CHAPTER SIX– MAJOR THOROUGHFARE PLAN

MAJOR THOROUGHFARE PLAN

In Grandview and the Kansas City Metropolitan Area, highways and roadways have become the main transportation mode for both people and freight. USH 71, Missouri Highway 150, and I-435 serve as the regional connections to the Grandview area. Grandview, like most American cities, experienced a substantial increase in the number of vehicle miles traveled over the past several decades. As a result, congestion has increased. In response, more and better roadways have been built. These roadways have generally provided incentives to continue Grandview's urbanization in such corridors as Blue Ridge, West Main Street, Arrington Road, Botts Road, and Byars Road.

The Major Thoroughfare Plan classifies public highways and roadways within the City based upon their function. The Plan also establishes access control standards and guidelines which set forth minimum distance separations between intersections and driveways along arterial and collector roads.

Individual roads and streets do not serve trips independently. Rather, most trips involve movement through a network of connected roadways. A highway and roadway functional classification system provides a method of planning for street improvements in a logical, efficient and orderly manner in conjunction with land development and/or redevelopment.

Roadway Classification System

The existing highways and roadways network is classified by function. Highways and roadways are classified according to the level of service they provide. The factors determining roadway classifications are:

- the level of through-traffic movement; and
- access to adjacent land or individual properties.

Roadways are not classified by the amount of traffic they carry. However, higher traffic volumes are usually consistent with upper level roadway classifications which are discussed below.

The functional classification for roadways uses a hierarchical structure to identify the operation of all roadways within a transportation system. The hierarchy of road types in ascending order is:

1. local roads;
2. collector roads;
3. arterial roads; and
4. expressways/freeways.

Lower level roadways, such as local or collector roads, provide more direct and frequent access to abutting property than do higher level roadways, such as arterial roadways or freeways.

Roadway classifications determine the design standards for construction of a roadway. The function of a roadway, traffic volume, and adjacent land use determine the type of roadway needed to support daily traffic activity. General roadway design standards have been developed by the American Association of State Highway Transportation Officials (AASHTO) as defined in "A Policy of Geometric Design and Highways and Streets". The ability to improve an existing roadway by constructing additional lanes or other improvements to AASHTO standards, however, may be constrained by the existing development. The AASHTO standards are summarized below for arterial, collector, and local roadways.

Local. Local roadways provide direct access to private property. The ideal traffic volume for local roadways is less than 1,500 vehicles per day. The recommended width for a local roadway is 28 feet and the recommended minimum right-of-way is 50 feet. If a local roadway is constructed without an enclosed storm water system, the right-of-way should be increased to 60 feet in width so that the open storm water drainage system will be located entirely within the right-of-way. On-street parking is usually permitted. However, in order to meet fire codes, which require a 20-foot path for equipment, parking should be limited to one side of the roadway.

Collector. Collector roadways are classified as two-lane collector roadways and three-lane collector roadways.

The two-lane collector roadway functions to collect traffic in residential neighborhoods. Because traffic volumes on two-lane collector roadways may range between 1,500 and 5,000 vehicles per day, residential properties abutting the collector road may not be as desirable as those abutting a local road. The road width should accommodate two 16-foot lanes and curb and gutter for a width of 36 feet. To accommodate sidewalks and street lighting, a right-of-way of 60 feet is needed. On-street parking and private access to the collector should be discouraged. If needed, parking should be allowed on one side only.

A three-lane collector roadway section is appropriate for collecting traffic in commercial land use areas, such as a business park or shopping center where traffic demand is expected to range between 1,500 and 12,000 vehicles per day. This road section includes two 12-foot through lanes, and can be widened by adding one 12-foot center left turn lane. The recommended road width for a three-lane collector including curb and gutter is 40 feet. Sidewalks should be provided on both sides. The right-of-way width to allow for the roadway, sidewalks and street lighting should be a minimum of 70 feet. On-street parking should be prohibited.

Arterial. Arterial roadways are appropriate for carrying traffic through land uses without being disrupted by properties fronting on the road or by cross streets. An arterial road section includes four 12-foot through lanes and should provide an additional left turn bay at all signalized intersections and any major intersections. A minimum road width of 52 feet and right-of-way width of 80 feet are recommended. Sidewalks should be provided on both sides. Only public roads should be allowed to access a four-lane arterial road and road spacing should be related to design speed as per a five or six lane roadway. The ideal range for traffic volume on a four-lane arterial roadway is between 12,000 and 25,000 vehicles per day.

Expressways/Freeways/Highways. Freeways, expressways and highways are primary arterial roadways which are fully or partially access controlled facilities. These routes are typically the highest traveled corridors, serve major activity centers and carry the major portion of trips entering or leaving the City.

City of Grandview Roadway Classifications

The roadway classifications described above are applicable to the major roadways within the City. These roadways are classified based on their function that corresponds with the description of the roadway classifications. **Table 22** classified all major roadways within the City using the AASHTO Standards as a guide. Roads that are not identified as either a "collector" road, "arterial" road or "expressway/freeway" are classified as local roads. As development occurs, other roadways need to be classified as either collector or arterial roadways.

The City of Grandview should implement its Major Thoroughfare Plan as new subdivision plats are considered. In order to provide a complete thoroughfare network, road improvements that should be addressed include the following:

- New arterial connection between Byars Road and Kelly Road in the area of 139th Street;
- Byars Road continuation south to County Line Road;
- North/south road extending south from Main Street to provide access to future residential development to the south of Robinson Pike Road;
- Arrington Road realignment;
- 140th Street Westerly extension from Botts Road to Arrington Road;
- New connection of 2nd and 3rd Streets near Duck Road; and
- Blue Ridge Boulevard underpass reconstruction.

Table 22: Major Roadway Classifications

Name of Roadway	Roadway Classification
71 Highway	Principal Arterial (Expressways and Freeways)
State Highway150	Other Principal Arterial
Raytown Road	Other Principal Arterial
Blue Ridge Blvd.	Minor Arterial
Harry Truman Drive	Minor Arterial
Main Street	Minor Arterial
Martha Truman Road	Minor Arterial
Highgrove Road	Minor Arterial
Bennington Ave. Extension	Collector
5th Street	Collector
15th Street	Collector
125th Street	Collector
129th Street	Collector
133rd Street	Collector
134th Ter.	Collector
135th Street	Collector
142nd Street	Collector
St. Andrews/ 143rd Street	Collector
Norby Road	Collector
La Quinta Dr.	Collector
Winchester Ave.	Collector
Manchester Ave.	Collector
Botts Road	Collector
Byars Road/Food Lane	Collector
Arrington Road	Collector
White Ave.	Collector
Bellaire Ave.	Collector
Spring Street	Collector
139th /140th Street	Collector
Grandview Road	Collector
East and West Frontage Roads	Collector

Intersection Spacing

Adequate distance between intersections enhances safe and efficient flow of traffic. Appropriately spaced intersections provide through-motorists an opportunity to respond to traffic entering the through street from a side street. **Table 23** provides the recommended minimum standards for spacing intersections, determined by through-traffic speed.

Table 23: Minimum Intersection Spacing Standards—Major Arterial Road

Through-Traffic Speed	Minimum Intersection Spacing
30 mph	210 feet
35 mph	300 feet
40 mph	420 feet
45+ mph	550 feet

Source: Institute of Transportation Engineers

Driveway Spacing—Access Control

Like a street, private driveways create an intersection with a public street. Conflicts and potential congestion occur at all intersections - public and private. Standards to reduce conflict include:

- Separating the conflicts by reducing the number of driveways and intersections;
- Limiting certain maneuvers such as left turns; and
- Separating conflicts by providing exclusive turn left turn and right turn lanes.

Access drives should not be located within the operations area of an intersection. Driver conflicts need to be spaced in order to eliminate overlaps between through traffic and right turns.

It is recommended that new driveway locations comply with the minimum corner clearance criteria indicated in **Figure 16**. Proper spacing of driveways provides space for adequate storage and stacking of automobiles on the public street. This distance may have to be increased on streets with high volumes to ensure that driveways do not interfere with the operation of turning lanes at intersections.

The number of driveways accessing undivided arterial roadways should be minimized. The standards in **Table 24** are based on AASHTO standards and the Institute of Transportation Engineers Manual.

MAJOR THOROUGHFARE PLAN MAP

Table 24: Suggested Maximum Driveway Guidelines

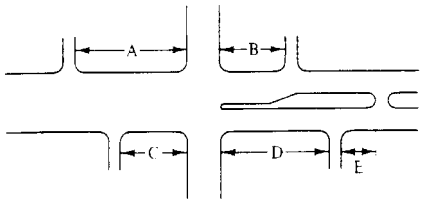
Maximum Number of Driveways	*Driveway Spacing*	
	Undivided Arterial Streets Length of Lot Frontage	Divided Arterial Streets Length of Lot Frontage
1	0-399 feet	0-529 feet
2	400 - 899 feet	530 - 1199 feet
3	900-1,399 feet	1200 - 1859 feet
4	1,400-1,899 feet [1]	1860 - 2525 feet [2]

Source: Institute of Transportation Engineers (ITE) Manual
Notes:
[1] For each 500 feet above 1899 feet, one additional driveway is permitted.
[2] For each 665 feet above 2525 feet, one additional driveway is permitted.

Corner Clearance

Minimum corner clearance guidelines are listed in **Figure 16**. These guidelines can be used to regulate new commercial developments located along arterial or collector streets.

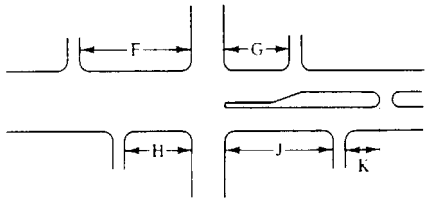
Figure 16: Corner Clearance Guidelines



Minimum Corner Clearances*

Item	Functional Classification of Road		
	Arterial	Collector	Local
A	230	175	50
B	115	85	50
C	230	175	50
D	230	175	50
E	75	0	0

(a) Signalized intersection control



Minimum Corner Clearances*

Item	Functional Classification of Road		
	Arterial	Collector	Local
F	115	75	50
G	115	85	50
H	85	85	50
J	115	75	50
K	75	0	0

(b) Non-signalized intersection control

West Frontage Road Enhancement Project

This enhancement project, scheduled for 2002-2003 construction, will limit driveway access to the west frontage road from E. 125th Street to Highgrove Road. The new driveway access limits will require the closing or narrowing of numerous existing driveways. In general, parcels will not be allowed a point of ingress/egress within 110 feet after an intersection and 220 feet in advance of a intersection street. Additionally, if a parcel has a point of access within 110 feet of another entrance on the frontage road, the point of access may have to be relocated. Specific requirements can be found in the Missouri Department of Transportation Access Management Manual.