CHAPTER 7 NON-MOTORIZED

This chapter provides an overview of the non-motorized transportation network for the SJATSO region, focusing primarily on the regional bicycle network. The SJATSO region consists of a well-established parkway and urban trail system within the City of St. Joseph. There is also the potential to expand non-motorized connections throughout the MPA through new trail connections as well as additional on-street facilities.

7.1. Existing Non-Motorized Facilities

The St. Joseph region has an extensive urban trail system which currently consists of approximately 17 miles of trails within the SJATSO MPA. The majority of the system is located within the City of St. Joseph. Since the last plan update, the City of St. Joseph introduced on-street bike lanes on St. Joseph Avenue, between Highland Avenue and Savannah Road. This enhancement was initially intended as a road diet project that would narrow the roadway from 4-lanes to 3-lanes to slow vehicular travel speeds. In reviewing the road diet design, it was determined that there was sufficient width to add on-street bike lanes. Overall, the bike lanes have worked well and travel speeds on St. Joseph have been reduced to more appropriate travel speeds for the corridor. Regardless, there are still some users, particularly vehicular motorists, who are adjusting to the roadway configuration.

In addition to on-street bike lanes, the City of St. Joseph, in conjunction with the City of St. Joseph Public Health Department, is planning to designate some area roadways as desired on-street bike facilities by installing sharrows. Sharrows are street markings, placed in the center of a travel lane, to indicate that a bicyclist may use the full lane. According to the US Manual on Uniform Traffic Control Devices, shared-lane markings are used to:

- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist’s impacting the open door of a parked vehicle;
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane;
- Alert motorists of the lateral location bicyclists are likely to occupy within the traveled way;
- Encourage safe passing of bicyclists by motorists; and
- Reduce the incidence of wrong-way bicycling.

Figure 7-1 displays the existing non-motorized facilities within the region.
Figure 7-1: Existing Non-Motorized Facilities
7.2. Land Use and Non-Motorized Plans

As part of the 2040 MTP update, the SJATSO reviewed relevant land use and non-motorized transportation plans from the planning partners. While each of the plans identifies individual goals and recommendations, there are common themes among the plans. Generally speaking, all the plans advocate making basic changes in the way the community grows and functions in the future to promote active transportation. These changes include, but are not limited to:

- Guiding development into new compact patterns that will enable non-motorized facilities to flow with public transit and automobiles.
- Ensuring connectivity of existing and proposed roadways, sidewalks, and urban trails (pedestrian/bicycle routes).
- Preserving the character and quality of the area while accommodating its anticipated growth and development.

Incorporating the goals and recommendations, and ultimately adopting these recommendations, will allow for more convenient and cost-effective transportation choices as well as create a more livable and sustainable region. The following non-motorized planning documents were reviewed to identify non-motorized issues, projects, priorities and recommendations.

**Draft St. Joseph Bicycle and Pedestrian Plan**

The SJATSO is currently updating the Bicycle and Pedestrian Plan. The draft Bicycle and Pedestrian Plan update stresses the “network” and “system.” In the context of the draft Plan update, a network is comprised of the many types of facility systems that support bicycle and pedestrian access. Together, these elements, or systems, provide the infrastructure necessary to support and expand non-vehicular modes of transportation.

The St. Joseph region has an extensive non-motorized trail network which includes:

- Urban Trail System
- Rails to Trails
- Historic Parkway & New Boulevard Systems
- Connector Streets/Complete Streets
- Safe Routes to School
- Conservation Trails
- Rural Trail Connectors
- Roadways of Focus
- On-Road Bicycle Routes (Bike Lanes)
- Traditional Sidewalks

The draft update of the St. Joseph Bicycle and Pedestrian Master Plan, envisions established connections that build off the established St. Joseph Parkway System. Traditional system designations in the urbanized areas of the MPA consist of trails within greenways and “park-like” roadways. This draft plan update formally recognizes the following components of the Urban Trail System:

- “Parkway” or “boulevard” street typical sections (include both pedestrian and bicycle access in its design with special design features and landscaping)
- 10’ multi-use, bi-directional trails that provide a link to traditional sidewalk systems commonly called the urban trail; located in greenways.
• Conservation Trails
• Rails to Trails
• Traditional sidewalk systems that link sections of the urban trail (connector streets).
• Quad State Trail connections on the north and south of the metropolitan area (if off-road and part of network if on-road).

Within the City of St. Joseph, the community is fortunate to have established a 26 mile, curvilinear park system that divides the city from North to South. Within the larger park, which includes hundreds of acres of urban forest, are located pocket parks, ball fields, water features, urban trails, mountain bike trails, playgrounds, etc. These elements constitute the heart of the Parkway system. In summary, what is unique about the Parkway system is that the Parkway and roadway are not one in the same — the road is not the Parkway, but an element of the Parkway. The Parkway is a defined linear park that includes the elements noted earlier in this paragraph.

During the last 20 years community planners have looked at where the Parkway could be extended. Unfortunately, many of the corridors identified did not obtain the necessary levels of staff or political support, until approximately 2007, to reasonably attain the goals of Parkway expansion, using the template established in the 1920’s. Sections have been allowed to develop with multiple access points, shallow setbacks, and narrow rights-of-way, necessitating that a “new” old roadway prototype, that has a long history in the community, be re-applied to these corridors. The public lands that would have lined the Parkway extensions are now developed with yards and homes, eliminating the prospect of the urban forest associated with the original Parkway. What has now occurred is that in defining the potential of a new Parkway, the roadway itself becomes the identifier and the larger context of the public lands within which the roadway functions falls away – but is not eliminated in total where land may still be available to partially extend the original vision.

One corridor that fits into this category is Riverside Road. It borders the 102 River and much of the land between the roadway and the river is designated as floodplain. This area is also identified by the St. Joseph Parks Department as ripe locations for new athletic fields in the future as well as the creation of another natural area much like the existing Parkway system. The current Riverside Road is largely comprised of a two-lane section, portions of which have shoulders, maintained by both the City of St. Joseph and MoDOT. The future roadway plan calls for a four-lane, divided highway. However, to meet the park-like treatment requirement, the roadway would be designed with a typical section that would include four 12’ travel lanes, 16’ center turn lane (raised/landscaped median when turning movements for access points are not required), 2½’ curb/gutter sections, 6’ marked bike lane (6” of this width could utilize the gutter pavement), 25’ of planting area for adequate space for large and mature trees, and 8’ sidewalks, all of which would collectively require a 150’ right of way as displayed in Figure 7-2.

![Figure 7-2: Riverside Parkway Concept](image-url)
Cook Road is another example. Currently a two lane roadway with open ditches, the new roadway would require a 100’ right of way in each of the two design concepts. The first roadway cross section (see Figure 7-3) includes two 12’ travel lanes, a 16’ center turn lane (raised/landscaped median when turning movements for access points are not required), 4’ bike lanes (6” of gutter being used for width), 2 ½’ curb and gutter section, 16’ planting area for trees, and 8’ sidewalks. Concept two (see Figure 7-4) is largely the same but instead of marked on-street bike lanes, wide outside lanes (14’) would be used for a lane width to provide adequate width for a shared lane. As a result, the planting space on each side could be increased to 17 ½’.

Figure 7-3: Cook Road – Concept 1

Figure 7-4: Cook Road – Concept 2

Within the urban area, Noyes Boulevard is a good example of a boulevard functioning as a collector or arterial in a residential area. In that case on-street parking is allowed, extra-wide lanes for biking, extra wide planting areas for large trees, and extra wide sidewalks were developed. Boulevards and avenues themselves represent good examples of “park-like treatment”.

These variations in approach are not unique designs, nor are they new to the St. Joseph region. The typical sections being described are commonly known as boulevards or avenues. Aside from what would now be called complete streets, or designs that appropriately include all users of the transportation system, these new boulevards would include features not common in most streets and would be located in much wider rights of way to accomplish that end.

**Safe Routes to School**

The St. Joseph and Riverside School Districts Safe Routes to School Plan is a comprehensive plan to encourage the communities in the St. Joseph metropolitan area to make walking and bicycling to school a safe and routine activity. This plan was completed in 2013. The Safe Routes to School program is traditionally aimed at safety and facilities; however, there is an indirect benefit to allow neighborhoods to “take back the streets” through the Safe Routes to school program to improve the physical condition, aesthetics and public safety around the St. Joseph School District schools.
The purpose of the St. Joseph and Riverside School Districts Safe Routes to School Plan is to educate the community about the benefit of walking and bicycling to school and how this can be done in a safe manner, and encourage schools, teachers and parents to supporters of a healthy walking and bicycling community. As part of the St. Joseph and Riverside School Districts Safe Routes to School Plan the SJATSO compiled a list of all the schools within the MPO, and includes the St. Joseph School District, and Riverside School District (Kansas), and numerous private and higher education institutions.

**Rail to Trail Inventory**

The Rail to Trail Inventory, completed in 2012, is a comprehensive planning level inventory intended to provide a detailed understanding of developing current railroad rights-of-way. The Rail to Trail Inventory focuses on outlying connections that tie the St. Joseph area with surrounding communities and beyond. The corridors include:

- The former Chicago and Northwestern Railroad is an approximate 11.2 mile corridor from St. Joseph to Savannah, Missouri. This trail would also provide connections to Country Club Village and unincorporated areas of Andrew County.
- The former and current Union Pacific Railroad is an approximate 5.6 mile corridor from St. Joseph to Wathena, Kansas. Communities aside from St. Joseph that are adjacent to this corridor include the City of Elwood, the City of Wathena and unincorporated areas of Doniphan County.

As a rail to trail inventory, this study is intended to provide a detailed understanding of developing the former and current railroad rights-of-way at a planning level, identifying opportunities and constraints along each corridor; identifying a preferred trail alignment based upon those findings; determining segment lengths and priorities; and provide an estimated cost which defines lengths of prioritized segments. In summary, the study is intended to provide a next-steps planning tool for the MPO and communities to facilitate trail development within the two corridors.

**Boulevard Master Plan (City of St. Joseph)**

In 2009 the City of St. Joseph adopted the Boulevard System Master Plan which serves as the official policy to guide future expansion and growth of the boulevard system to provide interconnectivity to the City’s Historical Parkway System. The emphasis of the boulevard system is on accommodating all travel modes and a significant contribution to regional mobility.

The proposed boulevard system totals approximately 25 miles and will provide an interconnection of existing parks and parkways, as well as providing connectivity to future parks and parkways on the east side of St. Joseph.

Specific existing roads were identified during the preparation of the Boulevard Master Plan in 2009. The roadways identified include:

- Cook Road (from its farthest west point to Riverside Road);
- Riverside Road;
- Picket Road;
- Ajax Road;
- Waterworks Road; and
- Portions of MacArthur Drive.
The identified roadways abut mostly undeveloped land that is ideal for the future negotiation of additional right-of-way in which to facilitate the typical section of a boulevard street. Refer to Chapter 13 for design elements and typical sections of proposed boulevards in St. Joseph.

7.3. Future Year Needs

Future Trail Sections
The SJATSO MPA has made significant inroads in planning, designing, and constructing components of its trail system. Over the years since the vision of greenway development was introduced, many phases of the trail have been designed by the City of St. Joseph and more are contemplated by Country Club Village, Savannah, Elwood, and Wathena as well. However, many components of the main north/south axis remain, as well as opportunities to expand the trail system on an east/west basis. The categories of trails can be listed as follows:

• Trails within existing greenways
  -- Within the St. Joseph Parkway System
  -- Conservation areas, such as the Missouri River levee system, or within state parks that must connect to the network
  -- Drainage areas (Conservation trails), including the various rivers, creeks, and streams within the area over which most communities already maintain easements. Good examples exist in this category in St. Louis, Kansas City, and Springfield. This is often the most expensive and most challenging option to explore, but also provides great benefits in accessing properties at a neighborhood scale. In the St. Joseph area, natural areas along the 102 River, Whitehead Creek and their respective sub-basins are promising opportunities.

• Rails to Trails – include both the re-acquisition and retention of railroad corridors. The category has proven itself on a national basis and operates as one of the safest, cheapest (mile for mile), and most popular environments for trails. With the majority of rail corridors being entirely grade separated, there are fewer conflict points between the trail users and automobiles. When these conflict points occur, the Manual on Uniform Traffic Control Devices provides appropriate mitigation measures.

• Utility Corridors – examples would include electric utilities and underground pipeline company easements that crisscross the region. It is common in some regions that utilities will allow the use of their easements for trails. This is often viewed as a positive form the utility owner perspective as a second jurisdiction is responsible for vegetation maintenance and also offers an opportunity for supporting public uses that many corporations strive for. Such uses also enhance utility access for system maintenance.

Figure 7-5 displays the planned bicycle and pedestrian facilities for the St. Joseph MPA.

Rails-to-Trails
There is great interest within the St. Joseph region to expand the regional trail system. As previously mentioned, the SJATSO conducted a rails to trail inventory as an initial step to assess the feasibility of the extending a regional trail from St. Joseph to Savannah. Discussions with local officials in the northern section of the MPA highlight a priority to not only expand the regional trail connection, but to identify opportunities to identify and develop future east-west connections that would connect to the primary north-south regional trail.
Opportunities exist to extend the local bicycle and pedestrian network to regional trails through abandoned rail corridors. These rail corridors include:

- Union Pacific Corridor – Maple Leaf Parkway to Northside Complex/Northwest Parkway Trail
- Chicago & Great Western Corridor – Northside Complex to County Line Road: Riverfront
- U.S. 59 Highway – City limits to Rt. 45 & Amelia Earhart Bridge over the Missouri River
- Chicago and Great Western Corridor – County Line Road to Savannah
- Union Pacific Corridor – Elwood to Wathena (planned Quad State Trail)

Although the St. Joseph area has a robust parkway system that includes bikeways, planning for 2040 means strengthening non-motorized trail systems and bridging gaps in the network. This will be accomplished by addressing both local and regional components of the non-motorized system. It is incumbent on local governments and advocacy organizations to remain vigilant for notices of rail abandonments and take advantages of opportunities to preserve rail right-of-way for future non-motorized trails.

**Local Connections**

As discussed earlier in this section the extension of the Parkways (i.e., Riverside Road and Cook Road) could ultimately link to additional non-motorized facilities throughout the SJATSO MPA and to areas beyond, including the Quad State Trail which is envisioned to be part of a national trail system. The draft Bicycle and Pedestrian Master Plan sets forth a number of improvements that would strengthen the regional non-motorized transportation network. Future bicycle and pedestrian facilities include the extension of sidewalks and bike ways on boulevards, the completion of the Quad State Trail through the St. Joseph area, and Conservation Area trails primarily running along the 102 River. Boulevards accommodate bicycle travel through on-street lanes or shared roadways, based on the context and availability of right-of-way. Abandoned rail corridors represent future opportunities for expansion of the non-motorized facilities. The sum of these planned facilities is intended to provide a comprehensive framework of sidewalks and trails to offer real transportation alternatives for bicyclists and walkers.

While trails represent a substantial piece of the SJATSO non-motorized network, on-street bicycle accommodations, or non-motorized improvements incorporated into roadway projects, could provide critical connections to supplement the trail system. The application of complete streets principles can help in strengthening the SJATSO non-motorized network. Complete streets is a concept that can be applied in planning or designing a new roadway or repairing/replacing an existing roadway. Finding ways to eliminate non-motorized system gaps could be as easy as restriping roadways to allocate more space to bicyclists or could involve more extensive improvements such as reconstructing roadways to incorporate on-street bicycle facilities or adjacent sidewalks and/or trails. The consideration of non-motorized travel should become common practice in evaluating future transportation infrastructure improvements throughout the SJATSO region.

**Regional Connections**

- The Quad State Trail
  The Quad State Trail is a planned 700-mile non-motorized trail that extends from St. Louis to Omaha and Lincoln, NE, with approximately 450 miles of the trails already existing. Some of the existing trail passes through the St. Joseph area adjacent to the Missouri River on sections of the Riverfront Trail. An alternative alignment would allow bicyclists to traverse the City through the existing parkway system which would require some potential connector improvements to enhance this network. The complete alignment of trail through the MPA has not been
determined. Completion of the Quad State Trail through the St. Joseph area would substantially add to the non-motorized network at both a local and regional level.

Sections of the Quad State Trail that are expected to pass through the MPA are:

- Union Pacific & Chicago & Great Western Corridors – Middleton North through Country Club Village to Savannah.
- Union Pacific Corridor – Elwood through Wathena to the West
- Inter Urban or Rock Island Corridor or Burlington Northern Corridor South toward Platte City
- Missouri River Levee System – Conservation Areas North and South

**Figure 7-5** displays the planned bicycle and pedestrian facilities for the St. Joseph area.
Figure 7-5: Planned Non-Motorized Improvements
7.4. Implementation

This section discusses potential costs, funding options and priority non-motorized projects.

**Typical Trail Costs (Rails to Trails)**

Cost for construction of the St. Joseph Rail to Trail was developed at a high level generalized opinion of cost. A range of trail construction costs (2012 dollars) were developed and reflect potential general contractor pricing as it would be submitted in a competitive bid. **Table 7-1** summarizes the trail cost per mile based on a linear mile of a ten foot wide trail.

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Cost (2012 Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural on Ballast</td>
<td>$60,000</td>
</tr>
<tr>
<td>Community on Ballast</td>
<td>$70,000</td>
</tr>
<tr>
<td>Rural without Ballast</td>
<td>$80,000</td>
</tr>
<tr>
<td>Community without Ballast</td>
<td>$90,000</td>
</tr>
<tr>
<td>Difficult Terrain/Earthwork/Clearing</td>
<td>$120,000</td>
</tr>
</tbody>
</table>

The numbers reflect a general cost based upon the following assumptions:

- ROW acquired will be twenty feet in width;
- An average of three quantity, eighteen inch storm culverts to be installed per mile with minimal grading;
- A profile depth of 4-8” of installed rock surfacing, dependent on the presence of good base material (ballast);
- Labor to be paid at prevailing wage;
- Rural versus Community land acquisition costs as noted;
- Some provision for engineering design, boundary survey and legal services is included; and
- Costs shown do not included any stream crossings these are all additional cost.

Other costs that are not included but will directly impact the overall cost include: property acquisitions; survey, design and engineering; inspections; permitting; geo-technical investigations; utility relocations; financing and other similar items.

As part of the Rails to Trails study, three broad categories of stream crossings and estimates were noted – small, medium and large.

- Small crossings may be accommodated by lower-cost bridge options such as rehabilitating existing bridges or by utilizing a box culvert, low-water or very small bridge crossings - $100,000
- Medium crossings include medium length prefabricated pedestrian bridges - $150,000
- Large crossings require longer than average or multi-span prefabricated bridges - $170,000

The estimated costs represent per square foot pricing and include abutment construction and assembly.

**Rail to Trail Implementation**
To move forward with implementation and keep momentum moving forward on the St. Joseph Rail to Trail is to develop a strong advocacy organization or committee made up of local government officials and community leaders. Just as important is to develop a list of trail user groups (i.e., bicycle clubs, running clubs, hikers, etc.).

The two railroad corridors have varying requirements which will need to be addressed separately. The St. Joseph/Elwood/Wathena trail will be less complicated to accomplish because the right-of-way is more accessible to local ownership. A short segment of this corridor is still in use by the railroad, but the remainder can be acquired. This corridor would however require crossing the Missouri River.

The trail from Karnes Road in St. Joseph to Savannah was abandoned many years ago, and many parcels are locally owned. The local organization might advance a proposal to the State of Missouri Parks Department and/or state representatives in the Legislature with the thought that they work together to have this right-of-way become a state park in the same way that Missouri’s Katy Trail became a state park.

Another approach to Karnes Road in St. Joseph to Savannah would be to acquire small segments as they become available. They could be developed when there is an approximate mile which offers a useful hiking or running distance. This method is long-term to finalize a completed trail from St. Joseph to Savannah. The following are some general conclusions:

- There is consensus that segments of trail that are to be developed in the more populated areas of the communities would eventually have an asphalt surface treatment while those in outlying areas may be developed with lower-cost limestone screenings surfacing.
- Priority segments should tie key community locations together first. Higher trail traffic areas provide a greater spectrum of benefits.
- Build first where opposition is low, as trail popularity will prompt further development in areas where opposition may be higher.
- Avoid difficult crossing areas and high expense alignments in favor of those which direct trail traffic into and through community downtowns and commercial areas.

**Master Plan Implementation**

The implementation strategy of Boulevard System Master Plan of the City of St. Joseph notes the plan must be referred to in all development processes to insure boulevard inclusion where proposed development is identified as such. Additionally, this plan should be reviewed for budgetary consideration on a yearly basis.

The Boulevard System Master Plan is intended to serve as a guide for the development of the Boulevard System. The intent of this Plan is for the City to develop standards for the expansion of the boulevard and parkway system that is consistent throughout all the City’s development regulations and planning policies. Amendments are anticipated as the environment changes. Amendments should be proposed upon review of this plan but should be no more frequent than once each calendar year. Limiting opportunities to amend this plan will prevent the Plan from becoming arbitrary and inconsistent with its original intent.

To ensure that the Boulevard System Master Plan remains a useful tool for decision-makers, periodic evaluations of the Plan’s goals and policies should be performed. These evaluations should be performed every five years, but can be done more frequently depending on the rate of change in the community, and should consider the following:

- Progress in implementing the Plan;
• Fiscal conditions and the ability to finance public investments recommended by the Plan; and
• Community support for the Plan’s goals and policies.

The annual budget is imperative to the implementation of this plan, as it sets the spending priorities for the coming year. This plan should continue to serve as the basis for the staff’s recommended work programs and a focus for the City Council’s discussion of priorities from year to year. City staff should review the goals and implementation programs of this plan in an effort to recommend strategic goals in a manner that is consistent with this plan.

**Overview of Non-Motorized Funding**

This plan is intended to be implemented over a period of 20-25 years and it will need to be considered in each budget proposal, CIP proposal, and any future General Obligation Bond initiative. Below are some of the possible available funding sources.

• **Capital Improvement Program**
  As the Capital Improvement Program sales tax (CIP tax) is approved, it can designate a portion of the CIP tax for property acquisition, right-of-way enhancement et seq. This tax by itself has been significant but should not be considered to be enough in nature to provide the entire funding needed to construct the Boulevard System as laid out in this plan. The CIP tax should be utilized in the same manner as it has for the Felix Street Streetscape project, in that a specific area was identified where the tax revenue could be used to help attain the final goal.

• **General Obligation Bonds**
  This was the method of financing the original parkway system in the 1920s. A property tax was imposed on the entire City and Bonds were sold to construct the Parkway System. A vote of “super majority” of the citizens is required to increase the City’s debt levy and subsequent bond sales. General Obligation Bonds are typically a 20 year term which is the proposed timeline of this Plan. The General Obligation Bond could be used to benefit the entire City and could also identify other roadways that require immediate improvement due to recent development. This will be instrumental in the continuation of the extension of the Boulevard throughout the City, and ultimately reaching the goal of creating a necklace around the City. This type of long term land use planning will be crucial as will the consideration of annexation in the south and southeastern portion of the City as parts of the future planned extension of the Boulevard System is not located within the City at this time.

• **Neighborhood Improvement Districts (NID)**
  The State Neighborhood Improvement District, or NID Act, provides the most effective way of providing upkeep and maintenance of existing or newly constructed parkway or boulevards. This method of financing is a property tax assessed on a group of properties that would adjoin the improvement or be within a five to ten block area of the improvement, basically in the neighborhood it would serve. People would be more inclined to participate in the NID as the parkway or boulevard that the tax revenue would apply to is nearby and they would experience a direct benefit from the tax. This again should be utilized primarily for the maintenance and upkeep of the Boulevard System in areas where needed.

• **Community Improvement District (CID)**
  The creation of a Community Improvement District (CID), much like the NID, affords local control to the “area residents” or community in which the district is created. This procedure would establish it as a political subdivision or as a Not-for-Profit Corporation, thereby allowing the CID to collect sales tax within the district to be used for the funding of construction projects.
that are specifically identified within its legal boundaries. These identified projects may include city streets, but in some instances the State has been slow to join these districts. In addition to the collection of revenue by sales tax, a property tax can be assessed to provide additional revenue to be utilized toward the identified community projects.

- **Safe Routes to Schools**
  - Funding for Safe Routes to School varies:
    - Federal programs include Congestion Mitigation and Air Quality (CMAQ), Surface Transportation Program (STP), Transportation Alternatives (TA), and Housing and Urban Development (HUD).

MAP-21 has consolidated many established funding sources for safe routes to school, rail to trails, and transportation enhancements into a single funding source – Transportation Alternatives (TA).

- State Safe Routes to School Programs.
- Health and Physical Activity Funds.
- Sales and Property Taxes.
- Special Taxing Districts.
- Private Sources (i.e., Philanthropic Organizations).
CHAPTER 8  FREIGHT

This chapter summarizes freight activity within the SJASTO region. Since the days of the Pony Express, goods have traveled through the St. Joseph region using a variety of modes. Highways, rail lines, and waterways provide direct access to north-south infrastructure and connections to east-west routes. The airport and pipelines are additional regional assets that provide important transportation linkages. The SJATSO is committed to developing a transportation network that supports the movement of goods and enhances economic development opportunities within the region.

8.1. Statewide Programs/Plans

MAP-21 requires state DOTs to establish freight advisory committees consisting of a cross-section of public and private freight stakeholders. States DOTs are also encouraged to develop comprehensive plans for freight related planning and investment. Both Missouri and Kansas have completed statewide freight studies. The following summarizes the statewide plans as they relate to the SJATSO region.

Statewide Freight Studies

The Missouri Statewide Freight Study was completed in 2005 and is currently being updated. The update, referred to as the Missouri Freight Plan, was made available for public comment at the time the 2040 MTP was being completed. The 2005 report recommended that Missouri focus on improving system reliability, develop freight data and measure performance, strengthen intermodal connectors, use technology to enhance freight operations, and involve freight stakeholders in the process. The 2014 update is part of the MoDOT “On The Move” initiative that focuses on maintenance of the current system, safety of travelers, spurring economic development, and providing more transportation choices. As depicted in Figure 8-1, MoDOT currently projects that Missouri will nearly double freight movement by 2040. The Kansas Statewide Freight Study released in 2009 projects Kansas freight volume to double between 2006 and 2030, exacerbating system bottlenecks. This growth is expected to be primarily in truck and rail modes.

Figure 8-1: Missouri Top Ten Commodities by Tonnage

MoDOT State Rail Plan – 2012

In May 2012, MoDOT developed a State Rail Plan which serves as the strategic framework for developing freight and passenger rail service in Missouri for the next 20 years. It recommends long-term priorities and strategies, as well as prioritizing investments to enhance the movement of people and goods and expand connections between all transportation modes. The plan meets the requirements established by the federal Passenger Rail Investment and Improvement Act of 2008 and will position Missouri to obtain future federal funding for rail projects.
Specific to freight services the State Rail Plan provided the following recommendations:

- Initiate programs and policies which are a part of an overall state economic development strategy and coordinated with the Missouri Department of Economic Development.
- Facilitate additional use of existing team tracks, industrial spurs and sidings.
- Support the development of additional rail access as appropriate to support new industrial development opportunities.
- Identify mechanisms to encourage or improve intermodal access at Missouri ports through the provision of additional rail access and trans-loading facilities.

The National Rail Association Infrastructure Capacity and Investment Study, prepared by the Association of American Railroads, developed a methodology for determining the level of service (LOS) for a specific freight rail corridor. The basis for determining the LOS, or congestion, on a railroad corridor is calculated using a volume-to-capacity (V/C) ratio. The Missouri rail capacity assessment considered three factors: ratio of the number of trains to the number of tracks, train control system, and train type. Based on the 2012 Missouri State Rail Plan the following rail lines should be monitored for potential capacity concerns. This includes the BNSF rail line which provides service between St. Joseph and Kansas City.

- BNSF – Thayer North Sub (from Springfield to Arkansas state line to the south)
- BNSF – St. Joseph Sub (from Kansas City to Nebraska state line to the northwest)
- UP – Chester Sub (from Dexter to Illinois state line to the east)
- UP – Hoxie Sub (from Dexter to Arkansas state line to south)
- UP – River Sub (from Jefferson City to Kansas City)
- NS – Kansas City District (from Moberly to Kansas City)
- KCT – Kansas (from I-435 to Kansas state line to west)

**Freight Tonnage by Mode**

The following section discusses the freight tonnage carried by mode. Nationally, the freight ton-miles by all modes has been increasing at a consistent rate of about 1.2 percent per year. Figure 8-2 and Table 8-1 summarize the freight tonnage for the main transportation modes.

- Motor Carriers (Truck Traffic): The last ten years have seen an increase of about 21% in truck freight tonnage transported from, to, or within Missouri. The tonnage increased from 380 million tons to 408 million tons during the years 2002 to 2012. Top Missouri truck exports by value include Mixed Freight, Machinery, Miscellaneous Manufactured Products and Pharmaceuticals. Top Missouri truck exports by ton include Cereal Grains, Food Products, Gravel, and Non-Metallic Mineral Products.
- Railroads: The last ten years have seen an increase of about 34% in rail freight tonnage transported over Missouri rails. The tonnage increased from 77 million tons to 81 million tons during the years 2002 to 2012.
- Aviation: The last ten years have seen a decrease of 55% in aviation freight tonnage transported through Missouri’s airports. The tonnage increased from 0.096 million tons to 0.064 million tons during the years 2002 to 2012.
- Public Ports: The last ten years have seen an increase of 34% in port freight tonnage transported over Missouri waterways. The tonnage increased from 31 million tons to 48 million tons during the years 2002 to 2012. The challenge of the St. Joseph Port Authority is to address the feasibility of increasing traffic on the Missouri River. Another challenge is increasing access to port facilities
and targeting businesses that have yet to see the opportunities of using waterways to transport their goods or raw materials.

Figure 8-2: Freight Tonnage by Mode

Table 8-1: Freight Shipments (Within, From, and To Missouri – Tonnage by Domestic Mode: 2040)

<table>
<thead>
<tr>
<th>State</th>
<th>Mode</th>
<th>Weight (thousand tons)</th>
<th>Weight Percent</th>
<th>Weight (thousand tons)</th>
<th>Weight Percent</th>
<th>Weight (thousand tons)</th>
<th>Weight Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISSOURI</td>
<td>Truck</td>
<td>361,453</td>
<td>94.53%</td>
<td>148,364</td>
<td>46.48%</td>
<td>134,461</td>
<td>56.38%</td>
</tr>
<tr>
<td></td>
<td>Rail</td>
<td>3,940</td>
<td>1.03%</td>
<td>39,022</td>
<td>12.23%</td>
<td>74,618</td>
<td>31.29%</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>1,880</td>
<td>0.49%</td>
<td>98,241</td>
<td>30.78%</td>
<td>2,625</td>
<td>1.10%</td>
</tr>
<tr>
<td></td>
<td>Multiple modes &amp; mail</td>
<td>4,759</td>
<td>1.24%</td>
<td>26,561</td>
<td>8.32%</td>
<td>16,254</td>
<td>6.82%</td>
</tr>
<tr>
<td></td>
<td>Other and unknown</td>
<td>9,948</td>
<td>2.60%</td>
<td>6,750</td>
<td>2.12%</td>
<td>2,340</td>
<td>0.98%</td>
</tr>
<tr>
<td></td>
<td>Pipeline</td>
<td>401</td>
<td>0.10%</td>
<td>70</td>
<td>0.02%</td>
<td>66</td>
<td>0.03%</td>
</tr>
<tr>
<td></td>
<td>Air (include truck-air)</td>
<td>0</td>
<td>0.00%</td>
<td>0</td>
<td>0.00%</td>
<td>0</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Total: 382,381 (100%) From: 319,167 (100%) To: 238,504 (100%) All: 940,052 (100%)

SOURCE: FHA Freight Analysis Framework, Summary Statistics

8.2. Existing Freight Movements and Facilities

Freight Traffic Overview

The MoDOT Statewide Freight Study indicated that 79 percent of commodity flows within the state are by truck. It also included a survey to determine the origin and destination of these commodities and the results indicated that 65 percent of the traffic originated or was destined outside Missouri. The State of Kansas State Freight Plan determined that through movements accounted for 54 percent of the total freight movements through the state.

The main facilities that serve truck traffic in the St. Joseph area include I-29, Highway 71, US 59, and US 36. The River Port is an intermodal facility that serves trucks, water and rail transfers. The area also includes
three facilities that serve truck and rail transfers. Additionally, to the east of St. Joseph on US 36 is a truck-air intermodal facility. Refer to Figure 8-3 for the location of existing St. Joseph freight facilities.

MoDOT’s study also identified the following characteristics of truck traffic within St. Joseph area:

- Intra-state commodity movements by truck: Of the 167.7 million tons carried by the Missouri transportation system, approximately 4.0 million tons (2.6 percent) are destined to Buchanan County.
- More than half of the 190 million tons of goods imported to Missouri arrives by truck. Buchanan County’s truck imports number over 5 million tons, valued between $5 and $10 billion.

In Kansas, Highway 36 is a rural highway route that has regional importance in linking the local agriculture and manufacturing industries to statewide, regional, and national markets. As a Class B route, Highway 36 is designed to handle large volumes of heavy trucks.
Figure 8-3: Existing St. Joseph Freight Facilities
**St. Joseph Region Truck Traffic**

In 2012, 70 percent of commodity flows by weight within the state of Missouri were by truck. The Federal Highway Administration projects truck traffic to continue to represent 70 percent of flows in 2040; however, the total tonnage will increase 58% from 408 million tons in 2012 to 644 million tons in 2040. Missouri’s location at the center of the country’s highway and rail networks means that much of the nation’s goods will travel near the St. Joseph region. As displayed in Figure 8-4, the central location of the St. Joseph region places the majority of the country within a two-day drive.

![Figure 8-4: One-Day and Two-Day Drive Area](image)

Heavy commercial vehicle (HCV) volumes on I-29, just east of I-229, reach as high as 31% of the daily traffic volumes. US 36, just east of the MPA boundary, consists of 23% truck traffic. I-229, just south of I-229, also carries 23% trucks; however, the daily volume on this stretch of I-229 is relatively low at 4,200 vehicles per day. Table 8-4 and Figure 8-5 summarize truck traffic within the SJATSO region.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Location</th>
<th>VPD</th>
<th>HCV</th>
<th>% HCV</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-29</td>
<td>South portion of the MPA, just south of Route H</td>
<td>30,076</td>
<td>5,900</td>
<td>19.6%</td>
</tr>
<tr>
<td>I-29</td>
<td>North portion of the MPA, just east of I-229</td>
<td>22,142</td>
<td>6,848</td>
<td>30.9%</td>
</tr>
<tr>
<td>US 36</td>
<td>East of the MPA Boundary</td>
<td>9,254</td>
<td>2,157</td>
<td>23.3%</td>
</tr>
<tr>
<td>US 36</td>
<td>Just West of US 169</td>
<td>23,967</td>
<td>1,631</td>
<td>6.8%</td>
</tr>
<tr>
<td>US 169</td>
<td>Just South of US 36</td>
<td>14,342</td>
<td>946</td>
<td>6.6%</td>
</tr>
<tr>
<td>US 169 (Loop 29)</td>
<td>Just North of State Hwy. 6</td>
<td>22,410</td>
<td>1,584</td>
<td>7.1%</td>
</tr>
<tr>
<td>I-229</td>
<td>North portion of the MPA, just south of I-29</td>
<td>4,275</td>
<td>992</td>
<td>23.2%</td>
</tr>
</tbody>
</table>

*Source: MoDOT 2013 Traffic Counts*
Figure 8-5: Heavy Commercial Vehicle Volumes
The conventional economic model for freight shipment is not expected to change by 2040. This is a model in which low-value, high-weight goods are more often shipped by rail and water, and high value, time sensitive goods are shipped by air, and moderately priced goods are shipped on trucks.

In addition to absolute growth, freight carried by trucks has gained a larger share of the overall freight market. The truck share of Missouri freight ton-miles grew from 29 percent in 1980 to 37 percent in 2012. Just-in-time supply chain management has transformed the movement of goods into a globally integrated system which merges transportation functions and modes into a seamless intermodal system. What this likely implies is that the use of intermodal containers will continue increase. The St. Joseph area’s proximity to Kansas City could favor a truck linkage to expedite goods shipment to and from that city.

Another factor that may increase business reliance on trucks for freight movement is the legislated maximum weight of trucks. Current weight limits on semi-trucks (80,000 pounds gross vehicle weight) have not been increased since 1975. Meanwhile, costs of fuel, labor and delays due to traffic congestion have increased. MAP-21 provides money to study the impact of current size and weight limits on trucks. MAP-21 also increases the amount of funding available for improvement and construction of safety rest areas for truck parking.

Nationwide issues that may impede the growth of freight movement by trucks include increased vehicular congestion that decreases reliability of this mode, and increases in insurance rates and fuel prices that erode the slim profit margin (estimated at 5 percent) in which trucking companies customarily operate. This could place St. Joseph at an advantage as I-29, the primary north-south roadway, carries a relatively low volume of vehicle traffic in the St. Joseph region (ranging from 22,000 vpd to 38,000 vpd). In addition, US 36, the primary east-west roadway, carries approximately 9,200 vpd. St. Joseph area roadways could have adequate capacity to accommodate additional commercial vehicle traffic which would allow industrial parks to expand in the region.

It will be particularly important to continue to develop additional east-west arterials in the developing northern portion of the MPA to among all transportation users. By doing so, motorists will be less inclined to utilize I-29 and I-229 for local trip purposes. This will benefit local traffic circulation but will also support the safe and efficient movement of local and regional freight through the SJATSO region.

**Railroads**

Missouri’s 19 railroads operate 4,800 main line miles of track (ranks 10th in the nation), with the majority of the track owned and operated by Class 1 carriers. Measured by weight, 304 million tons of freight was carried through Missouri in 2011, which ranks 4th in the nation and recorded $2.8 billion in the Gross State Product during that same time frame. The second and third largest rail hubs in the nation are located Kansas City and St. Louis, respectively.

In the St. Joseph area the Burlington Northern Santa Fe (BNSF) railway’s tracks run north-south and the Union Pacific (UP) railway runs east-west. The UP track also crosses the Missouri River and runs into Elwood, providing service to a lumber yard and feed mill. Through short line carriers, UP serves these St. Joseph area businesses:

- AG Processing
- Albaugh
- AM Cold Storage Co
- Bartlett and Company
• Lake Road Warehouse
• Nestle Food Pet Food
• Nufarm
• Omnium
• Payless Concrete

Port of St. Joseph
The Missouri River, part of the nation’s inland waterway system, is St. Joseph’s gateway to the Gulf of Mexico. The river’s flow is controlled by the U.S. Army Corps of Engineers using dams upstream, with the nearest one being the Gavins Point Dam in South Dakota. The navigation season is approximately eight months – from April 1 to December 1. The city’s location on the river gives area businesses the affordable option of transporting via river barge.

The Port of St. Joseph is an intermodal facility owned by the St. Joseph Regional Port Authority and operated by Kinder Morgan Terminals, offering full intermodal capabilities of barge, rail and truck. The intermodal port facility houses the following services and facilities:
• Dock and storage yard
• Truck Scale
• Complete intermodal transloading service
• Loaders, fork lifts, and auxiliary equipment
• Crawler cranes with 51 and 31 ton capacity
• Under car off-load pit with conveyor for the Union Pacific railroad spur

The port was developed to serve the agricultural and industrial markets of northwestern Missouri and northeast Kansas. The UP Railway and the BNSF Railway serve the port. In addition to cargo transfer, the port can provide direct delivery of materials, or outside storage for wire and other products. The Port of St. Joseph is considered as “emerging” as northwest Missouri provides critical freight support for agricultural industries.

The Port Authority is governed by a seven-member board and is administered by an executive director housed in the Chamber of Commerce. The port was built through a partnership between the state of Missouri, Buchanan County and the City of St. Joseph. The port is located just south the US 36 Bridge that crosses into Kansas. The port has convenient access to I-29, I-229, US 36, and US 59.

In 2011, MoDOT conducted a Missouri River Freight Corridor Assessment and Development Plan that found the river depth and reliability needed to be enhanced. Primary goods shipped on the Missouri river include sand, fertilizers, cereal grain, and fuel. A survey identified 79 facilities along the river, of which 29 are active. St. Joseph was identified as one of only two facilities capable of handling general cargo such as steel, containers, palletized or other loose cargo. This presents a potential future economic development opportunity for the region.

Utility Accommodations
Utility companies provide essential public services that are necessary to support existing and future development throughout SJATSO region. Utilities are frequently located within the public right-of-way and as such potentially impact the maintenance and operation of transportation (highway) system. The
coordination between utility providers, local agencies, and Missouri and Kansas DOTs is essential if public services are to be provided in an effective and efficient manner. Previous MTPs have explored the connectivity of the natural gas or petroleum pipelines, water, communication ports, and electrical utilities. The purpose of reviewing this infrastructure, though not typically addressed in MTPs, is to plan and manage the development of this network. Communications and pipelines are important assets of the transportation network as the support local area businesses and industries. If these attributes are not fully developed, they can have a substantial impact on the rest of the transportation system (i.e., roadway network). Though this component of the transportation system is mainly controlled and planned by private companies, it is important that St. Joseph region consider these elements in developing the regional transportation system and economic development opportunities.

**Communications**

The advancement of the telecommunications network has been one of the fastest evolving aspects of the transportation network across the nation. Not only does the communications network impact the transportation network, it is one of the key criteria for attracting new businesses and retaining existing businesses.

St. Joseph has access to trunk lines of fiber optic cable, which has been expanded and will likely continue to expand as demand increases. Southwestern Bell, the main provider of telecommunications in St. Joseph, has identified a plan to continue to expand as development continues in the region. Quality service to the east of St. Joseph, where substantial development has occurred and will continue to occur, has been an important expansion project because of the volume of service demand the businesses put on the network. The expansion to these developments has been accomplished using fiber optic cable to provide the fastest, clearest, and greatest capacity.

**Pipelines**

The private pipeline companies, such as Amoco and Williams, along with Missouri Gas Energy (MGE) report that there is sufficient capacity of the pipeline network. MGE, the direct provider to local users, has completed its pipeline replacement program, which has improved the safety of the system for its users.

**Electricity**

The main electricity provider in the St. Joseph area is Kansas City Power and Light (KCP&L), a subsidiary of Great Plains Energy, Inc. KCP&L provides electricity and gas service to more than 800,000 customers in 47 northwestern Missouri and eastern Kansas counties, a service territory of approximately 18,000 square miles. Although the majority of power generation comes from coal, KCP&L in 2006 purchased the Spearville Wind Generation Facility to add 100.5 megawatts of renewable energy to their production portfolio. The Spearville Wind Facility is located northeast of Dodge City, Kansas. It consists of 67 1.5 megawatt turbines and supporting plant equipment.

### 8.3. Future Freight Needs

As previously discussed, truck traffic will likely remain the predominate mode of freight transportation through the year 2040. However, the St. Joseph region is positioned to take advantage of both rail and waterway freight movements. Locally, the expansion of rail freight transport could occur if there was an expansion of rail capacity with an additional spur at the St. Joseph Port Authority facility and if utility of the rail line adjacent to the Rosecrans Memorial Airport was maximized to become an intermodal facility to facilitate rail to air freight movement.
If the demand for rail freight lines increases, some of the rail right-of-ways identified as possible rails to trails could be potentially put back into service for freight purposes. This should be considered in on-going non-motorized planning efforts. The airport master plan, currently being updated, should also be reviewed when complete to identify potential intermodal opportunities and the possibility of expanding freight movements within the region.

**Port of St. Joseph**

Critical to future planning efforts for St. Joseph Port Authority is a final determination on Missouri River flows. The Supreme Court ruling confirming the primary mission of the Corps of Engineers in the management of the Missouri River is flood control and navigation, has helped to restore a sense of dependability related to the Missouri River from a navigation standpoint. The hope is that barge traffic on the Missouri River will become more predominate in the future.

In September 2013, the U.S. DOT approved the federal designation of the Missouri River from Kansas City to Sioux City, Iowa as an “M-29 Connector.” Kansas City is a regional freight hub and is home to the United States second largest rail center and third largest trucking center. The M-29 Connector will provide a third transportation option for regional freight movement between Kansas City’s intermodal infrastructure and shippers in Missouri, Kansas, Iowa, Nebraska, South Dakota and Minnesota. The M-29 Connector is expected to transport an additional 500,000 tons of cargo per year on the Missouri River freight corridor in this region.

The uptick in cargo movement could amount to over $22 million dollars over the next several years and provide opportunities for the St. Joseph Port Authority. One possible opportunity to target for expansion is the bulk fertilizer distribution market. St. Joseph is ideally located for the distribution of fertilizer to the midwest agricultural market. The port provides two venues of bulk transportation with both rail and barge access. However, the distribution of the bulk fertilizer requires the expansion of existing facilities and the addition of new facilities. The Port requires a truck scale, which is currently absent from local port facilities, and a dedicated storage facility, possibly in the form of a 25,000 square foot A-frame structure, for this bulk trade. In addition, a hopper transfer system is needed to transfer the product from barge to truck, and truck to barge. Finally, there is a need to expand the hardstand to the south of the dock and existing hardstand and to provide a hard surface area for the trucks to be unloaded for cleanup purposes.

Future expansion of port activities is currently constrained by the limited size of the Port Authority property and rail spur capacity. The St. Joseph port facility is approximately 15 acres and is limited on land availability that is directly contiguous and available for expansion purposes. There is a parcel of vacant, unused land to the north of the port facility that is owned by UP. Port Commissioners have made it a priority to renew the negotiations to acquire this land from the UP as a strategic effort to permit future growth of the port facility.

The capacity of the current rail spur at the port will eventually become inadequate as the port assists a growing number of businesses handle diverse products. As the port’s rail activity increases, another spur will facilitate the storage of cars waiting for the loading or unloading of product. It is projected that an additional rail spur will be needed.

Security and lighting are other capital investments the Port Authority will at some point need to consider. Potentially, there is a need for lighting to accommodate the nighttime operations, as well as for security and safety purposes. Currently, products handled at the port do not require security clearance under federal port guidelines and the nature of the product is such that theft is not an issue. As such, at this time fencing...
is not an immediate need but as increased transportation security continues to be emphasized this could become a future issue that will need to be addressed.

**I-229/US 36/US 59 Interchange Area**

Providing a well maintained infrastructure that connects local industries with the regional transportation system is a critical component of supporting economic development within the SJATSO region. A future infrastructure concern is the long-term plan for the elevated section of I-229. As discussed in previous chapters of the MTP, MoDOT is expecting to spend approximately $2 million on short-term maintenance needs within the next year. MoDOT’s long-term maintenance projections for the elevated segment of I-229 currently range between $25 million and $30 million, with additional annual funding required for on-going maintenance needs. Given the proximity of the I-229 elevated section to the I-229/US 36/US 59 interchange makes the long-term plans a critical element that potentially impacts future freight movement throughout the region. As such, the SJATSO supports a detailed freight and regional connectivity study to further evaluate and identify a long-term, comprehensive solution to improve freight movement within the region. This study would address:

- A long-term plan for the I-229 elevated segment
- Safety and connectivity improvements at the I-229 / US 36 / US 59 interchange area
- Needed improvements to enhance access along US 59, to the Stockyards, and the Port of St. Joseph
- Needed improvements to enhance access to the airport
CHAPTER 9  AVIATION

The Rosecrans Memorial Airport (STJ) is owned and operated by the City of St. Joseph although located in Buchanan County, Missouri, approximately 4 miles west of the City of St. Joseph and 60 miles north of downtown Kansas City. STJ is situated on approximately 1,708 acres of land. The airport is equipped with an Approach Control open from 8 a.m. to 6 p.m., six days a week, Monday through Saturday and Air Traffic Control Tower open Monday through Friday 7 a.m. to 7 p.m., Saturday and Sunday 8 a.m. to 6 p.m. Charter, air ambulance service, flight training, and aircraft services are available.

The airport was severely damaged both in 1952 and 1993 as a result of major flooding. After the 1952 flood, the United States Army Corp of Engineers constructed a cut-off channel for the Missouri River east of the airport, separating the city from the airport. An oxbow lake – Browning Lake – was also formed immediately south of the airport along the Missouri-Kansas state line. STJ is accessed from US 36 West from St. Joseph, across the Missouri River, to Kansas Highway 238 in Doniphan County. Kansas Highway 238 crosses Browning Lake to access the STJ terminal area.

9.1. Existing Facilities

STJ has two runways; the primary Runway 17-35 and crosswind Runway 13-31. The crosswind runway is a visual runway serving both military aircraft conducting training operations and civilian general aviation aircraft. With a length of 8,061 feet, primary Runway 17-35 accommodates aircraft within the FAA Aircraft Approach Category C and Airplane Design Group IV. Category C aircraft include transport aircraft with an approach speed of 121 knots or more, but less than 141 knots. Airplane Design Group IV includes aircraft with 118’ wingspans, up to but not including 171’. In 2013 STJ completed the construction of a new fire station (ARFF building).

STJ serves a wide-ranging civilian mix of aircraft from corporate jets to agricultural spray applicators. Significantly, STJ is also home to the Missouri Air National Guard (MOANG) 139th Airlift Wing. MOANG operates the Lockheed C-130 military transport aircraft. Currently there are 86 civilian and 10 military for a total of 96 aircraft based at STJ. The civilian based aircraft total includes one rotorcraft, an Air Ambulance Helicopter. Businesses at the airport facility, including MOANG, employ over 1,200 people.

Since 1948, STJ has been owned and operated by the City of St. Joseph as a division of the Department of Public Works and Transportation. The Airport Manager and a staff of five additional employees are responsible for the maintenance and operation of STJ facilities, infrastructure improvement by securing grant funds, economic development, and tenant/lease management. The airport manager is also responsible for meeting with civic groups, news media, and concerned citizens regarding airport development, operations, and issues. Figure 9-1 depicts the current airport facility.
In 2006, an Airport Master Plan Update was prepared for STJ to further develop the future vision for air service in the area. This plan incorporated the recommendations set forth in the Missouri Air National Guard Base Master Plan, adopted in 2004. The Airport Master Plan is currently going through another update and information from this planning effort was not available for the 2014 MTP update.

Three primary points arising out of the master planning process were used as tests for the chosen alternatives. The first dealt with the method for providing vehicular access to MOANG that best served the relocation of the base. This meant using 23rd Street as the primary access. The second goal involved maximizing the accessibility to the runway system. With future development including major corporate hangars, making development opportunities as attractive as possible are high priorities. The third component of the test was the ability of the alternative to provide vehicular access to the FBO. Using these three components, a recommended concept was developed and is illustrated in Figure 9-2.
The terminal area plan developed a series of sub-area plans for various components of the terminal section of the airport. The major facilities included in the assessment were general aviation, the airport terminal building, and terminal area parking and circulation.

In the analysis of adjacent land use, tests were performed for both existing and future aircraft noise levels. The existing noise levels resulted in a 65 DNL contour while future use escalated the level to a 75 DNL contour. The airport owns all the property within the affected contours. All existing and future land use designations for land surrounding the airport are shown as agricultural, so no negative community impacts are expected as a result of the noise levels associated with the development.

In addition to noise levels, the master plan addresses potential encroachment on the airport property by neighboring uses. Through an analysis of methods for guiding land use, the recommendation was made to purchase an additional 155 acres of land adjacent to the airport property.

Other suggestions made through the Master Plan deal with the potential reuse of the existing MOANG facility once it relocates across the property. **Figure 9-3** illustrates the phasing plan for relocation.
Of particular interest to the MTP process is the potential for additional City offices and other community facilities on the airport property. In the Master Plan analysis, there exists a potential for approximately 105,000 square feet of additional office space to be made available for occupancy. This shift, not to mention the potential for new hangar space and city department use, may directly influence future circulation in the areas immediately adjacent to STJ.

9.2. Future Aviation Needs

A potential major contributor to future air traffic at the Rosecrans Memorial Airport (STJ) would be the establishment of traditional commercial air service. Although the area is unlikely to support commercial air service given its relatively close proximity to Kansas City International Airport, there is evidence to suggest that general aviation activities and aviation-based business will continue to grow in the future.
Structural changes at STJ, the trend toward increased general aviation activities, and the need to relieve congestion at existing commercial air hubs could result in increased airport activity. The planned consolidation and relocation of MOANG facilities is expected to expand potential space for businesses that benefit from proximity to air services.

Due to the global economic downturn that occurred in recent years, general aviation experienced a slowdown. However, recent FAA general aviation data and future projections are cautiously optimistic that the hard impact of the recession is coming to an end. The forecast calls for robust growth in the long-term outlook (through the year 2033). One of the primary factors identified is continued concerns about safety, security and flight delays that keep business aviation attractive relative to commercial travel.2

In particular, the increased business use of fractional aircraft and the STJ’s central location within the United States are expected to contribute to greater long-term airport activity. The possible production of affordable and efficient aircraft, increased industrial activity from the Eastside Industrial Park, and the emergence of the St. Joseph area as a regional economic center also rank as possible contributors to the airport’s future success.

In addition, the National Aeronautics and Space Administration (NASA) has explored an extension of the nation’s transportation network that could have positive impacts on regional airports. Anticipating significant traffic congestion on both roadways and at the nation’s 30 major airports, and recognizing that 90 percent of the nation’s population is within 30 miles of the nation’s 5,000 small airports, NASA has conducted research on accommodating regional trips through the Small Aviation Transportation System (SATS).

The focus of the program was to develop improved technology to safely and effectively implement a system that increased the capacity and operations ability of the nation’s small airports. Primarily, the program seeks to achieve higher volume operations at airports that do not have control towers or terminal radars; pilots to land safely in low-visibility conditions at minimally equipped airports; increased single pilot performance; and SATS aircraft to integrate seamlessly into the complex national airspace. Although the program does not appear to be active at this time, the concept does hold promise for how passenger air service could one day be considered at the Rosecrans Memorial Airport.

STJ currently possesses an infrastructure asset in the form of a nearby rail link onto airport property. Intermodal freight transfers are a source of potential future aviation activity if US 36 is upgraded to interstate standards. Air traffic congestion at the Kansas City International Airport and vehicular traffic on Kansas City area roadways may compel businesses to look for an alternative to meet their air freight needs and STJ could potentially meet that future demand. However, there are factors that might hinder increased future aviation activity at STJ. Private businesses and aircraft owners might be burdened with high insurance and liability costs, fuel prices, economic upheavals, enhanced security restrictions, may have a negative impact on future STJ activities. These are issues that will likely be addressed as part of the Airport Master Plan that is currently being updated.

9.3. Planned Improvements

The St. Joseph MPA TIP (2014-2017) has identified 7 projects between 2014 and 2017 at a projected total of $11.3 million. Table 9-1 summarizes the projects which include the Master Plan Update, runway

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2 FAA Aerospace Forecast, Fiscal Years 2013-2033, produced by Federal Aviation Administration.
reconstruction, runway rehabilitation, new structures (air traffic tower, SRE building), and operational and maintenance activities (fencing for wildlife, tree removal).

Table 9-1: Aviation TIP (2014-2017)

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Facility</th>
<th>Fund Amount (Thousands)</th>
<th>Sponsor</th>
<th>Description</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehab Lighting</td>
<td>Rosecrans Memorial Airport</td>
<td>$117</td>
<td>City of St. Joseph</td>
<td>Runway approach lighting system.</td>
<td>$45</td>
<td>$45</td>
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<td>$45</td>
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<tr>
<td>Master Plan Update</td>
<td>Rosecrans Memorial Airport</td>
<td>$350</td>
<td>City of St. Joseph</td>
<td>ANG Master Plan.</td>
<td>$350</td>
<td>$350</td>
<td></td>
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<td>$350</td>
</tr>
<tr>
<td>Runway Pavement/Remarking</td>
<td>Rosecrans Memorial Airport</td>
<td>$600</td>
<td>City of St. Joseph</td>
<td>Pavement maintenance and remarking for runway 17/35.</td>
<td>$600</td>
<td>$600</td>
<td></td>
<td></td>
<td>$600</td>
</tr>
<tr>
<td>Perimeter Fencing</td>
<td>Rosecrans Memorial Airport</td>
<td>$900</td>
<td>City of St. Joseph</td>
<td>Install wildlife/security fencing around airfield perimeter.</td>
<td>$900</td>
<td>$900</td>
<td></td>
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<td>$900</td>
</tr>
<tr>
<td>Rehab. Existing Aircraft Taxilane</td>
<td>Rosecrans Memorial Airport</td>
<td>$1,900</td>
<td>City of St. Joseph</td>
<td>Rehabilitate taxilanes including barrel hanger area.</td>
<td>$1,900</td>
<td>$5,000</td>
<td></td>
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<td>$5,900</td>
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<td>Construct Air Traffic Tower</td>
<td>Rosecrans Memorial Airport</td>
<td>$5,000</td>
<td>City of St. Joseph</td>
<td></td>
<td></td>
<td>$5,000</td>
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<td>$5,000</td>
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<tr>
<td>Airport SRE Building</td>
<td>Rosecrans Memorial Airport</td>
<td>$2,600</td>
<td>City of St. Joseph</td>
<td>AIP Funds.</td>
<td></td>
<td></td>
<td>$2,600</td>
<td></td>
<td>$2,600</td>
</tr>
</tbody>
</table>

Total $11,395
CHAPTER 10  INTELLIGENT TRANSPORTATION SYSTEMS

This chapter summarizes the existing and planned Intelligent Transportation Systems (ITS) elements within the St. Joseph region. The SJATSO updates the ITS component every five years as part of the MTP updates.

10.1. Existing ITS Elements

ITS refers to the application of a wide range of advanced information that collects, processes and distributes information about the movement of people and goods in a region. ITS is the integrated application of advanced technologies using electronics, computers, communications, and advanced sensors. ITS applications within a region can provide travelers with important information that allows them to make informed travel decisions, thereby improving the overall safety and efficiency of the regional transportation system.

As stated in the goals and objectives, enhancing safety for the traveling public is a high priority within the region. Fulfilling this commitment to making the transportation safer and more efficient is not as simple as building more roads or expanding existing ones. Traditional methods are often very expensive and in some cases may have adverse environmental and/or social impacts. Now more than ever, there is an increased emphasis on maximizing the use of the existing transportation infrastructure and assets, and ITS can play an important part in accomplishing this goal. Travelers throughout the St. Joseph region also need accurate, up-to-date, and relevant road condition information in order to make appropriate trip decisions. Again, this is an area the ITS can help facilitate increased mobility throughout the region.

**ITS Benefits**

ITS can address a multitude of transportation issues, including improving operations and enhancing safety in a cost-effective manner. ITS applications have the potential to:

1. Reduce crashes and fatalities when vehicles travel along roadways that are equipped with ITS components.
2. Optimize traffic flow from one area to another.
3. Monitor traffic conditions using ITS traffic management systems, which utilize permanent vehicle detection technologies in coordination with closed circuit television cameras (CCTV).
4. Reduce the number of traffic stops, resulting in less congestion and ultimately translating into reduced fuel emissions and fewer negative impacts on the environment.

In summary the benefits of utilizing ITS include the following:

- Reduce delay and congestion
- Reduce incident response time
- Reduce travel time and variability in travel time
- Improve traveler information
- Inform travelers of current weather and pavement conditions
- Improve adverse pavement conditions with deicing equipment
- Reduce the number of accidents and secondary accidents
- Reduce emissions and fuel consumption
- Improve roadway capacity
- Improve traffic flow and travel speed
City of St. Joseph ITS Applications

The St. Joseph region (City of St. Joseph) has deployed emergency vehicle preemption devices at signalized intersections along key emergency corridors. Emergency vehicle preemption (EVP) at signalized intersections allows approaching emergency vehicles to preempt the current signal timing to serve the direction of the vehicle’s travel. The authorized emergency vehicle communicates a short range signal to a receiving device within the signal cabinet, which then commands the signal controller to provide a green light in the direction of travel from where the signal was received. There are currently a total of 12 emergency preemption devices in use within the St. Joseph region. Table 10-1 displays the location of emergency preemption devices.

Table 10-1: Emergency Preemption Device Intersection Locations

<table>
<thead>
<tr>
<th>Intersection Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 11th Street/Frederick Avenue</td>
</tr>
<tr>
<td>2 22nd Street/Jules Street</td>
</tr>
<tr>
<td>3 22nd Street/Faraon Street</td>
</tr>
<tr>
<td>4 22nd Street/Messanie Street</td>
</tr>
<tr>
<td>5 Noyes Boulevard/Jules Street</td>
</tr>
<tr>
<td>6 Noyes Boulevard/Faraon Street</td>
</tr>
<tr>
<td>7 36th Street/Faraon Street</td>
</tr>
<tr>
<td>8 36th Street/Frederick Avenue</td>
</tr>
<tr>
<td>9 Woodbine Road/Faraon Street</td>
</tr>
<tr>
<td>10 Kinghill Avenue/West Valley Street</td>
</tr>
<tr>
<td>11 Stockyards Expressway/Illinois Avenue</td>
</tr>
<tr>
<td>12 North Village Drive Road/North Pointe Drive</td>
</tr>
</tbody>
</table>


There are currently two types of vehicle preemption procedures in use:

1. High pre-empt for emergency vehicles, in which red lights are turned to green for ambulances in the St. Joseph region equipped with EVP technology, and

2. Low pre-empt for snow plows, green lights can be extended beyond the normal green time. However, snow plows do not have the ability to turn a red light green as emergency vehicles do. This is less disruptive to general traffic patterns along a corridor.

The signalized intersections of North Village Drive and North Pointe Drive and, Stockyards Expressway and Illinois Avenue have video detection systems. Over the last several years, video detection has become the increasingly common means of detecting traffic at intersections and interchanges. Video detection is often cheaper to install and maintain than inductive loop systems at multi-lane intersections. It is also recognized that video detection is more readily adaptable to changing conditions at the intersection (e.g. lane reassignment, temporary work zone activity lane closure, etc.). The benefits of video detection have become substantial as the technology improves, initial cost declines, and wide-spread use and experience expands.

St. Joseph Public Safety ITS Applications

The St. Joseph Police Department Communications Center has a combined dispatch center for the Police Department, Fire Department the Buchanan County Sheriff’s Department and seven Buchanan County Fire Departments. The Communications is served by an 800 MHz Trunking Radio System used by all police and fire agencies and paramedics at Heartland Hospital that provides communications to all of Buchanan
County. Mobile Data Systems (MDS), which aid in communications, dispatch and reporting, are equipped in 70 St. Joseph Police squad units and 23 St. Joseph Fire Department vehicles.

A number of administrative line calls are directed to the Communications Center from cell phone providers and are actually wireless 911 calls. Equipment to recognize these as 911 calls as wireless 911 calls has recently been deployed to improve emergency response.

**St. Joseph Region Transit ITS Applications**

The St. Joseph Transit system buses are equipped with Automated Vehicle Location (AVL) systems utilizing a signpost based tracking system to determine location of buses throughout the system, and relaying the information back to a central location. Benefits of a transit applied AVL system include, though not all inclusive, improved dispatch and operational efficiency; improved reliability of service; and a planning tool based on utilizing the information from AVL for future applications.

St. Joseph has also deployed other ITS applications that have been integrated with the vehicle AVL system. These include the following “Smart Bus” integrated technologies:

- **Automated Passenger Counters (APC):** Provides passenger count data and integration with the AVL System allows St. Joseph staff to see passenger boardings and alightings by stop, providing valuable information for planning and marketing, and opening up the possibility for estimating passenger loads and passenger miles.

- **Automated Voice Annunciator (AVA):** This technology is used to provide en route information to traveler with disabilities. The American Disabilities Act (ADA) requires that all transit stops at all key bus stops be announced, which is most often the bus drivers responsibilities. The AVA system relieves the bus driver of this responsibility by announcing stops, transfer options, and points of interest automatically in advance of the vehicle arriving at the location. The AVA equipment interfaces with the AVL equipment to gather vehicle location and stop information.

- **Mobile Data Terminals (MDT):** These devices are installed on buses to display, record and temporarily store certain types of information about each passenger’s pickup and drop-off, and collect statistical and performance data on services provided. The MDT is integrated with the AVL system for analysis of data at a stop / route level.

- **Real-Time Transit Information:** Real-time transit arrival information is provided at three key transfer locations in the St. Joseph region on large LCD monitors that estimate the number of minutes until a specified bus/route will arrive at that location. This information is based upon the AVL data communicated from the bus to a central server that processes the location and estimates the arrival based on the progress of the route. Real-time transit information is currently available at the following locations:
  - St. Joseph Downtown Transit Center, Angelique St. between 6th and 7th St.
  - North Wal-Mart, 4201 North Belt Highway
  - Hy-Vee, 201 North Belt Highway

In addition to these systems, St. Joseph Transit has also installed the following systems:

- **Transit IVR System for Trip Confirmation:** A transit Interactive Voice Response (IVR) allows for passengers that have made pre-trip requests for deviations from the posted fixed-route to confirm that their reservation has been made. The system is designed to contact those passengers the day before their trip to allow them to confirm that the trip is still needed or cancel the trip request if not needed.
• **Web-Based Portal for Trip Deviations:** This allows passengers to make trip deviation requests utilizing a web-based system instead of the existing telephone-based system. This system also allows passengers to confirm or cancel their trip deviation requests.

Each of St. Joseph’s buses is equipped with on-board surveillance equipment that includes a total of six video cameras in an enhanced video surveillance system integrated with an event recorder system. The on-board video surveillance system aids in protecting and reassuring the passengers’ safety and comfort by reducing vandalism and other criminal activity. They can also reduce the liability of the transit agencies, municipalities and their respective insurance companies from false and frivolous lawsuits. The event recorder system mounted on each bus has the ability to record incidents outside the bus similar to units mounted on law enforcement vehicles. Video from the cameras is uploaded from a Digital Video Recorder (DVR) unit on buses to a server located at the bus garage at the end of each travel day. After incidents occur on buses, St. Joseph transit will share video of the incident with police as needed for investigative purposes.

St. Joseph Transit has also installed a “Smart Card” facility access control system. This system has integrated with the time card system to and a keypad / photo identification system to provide secure facility access for transit staff.

St. Joseph transit operations include “paperless dispatching system” for operators and customers. This system is over six years old and does not have the ability to interface with new equipment.

**Missouri Department of Transportation ITS Applications**

The Missouri Department of Transportation (MoDOT) has deployed 60 Dynamic Message Signs (DMS) on rural interstates statewide. Within the St. Joseph region, MoDOT operates six DMS on I-29 and I-229. Primary control of messages on the DMS is through the Kansas City Scout Traffic Management Center (TMC) via cellular communication. MoDOT Northwest District, serving the St. Joseph region, has secondary access to DMS control in the event KC Scout TMC staff is otherwise engaged with pressing local issues (e.g. ice storm).

As part of Phase 1 of the Belt Highway Arterial Mobility Plan, MoDOT has interconnected multiple traffic signals along the Business Loop 29 route, US Highway 169, and Missouri Route 6, also known as the Belt Highway and Frederick Avenue. This has been done using spread spectrum broadband wireless radios. This project is considered the first step in establishing communications from the MoDOT NW District to all components located in the traffic signal cabinets along these major arterial routes in the St. Joseph region.

MoDOT has also recently installed remote monitoring of generator sites in the region. This project included the installation of remote monitoring capabilities of backup generators for MoDOT’s two-way radio tower sites. This allows the MoDOT NW District to access, via the internet, each generator’s past maintenance logs and current operational status, with indications such as generator running, oil levels, and time until next maintenance. The system will also notify an electrician when a failure has occurred at any of the backup generators. This has been a good investment for MoDOT electricians given the number of two-way radio tower sites that need to be maintained, which are scattered throughout the northwestern 20 counties of the state.

10.2. **Planned Intelligent Transportation Systems**

The following summarizes planned ITS enhancements within the St. Joseph region. The plans were identified as a result of contacting and meeting with a variety of stakeholders from the St. Joseph region. An ITS survey was utilized to gather information from stakeholders as well, requesting their planned projects in
the coming five to ten-years. These projects are listed below, each with a brief description. This section also provides an overview of developing and deploying ITS systems utilizing federal highway funding.

**St. Joseph Region Transportation Network**

The St. Joseph Public Works Department has a planned project that would add GPS monitors to fleet vehicles and incorporate some on-board salt distribution monitoring. GPS will track the location of maintenance vehicles and in those vehicles equipped with on-board salt distribution equipment will allow the operator to ascertain the progress of salt distribution in a cost effective and timely manner.

The St. Joseph Police Department Communications Center has is a combined dispatch center for the Police Department, Fire Department the Buchanan County Sheriff’s Department and seven Buchanan County Fire Department served by a 800 MHz Trunking Radio System. It is possible to upgrade the communications systems to include not only the St. Joseph region fire, police end other emergency services but include public works, and traffic agencies. This would create better communications, coordination and interoperability between emergency service agencies and traffic agencies when relaying information, especially during those scenarios dealing with emergency response situations. Integrated communications would allow for quickly sharing current roadway incident response status between allied response agencies and would create a flow of information that reduces or eliminates delay due to a lag in communication, leading to faster response times and more efficient use of emergency resources and traffic resources.

**St. Joseph Region – Public Safety**

The City of St. Joseph Police Department has developed a proposal that if approved will allow the City to deploy automated red light enforcement systems at select intersections that meet criteria including: high crash rates; high traffic volumes; and those intersections that present difficult enforcement.

In a typical system, cameras are positioned on poles at the corners of an intersection. The cameras point inward, so they can photograph cars driving through the intersection. Generally, red-light enforcement has cameras at all four corners of an intersection, to photograph cars going in different directions and get pictures from different angles. For the proposed St. Joseph system no equipment or sensors would be needed in the roadway so no construction on the actual roadway surface would be needed. A photo of the vehicle running the red would be taken to include the license plate number, but no photo of the driver. The registered owner of the vehicle would then receive a ticket via mail.

There are currently two intersections at which the automated red light enforcement equipment is installed and could be operational in the near future: Belt Highway and Frederick Avenue and Belt Highway and Cook Road. Additional proposed intersections include: Frederick Avenue and Woodbine Road; Belt Highway and Gene Field Road; Belt Highway and Faraon Street; and Frederick Avenue and I-29. These intersections are all within the top ten intersections in the city for vehicle crashes and injuries. Pending the appropriate legislation and approval, the cost of the system is anticipated to be covered by the fines generated from violations of the automated red light cameras.

**St. Joseph Region – Transit**

St. Joseph Transit plans to implement the following transit technologies over the coming five to ten-years:

- **Google Transit Integration**: This project will provide route information at a stop level via Google transit’s web-based system. Users can access Google Maps (https://maps.google.com/) and zoom into an area of interest in the St. Joseph region to find bus stop icons along existing transit routes. The user can click on those icons to understand which transit route serves those stops, as
well as the scheduled times of arrival for those buses. It is anticipated this service will launch before the end of 2014.

• **Mobile Data Terminal Upgrade**: The existing MDTs utilized by St. Joseph transit will be replaced with 7-inch tablets that will provide bus drivers with a touchscreen-based interface to use for logging into bus routes and entering in critical driver and route information.

• **Camera System Upgrade**: The existing camera system at remote transit facilities, such as transit stations, currently has bandwidth and speed limitations. The planned upgrade will allow for faster data transfer of video from on-site Digital Video Recorders (DVRs) to transit staff and utilize less bandwidth.

• **Maintenance Software Upgrade**: St. Joseph Transit will also transition to different maintenance software that has greater flexibility than the current system, and also allows for greater staff reporting and tracking capabilities.

In addition to these planned transit ITS projects, St. Joseph Transit desires to install the following additional technologies:

• **Additional Remote Facility Cameras**: These cameras would be located at the transit garage and provide surveillance of the fuel island used by buses when fueling up at the beginning or end of their trip.

• **Provide live feed of vehicle cameras to law enforcement**: The existing cameras on transit vehicles currently off-load surveillance video when the bus returns to the garage at the end of its trip. A live feed of the video provided to law enforcement could aid in responding to critical incidents and allow staff to monitor the critical situation in real-time.

• **Smartphone Application for Real-Time Transit Information**: This project would provide real-time transit arrival information to passengers that use smartphones to better plan for their trip. Currently, real-time transit information is only provided at three fixed locations via large LCD monitors. This type of application could be provided by the existing AVL provider or developed internally by St. Joseph staff. The project requires access to real-time AVL data reported by transit vehicles via cellular communications, which is currently installed on St. Joseph transit vehicles.

• **AVL expansion to Service Vehicles**: Expanding the AVL system to maintenance vehicles would allow for central dispatch to better understand the location of the fleet and manage transit incidents that require service vehicles for repair or maintenance. This would require the installation of AVL hardware on the vehicles themselves, in addition to cellular communications equipment to report the vehicle’s location back to the central dispatch office.

**Missouri Department of Transportation**

The six dynamic message signs (DMS) within the St. Joseph region are controlled by cellular technology (dial-up via a built-in cell phone). MoDOT is in process of upgrading this current cellular communication to more efficient and cost effective system using fiber network and where fiber is not available using wireless technology. Other planned ITS enhancements in the St. Joseph region include 8 to 10 closed-circuit televisions (CCTV) which will tie into the fiber network and will be operated by the KC Scout TMC.

MoDOT will upgrade their central management capabilities with a new ATMS software package as part of Phase 2. This will enable center-to-field communications between the MoDOT NW District office and the
various components installed in traffic signal cabinets along the Business Loop 29 route, as well as other DMS and CCTV in the region. Phase 2 is anticipated to be complete within the next 5 to 10 years.

Additional ITS projects that MoDOT desires to undertake in the coming years includes a bridge navigation lights monitoring system, which would allow MoDOT staff to remotely monitor the major river bridge navigation lights that require MoDOT inspection on a regular basis. The system would alert a MoDOT electrician when a light has gone out so it can be changed quickly, and minimize the added expenses of someone traveling to the bridges to inspect them. This system could be used at a total of four bridges along the Missouri River in the Northwest District of Missouri, with three of them located at least one hour from St. Joseph.

MoDOT also desires to expand the rural installations of DMS and CCTV cameras in the St. Joseph region. Locations would be chosen by MoDOT and St. Joseph to fill in the gaps between the existing rural ITS components along major highways in the region to assist with incident management and inclement weather event response. Further study is needed to determine the optimal locations for such devices.

10.3. St. Joseph Regional ITS Architecture

An ITS architecture represents a shared vision of how each agency’s systems work together by sharing information and resources to enhance transportation safety, efficiency, capacity, mobility, and security. The information exchange among the many transportation stakeholders helps illustrate various integration options, gain consensus on cost-effective ITS technologies and systems to be considered prior to investing in the design, development, and deployment of ITS.

Regional ITS Architectures are generally updated once every five years in order to remain consistent with the National ITS Architecture, as well as to meet the requirements of Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) for receiving Federal funds for future ITS projects, which need to be reflected within the updated Regional ITS Architecture. A summary of developing ITS projects when using federal highway trust funds is located in the following section.

MoDOT has assisted in administering and maintaining Regional ITS Architectures throughout the state. To meet the requirement and ensure federal funding eligibility for ITS, MoDOT previously initiated the development of Regional ITS Architectures for three urban regions statewide including: Springfield/Branson; St. Louis; and Kansas City. It was planned for the St. Joseph MPO to be covered within the Kansas City Regional ITS Architecture.

However, the existing and planned ITS elements in St. Joseph MPO are not currently reflected within the Kansas City Regional ITS Architecture, which is maintained by the Mid-America Regional Council (MARC). The St. Joseph MPO should either consider coordinating with MARC to update the Kansas City Regional ITS Architecture to include the St. Joseph MPO, or develop a separate Regional ITS Architecture specific to the St. Joseph region.

10.4. ITS Funding

The following ITS enhancements are the result of a contacting and meeting with a variety of the local and regional agencies. To be eligible for federal highway trust funds, projects with ITS elements need to address four steps to ensure compliance with regional and federal ITS requirements. The requirements direct all ITS projects using federal highway funds to be developed based on a systems engineering analysis, which
includes demonstrating how the project fits into the Statewide/Regional ITS Architecture. The following summary provides a quick overview of these key steps.

1. **Is Your Project an ITS Project?**
   The first step is to assess whether the project includes any ITS elements? By definition, ITS is any as advanced information processing, communications, sensing, or control technologies that are used to improve the safety and efficiency of the transportation system. Examples include interconnecting traffic signals, transit signal priority systems, dynamic message signs, closed-circuit television cameras, automatic passenger counters, and traffic signal control software.

2. **Meeting the Federal and Regional ITS Requirements**
   The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), and continued forward in MAP-21, requires that all intelligent transportation system (ITS) projects using highway trust funds *(including the mass transit account)* must "conform" to the National ITS Architecture and ITS technical standards.

3. **Fitting Your Project Into the Statewide/Regional ITS Architecture**
   The third step is to demonstrate how the ITS project fits, in the case of the St. Joseph MPO, into the Missouri Statewide ITS Architecture. The Statewide/Regional ITS Architecture defines a framework for ensuring institutional agreement and technical integration for the implementation of ITS projects statewide. It is designed to provide guidance and serve as a resource for the development of local and regional ITS projects.

4. **Conducting a Systems Engineering Analysis**
   The fourth step is to conduct a systems engineering analysis on your project. Systems engineering is a structured process that is meant to assist with developing the final design of a system. The analysis should be on a scale commensurate with the project scope - that is, the more complex the project, the more complex the analysis.

Further guidance on the steps that can be followed in the creation of a Regional ITS Architecture can be found within the Federal Highway Administration Office of Operations page at: [http://ops.fhwa.dot.gov/its_arch_imp/index.htm](http://ops.fhwa.dot.gov/its_arch_imp/index.htm).
CHAPTER 11 TRANSPORTATION SECURITY

SAFETEA-LU created a separate and distinct “security” planning factor that must be addressed as part of the MTP process. This continues under MAP-21. Effective coordination and communication among different operating agencies in a region is paramount in an emergency response situation. Proper planning, training, and preparation between law enforcement and other local agencies provides the best opportunity to safely and effectively respond to an incident and provide the public with clear and concise information about the situation and any actions that should be taken.

Transportation security within the SJATSO is enhanced by many of the ITS applications discussed in the previous section of this Chapter. The addition of a dynamic message sign along I-29 (just south of the I-29/I-229 interchange), and the possible addition of other signs in the SJATSO region, are valuable resources to convey important traffic messages during an incident. These signs can quickly be uploaded with current travel conditions and important messages to the traveling public. The DMS can be used to convey accident details and appropriate detour information or law enforcement related messages (including Amber alerts).

11.1. Homeland Security

The SJATSO has identified the following major homeland security risks within the region:

- Flooding,
- The nearby New Madrid Fault,
- Hazardous materials from major manufacturing plants; and,
- Agri-terrorism.

The SJATSO has long recognized the need to incorporate security into the planning process. The SJATSO and The Ride have worked closely in addressing homeland security needs through regular meetings and cooperative work between their staffs. The Federal Transit Administration (FTA) recently selected the SJATSO MPO and The Ride to work with an FTA contractor for a regional safety and security review.

The SJATSO has recognized that transit is an integral component to the area’s local emergency response plan. This plan is administered by the Local Emergency Committee (LEC). According to federal guidelines, LECs must include representatives from law enforcement, emergency management, transportation, firefighting, first aid, health, media, community and environmental groups, as well as local, state and federal elected officials, hospitals and owners and operators of key facilities. LECs are responsible for developing and distributing an emergency plan annually, as well as evaluating local needs and making recommendations for additional resources required for local emergency response and recovery.

11.2. Transit Security

In some emergency response situations, public transportation, or specifically buses, can play a vital support role in evacuations or other incidents. Buses can be dispatched to impacted areas and can be used to transportation large groups of people or as temporary shelter until alternative transportation means can be identified.

There is however always the possibility that an incident could occur on a bus. In the SJATSO 2009-2012 Transportation Improvement Plan, two transit security related projects were prioritized. The first project, scheduled for 2009, was to implement a new, web-based security system and “Next Stop” passenger information system that will track transit service with Global Positioning System. The second project, slated for 2011 and 2012, will improve the administrative and maintenance facilities access security systems.
through “Smart Card” access that is integrated with a photo identification system. These specific projects don’t relate to urban-wide emergency planning, but instead relate to system security.

11.3. Emergency Operations Plan

The City of St. Joseph developed an Emergency Operations Plan (EOP) in January 2004 that addresses various natural disasters and other incidents. Since 2004, the City of St. Joseph most recently updated the EOP in September 2013. As an overview, the EOP outline actions to be taken by local government officials and cooperating private or volunteer organizations to:

1. Prevent avoidable disasters and reduce the vulnerability of City of St. Joseph residents to any disasters that may strike.
2. Establish capabilities for protecting citizens from the effects of disasters;
3. Respond effectively to the actual occurrence of disasters; and
4. Provide for recovery in the aftermath of any emergency involving extensive damage within the county.

From a transportation security standpoint, the most likely transportation related emergency would involve a hazardous materials incident and flooding evacuation. According to the City of St. Joseph EOP, the St. Joseph region is continually at risk for a hazardous materials incident because of the number of fixed sites using materials locally. While the release of hazardous materials could occur from fixed containment sites, the EOP indicates the greatest threat of a serious hazardous materials incident in St. Joseph or surrounding area is posed by transportation related incidents (i.e., roadways and railroads). The EOP outlines specific plans and procedures to respond to a hazardous materials incident. In short, the EOP recognizes that the St. Joseph area has limited resources to respond to such an incident and as a result the initial response should be defensive and focus on safety of the affected population and of first responders. These defensive actions would be executed until outside response teams with proper equipment arrive at the scene of the incident.

The primary transportation routes/facilities that could impact the St. Joseph transportation system include the following:

<table>
<thead>
<tr>
<th>Highways</th>
<th>Airports</th>
<th>Pipelines</th>
<th>Railways</th>
<th>Waterways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate/U.S. Highways</td>
<td>Rosecrans Airport</td>
<td>Two major pipelines running through the region</td>
<td>Atlantic-Transatlantic Railroad</td>
<td>Missouri River</td>
</tr>
<tr>
<td>Interstate 29 and 229</td>
<td></td>
<td></td>
<td>Burlington Northern Railroad</td>
<td></td>
</tr>
<tr>
<td>U.S. Hwy. 169</td>
<td></td>
<td></td>
<td>Missouri Pacific Railroad</td>
<td></td>
</tr>
<tr>
<td>State Highways 6, 36, 59,</td>
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The second most likely scenario addressed is a mass transportation accident. In this case, mass transportation includes any large transfer of individuals from one place to another. The key difference between a hazardous materials incident is that a mass transportation accident involves people and not hazardous materials. According to the EOP, mass transportation accidents could include public airlines, railroad passenger cars, tour buses, city buses, school buses, and other means of public transportation.

The EOP outlines evacuation operations for the City of St. Joseph, which applies to small, localized situations as well as large-scale situations. The greatest risks for triggering evacuations are hazardous materials
incident and flooding. During any evacuation close coordination is required with the following functions (which in part address transportation functions):

- **Reception and Care** -- The evacuees must have some place to go even if it is in another county, whether it is a full-fledged evacuation or a limited evacuation in scope.
- **Law Enforcement** -- Traffic control along movement routes and security for evacuated areas are an absolute necessity. Designate primary and alternate evacuation routes and indicate these routes on a map.
- **Resource and Supply** -- Transportation for persons without automobiles, food, clothing, and fuel will be required.
- The Public Works Coordinator will be responsible for assisting in the traffic movement by constructing barricades and removing debris from the roadways.
- **Other support agencies** -- Constant interface will be required with the state and federal government and private agencies such as the Red Cross.
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CHAPTER 12  ALTERNATIVE SCREENING

The St. Joseph Area Transportation Study Organization (SJATSO) utilizes a combination of a technical evaluation and stakeholder outreach to identify, screen and prioritize multimodal improvements within the region. This chapter provides an overview of the 2040 MTP screening process. Ultimately, this process leads to the identification of projects and strategies that are included in the Recommended Plan (Chapter 13).

12.1. Screening Overview

A guiding principle of the SJATSO MTP development is to balance a strong technical analysis with public input. This approach is consistent with MAP-21 which focuses on developing performance-based planning and programming that is informed by quality data and public involvement throughout. As MAP-21 performance measures are developed, the SJATSO intends to incorporate measures into future MTP updates and other transportation planning activities. Figure 12-1 summarizes the screening process used by SJATSO to identify future year transportation needs and priority projects.

The screening process focuses on two primary tasks – a technical analysis and public input. While discussed as two separate tasks, both tasks inform each other throughout the screening process. Ultimately, the screening process is used to determine which potential transportation improvements:

- Achieve the stated goals and objectives of the MTP
- Address existing and future year needs, deficiencies and opportunities;

Plan and Project Review

The screening process begins by reviewing projects contained within current planning documents, including the previous MTP (2035). Other planning studies conducted since the last MTP, are also reviewed for specific projects, strategies, or other recommendations that might impact the MTP development. Since the 2035 MTP was adopted in February 2010, a transit operational study was completed and a non-motorized (rail to trail) study was also completed. These studies provide additional details and recommendations that are incorporated into the 2040 MTP update.

The plan and project review process also recognizes that additional studies will continue following the adoption of the 2040 MTP. For example, at the time this 2040 MTP was being completed, an airport master plan was beginning. As recommendations from airport master plan, and other studies, are identified these findings will be incorporated into the MTP as appropriate.
12.2. Technical Analysis

The technical analysis includes an evaluation of the respective transportation modes for the existing (2010) and future year (2040) conditions. This analysis considers both the on-going maintenance needs as well as identifying future year capital improvements to address projected mobility needs of the general public and local businesses and industries. The following summarizes the key technical components of the screening process.

Travel Demand Forecasting Model

As part of the 2040 MTP, the regional travel demand forecasting model was updated to reflect current year conditions. This process included an extensive review and update of the model network and an update of the socioeconomic data to establish a 2010 baseline condition. As part of this process, the project team collected approximately 130 daily traffic counts to supplement MoDOT and KDOT traffic counts. The traffic counts were used to develop and test the travel demand forecasting model.
Ultimately, the travel demand model is a tool used to evaluate the effectiveness of potential roadway improvements. The model is used to replicate existing travel conditions and then used to project year 2040 conditions. Chapter 4 includes a discussion of model scenarios and results.

**Environmental Justice**

Environmental Justice (EJ) is a federal policy that requires agencies receiving federal funds to set up processes that take into account impacts of plans, projects, and activities on minority and low-income populations. FHWA and FTA establish policy guidelines that focus on the following:

- **Limited Effects** – Avoid, minimize, or mitigate disproportionally high and adverse effects on human health and the local environment. This includes social and economic effects on minority and low-income populations;
- **Inclusion** – Ensure that all communities that would potentially be affected by the transportation decision making process have the opportunity to participate and be represented; and
- **Guarantee of Benefits** – Prevent the denial, reduction, or significant delay of the receipt of benefits to minority and low-income population.

The EJ analysis and results are presented in Chapter 13.

**Land Use Compatibility**

As summarized in Chapter 2, the planning area continues to grow over the past two decades. As this growth occurs, the planning area experiences changes in land use which have a direct impact on transportation patterns and infrastructure decisions. Land use changes, such as new housing developments and employment centers, often increase travel demand, creating the need for additional transportation accommodations in all modes. As the area responds with new supply (new roadways, additional travel lanes, new or expanded bus routes, new non-motorized facilities, etc.) the demand is addressed and there is improved accessibility to land. This accessibility results in new land uses, leading to new transportation demand and so on. This cycle of improvements and demand is known as the Land Use/Transportation Cycle.

**Operations and Maintenance**

The on-going preservation of the existing transportation infrastructure is a critical, and costly, element of maintaining a safe, efficient and reliable transportation system. The primary focus of the region, at least for the foreseeable future, is a continued focus on maintaining the existing infrastructure, and other transportation assets, in a state of good repair. As previously discussed, addressing the short-term and long-term needs of the elevated segment of I-229 is critical to addressing the overall O&M needs of the region. Chapter 5 of this MTP discussed the O&M needs of the region. Chapter 13 includes strategies as part of the recommended plan to address O&M needs, including the elevated segment of I-229.

**12.3. Public Input**

Public input is another critical aspect of the planning process that informs the project identification and screening process. The following summarizes the key public input received during the development of the 2040 MTP update.

*Public Opinion Survey*
With every MTP update, the SJATSO conducts a statically valid public opinion survey to help inform the process and identify priority issues. The SJATSO has been conducting this survey as part of the past three MTP updates. As such, the survey results begin to reflect trends that further inform the planning process.

In June/July 2013, ETC Institute conducted a scientific survey of area residents. The goal was to complete 400 surveys, providing a 95% level of confidence with a margin of error of +/- 5%. The goal was achieved with 406 completed surveys from the three-county metropolitan planning area. The survey instrument included the same questions as those used in the 2008 survey. The results from the 2013 survey were compared to the 2008 survey results, and when possible were also compared to the 2004 survey (note, the 2004 survey contained some different questions from the 2008 and 2013 surveys and therefore only certain survey responses are able to be compared). Table 12-1 shows how the trends were displayed between the 2013 and 2008 surveys. The results for each survey question, and survey instrument, are provided in a detailed ETC survey report which is available on the SJATSO website, or available upon request. The following highlights some of the survey findings.

Table 12-1: Public Opinion Survey Trends

<table>
<thead>
<tr>
<th>Percent Change Between 2008 and 2013 Survey</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Change</td>
<td>Greater than or equal to 5.0%</td>
</tr>
<tr>
<td>Somewhat Positive Change</td>
<td>Between 2.5% and 4.9%</td>
</tr>
<tr>
<td>Neutral / No Change</td>
<td>Between 2.4% and -2.4%</td>
</tr>
<tr>
<td>Somewhat Negative Change</td>
<td>Between -2.5% and -4.9%</td>
</tr>
<tr>
<td>Negative Change</td>
<td>Greater than or equal to -5.0%</td>
</tr>
</tbody>
</table>

The 2013 Public Opinion Survey was conducted to scientifically measure the pulse of the region by identifying transportation challenges and opportunities, suggesting potential transportation improvements, distinguishing low priority improvements from those more urgently needed, and identifying potential revenue sources to pay for such improvements. The results of the survey were presented to the MTP Steering Committee and policy makers to help inform the MTP decision making process.

**Sector / Stakeholder Workshops**

Sector workshops were conducted in April 2014 to identify current and future year mobility and infrastructure needs. The sector workshops provide an opportunity to focus on the specific needs of a particular sector, or subarea, of the region in greater detail. At the end of each workshop, the sector needs, and potential projects, were discussed in relationship to overall regional transportation system.

Similar to the 2035 MTP, the SJATSO region was divided into four sectors – north, south, east, and west. Large maps of the sectors were placed in front of the workshop attendees and transportation, land use, and growth issues were discussed. Figure 12-2 displays the marked-up maps for each of the sectors while the following summarizes the key themes.

- **North** – the North sector workshop discussion focused on the need to provide the appropriate infrastructure to support continued residential and commercial development in the area. Country Club Village is one area experiencing growth and there was discussion of expanding the non-motorized connections from St. Joseph to Savannah. Safety and connectivity continue to be
themes that have been previously expressed in the north sector. The possibility of expanding the use of Krug Park was also discussed.

- **East** – the East sector workshop discussion focused on the need to accommodate the fastest growing area of the region. Part of the discussion focused on the need to improve Cook Road to accommodate new development and a new school. The outer loop concept, discussed in the 2035 MTP, is no longer a feasible long-term option given the proposed new US 36 interchange and Ag Expo development. There was discussion about continuing to explore options to improve travel connections between I-29 and the Riverside Corridor. The need to improve non-motorized connections through the Parkway design was also mentioned.

- **South** – the South sector workshop discussion also focused on continued need to improve connections to the east. The logical growth pattern is toward the south to grow toward the Kansas City region; however, most growth is currently occurring toward the east. Discussion of access along US 59 and the need for intersection geometric improvements were also mentioned.

- **West** – the West sector workshop discussion focused on potential economic opportunities, the need to enhance non-motorized needs, and transit improvements. Recent transit enhancements to Elwood have been received as a positive. Like most sectors, there was also discussion about the I-229 elevated segment.
Figure 12-2: Sector Workshop Maps

NORTH SECTOR

EAST SECTOR

SOUTH SECTOR

WEST SECTOR
**Sector Workshop – Steering Committee Follow-up**

Following the sector workshops, the MTP Steering Committee met to discuss the workshop results. Much of the discussion focused on the immediate maintenance needs of the elevated section of I-229. Some of the discussion focused on the possibility of tearing down of the structure and replacing it with an at-grade roadway vs. continued on-going maintenance of the existing structure. Currently, there is no consensus on an option, and this MTP does not provide the level of analysis necessary to recommend a locally preferred scenario. This is however an example of how the public input obtained in the MTP planning process helped shape priorities within the region.

The committee also discussed the outer loop concept which was included as part of the unconstrained vision in the 2035 MTP. All were in agreement that enhancing connectivity in the southeast portion of the study area is important but that planned developments in the area no longer make the outer loop concept a feasible alternative. As such, the Steering Committee recommended evaluating a new roadway that would connect I-29/229 interchange to the Riverside Road corridor. This concept was included for evaluation in Chapter 4.

**Workplace Survey**

The SJATSO conducts a workplace survey with each MTP update. The workplace survey identifies potential projects that are divided into four sectors, similar to the sector workshops. The workplace survey identifies between eight and ten potential projects for consideration in each of the four sectors. For the most part the projects are consistent with the previous MTP and to respond to common themes heard from sector meetings and other stakeholders. Since the projects are consistent, it allows the 2014 and 2009 survey results to be compared. Figure 12-3 displays the projects identified for the workplace survey.
A workplace survey of area businesses and employees was distributed by the St. Joseph Chamber of Commerce to nearly 1,800 employees in the region. Overall, approximately 300 workplace surveys were completed. This is on par with the 2009 survey which had approximately 320 survey responses.

The results show that the large majority of respondents drive to work and there were very low responses for transit users and non-motorized users. The survey results should be viewed with caution as this is not a statistically significant survey. It does however help provide some insight into project priorities as viewed by area businesses and employees. The responses for each sector are ranked in Table 12-2. The projects are ranked in order based on the 2014 scores.
Table 12-2: Sector Project Ranking

<table>
<thead>
<tr>
<th>North Sector Improvements</th>
<th>2014</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Cook Road from I-29 to St. Joseph Avenue</td>
<td>7.20</td>
<td>7.90</td>
</tr>
<tr>
<td>Extend Cook Road from St. Joseph Avenue west to I-229 and the riverfront</td>
<td>6.40</td>
<td>6.23</td>
</tr>
<tr>
<td>Construct new east-west roadway connecting I-229 with Riverside Road</td>
<td>6.32</td>
<td>7.68</td>
</tr>
<tr>
<td>Improve US 59 from County Line Road to Belt Highway</td>
<td>6.00</td>
<td>6.11</td>
</tr>
<tr>
<td>Street and sidewalk improvements in Downtown</td>
<td>5.95</td>
<td>5.77</td>
</tr>
<tr>
<td>Preserve rights-of-way for future transportation improvements</td>
<td>5.16</td>
<td>6.03</td>
</tr>
<tr>
<td>Construct new east-west roadway connecting I-229 with US 59 (through Krug Park)</td>
<td>5.04</td>
<td>n/a</td>
</tr>
<tr>
<td>Improve Highway DD between St. Joseph and Savannah</td>
<td>4.88</td>
<td>5.19</td>
</tr>
<tr>
<td>Construct new bicycle trail connections to Country Club Village and Savannah</td>
<td>4.43</td>
<td>n/a</td>
</tr>
<tr>
<td>Extend &quot;The Ride&quot; transit service to Savannah</td>
<td>3.62</td>
<td>4.42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>South Sector Improvements</th>
<th>2014</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve (reconstruct) traffic flow at the interchange of I-229, US 36, and US 59</td>
<td>7.11</td>
<td>7.38</td>
</tr>
<tr>
<td>Improve the Highway 752/Alabama Road intersection and rail crossing</td>
<td>6.86</td>
<td>6.72</td>
</tr>
<tr>
<td>Improve US 59 from US 36 to south city limit</td>
<td>6.71</td>
<td>6.05</td>
</tr>
<tr>
<td>Construct new roadway connecting Highway 752 to Belt Highway</td>
<td>6.53</td>
<td>6.12</td>
</tr>
<tr>
<td>Improve access (interchange connections) from I-229 east to Route AC US 36</td>
<td>6.35</td>
<td>5.79</td>
</tr>
<tr>
<td>Improve signage into downtown St. Joseph from US 59</td>
<td>5.59</td>
<td>4.55</td>
</tr>
<tr>
<td>Improve transit service to Stockyards area</td>
<td>5.17</td>
<td>4.50</td>
</tr>
<tr>
<td>Construct new interchange at I-29 and Highway O</td>
<td>5.02</td>
<td>5.03</td>
</tr>
<tr>
<td>Extend bicycle path from Southwest Parkway east to Ajax Road</td>
<td>4.86</td>
<td>4.08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>East Sector Improvements</th>
<th>2014</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve traffic flow along Gene Field Road (Belt Highway to Riverside Road)</td>
<td>6.86</td>
<td>6.71</td>
</tr>
<tr>
<td>Improve Cook Road from I-29 to Riverside Road</td>
<td>6.61</td>
<td>6.86</td>
</tr>
<tr>
<td>Improve US 36 to interstate standards (includes interchange upgrades)</td>
<td>6.59</td>
<td>6.62</td>
</tr>
<tr>
<td>Improve traffic flow along Belt Highway</td>
<td>6.47</td>
<td>6.83</td>
</tr>
<tr>
<td>Reconstruct US 36 / Belt Highway interchange to improve traffic flow</td>
<td>6.35</td>
<td>6.56</td>
</tr>
<tr>
<td>Widen Mitchell Avenue to 3-lanes, including bike and pedestrian improvements</td>
<td>6.01</td>
<td>n/a</td>
</tr>
<tr>
<td>Create parkway along Riverside Road and parallel bike path (US 36 to Cook Road)</td>
<td>5.53</td>
<td>4.93</td>
</tr>
<tr>
<td>Extend transit service into developing industrial areas along Riverside Road</td>
<td>5.08</td>
<td>4.75</td>
</tr>
<tr>
<td>Run a new north-south bus route along Belt Highway</td>
<td>4.70</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>West Sector Improvements</th>
<th>2014</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reconstruct the elevated portion of I-229 as a surface roadway</td>
<td>7.21</td>
<td>n/a</td>
</tr>
<tr>
<td>Increase access to the river port and increase shipping activity</td>
<td>6.86</td>
<td>n/a</td>
</tr>
<tr>
<td>Improve roadway connection between US 36 and Rosecrans Airport</td>
<td>6.60</td>
<td>8.63</td>
</tr>
<tr>
<td>Improve safety of rail crossings at Vermont, 7th and 15th Streets</td>
<td>6.49</td>
<td>8.38</td>
</tr>
<tr>
<td>Reconstruct the elevated portion of I-229 (keep as an elevated structure)</td>
<td>6.50</td>
<td>n/a</td>
</tr>
<tr>
<td>Construct a bicycle/pedestrian river crossing</td>
<td>6.16</td>
<td>7.35</td>
</tr>
<tr>
<td>Increase frequency of transit service between Elwood and St. Joseph</td>
<td>5.13</td>
<td>7.59</td>
</tr>
<tr>
<td>Extend transit service to Wathena</td>
<td>4.87</td>
<td>6.76</td>
</tr>
<tr>
<td>Improve bicycle and pedestrian facilities in Elwood and Wathena</td>
<td>4.38</td>
<td>6.61</td>
</tr>
</tbody>
</table>

NOTE: Weighted scores are for comparison within each sector and should not be compared across sectors.

SOURCE: URS Corporation.
Overall, the 2014 workplace survey rankings were consistent with the 2009 workplace survey. This would suggest that the improvements identified in the 2035 MTP are still valid concerns that address future year needs. Improvements to Cook Road once again ranked as the highest priority within the region. There was also significant input received on the elevated section of I-229, which was a project not included on the 2009 workplace survey. In addition to the ranked projects, individuals were also able to provide open ended comments. The comments, and rankings, were used to help prioritize projects in the Recommended Plan (Chapter 13).

**Stakeholder Input**

In addition the MTP Steering Committee, the SJATSO utilizes the MTP update as an opportunity to obtain additional stakeholder input regarding transportation related issues impacting the region. Two examples of this stakeholder outreach include the Intelligent Transportation System (ITS) working session and the SJATSO Transit Working Group.

The ITS workshop was held in April 2014 and included local emergency response officials, public works representatives, St. Joseph Transit representatives and MoDOT and KDOT representatives. The ITS workshop provides an opportunity to discuss communication issues within the region and also provides an opportunity to address how potential security issues are coordinated between agencies.

Following the 2035 MTP, the SJATSO also formed a Transit Working Group. The Transit Working Group includes the fixed-route service provider as well as other local and regional transportation service providers. The purpose of the group is to meet a regular basis to discuss regional mobility needs and to identify potential opportunities to coordinate services. The Transit Working Group was utilized throughout the development of the MTP to address transit issues in the 2040 MTP. The input from the working group also helped with the update of the Coordinated Human Services-Transportation Plan which the SJATSO updates every five-years with the MTP.

**City of St. Joseph Community Survey**

The 2014 St. Joseph Community Survey was completed in June 2014 by ETC Institute. The survey addresses a wide range of topics, including transportation. The survey is only for the City of St. Joseph and the results do not apply to the entire SJATSO MPA. However, the survey does provide additional information that informs the overall development of the MTP. A full copy of the community survey is available from the City of St. Joseph.

**Public Open House**

In addition to the public surveys, the SJATSO conducts a public open house to present the draft plan recommendations. The open house for the 2040 MTP will be held on November 13, 2014 at the St. Joseph City Hall. Additional information will be provided once the open house is conducted.

**Public Review of the Draft MTP**

The SJATSO Coordinating Committee makes the draft MTP available for a 45-day public review and comment period. At the end of the 45-day period, all public comments will be addressed by the project team and the Coordinating Committee. The public review of the draft MTP will begin in early December 2014 and conclude in mid-January 2015. Additional information will be provided once the public comment period is completed.

**SJATSO Website and Social Media**
The SJATSO posts current planning documents on the MPO website. SJATSO also plans to utilize social media in future planning efforts to maximize public outreach efforts. As MAP-21 performance measures are finalized, the SJATSO plans to utilize the MPO website and social media to report on the overall performance in responding to the defined measures.
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CHAPTER 13  RECOMMENDED PLAN

This chapter summarizes the SJATSO 2040 MTP recommended plan. The recommended plan focuses on strengthening the existing regional transportation infrastructure by implementing future transportation improvements to enhance overall regional mobility and expand transportation choice. The recommended plan includes fiscally constrained transportation improvements and projects that are part of the long-range, unconstrained regional vision. The recommended plan recognizes the need to prioritize the preservation of existing transportation infrastructure and assets, expand multimodal connections within the region, and as appropriate expand the transportation roadway network to accommodate future year growth.

13.1. Priority Transportation Needs

Consistent with the screening process outlined in Chapter 12, the SJATSO began the project identification process by reviewing the 2035 MTP. These projects, along with existing and future year transportation needs, were discussed with the MTP Steering Committee and other stakeholders. This input, along with a technical evaluation of the regional transportation system, led to the identification of priority transportation needs for the SJATSO region. For the most part, the 2035 MTP priorities are still relevant and are again included in the 2040 MTP. As discussed later in this chapter, current transportation revenues limit the number of projects that are considered to be part of the fiscally constrained plan. The following summarizes the priority transportation needs for the SJATSO region. Figure 13-1 highlights the location of priority roadway and freight improvements.

Figure 13-1: Priority Roadway and Freight Needs

Connectivity/Capacity Improvements

The need to strengthen the east-west connectivity and the functional classification system remains an important regional transportation issue as the area develops to the north. The 2035 MTP identified the Cook Road corridor as an east-west connection to tie into the Riverside Road corridor. A continuous east-
west Cook Road that would connect to I-229, and the riverfront, has been part of the region’s long-range vision for some time. Enhancing a portion of this corridor is also part of the current SJATSO TIP.

The Cook Road improvements should also consider potential future development plans along this corridor. Specifically, Krug Park has been discussed for possible improvements that would increase the park’s use and include an expanded outdoor amphitheater. Given the close proximity to the Cook Road corridor this potential development should be closely monitored to identify what impacts this would have on traffic in the area, and the possible design/function of Cook Road. As part of this potential development, there has been some discussion of a new east-west alignment that would connect through Krug Park. This access issue should be explored further if this development moves forward.

On the east end of Cook Road, the corridor would tie into the Riverside Road. The Riverside Road corridor is another important connection that enhances north-south travel in the region and supports existing, and planned, industries along the corridor. The corridor also serves Heartland Hospital and Missouri Western State University, both of which are regional trip attractions. The Riverside Road corridor, including Route AC, has existing traffic capacity issues near the US 36 interchange. Addressing these capacity needs will be critical in supporting the planned Ag Expo center planned for construction in the short-term. From a long-range, unconstrained vision perspective, the possibility exists to one day extend the Riverside Road corridor south and west to tie into the I-29/I-229 interchange.

**Operational Improvements**

The Belt Highway is a corridor that currently sees some segments with daily traffic volumes exceeding 20,000 vpd. This corridor also experiences the highest number of crashes as documented in Chapter 4. As traffic continues to grow along the Belt Highway, this corridor is a prime candidate for operational improvements. Given that the Belt Highway is already five-lanes, adding through lane capacity is not a feasible long-term option. Instead, this corridor could benefit from operational improvements that would upgrade the existing traffic signals and prioritize signal coordination. As discussed in the ITS chapter, some technology (red light cameras and signal preemption) exist in the corridor and could also be used to enhance safety. Lower cost Transportation System Management (TSM) improvements would also be appropriate for select intersections to improve traffic operations and safety.

This corridor is also an important multimodal corridor in that a north-south transit route is envisioned along this corridor in the future (this is discussed further as part of the transit section). In order to support transit operations, sidewalk enhancements must be prioritized. The current SJATSO TIP includes some sidewalk enhancement along the Belt Highway.

**Maintenance and Freight Focus**

As discussed in Chapter 5, the I-229 elevated structure (see Figure 13-2), just west of downtown St. Joseph is a significant concern from an operations and maintenance perspective. This structure will have significant short-term and long-term impacts on the region’s transportation maintenance expenditures. MoDOT is planning to spend approximately $2 million on short-term bridge repairs and have identified the need for an additional $25 million to $30 million for mid- to long-term repairs. It is also likely that as this structure ages that the annual maintenance needs and associated repair costs will continue to increase.
Given the significant maintenance needs, along with age of the structure, the 2040 MTP has identified the need to further evaluate the long-term options. One possible scenario involves tearing down the elevated segment and reconstructing the roadway at-grade. The 2040 MTP acknowledges that this would be a complicated and challenging project; however, given the extent of the projected maintenance needs/costs this is the appropriate time to study all feasible long-term scenarios. It is also important to note that the 2040 MTP does not make a recommendation in terms of reconstructing/repairing “as is” vs. reconstructing as an at-grade roadway. This is significant a long-term investment that will have regional impacts on the transportation network and land use/development patterns. As such the SJATSO is prioritizing additional study of this structure, and corridor. If this structure were to be replaced with an at-grade roadway, it would require the declassification of the interstate. While this action is possible, it does require a vote of Congress to approve such action.

The uncertain status of the I-229 structure also impacts other potential transportation improvements and development in the area. I-229 provides an important connection into downtown St. Joseph and any structural/geometric modifications could impact access to downtown. The I-229 structure also directly impacts the I-229/US 36/US 59 interchange and access along US 36 and US 59. These transportation facilities play an important role in local and regional freight movements and as such any potential I-229 improvements should enhance freight within this area, and throughout the SJATSO region. Specifically, US 36 provides important regional access to the airport and to the St. Joseph Port. US 59 also provides an important truck access route into the region and serves the St. Joseph Port and Stockyards. Furthermore, the area has existing rail lines that parallel I-229 and serve existing industries.

**Expanding Transit Coverage**
The 2040 MTP builds off of transit recommendations identified in the 2012 Operational Transit Study. One of the improvements envisions a new north-south route along the Belt Highway that would build off the existing strong east-west route structure. A north-south transit route along the Belt Highway was previously discussed as part of potential long-term operational improvements. Traffic signal upgrades could be coordinated with future transit investments to help buses operate more efficiently within the corridor. Sidewalk improvements in the corridor are also critical to help riders access the bus within that critical first and last-mile connection to/from bus stops.

In addition to enhanced local service, the MTP continues to promote studying the possibility of expanded regional transit service. As discussed earlier in this document, the amount of travel between the St. Joseph region and Kansas City continues to grow as residents take advantage of convenient access to the Kansas City International Airport and to other facilities including medical services. The 2040 MTP recognizes the
potential to develop commuter bus service which could eventually turn into enhanced commuter transit services long-term.

Non-Motorized
As previously discussed, the Cook Road and Riverside Road corridors are two important corridors planned for future roadway improvements. Beyond this function, these corridors also include priority non-motorized improvements that would connect to the existing urban trail system. The 2035 MTP envisioned the Cook Road and Riverside Road corridors to function as a parkway that would accommodate bicycles. In fact, the current TIP includes construction of a portion of the Riverside Road trail. As this corridor develops, it will be important to adequately plan for and construct the important non-motorized improvements that continue to be part of the 2040 MTP.

In addition to these local improvements, there was considerable interest as part of the MTP development to expand the regional trail system to Savannah. Stakeholders from Country Club Village expressed a strong interest in developing this trail and further identified the potential to build local connections from the regional trail to the Village. As the area to the north continues to grow, the SJATSO should prioritize potential non-motorized improvements to ensure that these improvements can be constructed over the next twenty plus years.

13.2. Financial Constraint and Funding
The 2040 MTP, as with previous SJATSO MTP’s, stresses the need to allocate transportation funding and coordinate project scopes efficiently for optimum impact. This efficient approach will likely need to be perpetuated as the SJATSO and local agencies continue to be responsible for prioritizing and constructing future transportation projects identified in the 2040 MTP. SJATSO, like many other governmental agencies, faces a recurrent issue of developing stable funding sources to adequately fund projects that address long-term mobility and infrastructure needs of the region.

It has long been recognized at both the State and Federal levels that additional funding is needed to meet future infrastructure needs. Preliminary discussions at the state and national level have identified the possibility of raising the motor fuel tax or more advanced solutions that would charge motorists and freight providers based on VMT. There is also growing recognition that region’s need to invest in multimodal projects that provide transportation choice through enhanced public transportation and non-motorized services/facilities.

As with most DOT’s, MoDOT has seen transportation revenues decline due to inflation and a lack of motor fuel tax revenues. The motor fuel tax has lost its effectiveness because it has not been raised in 20 years and vehicles are becoming more efficient. In August 2014, the State of Missouri asked voters if the Missouri Constitution should be changed to enact a temporary sales tax of three-quarters of one percent to be used solely to fund state and local highways, roads, bridges and transportation projects for ten years. This measure failed with a 59% no vote. Had the measure passed, it was expected to generate $480 million annually to the state's Transportation Safety and Job Creation Fund and $54 million for local governments. Now, the transportation infrastructure needs continue to increase while the short-term holds little hope for any increase in transportation revenues.

Federal Funding
At the time this plan was being finalized, the future of surface transportation funding was uncertain. Congress has not passed an infrastructure funding package that lasts longer than two years since 2005. The
The last two-year highway bill that was approved was on July 6, 2012, when President Obama signed Moving Ahead for Progress in the 21st Century (MAP-21). Recently, in the summer of 2014, MAP-21 was reauthorized for only eight months. These short-term reauthorizations make it difficult to adequately plan for the long-term infrastructure needs of the region. The SJATSO continues to support a transportation program that identifies a stable, long-term funding source.

**State Funding**

Missouri generates their transportation revenue primarily from vehicle registration fees and motor vehicle fuel and sales taxes. The largest source of state transportation revenue is the motor fuel tax which generated $526 million in 2008. Assessed at a rate of 17-cents per gallon, it produces 45 percent of state transportation revenues. MoDOT receives a portion of motor vehicle sales and use taxes paid upon the purchase or lease of motor vehicles. These tax revenues provide approximately 25 percent of state transportation revenues. In total, this represents approximately about $1 billion in state revenues available for transportation projects.

Transit is funded by general revenue appropriation by the State Legislature averaging approximately $8 million per year. Statewide needs are for an appropriation of approximately $100 million per year for operation, a small portion of which flows to St. Joseph. For the past several years the State of Missouri is forecasting a bleak financial picture with no additional funding from the State in support of transit. The Missouri Public Transit Association (MPTA) is encouraging the State to give serious consideration to the future of State support for public transit funding. A strong statewide transit funding source is desperately needed to ensure the long-term viability of public transit throughout Missouri, and the SJATSO region.

13.3. **Fiscally Constrained Recommended Plan**

The MTP includes a fiscal constraint requirement which is intended to ensure that MTP’s reflect realistic assumptions about future revenues. Compliance with the requirement entails a comparison of revenues and estimated project costs. The primary question that must be answered is “Will the projected revenues (Federal, State, local, and private) to the year 2040 cover the anticipated costs of the projects?” Equally important is the question, “Will the projected revenues cover the operation and maintenance of the transportation system?”

In developing the revenue and cost estimates, it is necessary to use an inflation rate to reflect “year of expenditure dollars” based on reasonable financial principals developed cooperatively with the MPO. For the 2040 MTP, SJATSO assumes a 2.5% annual inflation rate for transportation revenues and a 4.0% annual inflation rate for project costs. These percentages were discussed with the MTP Steering Committee and the MPO Technical Committee. It is worth noting that some committee members felt a 2.5% increase for transportation revenues likely represents an optimistic projection. Ultimately, after some discussion, it was decided that a 2.5% increase was a reasonable assumption for long-range planning purposes.

**Available Revenue**

Table 13-1 summarizes the available revenue estimated between 2015 and 2040. A similar methodology was used to the 2035 MTP which based the historic funding levels on recent financial data. As such, the SJATSO region is estimated to have approximately $827 million to spend on transportation improvements between 2015 and 2040. This is further broken down into the following categories:

- Maintenance / Construction = approximately $596 million
- Transit = approximately $208 million
- Airport / Port = approximately $23 million
**Operating & Maintenance**

The SJATSO region is estimated to generate approximately $827 million between 2015 and 2040 for transportation investments. The majority of this money will be needed to fund operating and maintenance costs of existing transportation assets. The metropolitan planning statutes state that the MTP and the TIP must include, “...resources from public and private sources that are reasonably expected to be available to carry out the program.” For purposes of transportation operations and maintenance, the financial plan shall contain cost estimates and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways. For the TIP, financial constraint shall include sufficient financial information to demonstrate which projects are to be implemented using current and/or reasonable available revenues.

Of the approximately $596 million available for maintenance and construction, it is generally assumed that approximately 80% will be required to maintain the existing transportation infrastructure. This consists of on-going maintenance including repairing and repaving roadways and trails. Based on this assumption, this would leave approximately $119 million available for construction, or capacity/expansion projects.

Transit operating and capital costs are separate expenses that would be covered by the approximately $208 million. The majority of the transit costs are associated with the operation of the existing transit services. Based on current figures, more than 95% of the projected revenue is used to cover operational costs.

As part of the on-going maintenance, MPOs are required to monitor and determine that normal life cycles (useful life) have not been exceeded. Chapter 5 discussed operations and maintenance for the transportation system and there are two significant issues that must be monitored in the coming years. As discussed, the maintenance needs of the elevated section of I-229 are significant and exceed current funding. MoDOT would need to allocate special statewide funds to cover the projected nearly $30 million repair cost. Given the backlog of statewide needs, it is likely that the funding for the I-229 improvements would be postponed for the foreseeable future. A second concern is the aging vehicle fleet for the public transit agency. In March 2015, 20 of the 24 vehicles will have exceeded their useful life. Addressing the replacement of the transit vehicles is an important element of maintaining and operating a safe and efficient public transportation service within the region.
Table 13-5: Projected Transportation Revenues (2015 – 2040)

<table>
<thead>
<tr>
<th>Years</th>
<th>Projected Revenue (in 1,000s)</th>
<th>Annual Average During Time Period (in 1,000s)</th>
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<tbody>
<tr>
<td>2015 to 2019</td>
<td>Maintenance / Construction $87,035 72.0% $17,407</td>
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<tr>
<td></td>
<td>Transit $26,450 25.2% $6,090</td>
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<tr>
<td></td>
<td>Airport / Port $3,322 2.7% $654</td>
<td></td>
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<tr>
<td></td>
<td>TOTAL $116,807 $24,101</td>
<td></td>
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<tr>
<td>2020 to 2024</td>
<td>Maintenance / Construction $96,472 72.0% $19,694</td>
<td></td>
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<tr>
<td></td>
<td>Transit $34,451 25.2% $6,890</td>
<td></td>
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<tr>
<td></td>
<td>Airport / Port $3,759 2.7% $752</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL $135,682 $27,336</td>
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<tr>
<td>2025 to 2029</td>
<td>Maintenance / Construction $111,412 72.0% $22,262</td>
<td></td>
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<tr>
<td></td>
<td>Transit $36,976 25.2% $7,796</td>
<td></td>
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<tr>
<td></td>
<td>Airport / Port $4,252 2.7% $850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL $154,643 $30,929</td>
<td></td>
</tr>
<tr>
<td>2030 to 2034</td>
<td>Maintenance / Construction $126,052 72.0% $25,210</td>
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<tr>
<td></td>
<td>Transit $34,101 25.2% $7,820</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airport / Port $4,615 2.7% $862</td>
<td></td>
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<td></td>
<td>TOTAL $164,768 $34,893</td>
<td></td>
</tr>
<tr>
<td>2035 to 2040</td>
<td>Maintenance / Construction $133,314 72.0% $26,866</td>
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<tr>
<td></td>
<td>Transit $38,973 25.2% $8,820</td>
<td></td>
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<tr>
<td></td>
<td>Airport / Port $5,311 2.7% $962</td>
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<tr>
<td></td>
<td>TOTAL $174,598 $40,094</td>
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</table>

Total (2010 to 2035) $827,661

SOURCE: Local Agencies and URS Corporation.

NOTE: The projected revenues were forecast at a 2.5% annual increase to the year 2040.

Recommended Roadway Projects

Based on the project scoring in Chapter 4, and the 2015 to 2040 revenue projections, the following summarizes the recommended plan components. Table 13-2 summarizes the fiscally constrained roadway improvements with anticipated year of expenditure cost while Figure 13-3 displays the location of the projects.

The evaluation of the potential roadway projects in Chapter 4 resulted in the projects being assigned an overall score and priority ranking. It is important to note that the priority ranking was used as a guide in selecting the recommend improvements and the highest priority projects were not simply selected as projects for the fiscally constrained plan. The projects were further reviewed to determine the funding impacts and also to see how projects were distributed throughout the MPA. Those projects not identified as part of the fiscally constrained plan are included in the unconstrained vision (discussed later in this chapter).

Table 13-2: Fiscally Constrained Roadway Improvements

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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MoDOT</td>
<td>US 56</td>
<td>Construct new interchange approximately one mile east of Route AC.</td>
<td>n/a</td>
<td>$4,520,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Private Funding (Ag. Enterprises)</td>
<td>New Route</td>
<td>Construct new north-south roadway from just north of US 36 (at new interchange) south to connect with Main Street.</td>
<td>0.5</td>
<td>$2,000,000</td>
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<td></td>
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</tr>
<tr>
<td>3</td>
<td>City of St. Joseph</td>
<td>Cook Road</td>
<td>Improve utility corridors; construct Cook from US 36 to Revere Rd (3-lane); remove vertical alignment</td>
<td>1.0</td>
<td>$6,741,943</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>MoDOT</td>
<td>Cook Road</td>
<td>Improve capacity and reconstruct from US 56 to US 36; improve drainage; install 3-lane guardrail</td>
<td>0.9</td>
<td>$4,323,356</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>City of St. Joseph</td>
<td>Cook Road</td>
<td>Improve capacity and reconstruct from US 36 to US 36; improve drainage; install 3-lane guardrail</td>
<td>0.9</td>
<td>$5,323,356</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>6</td>
<td>MoDOT</td>
<td>Cook Road</td>
<td>Improve capacity and reconstruct from US 36 to US 36; improve drainage; install 3-lane guardrail</td>
<td>1.0</td>
<td>$6,741,943</td>
<td></td>
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<tr>
<td>7</td>
<td>MoDOT</td>
<td>Route AC (East Trafficway)</td>
<td>Improve capacity from Route 169 to US 36</td>
<td>1.8</td>
<td>$6,034,986</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>MoDOT</td>
<td>Route AC (East Trafficway)</td>
<td>Improve capacity from US 56 to Route 169</td>
<td>2.0</td>
<td>$6,034,986</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>MoDOT / St. Joseph</td>
<td>Route AC</td>
<td>Extend the existing four-lane section north to I-29, include non-motorized facilities in design and construction</td>
<td>1.0</td>
<td>$17,036,986</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>MoDOT / St. Joseph</td>
<td>Route AC</td>
<td>Construct new interchange approximately one mile east of Route AC</td>
<td>n/a</td>
<td>$2,000,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>MoDOT</td>
<td>Michell Avenue (TTY)</td>
<td>Improve drainage along entire route from US 36 to I-29</td>
<td>0.9</td>
<td>$4,912,943</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>MoDOT</td>
<td>Michell Avenue (TTY)</td>
<td>Improve drainage along entire route from US 36 to I-29</td>
<td>0.9</td>
<td>$4,912,943</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>MoDOT / MO 75 (Anderson)</td>
<td>Intersection Improvement</td>
<td>Intersection Improvement</td>
<td>n/a</td>
<td>$2,000,000</td>
<td></td>
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</tr>
<tr>
<td>51</td>
<td>City of Savannah / MoDOT</td>
<td>Business 71 (Savannah)</td>
<td>Add turning lanes, side lane at 1st, 6th, 7th, and 10th Streets</td>
<td>n/a</td>
<td>$1,299,917</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>56</td>
<td>City of Savannah / MoDOT</td>
<td>Business 71 (Savannah)</td>
<td>Extend existing four-lane section north from approximately Market Street to Route 8</td>
<td>1.0</td>
<td>$9,099,917</td>
<td></td>
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</tbody>
</table>
Figure 13-3: Fiscally Constrained Roadway Improvements
13.4. Recommended Public Transportation Improvements

Public transportation ridership continues to grow in the St. Joseph region over recent years. Ridership in FY 2014 reached 423,645 which was the highest ridership total since FY 2008 which reached 441,696. As the St. Joseph region continues to grow, there is an opportunity for the transit agency to continue to build off a strong, well established system to provide enhanced local, and potentially regional service. Ultimately, the transit service could approach 500,000 riders in the next five to ten years.

The St. Joseph public transit agency completed an operational review in 2012. This study identified potential improvements including the possibility of introducing a north-south route along the Belt Highway. This proposed route structure would connect to existing east-west routes through enhanced transit stations, or bus stops. Figure 13-4 shows the general concept of a north-south route in relationship to the top three performing routes for The Ride. Figure 13-5 shows how this north-south route could be coordinated with a potential regional connection to the Kansas City area.

Figure 13-4: North-South Route (Belt Highway)  
Figure 13-5: Regional Connection to Kansas City

The 2040 MTP recognizes that public transportation will become an increasingly important mobility option within the SJATSO region by the year 2040. An aging population, and likely stricter environmental regulations, will require the SJATSO region to potentially expand transit services. Fortunately, the transit agency and the public have in the past recognized the importance of public transportation in the St. Joseph area and in 2008 supported a tax increase that avoided significant service cuts. However, the transit costs continue to rise and identifying additional funding, especially for capital improvements, will be critical over the coming years.

It is anticipated that the current transit operations, and any new routes, would operate with 60-minute headways. While improving transit service to 30-minute headways has been discussed in the past, such an improvement in the short-term would place too great of a financial burden on the overall operations.
Increasing to 30-minute headways would also require additional capital costs for extra buses, which at this time is not feasible.

Finally, the transit agency, in conjunction with SJATSO, should work together to promote a regional Rideshare program. This program could be further expanded to include the development of regional park-n-ride lots that would connect to the Kansas City area.

Priority Transit Improvements
In April 2012, the St. Joseph Transit Operational Review identified short-term and long-term transit improvements. Since the plan’s completion, transit officials have implemented several of the recommendations including:

- Eliminated mid-day lunch break in service
- Eliminated some early morning, late evening trips
- Offered totally “on demand” service to Elwood KS – this was replaced with 3 inbound and 3 outbound buses due to the cost and high demand. As of February 2014, this has been increased to 5 trips per day and a Transit Working Group for Elwood has been established.
- Modified #12 Lovers Lane route to serve new Vatterott location
- Discontinued Nite Ride

The following summarizes additional short-term and long-term recommendations that still warrant further consideration.

Short-Term Recommendations
1. Ending the mid-shift driver break that causes system-wide distributions during the 9:00 AM to 9:45 AM hour and the 5:05 PM to 5:45 PM hour and matching supply to transit demand
   a. This break causes disruptions across the entire system – forces passengers to wait an additional 30 minutes.
   b. Modifying select low ridership trips, adjusting service spans and modifying frequencies
   c. The highest ridership would be less affected
   d. Result in a more efficient allocation of resources, greater fuel cost savings and more uniform schedule
   e. If a break is necessary: shifting the break from 9:05 AM and 5:05 PM, to 10:05 AM and 6:05PM respectively, would lessen the impact on passengers.
2. Match Transit supply to transit Demand
   a. Adjust service span ending to 8:15 PM for Route 11, 12, 16, 17 and 18. – the service hour between 8:15 PM and 9:15 PM has the lowest average ridership of the day for most routes.
   b. Route 11 service span and frequency modifications – operates along St. Joseph Avenue can be reduced to only operating the outbound route beginning at 5:15 AM and eliminating the first inbound route. It can be reduced to operating one bus as it leaves for its outbound trip beginning at 7:15 PM – service on this route would end at 8:15 PM at the 6th and Angelique Transit Center
   c. Route 12 – which operates along Lovers Lane - can be reduced to only operating the outbound route beginning at 5:15 AM and eliminating the first inbound route. Operate on bus as it leaves for its outbound trip beginning at 7:15 PM – Service would end at 8:15 PM at the 6th and Angelique Transit Center.
d. Route 13 – can be reduced to operating one bus as it leaves for its outbound trip beginning at 8:15 PM

e. Route 14 – can be reduced to operating one bus as it leaves for its outbound trip beginning at 8:15 PM.

f. Route 15 – can be reduced to operating on bus as it leaves for its outbound trip beginning at 8:15 PM.

g. Route 16 – can be reduced to only operating the outbound route beginning at 5:15 AM and eliminating the first inbound route. Additionally the evening hours can be reduced to operating one bus as it leaves for its outbound trip beginning at 7:15 PM. Service would end at 8:15 PM at the 6th and Angelique Transit Center.

h. Route 17 - can be reduced to only operating the outbound route beginning at 5:15 AM and eliminating the first inbound route. Additionally the evening hours can be reduced to operating one bus as it leaves for its outbound trip beginning at 7:15 PM. Service would end at 8:15 PM at the 6th and Angelique Transit Center.

i. Route 18 - can be reduced to only operating the outbound route beginning at 5:15 AM and eliminating the first inbound route. Additionally the evening hours can be reduced to operating one bus as it leaves for its outbound trip beginning at 7:15 PM. Service would end at 8:15 PM at the 6th and Angelique Transit Center.

Long Term Improvements
1. Orientate the transit system around 4 transit centers on the Belt Highway and downtown
   a. This will create a spine of higher frequency routes supported by local connector routes.
   b. Reconfigure part of the system from a 120 minute run cycle to a 60 minute run cycle

2. Additional Recommendations
   a. Transition Route 12 and Route 18 to demand response only services
   b. Simplify Route 13 and Route alignment
   c. Make minor alignment changes to Route 15 and Route 17
   d. Increase transit vehicle capacity at Hy-Vee transit center
   e. Limit deviations
   f. Increase Saturday frequency
   g. Explore opportunities to increase coordination and leveraging transit service with major employers and Missouri Western State University

13.5. Recommended Non-Motorized Improvements

The majority of non-motorized facilities within the MPA are currently located within the City of St. Joseph. The urban trail system, consisting of the Parkway system and other dedicated trails, form a well-established non-motorized network accented by on-street design elements and common as part of new roadways. The Parkway by itself consists of over 20 miles of continuous trails through the central part of the MPA. The recommended non-motorized improvements can build upon the existing facilities and extend non-motorized facilities to developing areas throughout the region.

With increased emphasize on reducing greenhouse gas emissions, the non-motorized component of the MTP could play a more significant role in the future. The non-motorized improvements consist of separate trail projects as well as roadway improvements with planned non-motorized facilities. In fact, the fiscally
constrained roadway projects include significant non-motorized facilities along Cook Road and Riverside Road corridors. **Figure 13-6** shows the connection between the Cook Road and Riverside Road corridors and the planned non-motorized improvements which are envisioned to be a parkway. **Figure 13-7** displays the non-motorized improvements in relationship to potential statewide and regional connections.

The Parkway loop would build off the existing Urban Parkway system and extend east along an improved Cook Road to Riverside Road as an on-street facility designed as a boulevard. The Riverside Road corridor, from Cook Road south, would also be designed as a boulevard and could include on-street, or potentially off-street, bicycle facilities. The Riverside Road corridor could tie into an existing trail that parallels US 36 and connects back to the existing Parkway system. A portion of the Riverside Road connection is included in the current SJATSO TIP.

Priority non-motorized improvements also include completing the Riverfront Trail and enhancing connections between the riverfront and the Parkway system through connector routes. One such connector route could be located in the southwest of the MPA connecting the Quad State Trail to the Parkway system. A possible location for this would be along Route 752. Another connector route could also link the Riverfront Trail to the St. Joseph Entertainment District.

The 2040 MTP also identifies the expansion of a trail that would extend from the existing urban area parkway system north to Savannah. While this rails to trails project showed significant support, the overall construction cost and some engineering issues (primarily bridges) pushes this to likely a mid- to long-term project. The MTP recognizes the importance of the project but funding is currently limited.

### 13.6. Recommended Freight Improvements

Enhancing freight movement through the region could have significant economic benefits. The SJATSO region has significant transportation assets in terms of a highway system, airport, rail and river port. These assets have the potential to be enhanced by future transportation investments and as such should be prioritized as part of future planning efforts within the SJATSO region.
As previously discussed, a long-term solution for the elevated segment of I-229 will directly impact regional travel patterns, including local and regional freight movement. Should the I-229 bridge need significant repairs this facility could be closed at certain times which could also impact freight movement on a temporary basis. If a long-term solution of reconstructing I-229 at-grade is considered, this too could have significant impacts on freight movements. As such, the 2040 MTP supports a detailed freight study that would evaluate and prioritize the regional freight improvements. A significant component of this study would be to address the long-term vision of the I-229 facility. Figure 13-8 shows the general location of a potential freight and I-229 study.

Figure 13-8: Potential Freight and I-229 Study Location

13.7. Environmental Mitigation

Following in the footsteps of SAFETEA-LU environmental mitigation requirements, MAP-21 requires MTPs to consider the potential environmental impacts at the policy or program level. This includes, “a discussion of the environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan transportation plan.” Once the potential MTP projects were identified and evaluated, the SJATSO consulted with Federal, State, and Tribal land management, wildlife, and regulatory agencies to develop a general discussion on possible environmental mitigation activities that might be considered for the potential transportation improvements.

The projects included in the 2040 MTP are often years away from final design and alignment, therefore, a detailed environmental review is not feasible, nor required, at this stage of the planning process. However, the MPO can consult with resource agencies to discuss potential impacts to natural and historic resources, and develop policies or strategies to ensure that transportation projects have minimal impacts on the environment.
The environmental mitigation analysis highlights potential impacts associated with the recommended transportation projects. The analysis is intended to identify potential conflicts of planned projects, and mitigation strategies that could be considered in an effort to minimize any negative affect that a project may have on an environmentally sensitive area. The SJATSO is committed to minimizing and mitigating the negative effects of transportation projects on the natural and built environments as reflected in the MTP goals and objectives.

When a federally funded transportation project reaches the engineering stage, compliance with several laws is required, including the National Environmental Policy Act (NEPA) of 1969. NEPA is a national policy to protect and enhance the environment, and contains a process for developing major federal actions (such as federal funding for a transportation project) that require environmental review documents as part of the project development. Complying with NEPA is typically the responsibility of the project sponsor. The NEPA process includes the consideration of alternatives for the project and their environmental effects, as well as public involvement and interagency collaboration.

Not every project will require the same type and/or level of mitigation. Adding capacity (via roadway widening or new roadways) is more likely to have environmental impacts as compared to spot improvements (intersection improvements, resurfacing, etc.), which are more likely to take place within the existing ROW with less impact on the environment.

**Environmentally Sensitive Areas**

There are numerous environmentally sensitive areas that can be found within the SJATSO. Many areas are difficult to map at a regional level and require detailed environmental analysis as MTP projects advance from the planning/concept phase to the design/engineering phase.

Environmental mitigation analysis for a MTP is not meant to be equal to or substitute for NEPA or other federal and state regulatory processes. However, there are several benefits to linking transportation planning and environmental concerns, including the early identification of potential environmental issues and consultation with various resource groups. Therefore, the environmental mitigation analysis for the SJATSO 2040 MTP provides a general overview of the fiscally constrained projects as compared to environmentally sensitive areas. In accordance with MAP-21, this analysis is a general overview and is not intended to be a detailed environmental analysis. The purpose of this analysis is to highlight potential environmental issues and provide early guidance to project sponsors so they may begin to consider or develop mitigation strategies early in planning and design phases.

A general environmental analysis has been conducted to help raise environmental awareness early in the project development process and to provide the public and decision makers with an overview of potential environmental impacts of projects. To conduct this analysis, a Geographic Information System (GIS) has been used to create a database of environment-related layers. Transportation projects were then added to determine what environmental resources may be an issue in the project right-of-way. Figure 13-9 shows the fiscally constrained projects overlaid on the environmental data. Based upon the available data, there are no significant environmental issues that are related to the fiscally constrained plan.
Figure 13-9: Environmental Mitigation Analysis – Fiscally Constrained Roadway Projects
Environmental Mitigation Strategies

The SJATSO encourages jurisdictions to follow federal guidance as an environmental strategy. The steps used to define mitigation in 40 CFR 1508.20 should be followed by project sponsors. In order of preference, these are:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

(Source: 40 CFR 1508.20)

Compliance with NEPA and other federal and state regulations will be carried out individually for each federally-funded project when that project is in development. However, the environmental analysis overview in this section provides a sense of the resources in the SJATSO, and the potential of planned transportation projects to affect those resources.

The following strategies are intended to provide guidance to the project sponsors within the SJATSO MPA in minimizing and mitigating the negative affects of transportation projects on the natural and built environments. Each project should be reviewed in detail at the design/engineering phase to identify specific issues or concerns. The following is used to determine the type of mitigation strategy that may apply to any given project.

1. Identify environmentally sensitive areas within or adjacent to the project location or corridor;
2. Identify how, and to what extent, a particular project may impact floodplains, wetlands and environmentally sensitive areas; and
3. Identify appropriate mitigation strategies to avoid or minimize the impact the project has on floodplains, wetlands and environmentally sensitive areas.

The type of mitigation ultimately performed for a particular transportation project will be determined by the project sponsor and regulating agencies. As mentioned previously, avoidance of damage to the environment should continually be the primary goal, but this is not always possible. There many types of activities that can be utilized as mitigation, depending on the size and scope of the project and the environmental resource(s) it may affect. Table 13-3 outlines suggestions for potential mitigation activities for transportation projects.
### Table 13-3: Potential Mitigation Activities for Transportation Projects by Resources Affected

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Mitigation Activities</th>
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| **Air Quality**                   | • Promote the use of alternative transportation modes including public transportation, bicycling, and walking  
• Promote the use of alternative fuel vehicles (i.e., local agency vehicles, public transportation, etc.)  
• Grow and expand the implemented regional Rideshare program.  
• Minimize idling of heavy construction vehicles  
• Transportation emission reduction measures |
| **Cultural Resources**            | • Project modifications to avoid area and/or historic sites  
• Preservation in place or excavation for archeological sites  
• Landscaping for historic properties  
• Memorandum of Agreement with State/Federal resource authorities |
| **Endangered and Threatened Species** | • Time of year restrictions  
• Construction sequencing  
• Design measures to minimize potential fragmenting of animal habitats  
• Enhancement or restoration of degraded habitat  
• Creation of new habitat  
• Establish buffer areas around existing habitats  
• Modifications of land use practices  
• Restrictions on land access |
| **Farmland**                      | • Conserve agricultural and farmland  
• Compensation for farmland  
• Agricultural conservation easements on farmland |
| **Forested and other Natural Area** | • Replacement property for open space easements of equal fair market value and equivalent usefulness  
• Minimize removal and/or selective cutting in forested areas except for what is needed to establish roadways and associated rights of way  
• Preserve and/or reestablish vegetation whenever possible within open areas |
| **Neighborhoods, Communities, Homes, and Businesses** | • Context sensitive solutions for communities  
• Minimize noise impact with sound barriers  
• Develop sidewalks, bike lanes, recreational areas, etc.  
• Property owners paid fair market value for property acquired  
• Relocate residential and commercial properties that are impacted |
| **Noise**                         | • Planting trees or other appropriate landscaping  
• Noise barriers.  
• Depressed roads or other roadway design to minimize noise levels |
| **Parks and Recreation Areas**    | • Construct bicycle/pedestrian pathways  
• Replace impaired functions |
| **Wetlands and Water Resources**  | • Preserve, create, replace, or restore wetland areas  
• Vegetative buffer zones  
• Restore streams and/or stream buffers  
• Improve storm water management  
• Strict erosion and sedimentation control measures |

#### 13.8. Environmental Justice

As the recipient of federal transportation funds, the SJATSO MPA is required to ensure non-discrimination in all aspects of the transportation planning process. Title VI of the Civil Rights Act of 1964 states that “no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal assistance” (42 U.S.C. 2000d-1). Additionally, in 1994, President Clinton issued Executive
Order 12898 which states that “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

For the purpose of assessing Title VI and environmental justice (EJ) issues, the average minority population and the percentage of households below the federal poverty line (referred to as low income in this analysis) for the entire study area were obtained from various sources of data (2000 Census, 2010 Census, 2012 American Community Survey). The data relating to these population groups was examined to determine which areas were impacted by the proposed improvements to the transportation system.

Ultimately the EJ analysis takes into account impacts of plans, projects, and activities on minority and low-income populations. FHWA and FTA establish policy guidelines that focus on the following:

• **Limited Effects** - Avoid, minimize, or mitigate disproportionately high and adverse effects on human health and the local environment. This includes social and economic effects on minority and low-income populations;

• **Inclusion** - Ensure that all communities that would potentially be affected by the transportation decision making process have the opportunity to participate and be represented; and

• **Guarantee of Benefits** - Prevent the denial, reduction, or significant delay of the receipt of benefits to minority and low-income population.

**Environmental Justice Analysis**

The EJ analysis evaluates the location of the recommended transportation improvements in relation to EJ populations. EJ populations, including minority and low income populations, are defined within the SJATSO MPA by using 2010 U.S. Census data. **Figure 13-10** displays the environmental justice areas identified for the SJATSO.

**Definition of Minority Population**

Minority population is defined as any identifiable group of minority persons who live in geographic proximity. Additionally, minority populations can include geographically dispersed or transient persons who would be similarly affected by a proposed transportation improvement. Minority persons include those who are American Indian, Alaska Native, Asian, Black or African American, Hispanic or Latino, and Native Hawaiian and other Pacific Islander. For the purpose of the EJ analysis, a census tract having a minority population of 50% or greater is defined as an EJ area. For the most part, locations that exceed the 50% threshold are located within the urbanized area of St. Joseph.

**Definition of Low-Income Population**

Low-income populations were identified using median household income data. For the purpose of this analysis, the median household income for the City of Elwood ($40,192) was used as the threshold to identify low-income EJ areas. The City of Elwood data was the lowest median household income of all communities within the region and therefore used as a general threshold throughout the area. This approach provides greater coverage to identify potential groups which might by adversely affected by the transportation improvements. The low-income population within the MPA is also highly concentrated in the St. Joseph urbanized area. Areas also extend into the Kansas portion of the MPA and the northern portion of Andrew County.

**Environmental Justice Areas with Fiscally Constrained Projects**
An analysis of the fiscally constrained projects and EJ areas was conducted to identify potentially adverse impacts on low income and minority populations within the SJATSO MPA. **Figure 13-11** displays the fiscally constrained projects, not including on-going maintenance, through 2040 in relationship to the EJ areas.

The vast majority of the MTP projects are on-going maintenance improvements focused on preserving the existing roadway network. Portions of the priority projects, including capacity improvements along Route AC and Mitchell touch on EJ areas. Improvements along US 59, at Alabama, also fall within a defined EJ area. **Figure 13-12** displays existing transit service coverage in relation to the EJ areas. Current transit service area coverage is very good and there are long-term plans to further enhance public transportation services in the SJATSO region by adding a north-south route along the Belt Highway. This improvement would enhance regional transportation services and increase accessibility throughout the region for all users, including individuals within the EJ areas.

**EJ Summary**

Overall, there is low potential for discrimination against low-income and minority populations in relation to the recommended MTP projects. The identified low-income and minority populations in the SJATSO MPA stand to benefit from the planned transportation improvements identified in the recommended plan. Also, the City of St. Joseph is reinvesting in infrastructure improvements which will positively impact some of the EJ areas.
Figure 13-10: Environmental Justice Areas
Figure 13-11: Environmental Justice Areas (with Fiscally Constrained Projects)
Figure 13-12: Environmental Justice Areas (with Transit Routes)
13.9. Unconstrained Vision

The SJATSO future transportation needs far outnumber the projected revenue forecast to the year 2040. Increasing construction, maintenance, and operating costs have significantly limited the ability of the SJASTO and local agencies to implement large transportation infrastructure projects. Substantial infrastructure improvements only continue to increase in cost as projects are pushed further into the future.

The SJATSO recognizes that it is not possible to construct all the transportation projects identified in the MTP; however, the unconstrained vision remains a critical part of the MTP. The unconstrained vision is important because it:

- Defines the long-term vision, or blueprint, for future transportation investments;
- Allows for better land use planning, informed development decisions, and better policy making; and,
- Positions the SJATSO to understand future year transportation needs and be apply to more quickly respond to having “shovel ready” projects should additional funding become available.

The SJATSO divides the unconstrained vision into Tier II and Tier III projects as part of the MTP. Tier II projects are sub-divided into a general time period of when specific improvements might be needed (again, with the understanding that current funding levels do will not be adequate to construct these projects). Tier III projects are viewed as being needed beyond the 2040 planning horizon.

**Tier II Projects (2015 to 2040)**

The MTP has identifies a wide range of potential improvements to address specific transportation needs to the year 2040. As previously indicated, Federal guidelines require the MTP to be fiscally constrained to the estimated level of public and/or private sector funding available. The majority of projects identified in Chapter 4 do not have a reasonable funding source and may not be implemented by the year 2040 unless additional revenue is identified. While these projects may not have funding, many are still vital pieces of a much larger regional vision for future growth and development. In some cases, if these projects were not identified, it could at some point prohibit or restrict implementation or future development.

**Tier III Projects (Beyond 2040)**

Tier III projects are a secondary component of the fiscally unconstrained vision and include projects that would likely be implemented beyond the 25-year planning horizon – year 2040. Table 13-4 includes both the Tier II and III projects. Figure 13-13 displays the location of the unconstrained projects, coded by tiers.
Figure 13-13: LRTP Vision – Tier II and Tier III Projects
For many years, traditional transportation planning has focused on moving vehicles as quickly and efficiently as possible. Today, it is understood that a transportation system must focus on moving people.
and goods as opposed to simply moving vehicles. This must also happen in a multimodal fashion, the automobile can no longer be the only mode that is accommodated. The following summarizes strategies, and policies, that support the implementation of the recommended, multimodal transportation plan for the 2040 MTP.

**Complete Streets**

In the last decade transportation planners have made a significant shift in their approach to the design and intended function of streets. This paradigm shift encourages transportation planners to coordinate with land-use planners, urban designers, and engineers and is termed “Complete Streets.” The City of St. Joseph addresses Complete Streets through adopted the *Boulevard System Master Plan* and is updating a Bicycle and Pedestrian Plan that offers guidance on how to design multimodal streets. The updated Bicycle and Pedestrian Plan is anticipated to be complete in 2015.

*Implementing a Complete Streets Policy*

The Boulevard System Master Plan and the Bicycle and Pedestrian Master Plan offer clear direction on ways to make roadways inclusive of all travel modes; however, the plans are not explicitly Complete Streets policy statements. A updated Complete Streets policy has the potential to end the project-by-project struggle to design better facilities by requiring all road construction and transportation improvement projects within the region to begin with evaluating how the street serves all users – pedestrians, bicyclists, public transportation vehicles and passengers, trucks and automobiles. Modifying the current Complete Streets policy may require changing existing policies and practices of local communities and/or transportation agencies. In some cases it may be difficult to adopt a new procedure or to modify design guidelines. Furthermore, implementing a Complete Streets policy may require additional training for planning and engineering staff which will take time and cost money but will result in a more comprehensive regional transportation system with additional capacity and flexibility to accommodate the travel needs of all users.

Ultimately, the desired outcome of a Complete Streets policy is one in which a multimodal street becomes the default design and only after a formal exception process is a non-compliant design allowed. The following are general exceptions where roadways can lack non-motorized facilities:

- Roads where bicyclists and pedestrians are prohibited.
- A clear absence of need.
- Roadway or corridor is clearly not part of, or in close proximity to, the existing or planned non-motorized network.

Some additional challenges for implementing a Complete Streets policy may include:

- Lack of right-of-way in cramped thoroughfares may make multimodal improvements difficult, costly, or impossible.
- Overcoming the misconception that Complete Streets cost more to build than traditional streets when in fact Complete Streets often cost less to construct. By fully considering the needs of all non-motorized travelers (pedestrians, bicyclists, and persons with disabilities) early in the life of a project, the costs associated with including non-motorized facilities are minimized.
- Ensuring accurate transportation analysis as current methodologies for studying traffic may result in misleading results. For example, some current traffic methodologies may fail to consider how the presence of transit in a mixed-use corridor could potentially lower trip generation rates and thus reduce traffic volumes and congestion.
• Coordination of current transportation projects with planned transportation improvements. It is important that current transportation projects consider the impacts on planned or future improvements. For example, the reconstruction of a bridge commonly takes place before future roadway improvements (within the same corridor). The bridge improvements should be coordinated with future roadway designs to ensure that non-motorized accommodations are included in the bridge reconstruction and provide a safe and convenient transition with future roadway improvements.

**An Ideal Complete Streets Policy**

Regardless of a policy’s form, the Bicycle and Pedestrian Master Plan identifies elements of a comprehensive Complete Streets policy. These elements could potentially be used in evaluating transportation projects within the SJATSO region. A Complete Streets policy should include the following:

• A vision for how and why the community wants to build and re-build its streets.
• Specifies that ‘all users’ includes pedestrians, bicyclists, and public transportation passengers of all ages and abilities, as well as trucks, buses, and automobiles.
• Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
• Provides for transit accommodations including sidewalks, shelters, and bus turn-outs.
• Is adoptable by all agencies to cover all roads.
• Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
• Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
• Directs the use of the latest and best design standards while recognizing the need for flexibility in balancing user needs.
• Directs that complete streets solutions compliment the context of the community.
• Establishes performance standards with measurable outcomes.
• Includes specific next steps for implementation of the plan.

**Transit Oriented Development**

Transit Oriented Development (TOD) is high-density, multi-family housing and mixed-use development designed to encourage accessible, active, pedestrian oriented areas within walking distance of transit. The purpose of implementing TOD is to encourage the use of public transit and reduce trips on freeways, expressways, major collectors and arterials. TOD includes many of the same principles as Complete Streets in that the policy is intended to strengthen alternative transportation modes. As a result, a corridor is able to move more people with fewer vehicles. TOD design focuses on the following:

• Locating housing near transit;
• Locating neighborhood-serving retail and office uses near transit and housing;
• Connecting streets and paths for pedestrians and cyclists to and through the TOD; and
• Creating viable retail spaces for various tenants.

In order for TOD to be successful, a strong relationship between development and transit and an understanding of how transit works in tandem with surrounding development is necessary. This understanding begins with:
• Defining locations and sites with land use designation where TOD should occur;
• Describing a conceptual framework in which existing and prospective development and transit can relate and complement each other;
• Understanding the challenges to implementing those concepts; and
• Defining the components of TOD.

**TOD Benefits to the SJATSO Region**
Public transportation in the St. Joseph area has a long history. Today, transit ridership is steadily increasing and potential improvements outlined in this MTP could further strengthen transit ridership. While transit currently represents a relatively small percentage of trips within the region, it is possible that this transportation mode may become more important as the St. Joseph Area approaches the 2040 planning horizon year. It is estimated that the number of St. Joseph area residents age 65 or older will double to approximately 21% of the population by 2040. As the St. Joseph area population ages it will likely see increased reliance on public transportation as a primary transportation mode for many individuals. TOD has can support, and encourage, the use of public transportation. TOD emphasizes transit in the planning and design process thus making it easier for individuals to access public transportation. Furthermore, TOD creates a pedestrian friendly environment that encourages individuals to walk and remain active which can be a benefit for the entire community.

**Non-motorized Guidelines**
The *St. Joseph Metro – Bicycle & Pedestrian Master Plan: A Complete Streets Roadmap*, sets forth guidelines to accommodate bicycling, walking and other non-motorized modes of travel on the City’s roadways. This document sets forth guidelines for accommodating non-motorized travel within an urban environment and is applicable for other jurisdictions in the SJATSO MPA. The non-motorized guidelines address the following issues:

1. Based on the context of the roadway, what are the proper dimensions for a typical street section, and what non-motorized facilities should be included?
2. How are the non-motorized transportation systems linked together to form a network?
3. Can sidewalks suffice to serve all non-motorized transportation modes?
4. How can pedestrian facilities be safely introduced into intersections?
5. What is the impact of trip purpose and land use on facility design?
6. What design best fits the application?
7. What is the proper placement and type of street furniture?

The non-motorized guidelines are most useful when used in the context of other key documents: The *Boulevard System Master Plan*; and the *SJATSO Metropolitan Transportation Plan*. Together, these documents offer specific recommendations and guidance for accommodating non-motorized improvements throughout the St. Joseph area.

**Safe Routes to School**
Safe Routes to School programs enable community leaders, schools and parents across the United States to improve safety and encourage more children to safely walk and bicycle to school. In the process, these programs are working to reduce traffic congestion and improve health and the environment, making communities more livable for everyone. Furthermore, encouraging young students to walk as their primary
Transportation mode will promote an active life style and which will hopefully continue on as part of a daily routine as adults.

The SJATSO staff and St. Joseph School District have worked together on developing a Safe Routes to Schools program. The Safe Routes to School Plan involves extensive research and analysis of each school within the MPO as well as mapping and cost estimates to create a road map that can be used to identify bicycle and pedestrian infrastructure needs near the schools. Staff will prepare four separate documents for each school district (throughout the 5 cities and 3 counties of the MPO), produce and consolidated report for each school district, and then incorporate the documents into one large plan.

Federal legislation and funding currently exist to support Safe Routes to School programs efforts, but these funds alone cannot meet all the needs of communities across the United States. Most programs can benefit from a mixture of local, state, federal, and private funding. The School District’s Safe Routes to School program may benefit from local funding in addition to funds secured through the Federal-aid State Safe Routes to School program. Though some communities have implemented complex local government financing tools such as sales tax funding or bonds to fund Safe Routes to School programs, perhaps the easiest approach is to identify existing sources of money that are currently supporting non-motorized transportation and safety or health issues and tap into them.

There are two categories of local funding through which to pursue Safe Routes to School funds: capital improvement projects and operating budgets:

- **Capital Improvement Projects (CIPs)** - are new infrastructure projects implemented using public funds. These projects are identified through a capital improvement planning process which is tied to the local budget. During the planning process, the local government identifies and prioritizes capital improvements such as new roads and sidewalks, and then allocates funding for construction at least one year before the project is implemented.

  Because CIPs may take a couple of years to complete, CIPs tend to have multi-year budgets. However, most CIPs have the capacity to make changes and fund newly identified projects and pressing needs. A local transportation planner or engineer serving on a Safe Routes to School taskforce or committee could assist in identifying infrastructure projects and include them in the CIP process.

- **Operating Budgets** - local operating budgets may provide avenues for non-infrastructure programs and infrastructure maintenance and repair. Transportation budgets may include funding for pedestrian and bicycle programs or school zone improvements. Police or Public Safety budgets may include funding for traffic law enforcement or school crossing guards. Public school budgets may include opportunities for safety education or walking and bicycling encouragement programs. Recreation budgets may include funding for after school programs. Including a representative from these departments on a Safe Routes to School taskforce or committee allows complementary sources of funding to be more easily identified. Most local operating budgets include funding for general maintenance and repair of infrastructure. Depending on the size of the budget, these funds can be used for inexpensive projects such as striping crosswalks or installing signage, or more costly projects such as installing curb ramps.

**Transportation Enhancements / Grants**

Transportation Enhancements activities are federally funded, community-based projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and
environmental aspects of transportation infrastructure. Transportation Enhancement projects must be one of 12 eligible activities and must relate to surface transportation. The eligible activities include:

1. **Pedestrian and bicycle facilities** – Sidewalks, walkways or curb ramps; bike lane striping, wide paved shoulders, bike parking and bus racks; off-road trails; bike and pedestrian bridges and underpasses.

2. **Pedestrian and bicycle safety and educational activities** – Campaigns promoting safety awareness; safety training activities and classes; training materials.

3. **Acquisition of scenic or historic easements and sites** – Acquisition of scenic lands or easements; purchase of historic properties or buildings in historic districts, including historic battlefields.

4. **Scenic or historic highway programs including tourist and welcome centers** – Construction of turnouts and overlooks; visitor centers and viewing areas; designation signs and markers.

5. **Landscaping and scenic beautification** – Improvements such as street furniture, lighting, public art and landscaping along travel corridors.

6. **Historic preservation** – Preservation of buildings and facades in historic districts; restoration of historic buildings for transportation-related purposes; access improvements to historic sites.

7. **Rehabilitation and operation of historic transportation buildings, structures or facilities** – Restoration of railroad depots, bus stations and lighthouses; rehabilitation of rail trestles, tunnels, bridges and canals.

8. **Conversion of abandoned railway corridors to trails** – Acquisition of railroad rights-of-way; planning, design and construction of multi-use trails and rail-with-trail projects.

9. **Inventory, control, and removal of outdoor advertising** – Billboard inventories and removal of illegal and nonconforming billboards. Inventory control may include, but not be limited to, data collection, acquisition and maintenance of digital aerial photography, video logging, scanning and imaging of data, developing and maintaining an inventory and control database, and hiring of outside legal counsel.

10. **Archaeological planning & research** – Research, preservation planning and interpretation; developing interpretive signs, exhibits and guides; inventories and surveys.

11. **Environmental mitigation of runoff pollution and provision of wildlife connectivity** – Runoff pollution studies; soil erosion controls; detention and sediment basins; river clean-ups; wildlife underpasses.

12. **Establishment of transportation museums** – Conversion of railroad stations or historic properties into museums with transportation themes; construction of new museums; purchase of exhibit materials.

**Access Management**

Access management is the process of managing the connections between public highways and roadways and adjoining land. Transportation officials must balance the need for land development with the need for safe and efficient travel. MoDOT’s and KDOT’s existing access management regulations require an application process for all new access points for new developments on roadways in their respective jurisdictions.

MoDOT’s access management guidelines promote safety and infrastructure efficiency through the proper selection of access improvements based on the roadway’s functional classification, distance between intersections and other access points, and the context of other access features such as frontage and backage roads. KDOT’s access management guidelines focus on the elimination of driveways by consolidating access
points or providing access from other roads, proper spacing between access points, geometric changes to ensure safe deceleration, and the introduction of dedicated turning lanes to separate through and turning vehicles.

The City of St. Joseph approved its own Access Management Policy in June 2003 using the MPO model. According to this standard, applications for building permits, development plans, or subdivision plats will not be processed until an application for access is made; the application is reviewed to ensure that it complies with the City of St. Joseph construction and access management standards unless in conflict with more stringent MoDOT requirements, visa versa; and approved with both the City of St. Joseph and MoDOT.

Utilizing these guidelines will help optimize the existing and future functions of the road network. Recognizing the vital link between land use and transportation and improving the coordination between the various governmental agencies will ultimately help facilitate this process.

A highway network serves a dual role in providing (1) travel mobility and, (2) access to property. Mobility can be provided at varying levels and include a wide range of elements (e.g., riding comfort, freedom of speed changes, etc.) while access is a fixed requirement, necessary at both ends of any trip. Access management is the process of managing the connections between public highways, local roads, and adjacent land uses. Transportation officials must balance the need for land development with the need for safe and efficient travel.

The functional classification of a roadway dictates the general level of mobility vs. accessibility (see Figure 13-14). At the upper limit of the system (e.g., interstate/freeways) are facilities that emphasize traffic mobility (long, uninterrupted travel), whereas facilities at the lower limits (e.g., local roads) emphasize land access. Arterials and collectors provide a transition between these functions.

All new access points on MoDOT for new developments must be gained through an application process. Within City of St. Joseph jurisdiction, new or modified access points require the permission of both the City of St. Joseph and MoDOT. The City of St. Joseph approved its own Access Management Policy in June 2003 using the MPO model. According to this standard, applications for building permits, development plans, or subdivision plats will not be processed until an application for access is made; the application is reviewed to ensure that it complies with the City of St. Joseph construction and access management standards unless in conflict with more stringent MoDOT requirements, visa versa; and approved with both the City of St. Joseph and MoDOT.
In Doniphan County, access to KDOT controlled roads requires an application to KDOT’s District 1 office. The applicant has to provide a detailed site plan and comply with access criteria. The review and approval process by KDOT normally takes two to four weeks.

An access management roadway classification system allows access management guidelines to properly fit the functional role of the highway, street, or road— the higher the function, the less direct access is allowed. The Missouri Department of Transportation’s Access Management Guidelines are summarized in Table 13-6.

<table>
<thead>
<tr>
<th>Interchanges/Intersections</th>
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</thead>
<tbody>
<tr>
<td>The minimum distance allowed between two interchanges avoids intense weaving situations that create congestion and increase crash rates.</td>
<td></td>
</tr>
<tr>
<td>The minimum distance between an at-grade intersection or driveway and an interchange preserves safety and traffic flow at and near interchanges.</td>
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<tr>
<td>Freeway/expressway transition helps drivers make a safe transition when a roadway changes in terms of its access management features.</td>
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<tr>
<td>The minimum distance or spacing between types of roadway preserves traffic flow and ensures that a functional hierarchy of roads is maintained.</td>
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</tr>
<tr>
<td>The minimum and desirable spacing between traffic signals ensures efficient traffic flow on signalized arterials. Too many signals placed too close together will disrupt traffic flow.</td>
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<table>
<thead>
<tr>
<th>Driveways</th>
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</thead>
<tbody>
<tr>
<td>Short spacing between driveways and high driveway densities generate conflict points that in turn lead to higher crash rates and more traffic congestion.</td>
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</tr>
<tr>
<td>Insufficient corner clearance is a major cause of access-related crashes.</td>
<td></td>
</tr>
<tr>
<td>A driveway opening where there is insufficient sight distance is inherently dangerous.</td>
<td></td>
</tr>
<tr>
<td>Insufficient driveway geometrics lead to a slow driveway entrance and exit speeds. This leads to conflicts between turning and through traffic.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Access Features</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Too many median openings or closely spaced median openings detract from the proper functioning of a median.</td>
<td></td>
</tr>
<tr>
<td>Two-way left-turn lanes do not function well once a certain traffic volume range has been reached.</td>
<td></td>
</tr>
<tr>
<td>Some high volume driveways should have dedicated left-or-right turn lanes to reduce conflicts with through traffic, particularly on high-speed routes.</td>
<td></td>
</tr>
<tr>
<td>Frontage and backage roads that are placed too close to mainlines may create more conflicts than they solve.</td>
<td></td>
</tr>
<tr>
<td>Three-lane roads are a relatively new concept that may be an economical solution to some access problems.</td>
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</tbody>
</table>

Utilizing these guidelines helps optimize the existing and future functions of the road network on the Missouri side of SJATSO. Recognizing the vital link between land use and transportation and improving the coordination between the various government agencies will ultimately help facilitate this process.

KDOT’s access management policies are controlled under their Corridor Management Policy, which is a state statute that requires an approved Highway Permit before any work is completed on the right-of-way along urban and rural sections of the State Highway System. In other words, to ensure the safe and efficient movement of traffic on any routes impacting the state highway system, KDOT must approve any driveway and local road construction or revisions prior to the completion of any construction. Essentially, KDOT’s Corridor Management Plan specifies the following categories for access management:
• In order to minimize the number of conflicts, eliminate driveways by combining access points or providing access from other roads
• Achieve better separation of conflict points by providing wide spacing between driveways and keeping driveways away from intersections
• Allow for slower deceleration through geometric changes
• Provide exclusive turning lanes so that turning vehicles and queues are separated from through traffic

**Relationship between Functional Classification and Land Use**

Overall, access management policies are an important tool to manage traffic flow and safety on the SJATSO roadway network, thus adhering to the established City of St. Joseph, MoDOT, and KDOT access management standards is imperative. **Table 13-7** outlines the general relationship between the SJATSO functional classification system and surrounding land uses. Not all functional classification types serve all land uses. For example, commercial areas are generally only served by arterial streets, as these streets often carry a large volume of traffic.

<table>
<thead>
<tr>
<th>Functional Classification</th>
<th>No access to adjacent land use</th>
<th>Residential</th>
<th>CBD</th>
<th>Mixed Use</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Arterials</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Arterials</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Collectors</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<td>X</td>
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</tbody>
</table>

**SJATSO Area Roadway Types**

An appropriate mix of roadway types is necessary for a well-functioning system. The following sections describe the common characteristics of SJATSO MPA roadway types.
Residential

Arterials, collectors and local streets can all serve residential street functions. For arterials, multimodal mobility must be balanced with land access. Collectors emphasize non-motorized traffic over mobility, and local streets even more so. Residential streets generally comprise two-to-four lanes.

Residential Street Elements:

- Sidewalks
- On-street parking
- Bike lanes on higher functional classifications
- Trees

Management elements to consider:

- Narrow traffic lanes
- Reduced pedestrian crossing distances, using curb extensions
- Diverters
- Building setbacks (narrow setbacks can have a traffic calming effect)
- Traffic circles or roundabouts

Figure 13-15: Local Residential Street with Parking on Both Sides
Central Business District (CBD)

CBD streets in St. Joseph region serve medium density retail and mixed land uses including neighborhood centers. They are usually designed to promote multimodal access and are located within a concentrated area. CBD streets generally consist of two-to-four lanes. On-street parking is typical, along with curb extensions within parking lanes to accommodate trees, wide sidewalks, street furniture, and outdoor café seating.

CBD Street Elements:

- Wide sidewalks
- Transit access
- Pedestrian plazas
- Curb extensions
- Trees
- On-street parking

Management elements to consider:

- Paving materials
- Narrower travel lanes
- Reduced pedestrian crossing distances, raised crossing beds, high visibility crosswalks
- Lighting

Figure 13-16: Collector with On-Street Parking and Bike Lanes
Mixed Use (and transitional)

These are for land uses located in mixed-use commercial, retail and residential areas. Alternate modes of travel are emphasized with pedestrian, bike and transit elements. Mixed-use streets generally comprise two-to-four travel lanes. Improvements such as landscaping increase non-motorized desirability. On-street parking and sidewalks are common.

Mixed Use Street Elements:
- Wide sidewalks
- Bike lanes
- On-street parking

Management elements to consider:
- Narrow travel lanes
- Traffic circles or roundabouts
- Trees
- Reduced pedestrian crossing distances, raised crossing beds, high visibility crosswalks
- Lighting

Figure 13-17: Mixed Use Street with Bike Lanes, On-Street Parking and Wide Sidewalks
**Commercial**

Streets serving commercial strip development are the most common example of this type. Buildings are set back with front parking lots. Numerous intersections and driveways for adjacent businesses characterize these types of developments. Typical commercial streets are usually highly auto-oriented, tending to discourage walking and biking so special consideration must be given to the safety of users of non-motorized travel modes. In this LRTP there is a continued focus on new design traits to support bicycle and pedestrian travel modes to make commercial corridors attractive to transit users, bikers and walkers. In most commercial areas mid-block crosswalks are rare and on-street parking unlikely given the off-street parking serving adjacent businesses. Commercial streets often comprise four-to-six lanes, with continuous center turn lane or median with turn lanes. Commercial streets are designed for high mobility and high access to adjacent businesses. They tend to become congested, thus compromising the mobility to gain accessibility.

Commercial Street Elements:
- Number lanes
- Transit
- Medians/center turn lanes

Management elements to consider:
- Consolidate driveways
- Reduce pedestrian crossing distances, using traffic islands

**Figure 13-18** shows the typical street section of an arterial with median and bike lanes.

Figure 13-18: Arterial with Median and Bike Lanes
Rural roads are generally lower volume, two-lane roadways that may accommodate residential and farming traffic. They are generally located in low-density settings with few residences. Pedestrian traffic accommodations are infrequent and bicycle travel can be accommodated with paved shoulders.

Rural Elements:
- Soft shoulders (gravel)
- Paved shoulders accommodate bicycle travel
- Adequate site distance
- Adequate clear zone (area just beyond the shoulders)

Management elements to consider:
- Acceleration and deceleration lanes
- Appropriate signage (i.e., curve ahead, stop ahead, reduced travel speed, no passing zone, etc.)

Figure 13-19: Rural Road (with Paved Shoulders)
**Industrial**

Industrial streets are designed to accommodate significant volumes of large vehicles such as trucks, trailers, and other delivery vehicles. They are generally located in low-density settings with few residences and on-street parking is unusual. Industrial streets generally consist of two-to-four lanes that are wider than normal to accommodate larger vehicles. Increasingly, bicycle and pedestrian traffic facilities are included to accommodate workers using non-motorized travel modes to access jobs. Current design recommendations focus on accommodating all travel modes and installing sidewalks when redevelopment occurs.

**Industrial Street Elements:**

- Wider travel lanes
- Wider turning radii

Management elements to consider

- Parking restrictions
- Acceleration and deceleration lanes

Example: Route 759

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**Strengthen the Transportation / Land Use Connection**

The importance of understanding the transportation/land use connection cannot be overstated. The SJATSO area currently has future land use plans for the City of St. Joseph and Buchanan County. Andrew County does not have a future land use plan, or zoning, which would significantly help in defining future transportation corridors and lead to better transportation infrastructure decisions. **Figure 13-20** displays the relationship between the overall MTP vision and the future land use plan.
Figure 13-20: Future Land Use & Roadway Projects
The SJATSO should consider developing a comprehensive regional land use plan covering the entire MPA. The next surface transportation bill will likely continue to promote livable and sustainable communities and developing a comprehensive regional land use plan would greatly enhance future development and transportation decisions.

Corridor planning and right-of-way preservation are important tools that can be used to strengthen the transportation/land use connection. Identifying future corridor alignments can lead to better land use and transportation decisions benefiting the entire region. The SJATSO should utilize the MTP vision outlined in this plan to move projects from the conceptual stage to implementation.