



# ArcLogistics™ Route 3 Map Data Specification

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## An ESRI Technical Paper

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# ArcLogistics Route 3 Map Data Specification

ArcLogistics™ Route uses shapefiles for its street data sets and map background layers. Map data can be in geographic or projected coordinates, but all the shapefiles used with ArcLogistics Route must be in the same coordinate system. Each street data set has several shapefiles associated specifically with it, but all street data sets use a single common set of map background layers.

## Shapefiles in the Street Data Set Directory

All of the shapefiles for a street data set must be located in the same directory.

### *AllSt*

ArcLogistics Route uses AllSt to represent the entire street network. AllSt must be a topologically connected shapefile.

## Shape Type

Line

## Attributes

### Address Fields

The fields needed for geocoding. They should be present, even if they are empty.

<u>Field</u>	<u>Type</u>	<u>Length</u>	<u>Description</u>
L_F_Add	Integer	12	Start of address range on left side of street
L_T_Add	Integer	12	End of address range on left side of street
R_F_Add	Integer	12	Start of address range on right side of street
R_T_Add	Integer	12	End of address range on right side of street
Prefix	String	2**	Prefix of street (e.g., "N")
Pre_Type	String	6**	Type of street before name (e.g., "Ave." in "Ave. A")
Name*	String	30**	Street's name (e.g., "Smith" in "Smith St.")
Type	String	6**	Type of street (e.g., "St.")
Suffix	String	2**	Suffix of street (e.g., "NW" in "Smith St., NW")
Full_Name	String	35**	Full name of street, used for display and direction strings
ZIPL*	String	10	Postal code on left side of street
ZIPR*	String	10	Postal code on right side of street
State_Abbr	String	15	State abbreviation (e.g., "CA")
CityL*	String	32	City on the left side of the street
CityR*	String	32	City on the right side of the street

\* The fields used to build the geocoding indices.

\*\* These lengths are flexible. If a complete address line is more than 50 characters long, it will be truncated in ArcLogistics Route.

Routing Fields The fields used to build the indices used in routing

<u>Field</u>	<u>Type</u>	<u>Length</u>	<u>Description</u>
Meters	Number	7 digits, 3 dec.	Length of the edge in meters
FT_Minutes	Number	8 digits, 4 dec.	Minutes to cross edge in digitized direction
TF_Minutes	Number	8 digits, 4 dec.	Minutes to cross edge against digitized direction
UserID	Integer	7	User's ID of edge
ShapeID	Integer	7	ID of edge used by ArcLogistics Route
Fnode	Integer	7	ID of node at "from" end of edge in digitized direction
Tnode	Integer	7	ID of node at "to" end of edge in digitized direction
F_zlev	Integer	2+	Elevation of node at "from" end of edge in digitized direction
T_zlev	Integer	2+	Elevation of node at "to" end of edge in digitized direction
Disp_Code	Integer	2	Code for classifying streets

Notes

UserID A code you provide to link this edge to the Turn and Oneway shapefiles

ShapeID A code written by ArcLogistics Route to link this edge to the Turn and Oneway shapefiles. The value of the first record must be 0. Each subsequent record increases ShapeID by 1.

Fnode and Tnode Filled in by ArcLogistics Route during routing index construction. Leave them empty when you process your street data.

F\_zlev and T\_zlev Provide node elevation, which is used to establish network topology. If two edges end at the same point but have different node elevation values, then the edges are not considered connected in the network. Node elevations are logical elevations, not literal altitudes. Node elevation is useful for modeling overpasses, bridges, and tunnels.

Disp\_Code Used to classify the streets. When you add a street data set to ArcLogistics Route, the largest connected set of streets with Disp\_codes of 10, 20, or 30 ("major streets") is included in the major street network used by the ArcLogistics Route product's hierarchical solver. Disp\_code is used to create two other shapefiles when you add street data to ArcLogistics Route: HwySt, which contains all streets with Disp\_code 10 or 20, and MajorSt, which contains all streets with Disp\_code 10, 20, or 30. Do not edit these shapefiles.

<u>Disp_code</u>	<u>Description</u>	<u>Symbol</u>	<u>Major Street Network?</u>
10	Major highway	Red	Yes*
20	Minor highway	Red	Yes*
30	Major surface street	Zoomed out: grey Zoomed in: blue	Yes*
40	Minor surface street	Grey	No

\* If some major streets are left out of the major street network indices, a diagnostic shapefile called CmajorSt is created. CmajorSt includes all streets that were added to the major street network.

*Oneway* Oneway is the set of one-way streets. Each one-way restriction that does not disconnect the network is used to modify the routing indices. When ArcLogistics Route rebuilds its routing indices, a shapefile called Addedoneway is created and populated with those Oneway edges that modified the routing indices.

Shape Type Line

<u>Attributes</u>	<u>Field</u>	<u>Type</u>	<u>Length</u>	<u>Description</u>
	UserID	Number	7	User's ID of edge "FT" = travel OK in digitized direction
	Oneway	String	2	"TF" = travel OK in opposite direction
	ShapeID	Number	7	ID of edge used by ArcLogistics Route

Note Populate the ShapeID field from AllSt, using a join on your UserID field. Each edge in Oneway should have the same shape as the corresponding edge in AllSt.

*Turn* Turn is the set of turn restrictions. Each turn restriction that does not disconnect the network is used to modify the routing indices. When ArcLogistics Route rebuilds its routing indices, a shapefile called Addeturn is created and populated with those Turn edges that modified the routing indices.

Each edge in Turn is related to two edges in AllSt: the "from" edge and the "to" edge. Turning from the "from" edge to the "to" edge is restricted.

Shape Type Line

<u>Attributes</u>	<u>Field</u>	<u>Type</u>	<u>Length</u>	<u>Description</u>	<u>Field</u>
	F_UserID	Number	7	User's ID of "from" edge	F_UserID
	T_UserID	Number	7	User's ID of "to" edge	T_UserID
	FshapeID	Number	7	ID of "from" edge used by ArcLogistics Route	FshapeID
	TshapeID	Number	7	ArcLogistics Route	TshapeID

Note Populate the FshapeID and TshapeID fields from AllSt, using joins on the F\_UserID and T\_UserID fields. The edges in Turn can have the shape of the "from" edge, the "to" edge, or a shape that combines both edges in a single polyline.

*Block (optional)* Block is the set of blocked streets. ArcLogistics Route will not allow vehicles to travel on street segments that are blocked. Each blocked street that does not disconnect the network is used to modify the routing indices. When ArcLogistics Route rebuilds its routing indices, a shapefile called Addedblock is created and populated with those blocked streets that modified the routing indices.

Shape Type Line

<u>Attributes</u>	<u>Field</u>	<u>Type</u>	<u>Length</u>	<u>Description</u>
	UserID	Number	7	User's ID of edge
	ShapeID	Number	7	ID of edge used by ArcLogistics Route
	Disp_code	Number	2	Code for classifying streets

Disp\_code values in Block are associated with those in AllSt.

<u>AllSt</u>	<u>Block</u>	<u>Symbol</u>
10	-1	Bold dashed red
20	-2	Bold dashed red
30	-3	Bold dashed blue
40	-4	Bold dashed black

*Dtl-Cnty* Dtl-Cnty is a background layer on the ArcLogistics Route Map View. In the data included with ArcLogistics Route–Data Edition, it contains the outlines of the counties intersecting the extent of AllSt. Any other polygon shapefile with a Name field among its attributes could be used as Dtl-Cnty, for example, a city boundary shapefile.

Shape Type Polygon

<u>Attributes</u>	<u>Field</u>	<u>Type</u>	<u>Length</u>	<u>Description</u>
	Name	Text	<any>	Name of county

*ZIP* ZIP is a background layer on the ArcLogistics Route Map View. ZIP also determines the extent of the Geocode Address dialog's map when the postal code fallback feature is used. Any other polygon shapefile with a ZIP field among its attributes could be used as ZIP, for example, a city district boundary shapefile.

Shape Type Polygon

<u>Attributes</u>	<u>Field</u>	<u>Type</u>	<u>Length</u>	<u>Description</u>
	ZIP	Text	10	ZIP Code (Postal Code)

*Lakes* Lakes is an unlabeled background polygon layer. It is displayed with a light blue fill on ArcLogistics Route maps. Other than its shape, no information from this theme is used in ArcLogistics Route.

Shape Type Polygon

*Parks* Parks is an unlabeled background polygon layer. It is displayed with a green fill on ArcLogistics Route maps. Other than its shape, no information from this theme is used in ArcLogistics Route.

Shape Type Polygon



## Shapefiles in the ArcLogistics Route Background Directory

*World* World is an empty shapefile, but its presence is necessary in the \ArcLogistics Route\Background directory. No information is used from the attribute table of World. Leave this shapefile empty.

Shape Type Polygon

*States* States is the land background in ArcLogistics Route maps that are zoomed in. No information is used from the attribute table of States. At very large scales, graphics errors may occur when displaying States. If you experience these errors, divide the polygons in States into a one-degree grid. This should solve the problem.

Shape Type Polygon

*ZO\_States* ZO\_States is the land background in ArcLogistics Route maps that are zoomed out beyond the minimum display scale for the street data set. No information is used from the attribute table of ZO\_States.

Shape Type Polygon