

Travel Routes

**National Data Dictionary
ROADS**

Infrastructure Application

Version 1.3

January, 2003

**Travel Routes Road User Board
Data Dictionary Sub-Team**

Table of Contents

1	Introduction	1-2
1.1	Conventions	1-2
2	Change Log	2-1
3	Data Structure.....	3-1
3.1	Tabular Component	3-2
3.1.1	Routes	3-2
3.2	Spatial Component.....	3-3
3.2.1	Arcs.....	3-4
3.2.2	Route Systems	3-6
4	Table/Column Definitions.....	4-1
4.1	RTE_BASICS.....	4-2
4.2	RTE_LINEAR_EVENTS.....	4-21
4.3	Record of Events.....	4-22
4.4	System/Audit Columns	4-22
5	Linear Event Definitions	5-22
6	Linear Event Application Matrix	6-22
7	Coding Scenarios.....	7-22
8	Special Situations	8-22
8.1	Roads Policy Initiative and Unclassified Roads	8-22
8.2	Campground Loops	8-22
8.3	Decommissioning Portions of Through Routes or Planned Route Connections	8-22
8.4	Dual Route Designations	8-22
8.5	Y Intersections	8-22
8.6	Duplication of Another Unit's Data	8-22
9	Remaining Issues.....	9-22
10	Glossary	10-22
11	References.....	11-22

1 Introduction

The purpose of this document is to provide thorough definitions of the tables/columns and linear events used within the Travel Routes module of the Infrastructure (INFRA) application. The Travel Routes module was initially released in 1998 without a comprehensive data dictionary. There has been confusion and conflicting uses of the columns and linear events ever since.

There have also been several significant policy changes since the application was initially released. The most significant of these policy changes (Roads Policy [1] and pending Public Forest Service Roads [2]) have been released or are in pending legislation. This guide has been designed to accommodate these new initiatives.

The Travel Routes module contains spatial and tabular data structures for both roads and trails. This guide currently **only contains the data dictionary for Roads**. The Recreation community is working on the standards for Trails.

This data dictionary is a living document. It only covers the basic components of the module (route basics and linear events) at this time. Further work is required to define route features, access and travel management (ATM), and maintenance needs components.

1.1 Conventions

The following conventions are used throughout the data dictionary:

Words in Italics – Instructional comments to the reader on an action that can be taken

[1] Reference Number, see chapter 0

2 Change Log

This data dictionary is dynamic and will constantly change to reflect changes in business rules, new data structures and program areas implemented.

Version	Chapter		
1.3	3 & 4	Changed BMP/EMP precision/scale to 8/4 respectively. Change was due to change made for trails. Added clarification of where the BMP is located when located at an intersection.	
	4	Dropped SPUR_NO as being available to use. Added new code for EVENT_SUBTYPE in the record of events table to denote that Road Analysis has been completed and that road is needed for long-term management. Dropped the IMPLEMENTATION event in the record of events as per agreement on 3/6/2002 conference call.	
	5	Changed Coding Scenario #2 to more accurately reflect the use of SYSTEM Linear Event. Corrected bad name for Operational Maintenance Level, actual linear event is called OPER MAINT LEVEL not OPERATIONAL MAINT LEVEL Added PED – PEDOMETER as a code for MILEAGE SOURCE Corrected name and coding for LEVELS OF TREATMENT Clarified values for the ACTION item in the .rat for the route and trail route system. Modified definition of Admin_Org to clear up confusion of how it is to be applied outside administrative boundaries. Added business rule for Managing_Org to clarify what unit will maintain data within Infra when Admin_Org and Managing_Org are different. Added code for JURISDICTION of T – TRIBAL ROAD to denote those roads that are owned and operated by a Native American tribe but are not managed by the BIA.	
	7	Several new coding scenarios were added and all had modifications to wording.	
	10	Added several terms to the Glossary including Terminal Facility and Fatality	
	1.2	All	Changed pagination for document to a chapter-page number format
	4.1	4.1	Clarified where route measures should start for US and State Highways.
4.3	4.3	Corrected the name of the record of events table and added audit columns to the diagram. Added Business Rule #2 for EVENT_SUBTYPE to enter the name of the inspector in the remarks when entering a physical inventory.	
5	5	Allowed overlaps for CRITICAL TRAFFIC linear event. (See User Board Meeting Notes, Denver 10/15/01)	
5	5	Changed PFSR CLASSIFICATION linear event, business rules, and code definitions to comply with the direction issued on designation process (7700 letter 12/17/2001)	

	5 8.6	Added code for JURISDICTION = OFS – OTHER FOREST SERVICE to solve the problem of aggregating data upward (see Conference call notes 12/5/01). Added business rule #2 for use with the OFS code.
	5	Changed STATE_COUNTY linear event back to COUNTY because of data translation from Infra version 4.9.1
	5	Added OGM – OIL, GAS, MINERALS code to OTHER SYSTEM and added coding flow chart (See User Board Meeting Notes, Denver 10/15/01)
	5	Added TREATMENT LEVEL linear event and coding (See User Board Meeting Notes, Denver 10/15/01).
	7	Added Scenario #10 & #11 to the Coding Scenarios Section to cover oil & gas and how to codify roads and trails that share the same physical alignment.
1.1	4.3	Added codes for INSPECTION event in the Record of Events. Codes added were PI –PHYSICAL INVENTORY, CS – CONDITION SURVEY, and FP – FISH PASSAGE

3 Data Structure

The Travel Routes application supports distinct spatial and tabular components that work together to provide a transportation atlas for roads and trails.

- The spatial component is managed as a routed linear Arc/Info coverage. This routed coverage stores the spatial location (geography) of the roads and trails and a unique link to their tabular attribute data.
- The tabular component is related attribute data that is stored within the Oracle database and managed through the Infrastructure application. Attributes apply either to the entire travel route (road or trail) or to some measured distance (up to its entire length) along the travel route (linear events), or to point features at a specific distance along the route (route features).

The general model of the Travel Routes application is shown in Figure 3-1.

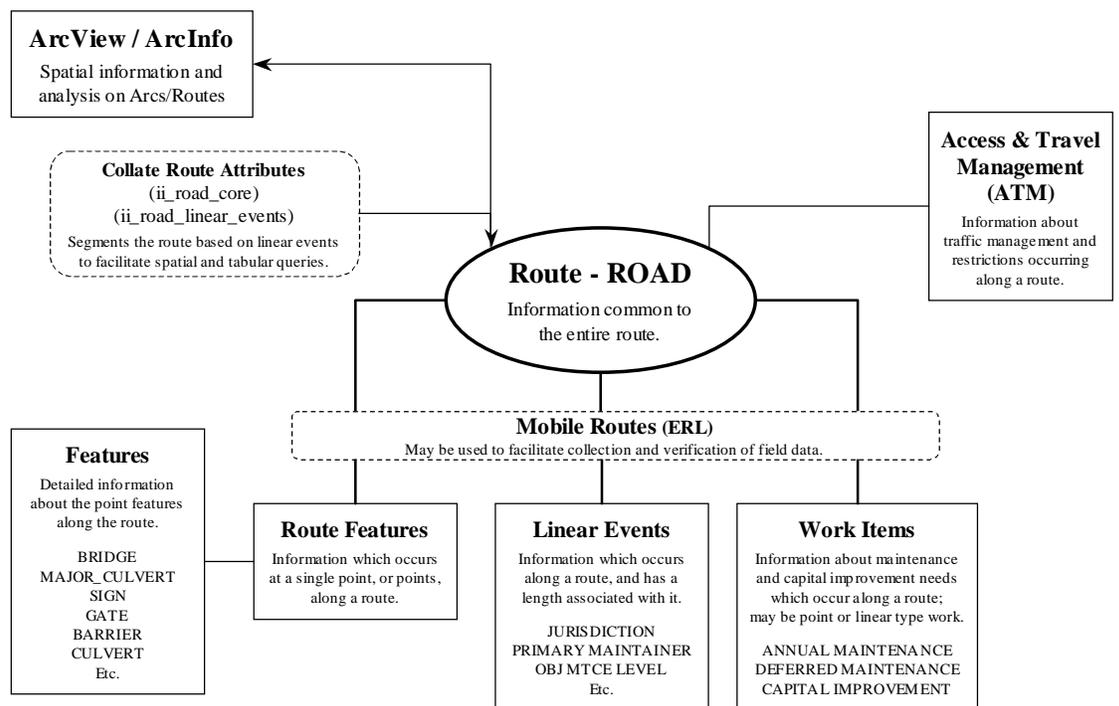


Figure 3-1 Travel Routes Module Relationships

The spatial side of the application manages representations of the geometry of the road network. It uses the Arc/INFO dynamic segmentation model where lines (arcs) represent the alignment between intersections and routes represent ordered collections of arcs and/or parts of arcs. A small set of attributes, which allow linking to the attribute data stored in Oracle, are stored on the arcs/routes.

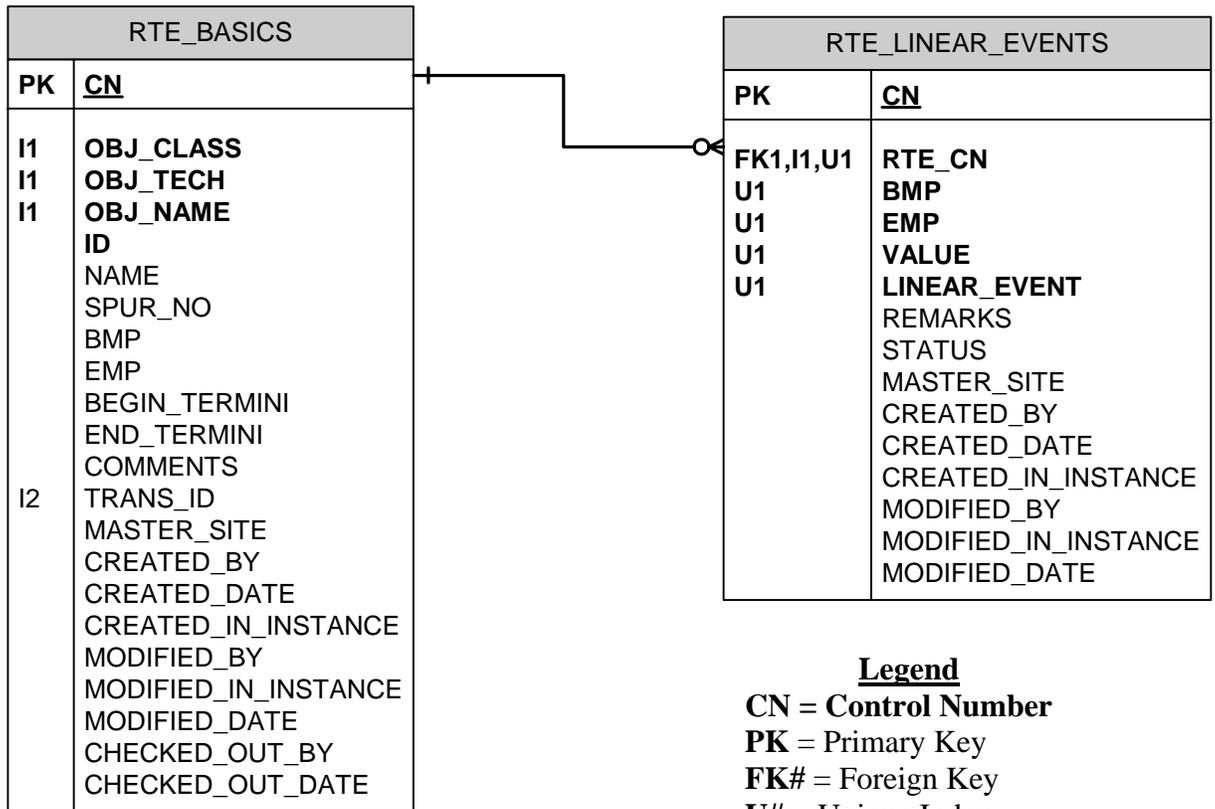
The descriptive attributes for a route are stored in the Oracle database, which also contains the unique link. Measured event data for a route are stored in Oracle with the unique link and the beginning and ending measures for the portion of the route to which the event applies. These links and measures allow the spatial and tabular components to work together in the Travel Routes application.

The descriptive attributes are managed via the INFRA application. This national application contains the forms to input and edit data and maintain data integrity of the tabular data. The modules shown in Figure 3-1 are implemented through the INFRA application.

3.1 Tabular Component

3.1.1 Routes

The structure of the basic route and linear event attributes within the Oracle database are shown in Figure 3-2. This is the core relationship that forms the foundation of the travel routes model.



Legend
CN = Control Number
PK = Primary Key
FK# = Foreign Key
U# = Unique Index
I# = Non-Unique Index

Figure 3-2. Route Basics and Linear Events Table Relationships

Traditionally, attribute data is stored in a table where a separate column (field) is defined for each attribute. In Travel Routes, the attribute data is stored as a series of linear event and value combinations in the RTE_LINEAR_EVENTS table. For each record in this table the linear event field holds the name of a linear event

(e.g. objective maintenance level) and the value field holds the value of the named linear event (e.g. 3 - SUITABLE FOR PASSENGER CARS) for a section along the route. This is commonly referred to as the “long/skinny approach”. While this data structure is efficient and extensible (allows for local customization), it’s not conducive to ad-hoc queries where multiple attributes need to be queried simultaneously. While several complex queries have been devised [4], there are situations where the queries don’t work correctly such as when linear events contain gaps and overlaps.

3.1.1.1 Static Summary Tables

There are two static tables (they don’t automatically change as the database changes) that can be used as of INFRA version 4.0 for ad hoc queries (both spatial and tabular) that flatten out the linear event model to a more traditional approach. These tables, described in the following sections, are much easier to use for querying the database and should be used for both spatial and tabular queries. Two separate Oracle procedures (stored programs within the Oracle database) are used to populate and maintain these tables. These tables are not to be edited directly as the data is dropped and re-created when the procedure is run. The procedures can be run from the Travel Routes menu or programmed from external programs (AML, Access, Visual Basic, etc.) [5]. Use the “Refresh Road Linear Events Snapshot” form from the INFRA Travel Routes Roads selection to update these two tables. The ArcView Travel Routes Extension query builder also will run the procedures to update these tables.

3.1.1.1.1 Road Core Table (II_ROAD_CORE)

In Oracle the name of this table is “II_ROAD_CORE”. It has a separate column for each of the nationally required linear events. This table is used for upward level reporting and is important to keep up to date. Any Oracle user can update this table even from outside the forest. The procedure that updates this table is called II_ROAD_CORE_PROC.

3.1.1.1.2 Road Linear Events (II_ROAD_LINEAR_EVENTS)

In Oracle the name of this table is “II_ROAD_LINEAR_EVENTS”. It has a separate column for each unique linear event in the database. Therefore the structure of it can change because of regional and forest authority linear events that can be added. This is the source table that is used in the ArcView Travel Routes Extension query builder. The procedure that updates this table is called II_ROAD_LE_PROC.

3.2 Spatial Component

The spatial component consists of arcs, which represent the location of linear features between intersections. Attributes associated with those arcs are stored in an Arc Attribute Table (AAT). Routes are composed of ordered collections of arcs and/or parts of arcs. Attributes associated with those collections are stored in the Route Attribute Table (RAT). The Travel Routes data structure includes a single set of arcs. Both the road and trail routes are “built on top of” those arcs.

Arcs (or parts of arcs) can belong to either a road or a trail (or more rarely to both a road and a trail). Very limited tabular attributes are stored in the AAT and RAT for the routed coverage. The unique link to the descriptive attributes for each route is stored in its RAT. An Arc/Info application called Spatial Data Interface (SDI) is widely used to assist with the construction and maintenance of the spatial data.

The GIS Core Data Dictionary

(<http://fsweb.wo.fs.fed.us/im/standards/gis/coredata/>) contains specifications for an integrated coverage of arcs with two route systems. This design allows efficient maintenance of the layer because roads sometimes function as trails during certain times of the year. The pertinent components of the standards contained within the GIS Core Data Dictionary are repeated here for completeness.

The key linkage between the spatial and tabular data is the route control number (CN). This identifier is unique across the Forest Service. In addition the route number (ID in RTE_BASICS) is also very important in building and maintaining the spatial data. Route systems are fragile and can be corrupted easily.

Therefore, **it's highly recommended that the route number (RTE_NO and TRL_NO) be included in the arc attribute table (.aat)** so that routes can be rebuilt if the route system is corrupted. The GIS Core Dictionary specifies that these items be included in the .aat for this reason.

3.2.1 Arcs

Coverage Name: travel_route

Map Scale: 1:24,000 for continental U.S., Puerto Rico, and Hawaii and 1:63,360 for Alaska

Horizontal Accuracy: Meet National Map Accuracy Standards

Projection, Datum, etc: A complete Arc/Info projection file is required

Table 3-1 contains the structure of the arc attribute table for the coverage. There are three user-defined items RTE_NO, TRL_NO and SOURCE_CODE. The RTE_NO and TRL_NO must be included for usage with SDI and to maintain a safety net in case the route system(s) get corrupted. It also allows forests to maintain only arcs and dynamically build the route systems. The SOURCE_CODE item is optional and can be used to track where the line work came from. The coding for the SOURCE_CODE is contained in Table 3-2.

Table 3-1. travel_route.aat, Arc Attribute Table for the travel_route Coverage

Col	Item Name	Width	Output	Type	Dec	Alt Name	Index	Description
1	FNODE#	4	5	B				Internal Item
5	TNODE#	4	5	B				Internal Item
9	LPOLY#	4	5	B				Internal Item
13	RPOLY#	4	5	B				Internal Item
17	LENGTH	4	12	F	3			Internal Item
21	TRAVEL_ROUTE#	4	5	B				Internal Item
25	TRAVEL_ROUTE-ID	4	5	B				Internal Item
29	RTE_NO	30	30	C		ROUTE_NO	Yes	Road Number – same as ID in the RTE_BASICS table. If a route functions as both a road and trail, then both the RTE_NO and TRAIL_NO should be populated.
59	TRL_NO	30	30	C		TRAIL_NO	Yes	Trail Number – same as ID in the RTE_BASICS table. If a route functions as both a road and trail, then both the RTE_NO and TRAIL_NO should be populated.
89	SOURCE_CODE	2	2	C				Code for the source of the geographic position of the arc. This item is NOT mandatory but can be used for internal control. Reference: EM-7140-24 Guidelines for Digital Map Updates

Table 3-2. Source Code Definition for Arc Attribute Table [8]

Code	Description
01	Cartographic Feature File
02	Global Positioning; 2-5 meter accuracy; 3D lock
03	Global Positioning; 2-5 meter accuracy; 2D lock
04	Global Positioning; <1 meter accuracy; survey grade
05	Resurvey Plat
06	Compiled from aerial photography
07	Digitized from Primary Base Series/Single Edition Quad
08	Digitized from Orthophotography
09	Automated Lands Project
20	Digitized from some other source
21	Geodetic Control Database (GCDB)
22	Other Cadastral Information
23	Another agency created the line work
24	Unknown

3.2.2 Route Systems

One route system will be created for roads (ROAD) and another for trails (TRAIL).

The route feature attribute tables (.rat) have identical structures except for the Arc/Info key items (fields) <route> # and <route>-id, where <route> equals road or trail. These data structures are compatible with the SDI application. Route measures and route direction must correspond to those stored in the RTE_BASICS table in Oracle.

The BMP and EMP items are redundant to those carried in the RTE_BASICS table in Oracle. They are included to facilitate route calibration and because the SDI application was designed to use them. The RTE_NO and RTE_CN are also redundant to the ID and CN columns in the RTE_BASICS table. These items are included for the linkage to the tabular data and for ease in labeling routes in Arc/Info and Arcview.

The ACTION and ACTIONSTAMP items are required for the SDI application to work. It maintains a history of when the route was linked to RTE_BASICS and if the route needs to be re-calibrated.

3.2.2.1 Road

The route attribute table for the road route will be as shown in Table 3-3.

Table 3-3. travel_route.ratroad, Road Route Attribute Table Definition

Col	Item Name	Width	Output	Type	Dec	Alt Name	Index	Description
1	ROAD#	4	5	B				Internal Item
5	ROAD-ID	4	5	B				Internal Item
9	RTE_NO	30	30	C		ROUTE_NO	Yes	Road Number – same as ID in the RTE_BASICS table.
39	RTE_CN	34	34	C		EVENT_KEY	Yes	The control number of the route as contained in the CN column in the RTE_BASICS table. The alternate name allows other generic tools to work with event data.
73	BMP	8	8	N	4			The BMP of the route. This is copied from the RTE_BASICS table. It is only in this table for ease of calibration.
80	EMP	8	8	N	4			The EMP of the route. This is copied from the RTE_BASICS table. It is only in this table for ease of calibration.
87	ACTION (see Table 3-4)	10	10	C				Identifies the status of calibration of a route.
97	ACTIONSTAMP	8	10	D				The date that the value was placed into the ACTION item.

Table 3-4 Valid Codes for the ACTION Item

Code	Description
CALIBRATED	The route is properly calibrated to the bmp/emp values in RTE_BASICS
REMEASURE	The route needs to be re-calibrated to the bmp/emp values in RTE_BASICS
MCALIBRATE	The route is properly calibrated to the bmp/emp values in RTE_BASICS and has had mid-point calibration performed with internal calibration points at road or trail intersections.

3.2.2.2 Trail

The route attribute table for the trail route will be as shown in Table 3-5.

Table 3-5. travel_route.rattrail, Trail Route Attribute Table Definition

Col	Item Name	Width	Output	Type	Dec	Alt Name	Index	Description
1	TRAIL#	4	5	B				Internal Item
5	TRAIL-ID	4	5	B				Internal Item
9	TRL_NO	30	30	C		TRAIL_NO	Yes	Trail Number – same as ID in the RTE_BASICS table.
39	RTE_CN	34	34	C		EVENT_KEY	Yes	The control number of the route as contained in the CN column in the RTE_BASICS table. The alternate name allows other generic tools to work with event data.
73	BMP	8	8	N	4			The BMP of the route. This is copied from the RTE_BASICS table. It is only in this table for ease of calibration.
80	EMP	8	8	N	4			The EMP of the route. This is copied from the RTE_BASICS table. It is only in this table for ease of calibration.
87	ACTION (see Table 3-4)	10	10	C				Identifies the status of calibration of a route.
97	ACTIONSTAMP	8	10	D				The date that the value was placed into the ACTION item.

4 Table/Column Definitions

The purpose of this section is to document the tabular data structure. It's organized by table name with the column definitions following. Definitions for linear events are contained in chapter 1.

Many of the tables share common column names (such as CN) and also contain audit columns. Audit columns provide information on who created the record, when it was created, and who/when last modified it. The audit columns have been moved to chapter 4.3 to minimize redundancy. Other common columns are repeated for each table for easy reference. Each column is contained on a separate page.

The columns are organized after the table name chapter generally by the order in which they occur in the table structure. A figure of the column is placed in the chapter that first describes the table. These figures include hyperlinks to quickly jump to the column of interest.

The format of each column or linear event definition holds basic information on:

- Name
- Definition
- Column structural definition (i.e. data type, etc)
- Reference to the USFS Manual, Handbooks, Code of Federal Regulation, or US Code if applicable.
- Requirements for population
- Business rules for application of the column or linear event
- General notes
- Codes available along with the definition of each code

4.1 RTE_BASICS

RTE_BASICS is the parent table for all routes (Figure 4-1). It contains one record for each route. It includes route definitions for both roads and trails, which can be separated by using the object name (OBJ_NAME).

You can click on the column of interest in Figure 4-1 to jump to the definition.

RTE_BASICS	
PK	<u>CN</u>
I1	OBJ_CLASS
I1	OBJ_TECH
I1	OBJ_NAME
	ID
	NAME
	SPUR_NO
	BMP
	EMP
	BEGIN_TERMINI
	END_TERMINI
	COMMENTS
I2	TRANS_ID
	MASTER_SITE
	CREATED_BY
	CREATED_DATE
	CREATED_IN_INSTANCE
	MODIFIED_BY
	MODIFIED_IN_INSTANCE
	MODIFIED_DATE
	CHECKED_OUT_BY
	CHECKED_OUT_DATE

Figure 4-1 RTE_BASICS Table Diagram

Travel Routes Data Dictionary

Name: CN

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: Unique identifier of a record. It is a unique number within the Forest Service that is composed of a sequence number concatenated with the oracle database instance identifier.

Reference:

Authority: WO

Format: Sequence Number & Oracle Instance Number

Unit of Measure:

Data Type: varchar2

Size: 34

Mandatory: Yes

Look Up:

Requirements for Population

Road System	Requirement
-------------	-------------

All	Required - System Generated
-----	-----------------------------

Business Rules:

Notes:

- 1.) The sequence number is generated by the RTE_CN_SEQ
- 2.) Generated by an insert trigger in the oracle database

Travel Routes Data Dictionary

Name: OBJ_CLASS

Used in Tables:
RTE_BASICS

Definition: The highest level grouping of objects within the INFRA database.

Reference:

Authority: WO

Format:

Unit of Measure:

Data Type: varchar2 **Size:** 30

Mandatory: Yes

Look Up:

Requirements for Population

Road System	Requirement
All	Required – Forms generated

Business Rules: 1.) Only ROUTE is used for Roads and Trails

Notes:

Valid Codes

Code

Description

ACCOMPLISHMENT_INSTRUMENT
 CONTACT
 DOCUMENT
 EVENTS
 FEATURE
 FISCAL
 LAND_UNIT
 POOLED
 REPORT
 ROUTE
 STATUS PARCEL
 SYSTEM_LIBRARY

Only code used for travel routes

Travel Routes Data Dictionary

Name: OBJ_TECH

Used in Tables:
RTE_BASICS

Definition: The primary technology used to store and access the object

Reference:

Authority: WO

Format:

Unit of Measure:

Data Type: varchar2 **Size:** 30

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Optional

Business Rules: 1. 'ORACLE' is the only value stored for travel routes even though ARCVIEW and SDI are commonly used

Notes:

Code

Valid Codes
Description

ARCVIEW

ORACLE

ORACLE FORMS 45

SDI

Only code stored in the RTE_BASICS table

Travel Routes Data Dictionary

Name: OBJ_NAME

Used in Tables:
RTE_BASICS

Definition: The name of the object. Used to differentiate between objects (ROAD or TRAIL) of the same class.

Reference: 36 CFR 212.1

Format:

Unit of Measure:

Data Type: varchar2

Size: 30

Scale:

Mandatory: Yes

Look Up:

Requirements for Population
Road System Requirement

Business Rules: 1.) This attribute always needs to be included in queries as roads and trails are mixed within the same storage structure

Notes:

Code

Valid Codes
Description

ROAD

A motor vehicle travel way over 50 inches, unless classified and managed as a trail (36 CFR 212.1).

TRAIL

A linear feature constructed for the purpose of allowing the free movement of people, stock, or OHV's.

Travel Routes Data Dictionary

Name: ID

Used in Tables:
RTE_BASICS

Definition: The official identifier of the route

Reference: EM-7100-15 Sign and Poster Guidelines for the Forest Service, Chapter 11.6 Guide Signs :

Format: see business rules

Unit of Measure:

Data Type: varchar2 **Size:** 30 **Mandatory:** Yes

Look Up:

Requirements for Population

<u>Road System</u>	<u>Requirement</u>
All	Required

Business Rules: General Rules

- 1.) In general the ID should be the same identifier that is signed on the ground.
- 2.) Different regions have different numbering strategies for Forest Service Roads. It is recognized that it would be difficult to standardize the numbering strategies because of the large investment in signs and documents.
- 3.) At a minimum include all Forest Roads which includes “any road wholly or partially within or adjacent to and serving the National Forest System, and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources” (23 U.S.C. 101). Classified and unclassified roads on National Forest System Lands are required in the forest road atlas (FSM 7711.1). It’s strongly recommended that other roads needed for mapping and analysis also be included in the transportation atlas.
- 4.) It’s recommended that the road number(id) be unique within a forest because:
 - i. SDI contains a tool to populate the route control number within the route attribute table in the gis coverage. This tool works by linking on the route number. If a duplicate exists it is more difficult for this tool to function correctly.
 - ii. Some forests have created automated processes to route their coverages when needed. These routines rely on the route number being unique within the coverage.
- 5.) Dual route designations are discouraged as the travel routes model was not designed to model these (See Chapter 8.4 for further explanation).

Classified Roads

- 6.) Interstate routes shall be designated with “I” then a hyphen then the route number and then a one digit letter for the cardinal direction. “I” shall be capitalized. Example: I-5N for northbound Interstate 5, I-84E for eastbound Interstate 84. Divided highways are actually two different roadways, which can have different alignments and measures.
- 7.) Federal routes shall be designated with a “US” then a hyphen then the route number. “US” shall be all caps. Example US-12 (US Highway 12)
- 8.) State Highways shall be designated with a 2 digit postal code then a hyphen then the route number. Postal code shall be all caps. Example OR-82, WA-504, NH-5
- 9.) Other governmental routes such as Other Federal, State roads, County, Township, and City (Municipal) roads shall be designated with a 3 digit alpha code to indicate the organization, then a hyphen, then the actual road number or name. For example:
 - BLM-1230 (Bureau of Land Management Road 1230)
 - NPS-Paradise (National Park Service Paradise Road)
 - HUM-Bear Creek Road (Humboldt County Bear Creek Road)
 - LAC-Bear Creek Road (Los Angeles County Bear Creek Road)
 - CTY-Bear Creek Road (Bear Creek County Road)
 - SLR-4555 (State Lands Road 4555)
 - WAL-586 (Wallowa County Road 586)
- 10.) Campground Loops - Because loops are spatially unique roads, append an alpha character to the route number separated by a hyphen. If the primary route going into a campground was designated as the 9028000 and had two loops off of that they would be coded as 9028000-A and 9028000-B. For more information see Chapter 8.2.
- 11.) Private Routes –It’s recommended to use an abbreviation for the landowner followed by a hyphen then the

private identifier or name. Example: WEYCO-202 (Weyerhaeuser road 202).

Unclassified Roads

- 12.) A systematic approach for numbering unclassified roads is desirable. This can be done by using an existing local numbering scheme or one of the following recommended systems:
- i. Parent#+MP+Direction+sequence number separated by a hyphen. A road that comes off of route 2808032 at mp 1.23 and goes right (in direction of increasing measure) would be 2808032-1.23R-1. For more information see Chapter 8.1
 - ii. U+Any Numbering system. For example U252. If the road becomes a classified road in the future, the road number needs to be changed to be consistent with the local system.

Temporary Roads

- 13.) Temporary roads are not intended to be tracked in the Transportation Atlas (36 CFR 212.2). If they are included, they should have a road number consistent with the document that authorizes their construction and use..

Notes:

Travel Routes Data Dictionary

Name: NAME

Used in Tables:
RTE_BASICS

Definition: Common name of the route

Reference:

Format:

Unit of Measure:

Data Type: varchar2

Size: 30

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	Optional

Business Rules: 1. Use where appropriate. **Do not code other meanings** within this attribute such as the timber sale name that built or is operating on a road.

Notes:

Travel Routes Data Dictionary

Name: SPUR_NO

Used in Tables:
RTE_BASICS

Definition: RETIRED – DO NOT USE ANYMORE

Reference:

:

Format:

Unit of Measure:

Data Type: varchar2

Size: 5

Mandatory: No

Look Up:

Requirements for Population
Road System Requirement

Business

Rules:

Notes: 1. Should be removed from the RTE_BASICS table

Travel Routes Data Dictionary

Name: BMP

Used in Tables:
 RTE_BASICS
 RTE_LINEAR_EVENTS

Definition: Beginning measure point of the route

Reference: _____ :

Format: 999.999 **Unit of Measure:** Miles

Data Type: number **Precision:** 8 **Scale:** 4 **Mandatory:** Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Required

- Business Rules:**
1. Start the measure point of a route at its logical beginning point where the route is originally signed. For example, Figure 4-2 shows a US Highway starting at an Interstate route. The US Highway begins its measures (milepost) at the interstate route. The forest has included the US Highway in the database and its spatial coverage where the US Highway but only where the road is within close proximity to national forest lands. In this case, the BMP of the US Highway route within Travel Routes should be the milepost of where the route enters the forest coverage extent measured from its original bmp of the route (MP 52.3). The milepost measures are typically available through a state department of transportation office.
 2. If a route changes jurisdiction along its length while the route designation remains constant, change the JURISDICTION linear event.
 3. If a Forest Service route starts outside the forest and continues into the forest, the bmp should begin where the route junctions with its parent route (State, County, Private) as shown in Figure 4-3. The example shows a route where an easement has been acquired across private land to access forest lands.
 4. The BMP must be in the same physical location as that shown in the GIS coverage. The BMP of the route in the coverage will be calibrated to the BMP in RTE_BASICS.
 5. Measure points should be measured in the field with a Distance Measuring Instrument properly calibrated or a GPS unit. Measures can be recorded up to the nearest .001 miles if one of these instruments is used. The accuracy recorded should be consistent with the accuracy of the instrument used to determine the measure.
 6. Mileposts must run in the same direction as what is signed on the ground
 7. If the BMP of a route is at the junction of another road system, the BMP is located at the centerline-centerline intersection to accommodate how the route systems are built in GIS.

Notes:

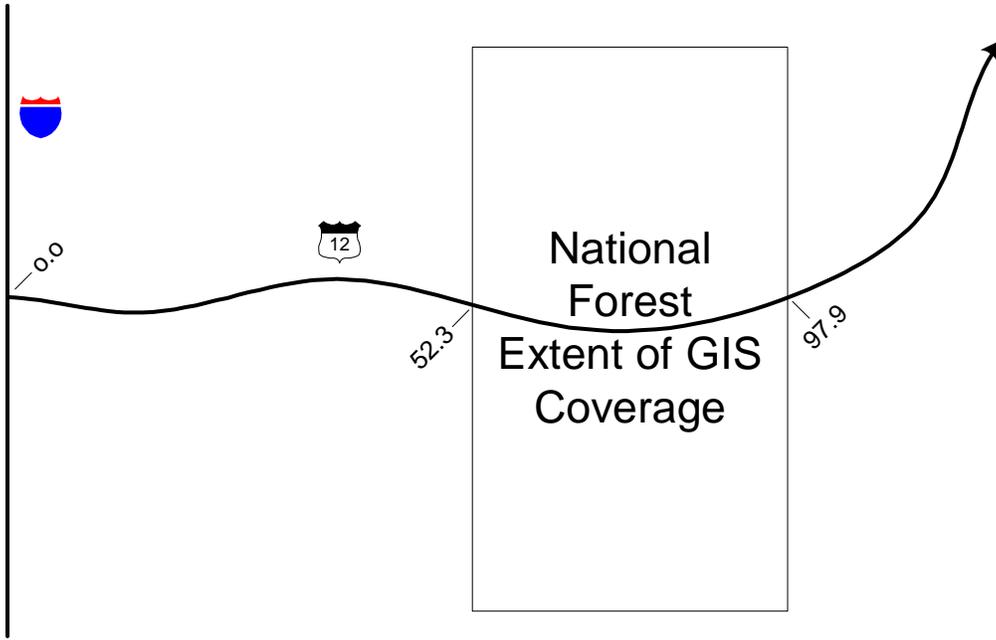


Figure 4-2 US Route Beginning Measure Example

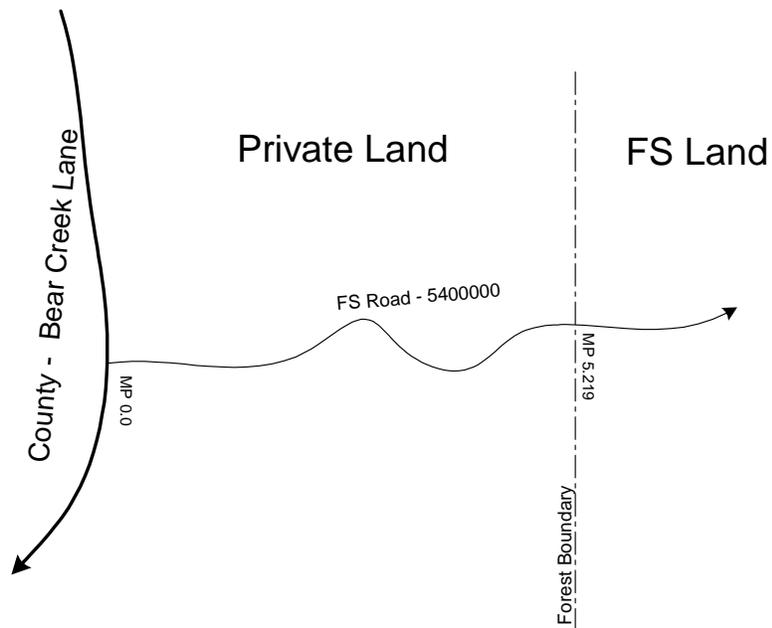


Figure 4-3 Route Beginning Measure Example

Travel Routes Data Dictionary

Name: EMP

Used in Tables:
 RTE_BASICS
 RTE_LINEAR_EVENTS

Definition: Ending measure point of the route

Reference:

Format: 999.999

Unit of Measure: Miles

Data Type: number

Precision: 8

Scale: 4

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Required

- Business Rules:**
1. The EMP is the BMP plus the measured length of the route.
 2. If a route changes jurisdiction along its length while the route designation remains constant, change the JURISDICTION linear event.
 3. The EMP must be in the same physical location as that shown in the GIS coverage. The EMP of the route in the coverage will be calibrated to the EMP in RTE_BASICS. . If the EMP is changed, the end point of the route in the spatial layer must also be changed to match it.
 4. Measure points should be measured in the field with a Distance Measuring Instrument properly calibrated or a GPS unit. Measures can be recorded up to the nearest .001 miles if one of these instruments is used. The accuracy recorded should be consistent with the accuracy of the instrument used to determine the measure.
 5. Mileposts must run in the same direction as what is signed on the ground.

Notes:

Travel Routes Data Dictionary

Name: BEGIN_TERMINI

Used in Tables:
RTE_BASICS

Definition: A description of where the route begins

Reference: :

Format:

Unit of Measure:

Data Type: varchar2

Size: 40

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All Other	Optional
FS	Required

- Business Rules:**
1. If the route starts at the junction with another route facility input the junctioning route ID.
 2. Prefix the junctioning route id with either the word Road or Trail. For example, if a road started at the junction of road 8303000 then the entry would be Road 8303000. For non-FS road systems, the prefix should begin with an appropriate prefix such as HWY (Highway), FH (Forest Highway), etc.
 3. It's recommended to input a milepost along the parent route after the text in business rule #2 (i.e. Road 8303000 at MP 3.105).

Notes:

Travel Routes Data Dictionary

Name: END_TERMINI

Used in Tables:
RTE_BASICS

Definition: A description of where the route ends

Reference:

Format:

Unit of Measure:

Data Type: varchar2

Size: 40

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	Optional

- Business Rules:**
1. If the route starts at the junction with another route facility input the junctioning route ID.
 2. Prefix the junctioning route id with either the word Road or Trail. For example, if a road ended at the junction of road 8303000 then the entry would be Road 8303000. For non-FS road systems, the prefix should begin with an appropriate prefix such as HWY (Highway), FH (Forest Highway), etc.
 3. It's recommended to input a milepost along the parent route after the text in business rule #2 (i.e. Road 8303000 at MP 3.105).

Notes:

Travel Routes Data Dictionary

Name: COMMENTS

Used in Tables:
RTE_BASICS

Definition: General descriptive remarks

Reference:

:

Format:

Unit of Measure:

Data Type: varchar2

Size: 240

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	Optional

Business Rules:

Notes:

Travel Routes Data Dictionary

Name: TRANS_ID

Used in Tables:
RTE_BASICS

Definition: Dead column - not used

Reference:

Format:

Unit of Measure:

Data Type: varchar2 **Size:** 34

Mandatory: No

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	N/A

Business Rules: 1. Discontinued column, do not use

Notes:

Travel Routes Data Dictionary

Name: MASTER_SITE

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: Oracle instance identifier of where the record was originally inserted.

Reference:

:

Format:

Unit of Measure:

Data Type: Number

Precision: 6

Scale: 0

Mandatory: No

Look Up:

<u>Requirements for Population</u>	
<u>Road System</u>	<u>Requirement</u>
All	N/A

Business Rules: 1. A dead column - not used. The oracle instance number is concatenated in the CN for the route

Notes:

Code

Valid Codes
Description

Travel Routes Data Dictionary

Name: CHECKED_OUT_BY

Used in Tables:
RTE_BASICS

Definition: The name of the user that has reserved the road for a mobile road survey. This column is populated by the electronic road log (ERL) tool.

Reference:

:

Format: USER (OPS\$ has been stripped off)

Unit of Measure:

Data Type: varchar2 **Size:** 30

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	N/A – System Populated

- Business Rules:**
1. Populated with base user's name if the road is checked out for mobile road survey for the Electronic Road Log (ERL) application.
 2. No editing will be allowed until this column is cleared and the data is checked back in.

Notes: 1.) This column was added to facilitate data integrity as part of the ERL application.

Travel Routes Data Dictionary

Name: CHECKED_OUT_DATE

Used in Tables:
RTE_BASICS

Definition: The date that the road was reserved in the Reserve Mobile Route form in INFRA Travel Routes. This column is populated by the electronic road log (ERL) tool.

Reference:

Format: DD-MON-YYYY

Unit of Measure:

Data Type: Date

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	N/A – System Populated

- Business Rules:**
- 1.) Populated with the date the user reserved a road in the mobile road survey for the Electronic Road Log (ERL) application.
 - 2.) No editing will be allowed until this column is cleared and the data is checked back in.

- Notes:**
- 1.) This column was added to facilitate data integrity as part of the ERL application.

4.2 RTE_LINEAR_EVENTS

The RTE_LINEAR_EVENT table (Figure 4-4) holds the descriptors for a route and the value of those descriptors. This table is typically called an “event” table. It contains one record for each event along a route. Only one unique combination of RTE_CN, BMP, EMP, LINEAR_EVENT and VALUE can be defined. Overlapping linear events are possible but only allowable in a few cases.

You can click on the column of interest in Figure 4-4 to jump to the definition.

RTE_LINEAR_EVENTS	
PK	CN
FK1,I1,U1	RTE_CN
U1	BMP
U1	EMP
U1	VALUE
U1	LINEAR_EVENT
	REMARKS
	STATUS
	MASTER_SITE
	CREATED_BY
	CREATED_DATE
	CREATED_IN_INSTANCE
	MODIFIED_BY
	MODIFIED_IN_INSTANCE
	MODIFIED_DATE

Figure 4-4 RTE_LINEAR_EVENTS Table Diagram

Travel Routes Data Dictionary

Name: CN

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: Unique identifier of a record. It is a unique number within the Forest Service that is composed of a sequence number concatenated with the oracle database instance identifier.

Reference:

Authority: WO

Format: Sequence Number & Oracle Instance Number

Unit of Measure:

Data Type: varchar2 **Size:** 34

Mandatory: Yes

Look Up:

Requirements for Population

Road System	Requirement
All	Required - System Generated

Business Rules: 1.) Generated by an insert trigger in the oracle database

Notes: 1.) The sequence number is generated by the -RTE_LINEAR_CN_SEQ sequence

Travel Routes Data Dictionary

Name: RTE_CN

Used in Tables:
RTE_LINEAR_EVENTS

Definition: Unique identifier of a route. It is a unique number within the Forest Service that is composed of a sequence number concatenated with the oracle database instance identifier. It is a foreign key to the CN column in RTE_BASICS.

Reference:

:

Format: Sequence Number & Oracle Instance Number

Unit of Measure:

Data Type: varchar2 **Size:** 34

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Required

Business Rules: 1.) Generated by the INFRA application

Notes:

Travel Routes Data Dictionary

Name: BMP

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: Beginning measure point of a route segment for a linear event and value combination

Reference: :

Format: 999.999

Unit of Measure: Miles

Data Type: number

Precision: 8

Scale: 4

Mandatory: Yes

Look Up:

Requirements for Population

Road System	Requirement
All	Required

- Business Rules:**
- 1.) Start the measure point of a linear event at its logical beginning point.
 - 2.) Measure points should be measured in the field with a Distance Measuring Instrument properly calibrated or a GPS unit. Measures can be recorded up to the nearest .001 miles if one of these instruments is used. The accuracy recorded should be consistent with the accuracy of the instrument used to determine the measure.
 - 3.) Mileposts must run in the same direction as those indicated for the route in the RTE_BASICS table.

Notes:

Travel Routes Data Dictionary

Name: EMP

Used in Tables:
 RTE_BASICS
 RTE_LINEAR_EVENTS

Definition: Ending measure point of a route segment for a linear event and value combination

Reference: _____ :

Format: 999.999 **Unit of Measure:** Miles

Data Type: number **Precision:** 8 **Scale:** 4 **Mandatory:** Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Required

- Business Rules:**
- 1.) End the measure point of a linear event at its logical ending point.
 - 2.) Measure points should be measured in the field with a Distance Measuring Instrument properly calibrated or a GPS unit. Measures can be recorded up to the nearest .001 miles if one of these instruments is used. The accuracy recorded should be consistent with the accuracy of the instrument used to determine the measure.
 - 3.) Mileposts must run in the same direction as those indicated for the route in the RTE_BASICS table.
 - 4.) The EMP must be in the same physical location as that shown in the GIS coverage. The EMP of the route in the coverage will be calibrated to the EMP in RTE_BASICS. If the EMP is changed, the end point of the route in the coverage must also be changed to match it.
 - 5.) If a route is decommissioned along a portion of its length and will still be managed as a single route, do not change the EMP, instead use the ROUTE STATUS linear event to capture the change in status

Notes:

Travel Routes Data Dictionary

Name: LINEAR_EVENT

Used in Tables:
RTE_LINEAR_EVENTS

Definition: A specific characteristic of a route. For example: the surface type or operational maintenance level.

Reference: :

Format: **Unit of Measure:**

Data Type: varchar2 **Size:** 40 **Scale:** **Mandatory:** Yes

Look Up: II_ATT, II_ATT_OCC

Requirements for Population

Road System	Requirement
FS	Required – See specific linear events
All Other	See Linear Event Application Matrix

- Business Rules:**
- 1.) Extensive coding and validation exists. All Washington Office authority linear events are defined in this data dictionary.
 - 2.) Lookups (LOV's) are taken from the II_ATT and II_ATT_OCC tables. II_ATT defines the linear event and II_ATT_OCC determines if the linear event can be used for a road or a trail.
 - 3.) See the listing for each linear event to determine if the linear event is required for specific road systems (See Chapter 1).
 - 4.) Linear events can be added to the database for local conditions, which is called "extensibility". Region and Forest authority linear events must be coordinated at the regional level to ensure consistency. See the INFRA System Administration User Guide (Chapter 4). It's strongly encouraged that regions and forests that add linear events document them.

- Notes:**
1. A linear event can be continuous, have gaps, or have overlaps. This dictionary describes for each linear event if overlaps are allowed. To determine if gaps are allowed, review the Linear Event Application Matrix (Chapter 6).
 2. A continuous linear event is shown in Figure 4-5. In this case the JURISDICTION linear event is recorded continuously along the length of the route. There would be 3 records entered for JURISDICTION as shown.
 3. A gap in a linear event is shown in Figure 4-6. In this case the MILEAGE SOURCE linear event is only populated for two segments along the route and there is a gap between them. There would only be 2 records entered for the MILEAGE SOURCE linear event as shown. In general gaps are not appropriate for mandatory linear events on Forest Service Roads. To determine if a gap is allowable, consult the Linear Event Application Matrix (Chapter 6).
 4. An overlap in a linear event is shown in Figure 4-7. In this case there are two cost share easements along the same segment of road from mp 2.0 to 6.0, which is recorded with the ACCESS RIGHTS linear event. There would only be 2 records entered for the ACCESS RIGHTS linear event as shown. This dictionary describes if overlaps are allowable for each linear event. It is must be noted that anytime a linear event contains overlaps, mileage summaries using this linear event will not be accurate.

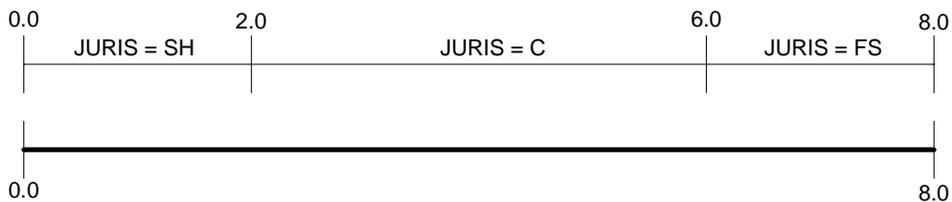


Figure 4-5 Continuous Linear Event

■		■			
0.0	2.0	JURISDICTION	SH – STATE HIGHWAY		
2.0	6.0	JURISDICTION	C – COUNTY, PARISH, BOROUGH		
6.0	8.0	JURISDICTION	FS – FOREST SERVICE		



Figure 4-6 Gap in Linear Event

█	█	0.0	2.0	MILEAGE SOURCE	DMI – DISTANCE MEASURING INSTRUMENT
		6.0	8.0	MILEAGE SOURCE	GPS – GLOBAL POSITIONING

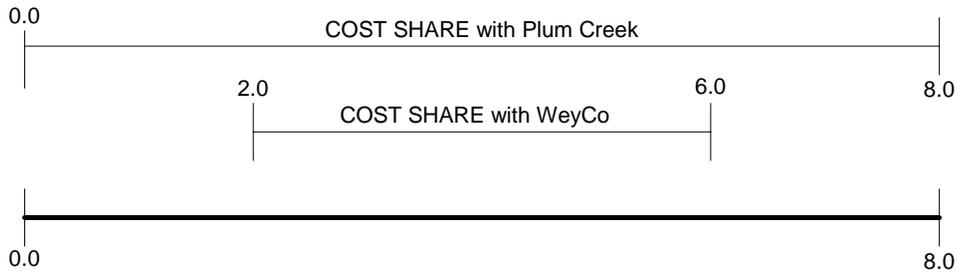


Figure 4-7 Overlap Linear Event

█	█	0.0	8.0	ACCESS RIGHTS	CS – COST SHARE Plum Ck, Dog Creek, 1
		2.0	6.0	ACCESS RIGHTS	CS – COST SHARE WeyCo, Tilton, 5

Travel Routes Data Dictionary

Name: VALUE

Used in Tables:
RTE_LINEAR_EVENTS

Definition:

The value of the linear event for the segment. For example: Asphalt for the surface type

Reference:

:

Format:

Unit of Measure:

Data Type: varchar2

Size: 240

Mandatory: Yes

Look Up: II_CODES

Requirements for Population

Road System	Requirement
FS	Required – See specific linear events
All Other	See Linear Event Application Matrix

- Business Rules:**
- 1.) For Linear Events that have no List of Values defined (such as Design Speed, etc.) in the II_CODES table, valid coding is defined by the Linear Event business rules and definition.
 - 2.) **Don't use punctuation marks** within the value as it can cause problems with several Oracle procedures. Punctuation marks such as %, #, /, !, ', *, ?, & **should not** be used.

- Notes:**
- 1.) Many linear events have a list of values that are defined in the II_CODES table.
 - 2.) If a linear event does not have valid values (codes) defined in the II_CODES table, any data can be stored.

Travel Routes Data Dictionary

Name: REMARKS

Used in Tables:
RTE_LINEAR_EVENTS

Definition: Descriptive remarks on the value of a linear event.

Reference:

:

Format:

Unit of Measure:

Data Type: varchar2

Size: 240

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	Optional

- Business Rules:**
- 1.) Specific business rules FOR INDIVIDUAL LINEAR EVENTS give guidance for using this feature such as ACCESS RIGHTS
 - 2.) If a remark exists for a record, further remarks can be appended by placing a comma then the new remark.

Notes:

Travel Routes Data Dictionary

Name: STATUS

Used in Tables:
RTE_LINEAR_EVENTS

Definition: Dead Column - Not used

Reference:

:

Format:

Unit of Measure:

Data Type: varchar2

Size: 2

Mandatory: No

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	N/A

Business Rules: 1.) Discontinued column, do not use

Notes:

Travel Routes Data Dictionary

Name: MASTER_SITE

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: Oracle instance identifier of where the record was originally inserted.

Reference:

:

Format:

Unit of Measure:

Data Type: Number

Precision: 6

Scale: 0

Mandatory: No

Look Up:

<u>Requirements for Population</u>	
<u>Road System</u>	<u>Requirement</u>
All	N/A

Business Rules: 1.) A dead column - not used. The Oracle instance number is concatenated in the CN for the route

Notes:

4.3 Record of Events

The Record of Events data structure is designed to hold date related linear event information. That is, data that is date related that changes along a route. This is a generic data structure that will allow storage of items such as construction and decommissioning dates, when a road is designated or nominated in a scenic byway program, or when there are route status changes (FSM 7711.1).

II_RTE_RECORD_OF_EVENTS	
PK	<u>CN</u>
	RTE_CN EVENT EVENT_SUBTYPE EVENT_DATE DATE_ACCURACY BMP EMP REMARKS CREATED_BY CREATED_DATE CREATED_IN_INSTANCE MODIFIED_BY MODIFIED_DATE MODIFIED_IN_INSTANCE

Figure 4-8 Record of Events Data Structure

Travel Routes Data Dictionary

Name: CN

Used in Tables:
II_RTE_RECORD_OF_EVENTS

Definition: Unique identifier of a record. It is a unique number within the Forest Service that is composed of a sequence number concatenated with the oracle database instance identifier.

Reference: **Authority:** WO

Format: Sequence Number & Oracle Instance Number

Unit of Measure:

Data Type: varchar2 **Size:** 34 **Mandatory:** Yes

Look Up:

Requirements for Population

Road System	Requirement
All	Required - System Generated

Business Rules: 1.) Generated by an insert trigger in the oracle database

Notes: 1.) The sequence number is generated by the (unknown, not designed yet) sequence

Travel Routes Data Dictionary

Name: RTE_CN

Used in Tables:
II_RTE_RECORD_OF_EVENTS

Definition: Unique identifier of a route. It is a unique number within the Forest Service that is composed of a sequence number concatenated with the oracle database instance identifier. It is a foreign key to the CN column in RTE_BASICS.

Reference:

:

Format: Sequence Number & Oracle Instance Number

Unit of Measure:

Data Type: varchar2

Size: 34

Mandatory: Yes

Look Up:

Requirements for Population

Road System	Requirement
All	Required

Business Rules:

Notes:

Travel Routes Data Dictionary

Name: EVENT

Used in Tables:
IL_RTE_RECORD_OF_EVENTS

Definition: The event category for a record in the record of events table. It is the parent category for the event subcategories

Reference: :

Format: **Unit of Measure:**

Data Type: varchar2 **Size:** 40 **Mandatory:** Yes

Look Up:

Requirements for Population

Road System	Requirement
All	Optional

Business Rules:

Notes:

Valid Codes

Code	Description
CHANGE ATTRIBUTE	The date that important linear events or attributes were changed
CONSTRUCTION	Related to construction, reconstruction, or decommissioning
DECISION DOC DESIGNATION	NEPA Planning Documentation Special designations such as PFSR, Scenic Byway, etc. Must be officially designated.
INSPECTION	Different types of physical inspections
NATURAL EVENT	Events that naturally occur such as floods, etc.
NOMINATION	Nominated for a special designation, not approved yet.
PLANNING DOC	Transportation Planning Documentation such as Roads Analysis, RMO, etc.
TRAVEL MGMT	Change in Travel Management status such as changing to a closure yearlong

Travel Routes Data Dictionary

Name: EVENT_SUBTYPE

Used in Tables:
II_RTE_RECORD_OF_EVENTS

Definition: A subcategory of a parent event. This is used to classify the event.

Reference: :

Format:

Unit of Measure:

Data Type: varchar2 **Size:** 40

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Optional

- Business Rules:**
- 1.) It's recommended to use a GIS Coverage instead of recording NATURAL EVENTS in this data structure. The data for natural events is truly spatial in nature and may have additional information requirements that are not suitable to record here.
 - 2.) When entering that a physical inventory was completed (real property inventory), enter the name of the person doing the inspection in the remarks.

Notes:

EVENT	EVENT_SUBTYPE	<u>Valid Codes</u>	
			Description
CONSTRUCTION	C - CONSTRUCTION		Original construction
	R - RECONSTRUCTION		Reconstruction
	DE - DECOMMISSIONED		A road that has been stabilized to a more natural state (36 CFR 212.1)
	CV – CONVERTED		Converted to a TRAIL
PLANNING DOC	ADD – RAP ADD		Road Analysis complete, recommend to add to system
	CV – RAP CONVERT		Road Analysis complete, recommend road segment to be converted to another use
	DE – RAP DECOMMISSION		Road Analysis complete, recommend road segment to be decommissioned
	NC – RAP KEEP		Road Analysis complete, road segment is needed for long term management
	RMO – RMO COMPLETE		Road Management Objective is complete
DECISION DOC	DE – NEPA DECOMMISSION		NEPA decision to decommission the road segment
	CV – NEPA CONVERT		NEPA decision to convert the road segment to another use
	ADD – NEPA ADD		NEPA Decision to ADD to system
DESIGNATION	PR – PUBLIC ROAD		Designated as a Public Forest Service Road
	SB – SCENIC BYWAY		Designated as a Scenic Byway
	FH – FOREST HIGHWAY		Designated as a Forest Highway
	LB – LOCAL BYWAY		Designated as a local byway
	OT – OTHER		Some other designation, describe in remarks
NOMINATION	PR – PUBLIC ROAD		Nominated as a Public Forest Service Road
	SB – SCENIC BYWAY		Nominated as a Scenic Byway
	FH – FOREST HIGHWAY		Nominated as a Forest Highway
	LB – LOCAL BYWAY		Nominated as a local byway
	OT – OTHER		Some other Nominated, describe in remarks

TRAVEL MGMT	OY – OPEN YEARLONG	Changed to Open Yearlong
	RS – RESTRICTED SEASONALLY	Changed to seasonal restriction
	RY – RESTRICTED YEARLONG	Changed to yearlong restriction
	CS – CLOSED SEASONALLY	Changed to seasonal closure
	CY – CLOSED YEARLONG	Changed to yearlong closure
NATURAL EVENT	A - AVALANCHE	Damage caused by an avalanche
	F - FLOOD	Flood damage – washout, ditch scour, etc
	L – LANDSLIDE	Debris avalanche or rotational failure that restricted or blocked any portion of the roadway
	V - VOLCANO	Damage caused by a volcano
	O - OTHER	Some other natural occurrence
CHANGE ATTRIBUTE	J – JURISDICTION	Change of jurisdiction
	OP – OPER MAINTENANCE LEVEL	Change of operational maintenance level
	OB – OBJ MAINTENANCE LEVEL	Change of objective maintenance level
	FC – FUNCTIONAL CLASS	Change of functional class
	RN – ROUTE NUMBER	Change of road number
INSPECTION	PI – PHYSICAL INVENTORY	Verified for existence for the real property inventory. Enter the name of the inspector in remarks.
	CS – CONDITION SURVEY	Condition survey completed to record annual & deferred maintenance and capital improvement needs
	FP – FISH PASSAGE	Fish passage survey completed on all fish culverts on the route segment.

Travel Routes Data Dictionary

Name: EVENT_DATE

Used in Tables:
II_RTE_RECORD_OF_EVENTS

Definition: The date that the event occurred

Reference:

:

Format:

Unit of Measure:

Data Type: Date

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Optional

- Business Rules:**
- 1.) If an event is only known to a precision of one year, record the date as if it occurred on the January 1 of that year. For example, if it were known that a road was constructed in 1984, it would be recorded as 1/1/1984. The DATE_ACCURACY would be set to Y – ESTIMATED YEAR.
 - 2.) If an event is only know to a precision of one decade, record the date as if it occurred on January 1 of the first year of the decade. For example, if it was known through progressive aerial photography flights that a road was built in the 1960's, record it as 1/1/1960. The DATE_ACCURACY would be set to D – ESTIMATED DECADE.

Notes:

Travel Routes Data Dictionary

Name: DATE_ACCURACY

Used in Tables:
 II_RTE_RECORD_OF_EVENTS

Definition: The confidence of the event date

Reference:

Format:

Unit of Measure:

Data Type: varchar2 **Size:** 25

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Optional

Business Rules:

Notes:

Code

K – KNOWN
 Y – ESTIMATED YEAR
 D – ESTIMATED DECADE

Valid Codes
Description

Date is known to the nearest day
 Date is estimated to nearest year
 Date is estimated to nearest decade

Travel Routes Data Dictionary

Name: BMP

Used in Tables:
II_RTE_RECORD_OF_EVENTS

Definition: Beginning measure point of the road segment

Reference:

Format: 999.999

Unit of Measure: Miles

Data Type: number

Precision: 8

Scale: 4

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
<u>Road System</u>	<u>Requirement</u>
All	Optional

- Business Rules:**
- 1.) Measure points should be measured in the field with a Distance Measuring Instrument properly calibrated or a GPS unit. Measures can be recorded up to the nearest .001 miles if one of these instruments is used. The accuracy recorded should be consistent with the accuracy of the instrument used to determine the measure.
 - 2.) Mileposts must run in the same direction as what is signed on the ground

Notes:

Travel Routes Data Dictionary

Name: EMP

Used in Tables:
II_RTE_RECORD_OF_EVENTS

Definition: Ending measure point of the road segment

Reference:

:

Format: 999.999

Unit of Measure: Miles

Data Type: number

Precision: 8

Scale: 4

Mandatory: Yes

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Optional

- Business Rules:**
- 1.) Measure points should be measured in the field with a Distance Measuring Instrument properly calibrated or a GPS unit. Measures can be recorded up to the nearest .001 miles if one of these instruments is used. The accuracy recorded should be consistent with the accuracy of the instrument used to determine the measure.
 - 2.) Mileposts must run in the same direction as what is signed on the ground

Notes:

Travel Routes Data Dictionary

Name: REMARKS

Used in Tables:
II_RTE_RECORD_OF_EVENTS

Definition: Additional comments about the record of event

Reference:

Format:

Unit of Measure:

Data Type: varchar2

Size: 255

Mandatory: No

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Optional

Business Rules:

Notes:

4.4 System/Audit Columns

Many tables within INFRA have audit columns. These columns log information on:

- The user that created the record
- The date the record was created
- The Oracle instance number the record was created in
- The user that last modified the record
- The date the record was last modified
- The Oracle instance number where the record was last modified

The Oracle database maintains these columns through the use of insert and update triggers defined within the database. Therefore, no user action is required to populate these. These columns can be useful when troubleshooting problematic data.

Travel Routes Data Dictionary

Name: CREATED_BY

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: The user that created the record.

Reference: OPSS\$USER

:

Format:

Unit of Measure:

Data Type: varchar2

Size: 30

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	Required - System Generated

Business Rules: 1.) Audit column, no input required - populated with an Oracle insert trigger.

Notes: 1.) This column may contain information on conversion routines or mass loading such as ERL1-ERL2 data.

Travel Routes Data Dictionary

Name: CREATED_DATE

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: The date when the record was originally created.

Reference:

:

Format:

Unit of Measure:

Data Type: date

Mandatory: No

Look Up:

Requirements for Population

Road System	Requirement
All	Required - System Generated

Business Rules: 1.) Audit column, no input required - populated with an Oracle insert trigger.

Notes:

Travel Routes Data Dictionary

Name: CREATED_IN_INSTANCE

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: The Oracle instance number of where the record was created. This is taken from the INSTANCE_ID column in the THIS_DB_INSTANCE table.

Reference:

:

Format:

Unit of Measure:

Data Type: number

Precision: 6

Scale: 0

Mandatory: No

Look Up: THIS_DB_INSTANCE

Requirements for Population

Road System	Requirement
All	Required - System Generated

Business Rules: 1.) Audit column, no input required - populated with an Oracle insert trigger.

Notes:

Travel Routes Data Dictionary

Name: MODIFIED_BY

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: The user that last modified the record.

Reference:

:

Format: OPS\$USER

Unit of Measure:

Data Type: varchar2 **Size:** 30

Mandatory: No

Look Up:

<u>Requirements for Population</u>	
Road System	Requirement
All	Required - System Generated

Business Rules: 1.) Audit column, no input required - populated with an Oracle update trigger.

Notes:

Travel Routes Data Dictionary

Name: MODIFIED_DATE

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: The date when the record was last modified.

Reference:

:

Format:

Unit of Measure:

Data Type: date

Mandatory: No

Look Up:

<u>Requirements for Population</u>	
<u>Road System</u>	<u>Requirement</u>
All	Required - System Generated

Business Rules: 1.) Audit column, no input required - populated with an Oracle update trigger.

Notes:

Travel Routes Data Dictionary

Name: MODIFIED_IN_INSTANCE

Used in Tables:
RTE_BASICS
RTE_LINEAR_EVENTS

Definition: The Oracle instance number of where the record was last modified. This is taken from INSTANCE_ID column in the THIS_DB_INSTANCE table.

Reference:

:

Format:

Unit of Measure:

Data Type: number **Precision:** 6 **Scale:** 0 **Mandatory:** No

Look Up: THIS_DB_INSTANCE

Requirements for Population

Road System	Requirement
All	Required - System Generated

Business Rules: 1.) Audit column, no input required - populated with an Oracle update trigger.

Notes:

5 Linear Event Definitions

The definitions for linear events that are defined as Washington Office authority are contained in the following section. Regions and Forests can establish their own linear events and coding for such, but the coding and linear events for Washington Office authority shall not be modified. Regions and forests that create linear events should establish them as a supplement to this document and post them on their intranet site. They should also be coordinated at the regional level to ensure consistency.

The values for all linear events are stored in English units. There is currently no initiative to convert to metric units.

Warning - There are many times when there is a question on how many miles of USFS roads there are classified by a set of linear events. All queries must include logic to exclude those roads that are under other jurisdictions and are not currently on the NFSR system. To do that, each query should contain the following criteria:

- ROUTE STATUS = 'EX – EXISTING'
- JURISDICTION = 'FS – FOREST SERVICE'
- SYSTEM = 'NFSR – NATIONAL FOREST SYSTEM ROAD'
- ADMIN_ORG -= Set to value of forest that you want to query. Other forests roads may be duplicated in the database. Use the MANAGING_ORG instead to find out how many miles are managed by the forest.

Some of the linear events are spatial attributes and as such should be generated and maintained through GIS. A generic procedure has been developed by the INFRA development team to allow maintenance of spatial attributes via a spatial overlay but it requires a “land unit” coverage that is linked to the land units module of Infra. An asterisk notes the spatial linear events after their name below.

The linear events under Washington Office Authority are listed below. *Click on the name to jump to the definition of that linear event.*

- [ACCESS RIGHTS](#)
- [ADMIN_ORG*](#)
- [CONGRESSIONAL DISTRICT*](#)
- [COUNTY*](#)
- [CRITICAL TRAFFIC](#)
- [DESIGN SPEED](#)
- [DESIGN TRAFFIC](#)
- [FUNCTIONAL CLASS](#)
- [JURISDICTION](#)
- [LANES](#)
- [LEGAL](#)
- [LEVELS OF TREATMENT](#)
- [MANAGING_ORG](#)
- [MILEAGE SOURCE](#)
- [OBJECTIVE MAINT LEVEL](#)

- [OPER MAINT LEVEL](#)
- [OTHER SYSTEM](#)
- [PFSR CLASSIFICATION](#)
- [PRIMARY MAINTAINER](#)
- [QUAD*](#)
- [ROAD TEMPLATE](#)
- [ROUTE STATUS](#)
- [SERVICE LIFE](#)
- [SURFACE TYPE](#)
- [SYSTEM](#)
- [TEMPLATE SLOPE CODE](#)
- [TRAFFIC SERVICE LEVEL](#)
- [TRAVEL WAY WIDTH](#)

Travel Routes Data Dictionary

Name: ACCESS RIGHTS

Used in Tables:
RTE_LINEAR_EVENTS

Definition: A privilege or right of a person or entity to pass over or use another person's or entity's travel way

Reference: National Forest Service Lands Program PRLS 646 (Title 36 CFR 212.1 FSM 5460.5, FSM 7705, FSM 7710.5, FSH 7709.58)

Authority: WO

Format:

Unit of Measure:

Overlap: Yes

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
All	Optional

- Business Rules:**
- 1.) If you desire to record the party with whom the access right exists, enter it in the Remarks column.
 - 2.) Cost Share - Enter the agreement area name in the remarks. If desired, also enter the supplement number that the road was originally shared under. The agreement area name shall be first followed by a comma and then the primary supplement number. For example if supplement 1 brought a road segment in the North Fork Tilton Agreement area, it would be input as NORTH FORK TILTON, 1.
 - 3.) Entering an Agreement/Permit record requires that a legal document exists. The exception is recording where access is needed.

Notes: 1.) Eventually ALPS will hold official encumbrance data

Valid Codes

Code	Description	Code Str.
AN - ACCESS NEEDED	No legal right exists and is needed	101000
CS - COST SHARE	A supplement to a road right of way construction and use agreement has been prepared and signed.	102000
E - EASEMENT	An interest in land owned by another party that entitles the holder to a specific limited use or enjoyment. Will be in ALP someday.	103000
L - LEASE	A right of ingress or egress granted by a government authority under the terms of the lease. Will be in ALP someday.	104000
P - PERMIT	A written license that has been issued by one party to a second party granting permission but not vesting a right.	105000
PR - PRESCRIPTIVE RIGHT	A right of access acquired by continuous use, known to and not contested by the landowner, in accordance with state laws. Complete any additional information in remarks.	106000
RA - FOREST ROAD AGREEMENT	A written agreement between the Forest Service and a state, county or local government. (FSH 7709.58-ch13.23, FSH 1509.11, FSM 1530)	107000
RS - RESERVATION	A right retained when property ownership was transferred from one party to another. Will be in ALP someday.	108000
TE - TEMPORARY EASEMENT	A temporary interest in land owned by another party that entitles the holder to a specific limited use or enjoyment for a specific period of time.	109000

Travel Routes Data Dictionary

Name: ADMIN_ORG

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The Forest Service unit where the route segment physically resides or the primary Forest Service unit served by the route segment.

Reference: No reference in directive system

Authority: WO

Format: RRRFDD RR is the 2-digit code for the Region, FF is the 2-digit code for the Forest and DD is the 2-digit code for the District.

Unit of Measure:

Overlap: No

Look Up: ID column in II_CONTACTS

Linear Event: Yes

Requirements for Population

Road System	Requirement
All Other	Optional
FS	Required
Unclassified	Required

- Business Rules:**
- 1.) Coding is validated against the ID column in the II_CONTACTS table where the OBJ_NAME = 'ORGANIZATION'.
 - 2.) Management responsibilities should be indicated by the [MANAGING_ORG](#). In most cases the ADMIN_ORG will be the same as MANAGING_ORG. However, because of organizational consolidation it is common to have one district or forest manage a route segment that is closer to their base of operations than the unit that the asset physically resides on.
 - 3.) If the route segment is outside the proclaimed forest boundary, enter the primary Forest Service unit served by the route segment. The primary Forest Service unit may be a region (01), forest (0105), or district (010502) organization.(Figure 5-1 and Figure 5-2).

- Notes:**
- 1.) See Section 8.6 on how to use this linear event for recording other forest road segments within a local database.

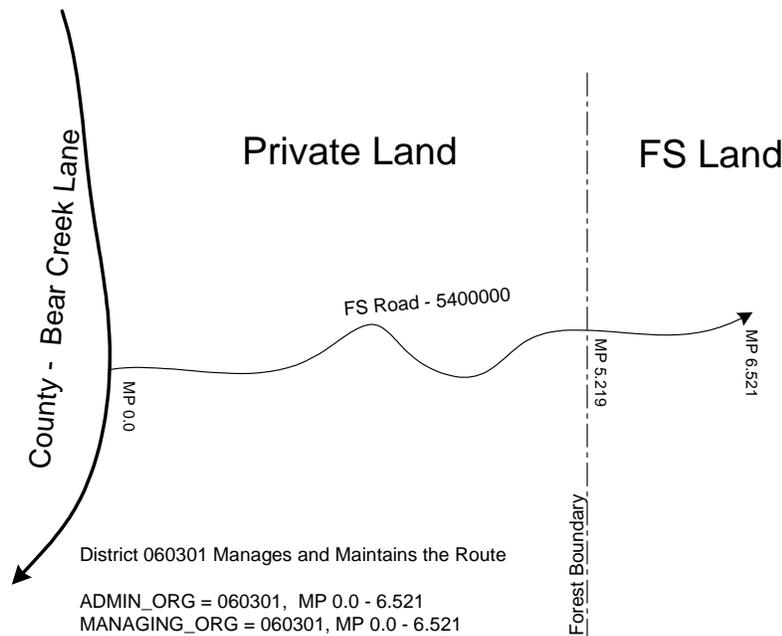


Figure 5-1. Recording ADMIN_ORG and MANAGING_ORG outside Forest Boundary

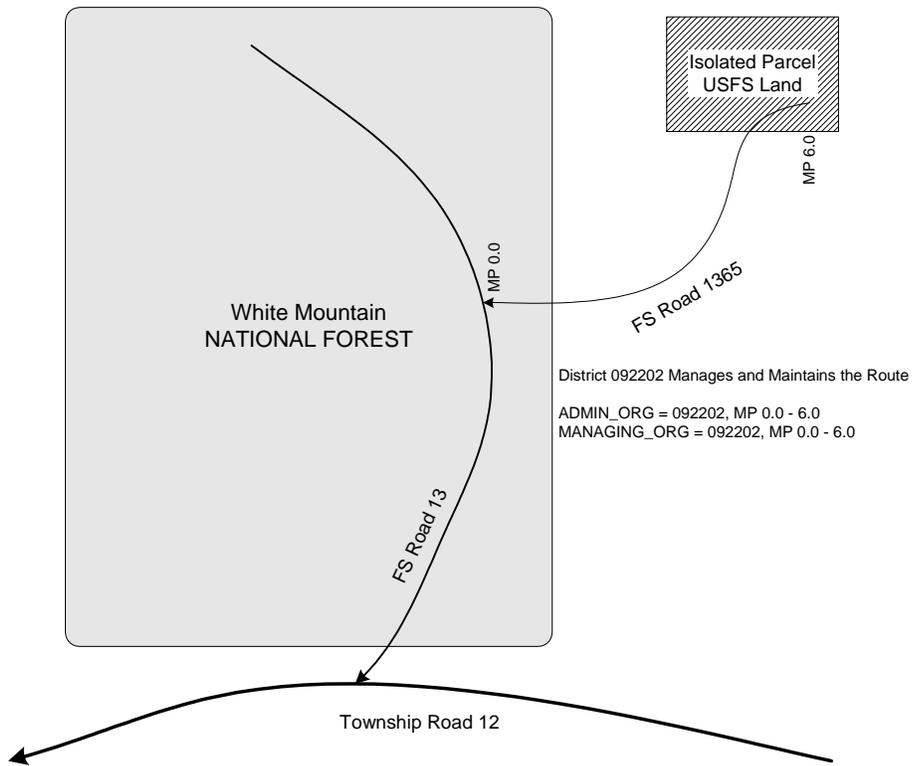


Figure 5-2 Recording ADMIN_ORG and MANAGING_ORG for Isolated Parcel

Travel Routes Data Dictionary

Name: CONGRESSIONAL DISTRICT

Used in Tables:
RTE_LINEAR_EVENTS

Definition:

Reference:

Authority: WO

Format: 99

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

<u>Requirements for Population</u>	
<u>Road System</u>	<u>Requirement</u>
FS	Required

- Business Rules:**
- 1.) Shall be zero padded for single digit districts (i.e. 01).
 - 2.) Lookup values should be established for coding specific to each forest.

Notes: 1.) This is a spatial attribute and should be generated through a GIS coverage.

Travel Routes Data Dictionary

Name: COUNTY

Used in Tables:
RTE_LINEAR_EVENTS

Definition: State and County/BOROUGH/PARISH/TOWNSHIP in which the route segment physically resides.

Reference:

Authority: WO

Format: SS - COUNTY

Unit of Measure:

Overlap: No

Look Up:

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required

Business Rules: 1.) Lookup values should be established for coding specific to each forest.

- Notes:**
- 1.) This attribute replaces the STATE and COUNTY attributes. It was changed to facilitate uniqueness.
 - 2.) This is a spatial attribute and should be generated through a GIS coverage.
 - 3.) Example coding:
NH - CARROL = Carrol County, New Hampshire
CO - JEFFERSON = Jefferson County, Colorado
OR - JEFFERSON = Jefferson County, Oregon

Travel Routes Data Dictionary

Name: CRITICAL TRAFFIC

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The vehicle, normally the largest (by weight, size, or unique configuration), whose limited use on the road is necessary to complete the planned activity.

Reference: FSH 7709.56 sec 4.1, Road Preconstruction Handbook

Authority: WO

Format:

Unit of Measure:

Overlap: Yes

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
All	Optional

Business Rules:

Notes:

Code	<u>Valid Codes</u> Description	Code Str.
4WD - FOUR WHEEL DRIVE	Four Wheel Drive High Clearance Vehicle	103000
BUS - BUS	Bus	108000
BUS(40) - 40 PASSENGER TOUR BUS	40 Passenger Tour Bus	108100
CAR - PASSENGER CAR	Passenger car	101000
FLATBED - H15 TRUCK	H15 Truck (Tandem Axle or Triaxle straight frame truck)	106100
GARBAGE - GARBAGE TRUCK	Garbage or other service truck	106200
LOGT - LOGGING TRUCK	Logging Truck with adjustable reach pole trailer	109000
LOWBOY - LOWBOY TRACTOR TRAILER	Low-boy Tractor Trailer	110100
MOTORHOME - MOTORHOME	Motor Home	107000
OHH - OFF HIGHWAY HAUL VEHICLE	Off Highway Haul Vehicles	109100
PICKUP - PICKUP TRUCK	Pickup Truck - High Clearance Vehicle	102000
S4WD - SHORT BASE 4WHEEL	Short base four-wheel drive i.e. JEEP CJ4	103100
SEMI - TRACTOR TRAILER TRUCK	Semi Truck (Tractor Trailer)	110000
SERVICE - SERVICE VEHICLES	Service Vehicle	106300
TRAILER - RECREATION CAMPER TRAILER	Car/Truck w/Camper-Boat Trailer	105000
TRUCK - STRAIGHT TRUCK	Straight Truck (H-Load)	106000
YARDER - CABLE LOGGING EQUIPMENT	Yarder - Cable Logging Equipment	111000

Travel Routes Data Dictionary

Name: DESIGN SPEED

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The speed determined for design and correlation of the physical features of a route that influence vehicle operation. The maximum safe speed that the design vehicle can maintain over a specified segment of a route when conditions are so favorable that the design features of the road, rather than operational limitations of the vehicle, govern. The design speed is the safe speed for the design situation only.

Reference: FSH 7709.56 sec 4.25, Road Preconstruction Handbook

Authority: WO

Format: 99

Unit of Measure: MPH

Overlap: No

Look Up:

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Optional

- Business Rules:**
- 1.) Indicate the average design speed in MPH to the nearest 5 MPH.
 - 2.) Enter the numeric value only (15), don't include the units as the units are defined as MPH.
 - 3.) When original design information is not available, only populate this field if an engineering study has been completed for purposes of establishing need for warning and regulatory signing. This only applies to existing roads.

Notes:

Travel Routes Data Dictionary

Name: DESIGN TRAFFIC

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The vehicle frequently using the road that determines the minimum standard for a particular design element. No single vehicle controls the standards for all the design elements for a road. Determine the maximum and minimum standards from the type and configuration of the vehicles using the road. Analyze each design element to determine which vehicle governs the standard for that element.

Reference: FSH 7709.56 sec 4.1, Road Preconstruction Handbook

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Optional

Business Rules:

Notes:

Valid Codes

Code	Description	Code Str.
4WD - FOUR WHEEL DRIVE	Four Wheel Drive High Clearance Vehicle	103000
BUS - BUS	Bus	108000
BUS(40) - 40 PASSENGER TOUR BUS	40 Passenger Tour Bus	108100
CAR - PASSENGER CAR	Passenger car	101000
FLATBED - H15 TRUCK	H15 Truck (Tandem Axle or Triaxle straight frame truck)	106100
GARBAGE - GARBAGE TRUCK	Garbage or other service truck	106200
LOGT - LOGGING TRUCK	Logging Truck with adjustable reach pole trailer	109000
LOWBOY - LOWBOY TRACTOR TRAILER	Low-boy Tractor Trailer	110100
MOTORHOME - MOTORHOME	Motor Home	107000
OHH - OFF HIGHWAY HAUL VEHICLE	Off Highway Haul Vehicles	109100
PICKUP - PICKUP TRUCK	Pickup Truck - High Clearance Vehicle	102000
S4WD - SHORT BASE 4WHEEL	Short base four-wheel drive i.e. JEEP CJ4	103100
SEMI - TRACTOR TRAILER TRUCK	Semi Truck (Tractor Trailer)	110000
SERVICE - SERVICE VEHICLES	Service Vehicle	106300
TRAILER - RECREATION CAMPER TRAILER	Car/Truck w/Camper-Boat Trailer	105000
TRUCK - STRAIGHT TRUCK	Straight Truck (H-Load)	106000
YARDER - CABLE LOGGING EQUIPMENT	Yarder - Cable Logging Equipment	111000

Travel Routes Data Dictionary

Name: FUNCTIONAL CLASS

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The way a road services land and resource management needs, and the character of service it provides.

Reference: old FSH 7709.54 (old Terminology Handbook, no longer in print)

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required

Business Rules:

Notes:

Valid Codes

Code	Description	Code Str.
A - ARTERIAL	Provides service to large land areas and usually connects with other arterial roads or public highways.	101000
C – COLLECTOR	Provides service to smaller land areas than an arterial road. It usually connects forest arterial roads to local forest roads or terminal facilities.	102000
L - LOCAL	Connects terminal facilities with forest collector or arterial roads or public highways. Usually local roads are single purpose transportation facilities.	103000

Travel Routes Data Dictionary

Name: JURISDICTION

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The legal right to control or regulate use of a transportation facility. Jurisdiction requires authority, but not necessarily ownership. The authority to construct or maintain a road may be derived from fee title, an easement, an agreement, or some other similar method.

Reference: FSM 7705, FSH 5409.17-94-2

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
All	Required

- Business Rules:**
- 1.) Road ROW Construction and Use Agreements (Cost Share) - The current standard easement granted to the US Government via this agreement provides sufficient authority to establish Forest Service jurisdiction. However, older agreements may not grant sufficient authority. The FRTA easement granted to a cooperator giving right-of-way over a Forest Service road retains jurisdiction with the Forest Service.
 - 2.) Use the OFS – OTHER FOREST SERVICE when data from a neighboring forest is put into the local database. The data is usually needed for gis or management purposes. Coding the road segment with OFS will prevent the mileage from being double counted as the data is aggregated at the regional or national scale.

Notes:

Code	<u>Valid Codes</u> Description	Code Str.
BIA - BUREAU OF INDIAN AFFAIRS	USDI Bureau of Indian Affairs	116300
BLM - BUREAU OF LAND MANAGEMENT	USDI Bureau of Land Management	116100
BOR - BUREAU OF RECLAMATION	USDI Bureau of Reclamation	116200
C - COUNTY, PARISH, BOROUGH	County, Parish, Borough	104000
COE - CORPS OF ENGINEERS	US Army Corps of Engineers	116900
DOD - DEFENSE DEPARTMENT	US Defense Department	116400
DOE - DEPARTMENT OF ENERGY	US Department of Energy	116500
FAA - FEDERAL AVIATION ADMINISTRATION	USDOT Federal Aviation Administration	116700
FS - FOREST SERVICE	USDA Forest Service	111000
FWS - FISH AND WILDLIFE SERVICE	USDI Fish and Wildlife Service	116800
L - LOCAL	Town, Township, Municipal Agency (City or other local civil government)	117000
NPS - NATIONAL PARK SERVICE	USDI National Park Service	116600
OF - OTHER FEDERAL AGENCY	Other Federal Agencies	116000
OFS – OTHER FOREST SERVICE	Adjacent USDA Forest Service unit.	111001
P - PRIVATE	Private (profit & not for profit)	115000
S - STATE	State Agency	120000
SH –STATE HIGHWAY	State Highway Department	120100
SLR – STATE LANDS ROAD	State lands organizations (Department of Natural Resources)	120200
T – TRIBAL ROAD	Non-Federal Tribal Road	122000
UNK – UNKNOWN	Needs to be researched and resolved	121000

Travel Routes Data Dictionary

Name: LANES

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The number of lanes the travel way has.

Reference: FSH 7709.56 sec 4.24 Road bed, Road Preconstruction Handbook
AASHTO Green Book for public road agencies

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required
State-County	Required

- Business Rules:**
- 1.) Only full lanes are to be used See FSH 7709.56
 - 2.) Numeric widths of route segments should be recorded using TRAVEL WAY WIDTH.

Notes:

Valid Codes

Code	Description	Code Str.
1 - SINGLE LANE		101000
2 - DOUBLE LANE		102000
3 - THREE LANE		103000
4 - FOUR LANE		104000

Travel Routes Data Dictionary

Name: LEGAL

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The legal description of the beginning termini of the route (the BMP of the route).

Reference: GIS Core Dictionary (<http://fsweb.wo.fs.fed.us/im/standards/gis/coredata>)
ALPS Data Dictionary (<http://fsweb.r6.fs.fed.us/alp>)

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up:

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Optional

Business Rules: 1.) This is commonly recorded for PUBLIC LANDS SURVEY SYSTEM (PLSS) Forests where "Legal" is the Township/Range/Section.

2.) A **SUGGESTED** Format for TRS: 0050N0060E13 to record

T5N R6E S13

Or

0050N0060E02 to record
T5N R6E S02

Legal description coding according to national standards is:
###XN###XE##

where:

- 3 digit whole Township or Range number

X - Fractional Township number as follows:

1 - 1/4 township

2 - 1/2 township

3 - 3/4 township

0 - not a fractional township

N or E - North or East of the principle meridian or base line

Last two ## digits contain the section number, all 2 digits must be entered

Notes: 1.) Not applicable to non-plss forests

Travel Routes Data Dictionary

Name: LEVELS OF TREATMENT

Used in Tables:
RTE_LINEAR_EVENTS

Definition: Describes a summary of the treatments completed on a decommissioned road or a road placed in storage. It describes the intensity of the work performed in relation to hydrologic, vegetative, and stability factors.

Reference: **Authority:** WO

Format: **Unit of Measure:**

Overlap: No

Look Up: NAME column in IL_CODES **Linear Event:** Yes

Requirements for Population

Road System	Requirement
FS	Optional

- Business Rules:**
- 1.) All treatments include blocking the entrance of the road.
 - 2.) Only to be used for roads placed in storage or decommissioned.
 - 3.) The use of re-contouring is discouraged because of cost vs. effectiveness. In general, other combination of treatments can produce the desired effect.

- Notes:**
- 1.) The codes represent a summary of treatments that have been performed on a road. Individual treatments and associated costs may be recorded in work items.
 - 2.) The intent of this linear event is to allow a quick summary as to overall condition of the road in order to assess emergency access, needs for further treatment and potential impacts of the road system to soil and water resources.

Valid Codes

Code	Description	Code Str.
B – BLOCKED	Entrance is blocked. No other treatment to road prism or drainage.	100101
C – CMP REMOVED	CMP's on streams and drainages have been removed and associated fills have been sloped back and stabilized. Ditch relief culverts may be bypassed and left in place or removed. Former drainage patterns have been re-established.	100102
V – REVEGETATED	Road prism has been re-vegetated.	100103
U – UNSTABLE FILLS REMOVED	Unstable fills have been removed.	100104
W – WATERBARRED/OUTSLOPED	The road prism has been water barred and/or outsloped.	100105
R - RECONTOURED	Full obliteration of the road prism. (top of cut to toe of fill) by restoring natural contours and slopes. Removal of all CMP's and restoration of all watercourses to natural channels and floodplains.	100106
CU – COMBINATION	Removed CMP's and unstable fills have been removed.	100201
CW – COMBINATION	Removed CMP's. The road prism has been water barred and/or outsloped.	100202
CV - COMBINATION	Removed CMP's and re-vegetated the road prism.	100203
VU - COMBINATION	The road prism has been re-vegetated and unstable fills have been removed.	100204
WV - COMBINATION	The road prism has been water barred and/or outsloped, and re-vegetated.	100205
WU - COMBINATION	The road prism has been water barred and/or outsloped. Unstable fills have been removed.	100206
CWU - COMBINATION	Removed CMP's. The road prism has been water barred and/or outsloped, and unstable fills have been removed.	100301
CWV - COMBINATION	Removed CMP's. The road prism has been water barred and/or outsloped, and re-vegetated.	100302
CVU - COMBINATION	Removed CMP's. The road prism has been re-vegetated. Unstable fills have been removed.	100303
WVU - COMBINATION	The road prism has been water barred and/or outsloped and re-vegetated. Unstable fills have been removed.	100304
WUVC - COMBINATION	Removed CMP's. The road prism has been re-vegetated, water barred and/or outsloped. Unstable fills have been removed.	100401

Travel Routes Data Dictionary

Name: **MANAGING_ORG**

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The Forest Service unit (region/forest/district) that has long-term responsibility for the management of the route segment.

Reference: No reference in directive system

Authority: WO

Format: RRRFDD RR is the 2-digit code for the Region, FF is the 2-digit code for the Forest and DD is the 2-digit code for the District.

Unit of Measure:

Overlap: No

Look Up: Coding is validated against the ID column in the II_CONTACTS table where the OBJ_NAME = 'ORGANIZATION'.

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required

- Business Rules:**
- 1.) Management means the administrative unit that has the responsibility for road management (regulating traffic, signing, scheduling maintenance, issuing road use permits, etc).
 - 2.) The unit that has management responsibility shall maintain all data within Infra and is considered the data steward for the route.

- Notes:**
- 1.) See Section 8.6 on how to use this linear event for recording other forest road segments within a local database. Also see the [ADMIN_ORG](#) linear event.
 - 2.) MANAGING_ORG should default to ADMIN_ORG when a new record is added to the database.

Travel Routes Data Dictionary

Name: MILEAGE SOURCE

Used in Tables:
RTE_LINEAR_EVENTS

Definition: Mileage source represents the source of the measure points recorded for a road segment.

Reference:

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up:

Linear Event: Yes

Requirements for Population

Road System	Requirement
All	Optional

Business Rules: 1.) Mileage source represents the source of the distance measures for a road segment. Different values would be used only where the source of the measures change. It's not to be used for recording linear event changes.

Notes: 1.) This information is not necessarily the same as the source for the "line work", the spatial representation of the route. Rather, it represents the source of the measures (MP's) recorded in RTE_LINEAR_EVENTS for the route segment.

For example, if the entire length of a 10.0 mile long road was obtained using GPS equipment, the Value (Code) GPS – GLOBAL POSITIONING would be applied from BMP 0.0 to EMP 10.0. If measurement of only the first portion of the road to a junction at MP 6.0 had been obtained with GPS equipment, and the length for the remainder of the road had been obtained from cartographic feature files, MILEAGE SOURCE would be coded GPS – GLOBAL POSITIONING from BMP 0.0 to EMP 6.0, and ARC - SPATIAL DATA from BMP 6.0 to EMP 10.0

Valid Codes

Code	Description	Code Str.
ARC – SPATIAL DATA	Mileage source from GIS, cartographic feature files, AutoCAD, Orthophotography, or other digital spatial data sources. Not measured on the ground.	101000
DMI – DISTANCE MEASURING INSTRUMENT	Mileage determined on the ground using an Electronic Distance Measuring Instrument such as a Jamar or Nitestar digital measuring instrument that is properly calibrated.	104000
GPS – GLOBAL POSITIONING	Mileage determined on the ground using Global Positioning equipment.	105000
MAPW – MAP WHEEL	Mileage determined by using a map wheel from existing maps.	106000
WHEEL – MEASURING WHEEL	Mileage determined on the ground using a measuring wheel.	107000
ODOM – ODOMETER READING	Mileage determined on the ground by vehicle odometer reading.	108000
OTHER – OTHER SOURCE	Other mileage source – specify in remarks such as cloth tape, steel chain, etc.	109000
STRING – STRING BOX	Mileage determined on the ground using a string box (hip chain).	111000
SURVEY – CONSTRUCTION SURVEY	Mileage based on survey done for original construction or reconstruction.	112000
PED – PEDOMETER	Mileage determine by walking with a pedometer.	113000

Travel Routes Data Dictionary

Name: OBJECTIVE MAINT LEVEL

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns.

Reference: FSH 7709.58 Chapter 12.3, Transportation System Maintenance Handbook

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required
All Other	N/A

- Business Rules:**
- 1.) Codes C or D should not be used unless an appropriate decision document is on file. The results of Road Analysis need to be included in a pre-decisional planning document.
 - 2.) Sport Utility Vehicles (SUV) are classified as a high clearance vehicles.

- Notes:**
- 1.) See Chapter 8.1 Roads Policy Initiative and Unclassified Roads for further guidance in using this linear event.
 - 2.) A typical low standard timber sale road usually is operated at a higher maintenance level during the sale than afterwards. Typically these roads would have an operational maintenance level of 2 and an objective maintenance level of 1.
 - 3.) See the [Glossary](#) for a full definition of Maintenance Level. The descriptions contained below are shortened so they can be held within the code table (IL_CODES).

Valid Codes

Code	Description	Code Str.
1 - BASIC CUSTODIAL CARE (CLOSED)	Assigned to intermittent service roads during time they are closed to vehicular traffic	101000
2 - HIGH CLEARANCE VEHICLES	Assigned to roads operated for use by high clearance vehicles.	102000
3 - SUITABLE FOR PASSENGER CARS	Assigned to roads operated and maintained for travel by a prudent driver in a standard passenger car.	103000
4 - MODERATE DEGREE OF USER COMFORT	Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.	104000
5 - HIGH DEGREE OF USER COMFORT	Assigned to roads that provide a high degree of user comfort and convenience.	105000
C - CONVERT USE	Convert use of the facility to another use such as a trail.	106000
D - DECOMMISSION	Assigned to roads that have been or are to be decommissioned.	107000

Travel Routes Data Dictionary

Name: OPER MAINT LEVEL

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The Maintenance level currently assigned to the road considering today's needs, road condition, budget constraints and environmental concerns; in other words it defines the level to which the road is currently being maintained.

Reference: FSH 7709.58 Chapter 12.3, Transportation System Maintenance Handbook

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required
All Other	N/A

- Business Rules:**
- 1.) If a road is being operated at a maintenance level 1, it should also have a Service Life of I - Intermittent Term Service or IS – Intermittent Stored Service.
 - 2.) Sport Utility Vehicles (SUV) are classified as a high clearance vehicles

- Notes:**
- 1.) See Chapter 8.1 Roads Policy Initiative and Unclassified Roads for further guidance in using this linear event.
 - 2.) A typical low standard timber sale road usually is operated at a higher maintenance level during the sale than afterwards. Typically these roads would have an operational maintenance level of 2 and an objective maintenance level of 1.
 - 3.) See the Glossary for a full definition of Maintenance Levels. The descriptions contained below are shortened so they can be held within the code table (II_CODES).

Valid Codes

Code	Description	Code Str.
1 - BASIC CUSTODIAL CARE (CLOSED)	Assigned to intermittent service roads during time they are closed to vehicular traffic	101000
2 - HIGH CLEARANCE VEHICLES	Assigned to roads operated for use by high clearance vehicles.	102000
3 - SUITABLE FOR PASSENGER CARS	Assigned to roads operated and maintained for travel by a prudent driver in a standard passenger car.	103000
4 - MODERATE DEGREE OF USER COMFORT	Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.	104000
5 - HIGH DEGREE OF USER COMFORT	Assigned to roads that provide a high degree of user comfort and convenience.	105000

Travel Routes Data Dictionary

Name: OTHER SYSTEM

Used in Tables:
RTE_LINEAR_EVENTS

Definition: Additional network(s) of travel ways serving a common need or purpose

Reference: U.S.C. 101 23 CFR 660 and FSM 7740.5

Authority: WO

Format:

Unit of Measure:

Overlap: Yes

Look Up: NAME column in II_CODES

Linear Event: Yes

<u>Requirements for Population</u>	
Road System	Requirement
FS	Optional

- Business Rules:**
- 1.) Use for additional networks of roads such as scenic byways, national trail associations.
 - 2.) Forest Highways shall be coded as OTHER SYSTEM and must be on the official FHWA list of approved routes on the forest highway system. Figure 5-3 shows how a typical Forest Highway would be coded where a portion of the entire route is already transferred to a public authority and a portion is waiting to be transferred.
 - 3.) Roads that are also managed as designated system trails (i.e. snowmobile trails and cross country ski trails), should be entered here as a secondary system as NFST – NATIONAL FOREST SYSTEM TRAIL.
 - 4.) OGM – OIL, GAS, MINERALS should be used where the sole purpose of the road is for oil, gas, or minerals exploration and or production. In the exploration phase, the road should also be coded as SYSTEM = TMP – TEMPORARY. If the operation goes into production, set SYSTEM = NFSR – NATIONAL FOREST SYSTEM ROAD (see Figure 5-4).

Notes: 1.) This linear event contains overlaps. Therefore, any mileage summary including this will not be accurate.

Code	<u>Valid Codes</u> Description	Code Str.
C - COUNTY, PARISH, BOROUGH	County, Parish or Borough network	101000
FH - FOREST HIGHWAY	A forest road under the jurisdiction of and maintained by a public authority and open to public travel (U.S.C. 101 23 CFR 660 and FSM 7740.5)	102000
I - INTERSTATE HIGHWAY	Interstate Highway	103000
L – LOCAL	Town, Township, Municipal Agency (City or other local civil government)	104000
SSB – STATE SCENIC BYWAY	State designation for roads that have unique scenic or recreational qualities	105000
NFSB – NATIONAL FOREST SCENIC BYWAY	National designation for roads that have unique scenic or recreational qualities designated by the Chief of USFS	105001
NSB – NATIONAL SCENIC BYWAY	National designation for roads that have unique scenic or recreational qualities designated by FHWA	105002
OF - OTHER FEDERAL	Other Federal Agency (such as BLM, NPS, BIA, etc.)	106000
OR – OTHER ROAD	Other locally designated route system	107000
OS – OTHER STATE	State roads other than those on the state highway system	108000
P – PRIVATE	Private	109000
SH - STATE HIGHWAY	State Highway (primary or secondary)	110000
US - US HIGHWAY OR ROUTE	US Highway	111000
NFST – NATIONAL FOREST SYSTEM TRAIL	A forest trail that is under the jurisdiction of the Forest	112000
NDT – NATIONALLY DESIGNATED TRAIL	National Scenic, Historic, or Recreation trails	112001
OT - OTHER TRAIL	All other trails systems	112002
OGM – OIL, GAS, MINERALS	Sole purpose of the road is for Oil, Gas, or Mineral exploration and/or production.	113000

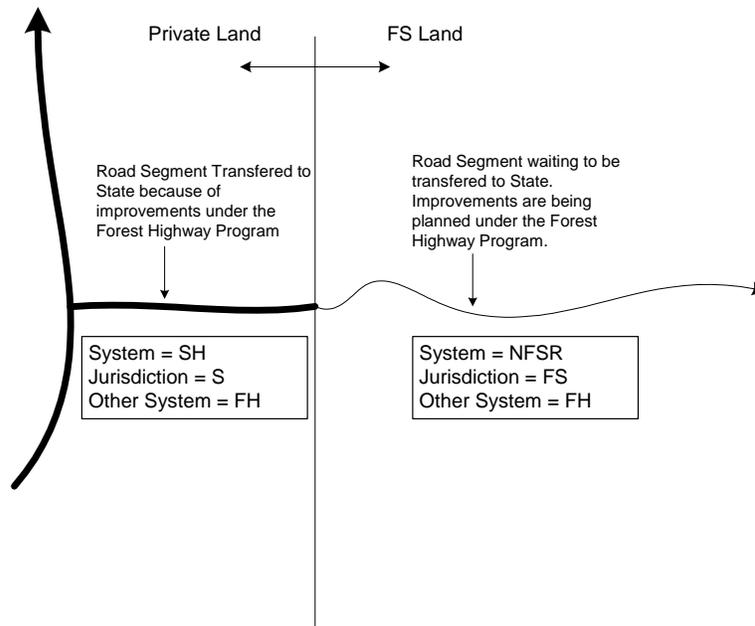


Figure 5-3 Use of OTHER SYSTEM to code Forest Highways

OIL & GAS ROADS

OUTSTANDING & RESERVED RIGHTS

FOREST PLAN / OIL & GAS EIS

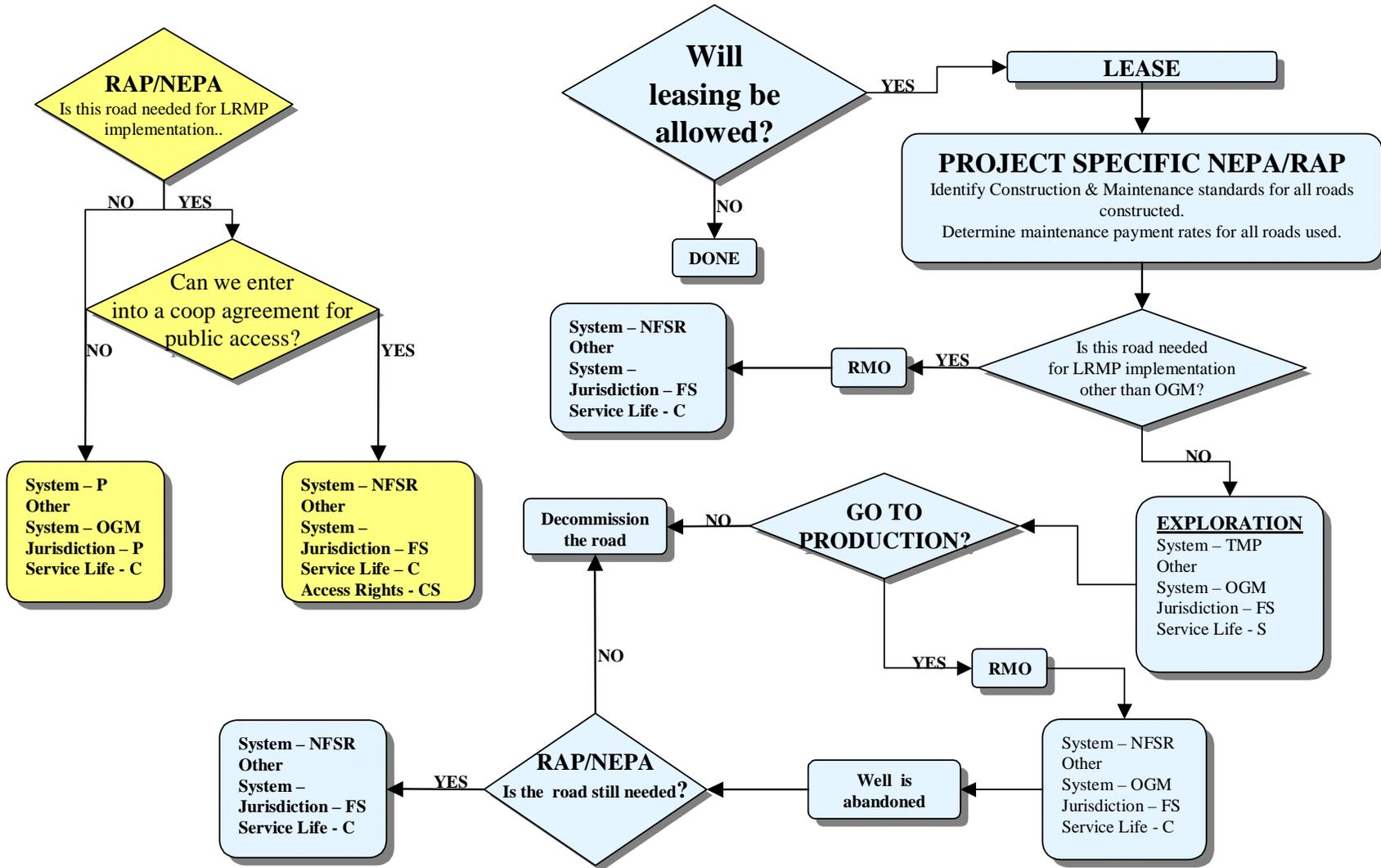


Figure 5-4 Oil, Gas, and Minerals Road Coding Flow Chart

Travel Routes Data Dictionary

Name: PFSR CLASSIFICATION

Used in Tables:
RTE_LINEAR_EVENTS

Definition: A Public Forest Service Road (PFSR) is a designated public road under Forest Service jurisdiction that meets the definition of 23 U.S.C. Section 101. The PFSR classification indicates the status of PFSR designation.

Reference: 23 U.S.C. Section 101,
Process for Public Forest Service Road Designation (and De-Designation) as
contained in a 7700 letter from the WO to Regional Foresters 12/17/2001.

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required for those road segments that are identified as having potential or are designated.

Business Rules: The following criteria must be met for a road to have **potential** as a PFSR:

- 1.) Objective Maintenance Level 3 – 5
- 2.) Under Forest Service Jurisdiction
- 3.) Provide unrestricted access (except for emergencies, seasonal snow closures, scheduled closures)
- 4.) Serve a compelling public transportation need

The following **additional criteria** must be met for a road to be **designated** as a PFSR

- 5.) Forest must coordinate with states and local road authorities before designation is formally requested
- 6.) Right-of-Way must be acquired before designating a road as a PFSR (Forest Service must have jurisdiction)

Additional business rules that apply when a road segment is designated are:

- 7.) A road segment must be coded as designated within 1 month from the time that the Regional Forester sends a written response back to the National Forest approving the road as a designated PFSR.
- 8.) The forest should use the RMO form to document additional applicable public road designation information such as specific coordination information, contracts, agreements, etc.
- 9.) The date of the designation should be recorded in the record of events data (see chapter 4.3)

- Notes:**
- 1.) Additional data structures will be used to track project expenditures (See the INFRA Projects Module)
 - 2.) The Forest Service was declared as a Public Road Authority on 10/16/1998 by Gloria Manning, then Acting Deputy Chief for National Forest Systems.
 - 3.) 23 U.S.C. 101 says in part that a public road is "Any road or street under the jurisdiction of and maintained by a public authority and open to public travel".

Code	<u>Valid Codes</u> Description	Code Str.
DSG - DESIGNATED PFSR	Identification and inclusion in a network, of those FS roads meeting the criteria of a PFSR and recorded officially in the Forest Service Infra database (PFSR CLASSIFICATION). Coordination and concurrence with local transportation agencies and FHWA - Federal Lands Highway Division has occurred.	102000
POT - POTENTIAL PFSR	A road proposed by the Forest Service as a potential PFSR after determining that the facility meets the criteria as a PFSR. Coordination and concurrence with local transportation agencies and FHWA - Federal Lands Highway Division has not occurred.	103000

Travel Routes Data Dictionary

Name: PRIMARY MAINTAINER

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The agency or party having primary (largest share) financial responsibility for maintenance.

Reference: FSH 7709.58, ch 13 (Transportation System Maintenance Handbook)

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in IL_CODES

Linear Event: Yes

<u>Requirements for Population</u>	
Road System	Requirement
FS	Required

- Business Rules:**
- 1.) Value should agree with the annual maintenance plan.
 - 2.) When another Forest Service unit maintains a road then the MANAGING_ORG linear event will indicate which FS unit is maintaining it. This will eliminate double counting of mileage when data is aggregated up to a regional or national level and clarify maintenance responsibilities.

Notes:

Code	<u>Valid Codes</u> Description	Code Str.
BIA - BUREAU OF INDIAN AFFAIRS	USDI Bureau of Indian Affairs	116001
BLM - BUREAU OF LAND MANAGEMENT	USDI Bureau of Land Management	116009
BOR - BUREAU OF RECLAMATION	USDI Bureau of Reclamation	116002
C - COUNTY, PARISH, BOROUGH	County, Parish, Borough	104000
CO - COOPERATOR	Cooperator (industrial cost share)	118100
COE - CORPS OF ENGINEERS	US Army Corps of Engineers	116008
CU - COMMERCIAL USER	Commercial user	107000
DOD - DEFENSE DEPARTMENT	US Defense Department	116003
DOE - DEPARTMENT OF ENERGY	US Department of Energy	116004
FAA - FEDERAL AVIATION ADMINISTRATION	USDOT Federal Aviation Administration	116007
FS - FOREST SERVICE	USDA Forest Service	111000
FWS - FISH AND WILDLIFE SERVICE	USDI Fish and Wildlife Service	116005
L - LOCAL	Town, Township, Municipal Agency (City or other local civil government)	117000
NPS - NATIONAL PARK SERVICE	USDI National Park Service	116006
OF - OTHER FEDERAL AGENCIES	Other Federal Agencies	116000
P - PRIVATE	Private (profit & not for profit)	118000
S - STATE	State Agency	120000
SH - STATE HIGHWAY	State Highway Department	120100
SLR - STATE LANDS ROAD	State lands organizations (Department of Natural Resources)	120200
UNK - UNKNOWN	Not known and needs to be resolved	121000

Travel Routes Data Dictionary

Name: QUAD

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The USGS Quadrangle OR QUARTER QUADRANGLE location of the route.

Reference:

Authority: WO

Format: Local forest code / local forest format.

Unit of Measure:

Overlap: No

Look Up:

Linear Event: Yes

<u>Requirements for Population</u>	
Road System	Requirement
All	Optional

- Business Rules:**
- 1.) Format: Local forest code / local forest format.
 - 2.) Enter the list of valid Quads into the Infra System library to ensure consistency in recording this information.
 - 3.) USGS Quadrangles shall be 1:24,000 quads for continental U.S., Puerto Rico, and Hawaii and 1:63,360 for Alaska.

- Notes:**
- 1.) Currently used by units/organizations to locate roads where a gis coverage is not available.
 - 2.) Spatial attribute that should be populated from gis if desired.

Travel Routes Data Dictionary

Name: ROAD TEMPLATE

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The cross-section of the roadway outside the traveled way

Reference: FSH 7709.56 ch 4.24 (5/87) Road Preconstruction Handbook

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Optional

Business Rules:

Notes:

Code	<u>Valid Codes</u> Description	Code Str.
A - DITCH, SHOULDER, AND BERM	Shoulder and Berm	101000
B - DITCH AND SHOULDER	Ditch and shoulder	102000
C - DITCH AND BERM	Ditch and berm	103000
D - DITCH	Ditch	104000
E - SHOULDER	Shoulder	105000
F - SHOULDER AND BERM	Shoulder and berm	106000
G - BERM	Berm	107000
H - NO DITCH, SHOULDER, OR BERM	No ditch shoulder or berm	108000
P - PRIMITIVE	Primitive, not constructed to a standard	109000

Travel Routes Data Dictionary

Name: ROUTE STATUS

Used in Tables:
RTE_LINEAR_EVENTS

Definition: Current physical state of being of the route segment

Reference: Federal Accounting Standards Advisory Board – 1998
36 CFR 212.1
FSM 7703
FSM 7712

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
All	Required

- Business Rules:**
- 1.) Decommissioning eliminates all maintenance needs for the asset. (Fed Acct Stds Advisory Board/ 1998). It results in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1)
 - 2.) Road Management decisions must be informed by roads analysis and disclosed in an appropriate NEPA Document (FSM 7712.11). Only change the route status through an appropriate decision document.
 - 3.) Only change the Route Status after the appropriate NEPA decision has been made and the work (if required) has been completed.
 - 4.) Use this linear event to document decommissioning. Don't delete the route from the database and coverage. Temporary roads are a local decision to either remove or preserve the data within INFRA.

Notes:

Code	<u>Valid Codes</u> Description	Code Str.
CV – CONVERTED	A route that was no longer needed and has been converted to another use	101000
DE - DECOMMISSIONED	A route that was no longer needed and has been removed from service.	102000
EX - EXISTING	A route that physically exists.	103000
PL - PLANNED	Planned route identified in a completed NEPA document, with a Record of Decision.	104000

Travel Routes Data Dictionary

Name: SERVICE LIFE

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The length of time that a facility is expected to provide a specified service

Reference: FSM 7722.14 - structural life, FSH 5409.17-94-2

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Optional

Business Rules: 1.) If a road segment is coded as IS – INTERMITTENT STORED SERVICE it must also be coded as Objective Maintenance Level 1.

Notes: 1.) Short term is defined as a facility developed and operated for a limited period of time, which will cease to exist as a transportation facility after the purpose for which it was constructed is completed, and the occupied land is reclaimed and managed for natural resource purposes.

Valid Codes

Code	Description	Code Str.
C - LONG TERM SERVICE	Continuous or annual recurrent service	101000
I - INTERMITTENT TERM SERVICE	A road which is closed to vehicle traffic between periods of use. The closed period must exceed one year	102000
IS - INTERMITTENT STORED SERVICE	Intermittent service road, closed to traffic. The road is in a condition that THERE IS LITTLE RESOURCE RISK IF maintenance IS NOT PERFORMED. (self-maintaining). FSH 5409.17-94-2	103000
S - SHORT TERM SERVICE	Short term use (including temporary roads)	104000

Travel Routes Data Dictionary

Name: SURFACE TYPE

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The wearing course; usually designed to resist skidding, traffic abrasion, and the disintegrating effects of weather.

Reference: EM 7720-100LL, sec 102

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Required
State-County	Required
All Other	Optional

- Business Rules:**
- 1.) P - PAVED should only be used if type of hard surface cannot be reliably determined.
 - 2.) Required for State and County systems to assist with automated map production.
 - 3.) If an admixture is used that is transient in nature, then code the surface as the primary base material.

Notes:

Code	<u>Valid Codes</u> Description	Code Str.
AC - ASPHALT	Asphaltic Concrete	101002
AGG - CRUSHED AGGREGATE OR GRAVEL	Crushed or screened graded material	102000
BST - BITUMINOUS SURFACE TREATMENT	Built up surface of asphalt emulsion and aggregate, not a dust palliative.	101003
CSOIL - COMPACTED SOIL	Compacted Native Material	104001
FSOIL - FROZEN SOIL	Template has been cleared and rough shape completed but can't be used until frozen conditions exist.	104002
IMP - IMPROVED NATIVE MATERIAL	Imported or processed material (pit run, select borrow, or admixture added to the surface soil and compacted)	103000
NAT - NATIVE MATERIAL	No imported or processed materials	104000
OTHER - OTHER	Other Surface Type - Specify in Remarks	105000
P - PAVED	Unknown manufactured hard surface	101000
PCC - PORTLAND CEMENT CONCRETE	Portland Cement Concrete	101001

Travel Routes Data Dictionary

Name: SYSTEM

Used in Tables:
RTE_LINEAR_EVENTS

Definition: A network of travel ways serving a common need or purpose, managed by an entity with the authority to finance, build, operate and maintain the routes.

Reference: **Authority:** WO

Format: **Unit of Measure:**

Overlap: No

Look Up: NAME column in II_CODES **Linear Event:** Yes

Requirements for Population

Road System	Requirement
All	Required

- Business Rules:**
- 1.) Overlapping Systems are not allowed. To record additional system designations on a single route segment, use the OTHER SYSTEM linear event.
 - 2.) NOT – NOT NEEDED designation can only be applied to roads with FS Jurisdiction.
 - 3.) UND - UNDETERMINED designation will be applied to routes until the appropriate system has been determined.
 - 4.) The NOT and UND codes are only to be used for unclassified roads.
 - 5.) Forest Highways will be coded in OTHER SYSTEM and the primary system will be the entity that has primary management of the road.
 - 6.) Public Forest Service Roads are considered to be part of the National Forest System Road (NFSR) system. See the PFSR CLASSIFICATION linear event.
 - 7.) BLM, NPS, BIA agency roads should be coded as OF - OTHER FEDERAL in SYSTEM. The JURISDICTION should be coded as appropriate to the individual agency.
 - 8.) Road segments that are coded as NOT – NOT NEEDED should have the OBJECTIVE MAINT LEVEL set to D – DECOMMISSION or C – CONVERT USE.

- Notes:**
- 1.) System is not the same as Jurisdiction. Interstate and State highways are both under State jurisdiction but belong to different System's of roads.
 - 2.) When a road exists that crosses private land and accesses the national forest for which no easement is granted yet to the government, it should be coded as JURISDICTION = P, SYSTEM = NFSR and ACCESS RIGHTS = AN

Valid Codes

Code	Description	Code Str.
C - COUNTY, PARISH, BOROUGH	County, Parish or Borough	102000
I - INTERSTATE HIGHWAY	Interstate Highway	105000
L - LOCAL	Town, Township, Municipal Agency (City or other local civil government)	104000
NFSR – NATIONAL FOREST SYSTEM ROAD	A classified forest road under the jurisdiction of the Forest Service. FSM 7705 (23 U.S.C. 101). Previously known as FDR - FOREST DEVELOPMENT ROAD	103000
NOT – NOT NEEDED	A road not needed for long term management of National Forest Resources (FSM 7712.01 B(2), (36 CFR 212))	113000
OF - OTHER FEDERAL	Other Federal Agency (such as BLM, NPS, BIA, etc.)	109000
OS – OTHER STATE	State roads other than those on the state highway system	112000
P - PRIVATE	Private	111000
SH - STATE HIGHWAY	State Highway (primary or secondary)	112000
TMP – TEMPORARY	Roads authorized by contract, permit, lease, other written	106000

	authorization, or emergency operation not intended to be part of the forest transportation system and not necessary for long-term resource management. (36 CFR 212.1)	
UND - UNDETERMINED	An existing road whose purpose and need has yet to be determined.	115000
US - US HIGHWAY OR ROUTE	US Highway	114000

Travel Routes Data Dictionary

Name: **TEMPLATE SLOPE CODE**

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The cross section of the traveled way

Reference:

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in II_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Optional

Business Rules:

Notes:

Valid Codes

Code	Description	Code Str.
C - CROWN	Surface Crowned	101000
F - FLAT	Surface Flat	102000
I - INSLOPE	Surface Insloped	103000
O - OUTSLOPE	Surface Outsloped	104000
P - PRIMITIVE	No constructed cross section (wheel track)	105000

Travel Routes Data Dictionary

Name: TRAFFIC SERVICE LEVEL

Used in Tables:
RTE_LINEAR_EVENTS

Definition: A description of the road's significant traffic characteristics and operating conditions.

Reference: FSH 7709.56 ch 4.1 (9/87) Road Preconstruction Handbook

Authority: WO

Format:

Unit of Measure:

Overlap: No

Look Up: NAME column in IL_CODES

Linear Event: Yes

Requirements for Population

Road System	Requirement
FS	Optional

Business Rules:

Notes:

Code	<u>Valid Codes</u> Description	Code Str.
A - FREE FLOWING MIXED TRAFFIC	Free flowing, mixed traffic; stable, smooth surface. Provides safe service to all traffic.	101000
B - CONGESTED DURING HEAVY TRAFFIC	Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal-size load or vehicle	102000
C - FLOW INTERRUPTED - USE LIMITED	Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.	103000
D - SLOW FLOW OR MAY BE BLOCKED	Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Travel with low clearance vehicles is difficult. Single purpose facility.	104000

Travel Routes Data Dictionary

Name: TRAVEL WAY WIDTH

Used in Tables:
RTE_LINEAR_EVENTS

Definition: The width of that portion of the roadway used for the movement of vehicles; not including turnouts, curve widening or shoulders.

Reference: FSH 7709.56 Ch 4.24 Road Preconstruction Handbook

Authority: WO

Format: 99

Unit of Measure: Feet

Overlap: No

Look Up:

Linear Event: Yes

<u>Requirements for Population</u>	
<u>Road System</u>	<u>Requirement</u>
FS	Optional

- Business Rules:**
- 1.) Round to the nearest foot.
 - 2.) Do not include the units of measurement within the value

Notes:

6 Linear Event Application Matrix

It's important to recognize that only certain linear events are required for certain systems. Table 6-1 describes the set of linear events required for each system.

Table 6-1 Required Linear Event Application Matrix

LINEAR EVENT ²	Road System				Status
	Classified Systems		Unclassified Roads		Decommissioned/ Converted ¹
	NFSR	Other ³	Undetermined	Not Needed	
ACCESS RIGHTS					
ADMIN_ORG	R		R	R	R
CONGRESSIONAL DISTRICT	R		R	R	R
COUNTY	R		R	R	R
CRITICAL TRAFFIC					
DESIGN SPEED					
DESIGN TRAFFIC					
FUNCTIONAL CLASS	R				
JURISDICTION	R	R	R (if known)	R	
LANES	R	R			
LEGAL					
LEVELS OF TREATMENT					
MANAGING_ORG	R		R	R	R
MILEAGE SOURCE					
OBJECTIVE MAINT LEVEL	R			R	R
OPER MAINT LEVEL	R				
OTHER SYSTEM		R ⁴			
PFSR CLASSIFICATION	R ⁵				
PRIMARY MAINTAINER	R				
QUAD					
ROAD TEMPLATE					
ROUTE STATUS	R	R	R	R	R
SERVICE LIFE					
SURFACE TYPE	R	R			
SYSTEM	R	R	R	R	R
TEMPLATE SLOPE CODE					
TRAFFIC SERVICE LEVEL					
TRAVEL WAY WIDTH					

Code	Description
R	Required
	Not Applicable
	Optional

¹ For decommissioned roads (ROUTE STATUS = DE), preserve existing values (optional for System=TMP).

² Linear Events shown in Bold are required

³ Includes Federal, State, County, and Private Roads. Federal, State, and County roads should have records in the oracle database. Forest Highways require geopolitical boundary information.

⁴ Only for those roads that have special designations such as Forest Highways, Scenic Byways, etc.

⁵ PFSR Required only for those routes that are potential or designated

7 Coding Scenarios

To assist the reader with implementation of the data dictionary, a set of likely scenarios were developed. These scenarios are intended to demonstrate how linear events work together to depict different situations as a road is worked through administrative and physical processes.

Field values shown in the scenarios represent typical coding situations. Specific values will depend in on local forest decision documents. They do not represent all of the mandatory values required for NFSRs.

Scenario #1: <i>An unrecorded existing road is found. It is open and being used by high clearance traffic. An analysis determines that it is needed for long-term access</i>	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
An existing road is found during a field review. <i>The road provides access on the NF and is currently being actively used by high-clearance traffic.</i> It is not recorded in the INFRA Travel Routes data base nor shown on any local administrative/transportation maps.	UND		EX			
Research is unable to determine jurisdiction. Since it is on National Forest System land, it is Forest Service jurisdiction by default.	UND	FS	EX			
Following appropriate analysis, a decision is made to place the road on the system and manage for long-term intermittent use.	NFSR	FS	EX	1	2	IS
Upon completion of the current use period, the road is placed in a stable (self-maintaining) condition and all highway vehicles are restricted.	NFSR	FS	EX	1	1	IS
Optional: Add appropriate record(s) to the Events table.	Event = DECISION DOC Event_Subtype = ADD – NEPA ADD Date Accurary: Known or Year					

Scenario #2: <i>Decommission an existing classified road.</i>	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
An existing forest road is in the data base and shown on local administrative/transportation maps. <i>The road provides access and is currently being actively used by high clearance traffic.</i>	NFSR	FS	EX	3	2	C
Following appropriate analysis, a decision is made to decommission the road. <i>The road is kept open during the interim.</i>	NFSR	FS	EX	D	2	C
Decommissioning activities have been completed. <i>By only changing the "Rte Status" value, the old data is preserved.</i>	NFSR	FS	DE	D	2	C
Optional: Add appropriate record(s) to the Events table.	Event = CONSTRUCTION Event_Subtype = DE – DECOMMISSION Date Accurary: Known or Year					

Scenario #3: Convert an existing classified road to a trail.	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
Following represents the Infra ROAD record.						
An existing forest road is in the data base and shown on local administrative/transportation maps.	NFSR	FS	EX	1	2	I
Following appropriate analysis, a decision is made to convert the road to a trail. <i>Motorized traffic is restricted during the interim.</i>	NFSR	FS	EX	C	1	I
Conversion activities have been completed. <i>By only changing the "Rte Status" value, the old data is preserved. Be sure to add the new trail in Infra Travel Routes (see below).</i>	NFSR	FS	CV	C	1	I
Optional: Add appropriate record(s) to the Events table.	Event = CONSTRUCTION Event_Subtype = CV - CONVERTED Date Accurary: Known or Year					
Following represents the corresponding Infra TRAIL record.						
Planned forest trail. (<i>Created following NEPA decision on road.</i>)	NFST	FS	PL			
Conversion activities have been completed.	NFST	FS	EX			

Scenario #4 a: Government obtains easement from private landowner on road open and available for forest access.	System	Juris	Route Status	Obj ML	Oper ML	Serv Life	Access Rights
An existing private road is currently being used to provide forest access.	P	P	EX				
Following appropriate analysis, a decision is made to obtain a permanent easement and manage the road for long-term use.	NFSR	P	EX	3	2	C	AN
A permanent easement is obtained.	NFSR	FS	EX	3	2	C	E
Capital improvements are complete, and the road is now being maintained to the desired standard.	NFSR	FS	EX	3	3	C	E
Optional: Add appropriate record(s) to the Events table.	Event = CHANGE ATTRIBUTE Event_Subtype = JURISDICTION Date Accurary: Known or Year						

Scenario #4b: Government obtains easement from private landowner on road not currently providing access.	System	Juris	Route Status	Obj ML	Oper ML	Serv Life	Access Rights
An existing private road is not available for forest access	P	P	EX				
Following appropriate analysis, a decision is made to obtain a permanent easement and manage for long-term use. Condemnation may be necessary.	P	P	EX				AN
A permanent easement is obtained.	NFSR	FS	EX	3	2	C	E
Capital improvements are complete, and road is now being maintained to the desired standard.	NFSR	FS	EX	3	3	C	E
Optional: Add appropriate record(s) to the Events table.	Event = CHANGE ATTRIBUTE Event_Subtype = JURISDICTION Date Accurary: Known or Year						

Scenario #5: New temporary timber access road.	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
Following appropriate analysis, a decision is made to access a timber management area with a temporary road. While it is not required nationally, the Forest Plan requires tracking and management of all temporary roads	TMP	FS	PL			S
The timber sale is sold and the temporary road is constructed.	TMP	FS	EX			S
The sale is closed, and the road has been decommissioned according to the requirements of the decision document.	TMP	FS	DE			S
Optional: Add appropriate record(s) to the Events table.	Event = CONSTRUCTION Event_Subtype = DE – DECOMMISSION Date Accurary: Known or Year					
Notes: Optional: Delete route from Infra database and linework from the travel routes coverage.						

Scenario #6: NFSR turned over to local government (Town, Township, Municipality), and added to Forest Highway system.	System	Other System	Juris	Route Status	Obj ML	Oper ML	Serv Life
Existing NFSR is seeing significant volumes of local traffic, which is not related to forest use.	NFSR		FS	EX	5	3	C
Forest meets with the local government and jointly proposes the road be added to the Forest Highway system; and that the local government take over all operation and maintenance responsibility following completion of capital improvements necessary to meet their standards. <i>Coding does not change until road is designated. Use remarks field to track proposed designations.</i>	NFSR		FS	EX	5	3	C
Road is designated a Forest Highway by the tripartite team (State DOT, FHWA, Forest Service).	NFSR	FH	FS	EX	5	3	C
Contract completed, and jurisdiction has been transferred. <i>If only a segment of the designated Forest Highway is included in the completed project, change only the coding for the affected segment.</i>	L	FH	L	EX	Delete data which no longer applies.		
Optional: Add appropriate record(s) to the Events table.	Event = CHANGE ATTRIBUTE Event Subtype = JURISDICTION Date Accurary: Known or Year						

Scenario #7: Old road constructed by the FS under the temporary road provisions of the timber sale contract was never properly "closed out". It is currently not in the data base. It is open and available for use.	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
An existing road is found during a road condition survey, and, because it is located on NF land, it is assumed to be an old "temporary" timber access road which was never "put to bed". Since the timber contract has long since been closed, it is no longer a "temporary" road. It is now an "unclassified" road. Until a decision is made on the long-term need of this road it is shown as "Undetermined".	UND	FS	EX			
While the original decision document stated the road was intended for temporary access to timber sale units, it is no longer valid due to its age. Following appropriate analysis, the decision is made that the road is not needed for long-term use, and it is to be decommissioned.	NOT	FS	EX	D		
Decommissioning activities have been completed.	NOT	FS	DE	D		
Optional: Add appropriate record(s) to the Events table.	Event = CONSTRUCTION Event_Subtype = DE – DECOMMISSION Date Accrual: Known or Year					

Scenario #8: Forest Service & County enter into a Forest Road Agreement covering an existing Forest Service Road.	System	Juris	Route Status	Obj ML	Oper ML	Prim Maint	Access Rights
Existing NFSR is serving as a major link to the County or State road system.	NFSR	FS	EX	4	4	FS	
Forest Road Agreement signed and Maintenance Plan implemented	NFSR	FS	EX	4	4	C	RA

Scenario #9: Forest Service & County enter into a Forest Road Agreement covering an existing County Road.	System	Juris	Route Status	Obj ML	Oper ML	Prim Maint	Access Rights
Existing County road is serving as a major link to the National Forest Road System.	C	C	EX			C	
Forest Road Agreement signed and Maintenance Plan implemented	C	C	EX	4	4	FS	RA

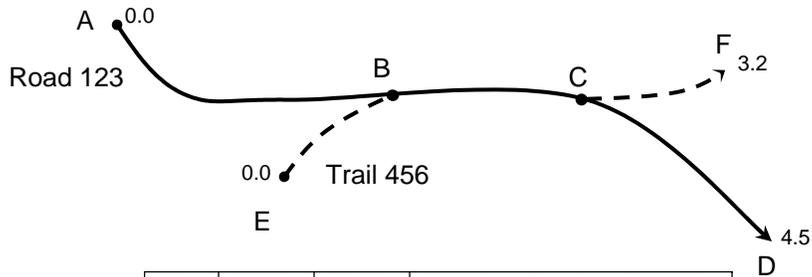
Scenario #10: Oil & Gas Roads	System	Other System	Juris	Route Status	Obj ML	Oper ML	Serv Life
Road is built for exploration of oil & gas	TMP	OGM	FS	EX			S
Well goes into production	NFSR	OGM	FS	EX	2	2	C
After the well is abandoned, appropriate analysis determines it's no longer needed, but road is not yet decommissioned.	NFSR	OGM	FS	EX	D	2	S
Road is decommissioned (Note: Linear event values are preserved from last known state)	NFSR	OGM	FS	DE	D	2	S
Optional: Add appropriate record(s) to the Events table.	Event = CONSTRUCTION Event_Subtype = DE – DECOMMISSION Date Accruary: Known or Year						

Scenario #11: In Infra there is an NFSR road, but a field inspection cannot find evidence of the road.	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
System Road exists in INFRA. Location is shown on local administrative/transportation maps	NFSR	FS	EX	3	1	I
During physical inventory, no trace of the road is found on the ground. There is no evidence that the road existed – no contract document, no photos showing a location, no NEPA documentation of any decommissioning decisions, no records other than the entry in INFRA and the location on the Administrative maps	NFSR	FS	EX	3	1	I
If there is no evidence that the road ever existed, it could be a mapping error, something that had been planned but never built. This is considered to be a data error. Delete the record from Infra, and remove any linework from the Travel routes coverage pertinent to this “non-existent” road. There would be no reporting of the road as having been decommissioned. No RAP is necessary to correct erroneous data in the inventory.	Delete	Delete	Delete	Delete	Delete	Delete

Scenario #12a: <i>Grown in road with outstanding resource issues</i>	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
A system Road exists in INFRA. Its location is shown on local administrative/transportation maps.	NFSR	FS	EX	1	2	C
During physical inventory, traces of the road are found on the ground. The road is heavily grown in and obviously has not provided any vehicle access for many years. The road would require major reconstruction work to open and make available for use. There is no NEPA documentation of any decommissioning decisions, no records of closure, no RMO. An inspection of the road finds outstanding resource issues that need to be corrected.	NFSR	FS	EX	1	1	I
The road cannot be removed from the system until there is a documented decision that it is no longer needed and should be decommissioned. The road cannot be declared decommissioned with outstanding resource issues. Road analysis is now required.	NFSR	FS	EX	1	1	I
Following appropriate analysis, a decision is made that the road is not needed for long-term use, and it is to be decommissioned.	NFSR	FS	EX	D	1	I
Decommissioning activities have been completed.	NFSR	FS	DE	D	1	I
Optional: Add appropriate record(s) to the Events table.	Event = CONSTRUCTION Event_Subtype = DE – DECOMMISSION Date Accrury: Known or Year					

Scenario #12b: <i>Grown in road with no resource issues to address.</i>	System	Juris	Route Status	Obj ML	Oper ML	Serv Life
A system (NFSR) road exists in INFRA. Its location is shown on local administrative/transportation maps. It is no longer open or available for vehicle access.	NFSR	FS	EX	1	2	C
During physical inventory, traces of the road are found on the ground. The road is heavily grown in and obviously has not provided any vehicle access for many years. The road would require major reconstruction work to open and available for use. There is no NEPA documentation of any decommissioning decisions, no records of closure, no RMO. An inspection of the road determines no outstanding resource issues that need to be corrected. In effect, the road has been naturally decommissioned.	NFSR	FS	EX	1	1	I
The road cannot be removed from the system until there is a documented decision that the road is no longer needed and should be decommissioned. Roads analysis is now required to decommission the road. The level of analysis may be minimal since the road has not been open and available for use and there are no outstanding resource issues.	NFSR	FS	EX	1	1	I
Following appropriate analysis, a decision is made that the road is not needed for long-term use. It is declared decommissioned and removed from the system	NFSR	FS	DE	D	1	I
Optional: Add appropriate record(s) to the Events table.	Event = CONSTRUCTION Event_Subtype = DE – DECOMMISSION Date Accrury: Known or Year					

Used by:	(Roads)	(Trails)	(Both)	(Both)	(Roads)	(Trails)
Scenario #13: A road and non-motorized trail occupy the same template for all or part of the road/ trail.	SYSTEM	TRAIL SYSTEM	JURIS	STATUS	OTHER SYSTEM	SHARED SYSTEM
Road #123 (NFSR Road) shares the template with Trail 456 from Road MP 2 to 3.5. Use the Road linear event "OTHER SYSTEM" to indicate the portion of the Road that is shared with the Trail.	NFSR 0 → 4.5		FS 0 → 4.5	EX 0 → 4.5	NFST MP 2 – 3.5 (B → C)	
TRAIL #456 (NFST Trail) shares the template with Road 123 from Trail MP 1 to 2.5. Use the Trail linear event, "SHARED SYSTEM", to indicate the shared portion of the trail.		NFST 0 → 3.2	FS 0 → 3.2	EX 0 → 3.2		NFSR MP 1 - 2.5 (B → C)



ID	BMP	EMP	Overlap Section (B – C)
123	0.0	4.5	2.0 -> 3.5
456	0.0	3.2	1.0->2.5

Spatial:

1. Build and calibrate a route for Road #123 and place it in the ROAD route system of the travel_route coverage. The route is built from selecting arcs A-B, B-C, C-D. The route is calibrated to the RTE_BASIC table for Road 123 which has a BMP = 0.0 and an EMP = 4.5
2. Build and calibrate a route for Trail #456 and place it in the TRAIL route system of the travel_route coverage. The route is built from selecting arcs E-B, B-C, C-F. The route is calibrated to the RTE_BASIC table for Trail 456 which has a BMP = 0.0 and an EMP = 3.2.

8 Special Situations

8.1 Roads Policy Initiative and Unclassified Roads

There is a sequence of events that will typically happen when inventorying unknown roads. The following sequence describes the events and actions that would be taken as a road is found in the field and as it is evaluated through the Road Analysis process. The flow diagram shown in Figure 8-1 shows how coding would be done as a road works through the Roads Analysis process.

1. Event: Road is “found” in the field.
 - Road number is assigned (see next section) and the basic route information (RTE_BASICS) is populated in Oracle.
 - Road alignment is added to the GIS Coverage, route system built and linked to Oracle.
 - Populate SYSTEM linear event to UND – UNDETERMINED. Road has not gone through Roads Analysis or NEPA yet.
 - Populate ROUTE STATUS linear event to EX – EXISTING as the road exists.
2. Event: Jurisdiction is determined
 - Populate JURISDICTION linear event as appropriate.
3. Event: Road Analysis – Decision made that the road is needed
 - Assign a new number to the road that is consistent with numbering in the region.
 - Change the route number in Travel Routes and in the GIS Coverage
 - Change SYSTEM linear event to NFSR – NATIONAL FOREST SYSTEM ROAD or as appropriate for other system classifications if the jurisdiction is other than Forest Service.
 - Populate all required linear events based on the approved RMO and field data
4. Event: Road Analysis – Decision is made that the road is not needed
 - Change SYSTEM linear event to NOT – NOT NEEDED
 - Populate OBJECTIVE MAINT LEVEL to D – DECOMMISSION if the decision has been made to decommission the route or C - CONVERT USE if the route will be converted to some other use. Only change the OBJECTIVE MAINT LEVEL after an appropriate decision document has been completed (roads analysis is not a decision document).

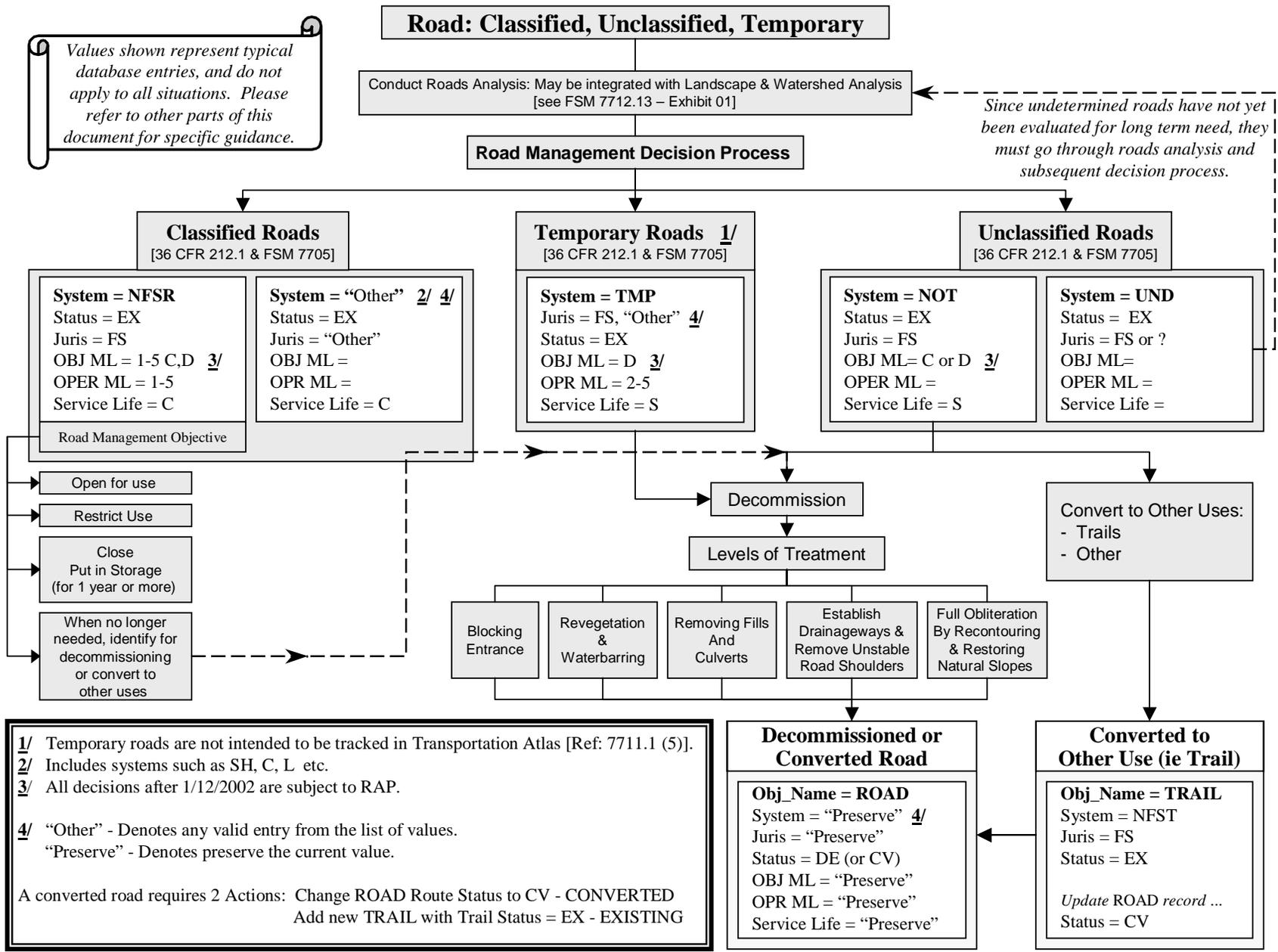
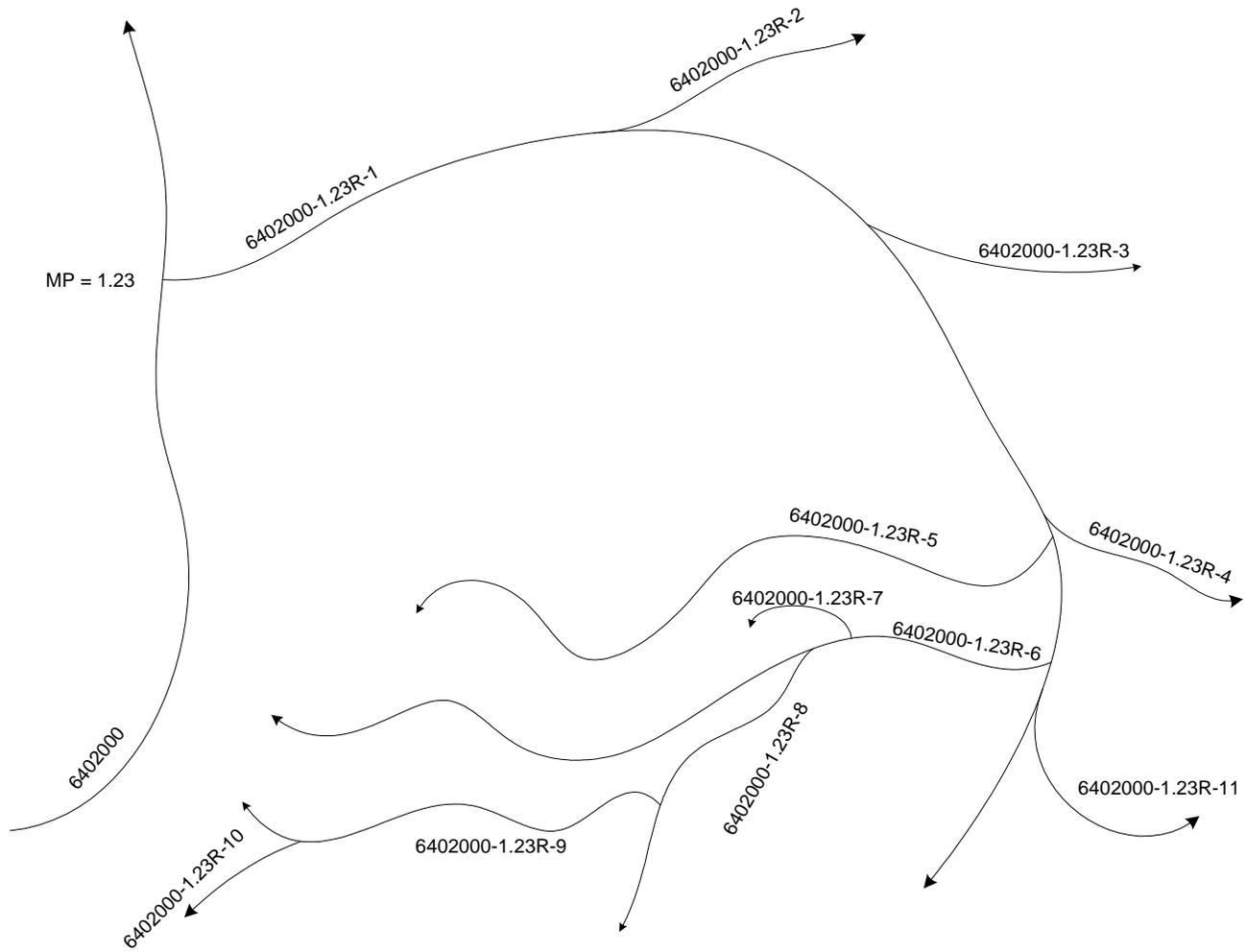


Figure 8-1 Road Management Options (see FSM 7712.11 – Exhibit 01) – Coding Details

Numbering of unknown/unclassified roads is problematic. Most regions are already using some system to number these roads. Some regions do not have the capability to map these routes at the time they are discovered and therefore need some intelligence on location built into the road number. The diagram in Figure 8-2 shows a **recommended** (not required) approach to numbering these roads in the database and on the GIS coverage. In all cases, if a road is added to the system through roads analysis and an approved RMO, the road number will need to be changed so that it's compatible with the forests road numbering strategy.



Road number may be assigned as follows:

Parent#+MP+Direction+Sequence Number separated by a hyphen

A road that comes off of route 2808032 at mp 1.23 and goes right
(in direction of increasing measure) would be 2808032-1.23R-1

Figure 8-2. Road Numbering Strategy for Unknown/Unclassified Roads

8.2 Campground Loops

Campgrounds are a unique situation in that most contain a series of loops that access vehicle length spurs into the actual campsites. The loops should be on the National Forest Service Road system (NFSR) as they are part of the long-term transportation network. However, loops are not typically signed with a route marker and have traditionally been lumped into the mileage for the primary road that accesses the campground. This is no longer possible when the spatial situation is considered. Each loop is a spatially unique alignment and as such must be identified and labeled in both the spatial and tabular data. A typical campground scenario is shown in Figure 8-3.

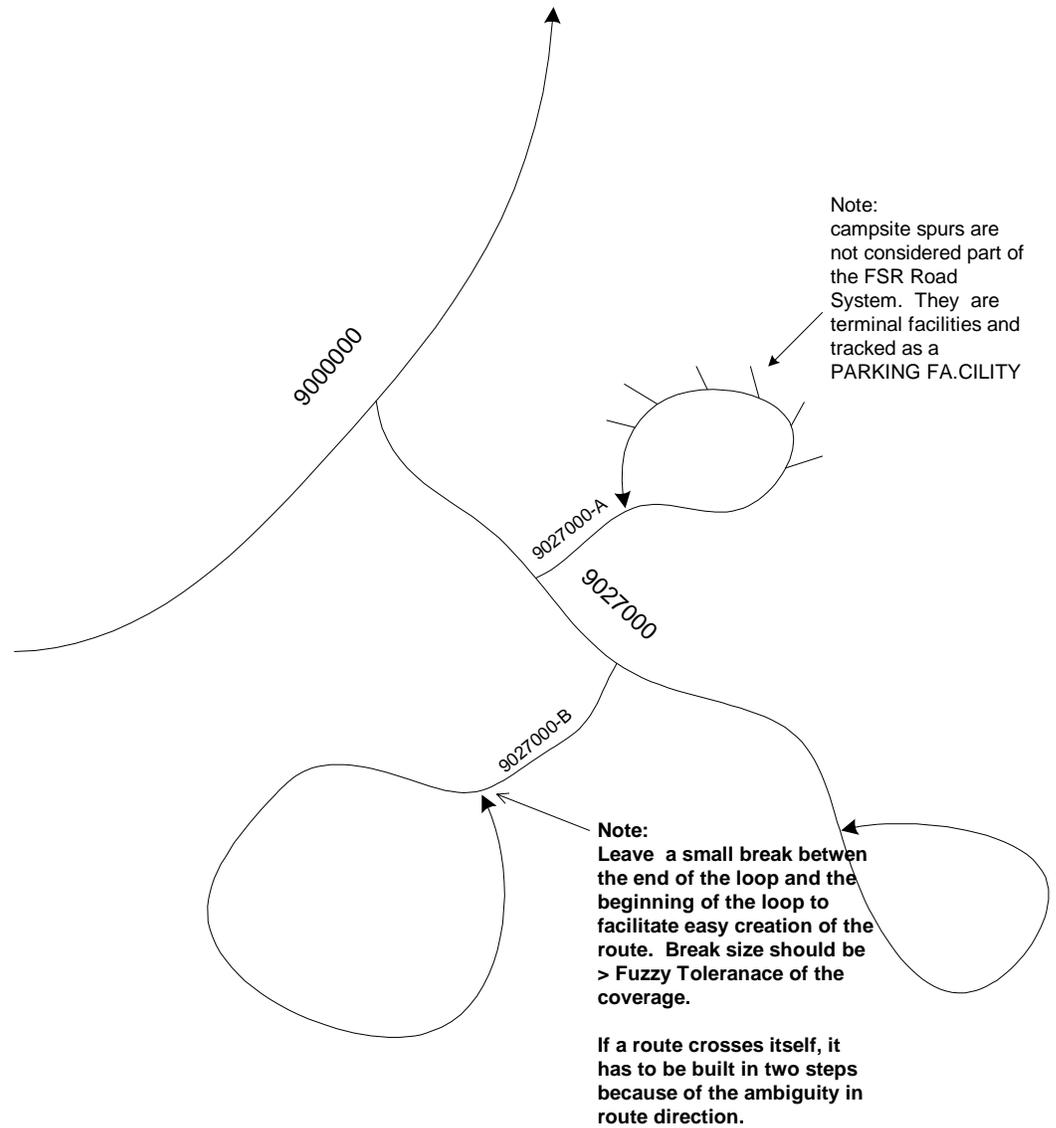


Figure 8-3. Campground Loops

Accurate loops in routed GIS coverage's are possible but require special techniques to build and maintain because of the ambiguity in the directionality of the route. If the arcs intersect, a route can still be built but it must be built in several steps by selecting the arcs that don't cross, building a route, then building another route with the arcs that cross and finally appending the later route to the first route. While this process will work, it doesn't lend itself to automated processing and requires specialized effort.

The recommended alternative is to leave a small break where the loop comes back onto itself. The size of this break should be greater than the fuzzy tolerance for the coverage (typically > 1 meter). It's highly recommended to create a small break, as the route system will be much easier to maintain.

The numbering of the loops is another issue. Use the parent route number of the road that accesses the campground then append a hyphen and an alpha (i.e. 9027000-B) for the loop designation.

8.3 Decommissioning Portions of Through Routes or Planned Route Connections

It is relatively common to consider decommissioning of a portion of a route that has access from both ends. This typically occurs because of extensive damage to the road from natural disasters (floods, etc.). The other situation where this can occur is when a through route is planned and construction is completed from both ends but never connected. The general scenario is shown in Figure 8-4. While this situation can be modeled in the spatial and tabular data, there are ramifications of the strategy used.

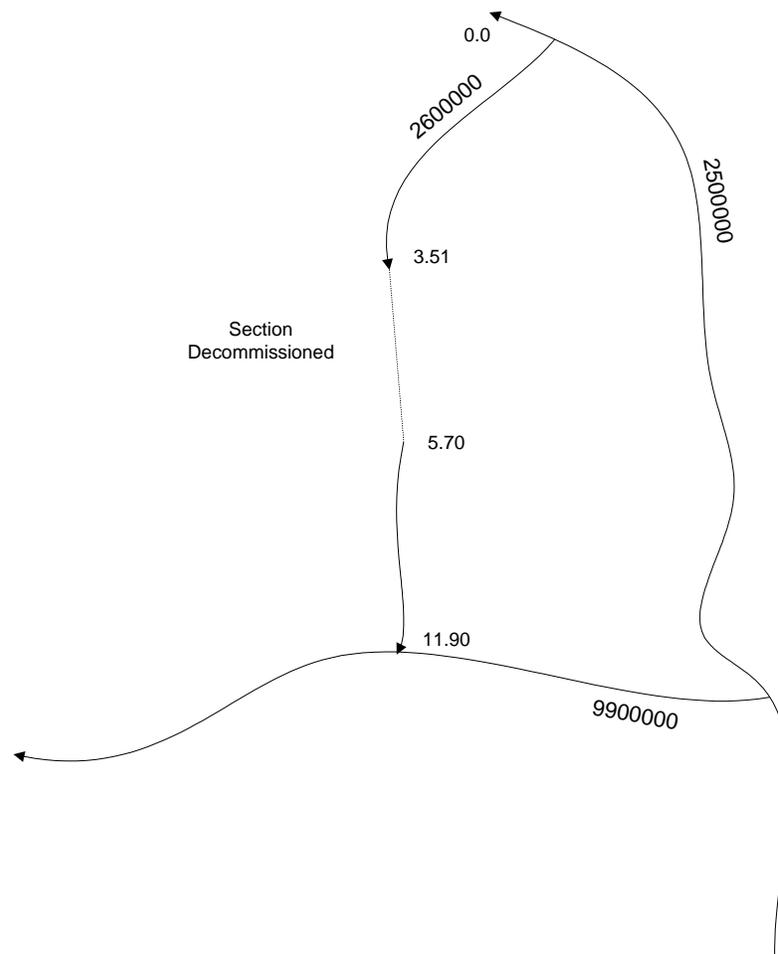


Figure 8-4. Decommissioning a part of a through route

There are two cases that can arise:

1. In the case of a decommissioned segment, the entire alignment of the road already exists within the road coverage. In this case, add several records to the linear events for the route that changes the route status. The entries for the road are shown in Table 8-1. Don't remove the alignment of the

decommissioned segment from the coverage. Calibration of the route will remain as it had. However, it's recommended to closely review the management objectives for the road and consider re-numbering the routes. If the route will have two different road numbers, they are treated as two different routes.

Table 8-1. Example Decommissioned Route Section

BMP	EMP	Linear Event	Value
0.0	3.51	ROUTE STATUS	EX – EXISTING
3.51	5.70	ROUTE STATUS	DE – DECOMMISSIONED
5.70	11.90	ROUTE STATUS	EX – EXISTING

2. At one time the road was planned as a through route but the segment within the middle was never built. In this case, a discontinuous route needs to be used. Calibration is the real issue and the calibration of each portion of the route needs to be done independently. Hopefully, the mile posting was done with some thought and there aren't two beginnings of the route (i.e. a bmp of 0.0 at both ends) in which case the routes need to be renumbered. If the route has continuous measures the following procedure should be used in ArcEdit:
 - Create the route system by selecting the arcs then use the makeroute command.
 - Change the edit feature to the route.subclass and make sure the route is selected
 - Use the subselect command to select only the sections of the first segment
 - Use the remeasure command to set the bmp emp (remeasure 0.0 3.51 measure)
 - Use the subselect command to select only the sections of the last segment
 - Use the remeasure command to set the bmp emp (remeasure 5.70 11.90 measure)

It's highly recommended that the management objectives and long-term transportation needs be reviewed. In many cases the land management objectives have changed and there is no need for the through route anymore. In this case, the road segments should be re-numbered into two different routes, re-signed, and processed normally.

8.4 Dual Route Designations

This situation arises when there is a segment of road that either has a dual route designation or junctions with another route or continues in another location as shown in Figure 8-5. These situations were not modeled in the design of Travel Routes. Dual route or offset route designations are discouraged, as they are confusing to the public. However, if local conditions warrant their use, the following work around(s) can be used.

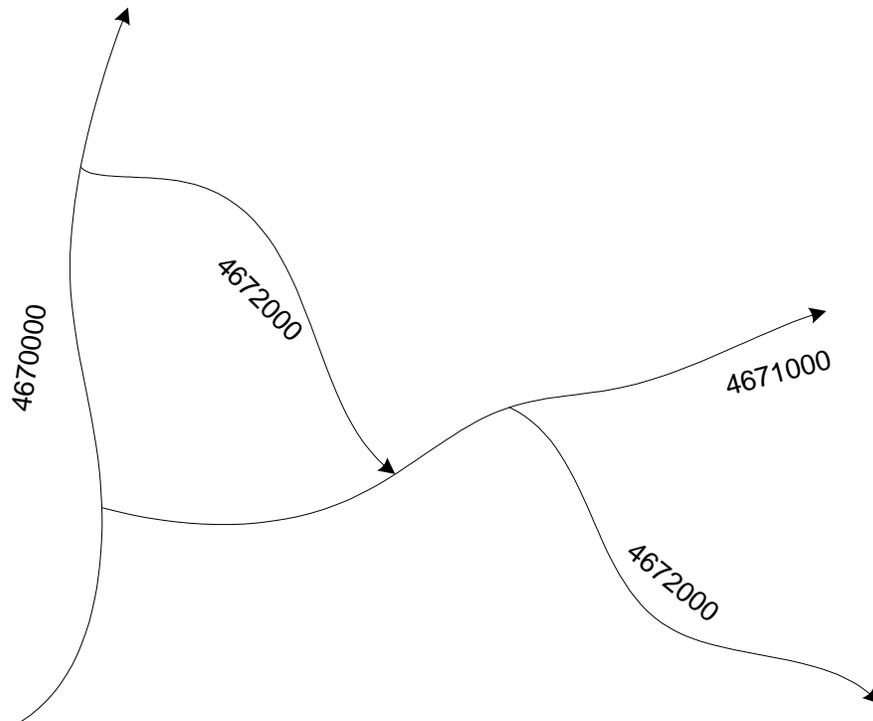


Figure 8-5. Dual Route General Case

The basic principle is to model the dual route without double counting the mileage and double entering the events for the shared segment of road. First, decide on which route is the through route. In the example shown in Figure 8-5, Road 4671000 is the through route. Create the route system and calibrate the route normally.

There are then two options:

1. Create the route as a discontinuous route without including arc B-C (Figure 8-6). It's recommended to milepost the road as shown in Figure 8-6 with no increment in the mile posting. This means that you can calibrate the entire route with the remeasure command in arcdit in one step (remeasure 0.0 6.0 measure). This is the easiest solution and is recommended in most cases. The linear events and features for the 4672000 road would be entered normally in travel routes as shown in Table 8-2.

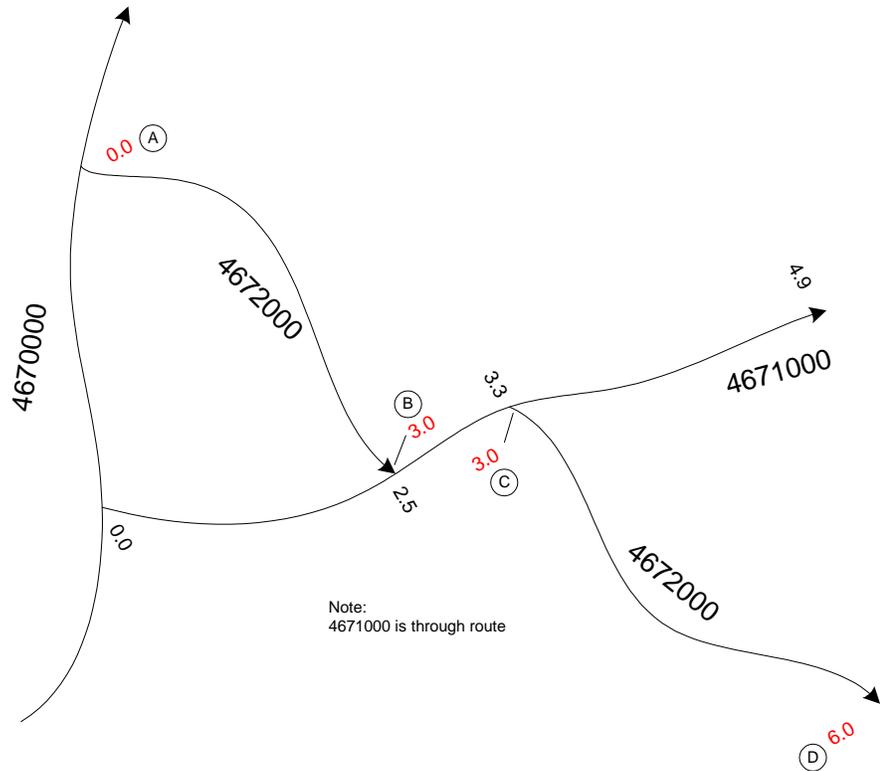


Figure 8-6. Shared Routes - Discontinuous Alternative

Table 8-2. Shared Routes - Discontinuous Route, Linear Events

4671000	0.0	4.9	ROUTE STATUS	EX - EXISTING
4672000	0.0	6.0	ROUTE STATUS	EX - EXISTING

Table 8-3 Route Basics data for Alternative 1

4671000	0.0	4.9
4672000	0.0	6.0

2. Create the route as a continuous route and increment the mile posting on the shared segment. In this case the route would be built from the arcs A-B, B-C, C-D as shown in Figure 8-7. The mile posting for road 4672000 would be revised to increment through the shared segment.

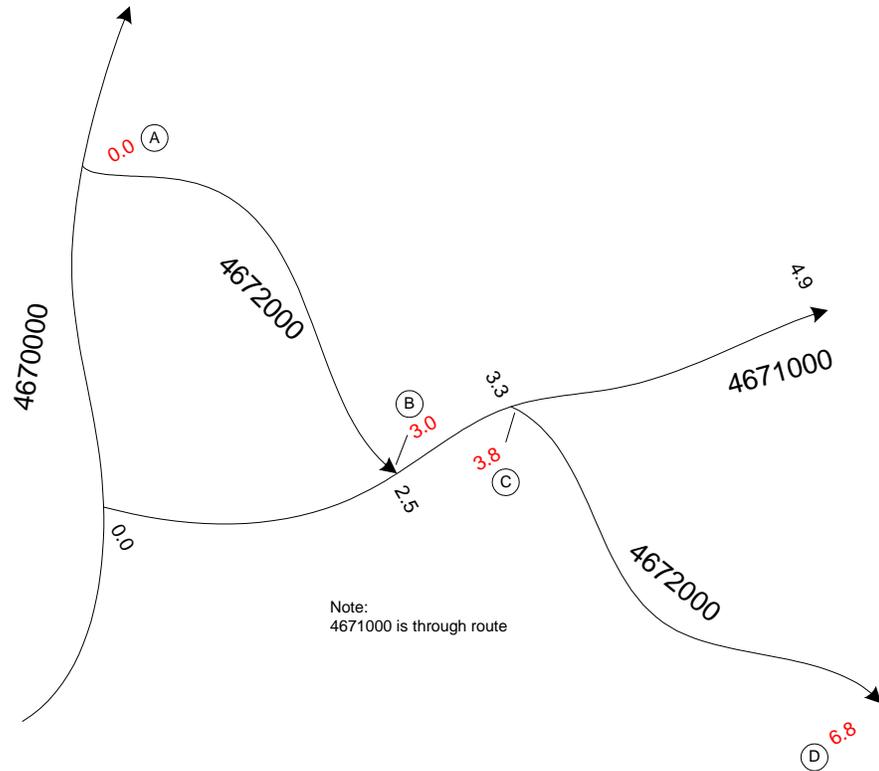


Figure 8-7. Shared Routes - Continuous Alternative

In this case, the route system is simply built and calibrated as normal. The linear events in INFRA though would show a gap in the route as shown in Table 8-4. The data in the RTE_BASICS table (Table 8-5) would show the length road 4672000 as 6.8 miles when in reality the road is only 6.0 miles long without the overlap. This alternative is spatially more accurate than Alternative 1 and would allow placement of road numbers on maps with both designations.

Table 8-4. Shared Routes - Continuous Route, Linear Events

4671000	0.0	4.9	ROUTE STATUS	EX - EXISTING
4672000	0.0	3.0	ROUTE STATUS	EX - EXISTING
4672000	3.8	6.8	ROUTE STATUS	EX - EXISTING

Table 8-5 Route Basics data for Alternative 2

4671000	0.0	4.9
4672000	0.0	6.8

8.5 Y Intersections

In many parts of the country, Y-type intersections have been constructed as shown in Figure 8-8. Although this is against current design policy, there are numerous places on the ground where it occurs. Typically, the back leg of the Y intersection is 100' or less in length.

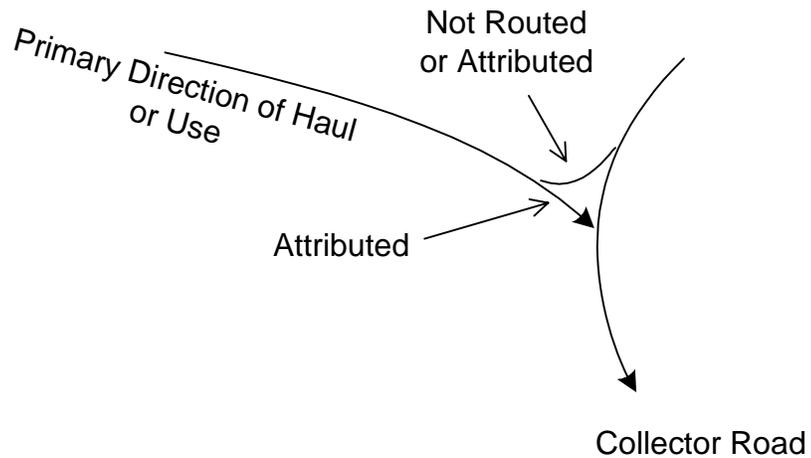


Figure 8-8. Y Intersection

It's highly recommended to not try to attribute or route the back leg of the Y intersection. This will eliminate calibration and routing problems in the coverage.

The following is recommended:

1. Determine the leg of the Y that is in the direction of primary haul or use
2. Attribute the arcs of the primary route as normal
3. Don't attribute the arc that is the alternate leg of the Y-Intersection and don't route it.

8.6 Duplication of Another Unit's Data

Sometimes it's desirable at the local level to duplicate spatial and tabular data of a route system from another forest's database. Typically this happens in the following situations:

1. When a neighboring forest wants to have the data in their database for display and analysis purposes. Please note that this reason is not wholly supportable. A connection can be made to another forest's database in the GIS software (Arc/Info or ArcView). However, it does make it more cumbersome to work with as queries have to be duplicated against another database instance.
2. When one unit manages the route, but through agreement, another unit maintains the route.

The problem with just adding the duplicated tabular data is that mileage and maintenance needs summaries that are aggregated up the chain of command will be duplicated. To prevent this situation, the forest that is managing the route on another forest should codify JURISDICTION = OFS – OTHER FOREST SERVICE. All queries at regional and national levels run against ROUTE STATUS = EX, JURISDICTION = FS and therefore these identical road miles will only be counted once.

The example in Figure 8-9 shows two forests that share a common border with a state highway providing main access to both forests. Forest 2 manages Road 7518 as it's closer to their road management and maintenance organizations.

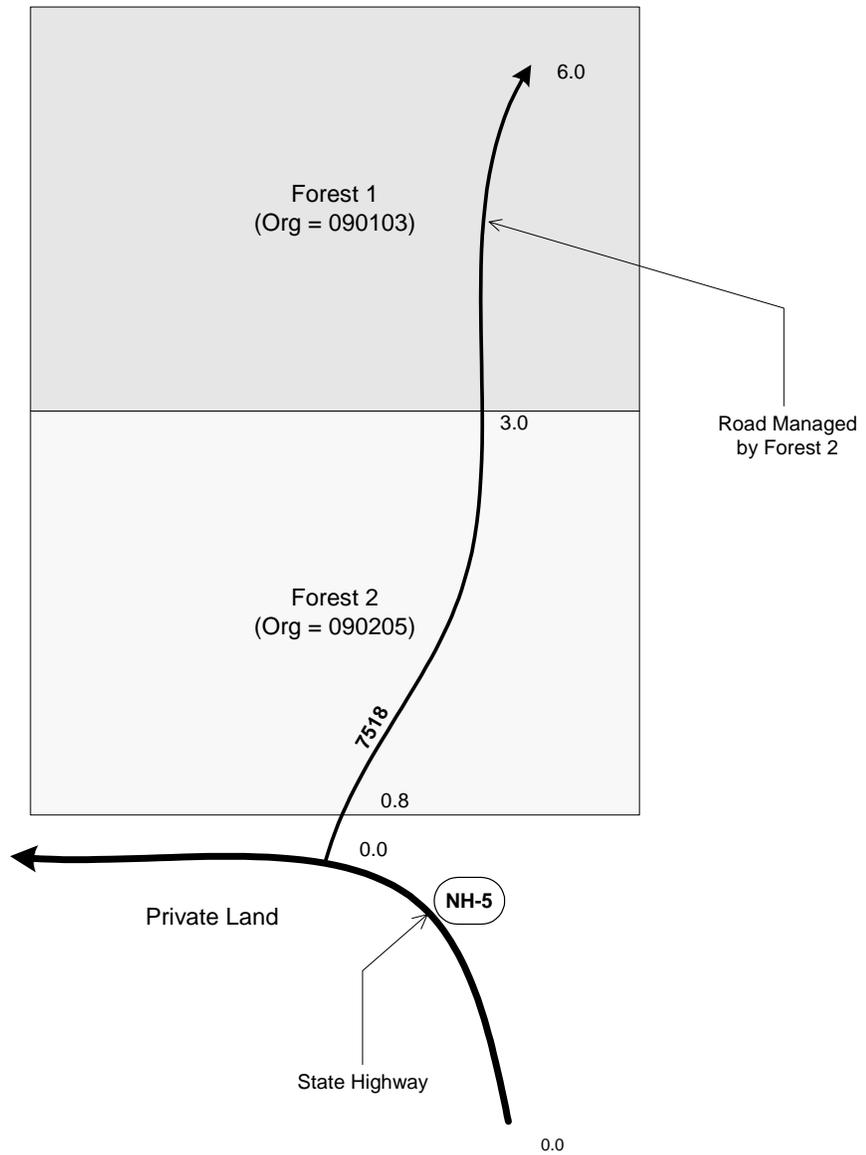


Figure 8-9 Use of MANAGING_ORG

Table 8-6 Road 7518 Coding Chart



0.0 – 3.0	ADMIN_ORG	090205	090205
	MANAGING_ORG	090205	090205
	JURISDICTION	OFS	FS
	PRIMARY MAINTAINER	FS	FS
3.0 – 6.0	ADMIN_ORG	090103	090103
	MANAGING_ORG	090205	090205
	JURISDICTION	FS	OFS
	PRIMARY MAINTAINER	FS	FS

9 Remaining Issues

Many issues are either being worked on by the Travel Routes Road User Board or are further out and will be addressed some time in the future.

Issues that the Road User Board is currently working on include:

1. Signs – A new program to be developed to record sign plans, inventory, etc.
2. Culvert – A team is working on how to store all the fish passage requirements into a generic culvert module and removing the distinction between “major” and “minor” culverts.

Issues farther out that are recognized as problems but that are not currently being worked on:

1. Historical tracking of road number changes. This is important for those forests that will be contemplating a road numbering change to provide storage of the mapping of the old route numbers to new route numbers.
2. Route Features, ATM, and Maintenance Needs modules need to be completed in the data dictionary.

10Glossary

Travel Routes Terms

- **Arc.** A line defined as a set of ordered x,y coordinates used to represent linear features and polygon boundaries.
- **Attribute/Column.** A field within a database table.
- **Authority.** A code to denote who is the managing authority for codes and linear events. Currently this can be set to WO (Washington Office), REGION (Regional Office) or FOREST (individual national forest).
- **Child Table.** A table within a relational database that is related to another table. The child table usually has multiple records in it related to the other (parent) table.
- **Code Structure.** Used to denote where a code for a linear event is a child of another code. This can be used to establish a hierarchy between codes and develop a lineage so that different codes can be aggregated up to one unique code. See the INFRA Administrators User Guide for more information on Code Structure.
- **Concatenated.** A term for when two or more character strings are merged together. For example, if X = Green and Y = Tree the concatenation of X & Y would be “GreenTree”.
- **Coverage.** An Arc/Info term for a collection of similar spatial features organized within a GIS. It generally represents a single set of geographic objects such as roads. A coverage supports the georelational model – it contains both the spatial (location) and attribute (descriptive) data for geographic features.
- **Data Type.** A characteristic of a column in a database or a stream of data. It characterizes the data into similar types (Varchar2, Number, Char, Date, etc)
- **Electronic Road Log (ERL).** A program written by San Dimas Technology and Development Center (SDTDC) designed to assist field units in collecting and storing road deferred maintenance data. The original version (ERL 1) which worked with Lotus has been replaced with ERL 2. ERL 2 runs on a Windows platform and has Infra download/upload capabilities. See the SDTDC website for the latest information on ERL (<http://fsweb.sdtc.wo.fs.fed.us>).
- **Extensible.** The ability to add custom coding to the database without requiring a programmer to change the code of the application that is used to maintain the database. The Travel Routes database was designed to be extensible in that new linear events can be added and look up values for those linear events can be added without requiring the INFRA development team to modify the database to accept the change.
- **Foreign Key** A column in a child table that references the primary key in a parent table.
- **Fuzzy Tolerance** An Arc/Info term that represents the distance that vertex coordinates can shift during geoprocessing operations when a coverage is either “clean”ed or overlaid.
- **Index.** A way to find rows in a database very quickly.

- **Insert Trigger.** A piece of programming code that executes when a new row is inserted into a database table. Typically these are used to generate unique identifiers such as the control numbers used throughout the INFRA application.
- **Linear Event.** A specific characteristic of a route that has a beginning measure and an ending measure where the characteristic is constant.
- **Mandatory.** Those columns within a table that can't be null.
- **Map Scale.** The ratio of the distance on a map to the distance on the earth. It is typically expressed as a fraction (i.e. 1:24,000). This means that 1 unit on the map equals 24,000 units on the ground.
- **Overlap.** Where a linear event's values have overlapping measures. For example, where easements have been granted to multiple cost share partners over different segments of the same route.
- **Precision.** In the context of a numeric database column, is the number of digits to the left of the decimal point plus the decimal point itself.
- **Primary Key.** The column(s) within a table that uniquely identify a row and have a primary key constraint enabled within the database.
- **Required.** Those columns within a table or a linear event where the business rules require it to be populated.
- **Route.** A road or trail that is signed and managed as a unique entity. Management can change along its length but it is singularly identified. This term is also used in GIS to denote a linear feature composed of one or more arcs or parts of arcs.
- **Route System.** A GIS term for a collection of routes, representing a logical collection of linear features.
- **Scale.** In the context of a numeric database column, is the number of digits to the right of the decimal point.
- **Size.** In the context of a string database column, is the maximum number of characters that can be stored.
- **Well Normalized.** The process of designing a database to the principles outlined by E.F. Codd. There are a series of steps (or forms) that describe how data is organized and related to each other.
- **WO Authority.** Those linear events and codes that are to be used consistently across the country and are defined nationally. Regions and Forests will not change these linear events or codes but can add additional linear events or codes (extensibility).

Policy Terms

- **Access Rights.** A privilege or right of a person or entity to pass over or use another person's or entity's travel way. (36 CFR 212.1, FSM 5460.5 – Rights of Way Acquisition, FSM 7700 – Transportation System)
- **Annual Maintenance.** Work performed to maintain serviceability, or repair failures during the year in which they occur. Includes preventive and/or cyclic maintenance performed in the year in which it is scheduled to occur. Unscheduled or catastrophic failures of components or assets may need to be repaired as a part of annual maintenance. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Arterial Road.** A forest road that provides service to large land areas and usually connects with other arterial roads or public highways. (FSH 7709.54 - Forest Transportation Terminology Handbook, no longer in print)
- **Capital Improvement.** The construction, installation, or assembly of a new fixed asset, or the significant alteration, expansion, or extension of an existing fixed asset to accommodate a change of purpose. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Classified Road.** Road wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service. (36 CFR 212.1, FSM 7705 – Transportation System)
- **Collector Road.** A forest road that serves smaller land areas than an arterial road. Usually connects forest arterial roads to local forest roads or terminal. (FSH 7709.54 – Forest Transportation Terminology Handbook, no longer in print)
- **Construction (new).** The erection, construction, installation, or assembly of a new fixed asset. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Critical Need.** A requirement that addresses a serious threat to public health or safety, a natural resource, or the ability to carry out the mission of the organization. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Critical Vehicle.** The vehicle, normally the largest (by weight, size, or unique configuration), whose limited use on the road is necessary to complete the planned activity. (FSH 7709.56, Sec 4.1 – Road Preconstruction Handbook)
- **Culvert.** A conduit or passageway under a road, trail, or other obstruction. A culvert differs from a bridge in that it is usually constructed entirely below the elevation of the traveled way. (EM 7720-100R, EM 7720-100LL, Sec 102)
- **Decommission.** Demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Portions of an asset or component

may remain if they do not cause problems nor require maintenance. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)

- **Deferred Maintenance.** Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. Deferred maintenance needs may be categorized as critical or noncritical at any point in time. Continued deferral of noncritical maintenance will normally result in an increase in critical deferred maintenance. Code compliance (e.g. life safety, ADA, OSHA, environmental, etc.), Forest Plan Direction, Best Management Practices, Biological Evaluations other regulatory or Executive Order compliance requirements, or applicable standards not met on schedule are considered deferred maintenance. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Design Speed.** The speed determined for design and correlation of the physical features of a route that influence vehicle operation. The maximum safe speed that the design vehicle can maintain over a specified segment of a route when conditions are so favorable that the design features of the road, rather than operational limitations of the vehicle, govern. The design speed is the safe speed for the design situation only. (FSH 7709.56, Sec 4.25 – Road Preconstruction Handbook)
- **Design Vehicle.** The vehicle frequently using the road that determines the minimum standard for a particular design element. No single vehicle controls the standards for all the design elements for a road. Determine the maximum and minimum standards from the type and configuration of the vehicles using the road. Analyze each design element to determine which vehicle governs the standard for that element. (FSH 7709.56, Sec 4.1– Road Preconstruction Handbook)
- **Emergency Need.** An urgent maintenance need that may result in injury, illness, or loss of life, natural resource, or property; and must be satisfied immediately. Emergency needs generally require a declaration of emergency or disaster, or a finding by a line officer that an emergency exists. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Fatality.** A fatality in the National Forest Road System annual fatality report is the death of a person (either an occupant of a vehicle or a non-motorist) that is the result of a crash involving a state highway legal motor vehicle (including motorcycles) traveling on a System Road open to traffic (operationally maintenance level 2, 3, 4, or 5) that occurs within 30 days of the crash. (Annual Roads Accomplishment Report FY 2002).
- **Forest Road.** As defined in Title 23, Section 101 of the United States Code (23 U.S.C. 101), any road wholly or partly within, or adjacent to, and serving the National Forest System and which is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. (FSM 7705 – Transportation System)
- **Forest Highway.** A forest road under the jurisdiction of, and maintained by, a public authority and open to public travel. (USC: Title 23, Section 101(a)).

- **Forest Transportation Atlas.** An inventory, description, display, and other associated information for those roads, trails, and airfields that are important to the management and use of National Forest System lands or to the development and use of resources upon which communities within or adjacent to the National Forests depend. (36 CFR 212.1)
- **Forest Transportation Facility.** A classified road, designated trail, or designated airfield, including bridges, culverts, parking lots, log transfer facilities, safety devices and other transportation network appurtenances under Forest Service jurisdiction that is wholly or partially within or adjacent to National Forest System lands. (36 CFR 212.1, FSM 7705 – Transportation System)
- **Forest Transportation System Management.** The planning, inventory, analysis, classification, record keeping, scheduling, construction, reconstruction, maintenance, decommissioning, and other operations undertaken to achieve environmentally sound, safe, cost-effective, access for use, protection, administration, and management of National Forest System lands. (FSM 7705 – Transportation System)
- **Functional Class.** The way a road services land and resource management needs, and the character of service it provides. (FSH 7709.54, Forest Transportation Terminology Handbook, no longer in print)
- **Health and Safety Need.** A requirement that addresses a threat to human safety and health (e.g. violations of National Fire Protection Association 101 Life Safety Code or appropriate Health Code) that requires immediate interim abatement and/or long-term permanent abatement. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Jurisdiction.** The legal right to control or regulate use of a transportation facility. Jurisdiction requires authority, but not necessarily ownership. The authority to construct or maintain a road may be derived from fee title, an easement, or some other similar method. (FSM 7705 – Transportation System)
- **Local Road.** A forest road that connects terminal facilities with forest collector, forest arterial or public highways. Usually forest local roads are single purpose transportation facilities. (FSH 7709.54 – Forest Transportation Terminology Handbook, no longer in print)
- **Maintenance.** The preservation of the entire highway, including surface, shoulders, roadsides, structures and such traffic-control devices as are necessary for its safe and efficient utilization. (USC: Title 23, Section 101(a)).
- **Maintenance.** The upkeep of the entire forest development transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-control devices as are necessary for its safe and efficient utilization. (36 CFR 212.2(i)).
- **Maintenance.** The act of keeping fixed assets in acceptable condition. It includes preventive maintenance normal repairs; replacement of parts and structural components, and other activities needed to preserve a fixed asset so that it continues to provide acceptable service and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than those originally intended. Maintenance includes work needed to meet laws, regulations, codes, and other legal

direction as long as the original intent or purpose of the fixed asset is not changed. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)

- **Maintenance Level.** Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. (FSH 7709.58, Sec 12.3 – Transportation System Maintenance Handbook)

Maintenance Level 1: Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resource to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are “prohibit” and “eliminate”. Roads receiving level 1 maintenance may be of any type, class or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

Maintenance Level 2: Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles.

Maintenance Level 3: Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either “encourage” or “accept.” “Discourage” or “prohibit” strategies may be employed for certain classes of vehicles or users.

Maintenance Level 4: Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is “encourage.” However, the “prohibit” strategy may apply to specific classes of vehicles or users at certain times.

Maintenance Level 5: Assigned to roads that provide a high degree of user comfort and convenience. Normally, roads are double-lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is “encourage.”

- **Major Culvert.** A culvert that provides an opening of more than 35 square feet (3.3 m²) in a single or multiple installation. A major culvert may consist of a single round pipe, pipe arch, open or closed-bottom box, bottomless arch, or multiple installation of these structures placed adjacent or contiguous as a unit. Certain major culverts are classified as bridges when they provide an opening of more than 20 feet (6.1 m), measured parallel to the roadway; such culverts may be included in the bridge inventory. See "Federal Highway Administration Coding Guide

for Bridge Inventory and Appraisal," items 49 and 112 (sec. 8.08) for culverts being classified as bridges. (FSH 7709.56b, Sec 05 – Transportation Structures Handbook)

- **Minor Culvert.** Any culvert not classified as a major culvert. (FSH 7709.56b, Sec 05 – Transportation Structures Handbook)
- **Mission Need.** A requirement that addresses a threat or risk to carrying out the mission of the organization. Needs related to administration and providing services (transportation, recreation, grazing, etc.). Needs not covered by health and safety or natural resource protection. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **National Forest System Road.** A classified forest road under the jurisdiction of the Forest Service. The term “National Forest System roads” is synonymous with the term “forest development roads” as used in 23 U.S.C. 205. (FSM 7705 – Transportation System)
- **New Construction.** The erection, construction, installation, or assembly of a new fixed asset. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **New Road Construction.** Activity that results in the addition of forest classified or temporary road miles. (36 CFR 212.1, FSM 7705 – Transportation System)
- **Noncritical Need.** A requirement that addresses potential risk to public or employee safety or health, compliance with codes, standards, regulations etc., or needs that address potential adverse consequences to natural resources or mission accomplishment. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Objective Maintenance Level.** The maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level. (FSH 7709.58, Sec12.3 – Transportation System Maintenance Handbook)
- **Open for Public Travel.** The road section is available and passable by four-wheeled standard passenger cars, and open to the general public for use without restrictive gates, prohibitive signs, or regulation other than restrictions based on size, weight or class of registration, except during scheduled periods, extreme weather or emergency conditions. (23 CFR 460.2(c)).
- **Operational Maintenance Level.** The maintenance level currently assigned to a road considering today’s needs, road condition, budget constraints, and environmental concerns. It defines the level to which the road is currently being maintained. (FSH 7709.58, Sec 12.3 – Transportation System Maintenance Handbook)
- **Other System.** Additional network(s) of travel ways serving a common need or purpose, managed by an entity with the authority to finance, build, operate and maintain the routes. (U.S.C. 101 23 CFR 660, FSM 7740.5 – Federal Lands Highway Programs)
- **Primary Maintainer.** The agency or party having primary (largest share) financial responsibility for maintenance. (FSH 7709.58, Chapter 13 – Transportation System Maintenance)

Handbook)

- **Private Road.** A road under private ownership authorized by easement to a private party, or a road which provides access pursuant to a reserved or private right. (FS-643, Roads Analysis; Informing Decisions About Managing the National Forest Transportation System, August 1999.).
- **Public Authority.** A Federal, State, county, town or township, Indian tribe, municipal or other local government or instrumentality thereof, with authority to finance, build, operate or maintain toll or toll-free highway facilities. (23 CFR 460.2(b))
- **Public Forest Service Road.** A designated public road under Forest Service jurisdiction that meets the definition of 23 U.S.C. Section 101.
- **Public Road.** Any road or street under the jurisdiction of and maintained by a public authority and open to public travel. (23 U.S.C. 101(a), 23 CFR 460.2(a), FSM 7705 – Transportation System)
- **Resource Protection Need.** A requirement that addresses a threat or risk of damage, obstruction, or negative impact to a natural resource. (Financial Health – Common Definitions for Maintenance and Construction Terms, July 22, 1998)
- **Road.** A motor vehicle travelway over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified, or temporary. (36 CFR 212.1, FSM 7705 – Transportation System)
- **Road Decommissioning.** Activities that result in the stabilization and restoration of unneeded roads to a more natural state. (36 CFR 212.1, FSM 7705 – Transportation System)
- **Road Improvement.** Activity that results in an increase of an existing road’s traffic service level, expands its capacity, or changes its original design function. (FSM 7705 – Transportation System)
- **Road Maintenance.** The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective. (FSM 7705 – Transportation System)
- **Road Management Objectives (RMO).** Defines the intended purpose of an individual road based on management area direction and access management objectives. Road management objectives contain design criteria, operation criteria, and maintenance criteria. (FSH 7709.55, Sec 33 – Transportation Planning Handbook)
- **Road Realignment.** Activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway. (FSM 7705 – Transportation System)
- **Road Reconstruction.** Activity that results in a Road Improvement or Road Realignment of an existing classified road. (FSM 7700 – Transportation System)
- **Service Life.** The length of time that a facility is expected to provide a specified service. (FSH 7709.56b, Sec 05 – Transportation Structures Handbook)
- **State.** Any one of the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and American Samoa. (23 CFR 460.2(e))

- **Subject to the Highway Safety Act.** National Forest System roads that are open to use by the public for standard passenger cars. This includes roads with access restricted on a seasonal basis and roads closed during extreme weather conditions or for emergencies, but which are otherwise open for general public use. (FSM 7705 – Transportation System)
- **Temporary Road.** Road authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be a part of the forest transportation system and not necessary for long-term resource management. (36 CFR 212.1, FSM 7705 – Transportation System)
- **Terminal Facility.** A transfer point between the transportation network and resources served or between different transportation modes. Typical terminal facilities are vehicle parking areas, boat ramps and docks, trailheads, log transfer facilities, airfields and heliports (old FSH 7709.54 (old Terminology Handbook, no longer in print).
- **Traffic Service Level.** Describes the significant characteristics and operating conditions of a road. (FSH 7709.56, Ch 4 – Road Preconstruction Handbook, FSM 7705 – Transportation System)
- **Transportation Facility Jurisdiction.** The legal right to control or regulate use of a transportation facility derived from fee title, an easement, an agreement, or other similar method. While jurisdiction requires authority, it does not necessarily reflect ownership. (FSM 7705 – Transportation System)
- **Traveled Way.** The portion of the roadway used for the movement of vehicles; not including turnouts, exclusive of shoulders and auxiliary lanes. (EM 7720-100LL, Section 102.)
- **Unclassified Roads.** Roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1, FSM 7705 – Transportation System). Unclassified roads are categorized into two types and recorded in the SYSTEM linear event. The two types are:
 - UND – UNDETERMINED – Roads where long term purpose and need has yet to be determined
 - NOT – NOT NEEDED – Roads not needed for long term management of national forest resources as determined through an appropriate planning document.

11 References

1. 36 CFR parts 212, 261, and 295. Administration of the Forest Development Transportation System; Prohibitions; Use of Motor Vehicles Off Forest Service Roads, Department of Agriculture, Washington D.C., January 12, 2001.
2. Yoder, Robert, Public Forest Service Roads Initiative, Pacific Northwest Region, Road Managers Workshop, Portland, Or., April 18, 2000.
3. GIS Core Data Dictionary, USDA Forest Service, Washington D.C., March, 2002 (<http://fsweb.wo.fs.fed.us/im/standards/gis/coredata>).
4. Russell, Carol, Script for creating flattened out event table, Northern Region, USDA Forest Service, Missoula, MT., 1999.
5. Sun, Steve, Glob Procedures for INFRA Travel Routes, Washington Office, USDA Forest Service, Washington D.C., 2000.
6. ARC/INFO Data Management-Concepts, data models, database design, and storage, Environmental Systems Research Institute, Inc., Redlands, CA., 1994.
7. INFRA Administrators User Guide, INFRA Software Development Group, Washington, D.C., 2000 (<http://pcs27.f16.r6.fs.fed.us/infra/userguides/admin-ug.htm>).
8. EM-7140-24, Guidelines for Digital Map Updates, Geometronics Service Technology Center, Salt Lake City, UT.