



# ***2006 GIS-T Symposium Columbus Ohio***

## ***Ohio's New Approach to the FHWA Functional Re-classification Process, an Enterprise Solution.***

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# *Introduction*

**This presentation will address the process that was used to update Ohio's Federal Aid Functional Classification System (FC), systems developed to manage and disseminate it and its ongoing maintenance:**

- @Development of a modified Transportation Urban Area Boundary**
- @Urban boundary review by Ohio Transportation Stakeholders**
- @FHWA boundary approval**
- @Development of programs to adjust roadways affected by boundary adjustments**
- @FC modification and review process.**
- @Development of GIS based County and Urban FC Maps**
- @FHWA approval process**
- @Ongoing system maintenance**



## *Development of a Modified Transportation Urban Area Boundary*

- ④ Established a criteria that included all areas within Ohio's 1990 Federal Highway Administration (FHWA) Adjusted Urban Area Boundary, the 2000 US Census Urban Area Boundary and Corporation Boundaries that were contiguous or inclusive of either Urban Area Boundary.
- ④ GIS maps of these new boundaries were developed and reviewed/modified by state and local transportation officials for inclusion of major transportation facilities.



## *Federal Highway Administration (FHWA) Adjusted Urban Area Boundary Approval*

- ④ Final Adjusted FHWA GIS-based maps were created and submitted to FHWA for approval.
- ④ Approval was received in the summer of 2003.



# *Adjusted Roadways to new FHWA Urban Area Boundaries*

- Developed formulas to convert FC codes where the urban areas expanded or contracted.

Rural to Urban

01=11

02=14 (12, if Interstate look-a-like)

06=16

07=17

08=17

09=19

Urban to Rural

11=01

12=02

14=02

16=06

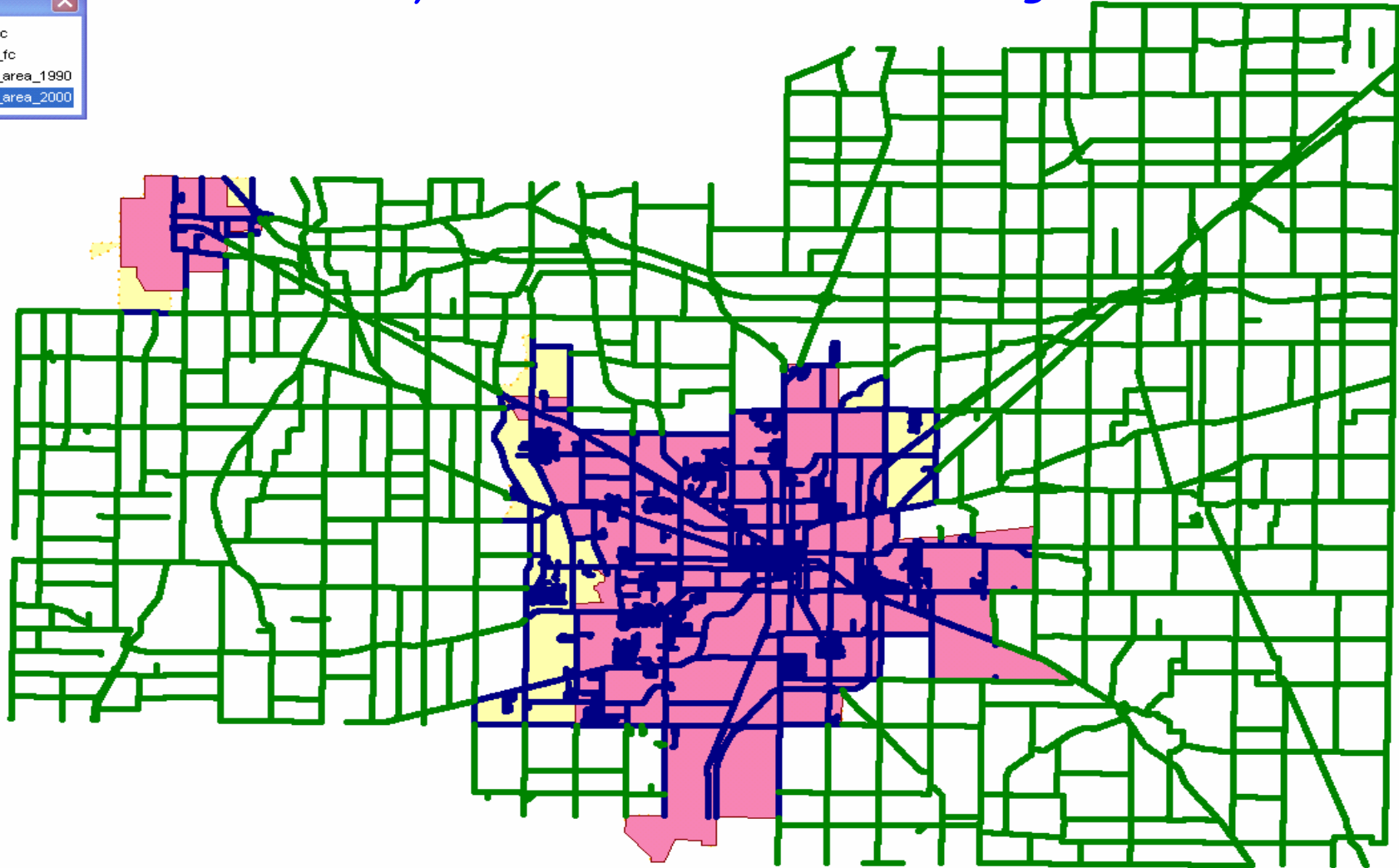
17=07

19=09

- GIS maps and road inventory lists were sent to Ohio's various transportation stakeholders for review and comment.



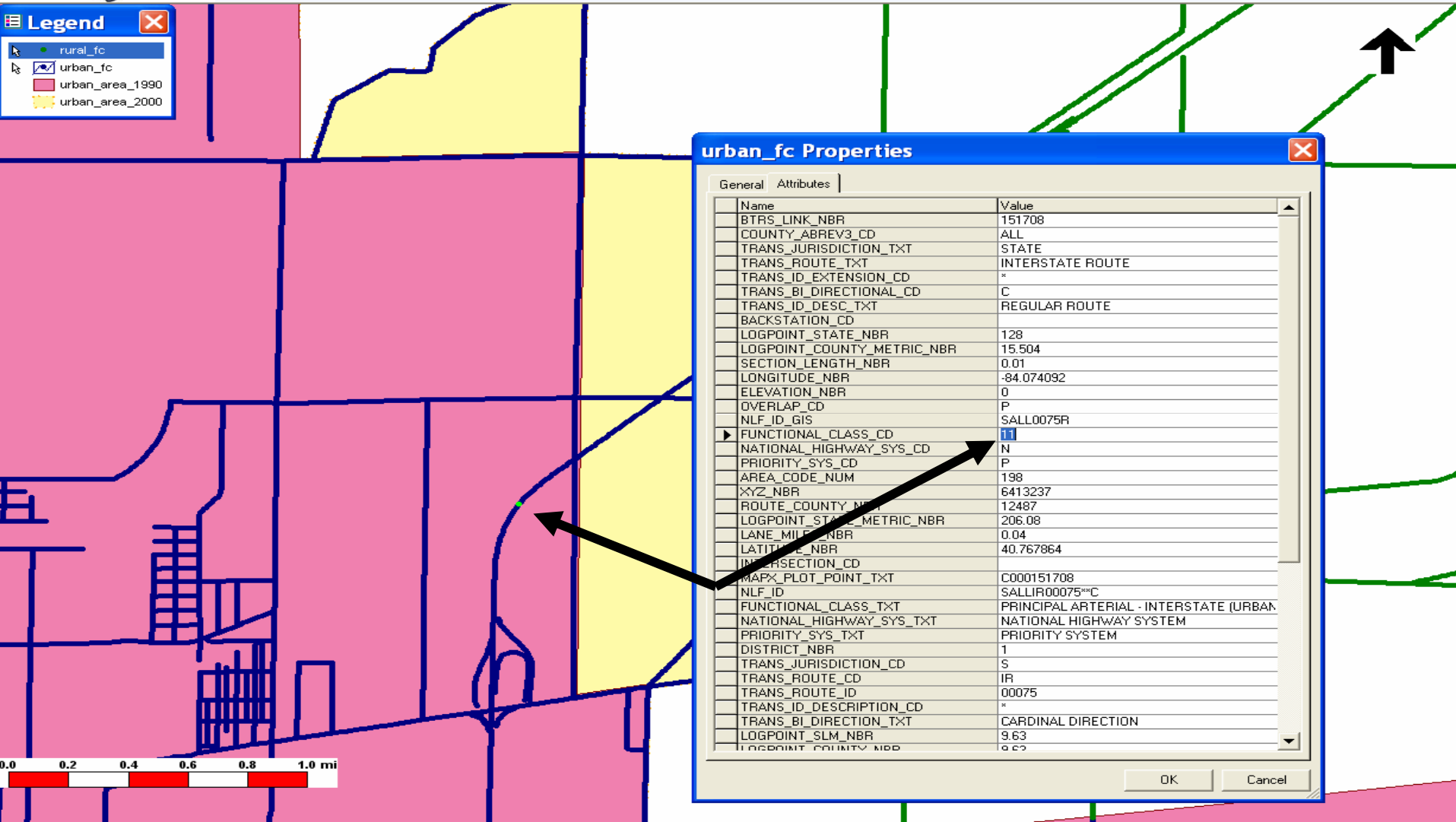
*The areas shaded pink are the 1990 Urban Boundary.  
The areas shaded yellow are the 2000 expanded areas.  
Spatial analysis was used to derive where  
roadway FC codes needed to be changed.*





*FC system codes in the pink shaded area are correct, i.e. nothing changed.*

A legend window with a close button (X) in the top right. It lists four layers: rural\_fc (green dot), urban\_fc (blue square), urban\_area\_1990 (pink square), and urban\_area\_2000 (yellow square).

A dialog box titled "urban\_fc Properties" with a close button (X) in the top right. It has two tabs: "General" and "Attributes". The "Attributes" tab is active, showing a table of attributes and their values. A black arrow points from the pink shaded area on the map to the "FUNCTIONAL\_CLASS\_CD" attribute in the table.

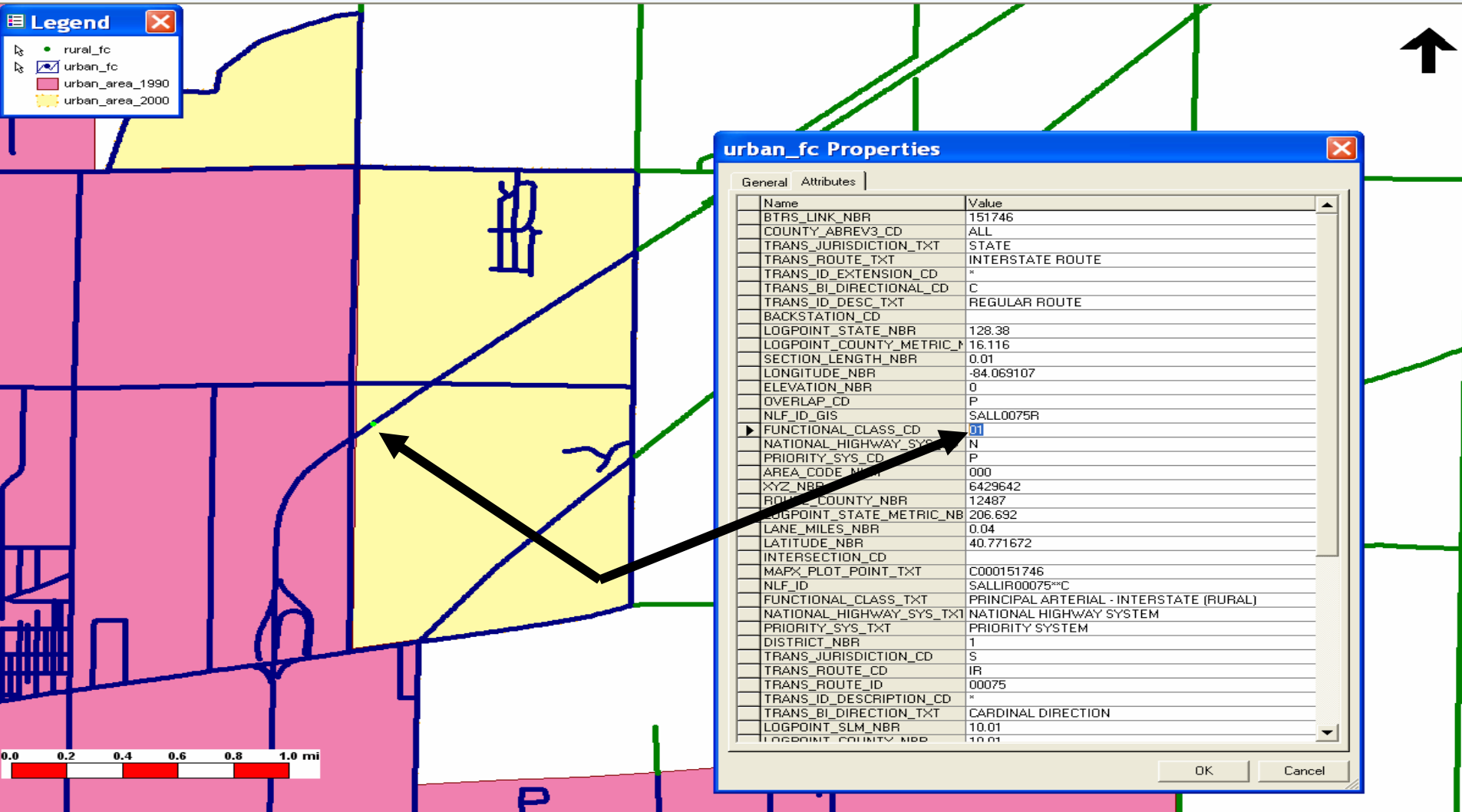
Name	Value
BTRS_LINK_NBR	151708
COUNTY_ABBREV3_CD	ALL
TRANS_JURISDICTION_TXT	STATE
TRANS_ROUTE_TXT	INTERSTATE ROUTE
TRANS_ID_EXTENSION_CD	*
TRANS_BI_DIRECTIONAL_CD	C
TRANS_ID_DESC_TXT	REGULAR ROUTE
BACKSTATION_CD	
LOGPOINT_STATE_NBR	128
LOGPOINT_COUNTY_METRIC_NBR	15.504
SECTION_LENGTH_NBR	0.01
LONGITUDE_NBR	-84.074092
ELEVATION_NBR	0
OVERLAP_CD	P
NLF_ID_GIS	SALL0075R
FUNCTIONAL_CLASS_CD	11
NATIONAL_HIGHWAY_SYS_CD	N
PRIORITY_SYS_CD	P
AREA_CODE_NUM	198
XYZ_NBR	6413237
ROUTE_COUNTY_NBR	12487
LOGPOINT_STATE_METRIC_NBR	206.08
LANE_MILE_NBR	0.04
LATITUDE_NBR	40.767864
INTERSECTION_CD	
MAPX_PLOT_POINT_TXT	C000151708
NLF_ID	SALLIR00075**C
FUNCTIONAL_CLASS_TXT	PRINCIPAL ARTERIAL - INTERSTATE (URBAN
NATIONAL_HIGHWAY_SYS_TXT	NATIONAL HIGHWAY SYSTEM
PRIORITY_SYS_TXT	PRIORITY SYSTEM
DISTRICT_NBR	1
TRANS_JURISDICTION_CD	S
TRANS_ROUTE_CD	IR
TRANS_ROUTE_ID	00075
TRANS_ID_DESCRIPTION_CD	*
TRANS_BI_DIRECTION_TXT	CARDINAL DIRECTION
LOGPOINT_SLM_NBR	9.63
LOGPOINT_COUNTY_NBR	9.63



Here is an example of a rural functional class code in the urban feature class which was established using a spatial intersection of enterprise log point information and the 2000 urban boundaries.

**Legend**

- rural\_fc
- urban\_fc
- urban\_area\_1990
- urban\_area\_2000



**urban\_fc Properties**

General Attributes

Name	Value
BTRS_LINK_NBR	151746
COUNTY_ABBREV3_CD	ALL
TRANS_JURISDICTION_TXT	STATE
TRANS_ROUTE_TXT	INTERSTATE ROUTE
TRANS_ID_EXTENSION_CD	*
TRANS_BI_DIRECTIONAL_CD	C
TRANS_ID_DESC_TXT	REGULAR ROUTE
BACKSTATION_CD	
LOGPOINT_STATE_NBR	128.38
LOGPOINT_COUNTY_METRIC_M	16.116
SECTION_LENGTH_NBR	0.01
LONGITUDE_NBR	-84.069107
ELEVATION_NBR	0
OVERLAP_CD	P
NLF_ID_GIS	SALL0075R
FUNCTIONAL_CLASS_CD	01
NATIONAL_HIGHWAY_SYS_CD	N
PRIORITY_SYS_CD	P
AREA_CODE_MTR	000
XYZ_NBR	6429642
ROUTE_COUNTY_NBR	12487
LOGPOINT_STATE_METRIC_NBR	206.692
LANE_MILES_NBR	0.04
LATITUDE_NBR	40.771672
INTERSECTION_CD	
MAPX_PLOT_POINT_TXT	C000151746
NLF_ID	SALLIR00075**C
FUNCTIONAL_CLASS_TXT	PRINCIPAL ARTERIAL - INTERSTATE (RURAL)
NATIONAL_HIGHWAY_SYS_TXT1	NATIONAL HIGHWAY SYSTEM
PRIORITY_SYS_TXT	PRIORITY SYSTEM
DISTRICT_NBR	1
TRANS_JURISDICTION_CD	S
TRANS_ROUTE_CD	IR
TRANS_ROUTE_ID	00075
TRANS_ID_DESCRIPTION_CD	*
TRANS_BI_DIRECTION_TXT	CARDINAL DIRECTION
LOGPOINT_SLM_NBR	10.01
LOGPOINT_COUNTY_MBR	10.01

OK Cancel

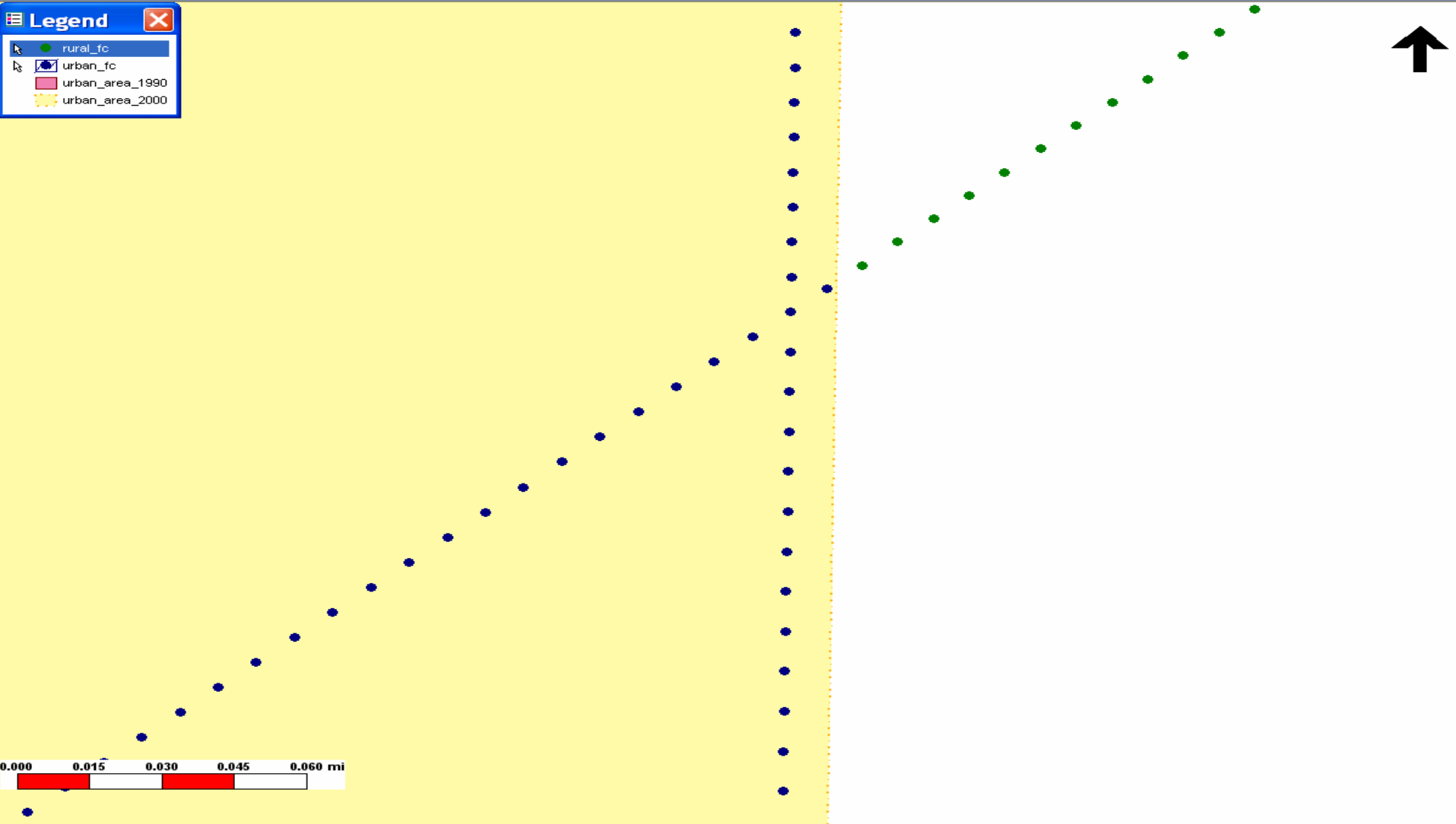




*The new 2000 Urban Area Boundaries were digitized to include or exclude specific transportation facilities.*

**Legend** ✕

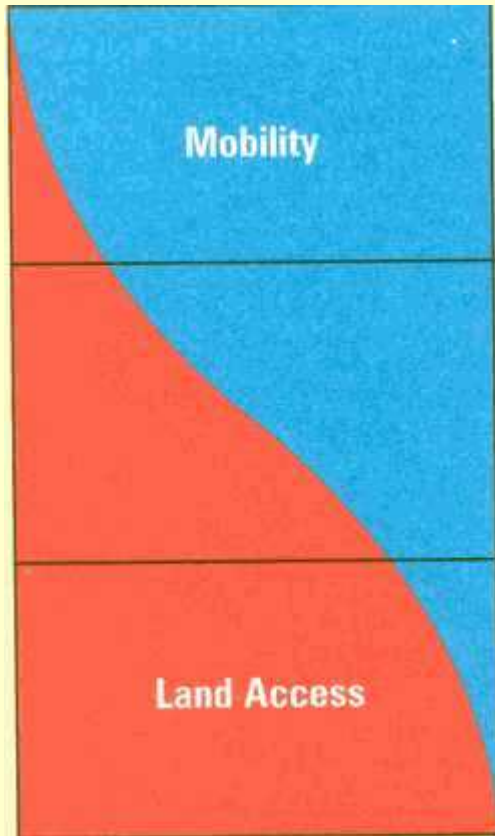
- rural\_fc
- urban\_fc
- urban\_area\_1990
- urban\_area\_2000





## *Functional Classification Review and Modification Process*

- ④ Transportation stakeholders sent in comments and proposed changes.
- ④ Utilizing GIS and database tools, ODOT's Functional Class Committee reviewed the comments and accepted them or rejected them based on FHWA guidelines.
- ④ Eliminated all FC changes that were arbitrary in nature or based on political boundaries.
- ④ The Functional Classification System (inventory based) for Ohio was approved in June, 2004.



## Arterials

- higher mobility
- low degree of access

## Collectors

- balance between mobility and access

## Locals

- lower mobility
- high degree of access



## *Developed Cartographic Quality Official Functional Classification Maps for FHWA submittal and approval*

- ④ Software was purchased (Label-EZ by MapText Inc.). Utilizing ODOT's GIS, cartographic electronic maps were created and published in PDF format on a new Functional Classification Website.
- ④ 160 Urban maps representing 100 Urban Areas and 88 County maps were produced.
- ④ Maps were submitted to FHWA for final approval in the Autumn of 2004 and ODOT received final approval in June of 2005.



## ODOT's Functional Classification Website

<http://www.dot.state.oh.us/planning/functional%20class/FunctionalClassmaps.htm>

The Ohio Department of Transportation  
Urban and Corridor Planning

# Functional Classification Maps

## Functional Classification Maps

The Functional Classification Maps were produced by the Office of Technical Services, GIS / Mapping Section, utilizing functional classification information stored in ODOT Road Inventory files. All classifications were established by the ODOT Functional Classification Committee in conjunction with ODOT District Offices and various local government entities.

The members of ODOT's Functional Classification Committee are: [Joseph Hausman](#), [William Ramsey](#), [Bill Rogers](#), all from ODOT, Office of Technical Services, and [Jery Wortman](#), ODOT, Office of Urban and Corridor Planning.

All Functional Classification correspondence should be directed to Jery Wortman for full committee consideration. Please review the [Functional Classification change Policies and Procedures](#) (beginning on Page 6) prior to contacting Jery Wortman.)

Further details regarding the [Concepts](#) and [Definitions](#) of the [Functional Classification Systems](#) are also available.

Rural Classification Maps (select from [Rural Classification Maps](#) (select from List) State Map

Adams	▲
Allen	▲
Ashland	▲
Ashtabula	▲
Athens	▲
Auglaize	▼

### The Rural System

[Rural Principal Arterial Syst](#)  
[Rural Minor Arterial System](#)

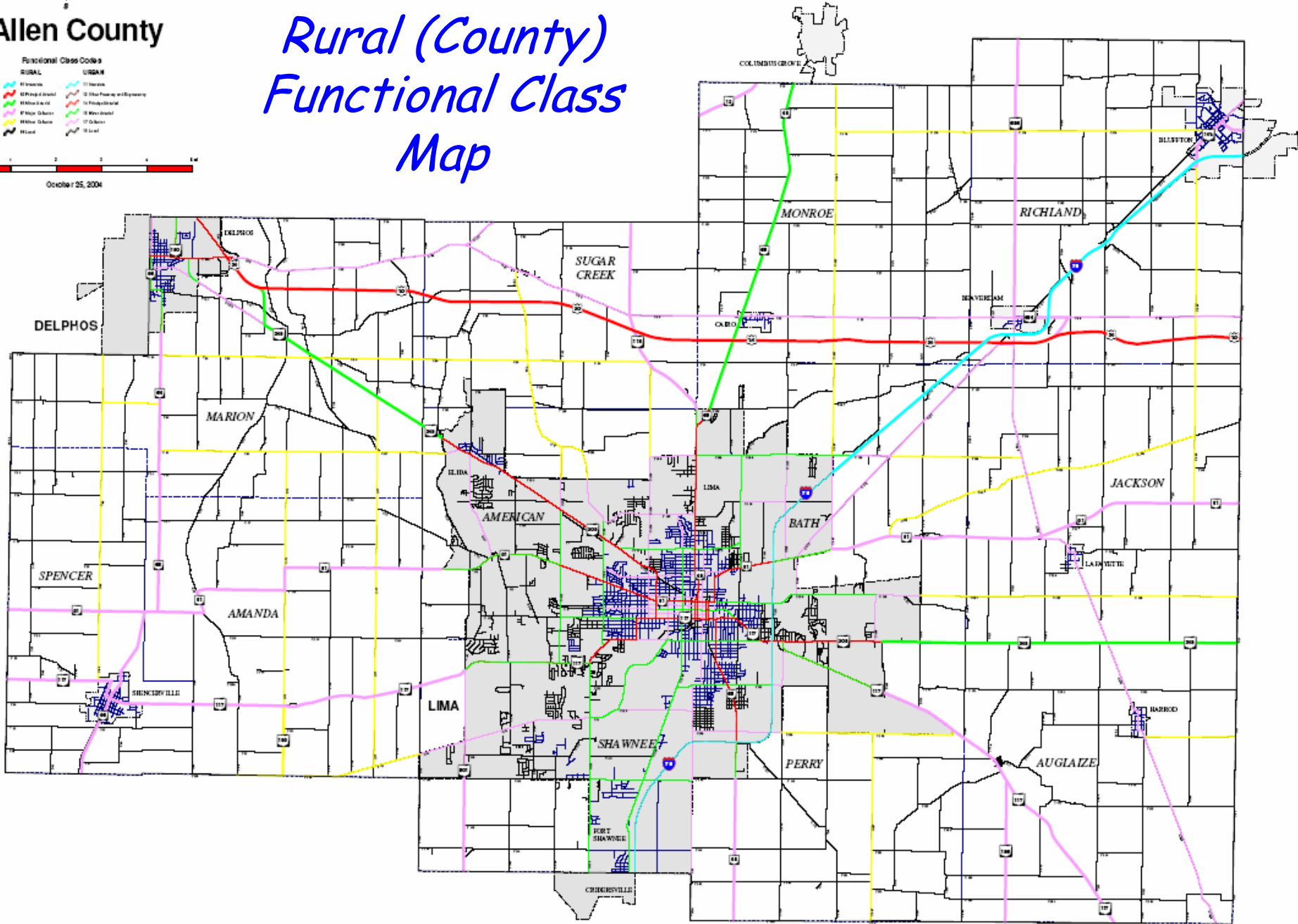


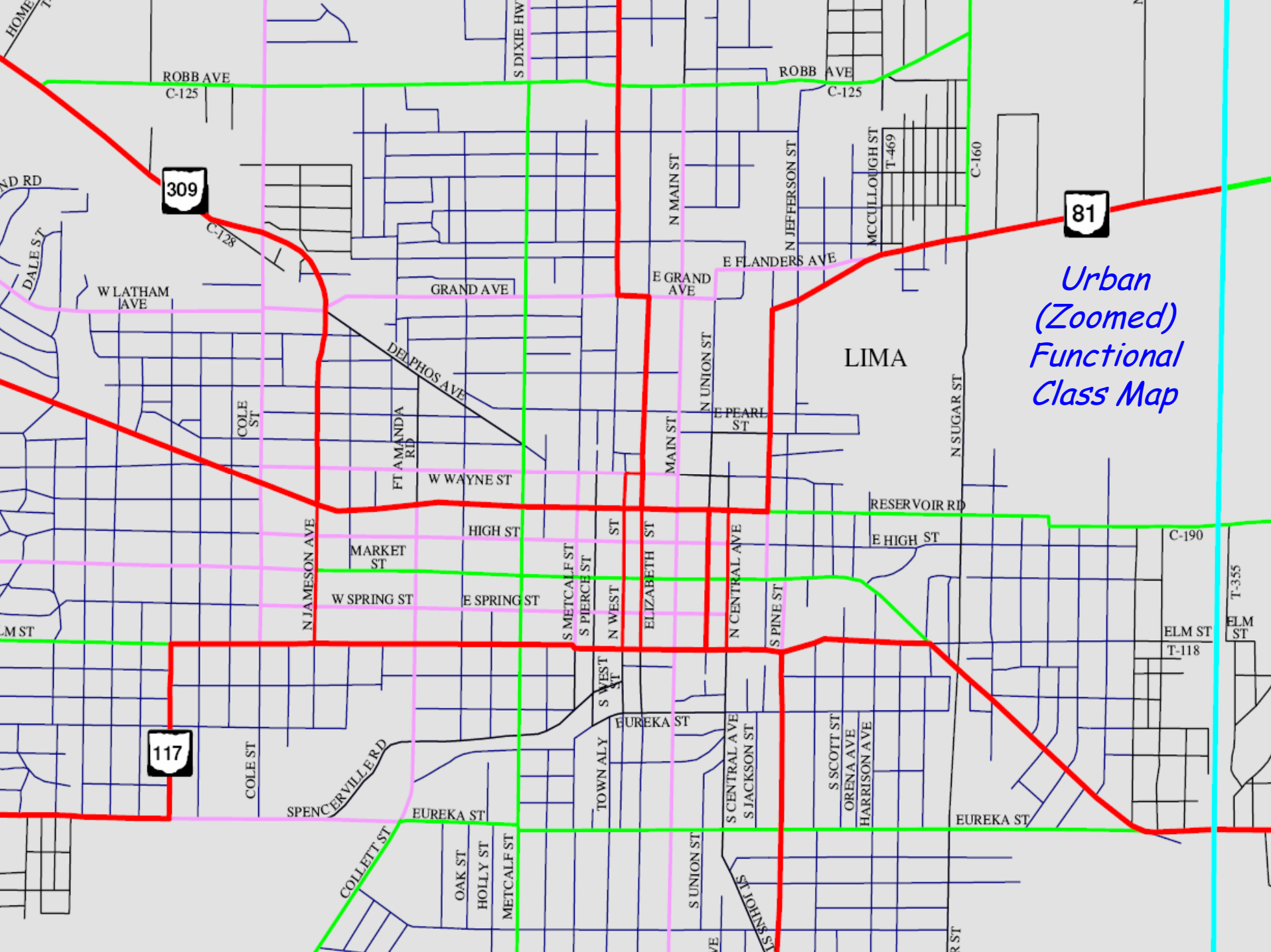
# Allen County

## Rural (County) Functional Class Map

Functional Class Codes

RURAL	URBAN
11 Intersect	11 Intersect
12 Highways and Bridges	12 Highways and Bridges
13 Major Arterial	13 Major Arterial
14 Minor Arterial	14 Minor Arterial
15 Local	15 Local





*Urban  
(Zoomed)  
Functional  
Class Map*



# Webmap Functional Classification Maps

GISWebMap - Microsoft Internet Explorer

Address: <http://tscww012/giswebmap/startGis.asp?majorbus=Road%20Inventory&sectionarray=Road%20Inventory,Traffic%20Data,Congestion%20Data,Crash%20Data>

GIS Subjects: Road Inventory | Home | Help | Exit

Quick Thematic Query

Quick Maps for Road Inventory Feature

Functional\_Class\_2004 Go

Select Rural Or Urban area from the pull-down list and hit "Go" to proceed.

Rural Classification Maps

ALLEN Go

Urban Classification Maps

ADA Go

LegendWindow...

Print Legend

Hide/Show all Queries

Hide / Show	Feature Symbol	Feature Name
<input checked="" type="checkbox"/>		State Rural Interstate Functional_class_01-- [597]
<input checked="" type="checkbox"/>		State Rural Princip Arterial Functional_class_02-- [2126]
<input checked="" type="checkbox"/>		State Rural Minor Arterial Functional_class_06-- [3122]
<input checked="" type="checkbox"/>		County Rural Minor Arterial

Ohio Department of Transportation





## *System Maintenance and Revisions*

- Ⓢ ODOT is continually updating its Road Inventory System. FC changes can take place as system revisions occur.
- Ⓢ Change requests from Transportation Stakeholders will be reviewed and accepted if proper FC guidelines are followed



## *Functional Classification Revision Justification*

- ⓐ Decennial Update
- ⓐ Changes in functionality due to changes in traffic volume, pattern or mix caused by:
  - Changes in adjacent land use
  - New traffic generators
- ⓐ New roadway construction, realignment or relocation due to planned or proposed development.
  - Evidence of commitment to build development within 6 years
- ⓐ **Functional classification changes are not allowed simply to obtain federal funding eligibility.**



# *Functional Classification Revision Process*

- ④ Metropolitan Planning Organization (MPO) Planning Area
  - Revision initiated by MPO if within urbanized area
  - Revisions to local, township and county roads initiated by local officials in coordination with MPO if within MPO planning area but outside urbanized area.
  - Revisions to state and federal highways initiated by ODOT in coordination with MPO if within MPO planning area boundary but outside urbanized area.



# *Functional Classification Revision Process*

## © Rural Areas

- Revisions initiated by local officials for local, township and county roads
- Revisions initiated by ODOT for state and federal highways



## *Functional Classification Revision Process*

- ② All requests submitted to ODOT district office
- ② District office reviews, recommends and forwards to ODOT central office
- ② Reviewed by ODOT central office Functional Classification Committee. Approvals forwarded to FHWA for concurrence
- ② ODOT notifies local officials of decision, following FHWA concurrence



## *Functional Classification Revision Requirements*

- ④ Statement of justification – evidence of change in actual function of a road
- ④ Functional Classification Revision Form
- ④ System Map marked with proposed changes
- ④ Approval letters and Recommendations
  - From MPO if within MPO jurisdiction
  - From local officials outside MPO jurisdiction
- ④ County Commissioners or County Engineer for township and county roads
- ④ Mayor or City Council for municipal streets in areas > 5,000 pop.



## *Conclusion and Important Web Sites*

- ④ **ODOT Functional Classification Committee meets as necessary**
- ④ **Functional Classification will be reviewed and accepted/rejected based on meeting FC criteria**
- ④ **ODOT's Functional Classification Website:**  
**<http://www.dot.state.oh.us/planning/file%20directory/FunctionalClass.htm>**
- ④ **ODOT's Road Inventory Website:**  
**<http://www.dot.state.oh.us/techservsite/offceorg/roadwayinfo/roadwayinfo.htm>**