

Think Quality - Think Future

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TO: Blount County Planning Commission

FROM: John Lamb

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SUBJECT: Road Classifications – Arterial, Collector and Local Roads in relation to the Major Road Plan.

At the last workshop, some on the Planning Commission asked for definition of the terms arterial road, collector road, and local road in relation to planning for the road network in the County. Such definitions follow from consideration of the function and classification of such roads in a network. The Federal Highway Administration (FHWA) has a set of guidelines for functional classification at <http://www.fhwa.dot.gov/planning/fctoc.htm>. The following discussion summarizes from that document.

Functional Road Classifications. A road network serves dual purposes: providing access to property, and providing routes for traffic, or mobility to and from places. Places range from individual properties, to larger centers of activity, all of which generate traffic. The larger centers of activity may be cities, with large populations, dense pattern of properties, and heavy generators of traffic such as commercial and industrial uses. Places also may include recreation areas and schools which generate substantial traffic independent of urban centers.

Roads are classified based on relative importance of function in providing access, and accommodating traffic or mobility. At the lowest level of local roads, the function is mainly provision of access to property, which in turn becomes the lowest level of place. Traffic is generated from a desire to get from one place (property) to another often higher order place (such as a business in a town center). A local road provides first order function in providing a route from original place

(property), but usually does not provide a direct route to destination, with traffic needing to connect through higher level roads toward final destination.

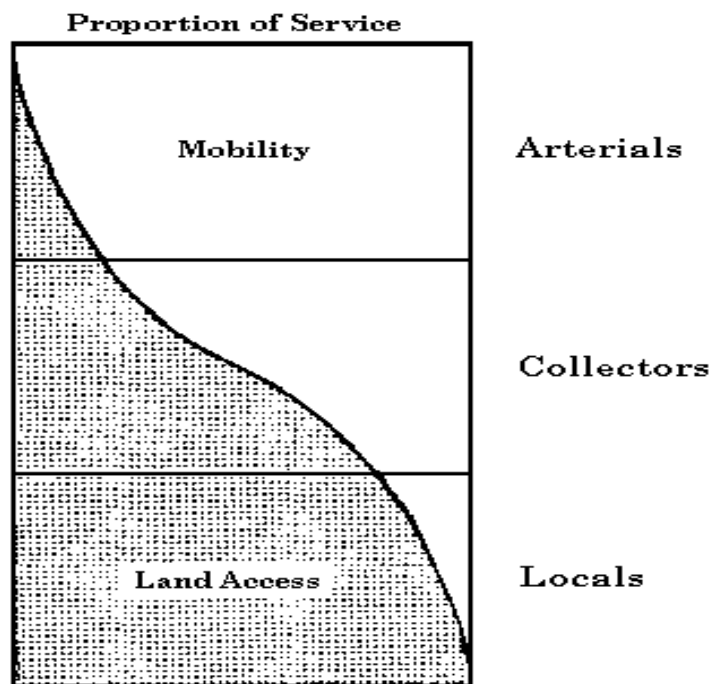
Higher level roads provide mobility, or routes for accumulated traffic to go efficiently from place to place, but can also provide access to property along the way. Collector roads provide access and mobility functions on a roughly balanced basis. In other words, collector roads provide access to adjoining properties, but also accumulate and carry traffic from lower level local roads and properties to higher level roads and places.

Arterial roads have the main functions of accumulating traffic from lower level roads, and carrying large amounts of traffic to and through large centers of activity such as cities. Arterial roads may also provide access to adjoining properties, but the access function is secondary and may be restricted to accommodate the main function of mobility or traffic conveyance.

The relationship between road classification and relative function of access and mobility is shown graphically below for the three classifications of roads (copied from FHWA “Functional Classification Guidelines”, Section 2).

Figure II-4

**Relationship of functionally Classified Systems
in Serving Traffic Mobility and Land Access**



The division lines are not precise between the three levels of functional classification, and the classifications may be further divided based on relative importance of access and mobility. Note that the collector classification ranges from majority land access function to majority mobility function. This classification is often split into minor collector which has more access function, and major collector which has more mobility function. In similar fashion, the arterial classification has a lower level providing substantial access function, often sub-classified as minor arterial, and the upper level having little or no access function, often sub-classified as principal or major arterial. The difference between major and minor may also include consideration of traffic intensity. The major arterial classification includes roads that have limitation on access to protect the main function of mobility or moving traffic efficiently, such as interstates and freeways.

The application of the classifications is different in rural and urban areas. Urban areas have the dual character of place destinations in a larger road network, and also provide access and mobility on an internal network of arterial, collector and local roads. Urban areas thus provide not only a network of access and mobility within the urban boundaries, but also a network connection into rural areas and connections to other major centers of activity.

Major Road Plan in Rural and Urban Areas. A major road plan should be part of a comprehensive plan for a County, along with addressing broader issues of transportation. A major road plan is also required in order to adopt and administer subdivision regulations according to TCA 13-3-202(a)(1) as follows:

From and after the time when the regional planning commission of any region ... has adopted a regional plan which includes at least a major road plan or has progressed in its planning to the state of the making and adoption of a major road plan, and has filed a certified copy of such major road plan in the office or offices of the county register ..., then no plat of a subdivision of land within such region, other than land located within the boundaries of any municipal corporation, shall be filed for record or recorded until it has been approved by such regional planning commission ...

The Blount County Planning Commission is the planning commission for the region outside the boundaries of all the municipalities in the County, and outside the planning regions of Alcoa and Maryville. Thus, the Blount County Planning Commission has prime responsibility for making, adopting and registering a Major

Road Plan for its region. The Major Road Plan last was adopted and registered in 1993 in Map File 1171A in the Register of Deeds Office.

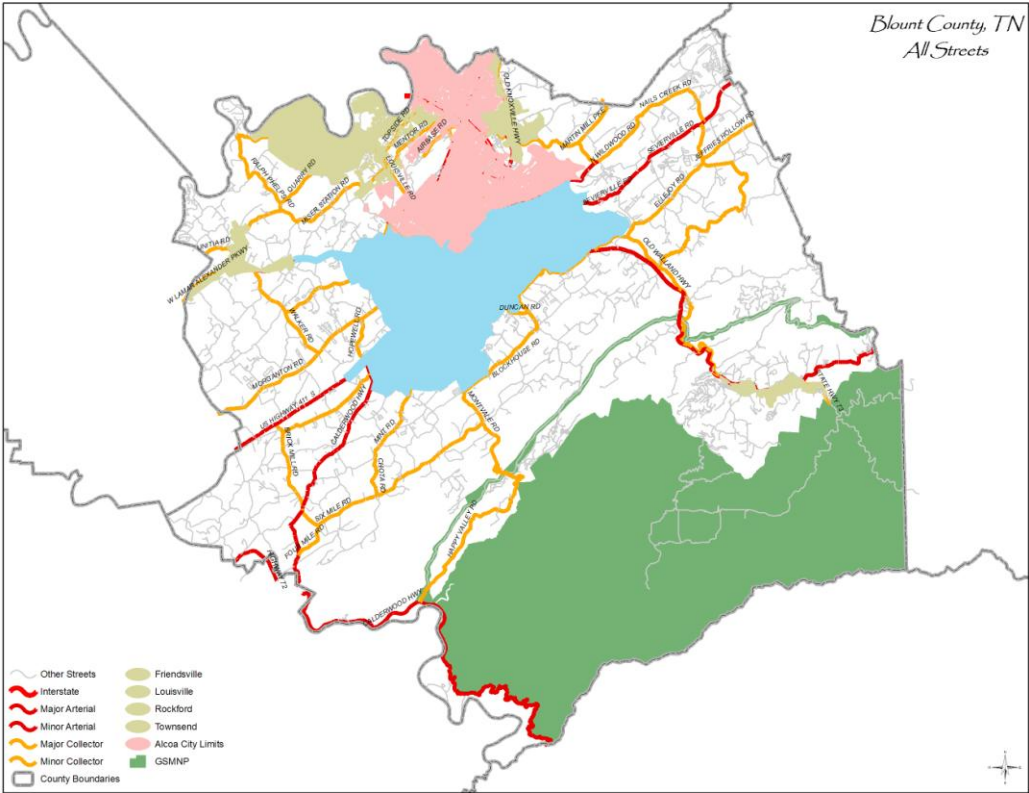
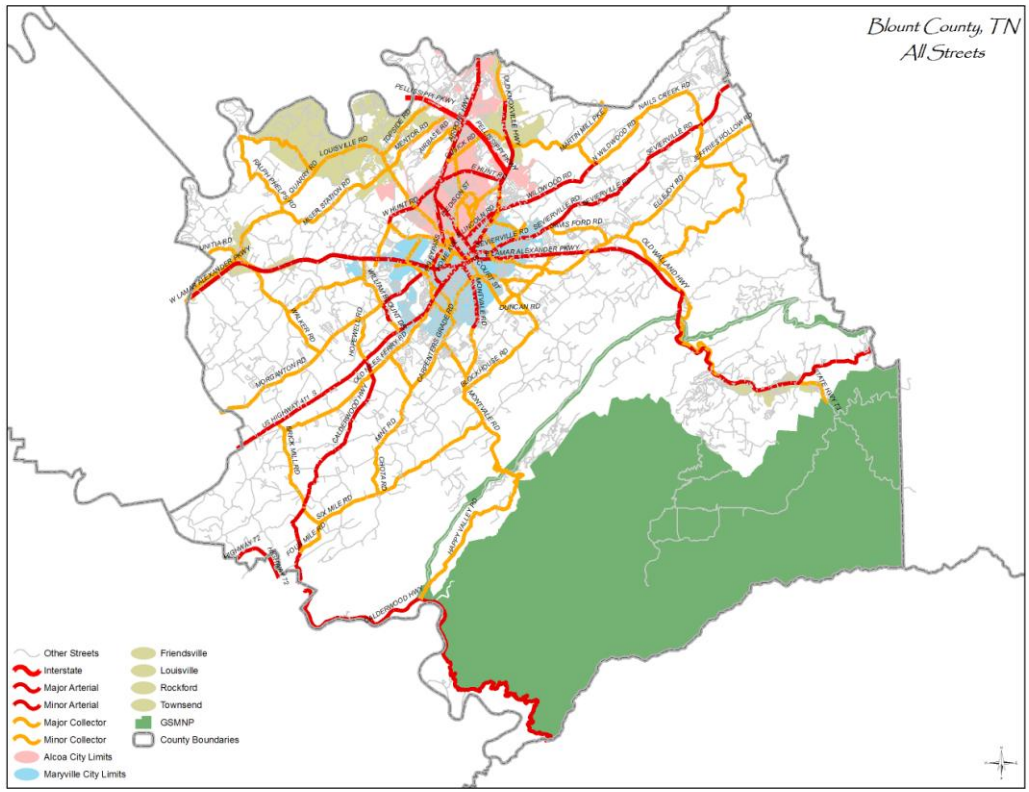
Since 1993, the boundaries of the Alcoa and Maryville planning regions have been changed to conform to the Urban Growth Boundaries (UGB) contained in the 1101 Growth Plan. The UGB of Alcoa and Maryville are roughly conforming to the urbanized area of the county as delineated by the US Census Bureau. Thus, the County planning region for purposes of the Major Road Plan consists of rural areas. However, this does not limit consideration of planning for the entire road network in the county, and good planning would indicate that consideration of plans for roads within the urban areas, both cities and city planning regions, is desirable for geographical continuity of plans for the entire network.

The Major Road Plans for the six cities in the County should be consulted for determining continuity. The registered Major Road Plans for the cities are the following by Map File and year of registration in the Register of Deeds Office:

Alcoa	Map File 1966A	2003
Friendsville	Map File 1405A	1998
Louisville	Map File 1822A	2002
Maryville	Map File 2300A	2006
Rockford	Map File 1691A	2001
Townsend	Map File 846B	1985

Application of Road Classification in Rural Areas. Areas outside the Cities and the city planning regions of Maryville and Alcoa will be the planning responsibility of the Blount County Planning Commission for the Major Road Plan. As an initial representation of the network responsibility of the Blount County Planning Commission, the maps on the following page present both the entire network of roads in the county, with prospective classifications, and those areas outside of city boundaries and city planning regions. Note that the second map shows the area of direct responsibility for the Blount County Planning Region.

The FHWA “Functional Classification Guidelines” provide guidance on how to apply road classifications in rural areas. A similar discussion is included in A Policy on Geometric Design of Highways and Streets (2001) by the American Association of State Highway and Transportation Officials, with linkage to design guidelines. For purposes of a Major Road Plan and comprehensive planning, specific design guidelines usually are not relevant.



For Arterial Roads - the following is provided by FHWA:

The *rural principal arterial* system consists of a connected rural network of continuous routes having the following characteristics:

1. Serve corridor movements having trip length and travel density characteristics indicative of substantial statewide or interstate travel.
2. Serve all, or virtually all, urban areas of 50,000 and over population and a large majority of those with population of 25,000 and over.
3. Provide an integrated network without stub connections except where unusual geographic or traffic flow conditions dictate otherwise (e.g., international boundary connections and connections to coastal cities).

The *rural minor arterial* road system should, in conjunction with the principal arterial system, form a rural network having the following characteristics:

1. Link cities and larger towns (and other traffic generators, such as major resort areas, that are capable of attracting travel over similarly long distances) and form an integrated network providing interstate and intercounty service.
2. Be spaced at such intervals, consistent with population density, so that all developed areas of the State are within a reasonable distance of an arterial highway.
3. Provide (because of the two characteristics defined immediately above) service to corridors with trip lengths and travel density greater than those predominantly served by rural collector or local systems. Minor arterials therefore constitute routes whose design should be expected to provide for relatively high overall travel speeds, with minimum interference to-through movement.

For Collector Roads – the following is provided by FHWA:

The rural collector routes generally serve travel of primarily intracounty rather than statewide importance and constitute those routes on which (regardless of traffic volume) predominant travel distances are shorter than on arterial routes. Consequently, more moderate speeds may be typical, on the average.

In order to define more clearly the characteristics of rural collectors, this system should be subclassified according to the following criteria:

Major collector roads.--These routes should: (1) Provide service to any county seat not on an arterial route, to the larger towns not directly served by the higher systems, and to other traffic generators of equivalent intracounty importance, such as consolidated schools, shipping points, county parks, important mining and agricultural areas, etc. ; (2) link these places with nearby larger towns or cities, or with routes of higher classification; and (3) serve the more important intracounty travel corridors.

Minor collector roads.--These routes should: (1) Be spaced at intervals, consistent with population density, to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road; (2) provide service to the remaining smaller communities; and (3) link the locally important traffic generators with their rural hinterland.

For Local Roads – the following is provided by FHWA:

The *rural local road* system should have the following characteristics: (1) Serve primarily to provide access to adjacent land; and (2) provide service to travel over relatively short distances as compared to collectors or other higher systems. Local roads will, of course, constitute the rural mileage not classified as part of the principal arterial, minor arterial, or collector systems.

Other Considerations. One of the purposes of functional road classification is to assist planning, such as in a Major Road Plan, and also to systematize administration and allocation of resources among different jurisdictions and types of roads, such as State aid to rural road systems. These two purposes are not necessarily congruent. The 1993 Major Road Plan shows evidence that the routes indicated as arterial and collector were also those roads that could avail of State revenues for maintenance and improvement. While this is not necessarily the overriding criteria for road classification in network planning, it is important from a practical standpoint in order to present a coordinated set of referenced roads between the local government and the Tennessee Department of Transportation (TDOT).

The Knoxville regional Transportation Organization is presently reviewing functional road classifications in local jurisdictions, including Blount County, for purpose of providing a unified and coordinated list of roads for consideration by TDOT. The TPO staff found that roads classified as collector may be

overrepresented in the region. This is in part based on a percentage benchmark for the different road types in rural areas, as follows from FHWA:

Table II-2 -- Guidelines on extent of rural functional systems

System	Range (percent)	
	VMT	Miles
Principal arterial system	30-55	2-4
Principal arterial plus minor arterial road system	45-75	6-12*
Collector road system	20-35	20-25
Local road system	5-20	65-75

* With most states falling in the 7-10 percent range.

The above table can be read as follows: for the principal arterial plus minor arterial road system in the County, you would expect that 45 % to 75 % of overall miles traveled would occur on about 6 % to 12 % of the road miles in the network. In similar fashion, collector roads would be expected to carry from 20 % to 35 % or overall miles traveled on 20 % to 25 % of the road network, and for local roads 5 % to 20 % of the miles traveled would be expected to occur on 65 % to 75 % of the road network. This stands to reason when you consider that the majority of the road network must provide access to individual properties on local roads with light traffic, and that traffic is accumulated and channeled into higher order collector and arterial roads.

The practical implication of this is that our Major Road Plan needs to be reasonably constrained in classifying higher level roads, particularly collector roads. Some roads that may seem to be classifiable as collector may only need to be classified as local roads.

In addition to the planning and resource allocation purposes, the roads classified in the Major Road Plan are also used in setting standards in both our Subdivision Regulations and Zoning Regulations. In Subdivision Regulations, higher level roads fronting proposed subdivision are required to have greater right-of-way dedicated than local roads. In Zoning Regulations, allowance for commercial special exception is often limited to collector or arterial roads. The Commission thus should be aware that over-classification of higher level roads may have consequences in administering land development and land use in the County.