Transportation Framework

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Introduction

Effective transportation systems are central to maintenance of the health, productivity, and safety of communities. The adequacy of a community's major street system has a tremendous impact on mobility, accessibility, safety, quality-of-life needs, and the pattern and rate of future growth. The primary purpose of the Transportation Framework chapter is to define and plan for future transportation systems to serve the community through 2030 with a focus largely on the vehicular mode of transportation and street network.

Transportation Framework Structure

Best connections within and surrounding Hannibal are defined by the Transportation Framework chapter. The Transportation Framework introduces new service standards for transportation and makes recommendations on the character of roadways, trails, and sidewalks. This chapter includes the following:

- **Street Classification System is based on the functioning of a hierarchy of vehicle origin-destination movements. These classifications are assigned to roadway segments based upon the current condition of the roadway.**
- **Levels of service (LOS) are qualitative measures describing operational conditions within a traffic stream. Six levels of service are designated from A to F.**
- **The various types of streets fit together to form a network of streets to serve the needs of each land use throughout the City. General rules apply and are described in the Functional Route Classification System.**
- **As future improvements are made to the city's street network, access management considerations can play an important role in improving safety and increasing capacity along Hannibal's roadways.**
- **The Proposed Street Map and Typical Sections recommend roadway widths appropriate for land uses, shown on the Proposed Land Use Map.**
- **The policies apply to future development within Hannibal today and should be used as a guide for determining "how," "when," and "where" future development should occur.**

Existing Conditions Assessment

Hannibal is positioned within an extensive regional highway network. The western terminus of I-72 begins in downtown Hannibal, where it then crosses the Mississippi River into Illinois via the new four-lane Mark Twain Memorial Bridge. The original bridge, built in 1936, was demolished in 2000 with the opening of the new Memorial Bridge. Another major route is U.S. Route 61. U.S. Route 61 is a 1,400-mile north-south route connecting Minnesota to Louisiana that passes directly through Hannibal. U.S. Route 61 crosses I-72 near downtown Hannibal. U.S. Route 36 is an east-west route spanning from Colorado to Ohio that also passes through the heart of Hannibal, where it merges with a stretch of I-72 into Illinois. The northern terminus of MO Route 79 also begins in Hannibal, closely paralleling the Mississippi River and traveling south to connect with I-70 near St. Charles, Missouri.

As future development occurs west and south of Hannibal's city limits, however, changes to the existing arterial and collector street network must be made to effectively accommodate

anticipated growth. The network east of Veterans Road is fairly comprehensive. West of Veterans Road and south of U.S. Route 36, the region is relatively undeveloped and the infrastructure is therefore not as complete. However, as development begins shifting, more connector streets will allow the region to expand and grow to suit preferred land uses, and future development patterns and densities.

There are several destination areas in Hannibal that must be served by a comprehensive and flexible roadway transportation network. Downtown Hannibal has many tourist attractions and historical sites that are frequented by visitors year round. The interchange at I-72 and MO Route 79 is directly north of the city's downtown region. Many of Hannibal's USD #60 public school services, including the Hannibal Public High School and Middle School, food distribution center, transportation center, special services and Board of Education are located near U.S. Route 61 between Stardust Drive and Palmyra Road. This is also the vicinity of Hannibal-LaGrange College. Other areas in Hannibal that generate considerable traffic volumes include Hannibal's Regional Hospital at the southwest corner of U.S. Route 36 and Shinn Lane, and the new big box retail development located along Stardust Dr.

Congestion

A portion of U.S. Route 61 from St. Paul, Minnesota to St. Louis, Missouri is known as the "Avenue of the Saints." This 520-mile 4-lane divided highway was designed to be a free-flowing highway connecting the two cities. Through Hannibal, there are currently seven signalized intersections on this stretch of U.S. Route 61. There tends to be congestion during the afternoon peak hour as a result of the close proximity of two signals and relatively high truck volumes traveling through downtown. This congestion occurs near the signalized intersection of U.S. Route 61 and West Ely/Pleasant Street, as it is located approximately 500 feet south of another signal at U.S. Route 61 and I-72. The signals are coordinated, but some congestion occurs on the northbound approach to U.S. Route 61 and West Ely/Pleasant Street when traffic is backed up on the entrance/exit ramps to I-72.

The signal at U.S. Route 61 and MO Route 168 (north of the city), as well as the signal at U.S. Route 61 at Warren Barrett (south of the city) require extra warning because they are the first signals a driver encounters on U.S. Route 61 in this region. According to the Missouri Department of Transportation (MoDOT), there have also been issues of vehicles running red lights on U.S. Route 61. This is something the city of Hannibal is attempting to mitigate through red light enforcement cameras.

Bicycle and Pedestrian Connections

Pedestrians and bicyclists in Hannibal have a beautiful and interesting natural and built environment in which to travel. They also have challenges of topography and varying levels of facilities. The older part of the city is more likely to have sidewalks though not on both sides of every street. Some newer subdivisions have sidewalks but many do not. On-street bicycle travel can be safe on low traffic streets, but major street intersections can be difficult for both pedestrians and bicyclists. The citywide trail system, part of which is completed in older areas of town, also will provide bicycle and pedestrian connectivity. The Hannibal Parks and Recreation Master Plan written in 1998 identifies proposed trails throughout the City, connecting parks along the Mississippi River and linking the existing trail system. The 1998 Plan reiterates a strong support for trail development within the community. As the City expands, there is an opportunity to tie all the pieces together in a comprehensive park and trails system that compliments the existing

system in the traditional urban core, but also protects and manages stormwater, vegetation, and soil resources.

Hannibal Bypass

As another solution to relieving congestion in Hannibal, a U.S. Route 61 bypass to the west of Hannibal has been proposed to remove through traffic from downtown Hannibal. An initial location study was conducted in 1996 to determine the most effective corridor to align the Hannibal Bypass. It would relocate traffic from the existing interchange at U.S. Routes 24/61 in Marion County southeast to connect with U.S. Route 61/Route M in Ralls County. In 1998, a Value Engineering team found the chosen alignment would cost roughly $65 million. Another Value Engineering study was performed in 2007, in which the preferred alignment was slightly altered, several interchanges were eliminated or redesigned, and the overall project cost decreased to approximately $38 million. Although this project is currently unfunded, it remains a high priority for MoDOT and its regional partners as a means of reducing congestion in downtown Hannibal, and improving the safety and efficiency of through traffic on U.S. Route 61.

Rail

Approximately 11-15 daily trains run on Norfolk Southern's (NS) Hannibal Subdivision through Hannibal, and there are 14 public at-grade crossings within the city limits. Trains cross the Mississippi River via the Wabash Railroad Bridge, north of the Mark Twain Memorial Bridge. Although safety and congestion at the crossings do not appear to be issues for the city at this time, increased vehicular or railroad traffic volumes may warrant future alternatives analyses to determine if any existing at-grade crossings may be consolidated, grade separated or upgraded to improve the region's transportation network.

Aviation

Hannibal Regional Airport is located within City limits, south of U.S. Route 61 along CRD 425. The Airport is owned by the City of Hannibal and open to the public, averaging approximately seven daily operations. Runway 17/35 is 4,400 feet in length with the opportunity for expansion to the north. Flight training for private pilots is available at the Airport, and in the future, such training may become part of the curriculum offered at the local community college. Additionally, plans are being developed for the construction of a new 3,200 square foot airport terminal.

Transportation Improvements Identified in the Previous Plan

The Comprehensive Plan updated in 2003 presented several major transportation-related recommendations. As development continues west of the city limits, it is anticipated that arterial and collector streets may be added or extended to develop a more comprehensive street network, as initially recommended in the City's previous Comprehensive Plan. According to the Plan, the following roads should be widened:

- Shinn Lane (CR 437) from I-72 to Route MM
- West Ely Road (CR 412) from city limits westward to Hannibal Regional Hospital
- Westover Road (CR 416) from U.S. Route 61 to Centerville Road (CR 418)
- Centerville Road (CR 418) from the intersection of Ely Road (CR 412) southwest to Paris Gravel Road (CR 422)

- **Paris Gravel Road (CR 422) from U.S. Route 61 west to Centerville Road (CR 418)**
- **CR 425 from U.S. Route 61 to U.S. Route 36**

The 2003 Plan also recommends the following additional roadways or road extensions:

- **Extend CR 439 from Route W south to the north service road of I-72**
- **Extend Veterans Road north from Route W to U.S. Route 61**
- **Re-align the two 90-degree turns at CR 425 adjacent to the Airport**
- **Extend Lindsey Road south to Route MM**
- **Extend Shinn Lane (CR 437) south from Centerville Road (CR 418) to Paris Gravel Road (CR 422)**
- **Extend Stardust westward from Head Lane to CR 439**
- **Extend Forest Dr. east of Shinn Lane (CR 437) to western boundary of Business Park (or to recommended extension of Lindsey Road)**
- **Extend Hospital Dr. (private) east from Shinn Lane through Business Park to Lindsey Road**

Functional Classification System

The Functional Classification System developed by the Federal Highway Administration (FHWA) is widely used to define the traffic-carrying function of streets. There are several ongoing planning initiatives to combine the traffic functional classification of streets with their adjacent land uses to yield a more comprehensive array of streets. The *Lexicon of the New Urbanism* proposes a structure for accomplishing this. (See the Land Use Framework chapter) The context-sensitive design initiative, sponsored by the Federal Highway Administration, urges state departments of transportation to make the road context (land use) an important part of road design.

The Missouri Department of Transportation (MoDOT) has developed a classification system based on a roadway's functionality. They run from the most restrictive (Interstate) to the least restrictive (Local Road). These classifications are assigned to roadway segments based upon the current condition of the roadway. Classes also vary according to posted speed limit and whether the roadway has or is planned to have a restrictive or non-restrictive median. The City of Hannibal does not currently have a roadway classification system in place, but MoDOT's roadway classification system was used to classify Hannibal's existing roadways (See Proposed Street Map) with the exception of "subcollectors," which is another industry standard classification but not one necessarily used by MoDOT. The following definitions of each classification are a combination of

Street Classification System

- **Interstate/Freeway: Limited access highways, designed for high-speed, high-volume traffic movements. Access is permitted only via interchanges. This level of classification can also include highways distinguished by a system of existing or planned service roads, a highly controlled limited number of connections, median openings, and infrequent traffic signals.**
- **Principal Arterial: These routes are key, non-freeway or non-interstate, intercity or interregional routes. They are intended to serve long-distance trips at relatively high speeds, and provide for traffic movements into, out of, and through the City. They also provide connections between communities and major traffic generators. They typically carry some of the highest traffic volumes and longest trips in any particular location.**
- **Minor Arterial: Minor arterials accommodate trips of moderate length and lower travel mobility than Principal Arterials, but may be the same posted speed limit as Principal Arterials. They often serve intercity and some through trips, and provide access to abutting land uses.**
- **Collector: A Collector provides movement within neighborhoods and directs neighborhood trips to principal and minor arterials. Their primary function is to provide a convenient link between major arterial streets, subcollector streets, and local roads. They carry moderate traffic volumes and shorter trips than minor and principal arterials with little through traffic.**
- **Subcollector: Subcollector streets provide a linkage between collectors and local roads. They may also provide access to adjacent properties. Like a collector, the subcollector provides frontage and access to residential lots, but also carries some of the through traffic to local streets. The subcollector is a relatively low-volume street.**
- **Local Road: The primary function of a local access street is to provide access to adjacent residential properties, and is not intended to carry through traffic. Local roads may include cul-de-sacs, short streets, courts, or terraces. They may have two narrow lanes, or one wide lane, with or without on-**

MoDOT's *Access Management Guidelines* and The American Association of State Highway and Transportation Officials' (AASHTO) *Green Book* of highway standards:

Level of Service (LOS)

Levels of service (LOS), as defined in the *Highway Capacity Manual*, are qualitative measures describing operational conditions within a traffic stream. LOS is based on measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. For example:

- **Shinn Lane is a 2-lane collector with an ADT of approximately 5,200 vehicles. For streets like Shinn Lane, the *Highway Capacity Manual* uses travel speed rather than capacity to define LOS. Although the exact free-flow speed of Shinn Lane is not known, the range of free-flow speeds is estimated to be 35-45 miles per hour. Therefore, Shinn Lane is considered a Class II street and currently operates at a LOS A based on these conditions.**
- **The City of Hannibal can strive to maintain LOS C or higher on their existing street network by incorporating guidelines from APWA and the *Highway Capacity Manual*. Traffic flows on the city's future roadway additions will also benefit from these design criteria and specifications by promoting optimal operations.**

Six LOS have been established and are designated by the letters A-F, providing best- to worst-case service categories in terms of driver satisfaction. LOS C, measured by stable traffic flow and minimal delay, is characteristically an acceptable operating service for roadways.

Six Levels of Service

- **Level-of-service A – represents free flow. Users are typically unaffected by the presence of others in the traffic stream. Freedom to select speeds and maneuver is extremely high and the comfort and convenience provided to motorists, passengers, bicyclists, or pedestrians is excellent.**

- **Level-of-service B – is in the range of stable traffic flow. The presence of other traffic begins to be noticeable. The freedom to maneuver and the level of comfort and convenience are somewhat less.**

- **Level-of-service C – is in the range of stable flow, but it marks the beginning of the range of flow in which traffic operations are significantly affected by the presence of others. The general level of comfort and convenience declines noticeably.**

- **Level-of-service D – represents high density but stable flow. Speed and freedom to maneuver are severely restricted and the user experiences a poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems.**

- **Level-of-service E – represents operation conditions at or near capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver is extremely difficult and must rely on the courtesy of others users. Comfort and convenience are poor and operations at this level are usually unstable because small increases in flow or minor incidents will cause breakdowns in the traffic flow.**

- **Level-of-service F – is used to define forced or breakdown flow. This condition exists where the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form**

Functional Route Classification

The various types of streets outlined above fit together to form a network of streets to serve the needs of each land use throughout the City. As the City of Hannibal grows, the demands upon the street network will change. It is important that the future land use pattern be choreographed with decisions made regarding street classifications in the future. The Proposed Street Map provides the functional street classification based on the Proposed Land Use Map for the City of Hannibal.

General rules apply, and in a perfect world with no constraints, arterials should be located at one-mile intervals and collectors located midway between arterials. This general rule must often be adjusted to accommodate existing street systems, natural features, and uses with high traffic demands. The following table lists important elements of the Functional Route Classification System.

Functional Route Classification

Classification	Function	Spacing (miles)	Direct Land Access
Freeway	Traffic Movement	4	None
Arterial, Boulevard, Parkway	Inter-community traffic movement	1 – 2	Limited
Collector (Avenue), Parkway	Collect and distribute traffic between local streets and arterials, and provide land access	½ or less	With limited regulation
Local	Land Access	As Needed	Safety controls only

Source: Institute of Transportation Engineers

Access Management

MoDOT's *Access Management Guidelines* aims to improve safety for motorists and pedestrians, decrease delay through more efficient operations, stimulate economic growth, decrease emissions, and provide aesthetic improvements. The term "access" refers to the ability to enter or leave a business, residence, or land parcel from a public roadway via a connecting driveway. Recommended distances between driveways, signalized intersections and other roadways generate less traffic congestion and aid in traffic flow. Likewise, driveways or other openings where sight distance is insufficient are dangerous to both motorists and pedestrians. *Access Management Guidelines* provides these recommendations to ensure safety and maintain the functional hierarchy of roadways.

Access management is a proactive step in anticipating and planning for the city's future needs. These guidelines can be implemented into the initial planning and design stages of projects. As future improvements are made to the city's street network, access management considerations can play an important role in improving safety and increasing capacity along Hannibal's roadways.

Ten Principles of Access Management

The Transportation Research Board's (TRB) *Access Management Manual* identifies 10 principles:

1. **Provide a specialized roadway system – it is important to design and manage roadways according to the primary functions that they are expected to serve;**

2. **Limit direct access to major roadways – roadways that serve higher volumes of regional through traffic need more access control to preserve their traffic function;**

3. **Promote intersection hierarchy – an efficient transportation network provides appropriate transitions from one classification of roadway to another;**

4. **Locate signals to favor through movements – long, uniform spacing of intersections and signals on major roadways enhances the ability to coordinate signals and ensure continuous movement of traffic at the desired speed;**

5. **Preserve the functional area of intersections and interchanges – the critical area is where motorists are responding to the intersection – i.e. decelerating, maneuvering into the appropriate lane to stop or complete a turn;**

6. **Limit the number of conflict points – drivers make more mistakes and are more likely to have collisions when they are presented with the complex driving situations created by numerous conflicts. Traffic conflicts occur when the paths of vehicles intersect and may involve merging, diverging, stopping, weaving or crossing movements;**

7. **Separate conflict areas – drivers need sufficient time to address one potential set of conflicts before facing another;**

8. **Remove turning vehicles from through-traffic lanes – turning lanes allow drivers to decelerate gradually out of the through lane and wait in a protected area for an opportunity to complete a turn, thereby reducing the severity and duration of conflict between turning vehicles and through traffic;**

9. **Use nontraversable medians to manage turn movements – they minimize left turns or reduce driver workload and can be especially effective in improving roadway safety; and**

10. **Provide a supporting street and circulation system – a supporting network of local and collector streets accommodate development, and unify property access and circulation systems.**

Future Transportation System Recommendations

Proposed Street Map

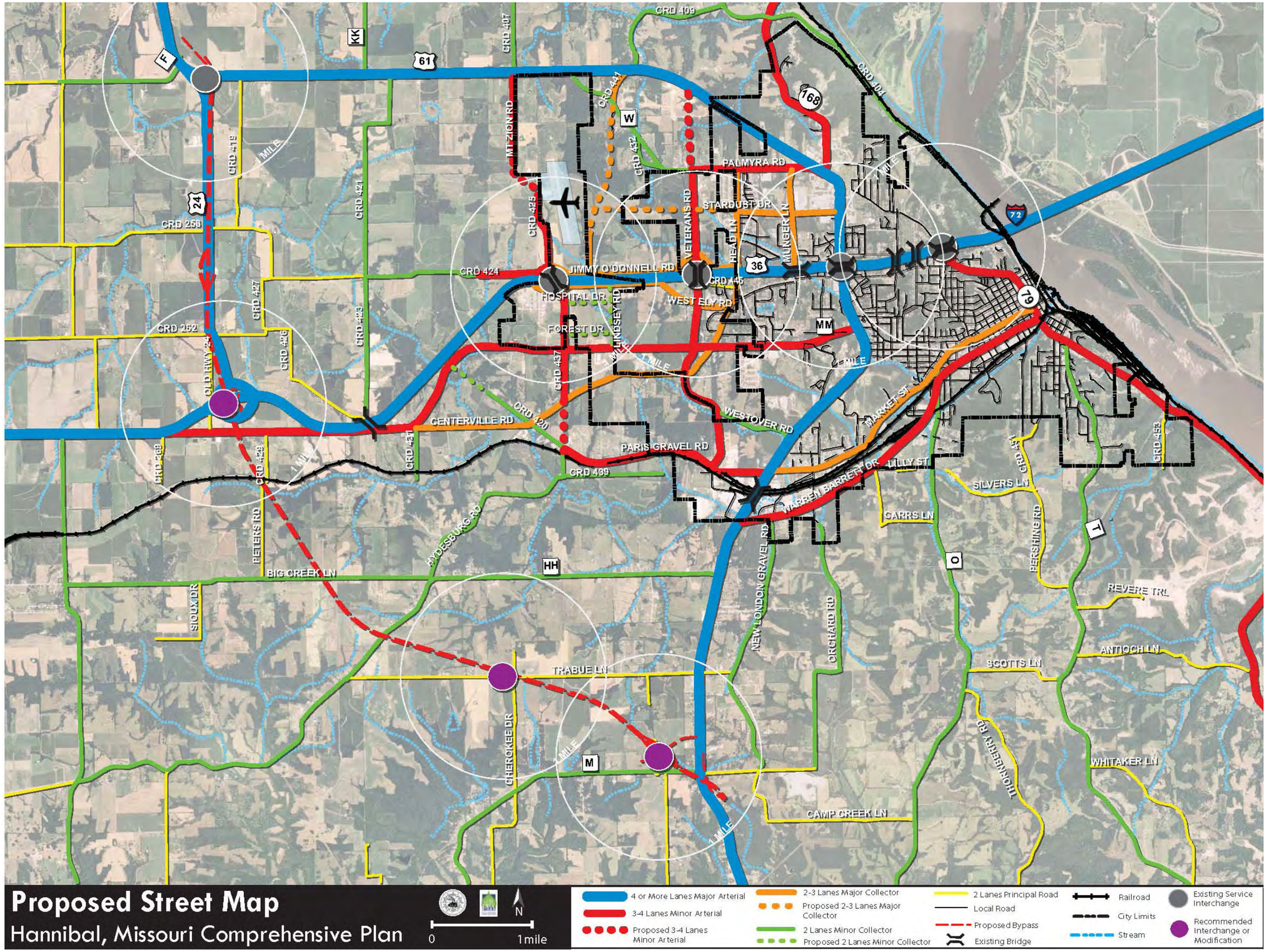
The Proposed Street map illustrates recommended capacity improvements and existing bridge locations that the city can integrate into their long term vision and goals, dependent on the type and intensity of surrounding development. The recommendations presented below include enhancements to both arterials and collectors, with the priority of establishing a more complete network west of the city limits.

The major roadway recommendations are illustrated in the Proposed Street Map, which recommends roadway widths appropriate for land uses shown on the Preferred Land Use Map.

- **The Proposed Street Map designates streets by their functional classification, which is a description of the purpose each type of street is intended to serve.**
- **By adoption of the Proposed Street Map, the city should seek to establish right-of-way and setback requirements for each type of street; establishing criteria for or changes to Subdivision Regulations for dedication of right-of-way.**
- **No recommendations are made for interstate and state highways as they are subject to separate transportation studies by the Missouri Department of Transportation (MoDOT). They are assumed to be 4-land highways based on the current transportation network.**
- **Streets that are not classified as arterials streets would be designed as sub-areas plans develop.**

Summary of recommended roadway widths for different land uses:

- **Agricultural, Conservation or Rural Residential: Can operate as 2-lane roadways (even at "full-build") to support low-density use.**
- **Agricultural or Park Districts: Can operate as 2-lane roadways (even at "full-build") to support low-density use.**
- **Low Density Residential: Can operate as 2 or 3-lane roadways (even at "full-build") to support low-density use.**
- **Medium Density Residential: Can operate as 2 or 3-lane roadways (even at "full-build") with the third lane possibly being a left turn lane into a development.**
- **Commercial or Industrial: Depending upon intensity can operate as 2, 3, or 4-lanes or more.**
- **Connectors between Intensive Land Uses: Can operate as 3 or 4-lane roadways (even if flowing through lower intensity land uses).**


Proposed Street Map
Hannibal, Missouri Comprehensive Plan
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4 or More Lanes Major Arterial
3-4 Lanes Minor Arterial
Proposed 3-4 Lanes Minor Arterial
2-3 Lanes Major Collector
Proposed 2-3 Lanes Major Collector
2 Lanes Minor Collector
Proposed 2 Lanes Minor Collector
2 Lanes Principal Road
Local Road
Proposed Bypass
Existing Bridge
Railroad
City Limits
Stream
Existing Service Interchange
Recommended Interchange or Modification
CRD 409
CRD 407
CRD 404
CRD 441
CRD 432
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CRD 426
CRD 437
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CRD 445
CRD 447
CRD 453
MT ZION RD
PALMYRA RD
STARDUST DR
VETERANS RD
HEAD LN
MUNGER LN
JIMMY O'DONNELL RD
HOSPITAL DR
WEST ELY RD
FOREST DR
WALLINDSEY RD
CENTERVILLE RD
WESTOVER RD
PARIS GRAVEL RD
MARKET ST
LILLY ST
WARREN BARRETT DR
SILVERS LN
CARRS LN
PERSHING RD
REVERE TRL
ANTIOCH LN
SCOTTS LN
THOMBERRY RD
WHITAKER LN
CAMP CREEK LN
NEW LONDON GRAVEL RD
ORCHARD RD
HYDESBURG RD
BIG CREEK LN
TRABUE LN
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Transportation Policies

The policies below apply to future development within and surrounding Hannibal today and should be used as a guide for determining "how," "when," and "where" future development should occur. A *policy* is defined as a definite course or method of action selected to guide and to determine present and future decisions.

Thus, *Policies,* define ways to make Hannibal's desired future happen. Specifically, the Plan should be used by the City to implement stated community goals and help make decisions about land use, proposed ordinances, and programs.

Many of the policies use the words "should" and so forth. In general, these words should be read to describe the relative degree of emphasis to be given the policy, but not to establish a specific legal requirement. Because of the often general nature of the policies, some policies within this Plan may appear to conflict. Exercise of judgment is critical to a comprehensive policy plan, which seeks to provide general direction regarding the myriad of factors affecting growth and development in a community setting.

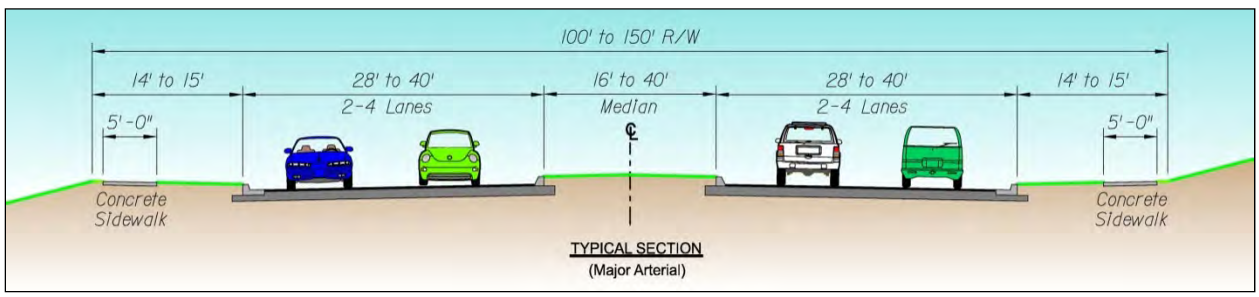
- **Provide a safe, convenient, and efficient transportation system incorporating and integrating many modes of travel including bicycles, pedestrians, and recreational trails.**
- **Provide residents with transportation choices by promoting the development and use of recreational trails and bike lanes as transportation routes to connect neighborhoods with services, jobs, and entertainment.**
- **Build a "just right" roadway system of a minimum size to serve projected uses and intensity of development.**
- **Improve and maintain the existing street network to accommodate projected traffic volumes.**
- **Preserve rural and scenic character of roads by avoiding capacity expansions and minimize traffic through rural areas by promoting targeted growth areas.**
- **Establish a street classification hierarchy, which identifies the function of all streets and intersections and ensures development of an efficient street system by proactively planning to preserve future right-of-ways through dedication or acquisition.**
- **Adopt and refine level of service standards to encourage use of alternative modes of transportation while meeting state requirements.**
- **Implement access control standards to increase efficiency and safety and adopt access management guidelines to reduce conflict between highway traffic and adjacent land uses.**
- **Future roadway development should promote streets designed with the Community Streets Principles and Guidelines outlined in this plan.**
- **Future roadway development should promote streets designed with the Pedestrian and Bicycle Circulation Principles and Guidelines outlined in this plan.**
- **Future roadway development should promote streets designed with the Site Planning Principles and Guidelines outlined in this plan.**
- **Identify and prioritize future roadway improvement through the Capital Improvement Program.**
- **Coordinate with nearby counties, regional, state, and national systems for the extension of existing and planned roadways.**
- **Continue to develop the Hannibal Municipal Airport for private and commercial aviation and**

Typical Sections

The American Public Works Association (APWA) and the Transportation Research Board's *Highway Capacity Manual* are practical resources containing construction specifications, design criteria and guidelines for roadways and other public works projects. It is recommended that the city consider these types of industry standards when designing future roadway extensions, additions or other capacity improvements to maintain uniform conditions throughout the city's street network.

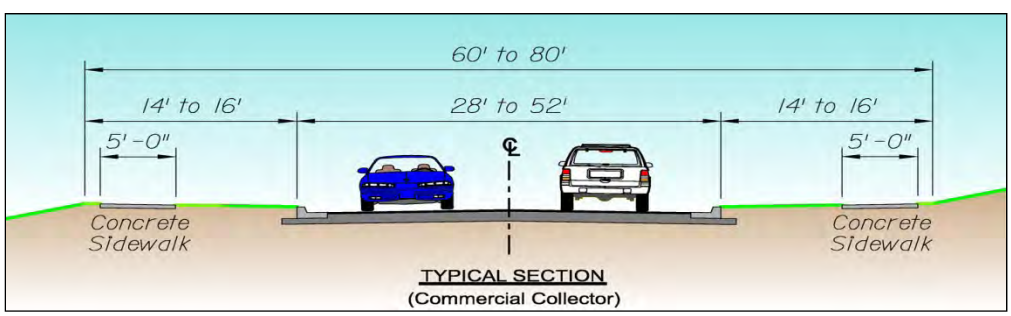
Shown in Figures 1 and 2 are APWA typical cross sections of a major arterial and a commercial collector, respectively. Arterial streets (Figure 1) are corridors that primarily serve the highest traffic volumes in the region. They connect communities to other commercial and residential districts, and connect to major state and interstate highways. A typical major arterial has between four and six lanes, with a 12-foot minimum width (excluding curb and gutter) for each lane. The width of the median varies from 16 to 40 feet and the right-of-way varies from 100 to 150 feet.

Figure 1: Typical Section – Major Arterial



A commercial collector (Figure 2) is a street that collects traffic to and from commercial, industrial, or other urban areas, and distributes that traffic to arterial streets. These types of collectors typically have two to four lanes, with a 12-foot minimum width (excluding curb and gutter) for each lane. There is usually not a median present on commercial collectors. The right-of-way varies from 60 to 80 feet, including 5-foot sidewalks on both sides.

Figure 2: Typical Section – Commercial Collector



The majority of existing streets west of Veterans Road are two-lane collectors. Although they are acceptable to accommodate current traffic volumes and existing land use patterns, it is important to reevaluate these widths in the future based on anticipated growth west of Hannibal's city limits.

A turn lane or supplementary lanes in each direction may be added to serve future traffic needs while still maintaining this roadway functional classification.

Roadway Capacity Improvements

North of U.S. Route 36, extensions, or additions to several north-south and east-west arterials are recommended, with collector streets to be added as land use types and densities permit. Currently, there are no major connections located between U.S. Route 24 and the Hannibal Municipal Airport. As development extends in that direction, a north-south arterial from U.S. Route 61 to Route HH may be added to improve circulation and access. Additionally, an east-west arterial may be added from the Airport to the proposed Hannibal Bypass or beyond, to accommodate future regional growth. East of the Airport, an extension and realignment of Veterans Road north to U.S. Route 61 will complete this north-south connection.

South of U.S. Route 36, the recommended capacity improvements focus more on enhancing and completing the existing collector street network. By doing so, traffic can move efficiently to nearby arterials and to other districts. Development is already occurring at Hannibal's Regional Hospital near Shinn Lane, so providing improved connections in close proximity to this traffic generator will allow the area to expand without congesting the city's roadways. In the future, Routes MM and HH may be widened from two to four lanes to effectively serve east-west traffic south of U.S. Route 36, and to provide adequate connections to the Hannibal Bypass and U.S. Route 61. A north-south extension of Skyview Drive from Centerville Road to Route HH can also improve circulation and flow.

Interchanges and Bridges

A service interchange is between a freeway or controlled access roadway and a lesser class roadway or arterial street, like the interchange at U.S. Route 61 and I-72. Diamond and partial cloverleaf interchanges are common forms of service interchanges. Currently, no new interchanges are under design in the region. However, there are two proposed interchanges and one recommended interchange modification that would occur with the Hannibal Bypass. The two proposed interchanges along the Bypass would be located at Route HH and Route M; the interchange modification would take place at U.S. Route 36.

The locations of existing and future bridges are shown on the Proposed Street map. Existing bridges include only those in which the roadway traveled over or under another highway or railroad tracks; bridges over water or other geographical features are not shown in this figure. Based on the recommended capacity improvements, two bridges may be located where roadways cross the NS railroad tracks, so as not to introduce additional highway-rail grade crossings at these locations. The bridges could carry the roadways either over or under the existing tracks. Other bridges may be added where roadways are extended north-south crossing U.S. Route 36, or east-west crossing the proposed Hannibal Bypass.

Access Management Recommendations

Although *Access Management Guidelines* apply specifically to MoDOT routes, it is wise for the city of Hannibal to consider such guidelines when planning for future capacity improvements or retrofitting existing locally-controlled corridors. For example, congestion is observed on portions of U.S. Route 61 near West Ely/Pleasant Street. This may be due to the proximity of two traffic signals on U.S. Route 61. Similarly, many access points are found along the stretch of U.S. Route 61 between Palmyra Road and the interchange at I-72, which can generate further congestion. In this case, it may be possible to consolidate several access points along these segments to increase vehicular capacity and reduce the number of potential conflicts on this corridor. Another location where access management guidelines may be considered is the area near the U.S. Route 36/Shinn Lane interchange, near the Regional Hospital. As this area grows, these access points may be consolidated or reconfigured to limit the number of intersections and driveways concentrated in this location.

Access management is a proactive step in anticipating and planning for the city's future needs. These guidelines can be implemented into the initial planning and design stages of projects. As future improvements are made to the city's street network, access management considerations can play an important role in improving safety and increasing capacity along Hannibal's roadways. Veterans Road can serve as an example of integrating access management guidelines into future projects. Currently, Veterans Road is an important local north-south connector. As growth occurs west of Veterans Road, however, this street will likely handle increased traffic volumes and may serve as a prime commercial corridor. The city can plan ahead by adopting guidelines that may limit the number of access points and/or space between them to decrease travel time and congestion and increase economic growth on this corridor.

Aviation

Continue to develop the Hannibal Municipal Airport for private and commercial aviation and aviation-related business development in accordance with the adopted Airport Master Plan. Protect the airport's approaches and air space from encroachment through height and land use restrictions.

Runway 17/35 is 4,400 feet in length with the opportunity for expansion to the north. The Airport Master Plan recommends extending the runway to 5,000 Lf to accommodate jet traffic. Additionally, plans are being developed for the construction of a new 3,200 square foot airport terminal.

Bicycle and Pedestrian

The primary bicycle and pedestrian system in Hannibal will be the citywide trail plan. The Transportation Framework suggests an expanded network of trails along stream corridors that could connect to existing and planned trails within current city limits as growth occurs. In addition, the Connecting Corridors (MM, US-61 Business and Veterans Road) should include sidewalks as property develops or redevelops. In addition, as roadways are reconstructed, careful attention should be given to assuring safe crossings for pedestrians and bicyclists, particularly at trail crossings and in the vicinity of major bicycle and pedestrian destinations. These include retail,

restaurant, libraries, schools, community centers and other institutions. Otherwise, streets, particularly arterial streets and highways, can become major barriers to non-motorized traffic.