

Oakland County Road Centerline/Address Range Coverage

Coverage Name:	roads
Coverage Features:	nodes, arcs
Coverage Attribute Tables:	nat, aat
Fuzzy Tolerance:	0.01'
Dangle Tolerance:	0'
Coordinate System:	Michigan State Plane South Zone, NAD 83, International Feet
Coordinate Precision:	Double
Custodian:	Digital Information Service Center

Purpose

This coverage provides a graphic representation of road centerlines with related address ranges and attribute information. It will maintain a graphic representation of standardized road names by jurisdiction, and support dispatch, dynamic segmentation and road maintenance operations.

Description

The road centerlines in this coverage geometrically correspond to the visual center of pavement developed as a part of Oakland County's 1997 digital orthophotography project. For traveled ways that existed at the time of the photography, the geometry was constructed during stereo compilation. For traveled ways that were constructed after the orthophotography centerline, sources include construction drawings, and surveys.

The road names and address ranges were compiled initially from TIGER95 files. These values were then verified from independent sources and checked by city, village, and township representatives. The road segmentation was developed to optimize addressing, dispatching, and standardization of road names. The segmentation in this file will not correspond directly to TIGER segmentation.

Address range values will correspond with the direction of the arc. "Low" address values will be assigned to the "From" nodes, "High" address values will be assigned to the "To" nodes. Road segments that do not have an address assigned to them may be populated with a "0" in the following fields: FR_ADD_L, TO_ADD_L, FR_ADD_R and TO_ADD_R. Eventually, these attributes will be populated according to a theoretical address scheme.

Naming and database design standards have been established for interstates and their ramp conditions. Numeric abbreviations (I-75, I-696, M-24) will be the primary highway name identifier and the full name will be populated in the alias field. Interstate and ramp identification conventions (Figure 1) have been developed to consistently code on-ramps, off-ramps, connectors and collectors. Those ramps that connect two interstates are classified "connectors" (CONN). Service drives, which are local access roads that parallel interstates, are classified "collectors" (COLL). Those ramps that provide access to interstates from local roads, or vice versa, are classified "on-ramps or off-ramps" (ONRP & OFRP).

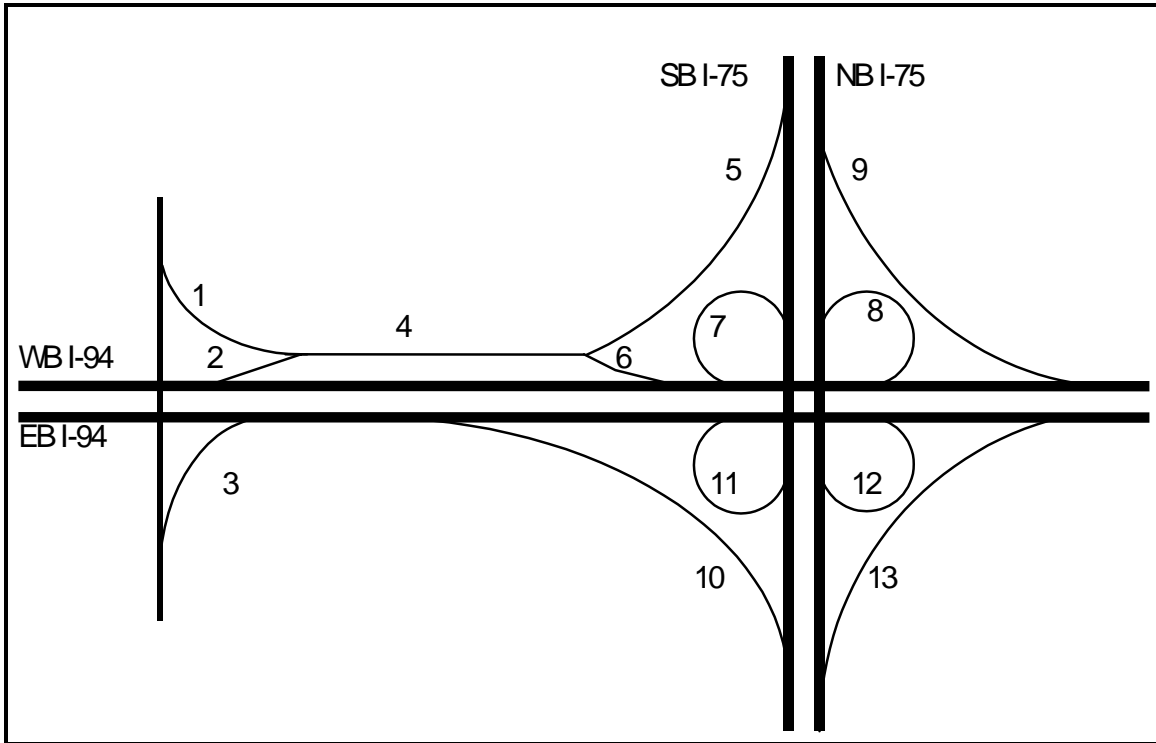


Figure ID	PRE_DIR	NAME	SUFFIX	Figure ID	PRE_DIR	NAME	SUFFIX
1.	W	I-94	OFRP	2.	W	I-94	ONRP
3.	E	I-94	ONRP	4.	W	I-94	COLL
5.	S	I-75	CONN	6.	W	I-94	OFRP
7.	W	I-94	CONN	8.	N	I-75	CONN
9.	W	I-94	CONN	10.	E	I-94	CONN
11.	S	I-75	CONN	12.	E	I-94	CONN
13.	N	I-75	CONN				

Figure 1: Interstate & Ramp Naming Conventions

In support of the Oakland County CLEMIS program, public safety attributes have been added to identify the extent of law enforcement, EMS, fire and animal control service boundaries. These public safety attributes only reflect primary service providers, secondary or “backup” service providers are configured in the CLEMIS CAD system. In cases where public safety attributes change along a road segment, the road is split and address ranges are prorated across the segments. Where appropriate, attributes are added to the NAT and AAT accordingly and alternative names have been standardized to meet the requirements set forth in the Printrak GGM GeoFile Build Procedures. In some cases, attributes have been classified to reflect the needs of out-county agencies participating in the CLEMIS program. The CLEMIS Team will maintain a master list of agency codes and boundary identification numbers in support of the CAD system. Consequently, the MUN_BNDY_L, MUN_BNDY_R, FIRE_BNDY_L, FIRE_BNDY_R, LAW_BNDY_L,

LAW_BNDY_R, EMS_BNDY_L, EMS_BNDY_R, AC_BNDY_L, AC_BNDY_R, TOW_BNDY_L and TOW_BNDY_R must be populated with values from that master list. In addition to those attributes list above, RESP_CODE and MESS_CODE have been added to support special E911 messages that may be assigned by the dispatcher. As data automation and maintenance is completed, a standardized shape file format (Appendix A) will be generated from this coverage design and provided to the CLEMIS Computer Aided Dispatch system.

Coverage Description

Node Structure

NODE Attribute Table (NAT):

<u>COLUMN</u>	<u>ITEM NAME</u>	<u>WIDTH</u>	<u>OUTPUT</u>	<u>TYPE</u>	<u>N.DE</u>	<u>ALTERNATE NAME</u>	<u>INDEXED?</u>
<i>1</i>	<i>ARC#</i>	<i>4</i>	<i>5</i>	-	<u>C</u>	-	-
<i>5</i>	<i>ROAD_ADD#</i>	<i>4</i>	<i>5</i>	-	-	<i>ID</i>	-
<i>9</i>	<i>ROAD_ADD-ID</i>	<i>4</i>	<i>5</i>	<i>B</i>	-	-	-
13	INTERSECTION_ID	12	12	I	-	-	-
25	MUN_BNDY	4	4	C	-	CITY_ID	-
29	FIRE_BNDY	4	4	C	-	FIRE_ID	-
33	LAW_BNDY	4	4	C	-	LAW_ID	-
37	EMS_BNDY	4	4	C	-	EMS_ID	-
41	AC_BNDY	4	4	C	-	AC_ID	-
45	TOW_BNDY	4	4	C	-	TOW_ID	-
49	MULTI_JUR	8	8	C	-	-	-
57	PROTECT	1	1	I	-	-	-
58	M_XSTREET	1	1	C	-	M_XSTREET	-
59	RESP_CODE	6	6	C	-	-	-

Item	Description	Item Codes
INTERSECTION_ID	Unique identifier that will relate to errata reports developed during data conversion / maintenance.	
MUN_BNDY	CLEMIS municipal code.	Refer to master list maintained by CLEMIS Team.
FIRE_BNDY	The unique identifier assigned to each public service fire boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
LAW_BNDY	The unique identifier assigned to each public service law enforcement boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
EMS_BNDY	The unique identifier assigned to each public service EMS boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
AC_BNDY	The unique identifier assigned to each public service animal control boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
TOW_BNDY	The unique identifier assigned to each public service tow1 boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
MULTI_JUR	A flag used by the clemiscode.aml for flagging those arcs or nodes that require staff coding intervention for one or more jurisdictional/district types.	M-Municipal F-Fire L-Law E-EMS A-Animal Control T-Tow
PROTECT	A flag used by GIS Utility to protect manually coded nodes from the clemiscode.aml.	1-Protect 0-Do not protect

M_XSTREET	Flag used to identify those nodes (intersections) that are in more than one municipality.	1 = More than one municipality. Null = Only one municipality.
RESP_CODE	A placeholder for emergency dispatch changes, allowing dispatchers to reconfigure who responds to a particular intersection on the fly.	Refer to CLEMIS CAD configuration.

Arc Structure

ARC Attribute Table (AAT):

<u>COLUMN</u>	<u>ITEM NAME</u>	<u>WIDTH</u>	<u>OUTPUT</u>	<u>TYPE</u>	<u>N.DE</u>	<u>ALTERNATE NAME</u>	<u>INDEXED?</u>
					<u>C</u>		
<i>1</i>	<i>FNODE#</i>	<i>4</i>	<i>5</i>	<i>B</i>	-	<i>F_ID</i>	-
<i>5</i>	<i>TNODE#</i>	<i>4</i>	<i>5</i>	<i>B</i>	-	<i>T_ID</i>	-
<i>9</i>	<i>LPOLY#</i>	<i>4</i>	<i>5</i>	<i>B</i>	-	-	-
<i>13</i>	<i>RPOLY#</i>	<i>4</i>	<i>5</i>	<i>B</i>	-	-	-
<i>17</i>	<i>LENGTH</i>	<i>8</i>	<i>18</i>	<i>F</i>	<i>5</i>	-	-
<i>25</i>	<i>ROADS#</i>	<i>4</i>	<i>5</i>	<i>B</i>	-	-	-
<i>29</i>	<i>ROADS-ID</i>	<i>4</i>	<i>5</i>	<i>B</i>	-	-	-
33	CENTERLINE_ID	12	12	I	-	ID	-
45	FR_ADD_L	6	6	I	-	L_LADD	-
51	TO_ADD_L	6	6	I	-	L_HADD	-
57	FR_ADD_R	6	6	I	-	R_LADD	-
63	TO_ADD_R	6	6	I	-	R_HADD	-
69	NAME_FLAG	1	1	I	-	-	-
70	PRE_DIR	2	2	C	-	-	-
72	NAME	30	30	C	-	-	-
102	SUFFIX	4	4	C	-	-	-
106	POST_DIR	2	2	C	-	-	-
108	CVT_L	5	5	C	-	-	-
113	CVT_R	5	5	C	-	-	-
118	ZIP_L	5	5	I	-	-	-
123	ZIP_R	5	5	I	-	-	-
128	VERSION	4	4	C	-	-	-
132	TLID_FLAG	1	1	I	-	-	-
133	TLID	10	10	I	-	TIGERID	-
143	DIR_TRV	1	1	I	-	FLIP	-
144	ROAD_CODE	2	2	C	-	-	-
145	CONV_SOURCE	1	1	C	-	-	-
146	REV_DATE	8	10	D	-	-	-
154	MULTI_JUR	8	8	C	-	-	-
155	PROTECT	1	1	I	-	-	-
156	MUN_BNDY_L	4	4	C	-	L_CITY_ID	-
160	MUN_BNDY_R	4	4	C	-	R_CITY_ID	-
164	FIRE_BNDY_L	4	4	C	-	L_FIRE_ID	-
168	FIRE_BNDY_R	4	4	C	-	R_FIRE_ID	-
172	LAW_BNDY_L	4	4	C	-	L_LAW_ID	-
176	LAW_BNDY_R	4	4	C	-	R_LAW_ID	-
177	EMS_BNDY_L	4	4	C	-	L_EMS_ID	-
181	EMS_BNDY_R	4	4	C	-	R_EMS_ID	-
185	AC_BNDY_L	4	4	C	-	L_AC_ID	-
189	AC_BNDY_R	4	4	C	-	R_AC_ID	-
193	TOW_BNDY_L	4	4	C	-	L_TOW_ID	-
197	TOW_BNDY_R	4	4	C	-	R_TOW_ID	-
201	RESP_CODE	6	6	C	-	RESPONSE	-
207	MESS_CODE	16	16	I	-	MESSAGE	-
223	TYPE_ERROR	2	2	I	-	-	-

225	EXAMINED_BY	30	30	C	-	-	-
255	EXAMINED_ON	8	10	D	-	-	-
263	COMMENTS	60	60	C	-	-	-
323	L_MAP_PAGE	2	2	I	-	-	-
325	R_MAP_PAGE	2	2	I	-	-	-
327	ROUTE	4	4	I	-	-	-
331	CARTO_NAME	30	30	C	-	-	-

Item	Description	Item Codes
CENTERLINE_ID	Unique identifier that will relate to errata reports developed during data conversion / maintenance.	
FR_ADD_L	Lowest address range on left side of the arc.	
TO_ADD_L	Highest address range on left side of the arc.	
FR_ADD_R	Lowest address range on right side of the arc.	
TO_ADD_R	Highest address range on right side of the arc.	
NAME_FLAG	Flag used to identify those arcs that contain multiple road names that are stored in the ALIAS_NAME relate table.	Yes/No binary code. 1=Yes, multiple names are present. 0=No, multiple names are not present.
PRE_DIR	The road name prefix.	N- North S- South E- East W- West NE- Northeast SE- Southeast NW- Northwest SW- Southwest
NAME	The road name.	Oakland County Land File standard road name.
SUFFIX	The road type.	USPS standard suffix abbreviations -OR- CONN- Connector COLL- Collector ONRP- On-ramp OFRP- Off-ramp
POST_DIR	The post direction of the road.	N- North S- South E- East W- West NE- Northeast SE- Southeast NW- Northwest SW-Southwest
CVT_L	Municipal code on left side of the arc.	Unique alpha numeric.
CVT_R	Municipal code on right side of the arc.	Unique alpha numeric.
ZIP_L	Zip code on left side of the arc.	
ZIP_R	Zip code on right side of the arc.	
VERSION	4 digit version indicator - see TLID	
TLID_FLAG	Flag used to identify those arcs that contain multiple TLID's that are stored in the DUP_TLID relate table.	Yes/No binary code. 1=Yes, multiple names are present. 0=No, multiple names are not present.
TLID	The lowest TLID number as derived from the 1995 TIGER Census coverage.	
DIR_TRV	The direction of travel as defined by the from-to nodes on the arcs.	Verified FLIP values derived from the 1995 Census coverage.

ROAD_CODE	Functional classification of roads based on type of service. A modified version of DOT's Federal Highway Administration (FHWA) classification scheme.	IN-Interstate highways ST-State highways US-US highways MJ-Major roads MN-Minor roads
CONV_SOURCE	The source file for the arcs.	D- Digital Orthophoto S-Survey Instrument O- Other
REV_DATE	The date the arc was changed in the coverage.	Date MM/DD/YYYY
MULTI_JUR	A flag used by the clemiscode.aml for flagging those arcs or nodes that require staff coding intervention for one or more jurisdictional/district types.	M-Municipal F-Fire L-Law E-EMS A-Animal Control T-Tow
PROTECT	A flag used by GIS Utility to protect manually coded arcs from the clemiscode.aml.	1-Protect 0-Do not protect
MUN_BNDY_L	CLEMIS municipal code on left side of the arc.	Refer to master list maintained by CLEMIS Team.
MUN_BNDY_R	CLEMIS municipal code on right side of the arc.	Refer to master list maintained by CLEMIS Team.
FIRE_BNDY_L	The unique identifier assigned to each public service fire boundary on left side of the arc.	Refer to master list maintained by CLEMIS Team.
FIRE_BNDY_R	The unique identifier assigned to each public service fire boundary on right side of the arc.	Refer to master list maintained by CLEMIS Team.
LAW_BNDY_L	The unique identifier assigned to each public service law enforcement boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
LAW_BNDY_R	The unique identifier assigned to each public service law enforcement boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
EMS_BNDY_L	The unique identifier assigned to each public service EMS boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
EMS_BNDY_R	The unique identifier assigned to each public service EMS boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
AC_BNDY_L	The unique identifier assigned to each public service animal control boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
AC_BNDY_R	The unique identifier assigned to each public service animal control boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
TOW_BNDY_L	The unique identifier assigned to each public service towing boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
TOW_BNDY_R	The unique identifier assigned to each public service towing boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
RESP_CODE	A placeholder for emergency dispatch changes, allowing dispatchers to reconfigure who responds to a particular street segment on the fly.	Refer to CLEMIS CAD configuration.
MESS_CODE	An identifier that allows the CAD dispatcher to assign a special response message to the road centerline.	Refer to CLEMIS CAD configuration.

TYPE_ERROR	Errata Reporting Codes. These codes were originally created for use by the conflation vendor for reporting discrepancies between TIGER95 (source file) and raw vector data (destination file). The source of attribution updates is also tracked with the TYPE_ERROR code. The GIS Utility will continue to use these codes to track update or maintenance source.	0-No error 1-Dog leg in destination file 2-New segment 3-Additional segment in destination file (ex: roads that intersect with boulevards) 4-Additional segment in destination file 5-Road name and/or address updated to match land file. 6-Source file intersection, destination file not. 7-Destination file intersection, source file not. 8- Road name and/or address updated to match land PSAP. 10-Graphic updates.
EXAMINED_BY	Data Technician who performed the latest edit.	
EXAMINED_ON	Date of latest edit, if any.	
COMMENTS	Notes regarding latest edit. Technician will use discretion in deleting comments that are no longer pertinent.	
L_MAP_PAGE	Section Number on left side of arc	
R_MAP_PAGE	Section Number on right side of arc	
ROUTE	State or Federal route number	
CARTO_NAME	Cartographic Representation of complete road name for cartographic output	

ALIAS_NAME Relate Table:

The purpose of the ALIAS_NAME table is to relate multiple road names to the primary road name. In instances of multiple road names, the primary road name will be determined in the following order of precedence:

1. The name to which addresses are assigned.
2. The local name, (i.e. a County Highway Number versus State Highway).
3. The name which is listed in the Census TIGER file.
4. The road name as indicated on the Oakland County enterprise parcel coverage.

The relate table, ALIAS_NAME will contain the following elements.

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DE	ALTERNATE NAME	INDEXED?
					<u>C</u>		
1	CENTERLINE_ID	12	12	I	-	-	-
13	PRE_DIR	2	5	C	-	-	-
15	NAME	30	30	C	-	-	-
45	SUFFIX	4	18	C	-	-	-
49	POST_DIR	2	2	C	-	-	-

Item	Description	Item Codes
CENTERLINE_ID	Unique identifier	

PRE_DIR	The road name prefix.	N- North S- South E- East W- West NE- Northeast SE- Southeast NW- Northwest SW-Southwest NB- North Bound SB- South Bound EB-East Bound WB- West Bound
NAME	The road name.	Oakland County Land File standard road name.
SUFFIX	The road type.	USPS standard suffix abbreviations -OR- CONN- Connector COLL- Collector ONRP- On-ramp OFRP- Off-ramp
POST_DIR	The post direction of the road.	N- North S- South E- East W- West NE- Northeast SE- Southeast NW- Northwest SW-Southwest

DUP_TLID Relate Table:

The purpose of this table is to maintain a connection to the Census information. Because the segmentation in the Road Centerline Coverage may be different than the Census Segmentation, one road segment in this file may relate to more than one segment in the Census file.

<u>COLUMN</u>	<u>ITEM NAME</u>	<u>WIDTH</u>	<u>OUTPUT</u>	<u>TYPE</u>	<u>N.DE</u>	<u>ALTERNATE NAME</u>	<u>INDEXED?</u>
1	TLID	10	10	I	<u>C</u> -	-	-
11	DUP_TLID	10	10	I	-	-	-

Item	Description	Item Codes
TLID	The lowest TLID number as derived from the 1995 TIGER Census coverage.	
DUP_TLID	Multiple TLID values related to the lowest TLID number.	

Appendix A _____

The following shape file formats have been developed to support the use of road centerline in the CLEMIS program and have been designed around the requirements set forth in Printrak's GeoFile Build Requirements. In Oakland County, road and address information will be maintained in standard coverage format and exported to shape file when updates to the CLEMIS program are required.

The road centerline coverage description supports the creation of two different shape files. A point file will be created from the NAT and line file will be created from the AAT. The shape file format is as follows:

CLEMIS Point File (Intersections):

The point file represents street intersections and their appropriate public service boundary codes. Specific column definitions (width, type, etc.) can be found in the NAT.

Item	Description	Item Codes
<i>SHAPE</i>	The type of spatial feature represented in the shape file.	Point
<i>XCOORD</i>	The Michigan State Plane, South Zone Coordinate System value for the intersection in the x direction.	
<i>YCOORD</i>	The Michigan State Plane, South Zone Coordinate System value for the intersection in the y direction.	
ID	Unique ID that corresponds directly to the ROAD_ADD#.	
CITY_ID	CLEMIS municipal code.	Refer to master list maintained by CLEMIS Team.
FIRE_ID	The unique identifier assigned to each public service fire boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
LAW_ID	The unique identifier assigned to each public service law enforcement boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
EMS_ID	The unique identifier assigned to each public service EMS boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
AC_ID	The unique identifier assigned to each public service animal control boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
TOW_ID	The unique identifier assigned to each public service towing boundary and used by GGM.	Refer to master list maintained by CLEMIS Team.
CITY_BRDR	Flag used to identify those nodes (intersections) that are in more than one municipality.	1 = More than one municipality. Null = Only one municipality.
FIRE_BRDR	Flag used to identify those nodes (intersections) that are responded to by more than one fire boundary.	1 = More than one boundary. Null = Only one boundary.
LAW_BRDR	Flag used to identify those nodes (intersections) that are responded to by more than one law boundary.	1 = More than one boundary. Null = Only one boundary.
EMS_BRDR	Flag used to identify those nodes (intersections) that are responded to by more than one EMS boundary.	1 = More than one boundary. Null = Only one boundary.
AC_BRDR	Flag used to identify those nodes (intersections) that are responded to by more than one animal control boundary.	1 = More than one boundary. Null = Only one boundary.
TOW_BRDR	Flag used to identify those nodes (intersections) that are responded to by more than one towing boundary.	1 = More than one boundary. Null = Only one boundary.

CLEMIS Line File (Road Centerline / Address Ranges):

The line file represents road centerline / address ranges and their appropriate public service boundary codes. Outside of the format and definition of the road name field, specific column definitions (width, type, etc.) can be found in the AAT. To support CLEMIS implementation and the requirements set forth in the GeoFile Build Requirements, individual road name components have been concatenated into a thirty (30) character NAME field.

Item	Description	Item Codes
<i>SHAPE</i>	The type of spatial feature represented in the shape file.	Polyline
ID	Unique identifier assigned to each arc in the shape file.	
F_ID	The unique identifier that corresponds to the FNODE#.	
T_ID	The unique identifier that corresponds to the TNODE#.	
L_LADD	Lowest address range on left side of the arc.	
L_HADD	Highest address range on left side of the arc.	
R_LADD	Lowest address range on right side of the arc.	
R_HADD	Highest address range on right side of the arc.	
NAME	The concatenated road name derived from PRE_DIR, NAME, SUFFIX and POST_DIR.	
L_CITY_ID	CLEMIS municipal code on left side of the arc.	Refer to master list maintained by CLEMIS Team.
R_CITY_ID	CLEMIS municipal code on right side of the arc.	Refer to master list maintained by CLEMIS Team.
L_FIRE_ID	The unique identifier assigned to each public service fire boundary on left side of the arc.	Refer to master list maintained by CLEMIS Team.
R_FIRE_ID	The unique identifier assigned to each public service fire boundary on right side of the arc.	Refer to master list maintained by CLEMIS Team.
L_LAW_ID	The unique identifier assigned to each public service law enforcement boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
R_LAW_ID	The unique identifier assigned to each public service law enforcement boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
L_EMS_ID	The unique identifier assigned to each public service EMS boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
R_EMS_ID	The unique identifier assigned to each public service EMS boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
L_AC_ID	The unique identifier assigned to each public service animal control boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
R_AC_ID	The unique identifier assigned to each public service animal control boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
L_TOW_ID	The unique identifier assigned to each public service towing boundary on the left side of the arc.	Refer to master list maintained by CLEMIS Team.
R_TOW_ID	The unique identifier assigned to each public service towing boundary on the right side of the arc.	Refer to master list maintained by CLEMIS Team.
ROAD_CODE	A one letter indicator of the level of government ownership of the roadway.	F – Federal S – State C – County L – Local P – Private O – Other U – Unknown
RESPONSE	An identifier that corresponds to the “classification” code in the CAD system.	Refer to CLEMIS CAD configuration.
MESSAGE	An identifier that allows the CAD dispatcher to assign a special response message to the road centerline.	Refer to CLEMIS CAD configuration.

