway System + Redesignation Signed Highway Number + Redesignation Signed Highway Suffix:

◆ System—Represents the posted designation approved by the Texas Transportation Commission for a segment of highway. Segment is either a new designation to the highway system or a redesignated existing route which will be receiving additional mileage and data from another already existing route or route segment

◆ Number—Identification number associated with the Redesignation Signed Highway System serving as the receiving route. Valid values: 0001 – 9999, NASA, or OSR

◆ Suffix—Character appended to the Redesignation Signed Highway Number to further partition the number or, in the case of business routes, to indicate geographical routing. Determine valid values by the Redesignation Signed Highway System.

For each situation of redesignation, two routes are involved: the sending route and the **receiving route**:

Sending Route—Identifies the redesignated route or route segment

Receiving Route—Identifies the route or route segment becoming a new route in TRM, or additional mileage to a route already existing on the file.

Determining the Redesignation Situation

To determine the appropriate redesignation situation, identify the relationship between the sending route and receiving route. For example, if the newly redesignated segment (sending route) is contiguous to the beginning of a route already existing in TRM (receiving route), select Situation C and proceed to the appropriate section:

The five general redesignation situations are divided into two categories:

Redesignation Types

The redesignation creates a brand new route not in TRM:	
Situation A	Redesignate Entire Route
Situation B	Redesignate Partial Route Section
The redesignation increases the mileage of a route in TRM:	
Situation C	Redesignate Contiguous to Begin of Route
Situation D	Redesignate Contiguous to End of Route
Situation E	Redesignate Contiguous to Fill a Gap

Caveats to All Redesignations

Always keep these warning in mind when redesignating highways in TRM:

◆ **Do not** redesignate Interstate Highways to non-interstate highways

◆ **Do not** redesignate non-interstate highways to Interstate Highways if the sending route's Roadbed-Id = K

◆ **Do not** redesignate segments containing more than 50 markers.

Input—Situation A: Entire Route to New Designation

Redesignate an entire route to a designation that is new to TRM. In Figure 5-10, all records and reference markers from the old designation (sending route) transfer to the new designation (receiving route).
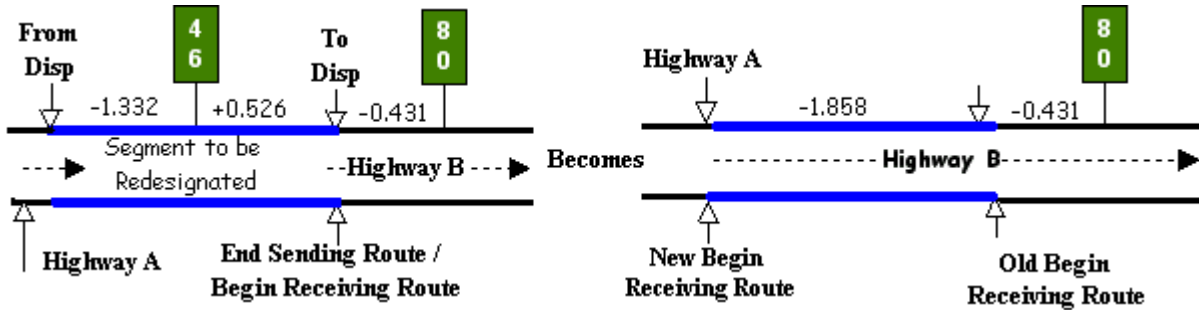
Figure 5-10.   Redesignate entire Highway A as Highway B.

Follow these input instructions for Redesignation Situation A:

Redesignation A: Redesignate Entire Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 33A and press \<E\>; the TPP Redesignation Submenu appears	-
2	Input A and press \<E\>; the Network Change Data screen appears	-
2	Input redesignation fields and press \<F2\>; a prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Sending Route Signed Highway System, Number, and Suffix ◆ Redesignation Type A ◆ Receiving Route Signed Highway System, Number, and Suffix ◆ Notation (use default wording or modify)
4	Repress \<F2\> to confirm the route or route segment redesignation; the system updates the route and the verification message "Transaction completed successfully" appears. The original request for redesignation displays for another update transaction	**OR** Press \<F11\> to cancel redesignation; the system takes no action
4	To select another redesignation type, press \<F3\> to exit back to the TPP Redesignation Submenu To input another Update-Code, press \<F3\> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this link)**	-

System Response. While making this new designation, the TRM system automatically:

◆   Transfers reference markers and all data values which once resided on the original designation to the new designation

◆   Disposes of the data records stored with the sending route.

Input—Situation B: Partial Route Section to New Designation

Redesignate a segment of an existing route to a new designation. All records from the old designation (sending route) transfer to the new designation (receiving route) and create a gap situation within the sending route:

◆   The sending route segment cannot contain a link or gap

◆   The 'From' and 'To' Reference Marker fields input for the sending route define the limits of the segment being redesignated

◆   The marker location input as the 'From' Reference Marker must be physically closest to the **beginning** of the new designation

◆   Reference marker transfer to the new designation depends upon the overall direction of the new route after redesignation.

Example 1: In Figure 4-11, the route segment being redesignated travels west to east. The overall direction of the new designation is west to east. Marker 76 is closest to the beginning of the newly-designated route. Therefore, input 'From' = 76 and 'To' = 92 markers in ascending marker direction:
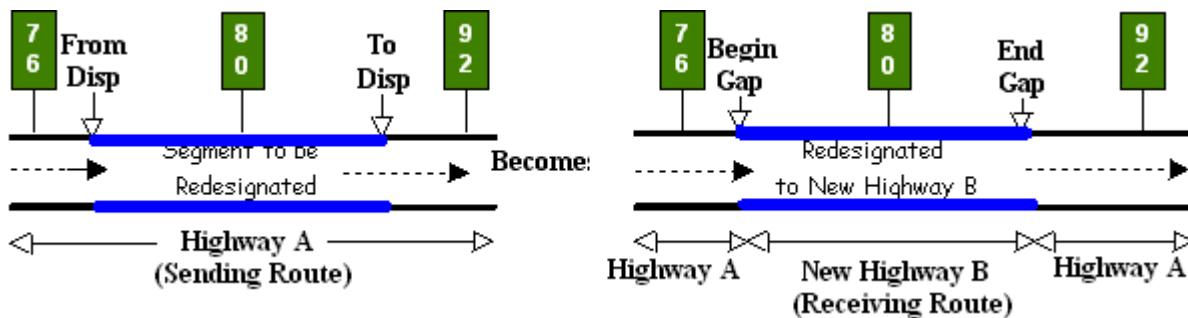
Figure 5-11. Redesignating a segment of Highway A to Highway B, ascending marker direction.

Example 2: In Figure 4-12, the route segment being redesignated travels west to east. The overall direction of the new designation is north to south. Marker 92 is closest to the beginning of the newly designated route. Therefore, input 'From' = 92 and 'To' = 76 markers in descending marker direction.
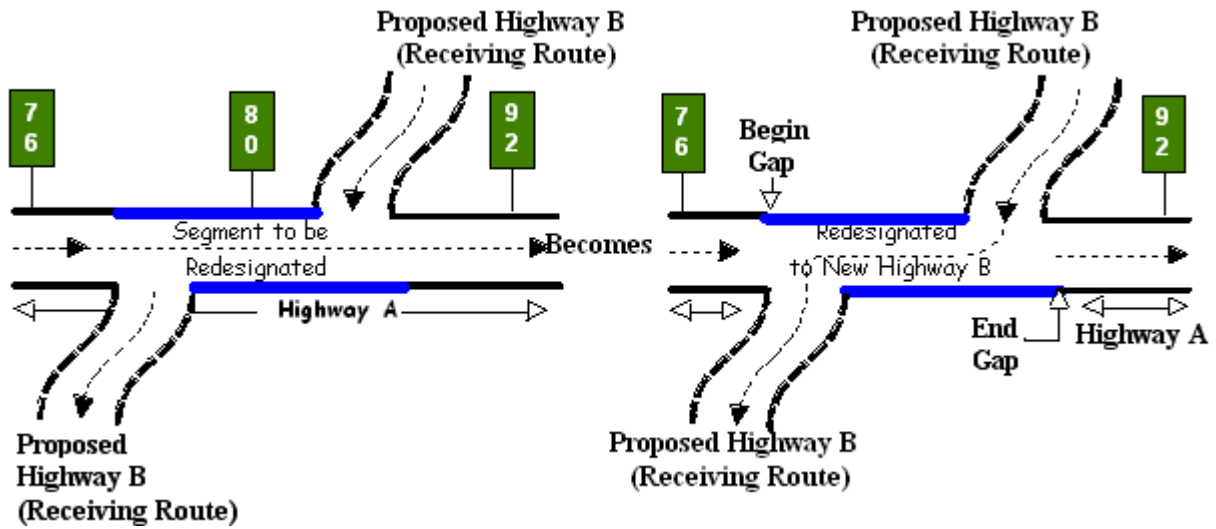
Figure 5-12. Redesignating a segment of Highway A to Highway B, descending marker direction.

This creates a gap in the sending route where the redesignated segment was. Because the route direction changed, no markers are transferred to the new designation.

Follow these input instructions for Redesignation Situation B:

Redesignation B: Redesignate Partial Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select **Update-Code** 33A and press <E>; the TPP Redesignation Submenu appears	-
2	Input B and press <E>; the Network Change Data screen appears	-
3	Input Location Key fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Redesignation Data" appears	◆ Sending Route Signed Highway System, Number, and Suffix (redesignated segment) ◆ **From** Reference Marker Number closest to begin of newly redesignated segment, (+) or (–) Sign, and Displacement ◆ Receiving Route **To** Reference Marker Number and Suffix closest to end of redesignated segment, (+) or (–) Sign, and Displacement
4	Input redesignation fields and press <F2>; a prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Redesignation Type B ◆ Receiving Route Redesignation Signed Highway System, Number, and Suffix ◆ Notation (use default wording or modify)

Redesignation B: Redesignate Partial Route

Step	Action	Input
5	Repress <F2> to confirm the route or route segment redesignation; the system updates the route and the verification message "Transaction completed successfully" appears. The original request for redesignation displays for another update transaction	**OR** Press <F11> to cancel redesignation; the system takes no action
6	To select another redesignation type, press <F3> to exit back to the TPP Redesignation Submenu To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the **TRM Main Menu, press <F10>** **(For instructions to log off the system, click this** link**)**	-

System Response. While completing this redesignation, the system automatically:

◆ Creates:

- the new route with the new designation

- a gap record within the sending route where the redesignated segment use to be, when applicable

- a record with placeholder marker **0000 if a marker is not located at the exact beginning** of the new designation

- a record with placeholder marker 9999 if a marker is not located at the exact **ending** of the new designation

◆ Deletes:

- curve and station data if the overall direction changed. Find this data in the Transaction file

- the reference markers if the overall direction changed, or transfers the markers to the new route

◆ Transfers all data values with the new designation if the overall route direction of the new segment is the same. Either references data from transferred markers, or from marker 0000 if no markers transferred

◆ Calculates:

- DFO for placeholder marker 9999 when applicable

- Distance between markers for the displacement between 0000 marker 9999 when applicable

◆   Treats the data records stored with the sending route as deleted route segment data

◆   Adds new markers which conform to the overall route direction and grid map location

◆   If the redesignation segment begins and/or ends at whole markers, the whole reference markers remain on the old route and transfers to the new route.

Input—Situation C: Contiguous Segment to Beginning of Existing Route

After redesignation, the newly redesignated segment is contiguous with the receiving route at the beginning of the receiving route, adds additional mileage to the receiving route, and creates a new beginning of the receiving route:

◆   The sending route segment cannot contain a link or gap

◆   The 'From' and 'To' Reference Marker fields input for the sending route define the limits of the redesignated segment. Input only the 'To' Marker fields for the receiving route

◆   **The marker location input with the 'To' Marker fields for both the sending and receiving routes must be physically closest to the beginning** of the receiving route.

Example 1: In Figure 4-13, the receiving route, Highway B, travels west to east as does the sending route, Highway A. Marker 40 on the redesignated segment is closest to the beginning of the receiving route. Therefore, 'From' = 36and 'To' = 40 are the marker locations for the redesignated segment. Input Marker 92 with the 'To' Marker location fields of the receiving route.

Figure 5-13. Redesignating a contiguous segment of Highway A as Highway B at the beginning of Highway B, ascending marker direction.

Example 2: In Figure 4-14, the receiving route travels west to east and the sending route travels north to south. In this case, Marker 76 on the redesignated segment is closest to the beginning of the receiving route. Therefore, 'From' = 82 and 'To' = 76 are the marker locations for the redesignated segment. Input Marker 40 with the 'To' Marker location fields of the receiving route.

Figure 5-14. Redesignating a contiguous segment of Highway A as Highway B at the beginning of Highway B, descending marker direction.

Follow these input instructions for Redesignation Situation C:

Redesignation C: Redesignate Contiguous to Begin of Route

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 33A and press <E>; the TPP Redesignation Submenu appears	-
2	Input C and press <E>; the Network Change Data screen appears	-
3	Input <u>Location Key</u> fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Redesignation Data" appears	◆ Sending Route Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ **From** Reference Marker <u>Number</u> farthest from begin of receiving route, (+) or (–) <u>Sign</u>, and <u>Displacement</u> ◆ **To** Reference Marker Number and Suffix closest to begin of receiving route, (+) or (–) Sign, and Displacement
4	Input redesignation fields and press <F2>; a prompting message "Press PF2 to confirm or PF 11 to cancel" appears	NOTE: Do not input the Redesignation 'From' Reference Marker fields ◆ Redesignation Type C ◆ Redesignation Signed Highway, Number, and Suffix ◆ Redesignation To Reference Marker Number and Suffix closest to begin of receiving route, (+) or (–) Sign, and Displacement ◆ Notation (use default wording or modify)

Redesignation C: Redesignate Contiguous to Begin of Route

Step	Action	Input
5	Repress <F2> to confirm the route or route segment redesignation; the system updates the route and the verification message "Transaction completed successfully" appears. The original request for redesignation displays for another update transaction.	**OR** Press <F11> to cancel redesignation; the system takes no action
6	To select another redesignation type, press <F3> to exit back to the TPP Redesignation Submenu To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While making this new designation, the system automatically:

◆ Deletes all reference markers from the newly redesignated segment, but transfers all data values with the new designation

◆ Creates a new record with placeholder marker 0000 to mark the exact beginning of the route

◆ Stores all data values transferred to the new route based off of marker 0000

◆ Recalculates

• DFO for all markers residing on the receiving route to account for the additional mileage

• Distance between markers for the displacement between the first marker on the receiving route and marker 0000 to account for the additional mileage

◆ Disposes of the data records stored with the sending route as deleted route or route segment data. If applicable, creates a gap in the sending route for the redesignated section.

◆ If the direction of travel of the newly redesignated route is reversed, the system removes curve and station data. Find this information in the Transaction file.

Input—Situation D: Contiguous Segment to End of Existing Route

After redesignation, the newly redesignated segment is contiguous with the receiving route at the ending of the receiving route, adds additional mileage to the receiving route, and creates a new ending of route:

◆ The sending route segment cannot contain a link or gap

◆   Define the limits of the redesignated segment with the 'From' and 'To' Reference Marker
    fields input for the sending route. Input only the 'From' Marker fields for the receiving route

◆   The marker location input with the 'From' Marker fields for both the sending and receiving
    routes must be physically closest to the **ending** of the receiving route.

Example 1: In Figure 5-15, the receiving route travels west to east and the sending route also trav-
els west to east. Marker 88 on the redesignated segment is closest to the ending of the receiving
route. Therefore, 'From' = 88 and 'To' = 92 are the marker locations for the redesignated segment.
Input Marker 36 with the 'From' Marker location fields of the receiving route.
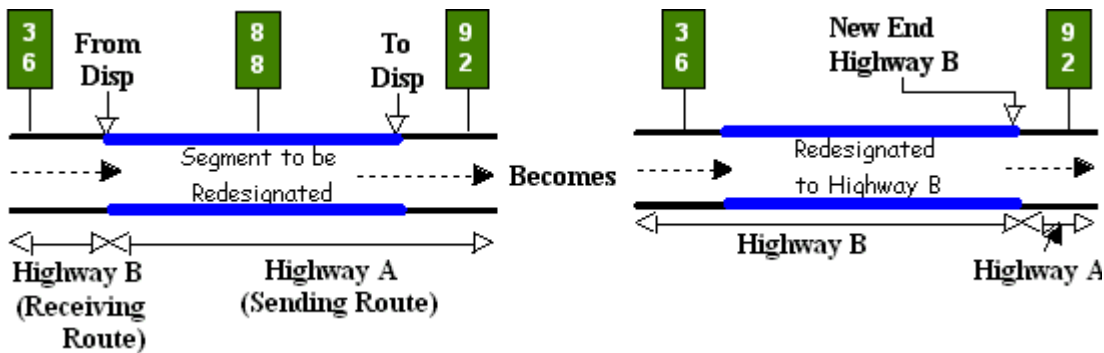
*Figure 5-15. Redesignating a contiguous segment of Highway A as Highway B at the end of
Highway B, ascending marker direction.*

Example 2: In Figure 5-16, the receiving route travels west to east and the sending route travels
north to south. In this case, Marker 82 on the redesignated segment is closest to the ending of the
receiving route. Therefore, 'From' = 82 and 'To' = 72 are the marker locations for the redesignated
segment. Input Marker 40 with the 'From' Marker location fields of the receiving route.
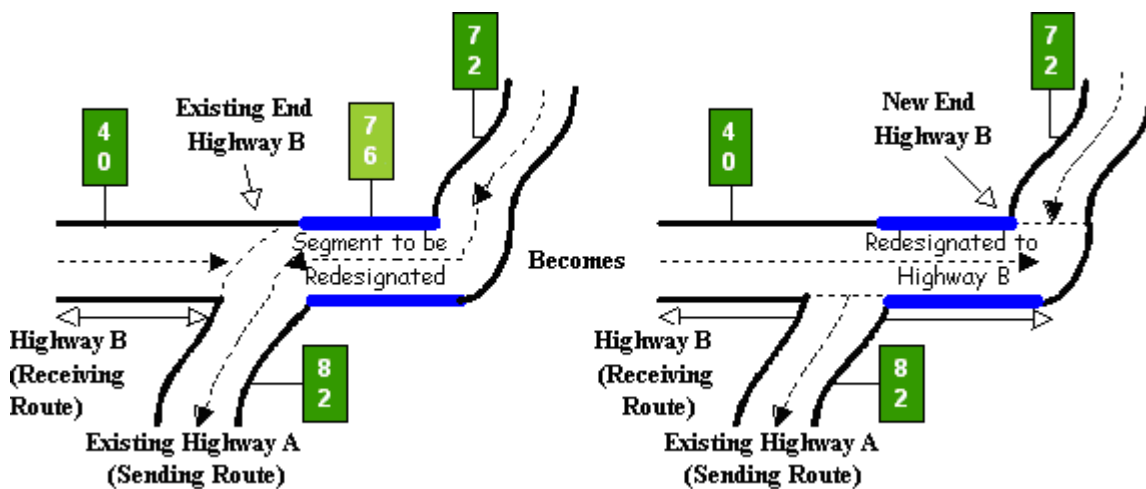
*Figure 5-16. Redesignating a contiguous segment of Highway A as Highway B at the end of
Highway B, descending marker direction.*

Follow these input instructions for Redesignation Situation D:

Redesignation D: Redesignate Contiguous to End of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 33A and press <E>; the TPP Redesignation Submenu appears	-
2	Input D and press <E>; the Network Change Data screen appears	-
3	Input Location Key fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Redesignation Data" appears	◆ Sending Route Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number closest to end of receiving route, (+) or (–) Sign, and Displacement ◆ **To** Reference Marker Number and Suffix farthest from end of receiving route, (+) or (-) Sign, and Displacement
4	Input redesignation fields and press <F2>; a prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Redesignation Type D ◆ Redesignation Signed Highway, Number, and Suffix ◆ Redesignation From Reference Marker Number and Suffix closest to end of receiving route, (+) Sign, and Displacement **Do Not** input the Redesignation 'To' Reference Marker fields ◆ Notation (use default wording or modify)
5	Repress <F2> to confirm the route or route segment redesignation; the system updates the route and the verification message "Transaction completed successfully" appears. The original request for redesignation displays for another update transaction	**OR** Press <F11> to cancel redesignation; the system takes no action
6	To select another redesignation type, press <F3> to exit back to the TPP Redesignation Submenu To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While making this new designation, the TRM system automatically:

- Deletes all reference markers from the newly redesignated segment, but transfers all data values with the new designation

- Creates a new record with placeholder marker 9999 to mark the exact ending of the route

- Stores all data values transferred to the new route based off the last marker located on the receiving route

- Recalculates:

  - DFO for marker 9999 to account for the additional mileage

  - Distance between markers for the displacement between the last marker on the receiving route and marker 9999 to account for the additional mileage

- Disposes of the data records stored with the sending route as deleted route or route segment data

- The system removes curve and station data, if the direction of travel of the newly redesignated route is reversed. Find this information in the Transaction file.

Input—Situation E: Contiguous Route Segment to Fill Gap

After redesignation, the newly redesignated segment **fills the gap** between two segments of the receiving route. Add additional mileage to the receiving route. Fill the location of the roadway gap already residing in the receiving route by the mileage of the new segment:

- The sending route segment cannot contain a link or gap

- The 'From' and 'To' Reference Marker fields input for the sending route define the limits of the redesignated segment. Only input the 'From' Marker fields for the receiving route

- **The marker location input with the 'From' Marker fields for both the sending and receiving routes must be physically closest to the existing begin gap point** on the receiving route.

Example 1: In Figure 4-17, the receiving route travels west to east and the sending route also travels west to east. Marker 56 on the redesignated segment is closest to the existing begin gap point on the receiving route. Therefore, 'From' = 56 and 'To' = 58 are the marker locations for the redesignated segment. Input Marker 36 with the 'From' Marker location fields of the receiving route.
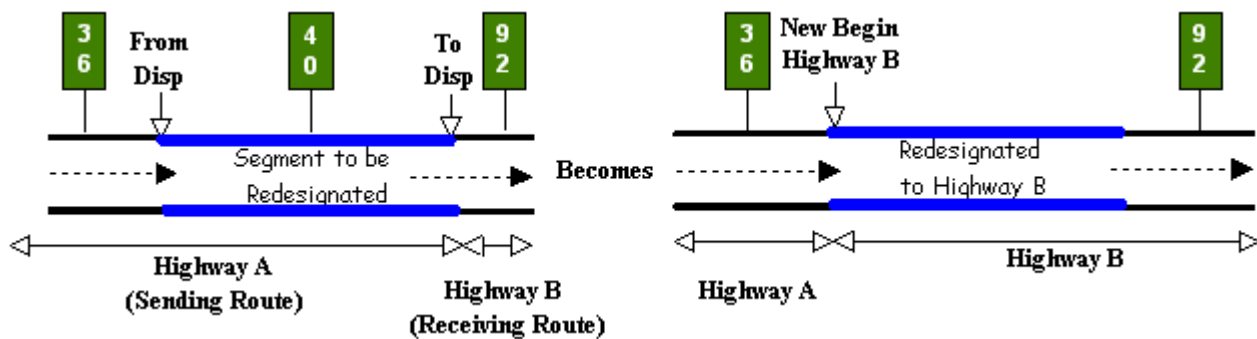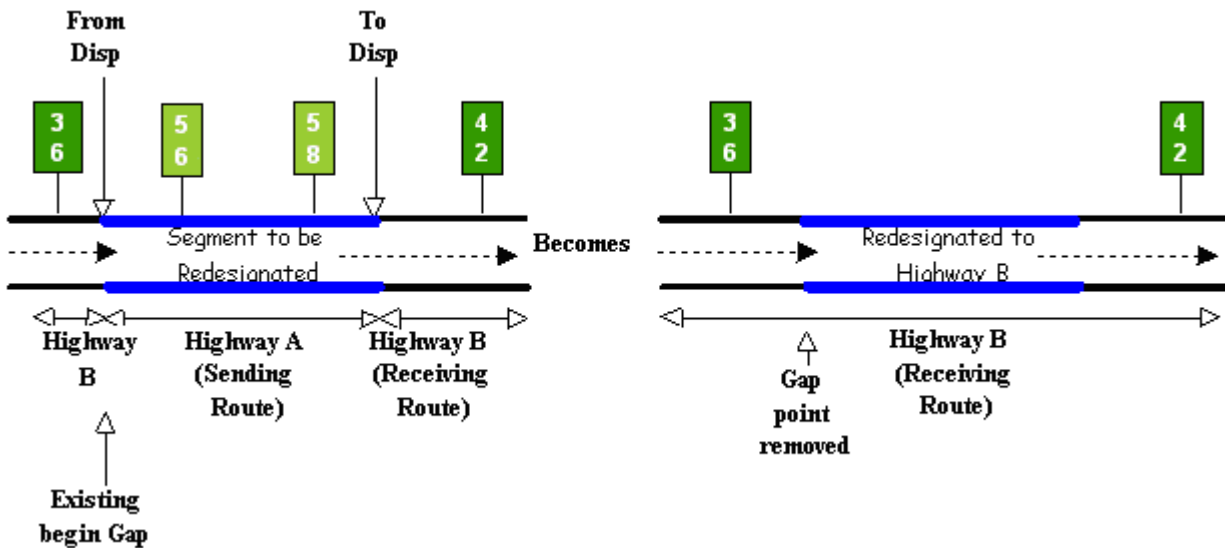
Figure 5-17. Redesignating Highway A to Highway B to fill a gap in Highway B, ascending marker direction.

Example 2: In Figure 4-18, the receiving route travels west to east; the sending route travels north to south. In this case, Marker 82 on the redesignated segment is closest to the existing begin gap point on the receiving route. Therefore, 'From' = 82 and 'To' = 76 are the marker locations for the redesignated segment. Input Marker 40 with the 'From' Marker location fields of the receiving route.
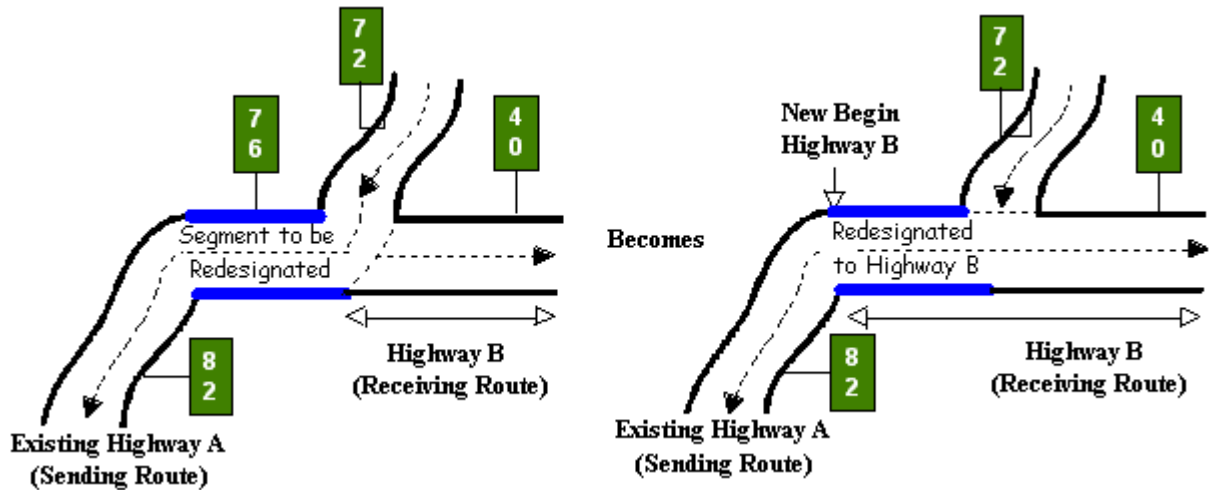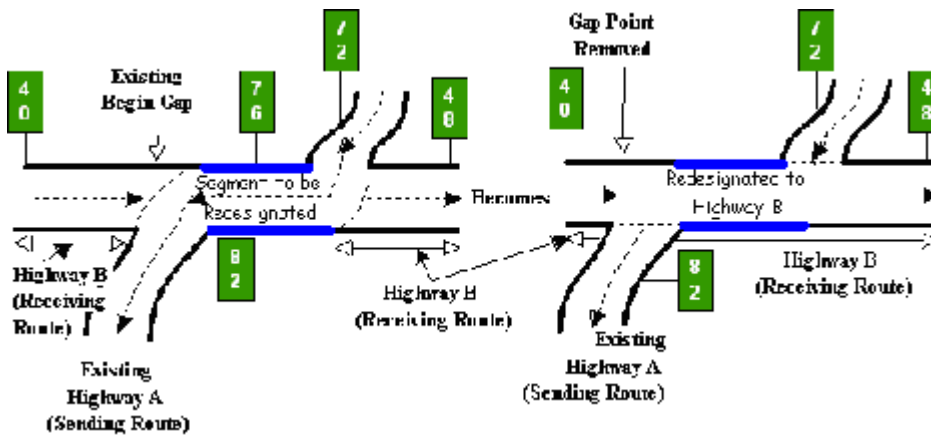

Figure 5-18. Redesignating Highway A to Highway B to fill a gap in Highway B, descending marker direction.

Follow these input instructions for Redesignation Situation E

Redesignation E: Redesignate to Fill Roadway Gap

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 33A and press \<E>; the TPP Redesignation Submenu appears	-
2	Input E and press \<E>; the Network Change Data screen appears	-
3	Input Location Key fields and press \<E>; the system retrieves record data from TRM. A prompting message "Enter Redesignation Data" appears	◆ Sending Route Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number before gap, (+) or (–) Sign, and Displacement ◆ **To** Reference Marker Number and Suffix before gap, (+) or (–) Sign, and Displacement
4	Input redesignation fields and press \<F2>; a prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Redesignation Type E ◆ Redesignation Signed Highway System, Number, and Suffix ◆ Redesignation From Reference Marker Number and Suffix before gap, (+) or (–) Sign, and Displacement **Do Not** input the Redesignation 'To' Reference Marker fields ◆ Notation (use default wording or modify)
5	Repress \<F2> to confirm the route or route segment redesignation; the system updates the route and the verification message "Transaction completed successfully" appears. The original request for redesignation displays for another update transaction	**OR** Press \<F11> to cancel redesignation; the system takes no action
6	To select another redesignation type, press \<F3> to exit back to the TPP Redesignation Submenu To input another Update-Code, press \<F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press \<F10> **(For instructions to log off the system, click this link)**	-

System Response. While making this new designation, the TRM system automatically:

◆ Deletes all reference markers from the newly redesignated segment, but all data values transfer with the new designation

◆ Recalculates:

- DFO for markers past the newly redesignated segment on the receiving route for the additional mileage

- Distance between markers for markers past the newly redesignated segment on the receiving route to account for the additional mileage

◆ Removes:

- the gap point record from the TRM-FEATURE file creating a continuous route flow

- curve and station data if the direction of travel of the newly redesignated route is reversed. Find this information in the Transaction file

◆ Treats the data records stored with the sending route as deletion route or route segment data.

Section 7 — Deleting Routes

When to Delete Route

Delete a complete or partial route when the Texas Transportation Commission approves deleting
the route. **The removed route or route segment**

cannot contain a link or gap. Remove links and gaps first for the system to allow the route
deletion.

Input—Delete Complete or Partial Route

Follow these input instructions to delete a complete route

Delete Complete Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 31A and press <E>; the Network Change Data screen appears	-
2	Input Location Key fields and press <F2>; the system retrieves record data from TRM. A prompting message "ROUTE WILL BE DELETED! Press PF2 to confirm or PF 11 to cancel" appears	**Note**: 'From' and 'To' Marker fields are optional ◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ **To** Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement
3	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted routes	**OR** Press <F11> to cancel deletion; the system takes no action
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to delete a partial route:

Delete Partial Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 31A and press <E>; the Network Change Data screen appears	-
2	Input Location Key fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ **To** Reference Marker Number and Suffix, (+) or (blank) Sign, and Displacement
3	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted Partial Routes	**OR** Press <F11> to cancel deletion; the system takes no action
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F3> twice **(For instructions to log off the system, click this link)**	-

System Response. While completing this transaction, the TRM system automatically:

◆ Removes all data and markers within the limits for the deleted route or route segment

◆ Does not remove reference markers from the route if the transferred limits fall exactly on those markers

◆ Writes records to the TRM-Tracking file for the removed route or route segment, plus any removed markers.

Section 8 — Transferring Routes

When to Transfer Route

Transfer complete or partial Routes when the Texas Transportation Commission approves transferring the route to a local jurisdiction for maintenance. See <u>Transferred Routes</u> to process a report. The removed route or route segment cannot contain a link or gap. Remove links and gaps first for the system to allow the route transfer.

Input—Transfer Complete or Partial Route

Follow these input instructions to transfer a complete route

Transfer Complete Route

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 31F and press <E>; the Network Change Data screen appears	NOTE: The system loses all data in transferring the route from TRM
2	Input <u>Location Key</u> fields	NOTE: 'From' and 'To' Marker fields are optional ◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ **To** Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input notation field and press <F2>; the system retrieves record data from TRM. A prompting message "ROUTE WILL BE DELETED! Press PF2 to continue or PF11 to cancel" appears	Notation for the new designation: county road, city street, or other <u>off-system</u> designation
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the transferred routes	**OR** Press <F11> to cancel deletion; the system takes no action
5	To enter another <u>Update-Code,</u> press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to transfer a partial route:

Transfer Partial Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 31F and press <E>; the Network Change Data screen appears	NOTE: The system loses all data in transferring the route from TRM
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ **From** Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ **To** Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input notation field and press <F2>; the system retrieves record data from TRM. A prompting message "ROUTE WILL BE DELETED! Press PF2 to continue or PF11 to cancel" appears	Notation of new designation: county road, city street, or other off-system designation
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the transferred route segments	**OR** Press <F11> to cancel deletion; the system takes no action
5	To enter another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response to Partial Route Transfer. While completing this transaction, the TRM system automatically:

◆ Removes all data and markers within the limits for the transferred route or route segment

◆ Does not remove reference markers from the route if the transferred limits fall exactly on those markers

◆ Writes records to the TRM-Tracking file for the removed route segment and any removed markers.

Chapter 6 — Highway Status

Contents:

Section 1 — Key Points to Know

Importance of Highway Status

The status of each roadbed of any route in <u>TRM</u> is crucial to TxDOT's Federal reporting, oversized truck routing, and construction budgeting for roadways. This chapter describes the TRM status codes and update instructions. Use only the **update** function to input values for Highway Status. Select this <u>link</u> to process a Highway Status Report.

Offices of Responsibility

TPP and the districts are the Offices of Primary Responsibility (OPRs) for updating highway status.

This table describes the status values for which TPP is responsible:

TPP Highway Status Values

Value	Meaning
1	Under new construction, not open to traffic
2	Under construction due to realignment
3	Under construction, not open to traffic
4	Under construction, open to traffic
5	Open to traffic; district data complete
6	Open to traffic, all data complete
7	Emergency Closing

This table describes the status values for which districts are responsible:

District Highway Status Values

Value	Meaning
4	Under construction, open to traffic
5	Open to traffic, district data complete
7	Emergency Closing

Click this link for your district's <u>TRM analyst.</u>

Definitions

Highway Status—Values indicate the condition of a highway segment with regard to traffic access and existence of construction/reconstruction.

Highway Status Date—System-generated date of last change to the Highway Status value.

Highway Status Note—Explains the reason for an emergency closing; 30 character text field.

The following section provides instructions to update a highway status.

<div align="center">

Section 2 — Highway Status Updates

</div>

Other than Emergency Route Closings Status

When all TRM roadway elements exist on the roadbed, TPP and Districts may update the highway status to a 5 (Open to traffic, district data complete) or 6 (Open to traffic, all data complete):

◆ **For TPP** Highway Status updates, valid values are 1, 2, 3, 5, and 6. Do not change status to a 6 unless it is currently a 5

◆ For District Highway Status updates, valid values are 4 and 5. All required elements for the specified roadbed must exist on the roadbed in TRM before updating the Highway Status to 5 or 6.

Input—Other than Emergency Route Closings

Follow these input instructions to update highway status other than Emergency Closing

<div align="center">

Update Highway Status

</div>

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Mainte-nance screen, select Update-Code 13H and press \<E\>; the TPP/District Maintenance Submenu appears.	-
2	Input an X by Job Location—Length and press \<E\>; the Job Location Data Screen appears.	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id: valid values are K, L, R, M, S, P, T, A, B, X, or Y
4	Input Highway Status field and press \<F2\>; the message "Transaction completed success-fully" displays.	Highway Status

Update Highway Status

Step	Action	Input
5	To exit back to the TPP/District Maintenance Submenu, press <F3>. To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu. To exit back to the TRM Main Menu, press <F10>. (For instructions to log off the system, click this link)	-

Emergency Route Closings Status

TxDOT temporarily closes routes to protect the traveling public and provide safety to workers as a result of emergency situations, such as:

◆ a hazardous chemical spill

◆ a bridge washed out by flood

◆ accident damage to a structure.

Any user may enter an Emergency Closing.

Input—Emergency Route Closings

Follow these input instructions to close route or route segments in TRM:

Emergency Route Closing

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TRM Main Menu, select G; the Emergency Closing screen appears.	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, L, R, M, S, P, T, A, B, X, or Y

Emergency Route Closing

Step	Action	Input
3	Input Notation field and press <F2>; the system sets segment to Highway Status value 7 in TRM and displays a verification message.	Notation indicating the reason for the closure.
4	To exit back to the TRM Main Menu, press <F10>. (For instructions to log off the system, click this [link](#))	-

Chapter 7 — Reference Markers & Coordinates

Contents:

Section 1 — Reference Markers — Key Points to Know

Reference Marker Defined

The Reference Marker is the TRM building block, the link between the automated files and what is **actually** on the ground. Reference markers replace control-section-milepoint, milepost, link-node, and others as the **sole source** of location identification for highway-related on-system data.

This Chapter

This chapter describes reference markers and coordinates, the offices of responsibility, input instructions, and includes discussions of the Global Positioning System (GPS) and the Geographic Information System (GIS).

Offices of Responsibility

The TRM Section of each district office is the Office of Primary Responsibility for reference markers. Responsibilities include:

◆   Installing

◆   Maintaining

◆   Indicating on highway construction plans

◆   Adding all markers to established routes in TRM.

TPP is the Office of Secondary Responsibility for reference markers. Responsibilities include documenting markers in TRM for new construction. TPP documents the first marker, plus any other markers shown on the construction plans, when first establishing the route in TRM.

Click this link for your district's TRM analyst.

Reference Marker Numbering System

TxDOT derives Reference marker numbers by imposing a grid on a map of Texas. Grid axes are set on extreme western and northern points, where numbering begins with ten. The first reference marker numbers match approximate grid locations. Subsequent marker numbers increase by two. Numbers increase north to south and west to east, depending on the highway's general direction (except north-south interstates, where numbers increase south to north). The numbers are continuous from beginning to end across the state and do not start over at county lines.

EXAMPLE: US 82 begins at Reference Marker 222 on the western edge of Yoakum County and ends at Reference Marker 798 on the eastern edge of Bowie County:
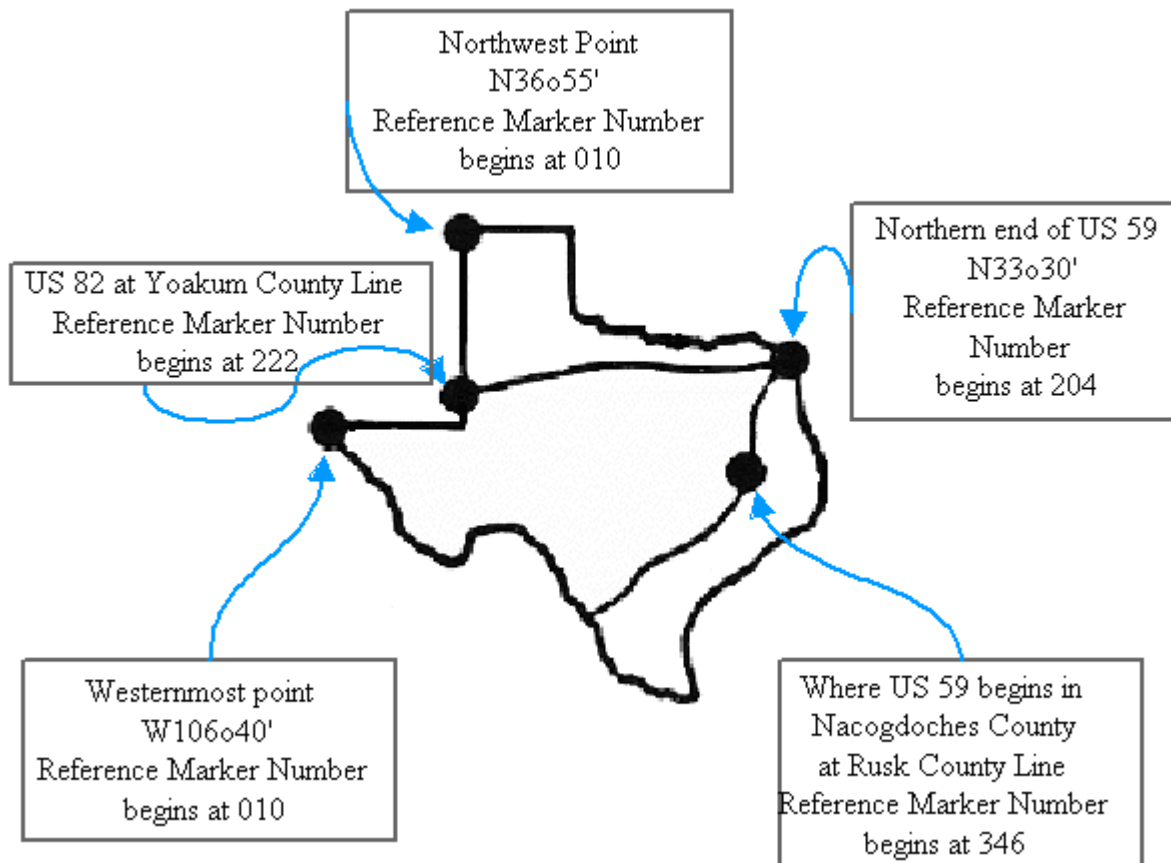
Figure 7-1. Sample of Reference Marker grid.

History

The initial installation of reference markers used existing milepost locations and a mile post/reference marker equivalency listing as a control document during the identification and installation process. Reference Marker Coordinators identified locations of the existing mile posts within a 0.01-mile accuracy to its equivalent control-section-milepoint. Then they verified the displacement or notified TPP of the correct displacement, measured up to 3 decimal places. The districts completed this project August 1990.

Definitions

Reference Marker Group—Consists of the Reference Marker Number + Reference Marker Suffix + Reference Marker Displacement. Process reference markers as point data; add, delete, or update up to eight markers to **TRM in one transaction. Do not** update the same marker more than once per transaction:

◆ Number—Official number posted on the signed highway. Used together with the other components of the Reference Marker Group to locate roadway data in TRM. Determine valid values by the function. TRM numbers markers from state line to state line and from westernmost or northernmost point of the Highway origin. (South to north for Interstate Highway post numbering.) Valid values: 0000 to 9999 (for interstate highways); 0010 to 9998 (for non-interstate highways)

◆ Suffix—Posted suffix character, if any, appended to the Reference Marker Number on the signed highway. Used together with the other components of the Reference Marker Group to locate data on the highway in TRM. Valid values: Blank (no suffix) or A thru Z

◆ Sign—Symbol indicating the ascending or descending direction to a data attribute or feature from a posted reference marker. Valid values: + (displacement in ascending reference marker direction) or − (displacement in descending reference marker direction).

◆ Displacement—Distance in miles from a posted reference marker on the signed highway to a data attribute or feature. Used together with the other components of the Reference Marker Group to locate data on the highway in TRM. Valid values: 00.000 to 99.999

Figure 7-2. Reference marker example.

◆ Distance From Previous Marker—System-generated value of distance, in miles, from a reference marker posted on the signed highway to the next sequential marker located on the same signed highway. Valid values: 00.000 to 99.999.

Section 2 — Reference Marker Installation Procedures

Installation

Each district installs new reference markers on the front and back of each reassurance route marker supporting post. Districts that want to install reference markers at additional locations, such as on each roadway or at closer intervals, need to contact TPP.

Use vehicles with calibrated distance measuring instruments (DMI's) or other more accurate distance measuring equipment. DO NOT USE standard vehicle odometers or trip meters; they are not as accurate. When using DMI equipped vehicles on a divided highway, take measurements while traveling on the inside lane in the direction of increasing mile posts. Reset the instrument to a known location at approximately every ten miles.

NOTE: The figures in this section are **not** to scale.

Location

Locate reference markers:

◆   On all routes, regardless of length

◆   On both sides of posts, two and one-half (2 ½) inches below the route marker so it is visible to drivers on both sides of the road.

Reference markers may be located:

◆   On frontage roads

◆   On roadbeds opposite the primary marker on divided highways (desirable)

◆   Approximately every two miles or less on alternating sides of single roadway highways.

Reference Marker Specifications

The districts should use:

◆   3" x 10" x 5/8" green reflective panels

◆   3" x 12" x 5/8" green reflective panels when reference marker number includes a suffix

◆   2" tall numbers and letters that are series D, white engineer-grade, pressure-sensitive sheeting

◆   only capital letters.

Order the letters and numbers from the general warehouses by using the DHT numbers below:

DHT Numbers

DHT No.	Number	DHT No.	Number	DHT No.	Letter
3721	0	3736	5	121032	A
3722	1	3727	6	121033	B
3723	2	3728	7	121034	C
3724	3	3729	8	-	-
3725	4	3730	9	-	-

NOTE: Letters D-Z are available if needed.

This graphic shows how and where to place a reference marker on an existing sign:
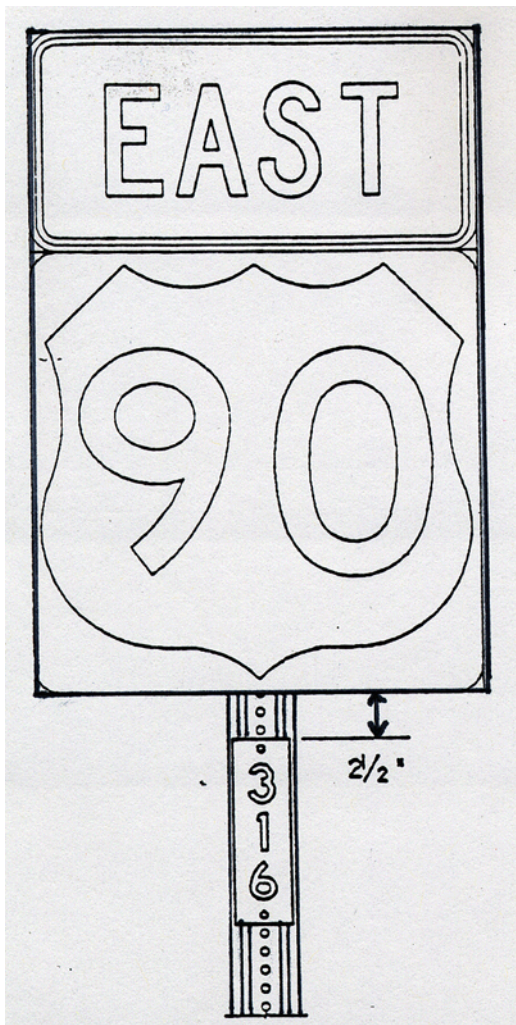
Figure 7-3. Plaques to be mounted back to back.

This graphic shows how a reference marker should look on a pipe:
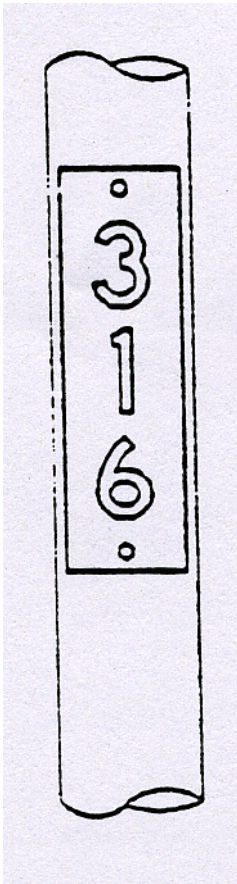
Figure 7-4. Plaque on pipe.

This graphic shows how to mount a reference marker on the pipe:
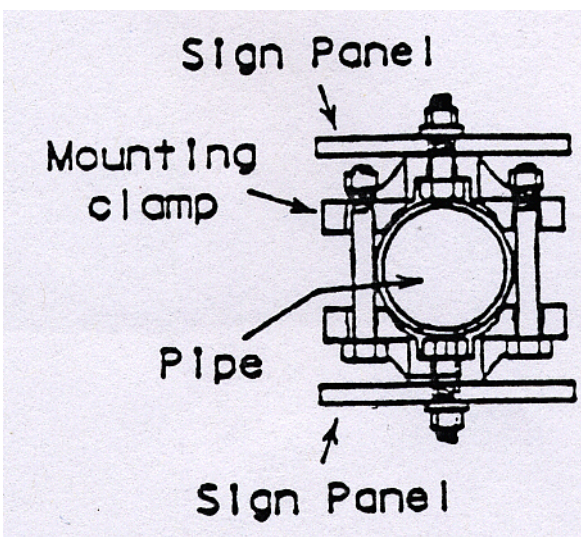
Figure 7-5. How to mount.

This graphic describes the sizes of the reference marker and numbers:
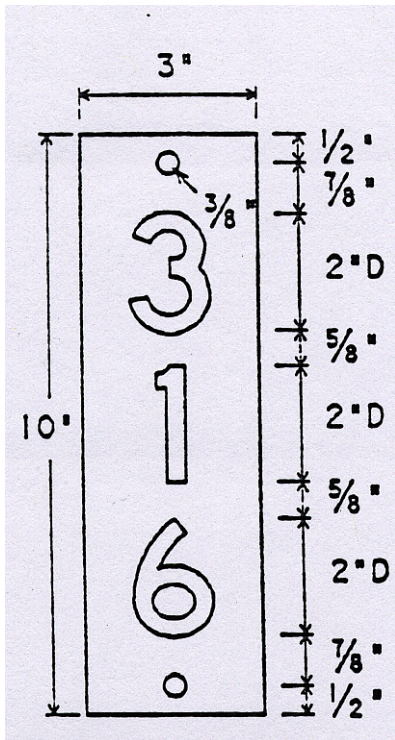
Figure 7-6.   Reference marker without suffix.

This graphic describes the sizes of the reference marker, numbers, and suffix letters:
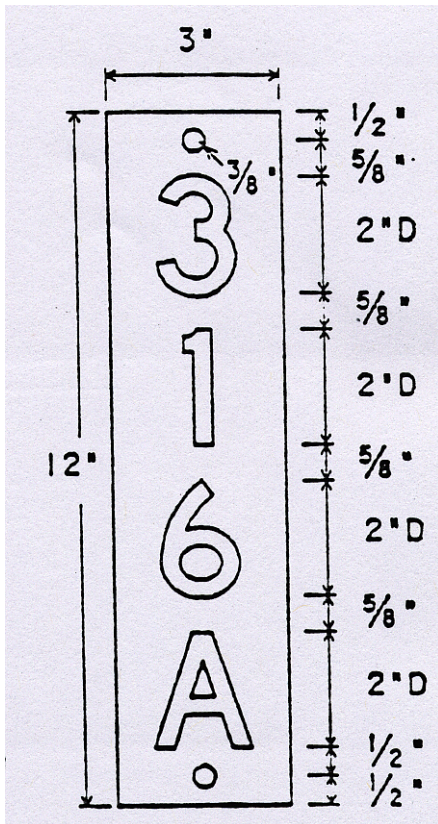
Figure 7-7. Reference marker with suffix.

This graphic shows how to handle low marker numbers by preceding the number with a zero so the reference marker number is three digits:

Figure 7-8. Example of low marker number preceded by a zero.

Use breakaway type mount design that leaves a stub in the ground, so you can **accurately** replace the mount.

This graphic shows how to set the reference marker pipe in relation to the highway in a business or residential area:
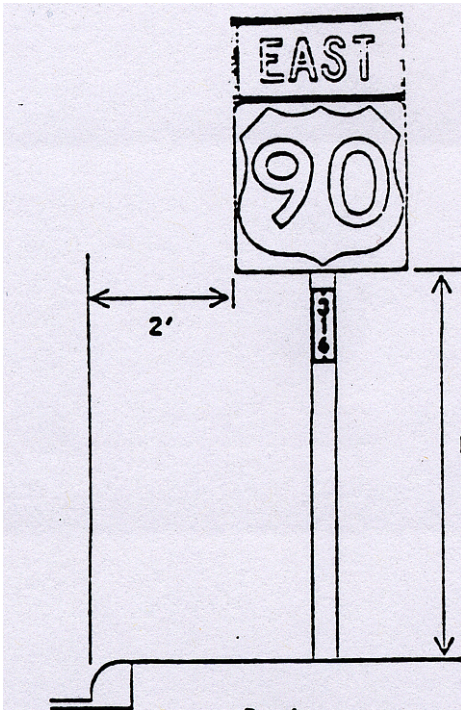
Figure 7-9. Business or residential area.

This graphic shows how to set the reference marker pipe in relation to the highway in a rural area:
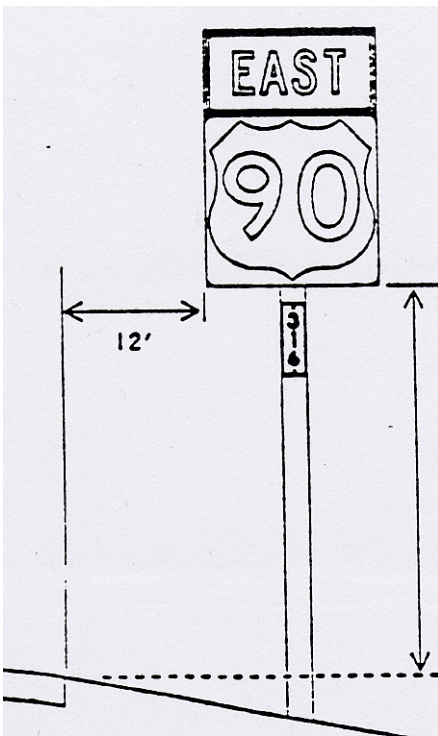
Figure 7-10. Rural area.

Uniform Posting Procedures

Use these procedures to assign new reference marker numbers. **Districts must include reference marker numbers on all PS&E package submissions**. TPP assigns at least the beginning reference marker and notifies the districts.

TPP is responsible for coordinating procedures. The district reference marker coordinator shall notify TPP whenever a reference marker is moved, renumbered, removed, or added, or whenever questions need to be resolved.

NOTE: All signs posted **must** agree with the highway designation

Districts. District reference marker coordinators request assignment of reference marker numbers for all projects that:

◆   create a new route

◆   affect the reference marker's location on a current route (changes in the distance from route origin, route realignment etc.)

Include the following with the request:

◆   Approved schematics

◆   Any reference marker numbering sere previously agreed to by telephone with TPP

◆   Identification of all concurrent routes

◆   Disposition of an old section of a route (i.e., deletion, redesignation) with commission approval

Districts:

◆   Determine the number of markers needed and assign the subsequent number(s)

◆   Include the reference marker numbers and their locations in all plans, specifications and estimates packages

◆   Install the reference markers before opening either a new route or a realigned route to traffic

Notify TPP of the location of additional reference markers that the district needs or desires on an existing route:

EXAMPLE: Adding reference markers at closer intervals along a route, or to extended sections of routes. Accuracy will be at .01 mile from a known location like the primary marker.

Notify TPP of a change in the reference marker numbering scheme in the event that the district coordinator must reverse reference marker numbers on an existing route.

Do not move reference markers once they are physically in the ground unless absolutely necessary. In the event that you must move a reference marker, notify TPP of the new location. You must add a letter suffix to the reference marker number (see figure 7.2A for an exception).

NOTE: Post reference markers on temporary posts during roadway maintenance or construction work.

NOTE: If the district removes reference markers due to roadway work, accidents, or for any other reason, replace the markers in the same location as soon as possible.

Highway Hierarchy

The table at this link lists highways according to their hierarchy.

Developing a New Route in Sections

The first reference marker number is assigned by TPP:
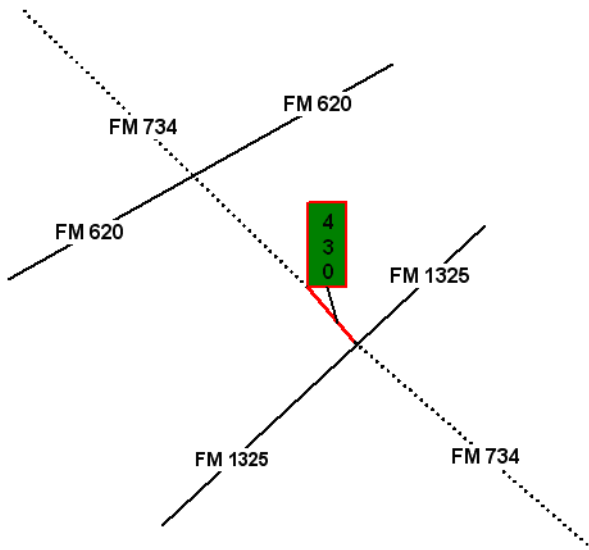
Figure 7-11. Install RM 430 for the first section of FM 734.

Additional sections of a route which are not contiguous with any other sections shall have a reference marker number assigned to them and these reference marker numbers shall be numbered based on their relationship to the existing reference marker numbers:
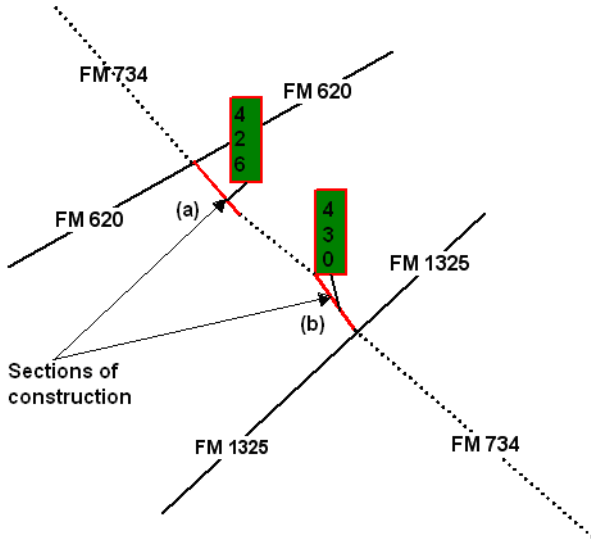
Figure 7-12. Sections a and b are not contiguous.

Additional sections of a route that are contiguous with other sections can use pre-existing reference marker numbers as their location keys:
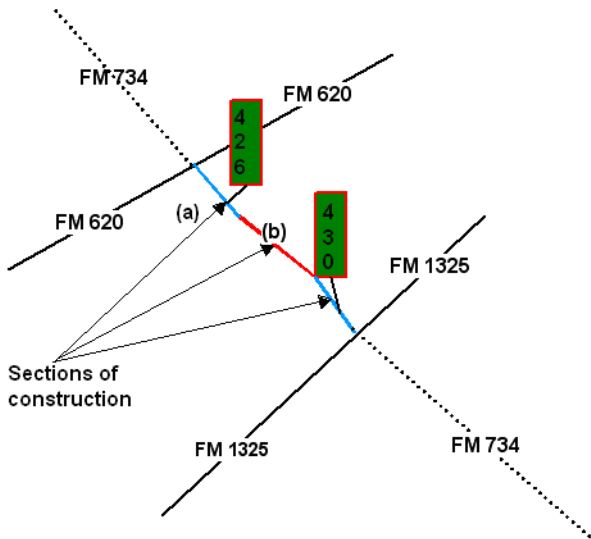
Figure 7-13. Section b may use RM 426.

Joining Two Different Routes

Place new markers on the linking section of the joined route, approximately two miles from markers on the original routes. Number the new combined route or renumber a section in accordance with the overall route direction.

Example 1: If renumbering a section, the location of the markers stays the same, if possible, but the reference marker number changes. FM 2185 is a west-east route, 10 miles in length; FM 2119 is a north-south route, 50 miles in length:
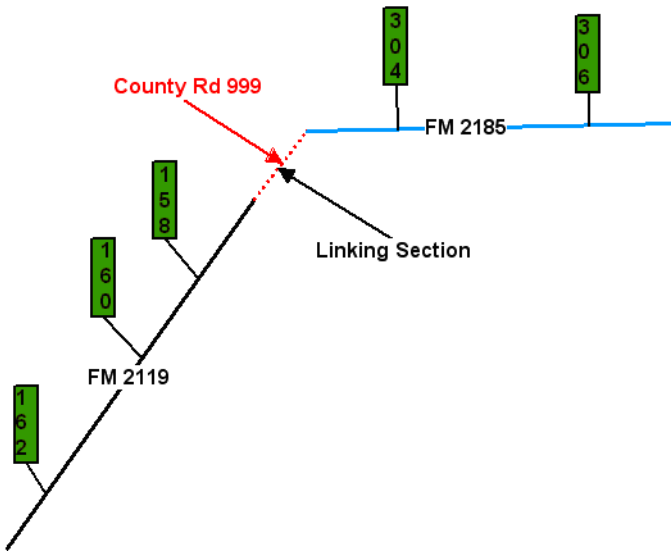
Figure 7-14. Before renumbering.

When joining the two routes, add a marker to the linking section and renumber the reference markers to reflect the new overall north-south direction:
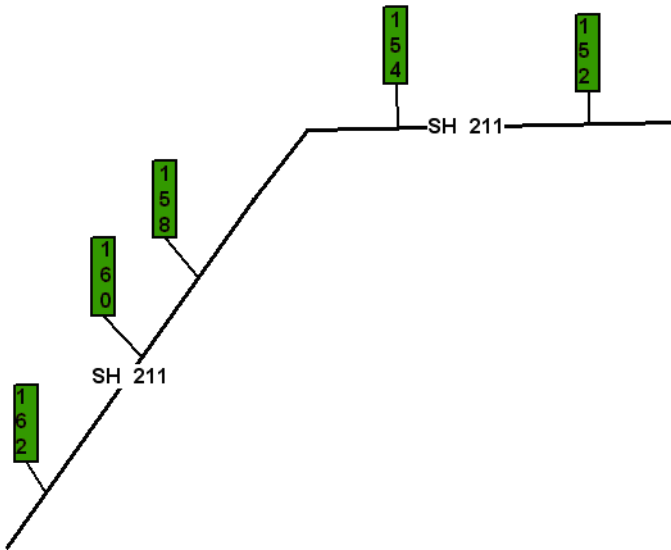
Figure 7-15. After renumbering.

Example 2: The distance between existing markers is more than two miles, but the numbers are already in contiguous order:
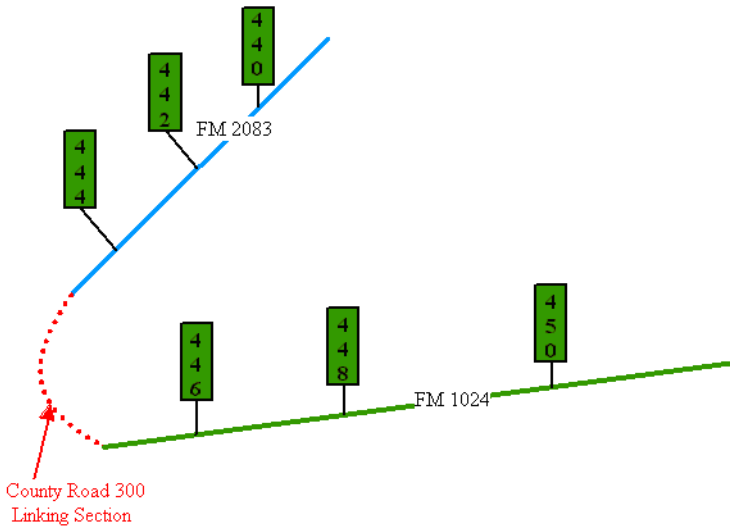
Figure 7-16. FM's are separated by a county road.

Choices for dealing with the linking section include:

◆ Adding an additional marker between existing markers OR
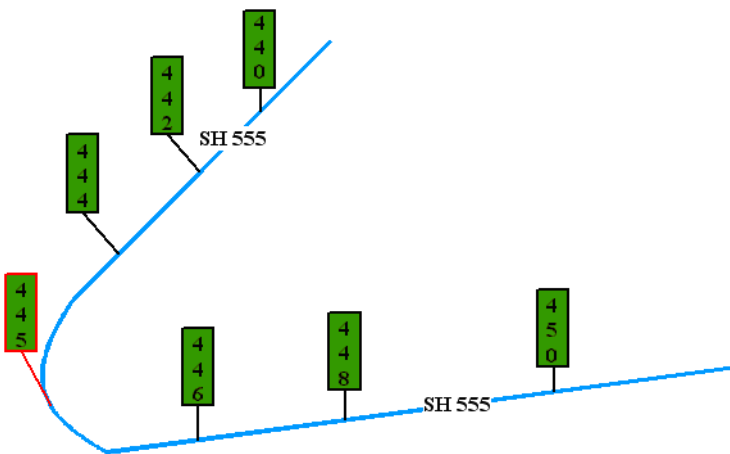
Figure 7-17. Add new RM 447 in the linking section.

◆ Moving existing reference markers closer together OR
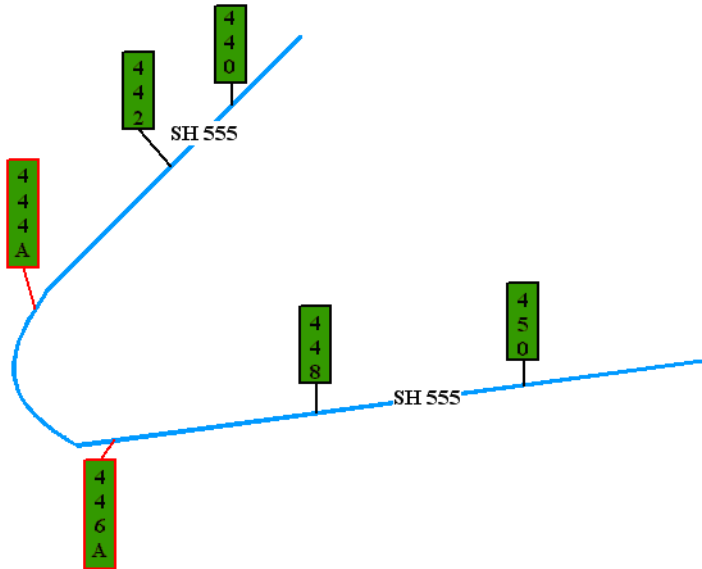
Figure 7-18. Physically move RM 446 and 448.

◆   Having existing reference markers closer together AND adding additional markers:
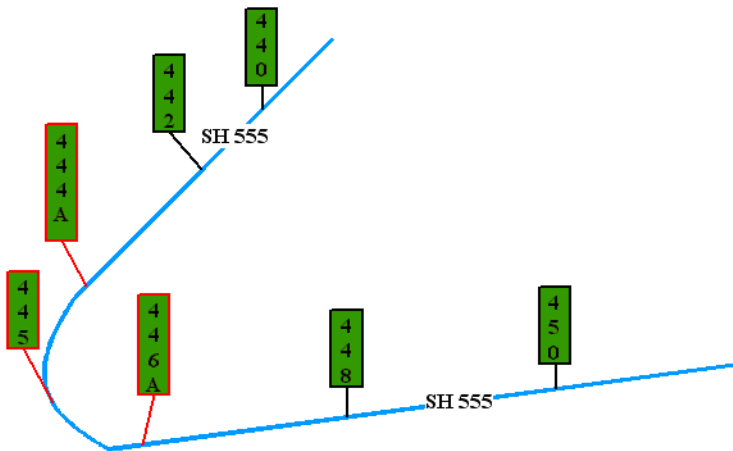
Figure 7-19. A combination of the two above.

Extending a Route

Add reference markers to the new section if needed or desired.

EXAMPLE: Add a reference marker if the distance between existing markers is greater than two miles between:

◆   The beginning of the route and the first marker

◆   The end of the route and the last marker:
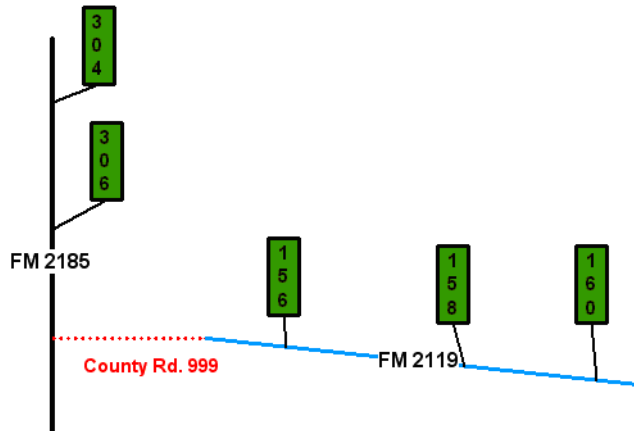
Figure 7-20. FM 2119 extended from the beginning of the route.
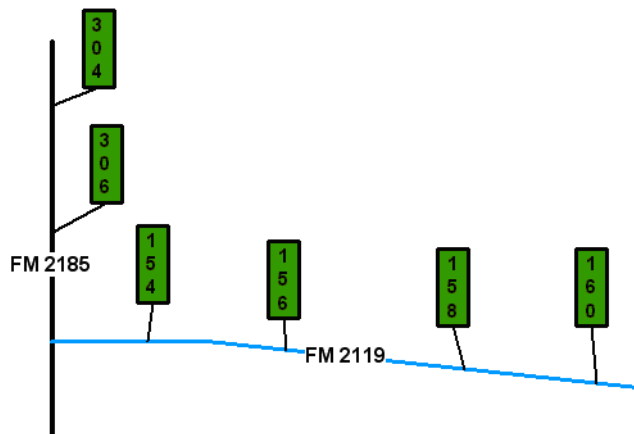
Figure 7-21. New reference marker 154 added.

Realigning a Route

The realigned section has the same reference marker numbers, but will have a letter suffix added.

If necessary, markers on the realigned section can be spaced or added so that no renumbering is required.

The old section retains the same reference marker numbers and locations if possible

Example 1: When realigning a route and redesignating the old section, you may add reference markers but space the new reference markers so that you do not disturb the original numbering:
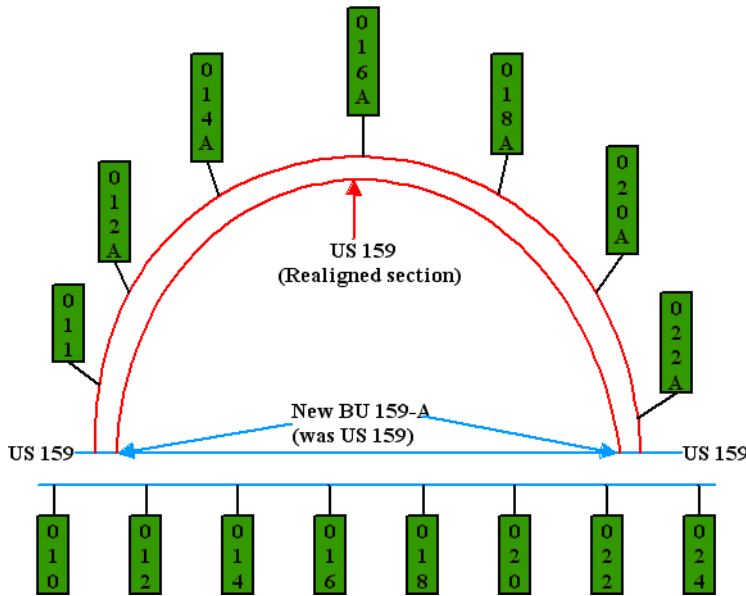
Figure 7-22. RM 011 added but not necessary.

Do not open routes at the same time with the same designation!

Example 2: Realigning a route. Figure 7-23 shows the incorrect approach, leaving two routes open at the same time with the same designation:
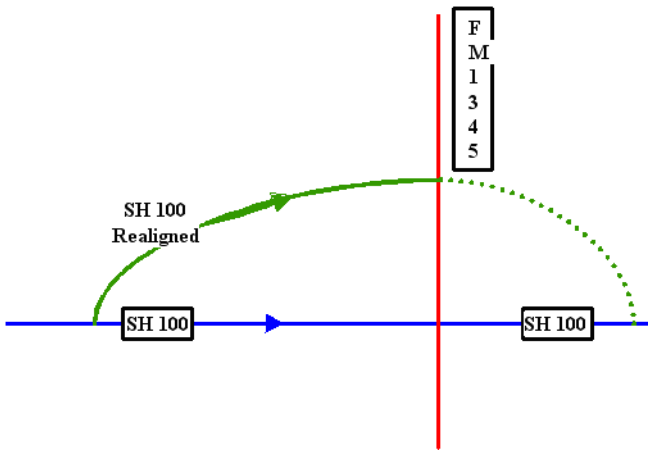
*Figure 7-23. There should **never** be a time when more than one route is open to traffic with the same designation and signing.*

Figure 7-24 is the correct approach showing the redesignation of the old section. SH 100 is temporarily trail blazed over FM 1345 and over SL 302, signed as "TO SH 100":
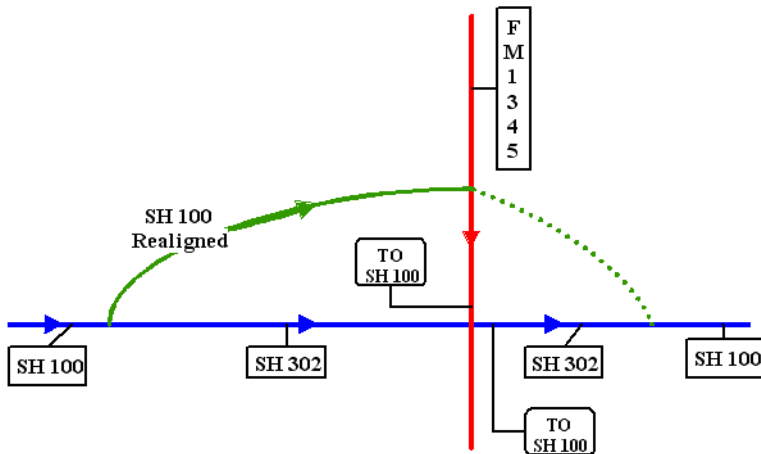
Figure 7-24. Now, there is not more than one route open to traffic with the same designation and signing.

Example 3: No section is redesignated:

The construction plans indicate the locations of reference markers for the new route section:
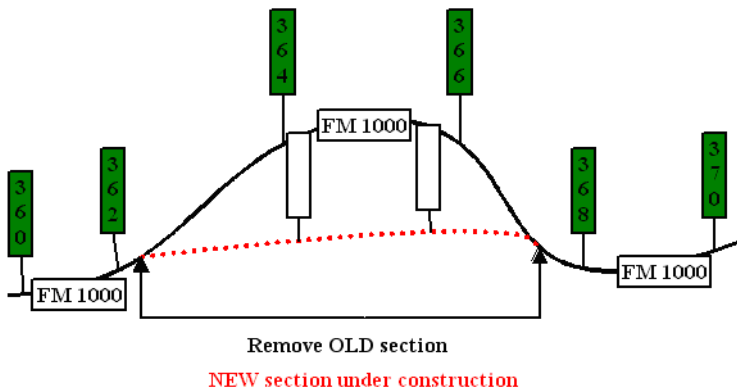
Figure 7-25. The blank signs indicate where new reference markers may be placed.

If the old highway section is no longer under state maintenance, take it off the system and remove the reference marker posts:
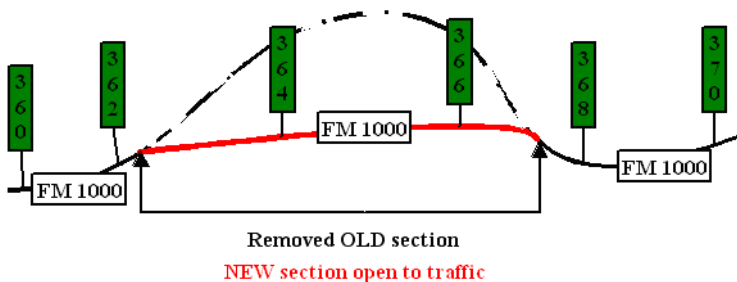
Figure 7-26. The blank signs are assigned marker numbers.

Business Routes and Spurs

Select the initial reference marker in direct relation to the nearest reference marker number on the parent route.

NOTE: With the exception of interstate business routes, direction of travel and location on the grid map have no bearing on the initial assignment of reference marker numbers on spurs with parent routes or on business routes:
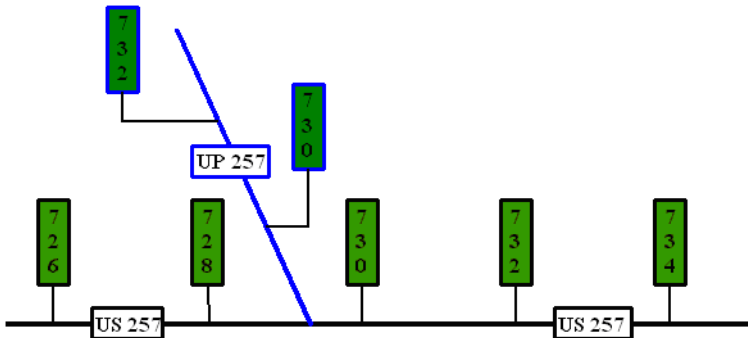
Figure 7-27. US Spur RM 730 directly relates to the nearest reference marker on US 257.

Circumferential Routes

Number a circumferential (i.e. state highway loop) route in an east-to-west clockwise direction. The numbering begins with the first interchange west of an imaginary north-south line bisecting the circumferential route at an expressway, freeway, or interstate route, or some other conspicuous landmark in the circumferential route near a south "polar" location:
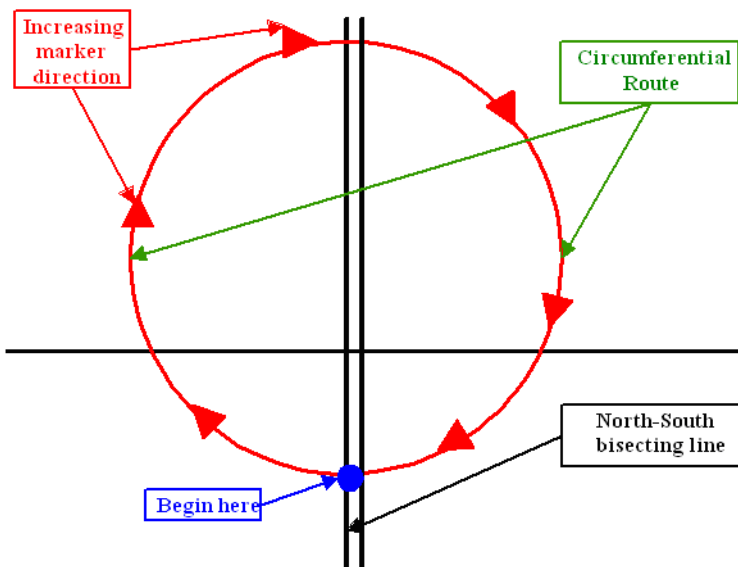
Figure 7-28. Begin at blue circle, move westward, northward, eastward, and southward back to blue circle.

Moving an Existing Reference Marker

If the new location affects the distance from route origin by more than 50 feet, add a letter suffix to the reference marker to show that the location has changed:
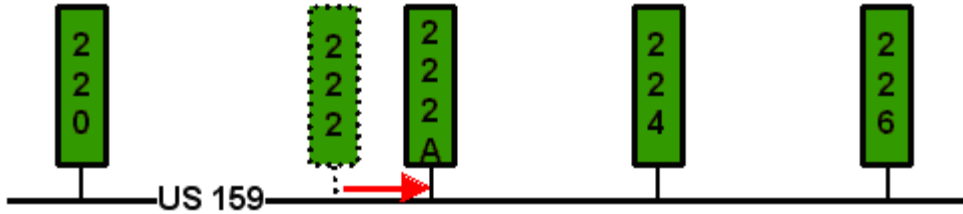
Figure 7-29. Add suffix to RM 222; RM 222 disappears.

If the new location affects the distance from route origin by less than 50 feet, do not add a letter suffix or update TRM.

NOTE: Because TRM does not require alternating reference markers on either side of the roadway, Reference Marker Number 104 can simply be moved across the roadway:
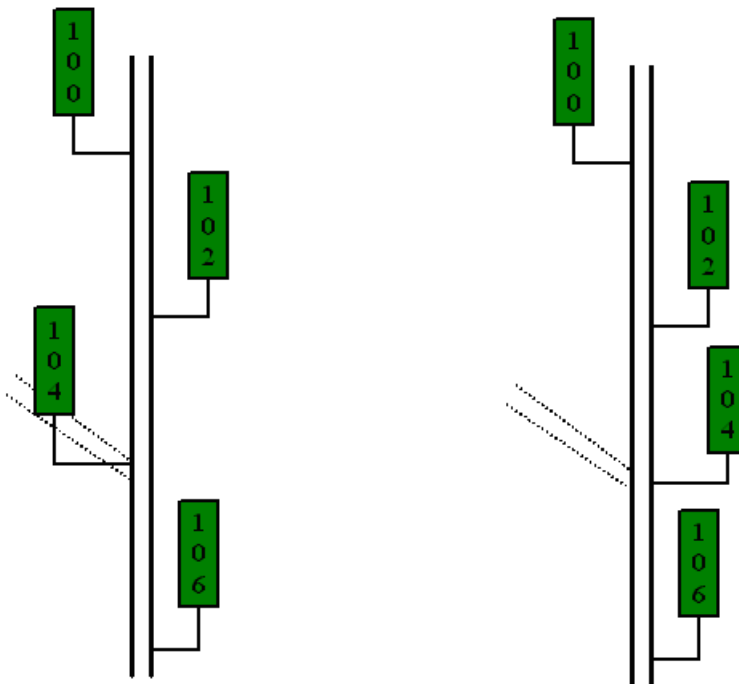
Figure 7-30. Before and after.

Concurrent Routes

Reference marker numbers for the high order route take precedence:
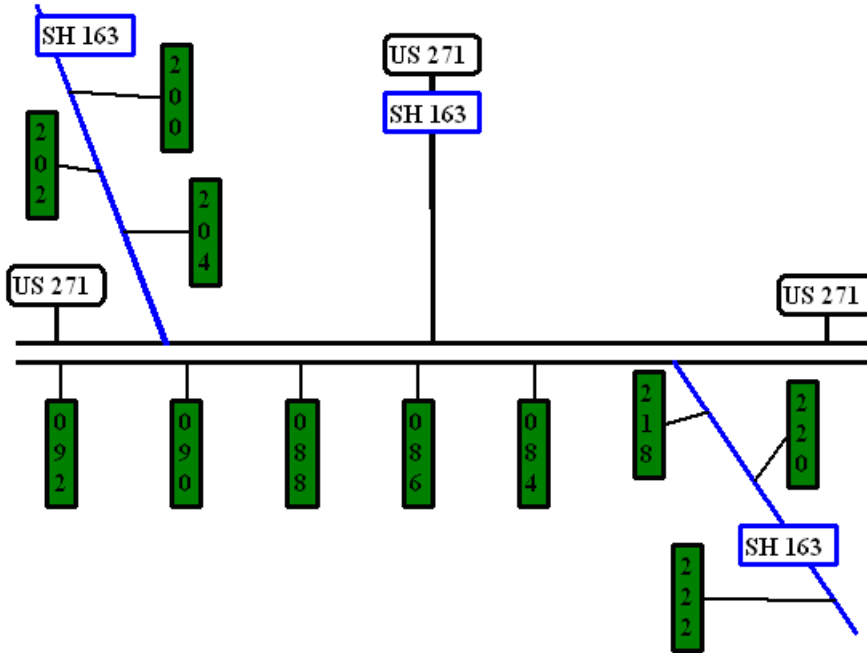
Figure 7-31. US 271 takes precedence over SH 163.

If the routes are the same order, the lower-numbered route takes precedence:
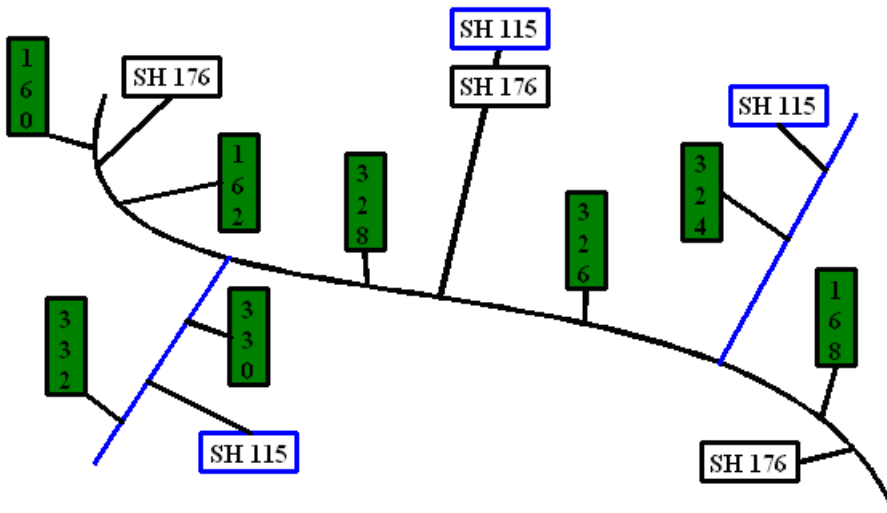
Figure 7-32. SH 115 takes precedence over SH 176.

Section 3 — Reference Marker Input Instructions

Reference Marker Constraints

You may **not:**

◆   Add, update, or delete markers 0000 and 9999 on non-interstate routes

◆   Add, update, or delete marker 9999 on interstate routes

◆   Add a marker if the same number resides in TRM with a different suffix.

EXAMPLE: RM 400B cannot be added if RM 400A currently exists in TRM.

Input—Reference Markers

Follow these input instructions to add reference markers:

Add Reference Markers

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, s**elect** **Update-Code** 22G and press \<E\>. **Result**: The Marker Data screen displays	Place **at least one marker** on any given route or each non-continuous segment of a route
2	Input Location Key fields	NOTE: **If the route segment has no markers due to route redesignation, add the first new marker using placeholder marker 0000.** ◆ **Signed Highway** System**, Number and Suffix** ◆ **Reference Marker** Number and Suffix of an existing marker closest to the location of the new marker ◆ **Reference Marker Sign**, positive (+) if the new marker is located past the existing marker, or negative (–) if the new marker is located prior to the existing marker ◆ **Reference Marker Displacement** as the distance between the location of the closest marker and the location of the new marker

Add Reference Markers

Step	Action	Input
3	Enter Process Markers fields and press <F2>. **Result**: The system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ **New Reference Marker Number** ◆ **Marker Suffix**, if applicable (Add a suffix, provided that the marker with the previous sequential suffix exists on the TRM-Tracking file. **Example:** RM 400A may be added if RM 400 exists in tracking, RM 400B may be added if RM 400A exists in tracking) ◆ **Effective Reference Marker Date**
4	◆ To enter another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

System Response. While adding the marker(s), the TRM system automatically:

◆ Incorporates the new marker(s) into existing records as needed. The new marker now references data previously referenced by an existing marker.
   Example: A culvert is located at RM 234 + 2.5 miles in TRM. If RM 236 is added two miles past RM 234, the culvert is located using RM 236 + 0.500 mile.

◆ Adjusts the Distance Between Markers for the closest succeeding and preceding markers

◆ Adjusts the Distance From Origin (DFO) for all existing markers and for the placeholder 9999 marker when applicable

◆ Creates the DFO for the new marker(s).

Follow these input instructions to delete reference markers:

Delete Reference Markers

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, s**elect** **Update-Code** 21G and press <E>. **Result**: The Marker Data screen appears	-
2	Input Location Key fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ **Signed Highway System, Number** and **Suffix** ◆ **Existing Reference Marker Number** and **Suffix** (if any) of the marker to be deleted

Delete Reference Markers

Step	Action	Input
3	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted reference markers	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
4	◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

System Response. While deleting the marker or markers, the TRM system automatically:

◆ Removes the marker(s) from all affected records; data which was previously referenced by the deleted marker is now referenced by the closest sequentially lower marker number.
Example: A culvert is located at marker 236 + 0.5 miles in TRM. If marker 236 is deleted, the culvert is located using the closest previous reference marker

◆ Calculates and updates the distance between the closest succeeding and preceding markers.

Follow these input instructions to update reference marker locations:

Update Reference Marker Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23G and press <E>. **Result**: The Marker Update Selection Menu appears	-
2	Input an X by Marker Relocation Update and press <E>. **Result**: The Marker Data screen appears	-
3	Input Location Key fields	◆ Signed Highway System, Number and Suffix ◆ Existing Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement

Update Reference Marker Location

Step	Action	Input
4	`Input update fields and press <F2>.` `Result:  The system updates the reference markers and displays verification message "Transaction completed successfully"`	◆ `Existing Reference Marker Number` ◆ `New suffix (the next sequential alphabet letter, beginning with A if the old suffix is blank) Example: Add RM 400A if RM 400 exists in tracking, add RM 400B if RM 400A exists in tracking, etc.` ◆ `(+) or (-) movement mileage` ◆ `Effective date`
5	◆ To enter another marker correction, press <F9> to clear the screen ◆ To select **Marker Correction Update**, press <F3> to exit back to the Marker Update Selection Menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to correct reference marker attributes:

Correct Reference Marker Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance Menu, select **Update-Code** 23G and press <E>. **Result**: The Marker Update Selection Menu appears	-
2	Input an X by Marker Correction Update and press <E>. **Result**: The Marker Data screen appears	-
3	Input <u>Location Key</u> fields	◆ **Signed Highway System, Number** and **Suffix** ◆ **Existing Reference Marker Number** and **Suffix, (+)** or **(–) Sign, and Displacement**

Correct Reference Marker Attributes

Step	Action	Input
4	Input update fields and press <F2>. **Result**: The system updates the reference markers and displays verification message "Transaction completed successfully"	◆ **Existing Reference Marker Number** ◆ **New suffix**—the next sequential alphabet letter, beginning with A if the old suffix is blank. Example: Add RM 400A if RM 400 exists in tracking, add RM 400B if RM 400A exists in tracking, etc. **When correcting an incorrectly stored marker location, do not add a suffix** ◆ **(+) or (-) movement mileage** ◆ **Effective date**
5	◆ To enter another marker correction, press <F9> to clear the screen ◆ To select **Marker Relocation Update**, press <F3> to exit back to the Marker Update Selection Menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

System Response. While updating the marker or markers, the TRM system automatically:

◆ Incorporates the new marker into existing records as needed. A sequentially lower marker number now references data that the existing marker previously referenced.
Example: A culvert is located at marker 230 + 2.5 miles in TRM. If marker 232 is moved such that it is now two miles past marker 230, the culvert now is located using marker 232A + .500 miles

◆ Adjusts the distance between markers for the closest succeeding and preceding markers.

Section 4 — Marker Coordinates — Key Points to Know

Marker Coordinates Defined

Marker Coordinates indicate the geophysical point of the reference marker on the route, located by latitude, longitude, and elevation. Add or update coordinates as point data, up to eight coordinates in one transaction.

Office of Primary Responsibility

TPP is the Office of Primary Responsibility (OPR) for adding and updating reference marker coordinates.

Definitions

Elevation—The vertical distance of a point above or below some arbitrarily assumed level surface or datum; the point of known height above mean sea level measured in feet.

Latitude—Angular distance north from the earth's equator to a given point on the earth, measured in degrees, minutes, and seconds.

Longitude—Angular distance west from the Greenwich Meridian to a point on the earth; measured in degrees, minutes, and seconds.

Input—Marker Coordinates

Follow these input instructions to add reference marker coordinates:

Add Reference Marker Coordinates

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select **Update-Code** 52E. **Result**: The Marker Coordinate Data screen appears	Only one set of coordinate data resides at each reference marker
2	Input Location Key fields	◆ **Signed Highway** System**, Number and Suffix** ◆ **Reference Marker** Number and Suffix (if any) which corresponds to the coordinate

Add Reference Marker Coordinates

Step	Action	Input
3	Input **remaining** fields and press <F2>. **Result**: The system updates TRM with the new marker coordinates and displays the message "Transaction completed successfully"	◆ **Marker Coordinate** <u>Latitude</u>, value format DDMMSS.0000 (degrees-minutes-seconds) from 255012.0000 to 363000.0000 ◆ **Marker Coordinate** <u>Longitude</u>, value format DDD-MMSS.0000 (degrees-minutes-seconds) from 0963029.0000 to 1063844.0000 ◆ **Marker Coordinate** <u>Elevation</u>, values 0000.00 to 8749.00
4	◆ To input other marker coordinates, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to update reference marker coordinates:

Update Reference Marker Coordinate Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select **Update-Code** 53E. **Result**: The Marker Coordinate Data screen displays with a prompt message requesting the updated coordinate's location	Only **one set** of coordinate data resides at each reference marker
2	Input <u>Location Key</u> fields and press <E>. **Result**: The record(s) as stored in TRM display. A message requests the updated marker coordinates	◆ **Signed Highway System, Number** and **Suffix** ◆ **Reference Marker Number** and **Suffix** (if any) which corresponds to the coordinate
3	Input update fields and press <F2>. **Result**: The system updates the attribute, displays a verification message and the original request for the coordinate's current record to update, plus any required fields	◆ **Marker Coordinate** <u>Latitude</u>**,** value format DDMMSS.0000 (degrees-minutes-seconds) from 255012.0000 to 363000.0000 ◆ **or Marker Coordinate** <u>Longitude</u>**,** value format DDDMMSS.0000 (degrees-minutes-seconds) from 0963029.0000 to 1063844.0000 ◆ **or Marker Coordinate** <u>Elevation</u>**,** values 0000.00 to 8749.00

Update Reference Marker Coordinate Attributes

Step	Action	Input
4	◆ To input another Update-Code, press \<F3\> to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> (For instructions to log off the system, click this link)	-

Geographic Information System

The TRM Key is the link for spatial and linear data that support the Geographic Information System (GIS). TRM allows TPP analysts to extract data from the database and send to users electronically to create GIS maps, using Arcview software. For data requests, contact the TPP District Data Support Branch for a TRM User Analyst.

For issues or questions about GIS with respect to TRM, contact TPP's Data Analysis, Mapping & Reporting Branch.

If a more general support is desired for GIS, contact the Technology Services Division (TSD).

Global Positioning System

TSD has also developed standards for Global Positioning System (GPS) use on TxDOT Projects and provides training classes for these standards. Classes include:

◆ GPS Data Standards

◆ GPS Mapping and Accuracy Standards

◆ Metadata

◆ Data Dictionaries.

Classes include actual field exercises with equipment. Please route any questions concerning GPS data collection to the Engineering Technology Services Branch (ETS) at TSD.

For issues or questions about GPS with respect to TRM, contact the Data Analysis, Mapping & Reporting Branch at TPP.

Chapter 8 — Roadbeds

Contents:

Section 1 — Key Points to Know

When to Establish Roadbeds

Establish Roadbeds on all segments of a roadway before opening to traffic and before adding data to any segment of the route. This chapter describes the different roadbed classifications, the offices of responsibility, and input instructions.

Offices of Responsibility

TPP is the Office of Primary Responsibility (OPR) for roadbed processing. Responsibilities include adding, updating, and deleting roadbeds from routes in TRM, according to construction plans or other documents supplied by district offices.

The TRM section of each district office is the Office of Secondary Responsibility (OSR). Each district is responsible for providing TPP with information required to document any constructed roadbeds in the district or for which the district assumes maintenance.

Click this link for your district's TRM analyst.

Definitions

Roadbeds—Driveable roadway segments separated from other roadway segments by any physical barrier including fences, concrete blocks, or other non-driveable surface. Input as From and To Reference Marker limits, although the system stores roadbed segments as "begin roadbed" and "end roadbed" point records.

Begin/End—Identifies the beginning or ending point of a roadbed existing in the data file. Valid values: B (beginning point of specific Roadbed-Id) or E (end point of specific Roadbed-Id).

Id Values—Two-character value identifying a specific roadbed. First character identifies each physically separate roadbed and the second character is always "G—at-grade" (see Figure 7-1 below). Determine valid values by the roadbed's function:

Roadbed-Id Values

1st Character:			
N	Combination of all mainlane roadbeds K, R, L, S, M, P, T	K	Single roadbed
-	-	C	Centerline; combination of all roadbed values
L	Left mainlane road	R	Right mainlane road

Roadbed-Id Values

1st Character:			
M	Left supplemental mainlane road (Collector)	S	Right supplemental mainlane road
P	Left supplemental supplemental mainlane road	T	Right supplemental supplemental mainlane road
X	Left frontage road	A	Right frontage road
Y	Left supplemental frontage/access road	B	Right supplemental frontage/access road
2nd Character: G (At Grade)			

CG = Centerline--All roadbeds; example: maintenance data and ROW
NG = All mainlane roadbeds
KG = Single roadbed (two-way traffic)

LG = Left Mainlane Roadbed
MG = Left Supplemental Mainlane Roadbed
PG = Left Supplemental Supplemental Mainlane Roadbed
XG = Left Frontage Road
YG = Left Supplemental Frontage Road

RG = Right Mainlane Roadbed
SG = Right Supplemental Mainlane Roadbed
TG = Right Supplemental Supplemental Mainlane Roadbe
AG = Right Frontage Road
BG = Right Supplemental Frontage Road

Figure 8-1. TRM Roadbed-IDS.

Roadbed-Specific Attributes—Attributes input to certain Roadbed-IDS only.

Width—Measurement, in feet, of the width of the driveable portion of a physically separate road-bed. Portion consists of the driving lanes, including any center turn lanes, and the outside park lanes and/or shoulders. Valid values: 001 to 999.

Section 2 — Roadbeds

Adding Roadbeds

Once establishing the mainlane roadbeds, add additional roadbeds, such as frontage roads or sup-plemental mainlanes, as needed. Adding Roadbeds describes the initial establishment of roadbeds. Refer to <u>Input—Update Roadbeds</u> to change the Roadbed-Id.

Input—Add New Roadbeds

Apply these constraints when adding new Roadbed-Id's:

Add New Roadbeds Constraints

Action	Description
Roadbeds L and R	◆ Add only one of the pair; the system automatically generates limits for the other ◆ Roadbed R must have Roadbed L and Roadbed L must have Roadbed R ◆ Always `make R and L` the same length ◆ Input Frontage Roads built before the mainlane roadbeds as L and R
Do not add	◆ Other roadbeds within marker limits where K already exists ◆ K within marker limits where other roadbeds already exist ◆ Roadbed-IDS N and C; these are not physical roadbeds ◆ Roadbeds A, X, Y, B, M, P, S, or T unless roadbeds L and R exist ◆ Roadbed K to an Interstate Highway ◆ `Roadbed T without a roadbed S` ◆ `Roadbed P without a roadbed M` ◆ `Roadbed Y without a roadbed X` ◆ `Roadbed B without a roadbed A`
Do not overlap	An existing roadbed segment with a new segment of roadbed of the same Roadbed-Id Limits
Do Add	A marker on the new segment

Follow these input instructions to add a new roadbed

Add Roadbed

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 12J and press <E>; the Job Location Data screen appears	-
2	Input Location Key fields and press <F2>; the system creates Roadbed Begin and End records in TRM and displays the message "Transaction completed successfully"	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id of the segment NOTE: If adding Roadbed R or L, a message appears on the secondary message line indicating the system added the companion Roadbed L or R
3	To enter another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F3> twice **(For instructions to log off the system, click this link)**	-

System Response. While it establishes the new roadbed limits, the TRM system automatically:

◆ Generates beginning and ending points for the input roadbed segments on all applicable TRM files

◆ Generates beginning and ending points for L roadbeds where R roadbeds were added or for R roadbeds where L roadbed were added (when applicable)

◆ Generates a record for Highway Status 1 indicating that the roadbed is "under construction, not open to traffic".

Input—Delete Non-Mainlane Roadbeds

Apply these constraints when deleting Roadbed-IDS:

Delete Roadbeds Constraints

Action	Description
Do not delete	◆ Roadbeds R, L, and K. Deleting any one of these roadbeds loses Network continuity. In order to remove any of these roadbeds, delete the route segment ◆ Roadbed unless no other roadbeds exist in TRM within the same 'From' and 'To' marker limits
Delete	Roadbeds M, S, P, T, A, B, X, or Y, which are non-mainlane roadbeds

NOTE: **You cannot** add, update, or delete Roadbed-IDS N and C; these are not physical roadbeds.

Follow these input instructions to delete non-mainlane roadbed:

Delete Non-Mainlane Roadbed

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 11J and press <E>; the Job Location Data screen appears	-
2	Input Location Key fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id of the segment
3	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted Non-Mainlane Roadbeds	**OR** Press <F11> to cancel deletion; the system takes no action
4	To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While it completes the transaction, the TRM system automatically:

◆ Removes the beginning and ending points for the deleted roadbed segments

◆ Removes data within the beginning and ending points located on that roadbed.

Input—Update Roadbeds

Apply these constraints when updating Roadbed-IDS:

Update Roadbeds Constraints

Action	Description

Change only	◆ K to R or L (If updating K to R or L, then the R/L pair cannot exist in TRM within the 'From' and 'To' marker limits)
	◆ R or L to K (If updating R or L to K, then K cannot exist in TRM within the 'From' and 'To' marker limits)
	◆ R or L to K only when:
	  ● Signed Highway is not an Interstate Highway
	  ● All supplemental mainlanes and frontage roadbeds are deleted
	◆ R to A
	◆ L to X

You cannot	Add, update, or delete Roadbed-IDS N and C; these are not physical roadbeds

Follow these input instructions to update roadbed:

Update Roadbed

Step	Action	Input
1	(For instructions to log onto the system, click this [link]) From the TPP or District Database Maintenance screen, select Update-Code 13J and press <E>; the Job Location Data screen appears and a prompt message requests the current from and to location of the updated roadbed plus the current Roadbed-Id	-
2	Input [Location Key] fields and press <E>; another prompt message appears requesting the changes	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id of the segment

Update Roadbed

Step	Action	Input
3	Input new roadbed fields and press <F2>; the system updates the roadbed and the verification message "Transaction completed successfully" appears. The original request for the current roadbed to update appears for another update transaction	New Roadbed-Id for the segment
4	To input another Update-Code, press <F3> to exit back to the TPP/District Database Mainte-nance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While it completes the transaction, the TRM system automatically:

◆   Adjusts beginning and ending points for the updated roadbed segments in accordance with begin/end points already existing in the data file

◆   Generates a record for Highway Status 1 indicating that the route is "under construction, not open to traffic"

◆   Removes or moves data and creates new roadbed limits depending on the following roadbed updates:

◆

Update Roadbed Responses

If you change…	The system…
K to R	◆ Changes Attribute data from K to R ◆ Changes Combination Mainlane + Frontage Road data to N ◆ Creates Begin/End limits for Roadbed L within the changed segment; no data exists on this L segment
K to L	◆ Moves Attribute data from K to L ◆ Changes Combination Mainlane + Frontage Road data to N ◆ Creates Begin/End limits for Roadbed R within the changed segment; no data exists on this R segment
R to K	◆ Changes Attribute data from R or N to K (**exception**: deletes crossovers, if any) ◆ Changes Combination Mainlane + Frontage Road data to K ◆ Adjusts or deletes Median data values ◆ Removes L Begin/End points plus associated data

Update Roadbed Responses

If you change…	The system…
L to K	◆ Changes Attribute data from L or N to K (**exception**: deletes crossovers, if any) ◆ Changes Combination Mainlane + Frontage Road to K ◆ Adjusts or deletes Median data values ◆ Removes R Begin/End points plus associated data
R to A	◆ Changes Attribute data from R to A ◆ Leaves N data records as they are ◆ Creates Begin/End limits for Roadbed R within the changed segment; no data exists on this R segment
L to X	◆ Changes Attribute data from L to X ◆ Leaves N data records as they are ◆ Creates Begin/End limits for Roadbed L within the changed segment; no data exists on this L segment

Chapter 9 — Linked Route Segments

Contents:

Section 1 — Key Points to Know

Linked Route Defined

The mileage required to travel each designated highway route might include some route segments identified with different highway designations. These are Linked Route Segments and they:

◆ Consist of on-system or off-system roadways

◆ Interrupt the mileage and reference marker flow of the Signed Highway

◆ Are not part of the network length of the Signed Highway

◆ Are used strictly for determining the distance from origin for features occurring beyond the link segment.

Three Types of Links

There are three basic types of Linked Route Segments:

◆ Concurrent Routes

◆ On-System Links

◆ Off-System Links.

This chapter describes the differences among the three types of links and the input instructions.

Office of Responsibility

TPP is the Office of Primary Responsibility (OPR) for processing linked routes, which includes adding, updating, and deleting links from routes in TRM.

Click this link for your district's TRM analyst.

Definitions

Ascending Marker Direction—Direction of travel in which the reference marker numbers increase.

Descending Marker Direction—Direction of travel in which the reference marker numbers decrease.

Interrupted Route—Secondary route of a linked route situation. Mileage and reference marker flow ends at the link and begins again past the end of the link.

Link Begin/End—Identifies the beginning or ending point of a linked route section. Valid values: B (beginning point of linking section) or E (ending point of linking section).

Link Reference Marker Group—Consists of the Link Reference Marker Number + Link Reference Marker Suffix + Link Reference Marker Displacement:

◆ Number—Official number posted on the signed highway route serving as a link for an interrupted signed highway route. Used together with the other components of the Link Reference Marker Group to locate the beginning or ending point of the link. Valid values: 0000 to 9998 (for Interstate Highways) or 0010 to 9998 (for non-interstate highways)

◆ Suffix—Posted suffix character, if any, for the Link Reference Marker Number on the signed highway route. Used together with the other components of the Link Reference Marker Group to locate the beginning or ending point of the link. Valid values: Blank (no suffix) or A thru Z.

◆ Sign—Symbol indicating the ascending or descending direction to the beginning or ending of a link from the Link Reference Marker Number. Valid values: + displacement in ascending reference marker direction or – displacement in descending reference marker direction

◆ Displacement—Distance in miles from a posted reference marker on the signed highway route to the beginning or ending of a link. Used together with the other components of the Reference Marker Group to locate data on the highway in TRM. Valid values: 00.000 to 99.999

Link Signed Highway Group—Consists of the Link Signed Highway System + Link Signed Highway Number + Link Signed Highway Suffix

◆ Highway—Highest priority designated highway system for a segment of the highway network within a linking segment (see Figure 9-1). All data and reference markers are tied to this route within the linking segment. This route serves as a link for an interrupted signed highway route:
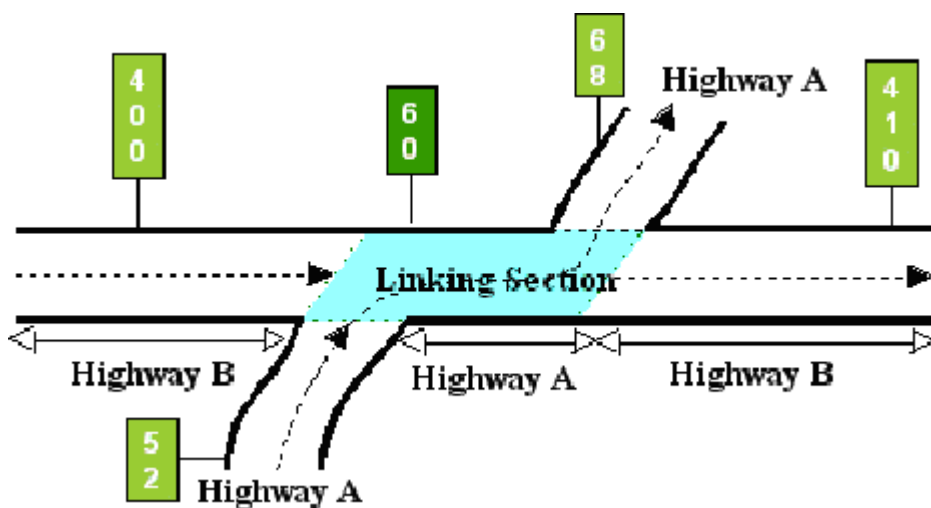
Figure 9-1. Highway B is the "interrupted route", input as the Signed Highway. Highway A is the "continuous route", input as the Link Signed Highway. (The shaded area is the linked section for both routes.)

◆ Number—Identification number associated with the Link Signed Highway System serving as a link for an interrupted signed highway route. Valid values: 0001 – 9999, NASA, and OSR

◆ Suffix—Character appended to the Link Signed Highway Number to further partition the number or, in the case of business routes, to indicate geographical routing. Determine valid values by the Link Signed Highway System

Link Type Value and Notation—Character used to identify whether the linking section is a Concurrency, On-System, or Off-System linking section:

Link Type Values

Value	Link Type
21	Concurrency
22	On-System Link
23	Off-System Link

The Notation provides additional information about the link between segments of another highway.

Off-System Link—Created when a highway designation stops at a point on a given local road or street and starts again from another point on the same or different local road with a driveable connection between the two points.

On-System Link—Highway designation of one route stops at the intersection of another route and starts again from a second intersection with the same route creating an on-system link.

Primary Route—Used when referring to the continuous, uninterrupted Link Signed Highway route of the link situation.

Linked Route vs. Roadway Gap

Although linked route segments and roadway gaps both involve an interruption in data, learn to recognize the difference:

◆ Linked route segments have mileage associated with them. All affected routes use this mileage within the linked route segment to determine the overall route length and distance between reference markers before and after the link route segment

◆ Roadway Gaps do not have any mileage associated with them. Because the roadway gap is not driveable, there is no distance recorded between the beginning and ending of the gap. Figure 9-2 below shows what a gap looks like on the road versus what it looks like in the file: The begin and end points are physically separated on the roadway, yet occupy the same space in the file:
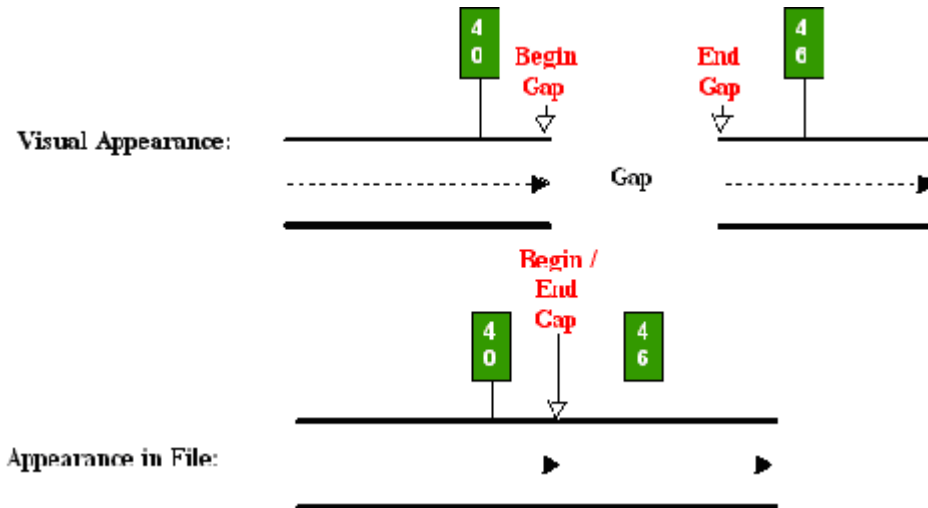
Figure 9-2. How the TRM system "sees" a roadway gap.

Determining the Link Points

Determine the marker location points input for the link by characteristics within the Signed and Linking Signed Highways. Remember:

◆   the route input as the Signed Highway is always the route interrupted by another on- or off-system road

◆   the route input as the Linking Signed Highway is always the route which remains continuous with no interruption in data or reference markers.

The Signed Highway/Secondary Route

The Signed Highway (secondary route) includes the Signed Highway and From Reference Marker Group. You need only one marker location point, which is the location of:

◆   A roadway gap

◆   The beginning of the route (concurrencies only)

◆   The ending of the route (concurrencies only).

The Linking Signed Highway/Primary Route

The Linking Signed Highway (primary route) includes the Link Signed Highway and both Link From and To Reference Marker Groups. The direction of travel of the Linking Signed Highway determines which marker is input as the From Marker location and which is input as the To Marker location.

Ascending Marker Direction

Example 1: In Figure 9-3, Highway B travels west to east while Highway A travels south to north (or west to east). Because A (the Linking Signed Highway) travels in the same direction as B (the Signed Highway), input the markers for A in ascending marker direction:
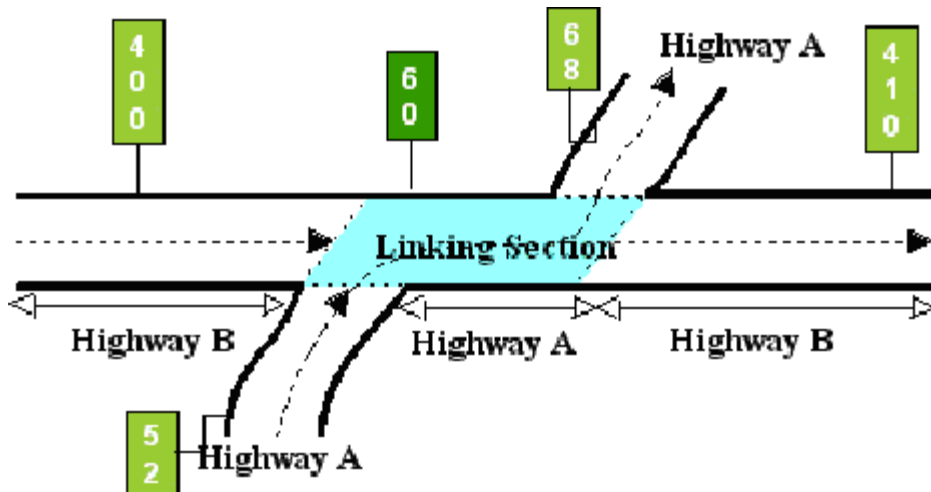
Figure 9-3. Segment of Highway A between segments of Highway B is the link, ascending marker direction.

If the direction of travel of the Linking Signed Highway is the same as the Interrupted Signed Highway, input the From and To marker location points for the Link Signed Highway in ascending marker direction.

Descending Marker Direction

Example 2: In Figure 9-4, Highway B travels west to east while Highway A travels north to south. Because A (the Linking Signed Highway) travels in the opposite direction of B (the Signed Highway), input the markers for A in descending marker direction:
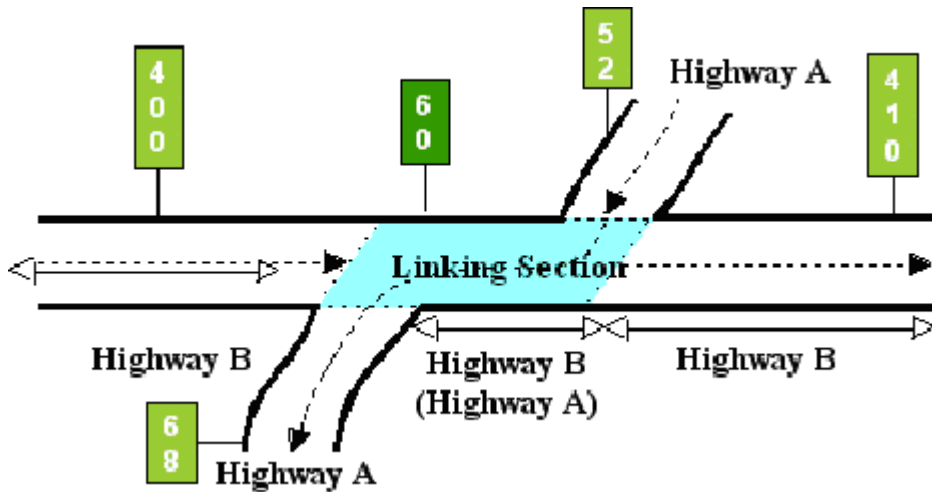
Figure 9-4. Segment of Highway A between segments of Highway B is the link, descending marker direction.

If the direction of travel of the Linking Signed Highway is different from the Interrupted Signed Highway, input the From and To marker location points for the Link Signed Highway in descending marker direction.

Section 2 — Concurrent Route Segments

Concurrent Route Defined

Concurrent Routes are two or more highways designated over the same physical roadway. Concurrencies can exist at roadway gaps or at the beginning or ending of the highway. Add, update, or delete linked route segments like other point data (because they are stored as point data).

EXAMPLE:　In Figure 9-5, data for Highway A is interrupted by Highway B, but the designation of A is carried on the roadway segment along with B. For concurrent route segments, one route is the primary route (Highway B) and any others within the roadway segment are secondary routes (Highway A):
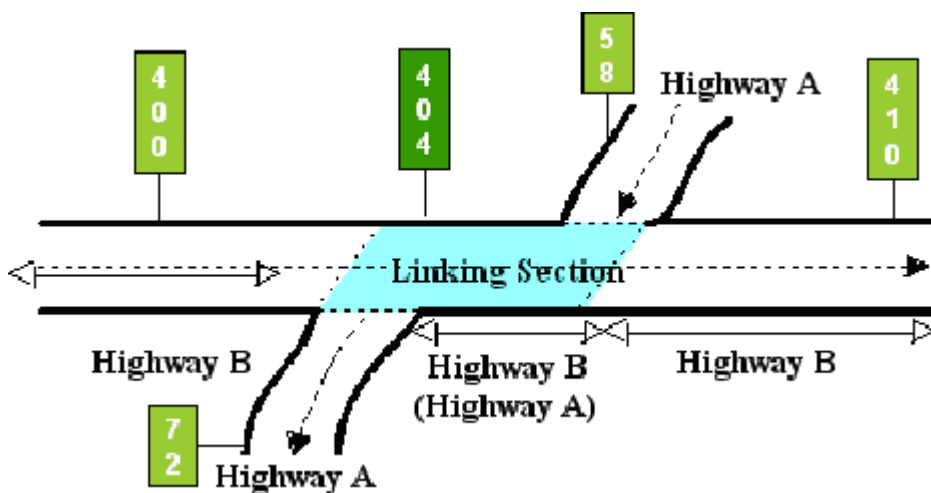
Figure 9-5. Concurrent segment of Highways A and B shaded.

Primary Route is the highest ranked highway system of all routes designated within the route segment:

◆　If within the same highway system, the primary route segment has the lowest number of the other routes

◆　All data values located within the link segment store with the primary route. This includes roadway mileage

◆　It is also referred to as the Linking Signed Highway or Continuous Route.

Secondary Route is the other highway designated over the same route segment as the primary route:

◆　It has no data attributes located on the route segment stored with it

◆　Mileage within the route segment determines Distance From Origin and Distance Between Markers, but is removed for Federal mileage reports

◆ It is also referred to as the Signed Highway or Interrupted Route.

Input—Add to Gap or End of Route

Follow these input instructions to add concurrency to gap or end of route:

Add Concurrent Route Segment to Gap or End of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 32I and press <E>; the Network Change Data screen appears	**Do not** add a concurrency to the highway beginning if the marker is located at the exact beginning
2	Input Location Key fields	◆ **Interrupted route** Signed Highway ◆ System, Number, and Suffix ◆ **From** Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement NOTE: **DO NOT** input the **To** Reference Marker group
3	Input remaining fields and press <F2>; the system updates all data records associated with the new link and displays the verification message "Transaction completed successfully"	◆ Link Type**21** ◆ **Continuous Route** • Signed Highway System, Number, and Suffix • From Reference Marker Number • (+) or (−) From Reference Marker Sign • From Reference Marker Displacement • To Reference Marker Number • (+) or (−) To Reference Marker Sign • To Reference Marker Displacement
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While adding the new concurrency, the TRM system automatically:

◆ Removes the gap record located in the TRM-Feature file for the interrupted route

◆ Increases the:

- mileage of the interrupted route by the length of the concurrent segment
- distance from origin for all markers succeeding the new segment by the length of the new segment

- distance between markers for the closest succeeding marker by the length of the new segment

◆ Generates the To Marker location of the segment for the Signed Highway

◆ Creates:

- records in TRM for the begin and end points of the link

- a new record with placeholder marker 9999 to mark the new ending of the Signed Highway, if the concurrency is added to the end of the route.

Input—Delete Within or at End of Route

Follow these input instructions to delete concurrency within or at end of route:

Delete Concurrent Route Segment Within or at End of Route

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 31I and press <E>; the Network Change Data screen appears	-
2	Input <u>Location Key</u> fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement
3	Input remaining fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Link Type 21 ◆ **Continuous Route** • Signed Highway System, Number, and Suffix • From Reference Marker Number, (+) or (−) Sign, and Displacement • To Reference Marker Number, (+) or (−) Sign, and Displacement
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted concurrent route segments	**OR** Press <F11> to cancel deletion; the system takes no action

Delete Concurrent Route Segment Within or at End of Route

Step	Action	Input
5	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

System Response. While deleting the concurrency, the TRM system automatically:

◆   Creates a gap record in the TRM-FEATURE file within the Signed Highway at the marker location of what was the beginning of the concurrency

◆   Decreases the:

   ●   mileage of the interrupted route by the length of the concurrent segment

   ●   distance from origin for all markers succeeding the new segment by the length of the new segment

   ●   distance between markers for the closest succeeding marker by the length of the new segment

◆   Removes records in TRM for the begin and end points of the link for both routes

◆   Creates a new record with placeholder marker 9999 to mark the new ending of the Signed Highway, if the concurrency is deleted from the end of the route.

Input—Update Within or at End of Route

Follow these input instructions to update concurrency within or at end of route:

Update Concurrent Route Segment Within or at End of Route

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select **Update-Code** 33I and press <E>; the Network Change Data screen appears and a prompt message requests the updated link's begin and end location points (From and To), plus any other required fields the system needs to locate the feature record	**Delete and re-enter** the link if the Signed Highway fields, Link Signed Highway fields, or the Link Type Code is incorrect

Update Concurrent Route Segment Within or at End of Route

Step	Action	Input
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Link Data" appears	◆ Link Type **21** ◆ **Continuous route** ● Signed Highway System, Number, and Suffix ● From Reference Marker Number, (+) or (–) Sign, and Displacement ● To Reference Marker Number, (+) or (–) Sign, and Displacement
4	Input the update information fields and press <F2>; the system updates the link and the verification message "Transaction completed successfully" appears. The original request for the current link update displays for another update transaction	◆ Change Link Type to 22 (On-System link) ◆ **and/or** Notation (Optional)
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While updating the concurrency, the system automatically updates the existing records in TRM with the modified values - either a new Link Type or a notation.

Input—Add to Beginning of Route

Follow these input instructions to add concurrency to beginning of route:

Add Concurrent Route Segment to Beginning of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 32I and press <E>; the Network Change Data screen displays	-

Add Concurrent Route Segment to Beginning of Route

Step	Action	Input
2	Input <u>Location Key</u> fields	◆ **Interrupted route** <u>Signed Highway System</u>, <u>Number, and Suffix</u> ◆ From Reference Marker <u>Number</u> and <u>Suffix</u>, (+) or (–) <u>Sign</u>, and <u>Displacement</u> **NOTE: DO NOT** input the To Reference Marker group
3	Input remaining fields and press <F2>; the system updates all data records associated with the new link and displays the verification message "Transaction completed successfully"	◆ Link <u>Type</u> 21 ◆ **Continuous Route** ● Signed Highway System, Number, and Suffix ● From Reference Marker Number, (+) or (–) Sign, and Displacement ● To Reference Marker Number, (+) Sign, and Displacement ◆ Notation (optional)
4	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

System Response. While adding the new concurrency, the system automatically:

◆ Creates a new record with placeholder marker 0000 to mark the new beginning of the Signed Highway

◆ Increases the:

  ● mileage of the interrupted route by the length of the concurrent segment

  ● Distance From Origin for all markers succeeding the new segment by the length of the new segment

  ● distance between markers for the closest succeeding marker by the length of the new segment

◆ Creates records in TRM for the begin and end points of the link.

Input—Delete from Beginning of Route

Follow these input instructions to delete concurrency from beginning of route:

Delete Concurrent Route Segment from Beginning of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 31I and press <E>; the Network Change Data screen appears	-
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement
3	Input remaining fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Link Type 21 ◆ **Continuous Route** • Signed Highway System, Number, and Suffix • From Reference Marker Number, (+) or (−) Sign, and Displacement • To Reference Marker, (+) or (−) Sign, and Displacement
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted concurrent route segments	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	- -

System Response. While deleting the concurrency, the system automatically:

◆ Creates a new record with placeholder marker 0000 to mark the new beginning of the Signed Highway

◆ Decreases the:

  • mileage of the interrupted route by the length of the concurrent segment

  • distance from origin for all markers succeeding the new segment by the length of the new segment

- distance between markers for the closest succeeding marker by the length of the new segment

◆ Removes records in TRM for the begin and end points of the link.

Input—Update to Beginning of Route

Follow these input instructions to update concurrency to beginning of route:

Update Concurrent Route Segment to Beginning of Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 33I and press <E>; the Network Change Data screen appears and a prompt message requests the updated link's begin and end location points (From and To) plus any other required fields the system needs to locate the feature record	**Delete and re-enter** the link if the Signed Highway fields, Link Signed Highway fields, or the Link Type Code is incorrect
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Link Data" appears	◆ Link Type 21 ◆ **Continuous route** • Signed Highway System, Number, and Suffix • From Reference Marker Number, (+) or (–) Sign, and Displacement • To Reference Marker Number, (+) or (–) Sign, and Displacement
4	Input the updated fields and press <F2>; the system updates the link and the verification message "Transaction completed successfully" appears. The original request for the current link update displays for another update transaction	Notation (optional)
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

System Response. While updating the concurrency, the TRM system automatically updates the existing records in TRM with the modified values - either a new Link Type or Notation.

Section 3 — On-System Link Segments

On-System Link Defined

Highway B's designation stops at its intersection with Highway A and resumes from a second inter-section with Highway A, creating an on-system link. On-System links exist only at roadway gap locations on the interrupted route. Add, update, or delete linked route segments like other point data (because they are stored as point data):

◆   Mileage within the linked segment determines Distance From Origin and Distance Between Markers for both the interrupted and continuous routes

◆   The system includes this mileage with the continuous route, but removes it from the inter-rupted route for Federal mileage reports

◆   The system does not carry the designation of the on-system link on the linked segment. On-System links have no route hierarchy.

EXAMPLE: In Figure 9-6, Highway B interrupts data for Highway A. The roadway segment with B does not carry a designation for A:
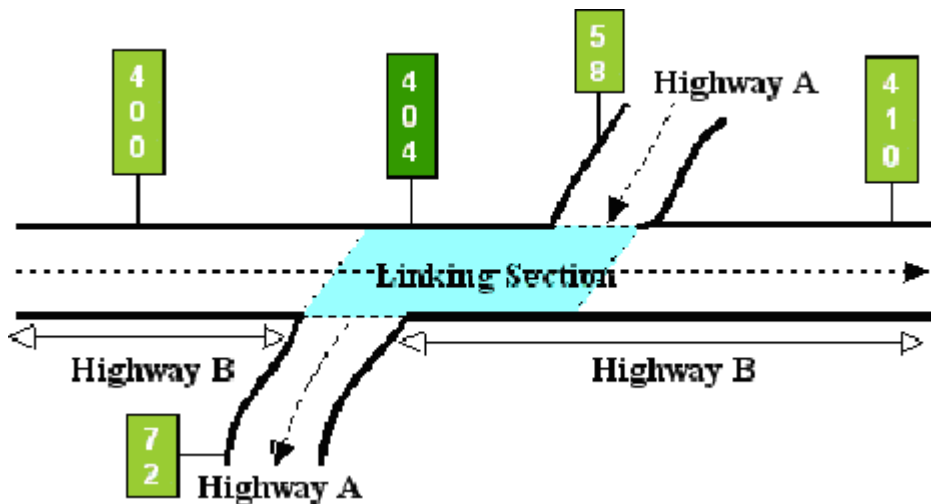
Figure 9-6.   Linking section of Highways A and B shaded.

EXAMPLE: In Figure 9-7, Highway A is the "interrupted route", entered as the Signed Highway. Highway B is the "continuous route", entered as the Link Signed Highway. The shaded area is the linked section for both routes:
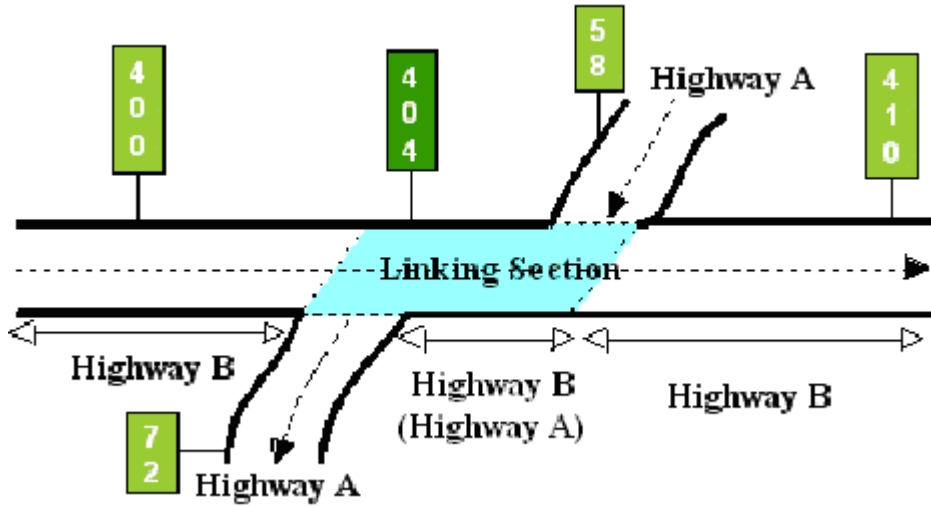
Figure 9-7.   Linking section of Highways B and A shaded.

Input—On-System Link

Follow these input instructions to add on-system link:

Add On-System Link

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 32I and press <E>; the Network Change Data screen appears	-
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement NOTE: **DO NOT** input the To Reference Marker group
3	Input remaining fields and press <F2>; a prompting message requests confirmation to add the link and displays the message "Transaction completed successfully"	◆ Link Type 22 ◆ **Continuous Route** ● Signed Highway System, Number, and Suffix ● From Reference Marker Number, (+) or (−) Sign, and Displacement ● To Reference Marker Number, (+) or (−) Sign, and Displacement ◆ Notation (optional)

Add On-System Link

Step	Action	Input
4	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	

System Response. While adding the new link, the TRM system automatically:

◆ Removes the gap record located in the TRM-Feature file for the interrupted route

◆ Increases the:

 ● mileage of the interrupted route by the length of the on-system segment

 ● distance from origin for all markers succeeding the new segment by the length of the new segment

 ● distance between markers for the closest succeeding marker by the length of the new segment

◆ Creates records in TRM for the begin and end points of the link.

Follow these input instructions to delete on-system link:

Delete On-System Link

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 31I and press <E>; the Network Change Data screen appears	-
2	Input <u>Location Key</u> fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement
3	Input remaining fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Link Type 22 ◆ **Continuous Route** ● Signed Highway System, Number, and Suffix ● From Reference Marker Number, (+) or (−) Sign, and Displacement ● To Reference Marker Number, (+) or (−) Sign, and Displacement

Delete On-System Link

Step	Action	Input
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted on-system links	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	

System Response. While deleting the on-system link, the TRM system automatically:

◆ Creates a gap record in the TRM-FEATURE file within the Signed Highway at the marker location of what was the beginning of the link

◆ Decreases the:

  ● mileage of the interrupted route by the length of the link segment

  ● distance from origin for all markers succeeding the new segment by the length of the new segment

  ● distance between markers for the closest succeeding marker by the length of the new segment

◆ Removes records in TRM for the begin and end points of the link for both routes.

Follow these input instructions to update on-system link:

Update On-System Link Segment

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 33I and press <E>; the Network Change Data screen appears and a prompt message requests the updated link's begin and end location points (From and To) location plus any other required fields the system needs to locate the feature record	**Delete and re-enter** the link if the Signed Highway fields, Link Signed Highway fields, or the Link Type Code is incorrect

Update On-System Link Segment

Step	Action	Input
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement

3	Input remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Link Data" appears	◆ Link Type 22
		◆ **Continuous Route**
		  ● Signed Highway System, Number, and Suffix
		  ● From Reference Marker Number, (+) or (−) Sign, Displacement
		  ● To Reference Marker Number, (+) or (−) Sign, and Displacement

4	Input requested fields and press <F2>; the system updates the link and the verification message "Transaction completed successfully" appears. The original request for the current link update displays for another update transaction	◆ Change Link Type to 21 (Concurrency) ◆ **and/or** Notation
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	

System Response. While updating the on-system link, the TRM system automatically updates the existing records in TRM with the modified values - either a new Link Type or Notation.

Section 4 — Off-System Link Segments

Off-System Link Defined

A highway designation that stops at its intersection with a given local road or street and resumes from another point on the same or different local road or street, with a driveable connection between the two points, creates an off-system link. Off-System links exist only at roadway gap locations on the interrupted route. Add, update, or delete linked route segments like other point data (because they are stored as point data):

◆   Mileage within the linked segment determines Distance From Origin and Distance Between Markers for the Signed Highway

◆   The system removes this mileage from the Signed Highway for Federal mileage reports

◆   If the Signed Highway fields, Link Signed Highway fields, or the Link Type Code is incorrect, delete and re-enter the link.

EXAMPLE: In Figure 9-8, Main Street interrupts Highway A; enter as the Signed Highway; no entry for the Link Signed Highway (the shaded area is the linked section.):
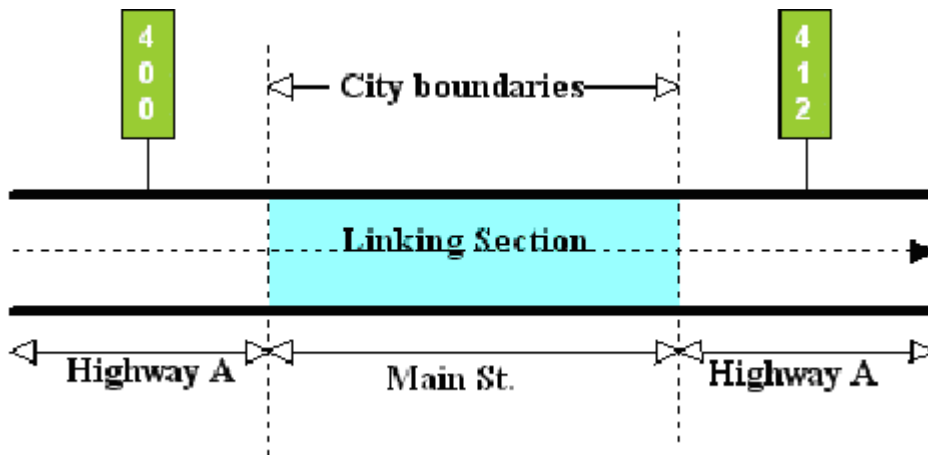
Figure 9-8.   Main St. linking segments of Highway A is an off-system link.

Input—Off-System Link

Follow these input instructions to add off-system link:

Add Off-System Link

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 32I and press <E>; the Network Change Data screen displays	
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, Displacement NOTE: **DO NOT** input the To Reference Marker group
3	Input remaining fields and press <F2>; a prompting message requests confirmation to add the links and displays the message "Transaction completed successfully"	NOTE: **DO NOT** input any fields for the Linked Signed Highway, or for the From or To Reference Marker fields. The off-system route is not state-maintained, has no designation, and no reference markers ◆ Link Type 23 ◆ Off-System length, in miles to three decimals ◆ Notation (optional)
4	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	

System Response. While adding the new link, the TRM system automatically:

◆ Removes the gap record located in the TRM-Feature file for the interrupted route

◆ Increases the:

- mileage of the interrupted route by the length of the off-system segment

- distance from origin for all markers succeeding the new segment by the length of the new segment

- distance between markers for the closest succeeding marker by the length of the new segment

◆ Creates records in TRM for the begin and end points of the link.

Follow these input instructions to delete off-system link:

Delete Off-System Link

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 31I and press <E>. **Result**: The Network Change Data screen appears	
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input remaining fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Link Type 23
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted off-system link segments	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	

System Response. While deleting the off-system link, the TRM system automatically:

◆ Creates a gap record in the TRM-FEATURE file within the Signed Highway at the marker location of what was the beginning of the link

◆ Decreases the:

- mileage of the interrupted route by the length of the link segment

- distance from origin for all markers succeeding the new segment by the length of the new segment

- distance between markers for the closest succeeding marker by the length of the new segment

◆ Removes records in TRM for the begin and end points of the link for both routes.

Follow these input instructions to update off-system link:

Update Off-System Link

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select **Update-Code** 33I and press <E>. **Result**: The Network Change Data screen appears and a prompt message requests the updated link's begin and end location points (From and To) plus any other required fields the system needs to locate the feature record	**Delete and re-enter** the link if the Signed Highway fields, Link Signed Highway fields, or the Link Type Code is incorrect
2	Input Location Key fields	◆ **Interrupted route** Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Link Data" appears	Link Type 23
4	Input updated fields and press <F2>; the system updates the link and the verification message "Transaction completed successfully" appears. The original request for the current link update displays for another update transaction	◆ Off-System Length ◆ **and/or** Notation
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> twice **(For instructions to log off the system, click this link)**	

System Response. While updating the off-system link, the TRM system updates the existing records in TRM with the modified values - either a new Off-System Link or Notation.

Chapter 10 — Pavement Data

Contents:

Section 1 — Key Points to Know

Pavement Data Defined

Pavement data consists of attributes describing the physical characteristics and measurements of the roadway. This chapter describes the pavement data attributes, the responsible offices, and TRM input instructions.

Offices of Responsibility

All of the pavement attributes are continuous length data class, but different roadbed classes and different Offices of Primary Responsibility (OPR) maintain them**.**

This table lists TPP's pavement responsibilities:

TPP Pavement Responsibilities

Attribute Name	**Roadbed** Class
Highway Design	MAINLANE CENTERLINE + FRONTAGE ROADS
Direction of Travel	CENTERLINE (CG)
ROW Width Minimum/Usual	CENTERLINE (CG)

This table lists districts' pavement responsibilities:

District Pavement Responsibilities

Attribute Name	**Roadbed** Class
Base Type	ROADBED-SPECIFIC
Curb Type Left/Right	ROADBED-SPECIFIC
Median Type/ Width	LEFT & RIGHT MAINLANES (NG)
Number of Thru Lanes	ROADBED-SPECIFIC
Roadbed Width	ROADBED-SPECIFIC
Shoulder Inside/Outside Type, Use, Width	ROADBED-SPECIFIC
Speed Limit Maximum/Minimum	ROADBED-SPECIFIC
Surface Type/Width	ROADBED-SPECIFIC

This table lists `Construction` Division's pavement responsibilities:

`Construction` Division Pavement Responsibilities

Attribute Name	**Roadbed** Class
Load Limit Axle, Gross, Tandem	ROADBED-SPECIFIC

Click this link for your district's TRM analyst.

Section 2 — Mainlane Centerline + Frontage Road Attributes

Highway Design Data

Highway Design, a general category of intended service for a given roadway segment, is the only Mainlane Centerline + Frontage Road pavement attribute:

Highway Design Values

First Character		Second Character	
0	One-Way Pair	A	With HOV lane(s)
1	One-Way	B	With Railway
2	Two-Way	C	With Toll Road
3	Boulevard (has a median)	Blank	No additional information
4	Expressway (has at-grade crossings)	–	–
5	Freeway (does not have at-grade crossings)	–	–

Input—Mainlane Centerline + Frontage Road Attributes

Follow these input instructions to update highway design values. Update several Pavement attributes in the same transaction if all attributes are continuous within the same From and To Marker limits and are the same Roadbed-Id:

Update Highway Design Value

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the District Length Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement (From and To marker limits cannot cross links or roadway gaps) ◆ Roadbed-Id: valid values are N, A, X, B, and Y

Update Highway Design Value

Step	Action	Input
3	Input Highway Design fields and press <F2>; the system TRM with the new design information and displays the verification message "Transaction completed successfully"	Highway Design Value
4	To input another Update-Code, press <F3> to exit back to the District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Section 3 — Centerline Attributes

Direction of Travel

Direction of travel indicates the overall direction of travel for the route, relative to the direction of the Reference Marker Number:

Direction of Travel Values

Value	Direction
1	South to North
2	North to South
3	West to East

ROW Width Data

Right of Way (ROW) Width Minimum is the minimum width, in feet, of the strip of land acquired for a highway, road, street, or other transportation purpose. Record ranges if over 0.20 mile in length. Width must be equal to or greater than the sum of all Roadbed Widths plus Median Width:
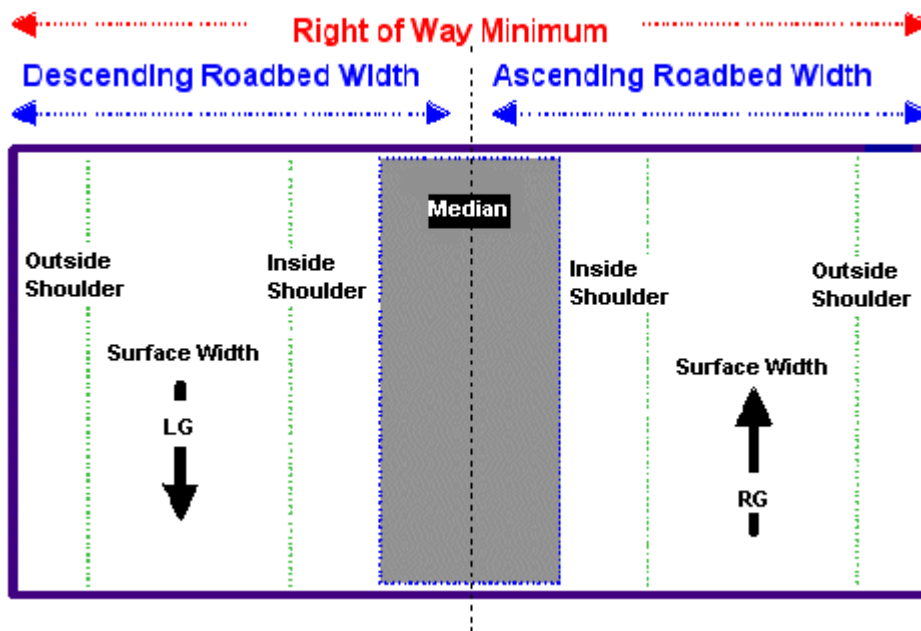
Figure 10-1. Minimum Right of Way width.

Right of Way Width Usual is the usual width, in feet, of the strip of land acquired for a highway, road, street, or other transportation purpose. Record ranges if over 0.20 mile in length. Width must be equal to or greater than the sum of all Roadbed Widths plus Median Width. ROW Width Usual must be greater than or equal to ROW Width Minimum.

```
Input ROW Width Usual and Minimum separately or together.  If input
separately, the system compares the input attribute to the attri-
bute stored in TRM.
```

Input—Centerline Attributes

Follow these input instructions to update centerline attribute values. Update several Pavement attributes in the same transaction if all attributes are continuous within the same From and To Marker limits and are the same Roadbed-Id:

Update Centerline Attribute Value

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance screen, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu/District Length Data screen displays (District users, skip to step 5)	-
2	Input X by submenu choice ROW Width and press <E>; the Highway Design Data Screen displays	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement NOTE: From and To marker limits cannot cross links or roadway gaps! ◆ Roadbed-Id: valid values are CG or blank
4	Input ROW fields and press <F2>; the system updates the record and the verification message "Transaction completed successfully" appears. The original request for the current centerline attributes to update displays for another update transaction	◆ ROW Width Minimum in feet ◆ ROW Width Usual in feet Valid values: 0001 to 9999

Update Centerline Attribute Value

Step	Action	Input
5	To select another Length or Point Data choice, press <F3> to exit back to the TPP Maintenance Submenu or District Database Maintenance Menu To enter another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu/ TRM Main Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Section 4 — Left/Right Mainlane Attributes

Median Width and Type Data

Median Width and Median Type are the two left and right mainlane pavement attributes. Due to roadbed classification constraints, you cannot input Median Width at the same time as any other pavement attributes. The system compares the value of the Median Width input to the other pavement width attributes stored in TRM to ensure that all meet the pavement width requirements:

Definitions

Median—The portion of a divided highway separating opposing traffic.

Median Type Value—Description of the non-driveable separation between the left and right mainlane roadbeds.

NOTE: If curbs and a positive barrier are in place, then positive barrier (value 2) has precedence:

Median Type Values

TRM Values	Median Types	HPMS Equivalent
1	Curbed	1
2	Positive Barrier	2
3	Unprotected	3
4	One-way pair	4

Median Width—The measurement of the width of the median not including the shoulder or any driveable area outside the median:
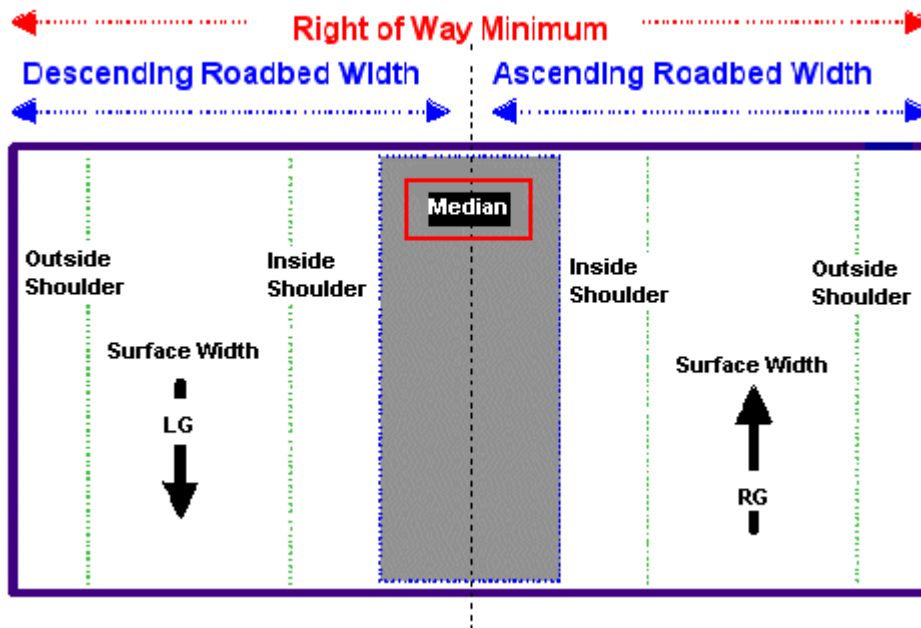
Figure 10-2. Median Width.

Input—Left/Right Mainlane Attributes

Follow these input instructions to update median attribute values:

Update Median Attribute Value

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the District Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Maintenance Submenu screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement NOTE: From and To marker limits cannot cross links or roadway gaps! ◆ Roadbed-Id: value must be NG

Update Median Attribute Value

Step	Action	Input
3	Input **Median** fields and press <F2>; the system updates TRM with the new median information and displays the verification message "Transaction completed successfully"	◆ Median Width in feet • If Median Type is 1, 2, or 3, Median Width is 001 to 999 • If Median Type is 4, Median Width is 000 ◆ Median <u>Type</u> (If more than one Median Type exists within a given range, select the sequentially lower type. **Example**: If types 2 and 3 exist, input 2)
4	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Section 5 — Roadbed-Specific Attributes

Other Pavement Data

The remaining pavement attributes are roadbed-specific, divided by responsibility of the District Offices or `Construction` Division:

Roadbed-Specific Attributes

District Input	District Input
Base Type	Speed Limit Maximum
Curb Type Left/Right	Speed Limit Minimum
Direction of Travel	Surface Width
Number of Thru Lanes	Surface Type
Roadbed Width	`Construction` Division Input
Shoulder Type Inside/Outside	Load Limit Axle
Shoulder Use Inside/Outside	Load Limit Gross
Shoulder Width `Inside/Outside`	Load Limit Tandem

IMPORTANT:

◆ Roadbed-specific attributes cannot cross highway design changes, i.e., changes from a single roadbed to a boulevard then back to a single roadbed

◆ Due to Roadbed Classification constraints, you cannot input the roadbed-specific pavement attributes at the same time as the centerline or mainlane centerline pavement attributes

◆ The system compares the value of the roadbed-specific attributes to the values stored in TRM for the centerline and mainlane centerline attributes to ensure that all meet the pavement width requirements.

Definitions

Base Type Values—Material used as the base layer of the pavement structure for a roadbed segment:

Base Type Values

Value	Base Type
1	Roadbed soil
2	Flex Base (Granular)

Base Type Values

Value	Base Type
3	Stabilized Earth or Flex (Granular)
8	Asphalt Base (Hot mix, asphaltic concrete)
9	Concrete

Curb—A vertical or sloping member along the edge of a pavement or shoulder forming part of a gutter, strengthening or protecting the edge and clearly defining the edge to vehicle drivers.

Curb Type Left/Right Values—A description of the type of curb located on the left or the right of a given roadbed. Left or right is determined by travelling in ascending marker direction:

Curb Type Values

Value	Curb Types
0	None
1	Curb (surface drainage only)
2	Curb (sub-surface only)
3	Overlaid curb (resurfaced so the curb no longer functions as a curb)
4	Overlaid curb (resurfaced so the curb no longer functions as a curb with/without opening to the sub-surface drainage)

Load Limit:

◆ [Load Limit Axle](#)

◆ Gross—Posted legal maximum load carried by a vehicle on a roadbed segment.

◆ Tandem—Posted legal maximum load carried by two or more axles in tandem on a roadbed segment.

Number of Thru Lanes—Number of thru driving lanes existing on a roadbed segment, excluding any special lanes such as turn lanes, acceleration/deceleration lanes, or passing/climbing lanes.

Shoulder—Portion of the roadway adjacent to the traveled way (on either side) for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface. Illustration:
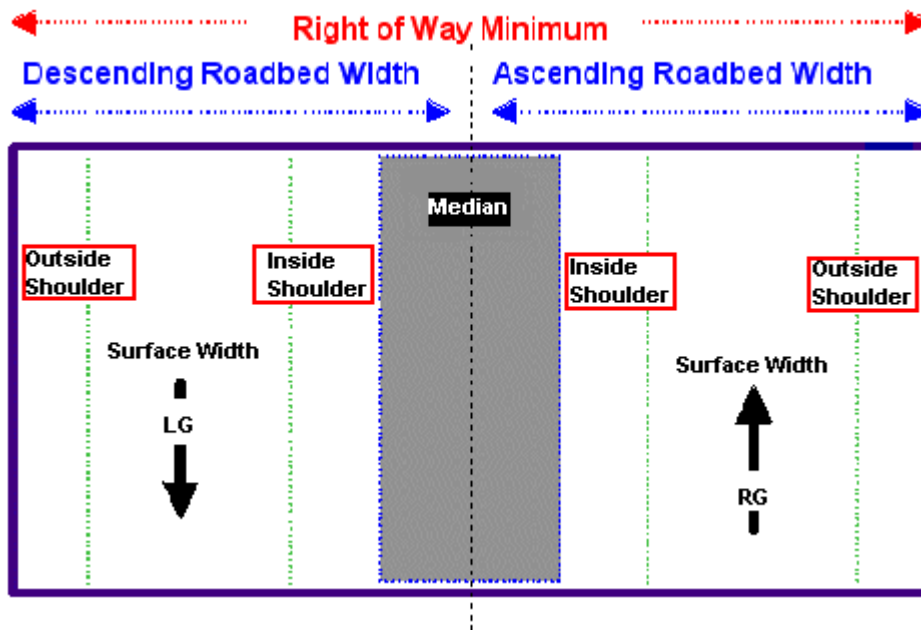
Figure 10-3. `Inside/outside shoulders.`

Shoulder Type Inside/Outside Values—Indicates the type of materials that compose the `inside` or `outside` shoulder:

Shoulder Type Values

TRM Values	Shoulder Type	HPMS Equivalent Values
1	None (no shoulders exist)	1
2	Surfaced with bituminous material	2
3	Surfaced with concrete (not tied to mainlane pavement)	2
4	Surfaced with concrete (tied to mainlane pavement)	2
5	Stabilized-surfaced with flex base, etc.	3
6	Combination-surface/stabilized or stabilized/earth	4
7	Earth-natural earth with or without turf	5

Shoulder Use Inside/Outside Values—Indicates shoulder use on the `inside or outside` of the roadbed segment:

Shoulder Use Values

Values	Shoulder Use
00	No designated use

Shoulder Use Values

Values	Shoulder Use
01	Diagonal parking
02	Parallel parking
03	Bicycle
04	Bus
05	No parking (emergency only)
06	No parking (peak hours only)
07	Other

Shoulder Width Inside/Outside—The width, in feet, of the shoulder on the left or right side of a roadbed segment:
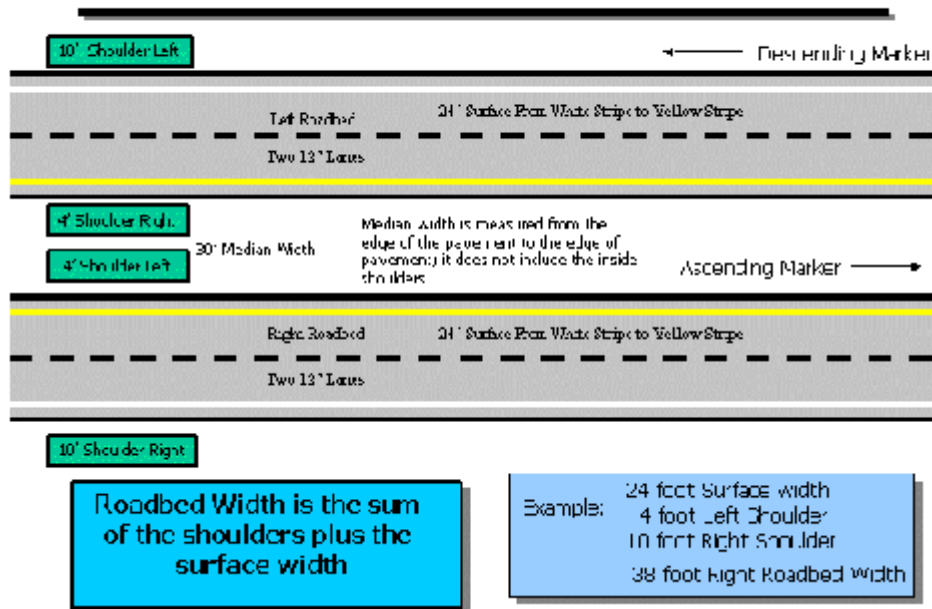
Figure 10-4. Green boxes indicate 2-10' `outside shoulders` *and 2-4'* `inside shoulders.`

Speed Limit Minimum/Maximum—Posted legal minimum/maximum speed limit for vehicles on a roadbed segment, up to 75 miles per hour (mph).

Surface Type Values—Indicates the material used as the surface layer of the roadbed segment pavement. Surface layer covers the driving lane portion of the roadbed:

Surface Type Values

TRM Values	Surface Type	HPMS Equivalent Values
20	Unimproved Road	1
30	Graded and Drained	1
40	Soil, Gravel or Stone	1
51	Bituminous Surface Treated	2
52	Mixed Bituminous-Low Type, less than 7" base and surface	3
53	Bituminous Penetration, less than 7" base and surface	3
61	High Flexible-mixed, bituminous 7" base and surface	4
62	Flexible Over Rigid, 7" base and surface	6
71	High Rigid-plain Jointed Concrete Pavement	5
72	High Rigid-reinforced Jointed Concrete Pavement	5
73	High Rigid-continuous Reinforced Concrete Pavement	5
74	Rigid Over Rigid-bonded Concrete Over Concrete	5
75	Rigid Over Rigid-unbonded Concrete Over Concrete	5
76	Rigid Over Flexible-concrete Over Bituminous	5
80	Other (Brick, Block, etc)	4

Surface Width—Measurement, in feet, of the width of the portion of a physically separate roadbed used as thru driving lanes. Includes any center turn lanes and/or flush paved medians

Input—Roadbed-Specific Attributes

Districts, follow these input instructions to update roadbed-specific attribute values. Update several Pavement attributes in the same transaction provided that all attributes are continuous within the same From and To Marker limits and are the same Roadbed-Id:

Update Roadbed-Specific Attribute Values

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the District Database Maintenance Menu, select Update-Code 13H and press <E>; the District Length Data Update screen appears	-

Update Roadbed-Specific Attribute Values

Step	Action	Input
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement NOTE: From and To marker limits cannot cross links or roadway gaps! ◆ Roadbed-Id: valid values are L, R, M, S, P, T, A, B, X, or Y
3	Enter remaining fields with updated information and press \<F2\>; the system updates the attribute and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Speed Limit Maximum, Minimum—Valid values: 01 to 75 (Speed Limit Maximum must be \> or = to Speed Limit Minimum) ◆ Roadbed Width in feet (Each Roadbed-Width + Median Width must be \< or = to its Right of Way Width) ◆ Base Type ◆ Surface Type, Width—valid values: 000 to 999 in feet (Surface Width + each Shoulder Width must be \< or = to its Roadbed Width) ◆ Number of Thru Lanes—Valid values: 01 to 10 per roadbed (Number Thru Lanes does not include left/right turn lanes) ◆ Direction of Travel ◆ Median Width in feet (Median Width does not include the widths of inside shoulders; input shoulders separately) ◆ Shoulder Inside/Outside Type, Use, Width—valid values: 01 to 99 in feet (Input all left/right shoulder attributes together) ◆ Curb Type Left/Right
4	To enter another Update-Code, press \<F3\> once to exit back to the District Database Maintenance Menu. To exit back to the TRM Main Menu, press \<F10\> (For instructions to log off the system, click this link)	-

`Construction` Division, follow these input instructions to update load limit values. Update several Pavement attributes in the same transaction provided that all attributes are continuous within the same From and To Marker limits and are the same Roadbed-Id:

Update Load Limit Values

Step	Action	Input
1	(For instructions to log onto the system, click this [link](#)) From the TRM Main Menu, select C, `CST` Database Maintenance and press <E>; the Load Limit Data Screen appears	-
2	Input [Location Key](#) fields	◆ Signed Highway [System](#), [Number, and Suffix](#) ◆ From Reference Marker [Number](#) and [Suffix](#), (+) or (−) [Sign](#), and [Displacement](#) ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement NOTE: From and To marker limits cannot cross links or roadway gaps! ◆ [Roadbed](#)-Id: valid values are K, L, R, M, S, P, T, A, B, X, or Y
3	Enter Load Limit fields with updated information and press <F2>; the system updates the record. A verification requests the current location of another attribute to update plus any required fields	◆ Load Limit Gross ◆ [Load Limit Axle](#) ◆ Load Limit Tandem Valid values: 000000 to 999999
4	To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this [link](#))	-

Chapter 11 — Features

Contents:

Section 1 — Key Points to Know

Feature Data Defined

Feature data consists of roadway features created almost exclusively for display on the Automated Roadway Inventory Diagram (ARI). This chapter describes the features included in TRM and gives detailed instructions for adding, deleting, or updating features and their attributes.

TRM Features/Responsible Office Table

The TRM Features Table lists each roadway feature; information provided includes:

◆   Features within each selection

◆   Valid Roadbed-IDS.

TRM Feature maintenance for which TPP is responsible:

TPP TRM Features

Feature Category	Feature Includes:	Valid **Roadbeds**
Boundary Data	◆ Begin/End ◆ Type ◆ Skew; also Figure 10-1 and Figure 10-2 in the next subsection ◆ Value ◆ Notation	C, N, X, Y, A, B
Feature Data	◆ Railroad Crossings ◆ Structures	K, R, L, M, S, T, P, X, Y, A, B, N

TRM Feature maintenance for which TPP and the districts are responsible:

TPP and District TRM Features

Feature Category	Feature Includes:	Valid **Roadbeds**
Feature Data	◆ Ferries ◆ Roadside Features ◆ Tunnels	K, R, L, M, S, T, P, X, Y, A, B, N

TRM Feature maintenance for which districts are responsible:

District TRM Features

Feature Category	Feature Includes:	Valid **Roadbeds**
Feature Data	◆ **Cattle** Guards ◆ **Connectors** (NO Roadbed 'N') ◆ **Culverts** ◆ **Gates** ◆ **On**- and **Off**-System Intersecting Roadways ◆ **Overhead** Signs ◆ **Pedestrian** Passageways ◆ **Pipelines** ◆ **Ramps** (NO Roadbed 'N') ◆ **Streams** ◆ **Telephone** Lines ◆ **Transmission** Lines ◆ **Turnarounds** ◆ **Water** Lines ◆ **Other** Features ◆ Other **Intersecting** Features	K, R, L, M, S, T, P, X, Y, A, B, N

Click this link for your district's **TRM analyst.**

Definitions

Feature Skew—Identifies the Quadrant, Type of intersection, and Angle from perpendicular of an intersecting roadway or feature; format is QIAA:

◆ Quadrant (Quad)

Feature Skew Quadrant

Value	Quadrant
1	Right Forward
2	Right Back
3	Left Back
4	Left Forward

◆ Intersection Type

Feature Skew Intersection Type

Value	Type of intersection
0	Stops at roadbed/centerline
1	Continues across roadbed/centerline

◆ Angle of intersecting feature (see Figure 11-1 below)

Feature Skew Intersecting Feature Angle

◆ Created with imaginary perpendicular line from the intersecting feature.
◆ Input values are: 00 - 90 (degree increments)

Illustration:
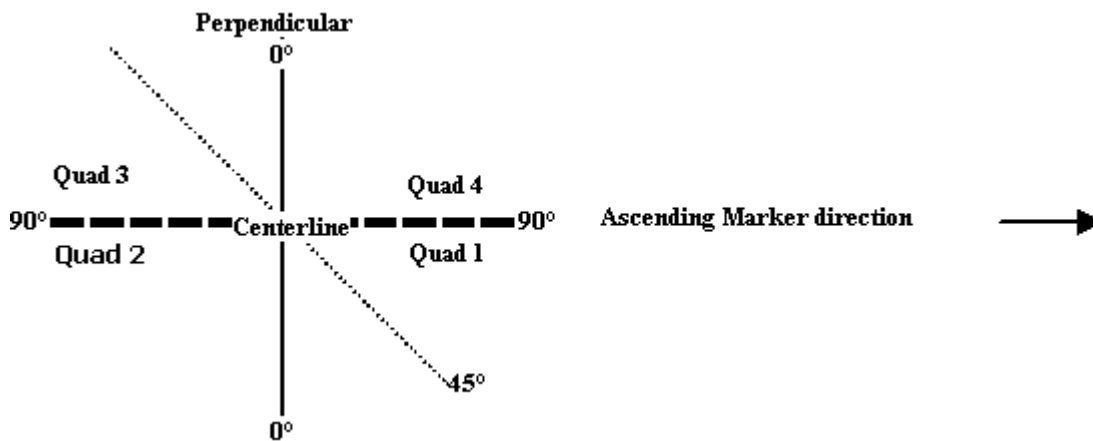
Figure 11-1. Quad-Intersection Type-Skew Angle: 3-1-45

Find the Roadway Feature Skew by placing an imaginary perpendicular line at the centerline point of the intersection and matching the quad with the angle of intersection based on ascending reference marker direction; this creates four imaginary quadrants, or "quads".

Give the quad in which the intersecting feature is located a value (in Figure 11-2, the red line represents the intersecting feature at centerline). Perpendicular features that lie between quads are input in either one:

Code KG: 2 1 00

Code KG: 3 0 50

Code KG: 1 0 45

Code RG: 2 0 00

Code RG: 4 0 00

Code NG: 2 1 75
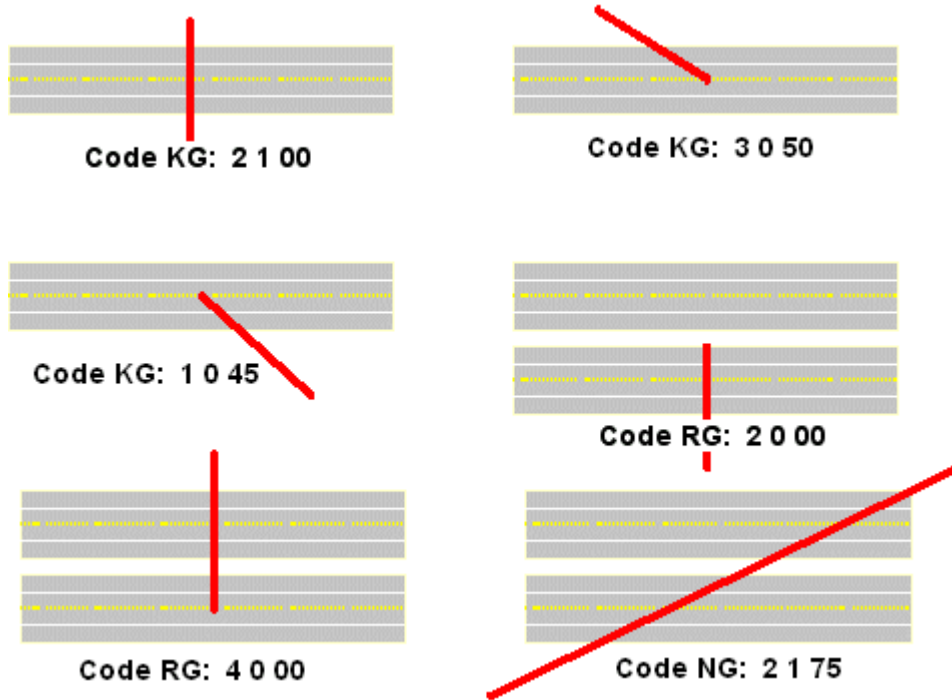
Figure 11-2. Examples of quads-intersection types-skew angles.

Intersecting Feature Type Values—Distinguishes between different intersecting features:

Intersecting Features Type Values

Value	Feature	Value	Feature
11	On-System Mainlane	73	Culvert Flowing Left
21	Local Road	74	Culvert Flowing Right
31	On-System Frontage Road	75	Culvert Flowing Both Directions
41	Federal Lands Road	80	Pipeline
51	State Lands Road	81	Transmission Line
61	On-System Toll Road Frontage Roads	82	Telephone Line
65	Crossover	83	Water Line
66	Turnaround Backward	90	Pedestrian Passageway
67	Turnaround Forward	91	Cattle Guard
70	Railroad Crossing	92	Gate
71	Stream Flowing Left	93	Overhead Sign
72	Stream Flowing Right	99	Other Intersecting Feature

EXAMPLE: A ramp is a roadway feature with Roadway Feature value 32. A crossover is an intersecting roadway feature with Roadway Feature value 33 and Intersecting Feature Type value 65. The Roadway Feature value for all intersecting roadway features is 33.

Intersection Type Values—Distinguishes the grade of the intersecting feature:

Intersection Type Values

Value	Type
A	At-grade intersection
B	Grade separated intersection (no ramps or connectors)
C	Interchange (at least one ramp and/or connectors)
D	Channelized intersection

Roadway Feature Values—Distinguishes between different features:

Roadway Feature Values

Value	Feature
24	Gap (System Generated)
25	Ferry
31	Connector
32	Ramp
33	Intersection
34	Structure
35	Boundary
36	Tunnel
41	Roadside feature
99	Other feature (not intersecting)

Roadway Grade Values—Horizontal Level of roadbed:

Roadway Feature Grade Values

Value	Feature Grade
U	Feature is Up above grade
G	Feature is at-Grade

Roadway Feature Grade Values

Value	Feature Grade
D	Feature is Down below grade

General Feature Constraints

Apply these constraints when adding, updating, or deleting roadway features:

Roadway Feature Constraints

Action	Description
Add, update, or delete	All roadway features as point data
Do not update	If the Signed Highway is incorrect; delete and re-enter the feature record
Update either	The feature's location point **OR** the feature's data attributes. If updating both, input two transactions

Section 2 — Intersecting Roadways

On-System and Off-System Intersections Defined

On-system intersecting roadways consist of an on-system roadway (the Signed Highway) intersecting with another on-system roadway (the Intersecting Signed Highway). TxDOT maintains both of the roadways. Off-system intersecting roadways consist of an on-system roadway (the Signed Highway) intersecting with an off-system roadway.

Definitions

Channelized Intersection—At-grade single roadbed intersection in which traffic is directed into definite paths by traffic control devices, such as islands, turn lanes, curbs, painted asphalt, or concrete medians; not considered to be a change in the highway design (Roadway Feature value 33, Intersection Type D).

Complement Record—Companion record to every on-system intersection record. Both records must reside in TRM in order for the ARI diagram to display the route intersection correctly.

EXAMPLE: The complement record of SH 100 intersecting with FM 2929 is FM 2929 intersecting with SH 100.

Intersecting Reference Marker Group—Provides the exact reference marker location of the intersection from the perspective of the Intersecting Signed Highway; consists of the Reference Marker Number + Reference Marker Suffix + Reference Marker Displacement:

◆   Number—Official number posted on the Intersecting Signed Highway route. Used together with the other components of the Intersecting Reference Marker Group to locate the exact point of roadway intersection. Determine a valid value by the function

◆   Suffix—Posted suffix character, if any, appended to the intersecting reference marker number on the intersecting signed highway route. Used together with the other components of the intersecting reference marker group to locate the intersection of this route with other routes stored in TRM.

◆   Sign—Symbol indicating the ascending or descending direction of an on-system route intersection from the posted Intersecting Reference Marker Number + Suffix.

◆   Displacement—Distance in miles from the Intersecting Reference Marker + Suffix on the Intersecting Signed Highway route to the intersection with another on-system

Intersecting Roadbed-Id—Identifies which roadbed intersects with another on-system roadway. First character identifies each physically separate roadbed and the second character identifies the elevation of the roadbed. Determine valid values by the function.

Intersecting Signed Highway System—Represents the posted designation approved by the Texas Transportation Commission for an intersecting segment of highway:

◆   Highway—Consists of the Intersecting Signed Highway System + Intersecting Signed Highway Number + Intersecting Signed Highway Suffix

◆   Number—Identification number associated with the Intersecting Signed Highway System

◆   Suffix—Character appended to the Intersecting Signed Highway Number to further partition the number or, in the case of business routes, to indicate geographical routing. Determine valid values from the Intersecting Signed Highway System

Intersection Type (Int Type)—Indicates the type of intersection or interchange.

On-System Intersection—(Roadway Feature value 33) An on-system roadway (the Signed Highway) intersecting with another on-system roadway (the Intersecting Signed Highway). Off-system intersecting route has no Intersecting Signed Highway nor Intersecting Reference Marker location associated with it:

Frontage Road—(Intersecting Feature Type 31) Any frontage road of any roadway designated by the Texas Transportation Commission, listed in the Highway Systems values; Roadbed-Id's A, B, X, and Y.

Mainlane—(Intersecting Feature Type 11) Any main driving lane of any roadway designated by the Texas Transportation Commission, listed in the Highway Systems values; Roadbed-Id's K, l, r, M, P, S, T, and N.

Roadway—Any roadway designated by the Texas Transportation Commission, listed in the Highway Systems values; Roadbed-Id's A, B, C, k, l, m, P, r, s, t, N, X, and Y.

Input—On-System Intersecting Roadways

Input intersecting roadways according to these two tables for complete TRM documentation.
Example: Highway B contains both left and right frontage roads and Highway A completely crosses Highway B; input three transactions:

Each Roadbed Intersection

Step	Input
1	Highway A crossing the Highway B left frontage roadbed (X)
2	Highway A crossing the Highway B mainlane roadbeds (L + R = N)
3	Highway A crossing the Highway B right frontage roadbed (A)

Then continuing the above example input three more transactions:

Complement Records for Each Intersection

Step	Input
1	Highway B left frontage road crossing Highway A
2	Highway B mainlane roadbeds crossing Highway A
3	Highway B right frontage road crossing Highway A

Channelized Intersections are the only exception to this rule. These special intersections have only a Signed Highway, not an Intersecting Signed Highway.
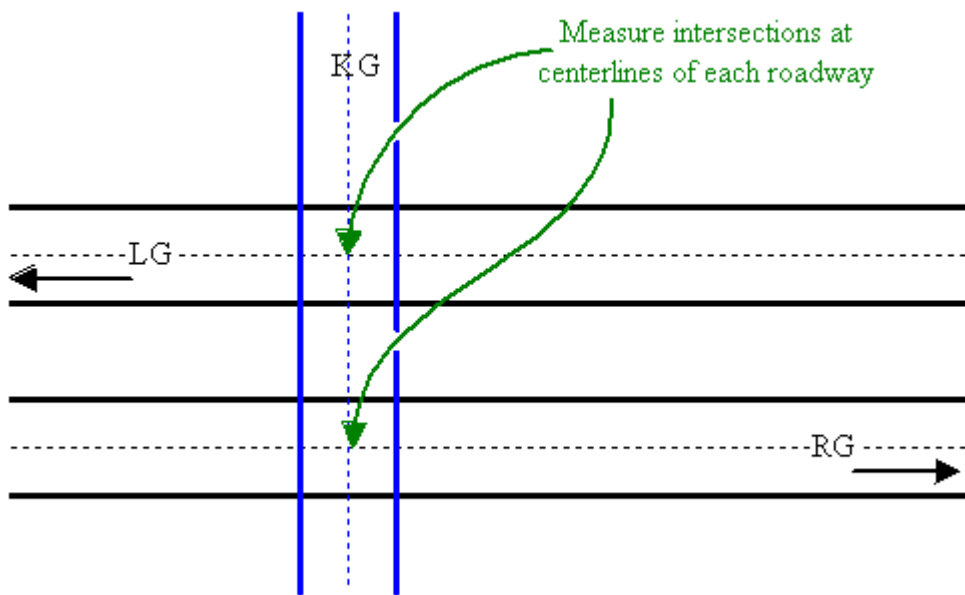
Figure 11-3. On-system intersection. Remember to input the complements!

Follow these input instructions to add intersecting roadway:

Add On-System Intersection

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 22H and press <E>; the Point Data screen appears	-
2	Enter Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N

Add On-System Intersection

Step	Action	Input
3	Enter Feature Data fields and press <F2>; the system updates TRM with the new on-system intersection data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade ● If Grade = U, Int Type = B and input Structure Number ● If Grade = G, Int Type must = A or D ● If Grade = D, Int Type must = B ◆ Feature Begin/End ◆ Feature Skew Quad-Type-Angle ◆ Structure Number ● If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4 ● If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes ◆ Intersecting Signed Highway System, Number, and Suffix ◆ Intersecting Reference Marker Number and Suffix ◆ (+) or (-) Intersecting Reference Marker Sign ◆ Intersecting Reference Marker Displacement ◆ Intersecting Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N ◆ Intersecting Feature Type ● If Int Feature Type = 11, Int Roadbed-Id must = K, R, L, M, S, T, P, or N ● If Int Feature Type = 31, Int Roadbed-Id must = A, B, X, or Y ◆ Intersection Type--If Int Type = D ● Input Begin/End ● Grade = G ● Roadbed-Id = K ● Int Signed Highway, Int Reference Marker, and Int Roadbed-Id do not apply ◆ Notation (optional)
4	To enter other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step To enter another Update-Code, press <F3> to exit back to the TPP/District Database Mainte-nance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to delete intersecting roadway:

Delete On-System Intersection

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Mainte-nance screen, select Update-Code 21H and press <E>; the Point Data screen appears	-
2	Input Location Key fields NOTE: The system requires only one delete transaction to delete both the intersec-tion and its complement	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature value 33 ◆ Feature Grade ◆ Feature Skew Quad-Type-Angle ◆ Int Feature Type
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted On-System Intersecting Roadways	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP/District Database Mainte-nance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update intersecting roadway location:

Update On-System Intersection Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Location and press <E>; a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-

Update On-System Intersection Location

Step	Action	Input
3	Input Location Key fields; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> ◆ (For instructions to log off the system, click this link)	-

Follow these input instructions to update intersecting roadway attributes:

Update On-System Intersection Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Elements; a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature value ◆ Feature Grade ◆ Feature Skew Quad-Type-Angle ◆ Int Feature Type

Update On-System Intersection Attributes

Step	Action	Input
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Grade ● If Grade = U, Int Type = B and input Structure Number ● If Grade = G, Int Type must = A or D ● If Grade = D, Int Type must = B ◆ Feature Skew Quad-Type-Angle ◆ Structure Number ● If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4 ● If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes ◆ Intersecting Signed Highway System, Number, and Suffix ◆ Intersecting Ref Marker Number and Suffix ◆ (+) or (–) Intersecting Ref Marker Sign ◆ Intersecting Ref Marker Displacement ◆ Int Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N ◆ Intersection Type--If Int Type = D: ● Input Begin/End ● Grade = G ● Roadbed-Id = K ● Int Signed Highway, Int Reference Marker, and Int Roadbed-Id do not apply ◆ Notation (optional)
6	To select Update Attribute Location, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Off-System Intersecting Roadways

Because On-System Intersecting roadways intersect with:

◆ Local roads (i.e., county roads, city streets)

◆ Federal lands roads (i.e., Federal parks)

◆   State lands roads (i.e., State parks)

◆   Toll Roads (open to traffic for a fee),

do not input the Intersecting Signed Highway and Intersecting Reference Marker fields. TxDOT
maintains only the Signed Highway:
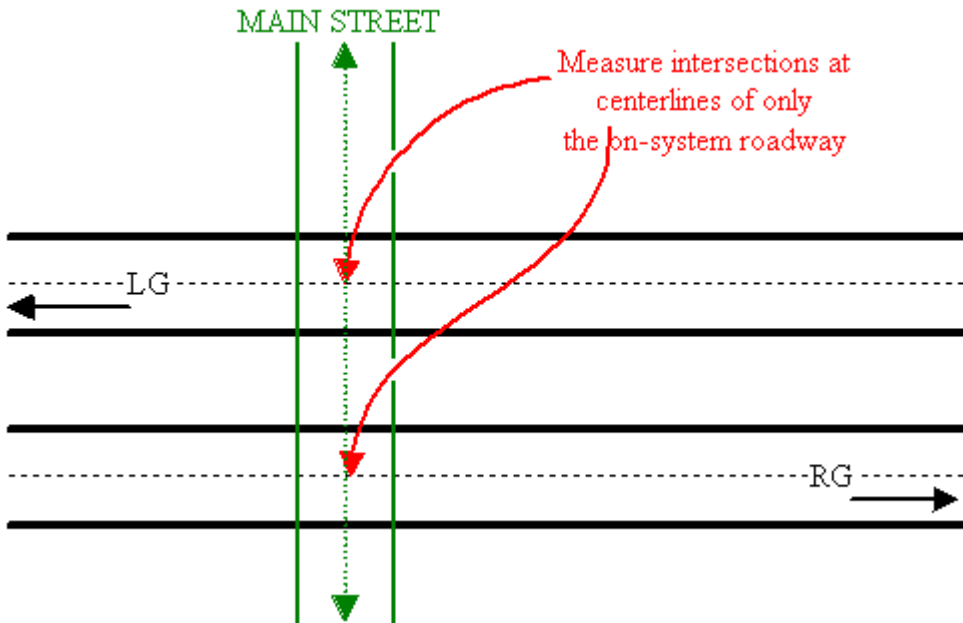
Figure 11-4. No complements exist in off-system intersections.

Input—Off-System Intersections

Follow these input instructions to add off-system intersection:

Add Off-System Intersection

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 22H and press <E>; the Point Data screen appears	-
2	Enter Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N

Add Off-System Intersection

Step	Action	Input
3	Enter Feature Data fields and press <F2>; the system updates TRM with the new off-system intersection data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 33 ◆ Feature <u>Grade</u> ● If Grade = U, Int Type must = B; input Structure Number ● If Grade = G, Int Type must = A ● If Grade = D, Int Type must = B ◆ Feature Begin/End ◆ Feature <u>Skew</u> Quad-Type-Angle ◆ <u>Structure</u> Number ● If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4 ● If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes ◆ Intersecting Feature <u>Type</u>—Valid codes are 21, 41, 51, 61 ◆ <u>Intersection</u> Type: If Int Type = D ● Input Roadway Feature Begin/End ● Roadway Feature Grade must = G ● Roadbed-Id must = K ◆ Notation (optional)
4	To enter other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step To enter another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete off-system intersection:

Delete Off-System Intersection

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 21H and press <E>. **Result**: The Point Data screen appears	-

Delete Off-System Intersection

Step	Action	Input
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature value ◆ Feature Grade ◆ Feature Skew Quad-Type-Angle ◆ Int Feature Type
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted Off-System Intersecting Roadways	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update off-system intersection location:

Update Off-System Intersection Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Location and press <E>; a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id

Update Off-System Intersection Location

Step	Action	Input
4	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update off-system intersection attributes:

Update Off-System Intersection Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Elements and press <E>; a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature value ◆ Feature Grade ◆ Feature Skew Quad-Type-Angle ◆ Int Feature Type

Update Off-System Intersection Attributes

Step	Action	Input
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Grade ● If update Grade to = U, Int Type must = B; input Structure Number ● If Grade = G, Int Type must = A ● If update Grade to = D, Int Type must = B ◆ Feature Skew Quad-Type-Angle ◆ Structure Number ● If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4 ● If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes ◆ Intersection Type: If Int Type = D ● Input Feature Begin/End ● Feature Grade must = G ◆ Roadbed-Id must = K ◆ Notation (optional)
6	To select Update Attribute Location, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Section 3 — TPP Feature Input Instructions

About This Section

The features listed in this section include definitions, descriptions, and input instructions of features for which TPP is solely responsible.

Boundaries

Boundaries are controlling entities, such as districts, counties, or cities, that act as limiters for road segments:
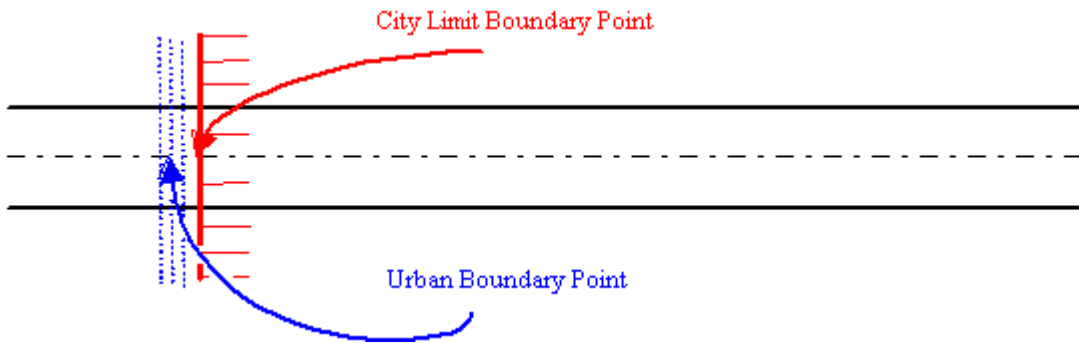
Figure 11-5. Measure boundaries at centerline.

Boundary Begin/End (Roadway Feature value 35) identifies the beginning or ending point of boundaries on a roadway segment: B (beginning of the boundary) or E (ending of the boundary).

Boundary Type values identify the type of controlling entity responsible for a given route segment:

Boundary Type Values

Value	Type
A	State
B	District
C	County
D	City
E	Urban (FIPS Urban Area Number)
F	State Park
G	State Forest
H	Other State Reservations

Boundary Type Values

Value	Type
I	Other State Agencies
J	Other Federal Agencies
K	Bureau of Indian Affairs
L	US Forest Service
M	National Park Service
O	Military Reservation/Corps of Engineers
blank	No Boundary

Boundary Values is a Length data attribute associated with a given Boundary Type; input for Boundary Types B thru E:

Boundary Values

If Boundary Type is:	Then Boundary value is the:
B	District Id number
C	County Number
D	City Number
E	FIPS Urban Area Number

Figure 11-6. City limit.

Figure 11-7. County line.

Follow these input instructions to add boundaries:

Add Boundaries

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 22H and press <E>; the Point Data screen appears	**Do not** overlap boundary points of the same type, i.e. district boundaries crossing into other districts
2	Input Location Key **fields**	NOTE: Input the begin and end points separately; a given highway may not be contained within an entire controlling entity ◆ Signed Highway System, Number, and Suffix ◆ From/To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are N, X, Y, A, B, or C

Add Boundaries

Step	Action	Input
3	Input Feature Data fields and press <F2>; the system updates TRM with the new boundary data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 35 ● 'B' if beginning of controlling entity ● or 'E' if the ending of controlling entity ◆ Feature <u>Skew</u> Quad-Type 1-Angle ◆ Boundary <u>Type</u> ● Boundary Types A, B, and C = Rdbd-Id C ● Boundary Types D thru O = Combination Main-lane Roadbeds + Frontage Roadbeds (CMR+F) ◆ Boundary <u>Value</u> ● Required for Boundary Types B, C, D, or E ● If Boundary value has fewer than five characters, do not "zero-pad" field; input only the appropriate characters and leave the rest of the field blank. **Example**: Input District 15 as 15_ _ _, not 0 0 0 1 5 ◆ Notation (optional)
4	To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete boundaries:

Delete Boundaries

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 21H and press <E>; the Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id

Delete Boundaries

Step	Action	Input
3	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature value ◆ B/E ◆ Boundary Type ◆ Boundary value (when applicable)
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted boundaries	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link**)**	-

Follow these input instructions to update boundary location:

Update Boundaries Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 23H and press <E>; the Update Selection Menu appears	**Do not** overlap boundary points of the same type, i.e. district boundaries crossing into other districts
2	Input an X by Update Attribute Location and press <E>; the Point Data screen appears and a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement

Update Boundaries Location

Step	Action	Input
5	To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update boundary attributes:

Update Boundaries Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 23H and press <E>; the Update Selection Menu appears	**Do not** overlap boundary points of the same type, i.e. district boundaries crossing into other districts
2	Input an X by Update Attribute Elements and press <E>; a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature value ◆ B/E ◆ Boundary Type ◆ Boundary value (when applicable)
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Boundary Value ◆ Feature Skew Quad, Angle ◆ Notation (optional)

Update Boundaries Attributes

Step	Action	Input
6	To select Update Attribute Location, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Railroad Crossings

Railroad Crossings are locations on the roadway at which train tracks cross the roadway either at grade (see Figure 11-9), above the roadway, or below the roadway.

Railroad Number is a unique identification number assigned to each individual at-grade railroad crossing by either the owning railroad or by TPP:
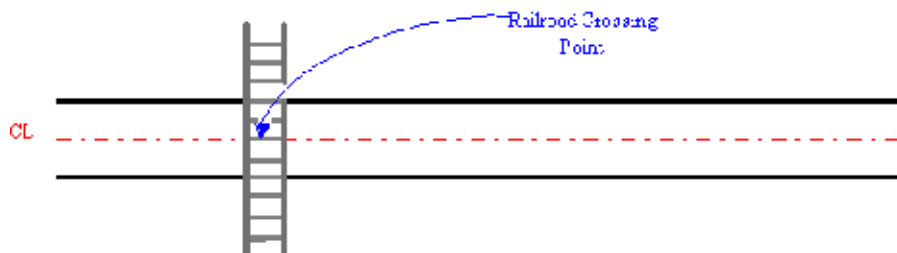
Figure 11-8. Measure crossing at centerline.

Figure 11-9.   At-grade railroad crossing.

Follow these input instructions to add railroad crossings:

Add Railroad Crossings

Input	Step	Action
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 22H and press <E>; the Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N

3	Input Feature Data fields and press <F2>; the system updates TRM with the new railroad crossing data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33
		◆ Feature Grade
		  ● If adding Grade U (Railroad Crossing up above the roadway), Structure Number is required
		  ● If adding Grade G, (Railroad Crossing is at grade), Structure Number does not apply
		  ● If adding Grade D (Railroad Crossing is down below the roadway), Structure Number does not apply
		◆ Feature Skew Quad-Type 1-Angle
		◆ Structure Number
		  ● If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4
		  ● If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes
		◆ Railroad DOT Number (required), value format NNNNNND (six-digit railroad number + one-letter identifier)
		◆ Int Feature Type 70
		◆ Notation (optional)

4	To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to delete railroad crossings:

Delete Railroad Crossings

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 21H and press <E>; the Point Data screen displays	-
2	Enter <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Enter Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Feature Skew-Quad/Type/Angle ◆ Int Feature Type
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted railroad crossings	**OR** Press <F11> to cancel deletion; the system takes no action
5	To enter another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>**)**	-

Follow these input instructions to update railroad crossings location:

Update Railroad Crossings Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 23H; the Update Selection Menu displays	-
2	Input an X by Update Attribute Location and press <E>; the Point Data screen appears and a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-

Update Railroad Crossings Location

Step	Action	Input
3	Input <u>Location Key</u> fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to update railroad crossings attributes:

Update Railroad Crossings Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Elements and press <E>; a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Feature Skew-Quad ◆ Int Feature Type

Update Railroad Crossings Attributes

Step	Action	Input
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Grade • If changing Grade to U, Structure Number is required • If changing Grade to G, Structure Number does not apply • If changing Grade to D, Structure Number does not apply ◆ Feature Skew Quad-Angle ◆ Structure Number • If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4 • If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes ◆ Railroad Number (required), value format NNNNNND (six-digit railroad number + one-letter identifier) ◆ Notation (Optional)
6	To select Update Attribute Location, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Structures

Structures are bridges or other elevated roadway segments required to cross a depression or obstacle; combination of culverts equaling twenty feet wide or more (bridge-class culvert). The Roadway Records office adds, updates, or deletes structure data. District offices may update attributes associated with the structure, but cannot update the Structure Number.

The location value for a structure is the point where the structure begins if travelling the roadway in ascending marker direction. The end point is calculated for the ARI diagram using the structure length from the BRINSAP file:
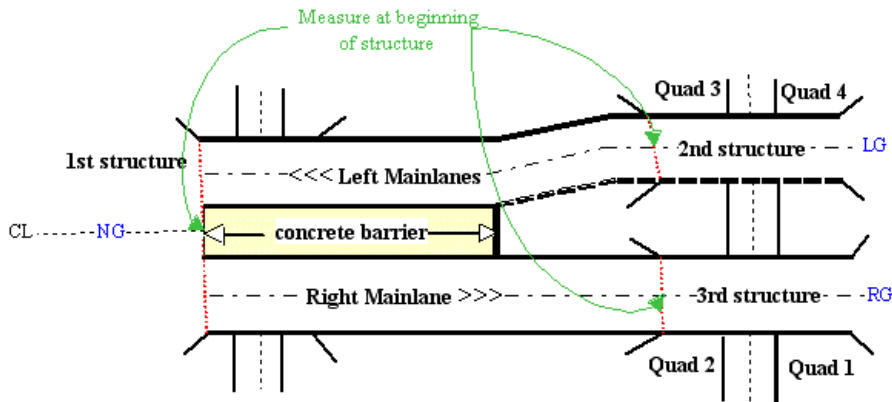
Figure 11-10. Measure at beginning of structure traveling in ascending marker order.

Figure 11-11. Fred Hartman Bridge over the ship channel.

Structure Number is the 14 digit number identifying a bridge or bridge-class culvert.

EXAMPLE: 12102351005123 (Houston District, Harris County, Control-Section 3510-05):

Structure Number Data Values

Digit places	Input	Values
2	District-Id	(1 - 25)
3	County Number	(001 - 254)
6	Control-Section	(0001-01 - 9999-99)
3	Bridge Number	(001 - 999)

Follow these input instructions to add structures:

Add Structures

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 22H and press <E>; the Point Data screen appears	-
2	Enter <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (−) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Enter Feature Data fields and press <F2>; the system updates TRM with the new structure data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 34 ◆ Feature <u>Grade</u> G ◆ <u>Structure</u> Number ● If a structure exists on Roadbed N marker location, do not add another structure to that same location on any mainlane roadbed ● If a structure record exists on a mainlane roadbed marker location, do not add another structure to that same marker location on Roadbed N ◆ Notation (optional)
4	To enter other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step To enter another <u>Update-Code,</u> press <F3> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete structures:

Delete Structures

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 21H and press <E>; the Point Data screen appears	-

Delete Structures

Step	Action	Input
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Roadway Feature Value
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted structures	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to update structures location:

Update Structures Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Location and press <E>; a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id

Update Structures Location

Step	Action	Input
4	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement ● If a structure exists on Roadbed N marker location, do not move another structure to that same location on any mainline roadbed ● If a structure record exists on a mainline roadbed marker location, do not move another structure to that same marker location on Roadbed N
5	To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu To input another [Update-Code](#), press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this [link](#))	-

Follow these input instructions to update structures attributes:

Update Structures Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this [link](#)) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Elements and press <E>; a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input [Location Key](#) fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Roadway Feature Value

Update Structures Attributes

Step	Action	Input
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ <u>Structure</u> Number ◆ Notation (optional)
6	To select Update Attribute Location, press <F3> to exit back to the Update Selection menu To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Section 4 — TPP/District Feature Input Instructions

About This Section

The features listed in this section include definitions, descriptions, and input instructions of features for which TPP and the district are responsible.

Ferries

Ferries are boats that carry persons and things across a channel:
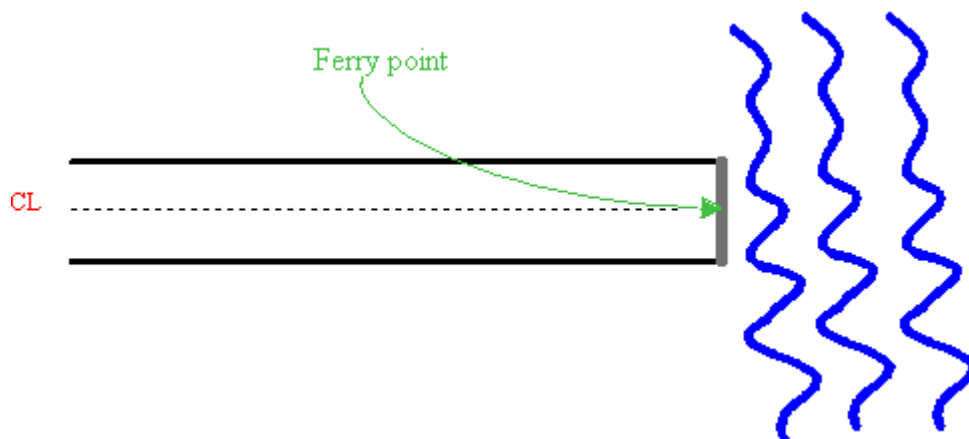
Figure 11-12. Measure ferry where roadway's centerline meets the dock.

Figure 11-13. Ferry at Bolivar Peninsula.

Follow these input instructions to add ferries:

Add Ferries

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 22H and press \<E\>; the Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (–) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Input Feature Data fields and press \<F2\>; the system updates TRM with the new ferry data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 25 ◆ Feature Begin/End 　• B = ferry starting point 　• E = ferry landing point ◆ Notation (optional)
4	To input other add feature transactions, press \<F9\> to clean the screen (optional) and repeat the first step To input another <u>Update-Code</u>, press \<F3\> to exit back to the TPP/District Database Mainte-nance Menu To exit back to the TRM Main Menu, press \<F10\> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete ferries:

Delete Ferries

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 21H and press \<E\>; the Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id

Delete Ferries

Step	Action	Input
3	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Roadway Feature Value
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted ferries	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP/District Database Mainte-nance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update ferry location:

Update Ferries Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Location and press <E>; the Point Data screen appears and a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement

Update Ferries Location

Step	Action	Input
5	To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>**)**	-

Follow these input instructions to update ferry attributes:

Update Ferries Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Elements and press <E>; the Point Data screen appears and a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Roadway Feature Value
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)

Update Ferries Attributes

Step	Action	Input
6	To select Update Attribute Location, press \<F3\> to exit back to the Update Selection menu To input another Update-Code, press \<F3\> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press \<F10\> (For instructions to log off the system, click this link)	-

Roadside Features

Roadside Features are physical objects residing on the left or right side of the roadway.

Roadside Feature Type Values indicate the type of feature located off the roadway:

Roadside Feature Type Values

Value	Feature	Responsibility
G	Traffic monitoring site	TPP only
A	Rest area	TPP/District
B	Picnic area	TPP/District
C	Tourist information	TPP/District
D	Scenic overlook	TPP/District
E	Litter barrel	TPP/District
F	Historical marker	TPP/District
H	Test site	TPP/District
I	Material stock pile	TPP/District
J	TxDOT facility	TPP/District
K	Traffic Management Instrumentation	TPP/District
L	Structure (structure number required)	TPP/District
M	Fire Plugs	TPP/District
N	Cemetery	TPP/District
O	Toll Booth	TPP/District
Z	Other	TPP/District

Feature Begin/End indicates the beginning or ending of a roadway feature. Valid values: B (beginning of feature) or E (ending of feature).

Features Left/Right indicates whether a feature is on left or right of a particular roadbed noted in ascending reference marker order. Valid values: L (left of roadbed) or R (right of roadbed). Determine Roadway Feature Left/Right by traveling the roadway in ascending reference marker direction:

Example: In Figure 11-14, input the litter barrel as either reference marker location 40 + 1.200 or 42 – 0.900. Input Roadway Feature Left/Right as left:
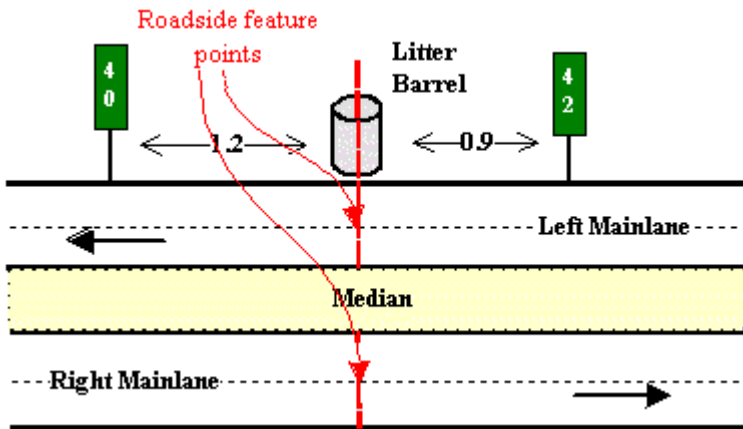
Figure 11-14. Roadside Feature E.

```
The estimated midpoint of the roadside feature determines the
location of the feature.

Example:  Input location of littler barrel from estimated midpoint
of barrel (see Figure 11-14)
```

Follow these input instructions to add roadside features:

Add Roadside Features

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 22H and press <E>; the Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are N, K, A, B, X, and Y

Add Roadside Features

Step	Action	Input
3	Input Feature Data fields and press <F2>; the system updates TRM with the new roadside feature data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 41 ◆ Feature Left/Right--in ascending marker direction 　● roadside feature on driver's right = R 　● roadside feature on driver's right = L ◆ <u>Roadside</u> Feature Type ◆ Notation (optional)
4	To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete roadside features:

Delete Roadside Features

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select Update-Code 21H and press <E>; the Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Feature Left/Right ◆ Roadside Feature Type
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted roadside features	**OR** Press <F11> to cancel deletion; the system takes no action

Delete Roadside Features

Step	Action	Input
5	To input another Update-Code, press \<F3\> to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press \<F10\> (For instructions to log off the system, click this link)	-

Follow these input instructions to update roadside feature location:

Update Roadside Feature Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press \<E\>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Location and press \<E\> The Point Data screen appears and a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields and press \<E\> The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press \<F2\>. The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (−) and Displacement
5	To select Update Attribute Elements, press \<F3\> to exit back to the Update Selection menu To input another Update-Code, press \<F3\> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press \<F10\> (For instructions to log off the system, click this link)	-

Follow these input instructions to update roadside feature attributes:

Update Roadside Feature Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Elements and press <E>; the Point Data Screen appears and a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Value fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Feature Left/Right ◆ Roadside Feature Type
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Left/Right--in **ascending** marker direction ● roadside feature on driver's right = R ● roadside feature on driver's right = L ◆ Notation (optional)
6	To select Update Attribute Location, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link**)**	-

Tunnels

Tunnels are covered vehicle passageways. TPP adds, updates, and deletes tunnels; District offices update tunnels.

Apply these constraints when inputting tunnels:

Tunnel Constraints

If…	Then…
A tunnel exists in TRM at a given marker location on Roadbed N	You cannot add a tunnel or move one to that same marker location on any other specific mainlane roadbed
A tunnel exists in TRM at a given marker location on any specific mainlane roadbed	You cannot add or move a tunnel to that same marker location on Roadbed N

Apply these constraints when inputting tunnels below grade:

Below Grade Tunnel Constraints

If the tunnel is below the roadway (Roadway Feature Grade = D) and	Then:
The mainlane roadbeds share the same structure number	◆ Input one transaction using Roadbed-Id of N ◆ Input Roadway Feature Skew Quad of 1, 2, 3, or 4
The mainlane roadbeds have different structure numbers	◆ Input individual transactions for each mainlane roadbed ◆ Input Roadway Feature Skew Quad of 1 or 2 for the right mainlanes ◆ Input Roadway Feature Skew Quad of 3 or 4 for the left mainlanes

Apply these constraints when adding or deleting tunnels:

Add or Delete Tunnel Constraints

Remember	This…
Determine the beginning point for a tunnel…	by traveling the roadway in ascending reference marker direction
Adding a tunnel requires two transactions.	◆ First transaction adds the beginning point of the tunnel ◆ Second transaction adds the ending point of the tunnel
Deleting a tunnel requires only one transaction.	Input either the begin point or the end point of the tunnel to delete the entire tunnel from TRM
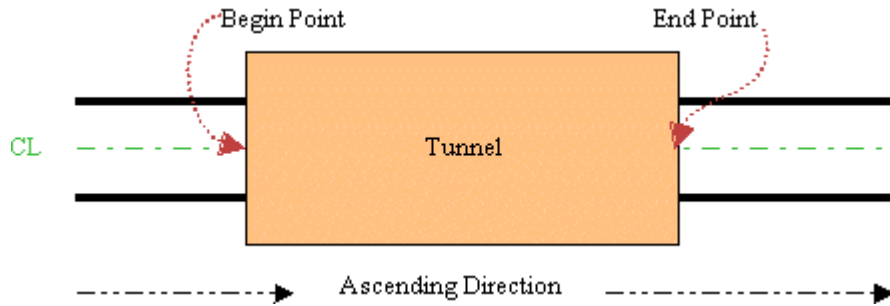
Figure 11-15. Measure tunnel begin and end at centerline.

Follow these input instructions to add tunnels:

Add Tunnels

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Mainte-nance screen, select Update-Code 22H and press <E>; the Point Data screen appears	-
2	Enter <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (–) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N

3	Enter Feature Data and press <F2>; the system updates TRM with the new tunnel data and dis-plays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 36
		 ◆ Feature Begin/End:
		    • B for tunnel beginning
		    • E for tunnel ending
		 ◆ Notation (optional)

4	To enter other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step To enter another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Mainte-nance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete tunnels:

Delete Tunnels

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Mainte-nance screen, select Update-Code 21H and press <E>; the Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Roadway Feature Value
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted tunnels	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another Update-Code, press <F3> to exit back to the TPP/District Database Mainte-nance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this **link)**	-

Follow these input instructions to update tunnel location:

Update Tunnels Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Mainte-nance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Location and press <E>; the Point Data screen appears. A prompt message requests the updated feature's location plus any other required fields the sys-tem needs to locate the feature record	-

Update Tunnels Location

Step	Action	Input
3	Input Location Key fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix of either the begin or end point **and/or** Reference Marker Sign (+) or (–) and Displacement of either the begin or end point
5	To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update tunnel attributes:

Update Tunnels Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select Update-Code 23H and press <E>; the Update Selection Menu appears	-
2	Input an X by Update Attribute Elements and press <E>; the Point Data screen appears and a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id

Update Tunnels Attributes

Step	Action	Input
4	Input Feature Data fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Roadway Feature Value
5	Input update fields and press <F2>; the system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)
6	To select Update Attribute Location, press <F3> to exit back to the Update Selection menu To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Section 5 — District Feature Input Instructions

About This Section

The features listed in this section include definitions, descriptions, and input instructions of features for which the district is solely responsible.

Cattle Guards

Structures placed in roadways to permit vehicle, but not animal, passage over roadways (Intersecting Feature Type 91):
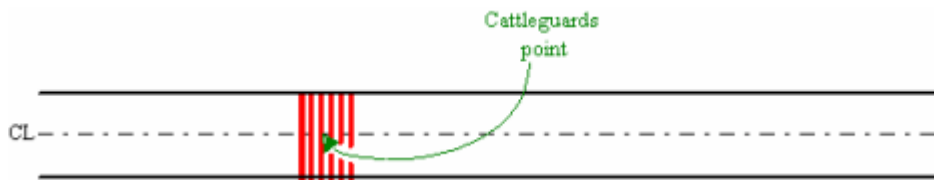
Figure 11-16. Cattle Guards also warn drivers to watch for livestock on the roadway.

Figure 11-17. Cattle guard on off-system roadway.

Follow these input instructions to add cattle guards:

Add Cattle Guards

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, **select** Update-Code 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (–) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: K
3	Input **Feature Data fields and press <F2>.** **Result**: The system updates TRM with the new cattle guard data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 33 ◆ Feature Grade Value G ◆ Int Feature Type 91 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>**)**	-

Follow these input instructions to delete cattle guards:

Delete Cattle Guards

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, **select**Update-Code 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id

Delete Cattle Guards

Step	Action	Input
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted cattle guards	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to update cattle guard location:

Update Cattle Guard Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Mainte-nance screen, **select** Update-Code 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Refer-ence-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id

Update Cattle Guard Location

Step	Action	Input
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (−) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link**)**	-

Follow these input instructions to update cattle guard attributes:

Update Cattle Guard Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select** Update-Code 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature value ◆ Int Feature Type

Update Cattle Guard Attributes

Step	Action	Input
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Connectors

Connectors are roadway segments which join the mainlane roadbed of one route to a mainlane roadbed of another route; measured from the gore point, which is the area immediately beyond the divergence of two roadbeds, bounded by the edges of those roadbeds:
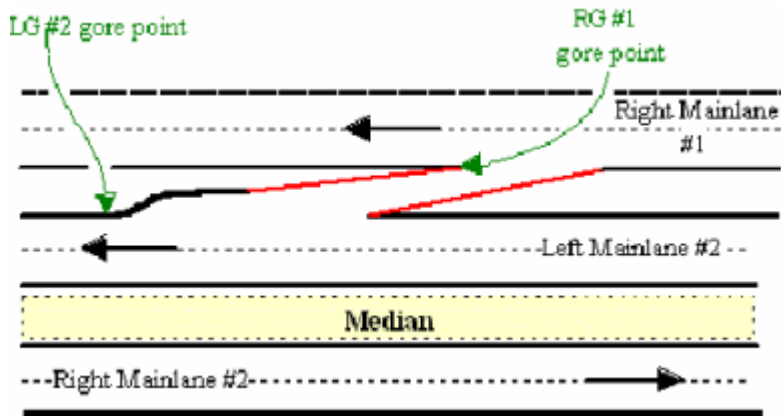
Figure 11-18. Right mainlane #1 connected to left mainlane #2.

Figure 11-19. Measure connectors at gore points for each highway connected.

Follow these input instructions to add connectors:

Add Connectors

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select** Update-Code 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id: valid values are K, L, R, M, S, P, and T
3	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new connector data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 31 ◆ Feature Skew Quad only ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to delete connectors:

Delete Connectors

Step	Input	Action
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, **select**Update-Code 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Feature Skew Quad
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted connectors	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>**)**	-

Follow these input instructions to update connectors location:

Update Connectors Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screens, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Connectors Location

Step	Action	Input
2	Input an X by **Update Attribute Location** and press <E>. **Result**: The Point Data screen appears and a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link**)**	-

Follow these input instructions to update connectors attributes:

Update Connectors Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select** Update-Code 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Connectors Attributes

Step	Action	Input
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Feature Skew Quad
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Trans-action completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Skew Quad ◆ Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Data-base Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Crossovers

Crossovers are roadways between two roadbeds that allow a change in direction at grade on non-controlled access highways, also known as median openings; the simplest form of an intersection:
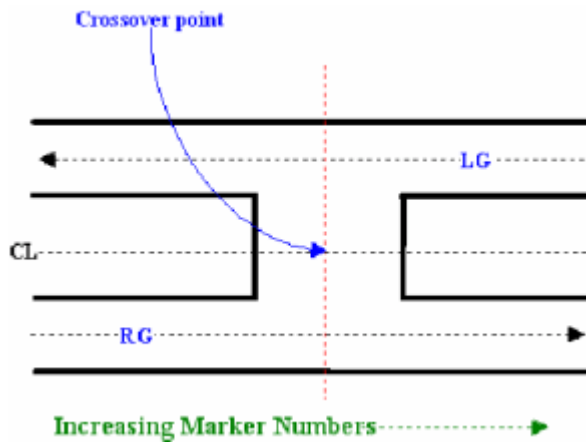
Figure 11-20. Measure crossover at NG centerline.

Follow these input instructions to add crossovers:

Add Crossovers

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select**Update-Code 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: NG
3	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new crossover data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade G ◆ Intersecting Feature Type 65 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <10> (For instructions to log off the system, click this link)	-

Follow these input instructions to delete crossovers:

Delete Crossovers

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, **select** Update-Code 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted crossovers	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu. ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to update crossover location:

Update Crossovers Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Crossovers Location

Step	Action	Input
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input [Location Key](#) fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Refer-ence-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction com-pleted successfully" appears. The original request for the current location to update dis-plays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Refer-ence Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selec-tion menu ◆ To input another [Update-Code](#), press <F3> twice to exit back to the TPP/District Data-base Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this [link](#))	-

Follow these input instructions to update crossover attributes:

Update Crossovers Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this [link](#)) From the TPP or District Database Mainte-nance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Crossovers Attributes

Step	Action	Input
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Culverts

Culverts are any structure under a roadway (less than 20 feet wide), usually for drainage (see <u>Figure 11-22</u>), with a clear opening, measured along the center of the roadway between inside of the end walls:
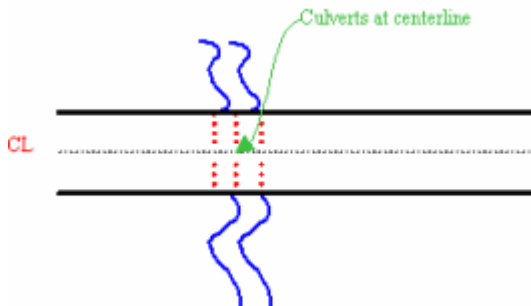
Figure 11-21. Measure at center of culverts at centerline.

Figure 11-22. Multiple box culvert.

Culvert Fill Depth is the depth of embankment, fill, earth, or base over the top most part of the culvert, measured to the nearest foot.

Follow these input instructions to add culverts:

Add Culverts

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Mainte-nance screen, **select**Update-Code 22H and press <E>. **Result**: The Point Data screen appears	-

Add Culverts

Step	Action	Input
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (–) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Input Feature Data fields and press \<F2\>. **Result**: The system updates TRM with the new culvert data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 33 ◆ Feature <u>Grade</u> D ◆ Feature <u>Skew</u> Quad-Type 1-Angle ◆ Culvert Fill Depth (District only), values 00 to 99 in feet, to top of pipe ◆ Intersecting Feature <u>Type</u>--In **ascending** marker direction 　• water flow right to left = Culvert Left (73) 　• water flow left to right = Culvert Right (74) 　• water flow both directions = Culvert Both (75) ◆ Notation (optional)
4	◆ To input other add feature transactions, press \<F9\> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press \<F3\> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to delete culverts:

Delete Culverts

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select**Update-Code 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input **Feature Data fields and press <F2>.** **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted culverts	**OR** Press <F11> to cancel deletion **Result**: The system takes no action
5	◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update culvert location:

Update Culverts Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Culverts Location

Step	Action	Input
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input [Location Key](#) fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another [Update-Code](#), press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this [link](#))**	-

Follow these input instructions to update culvert attributes:

Update Culverts Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this [link](#)) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Culverts Attributes

Step	Action	Input
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature <u>Skew</u> Quad-Angle ◆ Culvert Fill Depth (District only), values 00 to 99 in feet, to top of pipe ◆ Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Gates

Gates are swinging structures which prevent traffic from entering or exiting the given roadway:
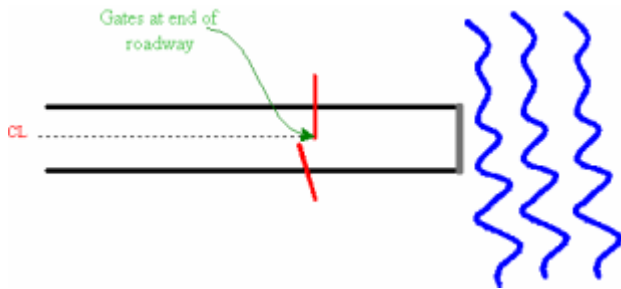
Figure 11-23. Measure where gates cross centerline.

Figure 11-24. Gates across an off-system roadway.

Follow these input instructions to add gates:

Add Gates

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select**Update-Code 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: K
3	Input Feature Data and press <F2>. **Result**: The system updates TRM with the new gate data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade Value G ◆ Intersecting Feature Type 92 ◆ Notation (optional)

Add Gates

Step	Action	Input
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to delete gates:

Delete Gates

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, **select** Update-Code 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system appears the verification message "Transaction completed successfully" and deletes all data records associated with the deleted gates	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update gate location:

Update Gates Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to update gate attributes:

Update Gates Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input the update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Overhead Signs

Overhead Signs are highway signs mounted over one or more roadway lanes:
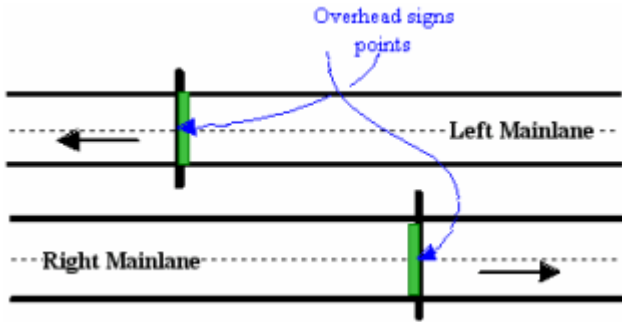
Figure 11-25. Measure overhead signs at centerline.
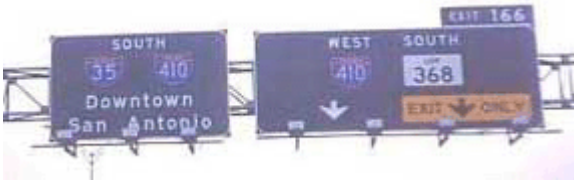
Figure 11-26. Overhead signs provide information and direction.

Follow these input instructions to add overhead signs:

Add Overhead Signs

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select** Update-Code 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new overhead sign data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade U ◆ Intersecting Feature Type 93 ◆ Notation (optional)

Add Overhead Signs

Step	Action	Input
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** link**)**	-

Follow these input instructions to delete overhead signs:

Delete Overhead Signs

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select** Update-Code 21H and press <E> Results: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted overhead signs	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** link**)**	-

Follow these input instructions to update overhead sign location:

Update Overhead Signs Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press \<E\>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press \<E\>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields and press \<E\>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ ◆ Roadbed-Id
4	Input update fields and press \<F2\>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press \<F3\> to exit back to the Update Selection menu ◆ To input another Update-Code, press \<F3\> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update overhead sign attributes:

Update Overhead Signs Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press \<E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press \<E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press \<E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input update fields and press \<F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)
6	◆ To select **Update Attribute Location**, press \<F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press \<F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10 **(For instructions to log off the system, click this link)**	-

Pedestrian Passageways

Pedestrian Passageways are walkways which cross either above the roadway (i.e., pedestrian bridges) or below the roadway (i.e., pedestrian tunnels):
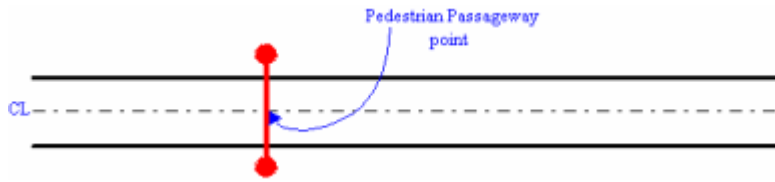
Figure 11-27. Measure Pedestrian Passageway at centerline.

Figure 11-28. Pedestrian Bridge in San Angelo District.

Follow these input instructions to add pedestrian passageways:

Add Pedestrian Passageways

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, **select** Update-Code 22H and press <E>. **Result**: The Point Data screen appears	-
2	Enter Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, A, B, X, Y, or N
3	Enter Feature Data fields and press <F2>. **Result**: The system updates TRM with the new pedestrian passageway data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade U or D ◆ Feature Skew Quad-Type 1-Angle ◆ Structure Number ● If Grade = U, Structure Number is required ● If Grade = D, Structure Number does not apply ◆ Intersecting Feature Type 90 ◆ Notation (optional)

Add Pedestrian Passageways

Step	Action	Input
4	◆ To enter other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To enter another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to delete pedestrian passageways:

Delete Pedestrian Passageways

Step	Action	Input
1	<u>(For instructions to log onto the system, click this link</u>) From the TPP or District Database Mainte-nance screen, select **Update-Code** 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted pedestrian passageway	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update pedestrian passageway location:

Update Pedestrian Passageways Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update pedestrian passageway attributes:

Update Pedestrian Passageways Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type

5	Input update fields and press <F2>.
	Result: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction
		◆ Feature <u>Grade</u> (U or D)
		◆ Feature <u>Skew</u> Quad-Angle
		◆ <u>Structure</u> Number
		  ● If changing Grade to U, Structure Number is **required**
		  ● If changing Grade to D, Structure Number **does not apply**
		◆ Notation (optional)

6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10 **(For instructions to log off the system, click this <u>link</u>)**	-

Pipelines

Pipelines are lines of pipe under a roadway, with pumps, valves, and control devices for conveying liquids, gases, or finely divided solids:
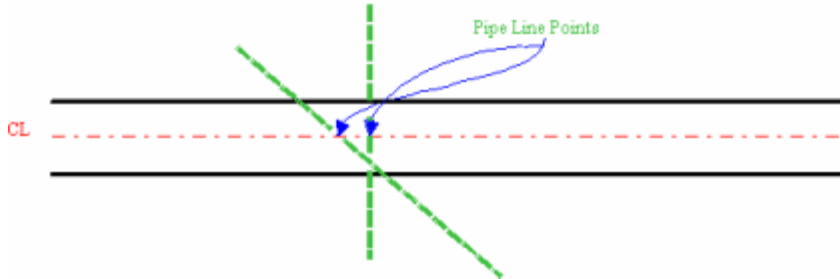
Figure 11-29. Estimate where underground pipeline meets centerline of roadway.

Figure 11-30. Pipeline warning sign.

Follow these input instructions to add pipelines:

Add Pipelines

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N

Add Pipelines

Step	Action	Input
3	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new pipeline data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 33 ◆ Feature <u>Grade</u> U or D ◆ Feature <u>Skew</u> Quad-Type 1-Angle ◆ Intersecting Feature <u>Type</u> 80 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete pipelines:

Delete Pipelines

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted pipelines	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action

Delete Pipelines

Step	Action	Input
5	◆ To input another <u>Update-Code</u>, press \<F3\> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update pipelines location:

Update Pipelines Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press \<E\>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press \<E\>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields and press \<E\>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press \<F2\>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (−) and Displacement

Update Pipelines Location

Step	Action	Input
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update pipelines attributes:

Update Pipelines Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature <u>Grade</u> (U or D) ◆ Feature <u>Skew</u>-Quad-Angle ◆ Notation (optional)

Update Pipelines Attributes

Step	Action	Input
6	◆ To select **Update Attribute Location**, press \<F3\> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press \<F3\> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this <u>link</u>)**	-

Ramps

Ramps are interconnecting roadways or traffic interchanges on which vehicles may enter or leave a designated highway, joining mainlane to frontage road or frontage road to mainlane of the same designated highway:
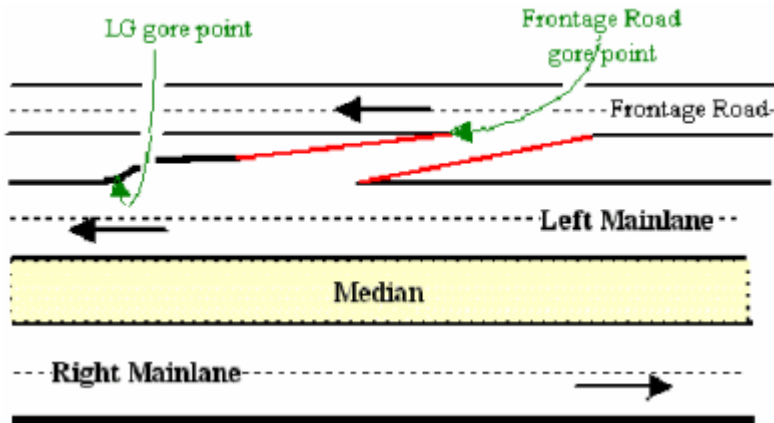
Figure 11-31. Measure gore point for frontage road and mainlane.

Follow these input instructions to add ramps:

Add Ramps

Action	Step	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 22H and press \<E\>. **Result**: The Point Data screen displays	-

Add Ramps

Action	Step	Input
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (−) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, or Y
3	Input Feature Data and press <F2>. **Result**: The system updates TRM with the new ramp data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 32 ◆ Feature <u>Skew</u> Quad only • If Roadbed-Id = K, A, B, X, or Y, Quad = 1, 2, 3, or 4 • If Roadbed-Id = R, S, or T, Quad = 1 or 2 • If Roadbed-Id = L, M, or P, Quad = 3 or 4 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to delete ramps:

Delete Ramps

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Feature Skew Quad

Delete Ramps

Step	Action	Input
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted ramps	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update ramp location:

Update Ramps Location

Step	Action	Input
	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
	Input <u>Location Key</u> fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (−) and Displacement

Update Ramps Location

Step	Action	Input
	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update ramp attributes:

Update Ramps Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Feature Skew Quad
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature <u>Skew</u> Quad only ◆ Notation (Optional)

Update Ramps Attributes

Step	Action	Input
6	◆ To select **Update Attribute Location**, press \<F3\> to exit back to the Update Selection menu ◆ To input another <u>Update-Code,</u> press \<F3\> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this <u>link</u>)**	-

Streams

Streams are water flows ranging from creeks and rivers to aqueducts. Determine the type by travelling the roadway in ascending reference marker direction:
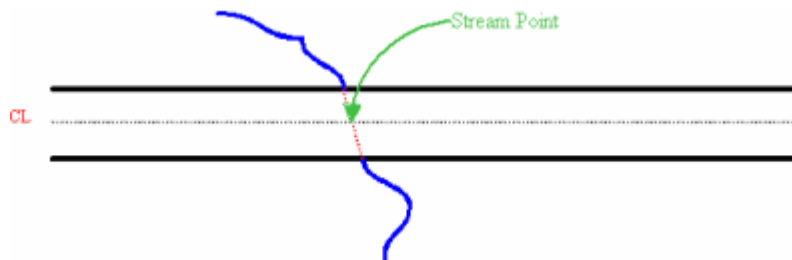
Figure 11-32. Estimate where the stream crosses the centerline under the roadway.

Follow these input instructions to add streams:

Add Streams

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 22H and press \<E\>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (−) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N

Add Streams

Step	Action	Input
3	Input Feature Data fields press <F2>. **Result**: The system updates TRM with the new stream data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade • If Grade = G, Roadbed-Id = N, K, A, B, X or Y; Structure Number does **not** apply • If Grade = U, Structure Number **required** • If Grade = D, Structure Number does **not** apply ◆ Feature Skew Quad-Type 1-Angle ◆ Structure Number • If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4 • If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes ◆ Int Feature Type--If traveling in **ascending** marker direction • flows from left to right = Stream-Right (71) • flows from right to left = Stream-Left (72) ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to delete streams:

Delete Streams

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 21H and press <E>. **Result**: The Point Data screen appears	-

Delete Streams

Step	Action	Input
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted streams	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TPP Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to update streams location:

Update Streams Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the location of the feature(s) being updated plus any other required fields the system needs to locate the feature record	-

Update Streams Location

Step	Action	Input
3	Input <u>Location Key</u> fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (−) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update streams attributes:

Update Streams Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the location of the attribute(s) being updated plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id

Update Streams Attributes

Step	Action	Input
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Trans-action completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Grade ● If Grade = G, Roadbed-Id = N, K, A, B, X or Y; Structure Number does **not** apply ● If Grade = U, Structure Number **required** ● If Grade = D, Structure Number does **not** apply ◆ Feature Skew Quad-Angle ◆ Structure Number ● If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4 ● If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right main-lanes or Skew Quad 3 or 4 for the left mainlanes ◆ Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Data-base Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Telephone Lines

Telephone Lines are overhead and underground communication lines:
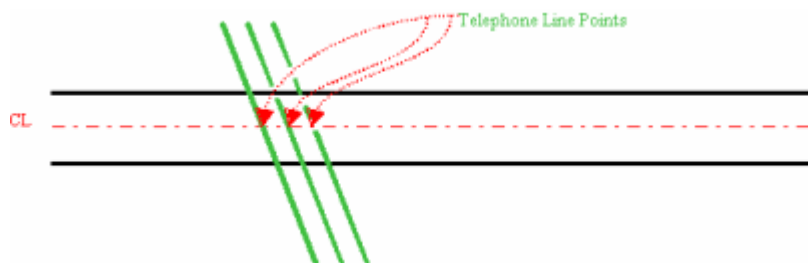
Figure 11-33. Measure telephone lines at centerline.

Follow these input instructions to add telephone lines:

Add Telephone Lines

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select **Update-Code** 22H. **Result**: The Point Data Screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (–) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new telephone line data and displays the message "Transaction completed successfully"	◆ Roadway Feature <u>Value</u> 33 ◆ Feature <u>Grade</u> U or D ◆ Feature <u>Skew</u> Quad-Type 1-Angle ◆ Int Feature <u>Type</u> 82 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to delete telephone lines:

Delete Telephone Lines

Step	Action	Input
	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select **Update-Code** 21H. **Result**: The Point Data screen appears	-
	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id

Delete Telephone Lines

Step	Action	Input
1	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
2	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted telephone lines	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
3	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to update telephone lines location:

Update Telephone Lines Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select **Update-Code** 23H. **Result:** The Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press <E>. **Result**: The Point Data screen appears and a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id

Update Telephone Lines Location

Step	Action	Input
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Feature Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this** <u>link</u>**)**	-

Follow these input instructions to update telephone lines attributes:

Update Telephone Lines Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select **Update-Code** 23H. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type

Update Telephone Lines Attributes

Step	Action	Input
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Trans-action completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Grade (U or D) ◆ Feature Skew Quad-Angle ◆ Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Transmission Lines

Transmission Lines are overhead and underground power and communication lines:
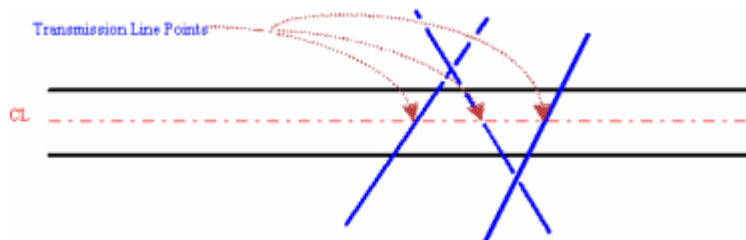
Figure 11-34. Measure Transmission Lines at centerline.

Figure 11-35. Electrical transmission lines.

Follow these input instructions to add transmission lines:

Add Transmission Lines

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 22H and press <E>. **Result**: The Point Data screen appears	- -
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new transmission line data and displays message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade U or D ◆ Feature Skew Quad-Type 1-Angle ◆ Int Feature Type 81 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> twice **(For instructions to log off the system, click this link)**	-

Follow these input instructions to delete transmission lines:

Delete Transmission Lines

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id

Delete Transmission Lines

Step	Action	Input
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted transmission lines	**OR** Press <F11> to cancel deletion **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to update transmission lines location:

Update Transmission Lines Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu displays	-
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the location of the feature(s) being updated plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id

Update Transmission Lines Location

Step	Action	Input
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F3> three times **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update transmission lines attributes:

Update Transmission Lines Attributes

Step	Input	Action
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the location of the attribute(s) being updated plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type

Update Transmission Lines Attributes

Step	Input	Action
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Grade (U or D) ◆ Feature Skew Quad-Angle ◆ Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Turnarounds

Turnaround Back connects a roadbed, under a structure, whose direction of travel is the **increasing** reference marker order with a roadbed whose direction of travel is **decreasing** reference marker order.

Turnaround Forward connects a roadbed, under a structure, whose direction of travel is the **decreasing** reference marker order with a roadbed whose direction of travel is **increasing** reference marker order:
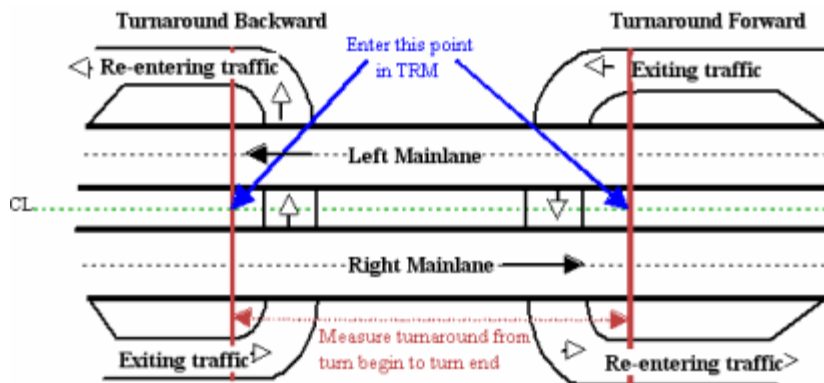
Figure 11-36. Measure from beginning turnaround curve to ending turnaround curve at centerline..

Follow these input instructions to add turnarounds:

Add Turnarounds

Action	Step	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, s**elect** **Update-Code** 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are N, M, S, P, T, X, Y, A, B, or K

3	**Input Feature Data fields and press <F2>.**
	
	Result: The system updates TRM with the new turnaround data and displays the message "Transaction completed successfully"
		◆ Roadway Feature Value 33
		
		◆ Feature Grade
		  • If Grade = G, Int Type must = B; valid Roadbed ID values = X, Y, A, or B
		  • If Int Type = A, then Grade must = G
		  • If Grade = U or D, Int Type must = B **and** input Structure Number; valid Roadbed ID values = N, K, M, S, P, or T
		
		◆ Structure Number
		  • If mainlane roadbeds share structure number, input one Roadbed-Id N transaction and Skew Quad 1, 2, 3, or 4
		  • If mainlane roadbeds have different structure numbers, input mainlane roadbed transactions for each; input Skew Quad 1 or 2 for the right mainlanes or Skew Quad 3 or 4 for the left mainlanes
		
		◆ Int Type (can only be A or B)
		
		◆ Int Feature Type
		  • If re-entering traffic from turnaround in descending marker direction, input turnaround backward (66)
		  • If re-entering traffic from turnaround in ascending marker direction, input turnaround forward (67)
		
		◆ Notation (optional)

4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to delete turnarounds:

Delete Turnarounds

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Mainte-nance screen, select **Update-Cod**e 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted turnaround	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to update turnarounds location:

Update Turnarounds Location

Step	Action	Input
	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Mainte-nance screen, select **Update-Code** 23H and press <E> **Result**: The Update Selection Menu appears	-

Update Turnarounds Location

Step	Action	Input
1	Input an X by **Update Attribute Location** and press <E>. **Result**: The Point Data screen appears and a prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
2	Input Location Key fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id
3	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix of either the begin or end point **and/or** Reference Marker Sign (+) or (−) and Displacement to either the begin or end point
4	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update turnarounds attributes:

Update Turnarounds Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Turnarounds Attributes

Step	Action	Input
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the location of the attribute(s) being updated plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature Grade ◆ Structure Number ◆ Int Type (only change from A to B or from B to A) ◆ Notation (optional)
5	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Water Lines

Water Lines are structures carrying water under a roadway:
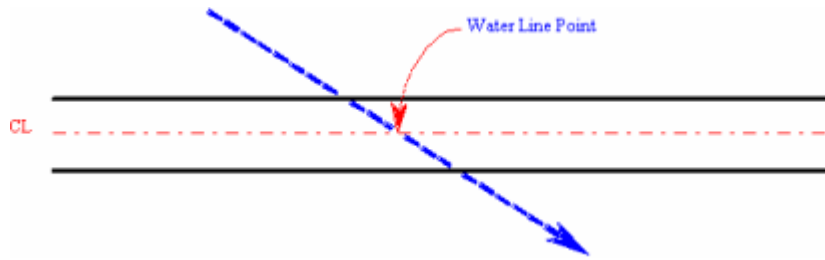
Figure 11-37. Estimate where water lines cross under roadway centerline.

Follow these input instructions to add water lines:

Add Water Lines

Step	Action	Input
	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 22H and press <E>. **Result**: The Point Data screen appears	-
	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new water line data and displays the message "Transaction completed successfully"	◆ Roadway Feature Value 33 ◆ Feature Grade U or D; if Grade = U, input Structure Number ◆ Feature Skew Quad-Type 1-Angle ◆ Int Feature Type 83 ◆ Notation (optional)
	◆ To add another feature, press <F9> to clean the screen (optional) and repeat the first step ◆ To enter another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to delete water lines:

Delete Water Lines

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 21H and press <E> **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted water lines	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update water lines location:

Update Water Lines Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Water Lines Location

Step	Action	Input
2	Input an X by **Update Attribute Location** and press \<E\>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input [Location Key](#) fields and press \<E\>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix ◆ (+) or (–)Reference Marker Sign ◆ Reference Marker Displacement ◆ Roadbed-Id
4	Input update fields and press \<F2\>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press \<F3\> to exit back to the Update Selection menu ◆ To input another [Update-Code](#), press \<F3\> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this [link](#))**	-

Follow these input instructions to update water lines attributes:

Update Water Lines Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this [link](#)) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press \<E\>. **Result**: The Update Selection Menu appears	-

Update Water Lines Attributes

Step	Action	Input
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Feature <u>Grade</u> (U or D) ◆ Feature <u>Skew</u> Quad-Angle ◆ Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Section 6 — Features Not Classified

Catch-All Category

This is the "catch-all" category for any features or intersecting features not previously discussed.

Other Intersecting Features not Classified

These features must intersect the roadbed or roadway, such as a frog crossing tunnel or a drop inlet. They may not be to the side of the roadway, under it, over it, or on it; those features are input as other roadway features not classified.

Follow these input instructions to add unclassified intersecting roadway features:

Add Unclassified Intersecting Roadway Features

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Mainte-nance screen, select Update-Code 22H and press <E> **Result**: The Point Data screen appears	-
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Input remaining Feature Data and press <F2>. **Result**: The system updates TRM with the new feature data and displays the message "Transac-tion completed successfully"	◆ Roadway Feature Value 33 ◆ Int Feature Type 99 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another Update-Code, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to delete unclassified intersecting roadway features:

Delete Unclassified Intersecting Roadway Features

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Roadway Feature Value ◆ Int Feature Type
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted Other Intersecting Roadway Features not Classified	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to update unclassified intersecting features location:

Update Unclassified Intersecting Features Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Unclassified Intersecting Features Location

Step	Action	Input
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input [Location Key] fields and press <E> **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input updated fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another [Update-Code], press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this [link])**	-

Follow these input instructions to update unclassified intersecting features attributes:

Update Unclassified Intersecting Features Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this [link]) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-

Update Unclassified Intersecting Features Attributes

Step	Action	Input
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input [Location Key](#) fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Roadway Feature Value ◆ Int Feature Type
5	Input updated fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)
6	◆ To select **Update Attribute Location**, press <F3> to exit back to the Update Selection menu ◆ To input another [Update-Code](#), press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this [link](#))**	-

Other Roadway Features Not Classified

These features are to the side of the roadway, under it, over it, or on it, such as guardrail damage or a climbing lane. They may not intersect with the roadway; those features are input as other intersecting features not classified.

Follow these input instructions to add unclassified roadway features:

Add Unclassified Roadway Features

Step	Input	Action
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Mainte-nance screen, select **Update-Code** 22H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway <u>System</u>, <u>Number, and Suffix</u> ◆ Reference Marker <u>Number</u> and Suffix, (+) or (−) <u>Sign</u>, and <u>Displacement</u> ◆ <u>Roadbed-Id</u>: valid values are K, R, L, M, S, P, T, A, B, X, Y, or N
3	Input Feature Data fields and press <F2>. **Result**: The system updates TRM with the new feature data and displays the message "Transac-tion completed successfully"	◆ Roadway Feature <u>Value</u> 99 ◆ Notation (optional)
4	◆ To input other add feature transactions, press <F9> to clean the screen (optional) and repeat the first step ◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to delete unclassified roadway features:

Delete Unclassified Roadway Features

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Mainte-nance screen, select Update-Code 21H and press <E>. **Result**: The Point Data screen appears	-
2	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id

Delete Unclassified Roadway Features

Step	Action	Input
3	Input Feature Data fields and press <F2>. **Result**: The system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Roadway Feature Value
4	Repress <F2> to confirm deletion. **Result**: The system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted Other Roadway Features not Classified	**OR** Press <F11> to cancel deletion. **Result**: The system takes no action
5	◆ To input another <u>Update-Code</u>, press <F3> to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to update unclassified

roadway features location:

Update Unclassified Roadway Features Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Location** and press <E>. **Result**: A prompt message requests the updated feature's location plus any other required fields the system needs to locate the feature record	-
3	Input <u>Location Key</u> fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement ◆ Roadbed-Id

Update Unclassified Roadway Features Location

Step	Action	Input
4	Input update fields and press <F2>. **Result**: The system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
5	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update unclassified roadway features attributes:

Update Unclassified Roadway Features Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP or District Database Maintenance screen, select **Update-Code** 23H and press <E>. **Result**: The Update Selection Menu appears	-
2	Input an X by **Update Attribute Elements** and press <E>. **Result**: A prompt message requests the updated attribute's location plus any other required fields the system needs to locate the feature record	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ Roadbed-Id
4	Input Feature Data fields and press <E>. **Result**: The system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Roadway Feature Value

Update Unclassified Roadway Features Attributes

Step	Action	Input
5	Input update fields and press <F2>. **Result**: The system updates the feature's data attributes and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Notation (optional)
6	◆ To select **Update Attribute Elements**, press <F3> to exit back to the Update Selection menu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP/District Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Chapter 12 — Administrative Data

Contents:

Section 1 — Key Points to Know

Administrative Data Defined

Administrative data are attributes related to federal funding or state jurisdiction. This chapter describes the administrative data classes, their values, and TRM input instructions.

Administrative Data Classes

Administrative attributes are either continuous or non-continuous length data and represent various roadbed classes.

Offices of Responsibility

TPP and the TRM section of each District office are the Offices of Primary Responsibility (OPR) for inputting and maintaining all administrative data.

This table lists each administrative attribute, its data class, and its roadbed class for which TPP is responsible:

TPP Administrative Data Classes

Attribute Name	Data Class	Roadbed Class
Administrative System	Continuous Length	CMR+F
Census Place Number	Continuous Length	CMR+F
City Number	Continuous Length	CMR+F
Control-Section	Continuous Length	CMR+F
County Number	Continuous Length	CMR+F
District Id	Continuous Length	CMR+F
FIPS Urban Area Number	Continuous Length	CMR+F
Functional System	Continuous Length	CMR+F
Govt Control Level	Continuous Length	CMR+F
HPMS Current ID	Continuous Length	CMR+F
Metropolitan Planning Area	Continuous Length	CMR+F
Rural/Urban Values	Continuous Length	CMR+F
Secondary Route Designation	Non-continuous Length	CENTERLINE

This table lists each administrative attribute, its data class, and its roadbed class for which districts are responsible:

District Administrative Data Classes

Attribute Name	Data Class	Roadbed Class
Maintenance Status	Continuous Length	CMR+F
Maintenance District	Continuous Length	CMR+F
Maintenance Foreman Number	Continuous Length	CMR+F
Maintenance Section	Continuous Length	CMR+F
(CMR+F = Combination Mainlane Roadbeds + Frontage Roads)		

Click this link for your district's TRM analyst.

Section 2 — Continuous Length Centerline Attributes

Responsibilities

Both the District offices and TPP input continuous length centerline attributes. This section describes the types of administrative data, their values, and input instructions.

Definitions

Administrative Data and Matrix—Provides information to assist in setting values, entering, and retrieving administrative data:

Administrative Data Values Matrix

Signed Highway **System**	**Functional** System	Govt **Control** Level	**R/U Value**	**FIPS** Urban Area Number	**Admin** System	City Nbr
Rural						
IH	01	01	1	0	01	0
Not IH or PA	> 01 & < 10	01	1	0	01	0
IH	01	01	1	0	05	> 0
Not IH or PA	> 01 & < 10	01	1	0	02, 05, 06	> 0
Not IH or PA	> 01 & < 10	> or = 60	1	0	08	0
Not IH or PA	> 01 & < 10	> or = 60	1	0	11	> 0
Large Urban						
IH	11	01	3,4	> 0 & <= 399	01	0
Not IH or PA	> 11 & < 20	01	3,4	> 0 & <= 399	01	0
IH	11	01	3,4	> 0 & <= 399	02, 05	> 0
Not IH or PA	> 11 & < 20	01	3,4	> 0 & <= 399	02, 05, 06, 13	> 0
Not IH or PA	> 11 & < 20	> or = 60	3,4	> 0 & <= 399	08	0
Not IH or PA	> 11 & < 20	> or = 60	3,4	> 0 & <= 399	11, 12	> 0
PA	> 11 & < 20	01	3,4	> 0 & <= 399	02, 05	> 0
Small Urban						
IH	11	01	2	> 399 & <= 999	01	0
Not IH or PA	> 11 & < 20	01	2	> 399 & <= 999	01	0

Administrative Data Values Matrix

Signed Highway **System**	**Functional** System	Govt **Control** Level	**R/U Value**	**FIPS** Urban Area Number	**Admin** System	City Nbr
IH	11	01	2	> 399 & <= 999	02, 05	> 0
Not IH or PA	> 11 & < 20	01	2	> 399 & <= 999	02, 05, 06, 13	> 0
Not IH or PA	> 11 & < 20	> or = 60	2	> 399 & <= 999	08	0
Not IH or PA	> 11 & < 20	> or = 60	2	> 399 & <= 999	11, 12	> 0
PA	> 11 & < 20	01	2	> 399 & <= 999	02, 05	> 0
If the Highway-System is an Interstate Highway (IH) and the Roadbed-Id is a frontage road (X, Y, A, or B), follow instructions listed above for "Not IH or PA".						

Administrative System Values—Indicates a highway route segment's maintaining governmental entity and the relative size of the incorporated city, if any, where the route segment is:

Administrative System Values

Value	Governmental Entity
01	State (rural)
02	State (city 5000 or more)
05	State (city less than 5000)
06	City (less than 5000)
08	Federal (rural)
11	Federal (city less than 5000)
12	Federal (city 5000 or more)
13	City (5000 or more)

Census Place Number—Number assigned by the Bureau of Census to a population cluster, incorporated or not. For incorporated cities, the number becomes the city number. The value entered must exist on the Census Place Tables and Characteristics System (TACS) table.

City Number—Identification number assigned by TPP to each incorporated city, numbered sequentially in alphabetical order. The value must exist on the City Name TACS table.

Control Section—Identification numbers assigned by the Design Division to route segments on every highway in the state. Control numbers are usually multi-county in length and are sub-divided into section numbers that are single county or less in length.

County Number—Number assigned to identify each of the 254 counties in the state. The County Number must reside within the assigned District-Id.

District ID—Identifies the district office normally responsible for department operations in the area where a highway segment is located. If updating the District-Id within the given reference marker range, the system deletes all County Numbers and Boundary Type C values within that range.

Federal Information Processing System (FIPS) Urban Area Number—Identification number assigned by the Federal Highway Administration (FHWA) to each urban area which is incorporated into the FIPS:

FIPS Urban Area Values

From	To	Area
00015	00399	Urbanized (population greater than 50,000)
00601	00748	Small Urban (population from 5,000 to 49,999)

Functional System—Indicates the FHWA-approved classification assigned to a route segment; describes its purpose and location. Among other things, functional class defines a highway segment's eligibility for Federal funding:

Functional Classification System Values

Value	Rural	Value	Urban
01	Interstate	11	Principal Arterial (Interstate)
02	Principal Arterial (other)	12	Principal Arterial (other Freeway)
06	Minor Arterial	14	Principal Arterial (other)
07	Major Collector	16	Minor Arterial
08	Minor Collector	17	Collector
09	Local	19	Local

Government Control Level—Indicates the kind of public entity responsible for maintenance and law enforcement of a route segment:

Government Control Level Values

TRM Value	Category	1999 HPMS Equivalency Value
01	State Highway Agency	1
60	Other Federal Agency	7
62	Bureau of Indian Affairs	7

Government Control Level Values

TRM Value	Category	1999 HPMS Equivalency Value
64	US Forest Service	7
65	Designated Forest Route	7
66	National Park Service	7
68	Bureau of Land Management	7
70	Military Reservation/Corps of Engineers	7

Highway Design Values—Two-character value which indicates a general category of service intended for a given roadway segment. The first character indicates if the route is a freeway, expressway, etc. The second character indicates whether the route has HOV lanes, a railway, etc. Values of the two characters may be combinations:

Highway Design Values

First Character		Second Character	
0	One-Way Pair	A	With HOV lane(s)
1	One-Way	B	With Railway
2	Two-Way	C	With Toll Road
3	Boulevard `(has a median)`	Blank	`No additional information`
4	Expressway `(has at-grade crossings)`	-	-
5	Freeway `(does not have at-grade crossings)`	-	-

Highway Maintenance Status Values—Indicates the Maintenance Section responsible for performing maintenance on a particular segment of highway:

Highway Maintenance Status Values

Value	Status
01	State Maintenance, designated state route
02	Local Maintenance, designated state route

Maintenance Foreman Number—Number assigned by the maintaining district to the maintenance foreman who actually performs maintenance on a section of highway (in his/her and other assigned geographical areas).

Maintenance District—District office actually maintaining a segment of highway, regardless of location.

Maintenance Section—Number assigned to a section of highway in an assigned geographical area.

Metropolitan Planning Area (MPA) Number—<u>Number</u> assigned by FHWA to a specific area, surrounding and including an urbanized area, where the Metropolitan Planning <u>Organization</u> (MPO) has defined planning responsibilities. The MPA number on the entry screen must be in the Metropolitan Planning Area TACS table.

Metropolitan Statistical Area (MSA) Class Values—System-generated value indicates the road class of a route segment according to criteria. The <u>MSA</u> County TACS table determines whether the county is an MSA county:

MSA Class Values

MSA-Class	If Number of Lanes…	and Highway Design…	and Roadbed-Id…
If not in an MSA County:			
01	< or = 2	= 1, or 2	= K
02	> 2	= 1, or 2	= K
03	> 0	= 0, 3, 4, or 5	not K
If in an MSA County:			
11	< or = 2	= 1, or 2	= K
12	> 2	= 1, or 2	= K
13	> 0	= 0, 3, 4, or 5	not K

Rural/Urban Values—Indicates the population density of the area in which a highway route segment is located:

Rural/Urban Values

Values	Rural/Urban
1	Rural (population less than 5,000)
2	Small Urban (population 5,000 to 49,999)
3	Urbanized (population 50,000 to 199,999)
4	Urbanized (population 200,000 or greater)

Input—Administrative Data

TPP users, follow these input instructions to update administrative data. Input more than one administrative attribute on the same transaction, if all input attributes are continuous within the same From and To marker limits. Input all other continuous length CMR+F attributes in any preferred arrangement:

Update Administrative Data (TPP)

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Maintenance Submenu appears	Use **only** the update function for all attributes!
2	Input X by Administrative Data and press <E>; the Administrative Data Screen appears	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement NOTE: The From and To marker limits cannot cross a link or gap! ◆ Roadbed-Id is CG or blank
4	Input remaining fields and press <F2>; the system updates Administrative Information and the verification message "Transaction completed successfully" appears. The original request for the current information to update displays for another update transaction.	◆ Administrative System ◆ County Number ◆ Control-Section, values (format CCCCSS Control + Section) 000101 thru 999999 ◆ Census Place Number, values 00000 thru 99999 ◆ City Number, values 00000 thru 99999 ◆ District Id ◆ FIPS Urban Area Number ◆ Functional- System ◆ Govt Control Level ◆ Highway Design (If roadbed ID = AG, XG, YG, or BG, highway design must be 1 or 2) ◆ Metropolitan Planning Area, values—Blank (not an MPA) or 015 thru 500 ◆ Rural/Urban Code ◆ HPMS- Current Id

Update Administrative Data (TPP)

Step	Action	Input
5	To input other Administrative data, press <F9> to clean the screen (optional) and repeat the first step To input another , press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link**)**	-

District users, follow these input instructions to update administrative data. Input more than one administrative attribute in the same transaction, if all input attributes are continuous within the same From and To marker limits. Input all other continuous length CMR+F attributes in any preferred arrangement:

Update Administrative Data (District)

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the District Database Maintenance Menu, select Update-Code 13H and press <E>; the District Length Data screen appears	Use **only** the update function for all attributes!
2	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement NOTE: The From and To marker limits cannot cross a link or gap! ◆　Roadbed-Id is CG or blank
3	Input remaining fields and press <F2>; the system updates TRM with the new Administrative information and displays the verification message "Transaction completed successfully" The original request for the current Administrative information to update displays for another update transaction	◆ Maintenance: ◆ Status ● If Maintenance Status is 04, Maintenance District must be 0 ● If Maintenance Status is 01, Roadbed Width must be greater than 0 ◆ District Id—Number of district office actually maintaining roadway ◆ Foreman Number, values 1 to 99 ◆ Section, values 01 to 30

Update Administrative Data (District)

Step	Action	Input
4	To input other Administrative data, press <F9> to clean the screen (optional) and repeat the first step To input another , press <F3> to exit back to the District Database Maintenance Menu To exit back to the TRM Main Menu, press <F3> twice **(For instructions to log off the system, click this** link**)**	-

Highway Performance Monitoring System Current Id

This is the current identification number assigned to a sample roadway segment for the Highway Performance Monitoring System (HPMS). The Id provides the flexibility for identifying sections in accordance with its needs independent of the unique identification maintained for HPMS sample sections:

HPMS Current ID

Format: CCCCSS0MMMMM	
Format	**Meaning**
CCCC	Control (4 digits)
SS	Section (2 digits)
0	Zero (the number) or Frontage Road Roadbed-Id
MMMMM	Beginning milepoint of the HPMS section (5 digits)

Go to the Highway Performance Monitoring System Field Manual link page for further information.

Input—Highway Performance Monitoring System Id

Follow these input instructions to input an HPMS Id:

Processing HPMS IDs

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H for length or Update-Code 43H for data and press <E>; the HPMS data screen appears	Use **only** the update function for all attributes!
2	Input fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement NOTE: From and To marker limits cannot cross a link or gap! ◆ Roadbed-Id: valid values are N, A, B, X, or Y
3	Input remaining **fields** and press <F2>; the system updates TRM with the new HPMS information and displays the verification message "Transaction completed successfully"	◆ Administrative System ◆ Census Place Number, values 00000 thru 99999 ◆ City Number, values 00000 thru 99999 ◆ Urban Area Number ◆ Functional System ◆ Control Level ◆ Metropolitan Planning Area, values—Blank (not an MPA) or 015 thru 500 ◆ Rural/Urban Code ◆ Current Id attribute
4	To input other HPMS data, press <F9> to clean the screen (optional) and repeat the first step To input another Update-Code, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link.)**	-

NOTE: The HPMS edits are subject to change.

Section 3 — Non-Continuous Length Attributes

Secondary Routes Defined

The Secondary Route Designation is the only non-continuous length attribute, which TPP inputs. Secondary routes are stored as two point data records, Begin Secondary Route and End Secondary Route.

Secondary Route Designations

Secondary Route Designations indicate an additional designation given to any state-maintained route:

Secondary Route Values

| Value	Secondary Route Designation	Value	National Highway System (NHS) Intermodal Connectors
A	State Truck Route	2	Major Airport
B	National Truck Route	3	Major Port Facility
C	Hazardous Material Route	4	Major Amtrak Station
E	Texas System	5	Major Rail/Truck Terminal
F	Strategic Highway Network (STRAHNET) Route	6	Major Inter-city Bus Terminal
G	STRAHNET connectors	7	Major Public Transit Terminal/Multimodal Passenger Terminal
H	National Forest Highway	8	Major Pipeline Terminal
I		9	Major Ferry Terminal
J	Texas Travel Trail	-	-
K	Parkway	-	-
L	Bicycle Route	-	-
M	Highway	-	-
N	Urban Route	-	-
O	Federal Aid	-	-
P	Evacuation Route	-	-
Z	Other Special Route	-	-
0	Not a secondary route	-	-
1	On the NHS, but not an NHS intermodal connector	-	-
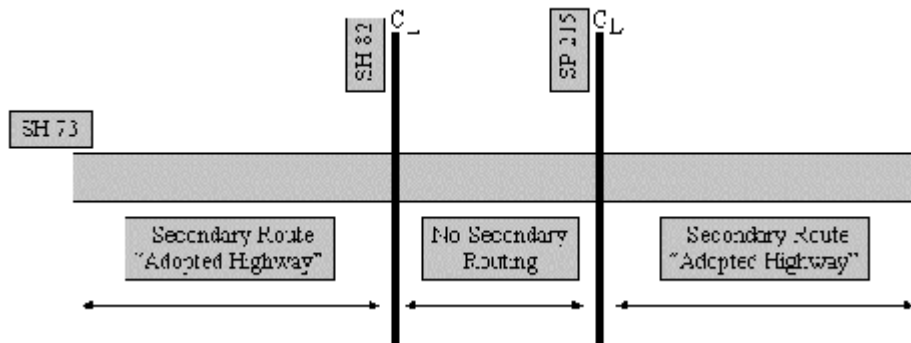
Figure 12-1. Secondary Routes can begin and end several times over the length of a highway.

Secondary Route Begin/End—System-generated identifier at the beginning or ending point of a secondary route. Valid values: B (beginning of secondary route segment) or E (ending of second-ary route segment).

Input—Secondary Routes

Follow these input instructions to add secondary route

Add Secondary Route

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 32H and press <E>; the Network Change Data screen appears	-
2	Input fields	◆ Signed Highway System, ◆ From Reference Marker Number and , (+) or (−) Sign, and ◆ To Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement NOTE: Designations of different types may be consec-utive or may overlap on the same roadway segment
3	Input **Feature Data** fields and press <F2>; the system updates TRM with the new route infor-mation and displays the message "Transaction completed successfully"	◆ Route value ◆ Notation (optional)

Add Secondary Route

Step	Action	Input
4	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10>y **(For instructions to log off the system, click this <u>link</u>)**	-

Follow these input instructions to delete secondary route

Delete Secondary Route

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 31H and press <E>; the Network Change Data screen appears	-
2	Input fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input **Feature Data** fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	◆ Secondary Route value
4	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted secondary routes	**OR** Press <F11> to cancel deletion; the system takes no action
5	To input another <u>Update-Code</u>, press <F3> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update secondary route attributes:

Update Secondary Route Attributes

Step	Action	Entries
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 33H and press \<E\>; the Network Change Data screen appears and a prompt message requests the begin and end location points (From and To) of the updated secondary route plus any other required fields the system needs to locate the secondary route	-
2	Input fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
3	Input Feature Data fields and press \<E\>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Secondary Route value
4	Input updated fields and press \<F2\>; the system updates the attribute and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Secondary Route Value ◆ Notation (optional)
5	To input another , press \<F3\> to exit back to the TPP Database Maintenance Menu To exit back to the TRM Main Menu, press \<F10\> **(For instructions to log off the system, click this link)**	-

Chapter 13 — Geometric Data

Contents:

Section 1 — Key Points to Know

Geometric Data Defined

Geometric data consists of attributes that describe the highway's bearing and curve information and descriptive points of a length segment. Geometric attributes are centerline roadbed class and store as point data. This chapter describes the procedures to add, update, or delete these attributes in TRM as other point data.

Office of Responsibility

TPP is the Office of Primary Responsibility (OPR) for inputting and maintaining all geometric-related data.

Click this link for your district's TRM analyst.

Geometric Data Attributes

The table below lists each geometric attribute by category:

Geometric Data Attribute Name

Baseline Bearing Data	Curve Data
Bearing Type	Curve Type
Bearing Beginning Direction	Delta Angle measurements: ◆ Delta Degrees ◆ Delta Minutes ◆ Delta Seconds ◆ Delta Left/Right
Bearing Degrees	Tangent Length 1
Bearing Minutes	Curve Length
Bearing Seconds	Tangent Length 2
Bearing Ending Direction	Curve Degree Angle measurements: ◆ Curve Degrees ◆ Curve Minutes ◆ Curve Seconds
Bearing Location	-

Definitions

Curve Length—Total length of a curving highway alignment including spiral and normal curves, measured in miles to three decimal places. **NOTE**: PI curves have no length; they occur at a single point.

Curve Type Values—Indicates the configuration or kind of curve based on the number of points required to define it:

Curve Type Values

Value	Curve Type	Number of Points
P	PI curve	1 point (change in direction at a point)
N	Normal curve	2 points
S	Spiral curve	3 or 4 points

Curvature Degrees—Whole degree measurement of the rate of curvature, the angle change per one hundred feet, for a given normal curve.

Curvature Minutes—Whole minute measurement of the rate of curvature, the angle change per one hundred feet, for a given normal curve.

Curvature Seconds—Seconds measurement, to one decimal place, of the rate of curvature of a given normal curve.

Delta Degrees—Whole degree measurement of the change in direction at the point of tangency (PT) created by a curve.

Delta Left/Right—Indicates, in increasing reference marker order, the direction a curve turns.

Delta Minutes—Whole minute measurement of the change in direction at the point of tangency (PT) created by a curve.

Delta Seconds—Seconds measurement to one decimal place of the change in direction at the point of tangency (PT) created by a curve.

Tangent Length—The measurement from point of curvature to point of intersection and from point of intersection to point of tangent of a curve.

TS1 Tangent Length—Element whose definition depends on the type of curve being defined:

◆   For a normal curve, the tangent length or distance in miles from the PC or PT to the projection point or intersection of the curve

◆   For a spiral curve, the first spiral tangent length or distance in miles from the TS to the pro-
     jected point of intersection of the spiral curve.

TS2 Tangent Length—The second spiral tangent length or distance in miles from the ST back to the
projected point of intersection of the spiral curve.

Section 2 — Baseline Bearing Data

Baseline Bearing Defined

The Baseline Bearing documents the compass heading of each straight route segment and the relative location of the baseline used to derive directions and measurements.

Definitions

Baseline Bearing Degrees—Degree measurement of the variance of the baseline alignment of the highway from its North or South heading, determined by field survey.

Bearing Beginning Direction—Primary direction, North or South, of the baseline alignment of a highway determined by field survey.

Bearing Ending Direction—Direction, east or west, in which the baseline alignment of a highway varies from a north or south heading, determined by field survey; last direction specified.

Bearing Location—An eight character text field used to identify the actual location of the highway baseline:

Baseline Bearing Location Examples

Value	Location
HWY CL	Highway Centerline
CL Lt Ln	Centerline of left lane
50F Rt	50 feet right of centerline
EP RL	Edge of Pavement, right lane
CL RBL	Centerline of Roadbed L
50 RT	50 feet right of centerline
LT ROW	Left right of way

Bearing Minutes—Whole minute measurement of the difference between actual direction and primary direction of the baseline bearing.

Bearing Seconds—Seconds measurement, to one decimal place, of the variance of the baseline alignment of a highway from its north or south heading, determined by field survey.

Bearing Type—Indicates the type of baseline information recorded on the highway segment:

Baseline Bearing Type Values

Value	Bearing Type
1	Baseline Bearing (normal)
2	EQ-Baseline Bearing back
3	EQ-Baseline Bearing forward
4	Highway Baseline location

Bearing Equations—Those points on the highway centerline at which it is necessary to make one station number equal to another station number:

Bearing Back—Direction or compass heading up to a baseline bearing equation.

Bearing Forward—Direction or compass heading from a baseline bearing equation forward.

Note: Bearings print on the ARI from location point forward, so the form reference marker location should be at the beginning of a clear area (i.e., free of attributes) on the ARI diagram. Add Both EQ-Baseline Bearing Back [Type 2] and EQ-Baseline Bearing Forward [Type 3] at the same location

Input—Baseline Bearing

Follow these input instructions to add baseline bearing

Add Baseline Bearing

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by Baseline Bearing and press <E>; the Baseline Bearing Data screen appears	-
3	Input Location fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement

Add Baseline Bearing

Step	Action	Input
4	Input remaining fields and press <F2>; the system updates TRM with the new route information and displays the message "Transaction completed successfully"	◆ Bearing Type ◆ Bearing Beginning Direction, N (North) or S (South) ◆ Bearing Degrees, whole degrees of compass bearing values 00 to 99 ◆ Bearing Minutes, whole minutes of compass bearing values 00 to 59 ◆ Bearing Seconds, seconds of compass bearing, to one decimal values 00 to 59.9 ◆ Bearing Ending Direction, E (East) or W (West) ◆ Bearing Location (required for Bearing Type 4 only)
5	◆ To select PI, Normal, or Spiral Curve additions, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to delete baseline bearing:

Delete Baseline Bearing

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 11H and press <E>; the TPP Database Maintenance Submenu displays	-
2	Input an X by Baseline Bearing and press <E>; the Baseline Bearing Data screen displays	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
4	Input remaining fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Bearing Type

Delete Baseline Bearing

Step	Action	Input
5	Repress \<F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted baseline bearing attributes	**OR** Press \<F11> to cancel deletion; the system takes no action
6	◆ To select PI, Normal, or Spiral Curve dele-tions, press \<F3> to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press \<F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update baseline bearing location:

Update Baseline Bearing Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H and press \<E>; the TPP Database Maintenance Submenu appears	◆ Update either the location of the bearing or the data attributes associated with the bearing. If updating both, input two transactions ◆ **Do not** update if the Signed Highway is incorrect; delete and re-enter the bearing record
2	Input an X by Baseline Bearing and press \<E>; the Update Selection Menu appears	-
3	Input an X by **Update Location** and press \<E>; the Baseline Bearing Data appears and a prompt message requests the updated attribute's loca-tion plus any other required fields the system needs to locate the attribute record	-
4	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement
5	Input remaining fields and press \<E>; the sys-tem retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	Bearing Type

Update Baseline Bearing Location

Step	Action	Input
6	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement
7	◆ To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu ◆ To select Normal, PI, or Spiral Curve, press <F3> twice to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> three times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update baseline bearing attributes:

Update Baseline Bearing Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu appears	◆ Update either the location of the bearing or the data attributes associated with the bearing. If updating both, input two transactions ◆ **Do not** update if the Signed Highway is incorrect; delete and re-enter the bearing record
2	Input an X by Baseline Bearing and press <E>; the Update Selection Menu appears	-
3	Input an X by Update Elements and press <E>; the Baseline Bearing Data screen appears and a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the attribute record	-
4	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
5	Input the remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Bearing Type

Update Baseline Bearing Attributes

Step	Action	Input
6	Input update fields and press <F2>; the system updates the attribute and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Bearing Type ◆ Bearing Beginning Direction (N or S) ◆ Bearing Degrees, whole degrees of compass bearing values 00 to 99 ◆ Bearing Minutes, whole minutes of compass bearing values 00 to 59 ◆ Bearing Seconds, seconds of compass bearing, to one decimal values 00 to 59.9 ◆ Bearing Ending Direction (E or W) ◆ Bearing Location (required for Bearing Type 4 only)
7	◆ To select Update Attribute Location, press <F3> to exit back to the Update Selection menu ◆ To select Normal, PI, or Spiral Curve, press <F3> twice to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> three times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Section 3 — PI Curve Data

PI Curve Defined

PI Curve documents the point of intersection of two straight route segments and the delta angle of change in compass bearing that occurs at the location.

Notes:

◆ Do not add a PI curve within the limits of another curve.

◆ Do not change the location of a curve to fall within the limits of another curve

◆ Update either the location point of the PI Curve or the data attributes associated with the PI Curve. If updating both, input two transactions

◆ Do not update if the Signed Highway is incorrect; delete and re-enter the curve record

Input—PI Curves

Follow these input instructions to add PI curve:

Add PI Curve

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12H and press <E>; the TPP Database Maintenance Submenu appears	
2	Input X next to PI Curve and press <E>; the PI Curve submenu appears	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (−) Sign, and Displacement
4	Input remaining fields and press <F2>; the system updates TRM with the new information and displays the message "Transaction completed successfully"	◆ Curve Type P ◆ Delta Angle measurements: • Degrees, whole degree values 000 to 179 • Minutes, whole minute values 00 to 59 • Seconds, seconds to one decimal values 00.0 to 59.9 • Left/Right, direction (L or R)

Add PI Curve

Step	Action	Input
5	◆ To select Baseline Bearing, Normal Curve, or Spiral Curve additions, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete PI curve:

Delete PI Curve

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 11H and press <E>; the TPP Database Maintenance Submenu appears	
2	Input an X next to PI Curve and press <E>; the PI Curve submenu appears	-
3	Input <u>Location Key</u> fields	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
4	Input Feature Data fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Curve Type P
5	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted PI Curves	**OR** Press <F11> to cancel deletion; the system takes no action

Delete PI Curve

Step	Action	Input
6	◆ To select Baseline Bearing, Normal Curve, or Spiral Curve deletions, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to update PI curve location:

Update PI Curve Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu displays	-
2	Input an X by PI Curve and press <E>; the Update Selection Menu displays	-
3	Input an X by Update Attribute Location and press <E>; he PI Curve Data screen displays and a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the attribute record	-
4	Input <u>Location Key</u> fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
5	Input update fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	Reference Marker Number and Suffix **and/or** Reference Marker Sign (+) or (–) and Displacement

Update PI Curve Location

Step	Action	Input
6	◆ To select Update Attribute Elements, press <F3> to exit back to the Update Selection menu ◆ To select Baseline Bearing, Normal Curve, or Spiral Curve, press <F3> twice to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> three times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update PI curve attributes:

Update PI Curve Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by PI Curve and press <E>; the Update Selection Menu appears	-
3	Input an X by Update Attribute Elements and press <E>; the PI Curve Data screen appears and a prompt message requests the updated attribute's location plus any other required fields the system needs to locate the attribute record	-
4	Input Location Key fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	◆ Signed Highway System, Number, and Suffix ◆ Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
5	Input update fields and press <F2>; the system updates the attribute and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	Delta Angle measurements: ◆ Degrees, whole degree values 000 to 179 ◆ Minutes, whole minute values 00 to 59 ◆ Seconds, seconds to one decimal values 00.0 to 59.9 ◆ Left/Right, direction (L or R)

Update PI Curve Attributes

Step	Action	Input
6	◆ To select Update Attribute Location, press \<F3\> to exit back to the Update Selection menu ◆ To select Baseline Bearing, Normal Curve, or Spiral Curve, press \<F3\> twice to exit back to the TPP Maintenance Submenu ◆ To input another <u>Update-Code</u>, press \<F3\> three times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press \<F10\> (For instructions to log off the system, click this <u>link</u>)	-

Section 4 — Normal Curve Data

Normal Curve Defined

Normal Curve documents the location and all the elements necessary to define a route segment that curves at a constant rate (see Figure 12-1):

Points of a Normal Curve

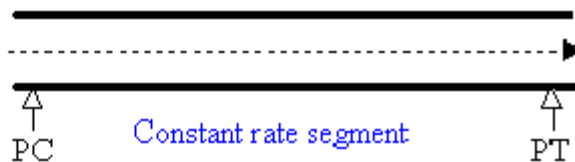| Point	Description
Point 1	The Point of Curvature, i.e., the PC point, the beginning of the normal curve segment
Point 2	The Point of Tangency, i.e., the PT point, the ending of the normal curve segment

Figure 13-1. Route curves at a constant rate between PC and PT.

Curve Id—Unique seven-digit identification number the system assigns to each Normal curve. The system stores the number on the record containing the PT point of a normal curve.

Notes:

◆   **Do not** add a Normal curve within or across the bounds of another curve

◆   **Do not** change the location of a curve to fall within the points of another curve

◆   Update either the location points of the Normal Curve or the data attributes associated with the Normal Curve. If updating both, input two transactions

◆   **Do not** update if the Signed Highway is incorrect; delete and re-enter the curve record

Input—Normal Curves

Follow these input instructions to add normal curve:

Add Normal Curve

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input X by Normal Curve and press <E>; the Normal Curve Data screen appears	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (-) Sign, and Displacement

4	Input remaining fields and press <F2>; the system updates TRM with the new information and displays the message "Transaction completed successfully"	◆ Curve Type N
		◆ Delta Angle measurements:
		  ● Degrees, whole degree values 000 to 179
		  ● Minutes, whole minute values 00 to 59
		  ● Seconds, seconds to one decimal values 00.0 to 59.9
		  ● Left/Right, direction (L or R)
		◆ Tangent Length 1, in miles to three decimals, values 00.000 to 99.999
		◆ Curve Degree Angle measurements:
		  ● Degrees, whole degree values 00 to 89
		  ● Minutes, whole minute values 00 to 59
		  ● Seconds, seconds to one decimal values 00.0 to 59.9
		◆ Length, in miles to three decimals valid values 00.000 thru 99.999

5	◆ To select Baseline Bearing, PI Curve, or Spiral Curve additions, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to delete normal curve:

Delete Normal Curve

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 11H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by Normal Curve and press <E>; the Normal Curve submenu appears	-
3	Input Location Key fields	NOTE: Input only PC or PT point for curve deletion ◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (-) Sign, and Displacement
4	Input remaining fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Curve Type N
5	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted normal curves	**OR** Press <F11> to cancel deletion; the system takes no action
6	◆ To select Baseline Bearings, PI Curve, or Spiral Curve deletions, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> **(For instructions to log off the system, click this link)**	-

Follow these input instructions to update normal curve location:

Update Normal Curve Location

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by Normal Curve and press <E>; the Normal Curve Data screen appears	-
3	Input Location Key fields	NOTE: Input only the PC or PT point for curve updates ◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (-) Sign, and Displacement
4	Input the remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	Curve Type N
5	Input the update location fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Update the PC point: any 'From' Reference Marker fields ◆ Update the PT point: any 'To' Reference Marker fields
6	◆ To select Baseline Bearing, PI Curve, or Spiral Curve, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> twice times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update normal curve attributes:

Update Normal Curve Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by Normal Curve and press <E>; the Normal Curve Data screen appears	-
3	Input <u>Location Key</u> fields	NOTE: Input only the PC or PT point for curve update ◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (-) Sign, and Displacement
4	Input remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Curve Type N
5	Input the update fields and press <F2>; the system updates the attribute and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Delta Angle measurements: ● Degrees, whole degree values 000 to 179 ● Minutes, whole minute values 00 to 59 ● Seconds, seconds to one decimal values 00.0 to 59.9 ● Left/Right, direction (L or R) ◆ Tangent Length 1, in miles to three decimals, values 00.000 to 99.999 ◆ Curve Degree Angle measurements: ● Degrees, whole degree values 00 to 89 ● Minutes, whole minute values 00 to 59 ● Seconds, seconds to one decimal values 00.0 to 59.9 ◆ Length: in miles to three decimals, valid values 00.000 thru 99.999
6	◆ To select Baseline Bearing, PI Curve, or Spiral Curve, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another <u>Update-Code</u>, press <F3> twice times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

System Response. Because the two points which compose a normal curve also compose the second and third points of a spiral curve, the system:

◆   Assigns a value of 2 to the Curve Point at the PC point of the curve

◆   Assigns a value of 3 is to the Curve Point at the PT point of the curve

◆   Stores all data values with Curve Point 21

◆   Assigns the next sequential number to the Curve-Id for this curve.

Section 5 — Spiral Curve Data

Spiral Curve Defined

Spiral Curve documents the location and all the elements necessary to define a route segment that curves at both a varying rate and a constant rate. Curved segments have a varying rate curve at one or both ends, used as a transition from the straight segment that precedes or follows the curve and the constant rate curve segment, or normal curve, in the center. The Spiral Curve requires either three or four location points to document:

◆ **A four-point spiral curve** consists of a normal curve with two varying rate segments at each end, the second being a normal curve. All four curve points must completely document a four-point spiral curve: TS SC CS ST

◆ **A three-point spiral curve** consists of a normal curve with only one varying rate segment at either end (see Figure 13-2 below):

Points of a Spiral Curve

| Point	Description
Point 1	The Tangent to Spiral point, i.e., the TS point, the beginning of the first varying rate segment
Point 2	The Spiral to Curve point, i.e., the SC point, the ending of the first varying rate segment and beginning of the normal curve segment
Point 3	The Curve to spiral point, i.e., the CS point, the beginning of the second varying rate segment and ending of the normal curve
Point 4	The Spiral to Tangent point, i.e., the ST point, the ending of the second varying rate segment
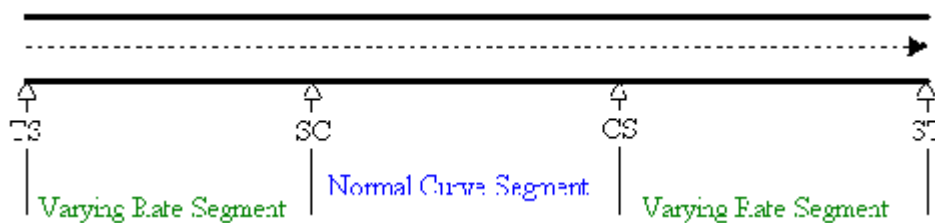
Figure 13-2. Route curves at a varying rate between TS and SC, at a constant rate between SC and CS, then at a varying rate between CS and ST.

Curve Id—Unique seven-digit identification number the system assigns to each Spiral curve. The system stores the number on the record containing the SC point of a spiral curve.

Note:

◆ Do not add a spiral curve within the limits of another curve

◆ Do not change the location of a curve to fall within the points of another curve

◆   Update either the location points of the spiral curve or the data attributes associated with the spiral curve. If updating both, input two separate transactions

◆   Do not update if the Signed Highway is incorrect; delete and re-enter the curve record

Input—Spiral Curves

Follow these input instructions to add spiral curve. Input each of the spiral curve points in sequential reference marker order, i.e., the TS point must precede the SC point, which must precede the CS point, which must precede the ST point:

Add Spiral Curve

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 12H and press \<E\>; the TPP Database Maintenance Submenu appears	-
2	Input X next to Spiral Curve and press \<E\>; the Spiral Curve submenu appears	-
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
4	Input Supplemental Location Key fields	◆ CS Curve Point Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ ST Curve Point (if applicable) Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement

Add Spiral Curve

Step	Action	Input
5	Input Spiral Curve fields and press <F2>; the system updates TRM with the new information and displays the message "Transaction completed successfully"	◆ <u>Curve</u> Type S ◆ Delta Angle measurements: ● Degrees, whole degree values 000 to 179 ● Minutes, whole minute values 00 to 59 ● Seconds, seconds to one decimal, values 00.0 to 59.9 ● Left/Right, direction (L or R) ◆ <u>Tangent</u> Length 1, in miles to three decimals, values 00.000 to 99.999 ◆ Tangent Length 2, in miles to three decimals, values 00.000 to 99.999 ◆ Curve Degree Angle measurements: ● Degrees, whole degree values 00 to 89 ● Minutes, whole minute values 00 to 59 ● Seconds, seconds to one decimal values 00.0 to 59.9
6	◆ To select Baseline Bearing, PI Curve, or Normal Curve additions, data, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another <u>Update-Code</u>, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to delete spiral curve:

Delete Spiral Curve

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 11H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by Spiral Curve and press <E>; the Spiral Curve submenu appears	-

Delete Spiral Curve

Step	Action	Input
3	Input Location Key fields	◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ **OR** 　● To Reference Marker Number (PT, SC) and Suffix (closest to SC point) 　● (+) or (–) To Reference Marker (PT, SC) Sign 　● To Reference Marker (PT, SC) Displacement (as the distance from the Marker to the SC point)
4	Input Supplemental Location Key fields	◆ **OR** 　● Reference Marker Number and Suffix (closest to the CS Curve point) 　● (+) or (–) Reference Marker Sign (positive if the direction to the CS Curve point is past the Marker, or as negative if the direction to the CS Curve point is prior to the Marker) 　● Reference Marker Displacement (as the distance from the Marker to the CS Curve point) ◆ **OR** 　● Reference Marker Number and Suffix (closest to ST Curve point) 　● (+) or (–) Reference Marker Sign 　● Reference Marker Displacement (as the distance from the Marker to the ST Curve point)
5	Input remaining fields and press <F2>; the system retrieves record data from TRM. A prompting message "Press PF2 to confirm or PF 11 to cancel" appears	Curve Type S
6	Repress <F2> to confirm deletion; the system displays the verification message "Transaction completed successfully" and deletes all data records associated with the deleted spiral curve attributes	**OR** Press <F11> to cancel deletion; the system takes no action
7	◆ To select Baseline Bearing, PI Curve, or Normal Curve deletions, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> twice to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

Follow these input instructions to update spiral curve location:

Update Spiral Curve Location

Step	Action	Input
1	(For instructions to log onto the system, click this <u>link</u>) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by Spiral Curve and press <E>; the Spiral Curve Data screen appears	-
3	Input <u>Location Key</u> fields	NOTE: Input only the PC or PT point for curve updates ◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ **OR** To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
4	Input the Supplemental <u>Location Key</u> fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter new Reference-Marker location" appears	◆ CS Curve Point Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ ST Curve Point (if applicable) Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
5	Input the update location fields and press <F2>; the system updates the location and the verification message "Transaction completed successfully" appears. The original request for the current location to update displays for another update transaction	◆ Update the PC point, any 'From' Reference Marker fields ◆ Update the CS point any 'From' Reference Marker fields and/or ◆ Update the ST point, any 'From' Reference Marker fields ◆ Update the PT point, any 'To' Reference Marker fields
6	◆ To select Baseline Bearing, PI Curve, or Normal Curve, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another <u>Update-Code</u>, press <F3> twice times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this <u>link</u>)	-

Follow these input instructions to update spiral curve attributes:

Update Spiral Curve Attributes

Step	Action	Input
1	(For instructions to log onto the system, click this link) From the TPP Database Maintenance Menu, select Update-Code 13H and press <E>; the TPP Database Maintenance Submenu appears	-
2	Input an X by Spiral Curve and press <E>; the Spiral Curve Data screen appears	-
3	Input Location Key fields	NOTE: Input only the PC or PT point for curve update ◆ Signed Highway System, Number, and Suffix ◆ From Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement ◆ **OR** To Reference Marker Number and Suffix, (+) or (–) Sign, and Displacement
4	Input remaining fields and press <E>; the system retrieves record data from TRM. A prompting message "Enter Updated Attribute Data" appears	Curve Type S
5	Input the update fields and press <F2>; the system updates the attribute and the verification message "Transaction completed successfully" appears. The original request for the current attributes to update displays for another update transaction	◆ Delta Angle measurements: • Degrees, whole degree values 000 to 179 • Minutes, whole minute values 00 to 59 • Seconds, seconds to one decimal values 00.0 to 59.9 • Left/Right, direction (L or R) ◆ Tangent Length 1, in miles to three decimals, values 00.000 to 99.999 ◆ Tangent Length 2, in miles to three decimals, values 00.000 to 99.999 ◆ Curve Degree Angle measurements: • Degrees, whole degree values 00 to 89 • Minutes, whole minute values 00 to 59 • Seconds, seconds to one decimal values 00.0 to 59.9
6	◆ To select Baseline Bearing, PI Curve or Normal Curve, press <F3> to exit back to the TPP Maintenance Submenu ◆ To input another Update-Code, press <F3> twice times to exit back to the TPP Database Maintenance Menu ◆ To exit back to the TRM Main Menu, press <F10> (For instructions to log off the system, click this link)	-

System Response. Because the two points which compose a normal curve also compose the second and third points of a spiral curve, the system assigns as the Curve-Id:

◆   1 to the Curve Point at the TS point of the curve

◆   2 to the Curve Point at the SC point of the curve

◆   3 to the Curve Point at the CS point of the curve

◆   4 to the Curve Point-at the ST point of the curve.

Also, the system stores all data values with Curve Point 2.

Chapter 14 — Texas Highway Designation Files

Contents:

Section 1 — What is the Highway Designation File?

Description

The Texas Highway Designation Files (THDF) contain highway designation history since September 1939, when the Transportation Commission of that time approved the General Redesignation of the State Highway System.

The THDF is located on the TPP [Intranet](#) and [Internet](#) Websites, `as well as the TxDOT homepage.` You can research any designated highway in Texas by the highway system (i.e., Interstate Highway, Farm to Market Road) and the highway's number.

Also included on the website are`:`

- The description of the highway designation process is located on the highway search page

- The glossary contains explanations of terms specific to the Highway Designation Files

- The historical facts pages contain information about the history of TxDOT and the highways

- The district/county list contains all 254 Texas counties with the corresponding district numbers in parentheses.

Section 2 — Search Instructions

Begin here

Follow these instructions to research any of the information provided by the THDF.

From the TxDOT homepage, select Roadway Information, then select General Information:

Figure 14-1. TxDOT Home Page.
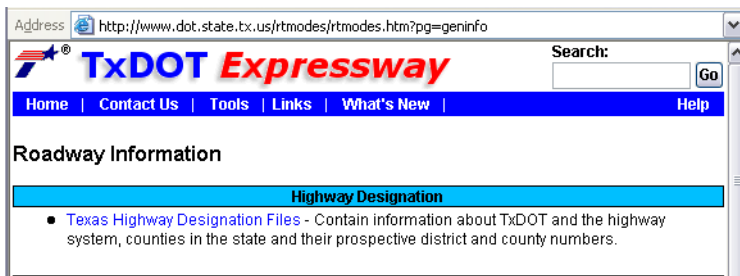
Select Texas Highway Designation Files:

Figure 14-2.   Click here for the THDF search page.
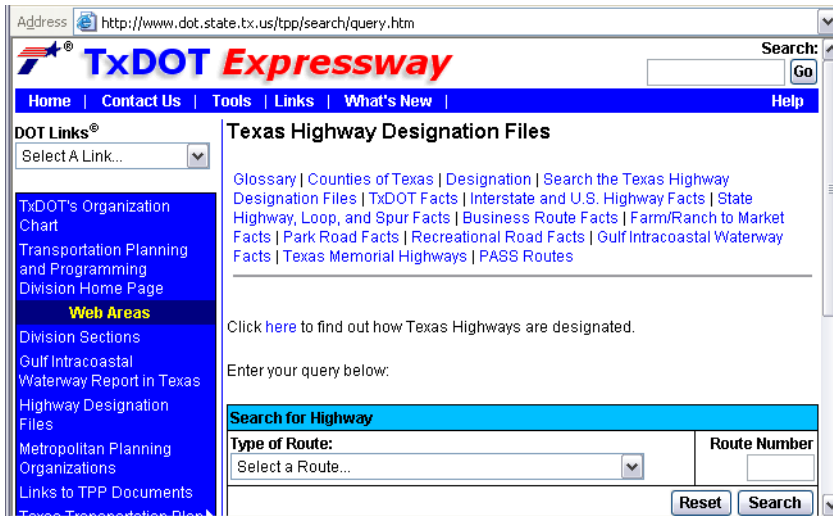
The Search Page appears:

Figure 14-3. Select a route to search.

Click on the arrow in the **Type of Route** drop-down box to select a route. The drop-down box opens to display all the highway systems included in the Highway Designation Files:
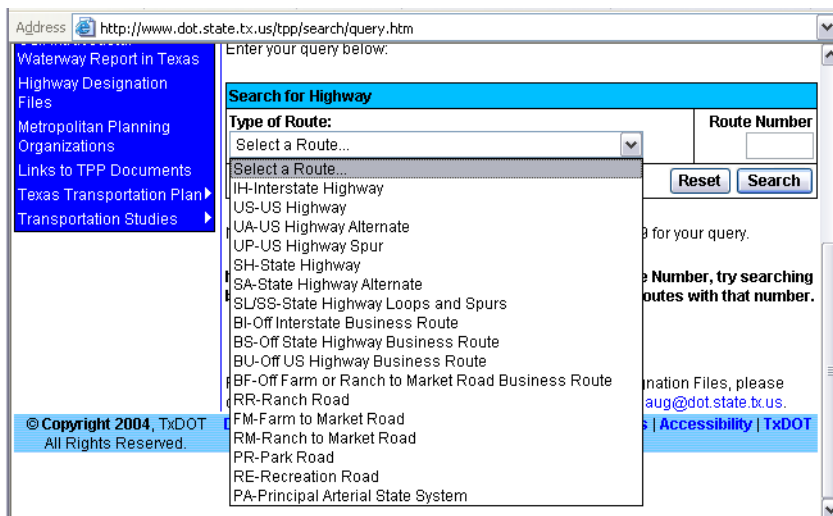

Figure 14-4. Select a highway system.

Select the Highway System you want to research then tab over to the **Route Number** box:
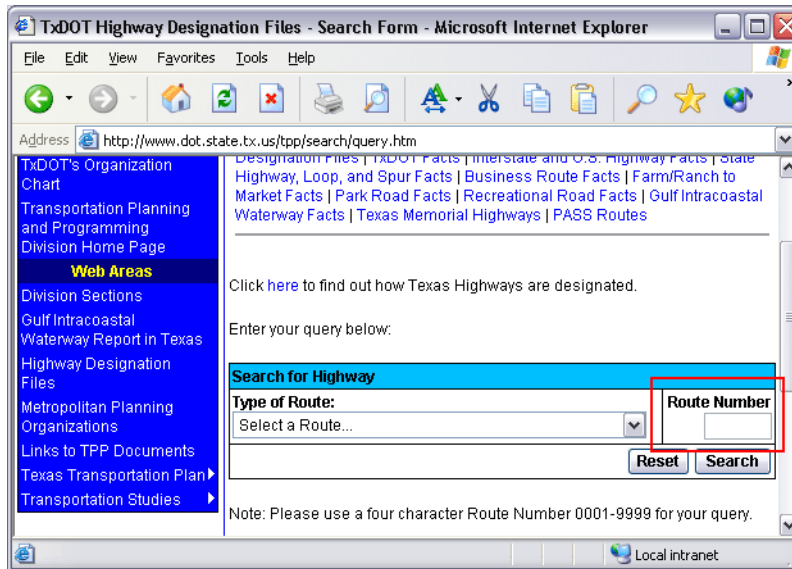
Figure 14-5. The Route Number box is at the far right of the screen.

Input the route number as four (4) digits (i.e., 0004, 0096, 0275) and select the search button; an abstract of the highway's history appears:
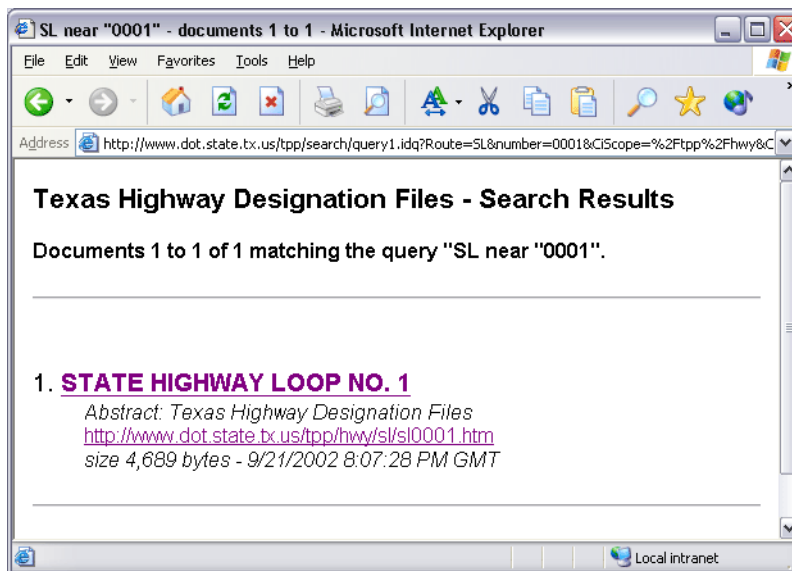

Figure 14-6. The abstract contains the first few words of the description.

Click on the highway's underlined name; the Highway Designation File for the highway appears:
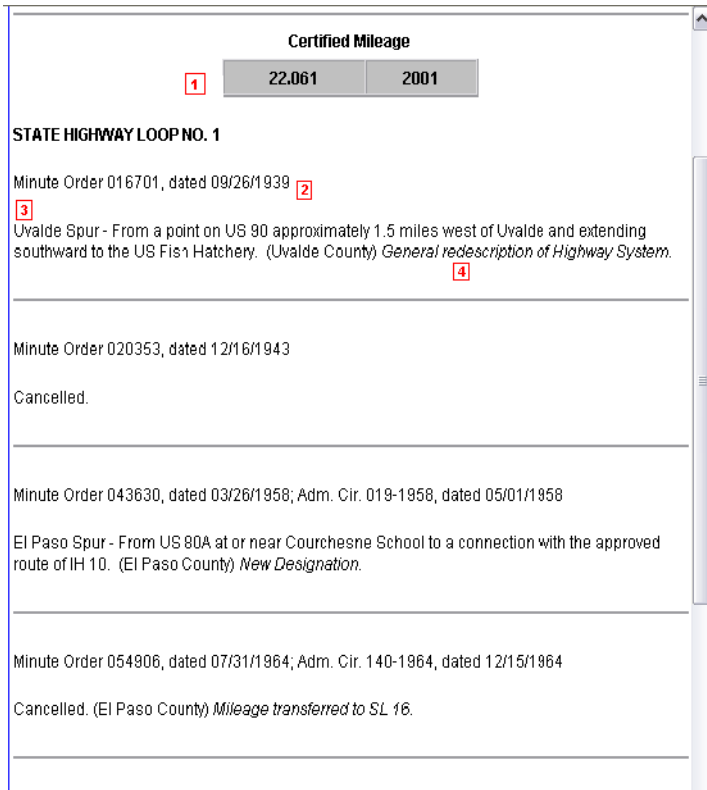
Figure 14-7. A portion of the Highway Designation File page for State Highway Loop 1.

The numbers in this table correspond to the numbers in the above graphic:

Highway File Page

Number	Description
1	The first item you see is the Certified Mileage box. This box contains the most recent highway mileage as of the date TPP certified the mileage to the Federal Highway Administration.
2	The designation history appears in date order, oldest to most recent, according to the date of the minute order designating the highway. The Minute Order Number and Date are included in the information to document the highway's approval and to assist in further research.
3	The highway's designation, or description, appears next, followed by the names of the county(ies) through which the highway passes. (On Designation Files for State Highway Loops and Spurs, the city name and "loop" or "spur" is included at the beginning of the description to distinguish among the changes in designation under the same number.)
4	The last item, in italics, explains the reason for the minute order.

Section 3 — How Highways are Designated

Begin here

From the TPP Home Page, select Texas Highway Designation Files. The highway Search Page appears. At the top of the page is the link to the description of how Texas Highways are designated:

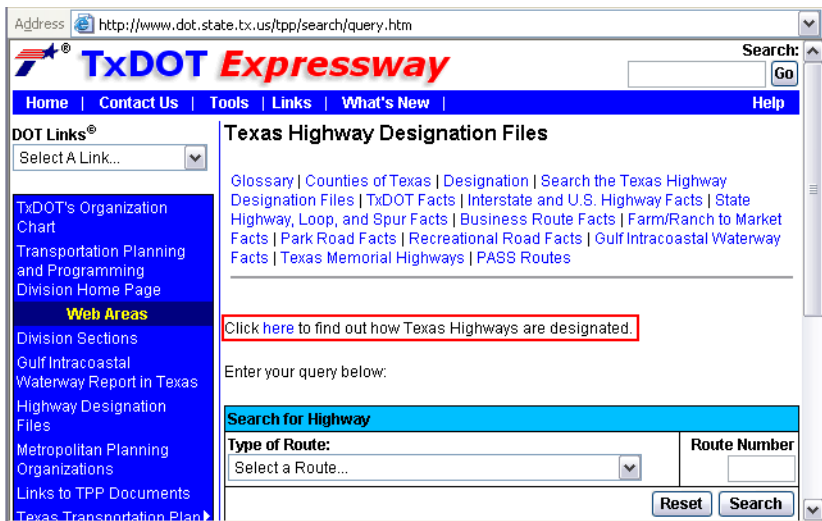*Figure 14-8. This link takes you to the description.*

Click **here** to view the explanation:
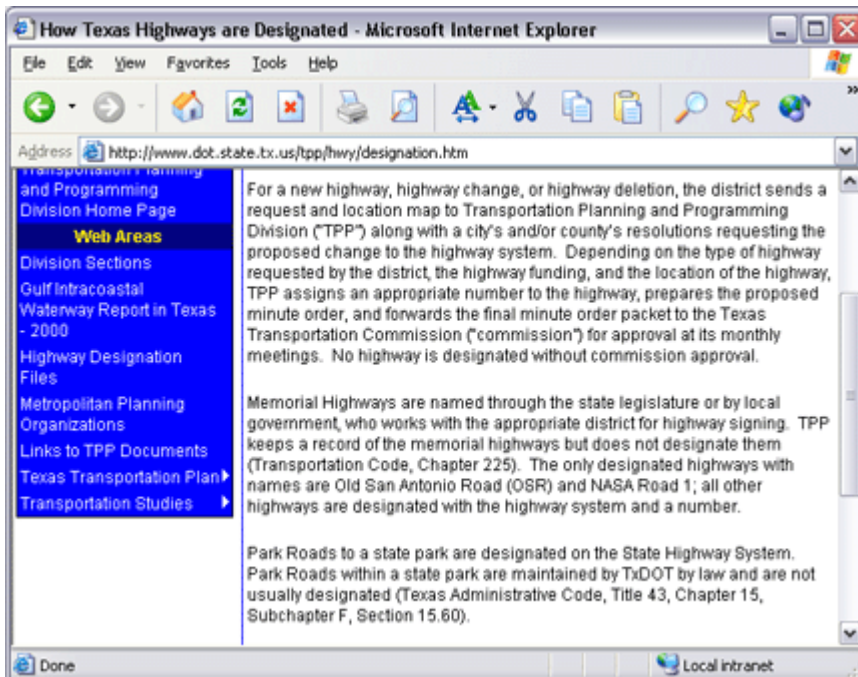
Figure 14-9. Abstract of the description.

Section 4 — Highway Designation File Glossary

Begin here

To view glossary entries, select Glossary:
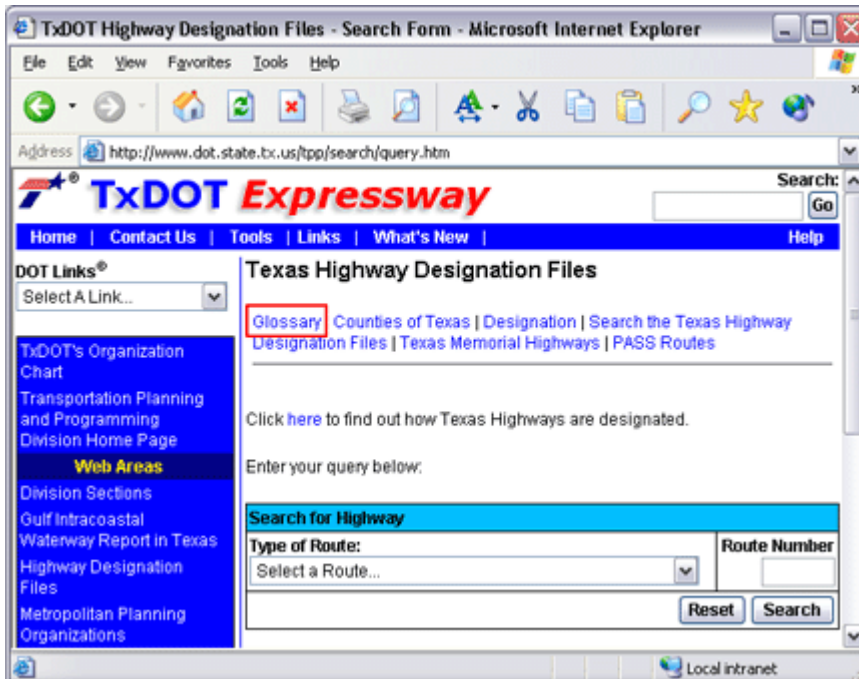
Figure 14-10. Selecting Glossary.

The Highway Designation Files' specific glossary appears.
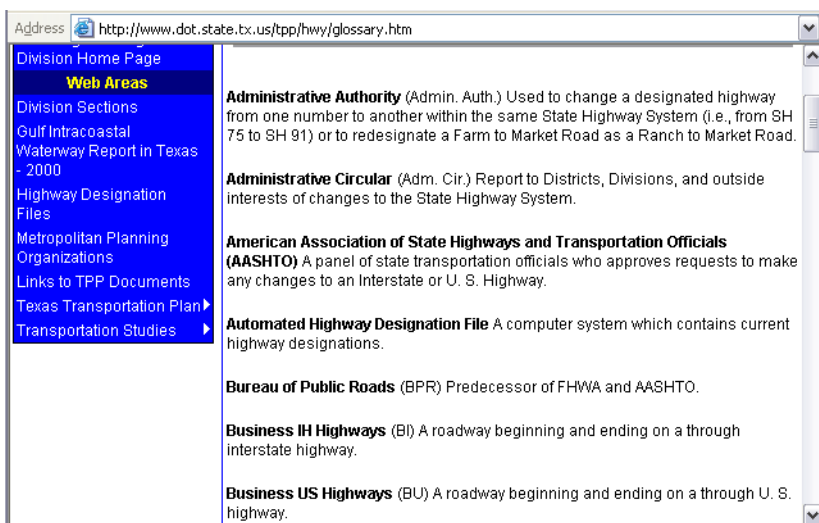
Figure 14-11. Abstract of the first glossary page.

Section 5 — County/District List

Begin here

To view the District/County list, click on **Counties of Texas**:
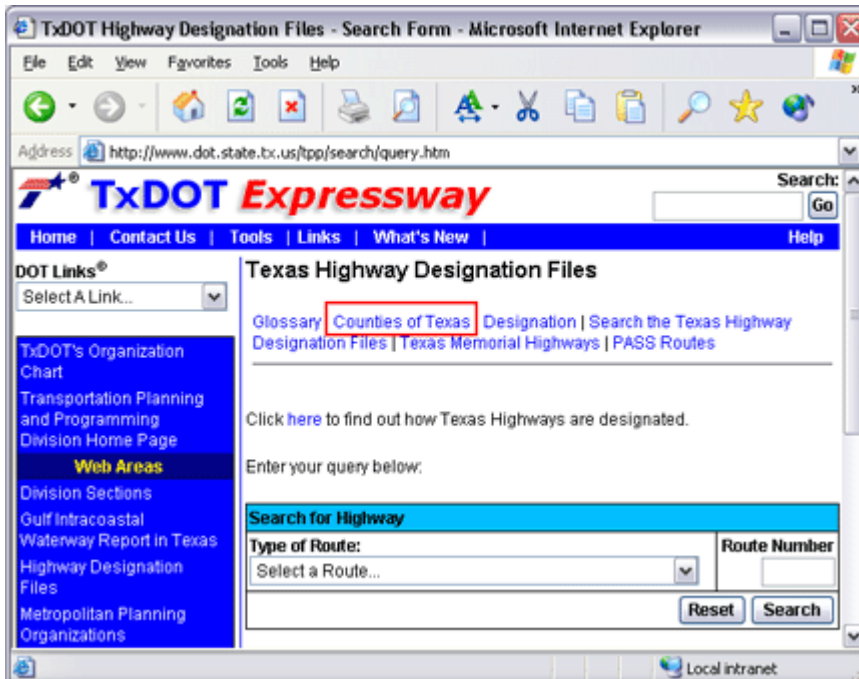
Figure 14-12. Selecting Counties of Texas.

The first page of the list appears:
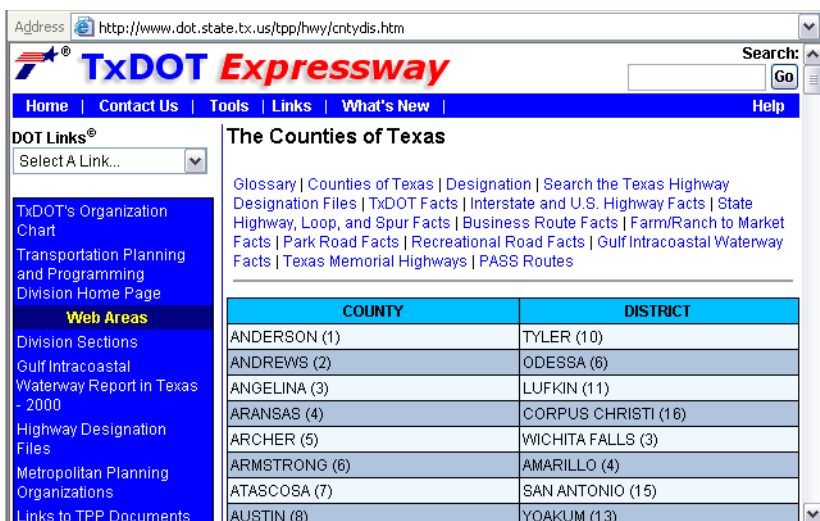
Figure 14-13. Abstract of the first district/county list page.

The counties are listed in alphabetical order with the corresponding district numbers in parentheses.

Chapter 15 — Error Messages

Contents:

Section 1 — Understanding Error Messages

What This Chapter Does

This chapter explains the meanings of error messages. For most error messages, the system requires you to enter a valid value in the highlighted, required field(s). If the system requires a different action, the explanation includes instructions.

Error Message Types

Error Messages fall into three categories:

◆   Fatal - Unless you correct the error, the system will not process the transaction:

```
TRM926289-F-At least one selection must be entered
TRM.SUB.TRR.926              TEXAS REFERENCE MARKER SYSTEM              DATE: 04/09/01
• QUERY •                    FEATURE ELEMENTS SELECTION SCREEN         TIME: 12:59 PM
```

Figure 15-1. You must enter a selection to proceed.

◆   Warning - Advises you that you must take further action, either in TRM or another database, to accurately record the information **OR** warns you that you will delete information if you press a certain function key:

```
TRM164014-W-Screen data will be lost! Press PF3 to Confirm or PF11 to Cancel
TRM.POI.TPP.112              TEXAS REFERENCE MARKER SYSTEM              DATE: 04/20/01
• ADD     •                            POINT DATA                      TIME: 04:09 PM

   Signed Highway      Reference Marker      Roadbed    I---- ROADWAY FEAT -----I
   Sys  Num   Suf      Num  Suf  Disp          Id        Code  Grade   L/R   B/E
```

Figure 15-2. Be sure you want to erase the screen.

◆   Informational - Advises you to confirm the transaction **or** how to proceed:

```
TRM.POI.TPP.112              TEXAS REFERENCE MARKER SYSTEM              DATE: 04/06/01
• UPDATE •                             POINT DATA                      TIME: 03:32 PM
TRM166154-I-Enter Current location plus all required fields <E>
   Signed Highway      Reference Marker      Roadbed    I---- ROADWAY FEAT -----I
   Sys  Num   Suf      Num  Suf  Disp          Id        Code  Grade   L/R   B/E
```

Figure 15-3. Proceed per instruction to complete the transaction.

About Message Variables

Some error message explanations contain variables shown as **'Variable 1'** or **'Variable 2'.** If you receive an error message that contains a variable, the error message describes the specifics of the error in place of **'Variable 1'** or **'Variable 2'**. The error message explanation usually contains the variable possibilities:

EXAMPLE: TRMxxx125 - "REF-MARKER-DISP cannot be −**0.238 (Variable 1)** when REF-MARKER-NBR is **0000 (Variable 2)**". The Reference Marker Displacement cannot be negative when the Reference Marker Number is zero. Likewise, the Reference Marker Displacement cannot be positive when the Reference Marker Number is 9999. Values appearing in **Variable 1**/**Variable 2** are Negative/0000 or Positive/ 9999. Enter a valid displacement value and press <F2> or <E>.

Section 2 — Error Messages

TRMxxx001 - (Fatal) "New Reference-MARKER-NBR must have a suffix." You moved a refer-ence marker and the system requires a suffix for the new location. Enter the next sequential suffix.

TRMxxx002 - (Informational) "Press PF2 to Confirm or PF11 to Cancel**.**" The system requires confirmation to delete data from TRM. Press <F2> to complete the delete transaction or press <F11> to cancel the transaction (the system takes no action).

TRMxxx003 - (Fatal) "User not authorized to access the selected screen**.**" Your signon (User Id) key does not have the proper security to access the selected menu option. Make a different menu selection or contact your automation administrator concerning security access capabilities.

TRMxxx004 - (Fatal) "**Variable 1** is not valid for current function; please reselect**.**" The selected function key (**Variable 1**) does not function on this screen. Select a different function key.

TRMxxx005 - (Fatal) "Required field(s) must be entered; please enter valid data." The system highlights all fields that apply to the selected update function. The cursor appears in the empty field awaiting a valid value to complete the transaction.

TRMxxx006 - (Fatal) "All three fields required to update SHOULDER data." Enter Left/Right Shoulder Width, Type, and Use at the same time.

TRMxxx007 - (Fatal) "At least one highlighted field must be entered." This message displays if you press <F2> or <E> but have not entered new data in any field. Enter valid values into all required fields and press <F2> or <E> again.

TRMxxx008 - (Fatal) "Invalid SPIRAL-CURVE; TS and/or ST point must be entered." A valid three-point spiral curve contains the following points: A tangent-to-spiral (TS) + Spiral to Curve (SC) + Curve-to-spiral (CS) or Spiral-to-curve (SC) + Curve to Spiral (CS) + Spiral-to-tangent (ST). The curve must include at least one TS or ST point. Enter valid values for the missing TS or ST point.

TRMxxx010 - (Fatal) "Invalid District HIGHWAY-STATUS; valid codes are 4 or 5." District TRM personnel may only input Highway Status values 4 or 5. Enter a valid District Highway Status value and press <F2> or <E>.

TRMxxx011 - (Fatal) "Invalid **Variable 1**; press PF1 for help or see User's Manual." You entered an invalid value for the highlighted field. Enter a valid value for the highlighted field name appear-ing in **Variable 1**.

TRMxxx012 - (Fatal) "Invalid REF-MARKER-SUFFIX; valid codes are blank or A--Z." You entered a value other than blank or A thru Z for the marker suffix. Leave the field blank or enter the next sequential alphabet letter.

TRMxxx013 - (Fatal) "Invalid TPP HIGHWAY-STATUS; valid codes are 1--6." TPP may only input Highway Status values 1 thru 6. Enter a valid TPP Highway Status value and press <F2> or <E>

TRMxxx014 - (Warning) "Screen data will be lost! Press PF1 to confirm or PF11 to Cancel." You pressed an exit function key (F3, F10, or F12) and changed field values since last accessing the screen or since the last time you pressed <F2>. Press F11 to remain on the screen and continue the transaction, or repress the same exit function key to leave the screen.

TRMxxx015 - (Fatal) "Invalid DISTRICT-ID; valid codes are 01-25." You entered a District-Id value other that 01 thru 25. Enter a valid District Id value and press <F2> or <E>.

TRMxxx016 - (Fatal) "Invalid COUNTY-NUMBER; valid codes are 001-254." You entered a County Number value other than 001 thru 254. Enter a valid County Number value and press <F2> or <E>.

TRMxxx017 - (Informational) "Top of data." Message displays to indicate that no records exist prior to those displayed on the query data screens. Pressing F7 once the first data screen displays prompts this message.

TRMxxx018 - (Informational) "Bottom of data." Message displays to indicate that no records exist beyond those displayed on the query data screens. Pressing F8 after the last data screen appears prompts this message.

TRMxxx019 - (Fatal) "Curve point location must be > previous curve point location." Enter curve points in ascending reference marker order. The highlighted curve point is not in sequential order when compared to the other curve points. Enter a curve point location that conforms to the sequential marker location order of the other curve points already entered.

TRMxxx020 - (Fatal) "Invalid BEARING-TYPE value; valid codes are 1, 2, 3, or 4." You entered a value other than 1, 2, 3, or 4 for Bearing Type.

TRMxxx021 - (Fatal) "Invalid BEGINNING-DIRECTION; valid codes are N or S." You entered a Beginning Direction value other than N (north) or S (south). Enter a valid Beginning-Direction value and press <F2> or <E>.

TRMxxx022 - (Fatal) "BEARING-DEGREE must be whole >= 00 and <= 90." You entered a Bearing Degree value other than a whole number from 0 thru 90. Enter a valid Bearing Degree value and press <F2> or <E>.

TRMxxx023 - (Fatal) "BEARING-MINUTES must be whole >= 00 and <= 59." You entered a Bearing Minutes value other than 0 thru 59. Enter a valid Bearing Minutes value and press <F2> or <E>.

TRMxxx024 - (Fatal) "BEARING-SECONDS must be >= 00.0 and <= 59.9." You entered a Bearing Seconds value other than 0.0 thru 59.9. Enter a valid Bearing Seconds value and press <F2> or <E>.

TRMxxx025 - (Fatal) "Invalid ENDING-DIRECTION; valid codes are W or E." You entered an Ending Direction value other than W (west) or E (east). Enter a valid Ending-Direction value and press <F2> or <E>.

TRMxxx026 - (Fatal) "DELTA-DEGREE must be whole number >= 00 and <= 179." You entered a Delta Degree value other than 0 thru 179. Enter a Delta Degree valid value and press <F2> or <E>.

TRMxxx027 - (Fatal) "DELTA-MINUTES must be whole number >= 00 and <= 59." You entered a Delta Minutes value other than 0 thru 59. Enter a valid Delta Minutes value and press <F2> or <E>.

TRMxxx028 - (Fatal) "DELTA-SECONDS must be >= 00.0 and <= 59.9." You entered a Delta Seconds value other than 0.0 thru 59.9. Enter a valid Delta Seconds value and press <F2> or <E>.

TRMxxx029 - (Fatal) "Invalid DELTA-LEFT-RIGHT value; valid codes are L or R." You entered a Delta Left/Right value other than L (left) or R (right). Enter a valid Delta Left/Right value and press <F2> or <E>.

TRMxxx030 - (Fatal) "DOC-DEGREE must be >= 00 and <= 89." You entered a DOC (Degree of Curve) Curve Degree value other than 0 thru 89. Enter a valid value for the Degree of Curve and press <F2> or <E>.

TRMxxx031 - (Fatal) "DOC-MINUTES must be >= 00 and <= 59." You entered a DOC (Degree of Curve) Curve Minute value other than 0 thru 59. Enter a valid Degree of Curve value and press <F2> or <E>.

TRMxxx032 - (Fatal) "DOC-SECONDS must be >= 00.0 and <= 59.9." You entered a DOC (Degree of Curve) Curve Second value other than 0.0 thru 59.9. Enter a valid Degree of Curve value and press <F2> or <E>.

TRMxxx033 - (Fatal) "Overlapping existing section **Variable 1**; cannot update." Multiple HPMS Current IDS overlap. Enter a valid HPMS Current ID value, or resubmit a valid milepoint range through the batch update process.

TRMxxx034 (Fatal) "ROW-WIDTH must be whole number >= 001 & <= 999." You entered a ROW Width value other than 001 thru 999. Enter a valid ROW Width value and press <F2> or <E>.

TRMxxx035 - (Fatal) "Invalid SKEW-QUAD value; valid codes are 1, 2, 3, or 4." You entered a Roadway Feature Skew Quad value other than 1, 2, 3, or 4. Enter a valid Roadway Feature Skew Quad value and press <F2> or <E>.

TRMxxx036 - (Fatal) "Invalid SKEW-TYPE value; valid codes are 0 or 1." You entered a Skew Type value other than 0 or 1: 0 (stops at road) or 1 (crosses road). Enter a valid Skew Type value and press <F2> or <E>.

TRMxxx037 - (Fatal) "SKEW-ANGLE degree must be >= 00 and <= 90." You entered a Skew Angle value other than 00 thru 90. Enter a valid Skew Angle value and press <F2> or <E>.

TRMxxx038 - (Fatal) "Invalid RURAL-URBAN value; valid codes are 1, 2, 3, or 4." You entered a Rural/Urban value other than 1, 2, 3, or 4. Enter a valid Rural/Urban value and press <F2> or <E>.

TRMxxx039 - (Fatal) "Invalid ADMIN-SYSTEM value; valid codes are 1, 2, 5, 6, 8, 11, 12, or 13." You entered a Administrative System value other than 1, 2, 5, 6, 8, 11, 12, or 13. Enter a valid Administrative System value and press <F2> or <E>.

TRMxxx040 - (Fatal) "Gap found between consecutive whole markers; cannot Redesignate." Redesignation segments cannot cross roadway gaps. This message describes the gap specifically. Select a different range to redesignate or add/move reference marker(s).

TRMxxx041 - (Fatal) "Invalid ROADWAY-FEATURE-GRADE code; valid codes are U, G, or D." You entered a Roadway Feature Grade value other than U, G, or D. Enter a valid Roadway Feature Grade value and press <F2> or <E>.

TRMxxx042 - (Fatal) "Invalid ROADWAY-FEATURE-L-R code; valid codes are L or R." You entered a Roadway Feature Left/Right value other than L (feature on Left) or R (feature on Right). Enter a valid Roadway Feature Left/Right value and press <F2> or <E>.

TRMxxx044 - (Fatal) "User not on Job Control File; contact Automation Administrator." Your User-Id is in the Job Control File maintained by Technology Services Division's (TSD) security section. Contact your Automation Administrator.

TRMxxx045 - (Fatal) "RAILROAD-NUMBER format must be 6 numeric and 1 alpha: NNNNNNA." You entered a Railroad Number value other than 6 numeric and 1 alpha: NNNNNN (000000 thru 999999) and A (A thru Z). Enter a valid Railroad Number value and press <F2> or <E>.

TRMxxx046 - (Fatal) "Invalid INTERSECTION-TYPE code; valid codes are A, B, or D." You entered an <u>Intersection Type</u> value other than A, B, or D. Enter a valid Intersection Type value and press <F2> or <E>.

TRMxxx047 - (Fatal) "Invalid ROADBED-ID code; valid codes are N ,X, Y, A, B, C, or blank." You entered a <u>Roadbed-Id</u> value other than N, X, Y, A, B, C, or blank on the <u>Administrative Data</u> screen. Enter a valid Roadbed-Id value and press <F2> or <E>.

TRMxxx048 - (Fatal) "Invalid SECONDARY-ROUTE code; valid codes are A-C, E-O, Z, or 1-9." You entered a <u>Secondary Route</u> value other than A thru C, E thru O, Z, or 1 thru 9. Enter a valid Secondary Route value and press <F2> or <E>.

TRMxxx049 - (Fatal) "Invalid ROADSIDE-FEATURE-CODE; valid codes are A-K, or Z." You entered a <u>Roadside</u> Feature value other than A thru K, or Z. Enter a valid Roadside Feature value and press <F2> or <E>.

TRMxxx050 - (Fatal) "Invalid ROADSIDE-FEATURE-CODE; valid codes are A-F, H-K, or Z." You entered a <u>Roadside</u> Feature value other than A thru F, H thru K, or Z. Enter a valid Roadside Feature value and press <F2> or <E>.

TRMxxx051 - (Fatal) "ROW-WIDTH must be >= sum of ROADBED-WIDTHS plus MEDIAN-WIDTH." The sum of all Roadbed Widths + all Median Widths within the given marker range must equal no more than the ROW Width Minimum. The system compares all these fields against each other or values stored in TRM.

TRMxxx052 - (Fatal) "MAINTENANCE-SECTION must be 0 when HIGHWAY-MAINT-STA-TUS = 04." Maintenance Section must be 0 (no maintenance section) when Highway Maintenance <u>Status</u> is 04 (not state maintained). The system compares all these fields against each other or values stored in TRM.

TRMxxx053 - (Fatal) "Error with HIGHWAY-MAINT-STATUS or ROADBED-WIDTH." Maintenance <u>Status</u> must be 01 (state maintenance) when Roadbed Width is greater than zero. (You **do not** enter these fields on the screen together.) The system compares the entered field with values stored in TRM within the given reference marker range.

TRMxxx054 - (Fatal) "Invalid ROADBED-ID; valid codes are M, P, S, T, X, A, Y, or B." You may delete only specific <u>Roadbeds</u> from a route. If deleting mainlanes, select Delete a Route. If changing mainlane Roadbed-IDS, select Update Roadbeds.

TRMxxx055 - (Fatal) "Invalid BEGIN-END code; valid codes are B or E." You entered a Begin/End value other than B (begin of feature, roadbed, or secondary route) or E (end of feature, road-bed, or secondary route). Enter a valid Begin/End value and press <F2> or <E>

TRMxxx056 - (Fatal) "HPMS section already in existence on **Variable 1**; cannot be updated." The HPMS section Id listed in the transaction already exists on another route or another section of the same route. Values appearing in **Variable 1** are the same route as the transaction or other route. Enter a highway or highway section that does not contain the same HPMS section Id.

TRMxxx057 - (Fatal) "ROADBED-WIDTH must be >= SURFACE-WIDTH + SHOULDER-WIDTHS." The sum of Surface Width + Shoulder Width within the given marker range and road-bed must less than the Roadbed Width. The system compares all these fields against each other or values stored in TRM.

TRMxxx058 - (Fatal) "SPEED-LIMIT-MAX must be >= SPEED-LIMIT-MIN." The maximum speed limit must be greater than or equal to the minimum speed limit. The system compares all these fields against each other or values stored in TRM.

TRMxxx059 - (Fatal) "MAINTENANCE-SECTION must be whole number >= 00 and <= 30." You entered a Maintenance Section value other than 00 thru 30. Enter a valid Maintenance Section value and press <F2> or <E>.

TRMxxx060 - (Fatal) "Invalid HIGHWAY-MAINT-STATUS code; valid codes are 01 or 02." You entered a Maintenance Status value other than 01 or 02. Enter a valid Maintenance Status value and press <F2> or <E>.

TRMxxx061 - (Fatal) "Invalid MAINTENANCE-DISTRICT; valid codes are 01-25." You entered a Maintenance District value other 01 thru 25. Enter a valid Maintenance District value and press <F2> or <E>.

TRMxxx062 - (Fatal) "MAINTENANCE-FOREMAN-NBR must be whole number <= 01 and <= 30." You entered a Maintenance Foreman Number value other than 01 to 30. Enter a valid Mainte-nance Foreman Number value and press <F2> or <E>.

TRMxxx063 - (Fatal) "SPEED-LIMIT-MINIMUM must be >= 01 and <= 75." You entered a Speed Limit Minimum value other than 01 thru 75. Enter a valid Speed Limit Minimum value and press <F2> or <E>.

TRMxxx064 - (Fatal) "SPEED-LIMIT-MAXIMUM must be >= 01 and <= 75." You entered a Speed Limit Maximum value other than 01 thru 75. Enter a valid Speed Limit Maximum value and press <F2> or <E>.

TRMxxx065 - (Fatal) "Invalid BASE-TYPE-CODE; valid codes are 1, 2, 3, 8, or 9." You entered a Base Type value other than 1, 2, 3, 8, or 9. Enter a valid Base Type value and press <F2> or <E>.

TRMxxx066 - (Fatal) "NUMBER-THRU-LANES must be whole number >= 01 and <= 10." You entered a Number of Through Lanes value other than 01 thru 10. Enter a valid Number of Through Lanes value and press <F2> or <E>.

TRMxxx067 - (Fatal) "HPMS-Current-Id must be 12 characters long." You entered an invalid number of characters. Enter 12 characters for the HPMS Id in the following format: CCCCSS0BBBBB [Control-Section-Zero (0)-Beginning milepoint for the section].

TRMxxx068 - (Fatal) "Invalid DIRECTION-OF-TRAVEL code; valid codes are 1, 2, or 3." You entered a Direction of Travel value other than 1, 2, or 3. Enter a valid Direction of Travel value and press <F2> or <E>.

TRMxxx069 - (Fatal) "SHOULDER-WIDTH must be >= 0 and <= 30." You entered a Shoulder Width value other than 0 thru 30. The system compares all these fields against each other or values stored in TRM. Enter a valid Shoulder Width value and press <F2> or <E>.

TRMxxx070 - (Fatal) "Invalid SHOULDER-TYPE code; valid codes are 1--7." You entered a Shoulder Type Left/Right value other than 1 thru 7. Enter a valid Shoulder Type Left/Right value and press <F2> or <E>.

TRMxxx071 - (Fatal) "Invalid SHOULDER-USE code; valid codes are 00--06." You entered a Shoulder Use Left/Right value other than 00 thru 06. Enter a valid Shoulder Use Left/Right value and press <F2> or <E>.

TRMxxx072 - (Fatal) "Invalid ROADBED-ID; records for N roadbed already exist." A feature exists in TRM on the N roadbed. You cannot add or move other features to any specific mainlane roadbed (R, L, M, S, P, or T) at the same location. Either enter a roadbed specific Roadbed-Id or correct the existing record in TRM.

TRMxxx073 - (Fatal) "Invalid ROADBED-ID; records for specific roadbeds already exist." A feature already exists in TRM on any of the roadbed-specific Roadbed-IDS (R, L, M, S, P, or T). You cannot add or move other features using Roadbed-Id N at the same location. Either enter a roadbed specific Roadbed-Id or correct the existing record in TRM.

TRMxxx074 - (Fatal) "Invalid ROADWAY-FEATURE-GRADE code; valid codes are U or D." You entered a Roadway Feature Grade value other than U or D. This applies to specific features only. The feature grade cannot be G (at-Grade). Valid values are: U (feature is Up above roadway) or D (feature is Down below roadway).

TRMxxx075 (Fatal) "Invalid CURB-TYPE; valid codes are 0-4." You entered a Curb Type value other than 0 thru 4. Enter a valid Curb Type value and press <F2> or <E>.

TRMxxx076 - (Fatal) "Error with INT-TYPE or ROADWAY-FEATURE-GRADE." You entered Intersection Type and Roadway Feature Grade values that do not correspond. Enter corresponding Intersection Type and the Roadway Feature Grade values and press <F2> or <E>.

TRMxxx077 - (Fatal) "STRUCTURE-NUMBER required when ROADWAY-FEATURE-GRADE = 'U'." For specific features, enter the Structure Number when the Roadway Feature Grade is U (feature is Up above roadway). Verify the Roadway Feature Value.

TRMxxx079 - (Fatal) "Begin and End points are from different **Variable 1** designations." Overlapping Secondary Route locations cause this error. Delete and re-enter at least one of the overlapping Secondary Routes with valid limits.

TRMxxx080 - (Fatal) "Invalid transaction; route will be left with no markers." If you delete marker(s) or route segment, the route to have no reference markers. Select fewer markers to delete or a smaller route section to delete so that at least one marker remains.

TRMxxx081 - (Fatal) "Invalid ROADWAY-FEAT-CODE; valid codes are 25, 31-36, 41, or 99." You entered a Roadway Feature value other than 25, 31 thru 36, 41, or 99. Enter a valid Roadway Feature value and press <F2> or <E>.

TRMxxx082 - (Fatal) "ROADWAY-FEAT-GRADE must be set to 'G'." For the specified feature, the feature grade must be G (feature is at-grade). Verify that the Roadway Feature value is valid or enter a G for the Roadway Feature Grade.

TRMxxx083 - (Fatal) "Invalid ROADWAY-FEAT-CODE; valid codes are 25, 31-34, 36, 41, or 99." You entered a Roadway Feature value other than 25, 31 thru 34, 36, 41, or 99. Enter a valid Roadway Feature value and press <F2> or <E>.

TRMxxx084 - (Fatal) "RAILROAD-NUMBER is required when ROADWAY-FEAT-GRADE = 'G'." Enter the Railroad Crossing Number when the Roadway Feature Grade is G (At-Grade).

TRMxxx085 - (Fatal) "ROADBED-ID does not exist at this location." At the given marker location and roadbed for point attributes, the given Roadbed-Id does not exist. Verify the Roadbed-Id or enter a different Roadbed-Id.

TRMxxx086 - (Fatal) "ROADWAY-FEAT-GRADE must be set to = 'D'." For Culverts, the Roadway Feature Grade is D (feature is Down below roadway).

TRMxxx099 - (Fatal) "CULVERT-FILL-DEPTH must be whole number." You entered a Culvert Fill Depth value other than 01 thru 99. Enter a valid Culvert Fill Depth value and press <F2> or <E>.

TRMxxx100 - (Fatal) "Invalid Transaction; request is beyond district boundaries." District offices may only Add, Update, or Delete data residing on routes within their own maintenance district. Verify that the route and reference marker range are within your Maintenance District.

TRMxxx101 - (Informational) "Highlighted fields will be ignored; press PF2 or PF11." One or more of the fields entered on the screens do not apply to the specified update function. The system

does not consider the highlighted fields in any processing or record updates. Press <F2> to continue or <F11> to cancel.

TRMxxx102 - (Fatal) "New REF-MKR-NUM must be > existing REF-MKR-NUM if DISP is positive." The new Reference Marker Number is sequentially higher than the existing marker, so the displacement to the new marker number must be greater than 0. Verify the displacement to the new marker.

TRMxxx103 - (Fatal) "Sign cannot be '-' when new REF-MKR-NUM is > existing REF-MKR-NUM." The new Reference Marker Number is sequentially higher than the existing Reference Marker Number stored in TRM, so the sign cannot be negative. Remove the sign or change it to +.

TRMxxx104 - (Fatal) "A gap exists within the range specified, transaction invalid." You cannot update length data across a roadway gap. Select a different range to update.

TRMxxx105 - (Fatal) "Process cannot create 2nd gap between consecutive REF-MARKER-NBRs." A second roadway gap between consecutive reference markers creates a route segment with no markers. Adjust the marker limits for the transaction to ensure that the route segment has at least one reference marker.

TRMxxx106 - (Fatal) "Route is a high-order route within a link; link must be deleted." The deleted or redesignated route or route section is a link to another route. You must check other sources such as the ARI or construction plans to find the designation of the linked route because this information is not available through the query facility. Identify the linked route and delete the link. Re-enter the route deletion or redesignation transaction.

TRMxxx107 - (Fatal) "Selection must be **Variable 1**." You entered a menu selection outside the range of selections. Values appearing in **Variable 1** are any of the selection values or characters. Make a valid selection.

TRMxxx108 - (Informational) "Data cannot be displayed within Link sections." The range selected for the query falls inclusively within a linking segment of another route. The system stores all data within the marker range with the continuous route. Select a larger reference marker range.

TRMxxx109 - (Fatal) "Calculated To-Point cannot exceed 99.999." You calculated the distance for the length of the link being stored with the Signed Highway as greater than 99.999 miles. Enter a range smaller than 99.999 miles.

TRMxxx110 - (Fatal) "**Variable 1** causes a subsequent DISTANCE-FROM-ORIGIN to be > 9999.999." You must update the DFO of all markers beyond a link with the new mileage. If the DFO is greater than 999.999 for any marker beyond the link, this message appears. Values appearing in **Variable 1** are Section Length and Link Length. Enter a link with a shorter length.

TRMxxx111 - (Fatal) "**Variable 1** causes a distance between whole markers to be > 99.999." Update the distance between the markers before and after the link with the new mileage. If the distance is greater than 99.999 for the marker beyond the link, this message appears. Values appearing in **Variable 1** are Section Length and Link Length. Enter a link with a shorter length.

TRMxxx112 - (Fatal) "**Variable 1** length must be >= 00.001 and <= 99.999". The length, whether entered or calculated, must be a value 00.001 thru 99.999. Values appearing in **Variable 1** are: Redesignation, Concurrency, Off-System Section, Curve Length, and Tangent. Enter a valid length in the Off System Length or enter displacements that calculate to a valid length.

TRMxxx113 - (Fatal) "Invalid ROADBED-ID; valid codes are N, K, M, S, P, or T." You entered a Roadbed-Id value other than N, K, M, S, P, or T. Enter a valid Roadbed-Id value and press <F2> or <E>.

TRMxxx114 - (Fatal) "BOUNDARY-TYPE = C must exist." Records for Boundary Type C (County Boundary) must exist in TRM before you add records for Boundary Type A (State Boundary) or Boundary Type B (District Boundary). Add records for these boundaries in this order: County (type C), District (type B), and State (type A).

TRMxxx115 - (Fatal) "**Variable 1** roadbed does not exist within limits." In order to add supplemental mainlane roadbeds, the corresponding mainlane roadbed must exist within the From and To Reference Marker limits. Values appearing in **Variable 1** are: L if M or P is added; R if S or T is added. Verify the limits of the added roadbed.

TRMxxx116 - (Fatal) "SIGNED-HIGHWAY cannot be the same as **Variable 1**." You entered the route as the Signed Highway, which must be different from the route entered as either the Intersecting or Linking Signed Highway.

TRMxxx117 - (Fatal) "Invalid COUNTY-NUMBER; does not reside in District **Variable 1**." You entered a County Number that is not included in the District Id value stored in **TRM within the given reference marker range. Values appearing in Variable 1** are 01-25. Enter a valid County Number value and press <F2> or <E>.

TRMxxx118 - (Fatal) "Multiple gaps encountered within range; cannot redesignate." Redesignation segments cannot cross roadway gaps. This message clearly describes that you must deal with more than one gap before the system accepts the transaction. Select a different range to redesignate or verify and update the gaps so this error message does not reappear.

TRMxxx119 - (Warning) "Railroad data must also be modified on the Railroad file." The TRM system updates through online processing and cannot verify the existence of the entered railroad information against the Railroad File. Verify whether the entered railroad information also exists on the Railroad File. If not, take appropriate action to include the information.

TRMxxx120 - (Warning) "Structure data must also be modified on BRINSAP." The TRM system updates through online processing and cannot verify the existence of the entered structure information against the Bridge Inventory, Inspection and Appraisal Program (BRINSAP) bridge information file. Verify whether the entered structure information also exists on the BRINSAP file. If not, take appropriate action to include the information.

TRMxxx121 - (Warning) "Railroad data must also be modified on BRINSAP." The TRM system updates through online processing and cannot verify the existence of the entered railroad information against the BRINSAP bridge information file. Verify whether the entered railroad information also exists on the BRINSAP file. If not, take appropriate action to include the information.

TRMxxx122 - (Fatal) "Invalid ROADBED-ID; valid codes are K, A, B, R, S, T, X, Y, L, M, N, or P." You entered a [Roadbed-Id](#) value that is not K, A, B, R, S, T, X, Y, L, M, N, or P. Enter a valid Roadbed-Id value and press <F2> or <E>.

TRMxxx123 - (Fatal) "REF-MARKER-NUMBER 0000 cannot be deleted or updated." With the exception of Interstate Highways, [marker](#) 0000 is only a **placeholder** marker number, not a physical marker, so you cannot update or delete it. Use the closet sequential marker number with a negative marker displacement in the transaction.

TRMxxx124 - (Fatal) "BOUNDARY-TYPEs = 'B' and 'C' must exist before 'A' can be added." Records for Boundary [Type B](#) (District Boundary) and C (County Boundary) must exist in TRM before adding a record for Boundary Type A (State Boundary). Add records for these boundaries in this order: County (type C), District (type B), and State (type A).

TRMxxx125 - (Fatal) "REF-MARKER-DISP cannot be **Variable 1** when REF-MARKER-NBR is **Variable 2**." The Reference Marker Displacement cannot be negative when the Reference Marker Number is zero. Likewise, the Reference Marker Displacement cannot be positive when the Reference Marker Number is 9999. Values appearing in **Variable 1**/**Variable 2** are Negative/0000 or Positive/9999. Enter a valid displacement value and press <F2> or <E>.

TRMxxx126 - (Fatal) "REF-MARKER-NUMBER **Variable 1** cannot be added or deleted or updated." You cannot add, update, or delete placeholder reference [marker](#) numbers. Values appearing in **Variable 1** are 0000 (for non-interstate highways) or 9999. Enter a valid marker number and press <F2> or <E>.

TRMxxx127 - (Fatal) "From Reference-MARKER-GRP cannot = To Reference-MARKER-GRP." When processing data through TRM maintenance screens, the marker and displacement fields entered in the [From](#) Reference Marker Group cannot equal those entered in the [To](#) Reference Marker Group. These fields may equal in query processing. Enter different values into the From and/or To Reference Marker Group fields and press <F2> or <E>.

TRMxxx128 - (Fatal) "No **Variable 1** record found at this point." You entered a boundary type value that does not exist at the reference marker location. Values appearing in **Variable 1** are any of the valid boundary types. Enter a valid boundary location and press <F2> or <E>.

TRMxxx130 - (Fatal) "SIGNED-HIGHWAY does not exist in TRM." You entered a Signed Highway not found in TRM. Check Query or enter a valid Signed Highway and press <F2> or <E>.

TRMxxx131 - (Fatal) "Reference-MARKER already exists in TRM." You added a Reference Marker Number plus Suffix (if any) already existing in TRM. Check Query or verify the reference marker entered.

TRMxxx132 - (Fatal) "Reference-MARKER does not exist in TRM." The Reference Marker Number plus Suffix (if any) entered in the add, update, or delete transaction does not exist in TRM. Check Query or verify the reference marker entered.

TRMxxx133 - (Fatal) "SIGNED-HIGHWAY already exists in TRM." You added a Signed Highway already existing in TRM. Check Query or enter a different Signed Highway.

TRMxxx134 - (Fatal) "Record(s) already exist in TRM." You entered a transaction for values that already exist in TRM at the given reference marker and/or Roadbed-Id. Check Query or enter a different reference marker location and/or Roadbed-Id.

TRMxxx135 - (Fatal) "Record(s) not found in TRM." You entered a transaction that does not have a corresponding record in TRM. Check Query or identify and enter the correct reference marker location and/or Roadbed-Id, and any required information.

TRMxxx136 - (Warning) "A complement record must exist for the intersecting hwy." Each on-system intersection is composed of two records: the Signed Highway and the Intersecting Signed Highway. Each record is a complement to the other. This message lets you know that only one of the pair exists in TRM. Enter the missing record of the pair.

TRMxxx137 - (Fatal) "ROW-WIDTH-USUAL must be >= ROW-WIDTH-MIN." The ROW Width Usual value must be greater than or equal to the ROW Width Minimum value. The system compares all these fields against each other or values stored in TRM. Enter valid values for ROW Width Usual or ROW Width Minimum or both and press <F2> or <E>.

TRMxxx138 - (Fatal) "Cannot add a CURVE within an existing CURVE." The points of one curve cannot overlap into the points of another curve. Validate the location of the curve points.

TRMxxx139 - (Fatal) "Invalid ROADWAY-FEAT-CODE; valid codes are 31-33, 41, or 99." You entered a Roadway Feature value other than 31 thru 33, 41, or 99. Enter a valid Roadway Feature value and press <F2> or <E>.

TRMxxx140 - (Informational) "Transaction completed successfully." You successfully updated TRM with the information entered on the screen. Enter another valid transaction on the screen or press an exit function key (F3, F10, or F12) to exit the screen.

TRMxxx141 - (Fatal) "Delta degrees + minutes + seconds must be > 0 and < 180." The sum of Delta Degrees, Minutes, and Seconds must be greater than 0 and less than 180. Enter valid values for Delta Degrees, Minutes, and/or seconds and press <F2> or <E>.

TRMxxx142 - (Informational) "Enter updated attribute data." You may enter values for the modifiable fields on the screen for update. Fields that you may not update include the Signed Highway, Reference Marker fields, Roadbed-Id (where applicable) plus any other fields which differentiate the location of this feature from other features. Enter updated values into the modifiable fields and **press <F2> or <E>.**

NOTE: If you cannot update the field, delete and re-add the feature or attribute.

TRMxxx143 - (Fatal) "ROW-WIDTH-MIN cannot be > ROW-WIDTH-USUAL." The width measurement of ROW Width Usual must be greater than or equal to the width measurement of ROW Width Minimum. The system compares all these fields against each other or values stored in TRM. Enter valid values for ROW Width Minimum or ROW Width Usual or both and press <F2> or <E>.

TRMxxx144 - (Fatal) "Cannot enter **Variable 1** without **Variable 2**." You must enter certain attributes together in order for the system to accept the transaction. Enter valid values for these paired attributes at the same time:

◆ Coordinates/Reference Marker

◆ Reference Marker/Coordinates

◆ Median Type 1 thru 4/Median Width

◆ Median Width/Median Type

◆ Reference Marker Suffix/Reference Marker Number

◆ Reference Marker Displacement/Reference Marker Number

◆ Reference Marker Number/Reference Marker Displacement.

TRMxxx145 - (Fatal) "Error with ROADBED-ID or INT-TYPE." If <u>Intersection Type</u> is D (channelized intersection), then <u>Roadbed-Id</u> must be K (single roadbed). Change the Roadbed-Id and/or Intersection Type values and press <F2> or <E>.

TRMxxx146 - (Fatal) "Sum of all ROADBED-WIDTHs and MEDIAN-WIDTH must be <= ROW-WIDTH." The sum of all Roadbed Widths + all Median Widths within the given marker range must equal less than the ROW Width Minimum. The system compares all these fields against each other or values stored in TRM.

TRMxxx149 - (Fatal) "From Reference-MARKER-GRP cannot be > To Reference-MARKER-GRP." When processing data through TRM maintenance screens, values entered in the From Reference Marker Group cannot be higher than those entered in the To Reference Marker Group. Enter valid values into the From and/or To Reference Marker Group fields and press <F2> or <E>.

TRMxxx150 - (Fatal) "Selection must be an 'X'." On specific submenus, enter the character X for the appropriate selection.

TRMxxx151 - (Fatal) "Invalid ROADBED-ID; valid codes are N, X, Y, A, B, K, C, or BLANK." Update Administrative or Highway Design Data using the listed Roadbed-IDS. **Note**: Valid Roadbed-Id values depend on the updated attributes. Enter a valid value for the Roadbed-Id and press <F2> or <E>.

TRMxxx152 (Fatal) "**Variable 1** exists within limits; cannot delete." You must remove supplemental roadbeds before deleting mainline roadbeds. Values appearing in **Variable 1** are: S, T, M, or P.

TRMxxx153 - (Informational) "Enter new Reference-MARKER location(s)." You entered the current values for existing marker(s). The system now requests the new values to update.

TRMxxx154 - (Informational) "Enter Current location plus all required fields and press <E>." The system requires the current location plus other unique data to retrieve and update records.

TRMxxx155 - (Fatal) "ROADWAY-FEAT-GRADE must be set to 'U'." For the specified feature, the Roadway Feature Grade must be U (feature is Up above roadway).

TRMxxx157 - (Fatal) "Data cannot be processed within or across a Link section." The reference marker range of a given add, update, or delete transaction cannot cross the limits of a high-order link segment. Verify the range for processing.

TRMxxx158 - (Fatal) "SPEED-LIMIT-MIN must be <= SPEED-LIMIT-MAX." The minimum speed limit must be less than or equal to the maximum speed limit. **Note:** The system compares all these fields against each other or values stored in TRM.

TRMxxx159 - (Fatal) "Invalid ROADBED-ID-GRADE; valid code is G." The Grade for all Roadbed-IDS is G (at-Grade). Enter a G for the second character of the Roadbed-Id.

TRMxxx161 - (Fatal) "Records not found within given SIGNED-HIGHWAY + REF-MARKER range." You entered the Signed Highway, Reference Marker range, or Roadbed-Id (if applicable) and the system did not find records within the range. Check Query.

TRMxxx162 - (Fatal) "Invalid ROADBED-ID; valid codes are K, A, B, C, R, S, T, X, Y, L, M, N, or P." You entered an invalid Pavement Data Roadbed-Id value. **Note**: Valid values depend on the updated attributes. Enter a valid Pavement Data Roadbed-Id value and press <F2> or <E>.

TRMxxx163 - (Informational) "Enter Current key and Roadbed-Id <E>." The system requires the current Signed Highway + Reference Marker range for retrieving records and updating. Enter the current range for updating Roadbed-Id and press <F2> or <E>.

TRMxxx164 - (Informational) "Enter new ROADBED-ID <PF2>." Once the reference marker range of the Roadbed-Id displays, enter and verify the new value, then press <F2>.

TRMxxx165 - (Fatal) "Highlighted field(s) do not correspond to the ROADBED-ID entered." Certain attributes require certain Roadbed-Id values. Enter a valid attribute or Roadbed-Id value and press <F2> or <E>.

TRMxxx166 - (Fatal) "Only one selection is allowed." You may select only one choice from the menu.

TRMxxx167 - (Fatal) "Maximum number of pages reached; PF-8 not valid." The query display range selected exceeds the maximum of 100 pages, which the system cannot display. Select a smaller range.

TRMxxx168 - (Fatal) "Invalid Choice(s); please select again." Selection must be for either multiple Length Data selections, or for only one Point Data selection. Select either multiple Length Data selections, or only one Point Data selection.

TRMxxx169 - (Fatal) "Invalid **Variable 1**; must be numeric." You entered a value into the highlighted field that is not completely numeric. Enter a valid numeric value and press <F2> or <E>.

TRMxxx170 - (Fatal) "Section is contiguous within Reference-MARKER limit(s)." You cannot add a section of route where a continuous route segment already exists.

TRMxxx172 - (Fatal) "From REF-MARKER-DISP must be < or = 00.000." The From Displacement cannot be higher than 0 when adding either a new route or new non-contiguous segment to an existing route. Verify displacement; enter a valid value and press <F2> or <E>.

TRMxxx173 - (Fatal) "To REF-MARKER-DISP must be > or = 00.000." The To Displacement cannot be less than 0 when adding either a new route or new non-contiguous segment to an existing route. Verify displacement; enter a valid value, and press <F2> or <E>.

TRMxxx174 - (Fatal) "Displacement out of range for route." The From and/or To Reference Marker Displacement(s) is beyond the length of the route. Check Query or verify displacement; enter a valid value and press <F2> or <E>.

TRMxxx175 - (Fatal) "Roadbed is not contiguous within Reference-MARKER limit(s)." In order to update or delete a roadbed, that roadbed must be the **only** roadbed existing in TRM within the From and To Reference Marker limits. You entered a From and/or To Reference Marker Displacement(s) that extends into the gap between roadbeds. Enter a valid reference marker range and press <F2> or <E>.

TRMxxx176 - (Fatal) "Displacement out of range for marker." The From and/or To Reference Marker Displacement(s) is beyond or at the location of the next/previous marker. Check Query or refigure the displacement(s) and press <F2> or <E>.

TRMxxx177 - (Fatal) "Roadbed **Variable 1** cannot be deleted." You cannot delete the entered Roadbed-Id because it is a mainlane roadbed. Use the Delete Route function to remove mileage or Update Roadbed to change the Roadbed-Id. Values appearing in **Variable 1** are: K, L, or R.

TRMxxx178 - (Fatal) "Displacement cannot be negative for Tracking query function." You entered a negative From or To Reference Marker Displacement. For the Tracking Query only, the displacement must be positive. Enter a positive value and press <F2> or <E>.

TRMxxx180 - (Warning) "WARNING! **Variable 1** ROADBED WILL BE DELETED! Press PF2 or PF11." You are updating either an L or R roadbed to a K roadbed. If updating R to K, the system deletes all associated data within the given reference marker range on roadbed L. This is also true for R if L is updated to K. Values appearing in **Variable 1** are: L or R. Press <F2> to continue or <F11> to cancel.

TRMxxx181 - (Informational) "Limits for roadbed **Variable 1** added or updated (HIGHWAY-STATUS = 1)." When adding or updating R or L, the system adds or updates the marker limits for the other roadbed also. Values appearing in **Variable 1** are L or R.

TRMxxx182 - (Fatal) "CURVE-ID maximum reached; program must be updated." The system-generated Curve-Id has a maximum value of 9999999. You receive this message if the system surpasses that maximum. Contact your automation administrator.

TRMxxx185 - (Fatal) "Invalid ROADWAY-FEAT-SKEW for given Roadbed-Id." For connectors, certain valid Skew values depend on the Roadbed-Id:

◆   If the Roadbed-Id is R, S, or T, the skew is 1 or 2

◆   If the Roadbed-Id is L, M, or P, the skew is 3 or 4

◆   If the Roadbed-Id is A, B, X, or Y, the skew is 1, 2, 3, or 4.

TRMxxx186 - (Fatal) "Required elements are missing; run Required Elements Report." You cannot update the Highway Status to a 5 or 6 until you add values for all required elements to the route. Run the appropriate Required Elements Report for the range of missing data. After adding the data to the route, re-attempt to update the Highway-Status to either 5 or 6.

TRMxxx188 - (Fatal) "User not authorized to update files." You do not have the proper security access to update TRM. Contact your automation administrator.

TRMxxx189 - (Fatal) "Cannot redesignate an interstate to a non-interstate." You cannot redesignate Interstate Highways to non-interstate designations. Change the Redesignation Signed Highway.

TRMxxx190 - (Warning) "ROUTE WILL BE DELETED !! Press PF2 to continue or PF11 to cancel." Warning message that the system will delete the entire route and all associated data. Repress <F2> to continue the delete transaction or <F11> to cancel deletion.

TRMxxx192 - (Fatal) "Cannot redesignate to an interstate with 'K' roadbeds existing." All interstate highways have at minimum left and right mainlane roadbeds. Either update the route with multiple roadbeds, or redesignate to another highway system designation.

TRMxxx194 - (Informational) "Restart/recovery pending for program **Variable 1** ! Press PF4 to restart." A system failure caused an interruption in the normal operation of the program. The system did not update TRM with your transaction. Value appearing in **Variable 1** is the associated program number where the restart occurred. Press <F4> to continue with the transaction. If this does not solve the problem, contact your district's TRM analyst immediately.

TRMxxx195 - (Fatal) "Limits for county overlap district boundaries." The From and/or To marker displacement limits lap over into a district of which the entered County is not a part. Change the limits so that they do not overlap.

TRMxxx198 - (Fatal) "**Variable 1** roadbed is not contiguous within Limits." In order to add supplemental mainlane roadbeds, the corresponding mainlane roadbed must exist continuously within the From and To Reference Marker limits. Values appearing in **Variable 1** are: L if M or P is added, or R if S or T is added. Verify the limits of the added roadbed.

TRMxxx199 - (Fatal) "REF-MARKER-SUFFIX must be blank." The range entered on the TPP and District Required Elements reports limit screen can only be 0000 to 9999. These placeholder markers do not have suffixes.

TRMxxx200 - (Fatal) "From REF-MARKER-DISP must be < To REF-MARKER-DISP." In order to add new routes or new route segments, the From Marker location must fall sequentially before the To Marker location.

TRMxxx201 - (Informational) "Restart detected for non-TRM application; only **Variable 1** available." A system failure caused an interruption in the normal operation of a program within another mainframe application. Values appearing in **Variable 1** are: D thru F or E thru F. Determine which application caused the restart problem. Follow whatever steps are necessary within that application to correct it.

TRMxxx202 - (Fatal) "Section has more than 50 markers; redesignate smaller sections." Due to system constraints, redesignate route segments containing only 50 or fewer markers at a time.

TRMxxx203 - (Warning) "Begin/End records may or may not appear in sequential order." Due to system constraints, the Begin/End records may be reversed. End records for one roadbed may follow Begin records for another roadbed; end records for one roadbed may follow data records for another roadbed. Carefully examine the records displayed.

TRMxxx205 - (Fatal) "INTERSECTION-TYPE must be set to 'A'." For the specific Roadway [Feature](#) value and/or Roadway Feature [Grade](#), the [Intersection](#) Type value must be A (At-Grade).

TRMxxx206 - (Informational) "Job **Variable 1** not submitted; contact Automation Administrator." A system error occurred when submitting the job. Contact your automation administrator.

TRMxxx207 - (Informational) "ROADBED-ID must be 'CG' or blank." For the specific function, query selection, or Roadway Feature Value, the only valid [Roadbed-Id](#) is CG (Centerline) or blank.

TRMxxx208 - (Fatal) "Selection must be 'Y' or 'N'." The [Save Profile](#) selection can only be Y (Yes) or N (No).

TRMxxx209 - (Fatal) "Selection must be 'A' or 'R'." The [Msg Class](#) selection can only be A (Automatic Print) or R (Review, do not print).

TRMxxx210 - (Informational) "Job **Variable 1** cancelled at User's request." You pressed Function Key <F11> to cancel job submittal. The program number appears in **Variable 1**.

TRMxxx211 - (Informational) "Job **Variable 1** submitted successfully; sent to default printer." You set the message class to A for automatic print when submitting the job. The program number appears in **Variable 1**. Pick up output at the printer named in the [Job Submittal](#) pop-up window.

TRMxxx213 - (Fatal) "Boundaries & Sec Rtes detected that must be deleted! – PF11 to cancel." The Msg Class selection can only be A (Automatic Print) or R (Review, do not print).

TRMxxx215 - (Fatal) "Invalid ROADBED-ID; valid codes are K, A, B, R, S, T, X, Y, L, M, or P." For the given function or Query selection, select only these [Roadbed-IDS](#).

TRMxxx217 - (Fatal) "Cannot change **Variable 1** roadbed to **Variable 2** roadbed." You can only change the given [Roadbed-Id](#) to a specific new Roadbed-Id value. Values appearing in s **Variable 1** and **Variable 2** include:

◆   Original Roadbed K changed to R, L, A, X

◆   Original Roadbed R changed to L, X

◆   Original Roadbed L changed to R, A.

TRMxxx219 - (Fatal) "REF-MARKER-NUMBER cannot be updated more than once per screen." Update a reference marker Number only once before pressing <F2> to [update](#) TRM with the screen information.

TRMxxx220 - (Fatal) "REF-MARKER-NBR currently exists with a different REF-MARKER-SUFFIX." You added a marker number that currently resides in TRM with a suffix other than the one entered on the screen. The same [marker](#) number cannot reside in TRM more than once.

TRMxxx221 - (Fatal) "Cannot add Bound Beg or End pt. within a Bound of the same type." Boundary points of the same type cannot overlap each other. Check Query or verify the location of the boundary points.

TRMxxx223 - (Informational) "Job **Variable 1** submitted successfully: output in ROSCOE." The system successfully submitted the batch job. The program number appears in **Variable 1**. Logon to ROSCOE to view/print the output.

TRMxxx224 - (Fatal) "Degree of Curve degrees + minutes + seconds must be > 0 and < 90." The sum of degrees + minutes + seconds for Degree of Curve must fall within 0 and 90. The individual fields have their own fixed ranges also. Adjust the degrees and/or minutes and/or seconds so that the sum is within 0 and 90.

TRMxxx225 - (Fatal) "You not authorized for TRM access." Your signon Id does not have an application-control record on file with ISD. You cannot access any of the functions within the TRM environment. Press <F12> to exit the TRM system and contact your automation administrator.

TRMxxx228 - (Fatal) "INT-TYPE can only be changed from 'A' to 'B' or from 'B' to 'A'." Intersection Type can only change from A (At Grade) to B (Grade separated intersection) or from B to A. The Intersection Type cannot change to or from types C (Interchange) or D (Channelized). Change the Intersection Type to A or B as appropriate, or delete the feature and re-enter with either an Intersection Type C or D.

TRMxxx229 - (Fatal) "Invalid **Variable 1**; cannot have special characters or blanks." The HPMS Current Id cannot have special characters (i.e., # $ % ^ & *) or blanks. Values appearing in **Variable 1** include HPMS-Current-Id.

TRMxxx233 - (Fatal) "Links detected that must be deleted! Press PF11 to cancel." You cannot delete or redesignate a route if a link exists within the From and To marker range. This message displays if the deleted or redesignated route is the low-ordered route in the link situation. Identify the limits of the link using either the query facility or the ARI diagram. Delete the link and then re-enter the range to delete or redesignate.

TRMxxx234 - (Informational) "You already signed on with same logon id; only **Variable 1** available." You cannot be signed onto both TRM and any other mainframe application at the same time. Values appearing in **Variable 1** include: D thru F or E thru F. Log off both applications and log on to TRM again.

TRMxxx235 - (Fatal) "Cannot enter a length data selection and a point data selection." You may only select length data or point data from the submenu. Select either multiple length selections or one point selection.

TRMxxx236 - (Fatal) "Cannot change LINK-TYPE-CODE from **Variable 1** to **Variable 2**." You cannot change the Link Type from or to a 23--Off-system link. **Variable 1**/:?? includes values 21/ 23, 22/23, 23/21, and 23/22. Change the Link Type to a valid value or delete the current link and re-enter a link with the desired value.

TRMxxx237 - (Fatal) "SUFFIX must be next sequential letter from Tracking record SUFFIX." You add a Reference Marker Number already existing in the TRM-Tracking file. The Suffix attached to this marker is not the next sequential alphabet letter from that marker + suffix listed in the Tracking file. Verify what the suffix should be.

TRMxxx238 - (Fatal) "Invalid LINK-TYPE-CODE; valid codes are 21, 22, 23." You entered a value other than 21 thru 23 for the Link-Type field. Enter a valid Link-Type value and press <F2> or <E>.

TRMxxx240 - (Fatal) "SUFFIX must be blank when no Tracking record exists." You added a Reference Marker Number not existing in the TRM-Tracking file. The Suffix portion of the marker number must be blank.

TRMxxx249 - (Informational) "Up through Reference-MARKER **Variable 1** was **Variable 2**." The Marker Data screen allows for up to eight markers to process within one transaction. If there is an error with one of the transaction lines, the system processes all valid lines up to that point, but processing stops at the error line. Values appearing in **Variable 1** are the last valid marker number entered. Values appearing in **Variable 2** are: added, updated, or deleted.

TRMxxx250 - (Fatal) "**Variable 1** roadbed already exists within limits." You added a roadbed already existing in TRM within the From and To reference marker range entered. Values appearing in **Variable 1** are the Roadbed-Id entered.

TRMxxx252 - (Fatal) "Overlaps existing **Variable 1** Designation; cannot add or update to **Variable 2**." You added or updated a secondary route overlapping another designation of the same type. Values appearing in s **Variable 1** and **Variable 2** are the different Secondary Route Types.

TRMxxx253 - (Fatal) "To REF-MARKER-NBR must equal '9999'." The To Reference Marker Number on both the TPP and District Required Elements reports limits screen must be 9999 only. Enter 9999 in the To Reference Marker Number field.

TRMxxx254 - (Fatal) "Cannot change concurrency at **Variable 1** of route to on-system link." You cannot change a concurrency to an on-system link if the concurrency exists at either the beginning or ending of the route. Values appearing in **Variable 1** are begin or end. Press any exit key to exit from the screen.

TRMxxx255 - (Fatal) "Invalid ROADBED-ID; valid codes are K, A, B, R, S, T, X, Y, L, M, P, or BLANK." These are the valid Roadbed-Id values for listing Query selection C: Roadbed-Id Data.

TRMxxx256 - (Fatal) "Invalid ROADBED-ID; valid codes are K, A, B, R, S, T, X, Y, L, M, N, P, C, BLANK." These are the valid values for entering Pavement data to the District Length Data entry screen.

TRMxxx257 - (Fatal) "Cannot change L or R roadbed to K with other roadbeds existing." You must remove supplemental mainlanes and any other frontage roads before updating either R or L roadbed to K. Remove other roadbeds before re-entering this transaction.

TRMxxx259 - (Fatal) "Invalid ROADBED-ID; valid codes are K, R, or L." You may update only roadbeds K, R, or L to other Roadbed-IDS.

TRMxxx261 - (Fatal) "Gap not found at FROM-REF-MARKER-GRP." You must add new route segments and on-system or off-system links at roadway gaps. The From Reference Marker location point marks the gap point. Verify the From Reference Marker location.

TRMxxx263 - (Fatal) "Invalid ROADBED-ID; valid code is NG." Only NG is a valid Roadbed-Id for Query Selection F, Median Data (combination of mainlanes R, L, M, S, P, T).

TRMxxx264 - (Fatal) "Baseline Bearing degrees + minutes + seconds must be <= 90." The sum of degrees + minutes + seconds for baseline bearing degrees must be less than or equal to 90. The individual fields (degrees, minutes, seconds) have their own fixed ranges also. Adjust the degrees and/or minutes and/or seconds so that the sum is <= 90.

TRMxxx265 - (Fatal) "Redesignation Reference-MARKER must be at a gap point." In order to fill the roadway gap of the receiving route with the sending route segment, the highlighted reference marker field must be the exact gap point of the receiving route.

TRMxxx266 - (Fatal) "Redesignation Reference-MARKER must be at beginning of route." In order to add the new sending route segment to the beginning of the receiving route, the highlighted reference marker field must be the exact point of the beginning of the receiving route.

TRMxxx267 - (Fatal) "Redesignation Reference-MARKER must be at end of route." In order to add the new sending route segment to the ending of the receiving route, the highlighted reference marker field must be the exact point of the ending of the receiving route.

TRMxxx270 - (Fatal) "LINK point range already exists on this SIGNED-Highway." The From and To Reference Marker range entered for the link already exists in TRM. Check Query or verify the location of the entered range for the link or exit the screen.

TRMxxx272 - (Fatal) "ROADBED-ID must be 'CG'." Only CG is a valid Roadbed-Id for the Boundary Types with a value. Enter a CG Roadbed-Id.

TRMxxx273 - (Fatal) "Invalid ROADBED-ID; valid codes are N, X, Y, A, B, or K." These are the valid values for entering specific features on the District/TPP Point Data screens.

TRMxxx274 - (Fatal) "SIGNED-HIGHWAY must be the Low-Ordered route for Concurrency." The hierarchy of the Signed Highway must be the low-order, high-number route as compared to the Link Signed Highway.

TRMxxx275 - (Fatal) "Concurrency cannot be added to route beginning with whole number." You cannot add a concurrency to a highway which has a marker located at the exact beginning of route (displacement is 00.000). Adjust the marker to a location not at the exact beginning of route.

TRMxxx276 - (Fatal) "KG roadbed is not valid when HIGHWAY SYSTEM = 'IH'." All Interstate Highways have at minimum left and right mainlane roadbeds.

TRMxxx277 - (Fatal) "Invalid ROADBED-ID; Roadbed does not exist within range specified." The Roadbed-Id entered with the transaction does not exist in TRM within the given From and To Reference Marker range. Check Query or change the Roadbed-Id to a valid Roadbed-Id.

TRMxxx278 - (Fatal) "New REF-MKR-NUM must be < existing REF-MKR-NUM if DISP is negative." The new Reference Marker Number must be sequentially lower than the existing marker number when the Reference Marker Displacement Sign is negative. Change new marker number or change sign to +.

TRMxxx279 - (Fatal) "Invalid New ROADBED-ID; valid codes are K, R, L, X, or A." The new Reference Marker Number must have one of the five listed valid values. Enter a valid new Road-bed-Id or exit the screen making no changes.

TRMxxx280 - (Fatal) "Only one existing gap can lie between consecutive REF-MARKER-NBRs." You cannot delete or move a reference marker so that it creates an additional gap between consecutive reference markers. Verify the deleted or new location marker.

TRMxxx281 - (Fatal) "CROSSOVER invalid; KG roadbed exists at this location." You cannot add or relocate a crossover to a point in which roadbed KG exists. Verify the location of the crossover.

TRMxxx282 - (Fatal) "Invalid INTERSECTION-TYPE code; valid codes are A or B." Intersection Types A (at grade) and B (Grade separated) are valid for all non-roadway intersections. Change the Intersection Type to A or B.

TRMxxx283 - (Fatal) "Invalid SUFFIX; enter next sequential letter from Existing SUFFIX." After relocating the updated reference marker, the suffix must be the next sequential alphabet letter from the existing Reference Marker Number. Check Query or change the suffix to the next sequential letter.

TRMxxx284 - (Fatal) "From REF-MARKER-NBR must equal '0000'." The From Reference Marker Number on both the TPP/District Required Elements reports limits screen must be 0000 only.

TRMxxx285 - (Fatal) "At least one transaction must be entered." You must enter a transaction on the screen before pressing <F2>.

TRMxxx286 - (Fatal) "New REF-MARKER-NUM cannot = existing REF-MKR-NUM for add." The new Reference Marker Number cannot equal the existing marker number entered. Change the new marker number or change existing marker number so that they are not the same.

TRMxxx287 - (Fatal) "REF-MARKER-DISP cannot = 0 for add or update." The displacement to the new Reference Marker Number must be greater than zero. Change the displacement to the appropriate positive or negative value.

TRMxxx288 - (Fatal) "HIGHWAY-STATUS-CODE = **Variable 1** exists within range; cannot update." You cannot update the Highway Status to 6 (open to traffic, all data in) or 7 (emergency closing) depending on the current status of the roadway. Values appearing in **Variable 1** are:

◆   If trying to update status 1, 2, 3, 4 to 6, then update Highway Status to a 5 (open to traffic, all district data in) before updating to a 6.

◆   If trying to update status 1, 2, 3 to 7, then the status of the roadway must be open to traffic before it can be closed.

TRMxxx289 - (Fatal) "At least one selection must be entered." You must make at least one sub-menu selection to continue processing.

TRMxxx293 - (Fatal) "At least one highlighted field must be left blank." You may enter only one curve point in order to retrieve a curve record for update or delete.

TRMxxx298 - (Fatal) "SKEW-TYPE must be set to '1'." You must value the Skew Type as 1 (intersection stops at roadway), for the specific Roadway Feature value and/or Intersecting Feature Type.

TRMxxx299 - (Fatal) "Structure Number must be blank when Grade = G or D." The system only allows a Structure Number when Grade is U (feature is Up); otherwise, the number does not apply.

TRMxxx301 - (Fatal) "Invalid ROADBED-ID; valid codes are K, R, S, T, L, M, or P." Only road-beds K, R, S, T, L, M, or P are valid roadbeds for processing connectors.

TRMxxx302 - (Fatal) "New Reference-MARKER already exists on Tracking file." The reference marker given to the new route segment or new non-contiguous route segment already exists for this route on the Tracking file. Select a new number or add a suffix.

TRMxxx304 - (Fatal) "SHOULDER-WIDTH entered must be > '0' when SHOULDER-TYPE > '1'." A Shoulder Type greater than 1 indicates that a shoulder exists. You must enter a width of greater than 0 feet.

TRMxxx306 - (Fatal) "BASELINE BEARING TYPE already exists at this point." A Bearing record of the same type as that entered on the screen already exists at this location.

TRMxxx307 - (Warning) "Counties & boundaries within range will be deleted; Press PF2/PF11." The system deletes all County Numbers and Boundary Type C records within the given From and To Reference Marker range due to the change in District-Id. Press <F2> to continue the transaction or <F11> to cancel the transaction.

TRMxxx308 - (Fatal) "MEDIAN-WIDTH-MEAS must be '0' if MEDIAN-TYPE-CODE = '0'." There is no Median Width where the Median Type is One-Way Pair. Verify the Median Data.

TRMxxx309 - (Fatal) "MEDIAN-WIDTH-MEAS must be > 0 if MEDIAN-TYPE-CODE = 1, 2, or 3." The system requires Median Width when Median Type is 1 (curbed), 2 (positive barrier), or 3 (unprotected).

TRMxxx313 - (Fatal) "Invalid MEDIAN-TYPE; valid codes are '0 thru '3'." You entered a value other than 0 thru 3. Enter a valid Median Type and press <F2> or <E>.

TRMxxx314 - (Fatal) "SHOULDER-WIDTH/USE must = 0 when SHOULDER-TYPE = 1." You may not enter values for either Shoulder-Width or Use if no Shoulder exists. Enter zeros into both the Shoulder Width and Use fields.

TRMxxx315 - (Fatal) "Cannot update MEDIAN data for range containing 'K' Roadbed." Medians reside on route only where R and L roadbeds exist.

TRMxxx316 - (Fatal) "A PI POINT already exists at this point." Only one PI Curve point can reside at any given point on the route.

TRMxxx317 - (Fatal) "Cannot **Variable 1**; conflict in existing curve data point(s)." You either added or updated a curve that overlaps a curve already existing in TRM. Values appearing in **Variable 1** are: Add or Update.

TRMxxx318 - (Fatal) "Invalid LATITUDE; value must be from 255012.0000 to 363000.0000." You entered an out-of-range value. The error message lists the valid range.

TRMxxx319 - (Fatal) "Invalid LONGITUDE; value must be from 963029.0000 to 1063844.0000." You entered an out-of-range value. The error message lists the valid range.

TRMxxx320 - (Fatal) "Invalid ELEVATION; value must be from 0000.00 to 8749.00." You entered an out-of-range value. The error message lists the valid range.

TRMxxx321 - (Fatal) "Invalid range; From point at end/To point at begin roadbeds." The From and To Reference Marker range resides at the exact end and begin of the given roadbed, respectively.

TRMxxx322 - (Fatal) "Invalid ROADBED-ID; valid codes are K, R, S, T, L, M, P, or N." Only roadbeds K, R, S, T, L, M, P, or N are valid roadbeds for processing On-system intersections that intersect the mainlanes of other on-system routes. Enter a valid Roadbed-Id or verify the Roadway Feature value and/or Intersecting Feature Type.

TRMxxx323 - (Fatal) "Invalid ROADBED-ID; valid codes are A, B, X, or Y." Only roadbeds A, B, X, or Y are valid roadbeds for processing On-system intersections which intersect the frontage roads of other on-system routes. Enter a valid Roadbed-Id or verify the Roadway Feature value and/or Intersecting Feature Type.

TRMxxx324 - (Fatal) "Only one CURVE POINT can be entered." To recall the curve record for update or delete, enter only one of the existing curve points.

TRMxxx325 - (Fatal) "Length of new route section cannot be < = 0." The calculated length of the new route segment must be greater than zero. Enter the From and To Reference Marker Displacements so that the calculated length is greater than zero.

TRMxxx326 - (Fatal) "Coordinate already exists; must be updated." A marker coordinate already exists at the reference marker location entered on the screen.

TRMxxx327 - (Fatal) "Invalid BOUNDARY-TYPE; valid codes are A - O." You entered a Boundary Type value other than A thru O. Enter a valid Boundary Type value and press <F2> or <E>.

TRMxxx328 - (Informational) "Enter SIGNED-HIGHWAY and Reference-MARKERS for coordinates <E>." The system requires the Signed Highway + Reference Marker for retrieving and updating records.

TRMxxx329 - (Fatal) "Coordinates do not exist in database; must be added." You entered the coordinates for update that do not exist at the given reference marker. Check Query or verify the location and coordinates entered.

TRMxxx331 - (Fatal) "Invalid ROADBED-ID; valid code is K." The Roadbed-Id must be KG when the Roadway Feature value = 33 (intersecting feature) and when Intersecting Feature Type = 91 (Cattle Guard) or 92 (Gate).

TRMxxx333 - (Fatal) "REF-MARKER-DISP must be < or = 0." In order to add a contiguous route segment to either the beginning of the route or to the ending of a gap, the From Reference Marker Displacement must be either less than or greater than zero.

TRMxxx335 - (Fatal) "ROADBED-ID must be CG for fields selected for query." The only valid Roadbed-Id for the selected Query screen is CG.

TRMxxx336 - (Fatal) "ENTR is invalid; change SIGNED-HIGHWAY, REF-MARKER-GRP or RDBD-ID." <E> is only valid when the Signed Highway, From or To Reference Marker Groups,

or Roadbed-Id change to new values. Enter a new value for Signed Highway, From or To Reference Marker Groups, or Roadbed-Id or press an exit function key to exit the screen.

TRMxxx337 - (Fatal) "**Variable 1** is invalid if range is changed; press <ENTR> to process range." You may press only <F7> (scroll forward) and <F8> (scroll backward) if you have not changed the Signed Highway, From/To Reference Marker range, or the Roadbed-Id (when applicable). Values appearing in **Variable 1** are: <F7> or <F8>. Enter a new value for Signed Highway, From or To Reference Marker Groups, or Roadbed-Id (if applicable) or press an exit function key to exit the screen.

TRMxxx338 - (Fatal) "**Variable 1** can only be added once for REF-MARKER-NBR." The Marker Coordinate data (latitude, longitude, and elevation) can exist once for any given reference marker. Values appearing in **Variable 1** are Latitude, Longitude, and Elevation.

TRMxxx339 - (Fatal) "Range cannot cross highway design change." The From and To marker range cannot cross from an R/L pair to K roadbed when processing Medians.

TRMxxx340 - (Fatal) "ENTR is invalid; change SIGNED-HIGHWAY or REF-MARKER-GRP." <E> is only valid when the Signed Highway, or From or To Reference Marker Groups change to new values. Enter a new value for Signed Highway, or From or To Reference Marker Groups, or press and exit function key to exit the screen.

TRMxxx341 - (Fatal) "REF-MARKER-NBR already entered." The Marker Coordinate Data screen accepts up to eight lines of data. However, you may enter a given reference marker only once before pressing <F2>.

TRMxxx342 - (Fatal) "ROADBED-ID must be K, A, B, R, S, T, X, Y, L, M, P, or C." Only these Roadbed-IDS are valid for submitting the District Required Elements Reports.

TRMxxx343 - (Fatal) "ROADBED-ID must be K, A, B, R, S, T, X, Y, L, M, or P." Only these Roadbed-IDS are valid for Query Selection P.

TRMxxx344 - (Fatal) "Signed Highway cannot be added--exists on Tracking." This route already exists on the TRM-Tracking file. You cannot add this route to the production database.

TRMxxx347 - (Fatal) "Roadbeds R and L must exist before other roadbeds are added." You cannot add other supplementary or frontage roadbed sections until you add the mainlanes (R and L).

TRMxxx349 - (Fatal) "Invalid ROADBED-ID; valid codes are N, X, Y, A, B, or C." Only the listed Roadbed-IDS are valid for Query Selection K or for processing boundaries on the District/TPP Point Data entry screen.

TRMxxx350 - (Fatal) "Invalid ROADBED-ID; valid codes are N, X, Y, A, or B." Only the above-listed Roadbed-IDS are valid for Query Selections D, L, or N.

TRMxxx351 - (Fatal) "Invalid values; see Matrix of Attributes." You must enter specific data fields together and must enter specific values depending on the matrix.

TRMxxx352 - (Fatal) "Invalid jobname suffix; cannot have special characters or blank." The Job-name Suffix field in the TRM User Job Submission window can only be a letter A thru Z or a number 0 thru 9. Characters such as @ # $ % are invalid.

TRMxxx353 - (Fatal) "REF-MARKER-DISP must be equal to 00.000 or 0." The From and To Reference Marker Displacement fields on the District/TPP Required Elements Report entry screen must be zero. Enter 00.000 or 0 into the From and To Reference Marker fields.

TRMxxx354 - (Fatal) "Route opened, but required elements missing; please query." The batch Missing Elements Report produces this message. Add missing data through TRM.

TRMxxx355 - (Fatal) "Requested function is not available due to END-OF-MONTH processing." Certain functions related to routes and markers are not available from the 13th to the 28th of each month. TPP performs End of Month processing during this time.

TRMxxx356 - (Fatal) "Requested function is not available due to END-OF-YEAR processing." Certain functions related to routes and markers are not available during End of Year processing.

Appendix A — Traffic Data & Terms

Contents:

Section 1 — Query Processing

TPP uploads traffic data to TRM during end-of-year processing. This Appendix explains the steps to query the system about and view traffic data and gives some definitions of traffic terminology.

For additional query information, go to Chapter 3, Section - "TRM Query".

For additional information about Traffic Data, go to Traffic Data and Analysis Manual.

To view the current traffic data:

Traffic Data Query

Step	Action	Input
1	Select "E" **Database Query** from the TRM Main Menu. **Result**: The Database Query Screen appears	-
2	Input Location Key fields	◆ **Signed Highway** System**, Number, and Suffix** ◆ **From Reference Marker** Number and **Suffix** closest to the beginning point ◆ **(+)** or **(–) From Reference Marker** Sign (positive or negative) ◆ **From Reference Marker** Displacement ◆ **To Reference Marker Number** and **Suffix** ◆ **(+) or (-) To Reference Marker Sign** ◆ **To Reference Marker Displacement** ◆ Roadbed-Id: valid codes are n, x, y, a, or b
3	Select "N" to view the **Traffic Data** and press <E>. **Result**: The Traffic Data Screen appears	-
4	To exit back to make another query, press <F3>	-
5	To exit back to the TRM Main Menu, press <F10>	-

Section 2 — Definitions

Click on term to view definition in the *TxDOT Glossary*:

[Annual Average Daily Traffic (AADT)](#)

[Average Of Ten Heaviest Wheel Loads Daily](#) (ATHWLD)

Design Hourly Volume (DHV)

Design [Year](#)

Directional [Design](#) Hourly Volume (DDHV)

[Flex 18 Kip](#) Equivalent Single Axle Loadings

[K Factor](#)

[Rigid 18Kip](#) Equivalent Single Axle Loadings

Percent Single Unit Trucks in ADT—Represents all single unit truck activity over all days of the week and seasons of the year as a percentage of total annual traffic. Single unit trucks include vehicle classes 4 through 7.

Percent Combo Unit Trucks in ADT—Represents all combo unit truck activity over all days of the week and seasons of the year as a percentage of total annual traffic. Combo unit trucks include vehicle classes 8 through 13.

Percent Single Unit Trucks in DHV—Represents all single unit truck activity for peak periods of the year as a percentage. Single unit trucks include vehicle classes 4 through 7.

Percent Combo Unit Trucks in DHV—Represents all combo unit truck activity for peak periods of the year as a percentage. Combo unit trucks include vehicle classes 8 through 13.

NOTE: Due to system constraints, at this publication, TRM does not contain traffic history records prior to the year before the current annual certified mileage year.