Section

3 ALTERNATIVES

3.0 Alternatives

This Tier 1 Final Environmental Impact Statement (Tier 1 FEIS) includes an evaluation of five alternatives for the Chicago to St. Louis High-Speed Rail (HSR) Corridor Program: the No-Build Alternative and four Build Alternatives. The Build (HSR) Alternatives evaluated would utilize different routes in three areas: between Chicago and Joliet, through Springfield, and between Alton and St. Louis. The proposed Build Alternative routes would utilize combinations of the existing passenger rail (Amtrak) route and other proposed new intercity passenger routes that primarily follow other existing rail lines. The No-Build Alternative includes the continuation of intercity passenger service between Chicago and St. Louis along with the planned passenger rail improvements that will allow for limited HSR service between Joliet and St. Louis. The limited HSR service will be provided between Joliet and St. Louis and will begin following completion of several upgrades to the existing tracks that were approved by a 2004 Record of Decision (ROD) (Dwight to St. Louis improvements) (issued by FRA and FHWA) and a 2011 Finding of No Significant Impact (FONSI) (Joliet to Dwight improvements) (issued by FRA). The limited HSR service resulting from those improvements will include up to three daily passenger round trips allowing for 110 mph passenger trains between Joliet and Alton, with remaining portions of the corridor allowing speeds of up to 79 mph. One additional non-HSR daily passenger round trip will continue to operate between Chicago and St. Louis, and one non-HSR Texas Eagle daily passenger round trip will continue to operate between Chicago and San Antonio, Texas, over the Chicago to St. Louis corridor under the No-Build Alternative. In comparison, the Build (HSR) Alternatives would include eight daily round trips allowing for 110 mph intercity passenger service for the entire route between Chicago and St. Louis. One additional non-HSR Texas Eagle daily passenger round trip would continue to operate under the HSR Build Alternatives.

This chapter: discusses the screening process that was used to identify the alternatives that were carried forward for analysis; describes each of the alternatives that were carried forward for further analyses, as well as the alternatives that were considered and dismissed as part of the screening process; and compares the estimated costs of the alternatives. This information is included in the following sections:

- Section 3.1 describes the alternatives screening process and assumptions;
- Section 3.2 discusses the No-Build Alternative;
- Section 3.3 describes the Build Alternatives, including eliminated alternatives; and
- Section 3.4 compares the costs of the Build Alternatives carried forward.

3.1 Tier 1 Alternatives Screening Process

3.1.1 Alternatives Screening and Selection Process

The purpose of the screening process was to identify reasonable alternatives to evaluate in detail in this Tier 1 Draft EIS. A set of screening criteria was developed specifically for this program. The screening criteria were applied to the Build Alternatives to determine if any of the identified alternatives should be eliminated from further consideration. The screening criteria were developed based on the following:

- the goals and objectives established for the program in the Purpose and Need (i.e., increase passenger rail ridership through infrastructure/equipment improvements to improve travel time, frequency and reliability of service, and safety from Chicago to St. Louis);
- avoiding and minimizing impacts to humans and the natural environment; and
- minimizing maintenance and operational costs.

Table 3.1-1 summarizes the major program elements for the Tier 1 No-Build Alternative and the Build (HSR) Alternatives. The Chicago to Joliet, Springfield, and Alton to St. Louis routing alternatives are listed in Section 3.3. Exhibit 3.1-1 depicts the areas studied during the alternatives screening process. More detailed maps of the potential alternative routes studied in the Chicago, Springfield, and St. Louis portions of the study corridor are provided in Sections 3.3.4 through 3.3.6. The program elements listed in Table 3.1-1 are the same for all of the alternatives evaluated through this screening process. The No-Build Alternative was not screened as part of the alternative screening process, because it is retained for comparison purposes to the other alternatives that were evaluated. More detailed discussions regarding individual improvements associated with the No-Build and Build Alternatives are discussed in Section 3.2 and 3.3.

After evaluating improvements to the Chicago to St. Louis corridor that would allow high speed trains to travel at 125 mph, this alternative was dismissed due to the magnitude of improvements that would be required to support trains traveling at that speed. Such improvements would require a substantial number of grade separations, additional curve treatments, and further signal and warning system upgrades. The additional construction requirements would make it cost prohibitive and result in more impacts to the human and natural environments. It was not anticipated that ridership would increase substantially compared to the 110 mph option to support the extra costs and environmental consequences.

3.1.2 Tier 1 Screening Objectives and Criteria

Key objectives and criteria were developed for screening the initial range of alternatives. The criteria were developed to evaluate the alternatives based primarily on their ability to meet the purpose and need of the program, but also to help identify any alternatives that may have disproportionate costs and/or environmental impacts. The screening criteria were used to help identify any alternatives with fatal flaws. The end result of the screening process was a set of the most reasonable alternatives, which were evaluated in more detail l in the Tier 1 Draft EIS.

Table 3.1-1. Design Elements of the Program Alternatives

Program Element[1]	No-Build Alternative (Design Year 2030)	Build Alternatives (Design Year 2030)	
Passenger Round Trips per Day	5[2]	9[3]	
Maximum Operating Speed	For 3 of the 5 passenger round trips: up to 110 mph between Joliet and Alton; up to 79 mph north of Joliet and south of Alton. For the remaining 2 passenger round trips: up to 79 mph between Chicago and St. Louis.	Up to 110 mph	Up to 125 mph
Number of Mainline Tracks	1 track through most of the corridor	2 tracks (minimum) throughout the corridor	
Alternative Routes	Use existing Chicago to St. Louis Amtrak route	Evaluate alternative routes between Chicago and Joliet, through Springfield, and between Alton and St. Louis	
Grade Crossings	Enhanced warning devices at grade crossings south of Joliet as part of the 2004 Record of Decision (ROD) improvements and the Dwight to Joliet Environmental Assessment.	Additional grade crossing treatments, including grade separations.	Where speeds exceed 110 mph, close or grade separate crossings.
Station Upgrades	Station upgrades at Dwight, Pontiac, Lincoln, Carlinville, Alton, and Springfield as covered in 2004 ROD	Additional station improvements, including potential passenger grade separations	
New Stations	None	Between Chicago and Joliet, for routes other than the existing Amtrak route, a new suburban station would be provided. A new station between Alton and St. Louis would also be considered.	

[1] The information in this table was developed with a focus on screening the alternate route alignments. The remaining program elements were developed in the Service Development Plan.

[2] Passenger service under the No-Build Alternative will include three HSR round trips between Chicago and St. Louis, one non-HSR round trip between Chicago and St. Louis, and one non-HSR Texas Eagle round trip. Texas Eagle service is between Chicago and San Antonio, Texas.

[3] Passenger service under the Build Alternatives would include eight HSR round trips between Chicago and St. Louis and one non-HSR Texas Eagle round trip.

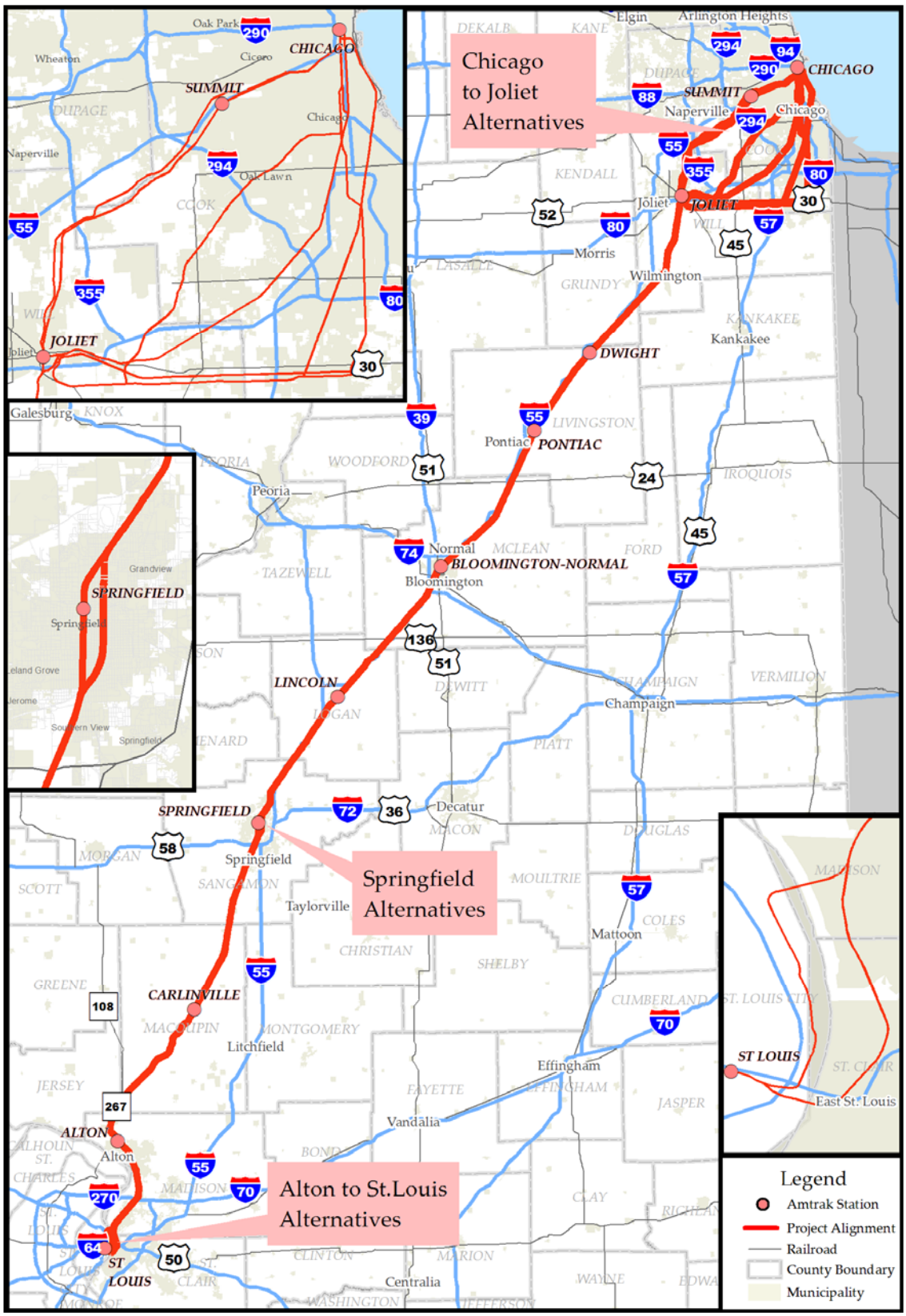


Exhibit 3.1-1. Map of overall Study Corridor for the Alternatives Screening.

Table 3.1-2 lists the Tier 1 Draft EIS screening objectives and their corresponding criteria, as well as the units or methodology used to quantify or characterize these criteria. The screening criteria were developed by first considering the overall purpose and need for the program, then determining specific goals and objectives of the program, and finally identifying what factors might influence each of those objectives. Once those factors were identified, specific qualitative and quantitative parameters were developed to compare the alternatives. Quantitative criteria were measured in appropriate units such as alternative route length, travel time, or dollars, while qualitative criteria that could not be captured adequately by a single number were encapsulated in a brief narrative description.

Table 3.1-2. Tier 1 Objectives and Screening Criteria

Objective	Criteria and Measures
Meet Purpose and Need (increase passenger rail ridership through improved travel times, frequency and reliability of service, and improve safety.)	• Length (miles) • Travel time (minutes) • Connectivity to other intercity passenger rail, intermodal services to improve mobility to important business/leisure destinations (qualitative discussion) • Safety (qualitative discussion based on ridership data)
Minimize operational and construction issues	• Operational issues (qualitative discussion, including host railroad's readiness/ability to accommodate high speed passenger rail • Potential conflicts with freight and other passenger service) • Number of at-grade crossings • Construction issues (qualitative discussion)
Minimize capital and maintenance costs	• Capital cost, including right-of-way (dollars) • Maintenance cost (dollars)
Minimize environmental impacts (natural, socioeconomic, and cultural resources)	• Existing and planned development [land use compatibility (qualitative discussion), right-of-way impacts (acres of right-of-way required)] • Natural resources1 [Water resources (# of crossings), floodplain impacts (# of crossings), wetlands (acres of wetlands in right-of-way), and threatened and endangered species impacts (number of species)] • Social and economic resources [environmental justice (EJ) impacts (areas where EJ population >50%)2, community and neighborhood impacts (qualitative discussion), buildings directly impacted (# of buildings potentially displaced)3 • Cultural and recreational resources [historic resources (# of resources), recreational/potential Section 4(f)/6(f) resources impacts (# of adjacent resources)

[1] A 200-foot buffer was used for the screening of natural resources to ensure that all resources falling within the anticipated right-of-way and those immediately adjacent were considered.

[2] A 1000-foot buffer was used to identify potential EJ populations adjacent to the alternatives.

[3] To determine potential numbers of buildings displaced, number of cultural resources sites, and number of recreational properties, the existing and anticipated new right-of-way boundaries were utilized.

The goal was to establish a set of criteria by which to uniformly compare all Tier 1 alternatives, regardless of geographic location. Additional information related to how the screening was conducted for each of the objectives is provided after Table 3.1-2.

3.1.2.1 Meet Purpose and Need

The general purpose and need for the program, as discussed in Chapter 2, is to promote a meaningful increase in passenger rail ridership between Chicago and St. Louis by improving/modernizing existing infrastructure to support high speed rail, reducing rail travel times, and increasing reliability and frequency of rail service. Providing improved rail service and reducing the overall reliance on automobiles as the primary mode of transportation would offer improved transportation choices, reduced fuel consumption, reduced air quality impacts, and improved safety. Several factors influence rail ridership. Some of the factors considered during the screening process that were expected to affect overall ridership changes include length of the alternative route, travel time, connectivity to other intercity passenger rail, and reliability and frequency of service (i.e., more trainsets/round trips). Ridership data is included in Section 3.3.3 in Table 3.3-2, including a comparison of changes in ridership for each mode of transportation under the No-Build and Build Alternatives.

Length

In order to maximize the ridership potential for the high-speed rail corridor, the lengths of the various alternatives were compared. The length of the alternative was one indicator that could influence travel times that would affect ridership based upon on-time performance and adverse travel along the various alternatives. The alternative lengths were obtained from GIS mapping data sources.

Travel Time

Travel time estimates for each alternative were developed using available track chart speed data. Additionally, existing curve radii was estimated from aerial photography to determine the maximum operating speeds through the existing curves. The proposed improvements anticipated for each alternative included sufficient infrastructure to maintain the desired speeds along each alternative in order to create a consistent comparison. More detailed analysis of the alternatives' travel times, including geometrics and capacity restrictions, was conducted for those alternatives carried forward for detailed evaluation in the Tier 1 Draft EIS. Those travel times are contained in Section 3.3.3 in Table 3.3-1.

Connectivity to Other Intercity Passenger Rail and Intermodal Service

Alternatives were evaluated to assess their connectivity to other passenger rail and intermodal service. Where applicable, endpoint stations were rated "good" if they accommodate other intercity passenger rail and intermodal service, and "poor" if they do not. Connectivity was considered because it is important that passengers using the proposed high speed rail service are able to get to their work/leisure destinations along the proposed route easily. Otherwise, people would continue to use other modes of transportation for convenience purposes, even if the travel times and/or costs associated with those other modes may be somewhat higher.

3.1.2.2 Minimize Operational and Construction Issues

Operational Issues

Operational issues, including host railroad's readiness/ability to accommodate high speed passenger rail, potential conflicts with freight and other passenger service, and number of at-grade crossings were considered for each alternative. In order for intercity passenger trains to operate at maximum efficiency, there should be limited interference from at-grade highway-rail or rail-rail crossings and freight, intercity passenger, and commuter operations along the alternative. These conflicts between freight and passenger trains can create capacity and operational conflicts. Travel time, reliability, and costs could be affected by capacity and operational issues.

Alternative alignments were reviewed based on the difficulty/anticipated costs that would be expected in order for a host railroad to be able to accommodate high-speed passenger rail service on their tracks. An alternative was not eliminated solely for requiring substantial infrastructure improvements and/or operational changes in order to allow host railroad's to be able to accommodate high-speed passenger trains. However, the magnitude of the required improvements was considered on a relative basis amongst the alternatives.

At-grade crossings also have an impact on operations along the alternatives. The number of at-grade highway-rail crossings and at-grade rail-rail crossings were quantified based on GIS data from the Illinois Commerce Commission (ICC) Grade Crossing database. At-grade highway-rail crossings provide conflict points for rail traffic increasing safety concerns along the alternative and vehicle delays along the roads being crossed. Minimization of these conflict points benefits both highway and rail users.

At-grade rail-rail crossings create coordination conflicts between railroad operators since one railroad is dependent upon the crossing controller's schedule. These crossings were also identified as major infrastructure improvements along the alternatives should any doubled tracked at-grade crossing exist. At these locations, it was assumed that railroad flyovers would be provided to eliminate the conflict point and to improve rail operation efficiencies along both the alternative and the crossing railroad. By providing flyovers, the impacts associated with rail operations would be removed. However, flyovers would result in increased construction costs and potential for additional impacts to existing natural, cultural, and human resources due the wider right-of-way required in those areas.

Construction Issues

The alternatives were compared based on the degree to which rail infrastructure construction would impact existing freight, intercity passenger, and commuter rail operations. Elements such as delay to existing freight and passenger operations, temporary construction requirements, and closures necessary for construction were assessed on a three level scale.

- Low Construction Impact Rating – existing rail traffic can be accommodated over multiple existing tracks in the corridor; some schedule delays for passenger and/or rail service, infrastructure improvements can be generally completed with few reroutes or cancellations. Few, if any, temporary construction projects would be necessary.
- Medium Construction Impact Rating – most existing rail traffic can be accommodated, but would have extended times in which alternate routes or transportation would be necessary during construction; schedule delays become more prevalent. Temporary construction projects necessary to maintain rail traffic would be increased. Service cancellations and/or reroutes would begin affecting some adjacent transportation systems.
- High Construction Impact Rating – nearly all existing rail traffic would have to be rerouted based on the complexity and intensity of the infrastructure improvements. Schedule delays would affect not only the alternative route, but adjacent routes because of the additional detour traffic. Temporary construction requirements may be similar to the medium rating due to the increased closures. However, the additional service cancellations would affect a larger geographic area of transportation systems during the overall infrastructure improvement construction period.

3.1.2.3 Minimize Capital and Maintenance Costs

Capital Cost

The capital costs for the alternatives were developed based on the required infrastructure improvements identified as necessary to accommodate high-speed passenger traffic. These costs were divided into various similar construction activities, quantities along each alignment identified, and unit costs then applied. For screening purposes, an order of magnitude of estimated costs was used to compare the alternatives. More detailed information regarding costs is included in Section 3.4 of this Tier 1 Final EIS.

The following types of costs were evaluated:

- Rolling Stock;
- Maintenance Facilities;
- Station Facilities;
- Roadways;
  - Removal;
  - Pavement and Appurtenances;
  - Structures;
- Rail;
  - Earthwork ;

  - Track;
  - Crossovers and Turnouts;
  - Signaling;
  - Structures;
  - Miscellaneous Items;
- Program Implementation Costs;
  - Construction plans and specification costs;
  - Construction engineering costs were estimated as a percentage of construction cost;
  - Program management costs;
- Right-of-Way Costs; and
- Contingencies.

Maintenance Cost

Maintenance costs were derived by determining estimated costs to maintain one mile of track per year. The cost estimates for each alternative considered during the screening process are reported in Tables 3.3-3, 3.3-4, and 3.3-5. Estimated maintenance costs for the alternatives that were carried forward in the Tier 1 Draft EIS are provided in Section 3.4.2.

3.1.2.4 Minimize Environmental Impacts

Existing and Planned Development

Potential land use conflicts may arise for alternatives that are within residential areas and near schools. Existing and planned land uses were evaluated to provide a general assessment regarding the linear miles of residential development and the number of schools adjacent to each alternative. New stations may be required for alternatives that shift passenger service to alternative routes through Chicago, Springfield, and/or St. Louis and thereby bypass existing stations in those communities. Additional land use studies would be conducted during Tier 2 studies to confirm that the locations of any proposed stations and other infrastructure features that could conflict with existing and/or planned land uses are adequately addressed.

The amount of new right-of-way anticipated to be acquired was estimated for each alternative studied. The proposed new right-of-way areas were evaluated to determine which resources may be impacted in those areas. The cost estimates provided in Section 3.4.2 include costs for acquiring land for the new right-of-way needed.

Minimize Impacts to Natural Resources

The evaluation of alternatives related to the natural resources screening criteria was focused on order of magnitude differences. More detailed surveys and analyses of impacts are provided in Chapter 5 of this Tier 1 Final EIS. Impacts would be further defined in subsequent Tier 2 documents for the Build Alternatives selected for further evaluation.

Digital mapping from the Federal Emergency Management Agency (FEMA) was used to inventory existing surface water features. The number of surface water crossings was quantified for each alternative.

Digital floodplain mapping from FEMA was used to inventory the existing floodplains. The number of floodplain crossings was quantified for each alternative.

Digital National Wetland Inventory (NWI) maps from the U.S. Fish and Wildlife Service (USFWS) were used to inventory existing wetlands. The approximate acreage of wetlands affected was quantified for each alternative.

Information from the Illinois Natural Heritage Database was used to identify specific locations of threatened and endangered species sightings and habitat. Species that would be potentially impacted are listed for each alternative.

Minimize Impacts to Social and Economic Resources

U.S. Census information for 2010 was used to identify minority populations adjacent to the alternatives. American Community Survey data was used to identify low-income populations, which include persons living below the poverty level. Minority populations included non-white persons. Block group data was used for minority data and census tract data was used for low-income data. For screening purposes, areas adjacent to the alternatives where the minority or low-income populations exceeds 50 percent were identified as areas where there may be a potential for disproportionate impacts. More detailed analyses would be conducted in subsequent Tier 2 studies after more specific design information is available to better assess the study corridor for potential disproportionate impacts.

Community and neighborhood impacts include disruption to neighborhoods and physical barriers or divisions of established communities that would affect those who live or work in the area. Where additional right-of-way would be required, those areas were evaluated qualitatively to determine if an alternative would divide or disrupt communities or potentially cause displacements. The number of at-grade crossings was one consideration in this qualitative analysis. The number of buildings directly impacted was tabulated since not enough information was available at this level to fully determine displacements.

Minimize Impacts to Cultural and Recreational Resources

Cultural resources include historic and pre-historic resources that are listed or eligible for listing on the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act requires federal agencies to take into account the

effects of their undertakings on historic properties listed or eligible for listing on the NRHP. Sites listed on the NRHP are also subject to Section 4(f) of the U.S. Department of Transportation Act. Historic resources include historic buildings, bridges, districts, archaeological sites, and sites that could be considered sacred to Native American groups. Data from the Illinois Historic Preservation Agency (IHPA) and the Illinois State Archaeological Survey was used to inventory historic resources. The number of historic resources that could potentially be affected by each alternative was quantified.

Public lands such as parks, forest preserves, nature preserves, Illinois Natural Area Inventory sites, and other lands adjacent to the rail corridor that may qualify as a Section 4(f) or Section 6(f) recreational resource were identified and inventoried. Illinois Department of Natural Resources (IDNR) databases, maps, GIS data, and aerial photography were consulted to assist in identifying any Section 4(f) recreational and Section 6(f) resources in the study corridor. The number of facilities where right-of-way would be required was quantified for each alternative.

Section 4(f) of the Department of Transportation Act of 1966 stipulates that U.S. Department of Transportation agencies, including FRA, cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless the following conditions apply:

- There is no feasible and prudent alternative to the use of land.
- The action includes all possible planning to minimize harm to the property resulting from use.

Properties falling under Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 were also considered during the screening process. The LWCF was enacted to establish a funding source to assist the States and Federal agencies in meeting present and future outdoor recreation demands and needs. Section 6(f) of the Act requires that all properties "acquired or developed, either partially or wholly, with LWCF funds" must be maintained as such in perpetuity. Section 6(f)(3) states that those properties acquired or developed with LWCF funds shall not be converted to a use other than public outdoor recreation without the approval of the Secretary of the Department of the Interior, acting through the National Park Service and at the request of the state delegate/State Liaison Officer.

3.2 No-Build Alternative

The No-Build Alternative consists of the existing passenger train route between Chicago and St. Louis, including all committed improvements to the existing intercity passenger rail system and the complementary intercity highway and aviation services and facilities in the Chicago to St. Louis corridor. The No-Build Alternative includes those improvements discussed in the following sections that are anticipated to be completed through the year 2030.

3.2.1 Passenger Rail Service under the No-Build Alternative

Amtrak operates the intercity passenger rail service in the study corridor. As part of this alternative existing Amtrak service would be maintained. Existing service consists of five daily round trips between Union Station in Chicago and the Amtrak Station in St. Louis. None of the round trips include HSR. Scheduled one-way travel time through the study corridor currently ranges from five hours and 20 minutes to five hours and 57 minutes (See Table 3.2-2 at the end of this section for additional travel time comparison data with the No-Build and Build Alternatives).

In January 2003, IDOT completed an EIS for the Chicago to St. Louis corridor. The Selected Alternative from the EIS included the provision of three daily round trips along the existing Chicago to St. Louis Amtrak route, with 110-mile per hour high-speed rail service south of Dwight, Illinois. Proposed improvements in the 2003 FEIS included double tracking several areas along the route, addition and/or extension of freight sidings, station enhancements, grade-separated crossings, and enhanced warning devices at multiple crossings. In January 2004, FHWA and FRA issued a ROD allowing for these improvements to the Dwight to St. Louis portion of the corridor. The projects that have advanced based on the 2004 ROD are described below. No action was selected between Chicago and Dwight. Table 3.2-1 summarizes the improvements approved in the 2004 ROD and subsequent studies.

The 2004 ROD approved improvements all occur along the existing route and when complete are expected to provide service that will provide three HSR round trips per day, plus two non-HSR trips. The 2004 ROD improvements include upgrading several sections of track between Dwight and St. Louis to allow trains to operate at 110 mph. The improvements include addition of double tracks, upgrades to and/or extension of existing sidings, crossovers, grade crossing surfaces, signals and warning systems, stations, and addition of new high speed trains.

As part of the ROD improvements, six new trainsets capable of operating at up to 110 mph will be purchased for use on the Chicago to St. Louis corridor. Each trainset is expected to consist of five cars, including new coach and business class seating, as well as food service. Two new high-horsepower diesel locomotives will likely be used on each trainset. The equipment purchased for the new high-speed service will undergo extensive performance testing and simulated operations on the corridor prior to their entry into passenger service.

In addition to the 2004 ROD improvements, a 2011 Environmental Assessment (EA)/FONSI was approved to allow proposed improvements by IDOT and UP associated with the "Track Improvement Project", which involves a series of proposed improvements to a section of the UP track between Joliet and Dwight, Illinois extending across portions of Will County, Grundy County, and northeastern Livingston County. The project passes through the Illinois communities of Joliet, Elwood, Wilmington, Braidwood, Godfrey, Braceville, Gardner, and Dwight. Table 3.2-1 summarizes the improvements approved in the 2004 ROD and 2011 FONSI that have been completed or are programmed for completion and considered part of the No-Build Alternative.

Table 3.2-1. Summary of Approved and/or Completed Rail Design Elements, Features, and/or Improvements Considered Part of the No-Build Alternative

Summary of Infrastructure Improvements under the No-Build Alternative through 2030
2004 ROD Approved Improvements (Dwight to St. Louis)
Track upgrades were approved between Dwight and St. Louis to allow up to 110 mph passenger service.
The 2004 ROD improvements include: • addition of double tracks and/or reconstruction of existing tracks covering approximately 183 miles; • upgrades to and/or extension of 13 existing sidings; • upgrades to existing crossovers and grade crossing surfaces; • enhanced warning devices/signals at 174 grade crossings; • rehabilitation/replacement of stations at Dwight, Pontiac, Lincoln, Springfield, Carlinville, and Alton; • addition of six new high speed trainsets; and • installation of Positive Train Control (PTC) on the Dwight to Q Tower section of line.
In 2010, FRA awarded $1.1 billion to IDOT for the Chicago to St. Louis corridor to complete some of the 2004 ROD-approved projects between Dwight and St. Louis. These improvements began in 2011. Track upgrades completed to date include improvements completed between Godfrey and Dwight using the Track Renewal Train (TRT) including: new rail and ties, realignment of several curves to support high speed trains; and installation of new concrete panels at grade crossings. All new double track sections and/or extended parallel sidings will be constructed on 20-foot track centers.
2011 FONSI Approved Improvements ("Track Improvement Project") (Joliet to Dwight)
Track upgrades were approved between Joliet and Dwight to allow up to 110 mph passenger service.
The 2011 FONSI improvements include: • a new and upgraded second mainline track from Joliet to Elwood (track improvements to the existing double tracks between MP 36.7 and MP 38.50, and a new second mainline track between MP 38.50 and MP 44.69); • a new freight siding between MP 55.0 and MP 57.13 (referred to as the Mazonia Siding), which will include a new turnout and approximately 12,200 feet of track; • addition of seven crossovers/turnouts to the existing double-tracked area between MP 36.7 and MP 38.50; • upgrades to existing crossovers, grade crossing surfaces, signals and warning systems, and stations; • addition of six new high speed trainsets; • acquisition of additional right-of-way for a second mainline track; and • improvements to the existing Dwight Siding, which include reconstruction of 2.6 miles of siding with an expanded centerline of 20 feet.

The first component of the 2011 FONSI includes improvements to the existing track to support the extension of the 110-mph speed limit for passenger trains on the corridor to the section between Dwight and Joliet and includes track upgrades, crossing upgrades, new turnouts, and other related work. The second component includes a new and upgraded second mainline track between Joliet and Elwood (i.e., track improvements to the existing double tracks between MP 36.7 and MP 38.50, and a new second mainline track between MP 38.50 and MP 44.69). In approximately the northernmost two miles of the FONSI project area, which are already double-tracked, the track improvements will

include the addition of seven crossovers/turnouts. The third component of the 2011 FONSI, located between MP 55.0 and MP 57.13, consists of a new siding track adjacent to the north side of the existing single mainline track. (Note: The siding is located in the City of Braidwood, but for purposes of consistency with the FONSI/EA, will be referred to as the Mazonia Siding.) A new turnout and approximately 12,200 feet of track will be constructed for the Mazonia Siding. The 2011 FONSI improvements are programmed for implementation as funding is available.

After the original 2011 EA for the Joliet to Dwight section was published, IDOT revised the track improvement project to include the acquisition of additional right-of-way for the second mainline track and improvements to the existing Dwight Siding. The improvements to the Dwight Siding track include reconstruction of a 2.6-mile siding track adjacent to the existing single mainline track with an expanded centerline distance of 20 feet (from 14 feet). No new right-of-way will be acquired for the Dwight Siding reconstruction. The revisions to the 2011 EA were minor in nature. Additional analyses were conducted and the new information was incorporated into the final 2011 FONSI decision for the project.

In 2010, the FRA awarded IDOT approximately $1.1 billion for the Chicago to St. Louis corridor to improve the corridor between Dwight and St. Louis. These improvements include many of the ROD approved improvements discussed above in Table 3.2-1. Subsequent to the initial $1.1 billion award, FRA awarded over $200 million in additional funds to IDOT for HSR improvements in the Chicago to St. Louis corridor. In September 2010, construction began upgrading existing track using the Track Renewal Train (TRT) to prepare the route for operations at up to 110 miles per hour. The track upgrades began in Godfrey and proceeded north to just south of Lincoln, excluding the Springfield Area. In 2011, the TRT was used to upgrade tracks between Lincoln and Dwight. The 2010-2011 improvements included the installation of new rail, concrete ties, and stone ballast that support the new rail and ties; new high-speed turnouts; realignment of several curves to support future higher speeds; and installation of new concrete panels at grade crossings. All new double track sections and/or sidings being extended to become part of the overall double track system are being constructed and/or planned to include 20-foot track centers.

Rail improvements are also planned for other sections of the corridor, including reconstruction/extension of existing sidings, signal enhancements, improved grade crossings, and new or restored station facilities with technology enhancements. These additional improvements are expected to be completed to support high-speed passenger rail service between Dwight and Joliet as early as 2012. Improvements to portions of the corridor south of Dwight will be ongoing through 2015. High speed passenger rail service will be implemented incrementally as specific segments of track are improved and approved for up to 110 mph service.

All of the improvements approved in the 2004 ROD and 2011 FONSI are considered part of the No-Build or baseline conditions. The ROD and FONSI projects, which are located from Joliet southward, are at various stages of implementation.

Also, considered part of the No-Build Alternative is the new intermodal facility near Joliet, Illinois constructed by UP. This facility will enable UP to continue to increase freight traffic on their line south of Joliet. The number of daily freight trains will gradually increase from about five to about 22.

In addition to track upgrades, and to support the higher speeds, a modified Incremental Train Control System (ITCS) that will include the use of cab signal displays on board locomotives will be implemented in the initial 110 mph segment between Dwight and Pontiac. Ultimately, an upgraded train control system meeting Federal Positive Train Control (PTC) program requirements will be implemented throughout the entire corridor to support 110 mph speeds.

Fencing along all rail improvements will be provided at all road crossings per Illinois Commerce Commission (ICC) requirements. Additional fencing may be provided in developed areas, subject to approval of local municipalities. Protective vandalism fencing will be provided on all overhead highway bridges.

No substantial changes in station stops, equipment, or grade crossing treatments will occur with this alternative beyond those previously approved changes. The only other improvements planned as part of the No-Build Alternative consist of regular maintenance and rehabilitation of the existing tracks.

HSR trains will stop at all of the stations currently served by the existing Chicago - St. Louis Amtrak route (i.e., Chicago Union Station, Summit, Joliet, Dwight, Pontiac, Bloomington/ Normal, Lincoln, Springfield, Carlinville, Alton, and St. Louis). South of Dwight, maximum operating speed will be 110 mph once all of the ROD improvements are completed.

No substantial improvements/upgrades have been approved to date between Chicago and Joliet. Therefore, under the No-Build conditions between Chicago and Joliet, the existing maximum operating speed of 79 mph will be maintained and no major physical improvements will be made north of Joliet. However, with the improvements completed or approved for completion south of Joliet, the No-Build Alternative would still improve the overall passenger service between Chicago and St. Louis.

The estimated one-way end-to-end travel times for the partial HSR trips under the No-Build Alternative is expected to be between four hours and 30 minutes to four hours and 45 minutes. This would allow the No-Build Alternative to provide travel times that are up to one hour and 12 minutes faster than the existing route prior to these improvements being completed. Travel times by transportation mode under the No-Build Alternative are provided in Table 3.2-2.

Table 3.2-2. Travel Times by Transportation Mode between Chicago and St. Louis

Mode	Estimated Travel Times (Hours: Minutes)		
	Existing Conditions	No-Build Alternative[2]	Potential Time Saved vs. Existing (No-Build)
Passenger Rail	5:20 to 5:57	4:30 to 4:45	0:50 to 1:12
Automobile	5:00 to 5:20	5:00 to 5:20	0:00
Air[1]	2:00 to 2:15	2:00 to 2:15	0:00
Bus	5:10 to 8:40	5:10 to 8:40	0:00

[1] Air travel times in this table include one hour to one hour and 15 minutes of actual flight time plus one hour to indicate the average minimum time expected for airport security and boarding gates.

[2] It is assumed that there will be no change in travel time for automobile, air, and bus travel between existing conditions and future 2030 conditions.

3.2.2 Annual Ridership Estimates

Annual ridership estimates were developed for each of the modes of transportation currently used between Chicago and St. Louis for the No-Build Alternative. Anticipated changes in ridership estimates are based on several factors including travel times, reliability and frequency of service, and connections to other modes of transportation. Table 3.2-3 contains ridership estimates for all four modes of transportation under the existing and No-Build Alternative conditions. Section 3.2.3 contains additional discussions regarding ridership.

Table 3.2-3. Annual Ridership Data for Each Mode of Transportation between Chicago and St. Louis under the Existing and No-Build Alternative Conditions

Mode	Annual Ridership (Number of Trips)			
	2010 Existing Conditions		2030 No-Build Alternative	
	Total Trips	Percent of Total	Total Trips	Percent of Total
Passenger Rail	641,587	1.3%	1,079,690	1.7%
Automobile	49,440,179	97.5%	60,057,139	96.6%
Air	542,751	1.1%	913,026	1.5%
Bus	99,809	0.2%	134,087	0.2%
Total	50,724,326		62,183,942	

3.2.3 Purpose and Need Assessment of the No-Build Alternative

A summary of the effectiveness of the No-Build Alternative at meeting the individual elements of the purpose and need is provided below.

3.2.3.1 Ridership (Travel Time, Frequency, and Reliability)

- Based on initial ridership estimates, passenger rail ridership under the No-Build Alternative would account for 1.7 percent of all trips between Chicago and St. Louis in 2030 compared to 2.8 percent under the Build Alternatives. The No-Build Alternative would provide some increase in ridership compared to the existing conditions. However, the full ridership potential would not be realized under the No-Build Alternative when compared to the Build Alternatives due to longer travel times. Therefore, although the No-Build Alternative will improve the passenger service compared to existing conditions, it will not fully meet the purpose and need of the proposed program.
- Under the No-Build Alternative, rail passenger travel time between Chicago and St. Louis will decrease up to one hour and 12 minutes relative to existing conditions. However, compared to the proposed Build Alternatives with overall travel times of three hours and 51 minutes to four hours and 10 minutes for an overall travel time decrease of up to one hour and 47 minutes over existing conditions, the No-Build Alternative travel times are still less than the ultimate goal for the HSR service within the entire Chicago to St. Louis corridor. Without additional rail capacity improvements in the corridor, beyond what is planned with the No-Build Alternative, increased frequencies and reliability of passenger rail service will not be fully realized. Rail communication and signal systems will continue to be upgraded under the No-Build Alternative, which will improve some of the reliability and on-time performance issues. However, the improvements under the No-Build Alternative would not provide enough increase in annual passenger rail ridership to meet the overall purpose and need of the program, especially when compared to the full build alternatives.
- Currently, the on-time performance of rail service in the Chicago to St. Louis corridor is unreliable and those reliability issues are expected to increase over the next 10 years. With the construction of the new Joliet Intermodal Terminal, it is anticipated that the number of freight trains on the tracks will double on the Chicago to St. Louis corridor. This additional traffic will exacerbate issues coordinating freight and passenger rail potentially affecting businesses and passengers relying on rail service along the route.
- Increased numbers of slow moving trains could result in adverse social and economic impacts to local communities due to automobile delays at crossings as well as delays in delivering freight and passengers/workers to their destinations on time. Vehicle congestion is already an issue in some of the cities, specifically Springfield, where there are at-grade rail crossings on major through streets. Long trains delayed or moving slowly on tracks can simultaneously block almost all of the crossings on that track, and traffic queues can block vehicles on intersecting streets. This adversely affects the quality of life and inhibits economic activity.

3.2.3.2 Safety

- Overall passenger safety in the study corridor will increase as travelers divert from automobile to rail since rail is a safer mode of travel. However, fewer passengers are expected to divert under the No-Build Alternative compared to the Build Alternatives, which would have overall travel times that are expected to be substantially shorter than automobile travel times.
- Slow moving trains in urban areas may interfere with emergency vehicle response times in the surrounding areas, especially where emergency response stations are located in areas where at-grade rail crossings are frequently blocked.

The No-Build Alternative will not meet the purpose and need of this program. However, the No-Build Alternative was carried forward in the Tier 1 Draft EIS for comparison purposes to the proposed Build Alternatives described below.

3.3 Build Alternatives

This section briefly describes each of the potential build alternatives that were considered during the screening process described in Section 3.1, identifies which alternatives were carried forward for further study in the Tier 1 Draft EIS, and discusses the reasons the other alternatives were eliminated. Section 3.3.1 discusses the overall program elements for the entire Chicago to St. Louis high speed rail alternatives. Section 3.3.3 assesses the Build Alternatives in relation to the purpose and need for the program. Sections 3.3.4 through 3.3.6 discuss three areas along the overall Chicago to St. Louis corridor where alternative routes were considered, some of which were carried forward for further evaluation in the Tier 1 Draft EIS. Finally, the Build Alternatives carried forward in the Tier 1 Draft EIS are described in more detail in Section 3.3.7.

3.3.1 Program Elements for the Proposed High Speed Rail Corridor

Several program elements were incorporated during the alternatives development process to help identify potential alternatives that are cost effective while producing major travel time reductions. These include:

- Use of existing rail infrastructure where possible (eliminating the need for all new track and right-of-way);
- Use of diesel-powered trains limiting top operating speeds to 110 mph; and
- Improvements and additions to enhance track capacity and train operations that are cost effective, such as provision of new train control and communication systems; provision of double track to allow for HSR trains traveling in opposite directions to pass each other with minimal delay; provision of additional siding track, as well as upgrading and extending existing siding track; and treatment of selected highway-railroad grade crossings.

One of the key elements of the Build Alternatives is to provide a minimum of double tracking for the entire Chicago to St. Louis Corridor. Up to 47 trains per day (18 intercity passenger and 29 freight) are projected to be operating in the study corridor under the

Build Alternative between Joliet and St. Louis where the corridor is primarily single track. At these train frequencies, it was determined that two tracks would be required to maintain reliable passenger service and to maintain No-Build condition freight levels of service. (See Section 6.1.2.1 for a discussion of railroad operation performance under the No-Build and Build Alternatives.) The Build Alternatives would provide double tracking for the entire length of the study corridor, whereas the No-Build Alternative would only provide a second track at the existing double-tracked locations, and those approved for double tracking and/or siding extensions in the 2004 ROD and 2011 FONSI. In addition, a parallel maintenance access road would be constructed along the length of the railroad. Several areas within the study corridor already contain a second track and/or sidings, with additional double tracking and sidings approved to be constructed as part of the 2004 ROD and 2011 FONSI improvements within the existing passenger rail corridor. All new double-tracking would be at 20-foot track centers.

Most of the study corridor between Joliet to Springfield and Springfield to Venice primarily runs through rural areas, but also goes through several smaller cities and communities. Improvements to the existing route would be completed in those areas with no alternative routes being considered. However, as mentioned in Section 3.1, there are three areas where alternative routes for the proposed high speed passenger trains were evaluated due to the increased potential for community impacts due to larger populations and existing development, additional crossings, and increased potential for conflicts with freight trains. These include the section from Chicago to Joliet, the section through Springfield, and the section from Alton to St. Louis. Those areas were evaluated for alternative routes as part of the screening process described in Section 3.1 to determine if there would be opportunities to improve the overall passenger rail service, while reducing overall impacts to the human and natural environments, minimizing costs. The need to reduce potential conflicts with an increasing number of freight trains also led to studying alternative routes. The three areas where additional alternative routes were considered are discussed in Sections 3.3.4 through 3.3.6.

Rail passenger travel time between Chicago and St. Louis would be from between three hours and 51 minutes and four hours and 10 minutes under each of the Build Alternatives. This compares to the No-Build Alternative with overall travel times of a minimum of four hours and 30 minutes. The Build Alternatives would therefore result in an additional 35- to 39-minute travel time savings compared to the No-Build conditions. Travel times for the Build Alternatives are provided in Table 3.3-1.

Table 3.3-1. Travel Times by Transportation Mode between Chicago and St. Louis

Mode	Estimated Travel Times (Hours: Minutes)		
	Existing Conditions	Build Alternatives[2]	Potential Time Saved vs. Existing (Build)
Passenger Rail	5:20 to 5:57	3:51 to 4:10	1:29 to 1:47
Automobile	5:00 to 5:20	5:00 to 5:20	0:00
Air[1]	2:00 to 2:15	2:00 to 2:15	0:00
Bus	5:10 to 8:40	5:10 to 8:40	0:00

[1] Air travel times in this table include one hour to one hour and 15 minutes of actual flight time plus one hour to indicate the average minimum time expected for airport security and boarding gates.

[2] It is assumed that there will be no change in travel time for automobile, air, and bus travel between existing conditions and future 2030 conditions.

3.3.2 Annual Ridership Estimates

Annual ridership estimates were developed for the Build Alternatives. Anticipated changes in ridership estimates are based on several factors including travel times, reliability and frequency of service, and connections to other modes of transportation. During the initial screening of alternatives in the Chicago, Springfield, and St. Louis sections of the study corridor, factors that might influence ridership the most, such as travel times and connectivity to other passenger transit, were collectively considered in a qualitative manner to help identify which of the potential alignment options would have the most potential to increase ridership. Ridership data was later quantified for each of the full length Build Alternatives that were studied in detail in the Tier 1 Draft EIS. Because there is no measurable difference in ridership expected between the full length Build Alternatives carried forward, the ridership data is considered the same for each Build Alternative for comparison with the No-Build Alternative. Table 3.3-2 contains ridership estimates for all four modes of transportation under the existing, No-Build Alternative, and Build Alternative conditions for comparison. Sections 3.3.3 contains additional discussions regarding ridership for the alternatives considered in the Tier 1 Draft EIS.

Table 3.3-2. Annual Ridership Data for Each Mode of Transportation between Chicago and St. Louis

Mode	Annual Ridership (Number of Trips)			
	2010 Existing Conditions		2030 Build Alternatives	
	Total Trips	Percent of Total	Total Trips	Percent of Total
Passenger Rail	641,587	1.3%	1,707,109	2.7%
Automobile	49,440,179	97.5%	59,547,865	95.7%
Air	542,751	1.1%	826,284	1.3%
Bus	99,809	0.2%	120,366	0.2%
Total	50,724,326		62,201,624	

3.3.3 Purpose and Need Assessment of the Build Alternatives

A summary of the effectiveness of the full length Build Alternatives (discussed in Section 3.3.7) at meeting the purpose and need is provided below. All of the Build Alternatives would meet the purpose and need for the program, with at least some variation in how well each alternative would meet the purpose and need, the total benefits offered by each alternative, and the overall environmental consequences associated with them. The summary tables in Sections 3.3.4 through 3.3.6 provide a general comparison of the potential impacts of the alternatives considered during the alternatives screening process. As noted above, all of the build alternatives would meet the purpose and need. However, the alternative sections carried forward in the Chicago, Springfield, and St. Louis portions of the study corridor were those that were expected to perform better against the purpose and need criteria and measures identified in Table 3.1-2. More detailed discussions regarding the differences between the Build Alternatives that were carried forward for further study are discussed in the affected environment and environmental consequences sections.

The following summarizes the anticipated effectiveness of the Build Alternatives at meeting the primary components of the purpose and need for the program.

3.3.3.1 Ridership (Travel Time, Frequency, Reliability)

Based on initial ridership estimates, passenger rail ridership under the Build Alternatives would account for 2.8 percent of all trips between Chicago and St. Louis in 2030 compared to 1.7 percent under the No-Build Alternative. This increase in ridership would allow each of the Build Alternatives to fully meet the purpose and need of the program.

Rail passenger travel time between Chicago and St. Louis would be between three hours and 51 minutes and four hours and 10 minutes under the Build Alternatives. This compares to the No-Build Alternative with overall travel times of a minimum of four

hours and 30 minutes. The Build Alternatives could therefore result in an additional 35- to 39-minute travel time savings compared to the No-Build conditions. Compared to the existing conditions, travel times would be up to one hour and 47 minutes lower under the Build Alternatives.

Capacity improvements provided for with the Build Alternatives would allow for increased train frequencies and improved reliability.

3.3.3.2 Safety

Overall passenger safety in the study corridor will increase as more travelers divert from automobile to rail since rail is a safer mode of travel. More passengers are expected to divert under the Build Alternatives compared to the No-Build Alternative.

Each of the Build Alternatives that were carried forward would meet the purpose and need of the program.

3.3.4 Alternative Route Screening for Chicago to Joliet

3.3.4.1 Initial Range of Alternatives Chicago to Joliet

A set of 16 potential alternate routes between Chicago and Joliet were identified for screening by reviewing potentially available railroad corridors that provide a route between Chicago and Joliet. Exhibits 3.3-1 through 3.3-4 depict the initial range of alternatives studied during the screening process between Chicago and Joliet.

The following is a brief description of each of the alternative routes that were considered during the screening process from Chicago to Joliet:

Chicago to Joliet Alternative 1 - Burlington Northern Santa Fe (BNSF) to Chicago Union Station

This alternative would include utilizing the existing BNSF rail from Joliet Union Station to the Canadian National (CN) (north of the entrance to Corwith Yard), the CN to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Construction of a crossover south of Joliet Union Station;
- A new double track connection from the BNSF at the CN north of the entrance to Corwith Yard;
- Additional tracks at Joliet yard and the Amtrak connection near 21st Street;
- Station improvements including a new Amtrak platform at the Joliet Transportation Center and a new suburban Amtrak station (location undetermined); and

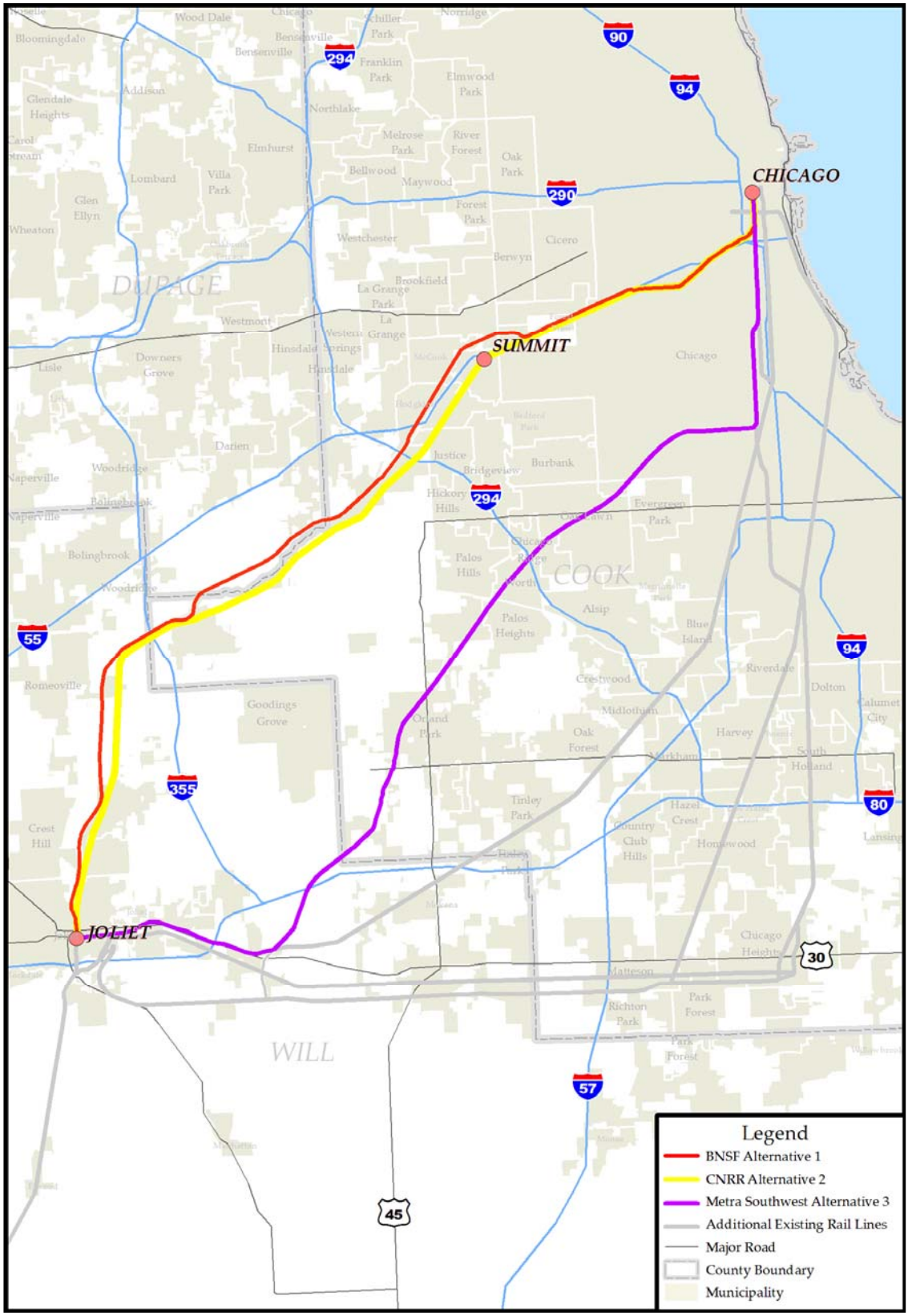


Exhibit 3.3-1. Initial Range of Chicago to Joliet Alternatives (Alternatives 1, 2, and 3)

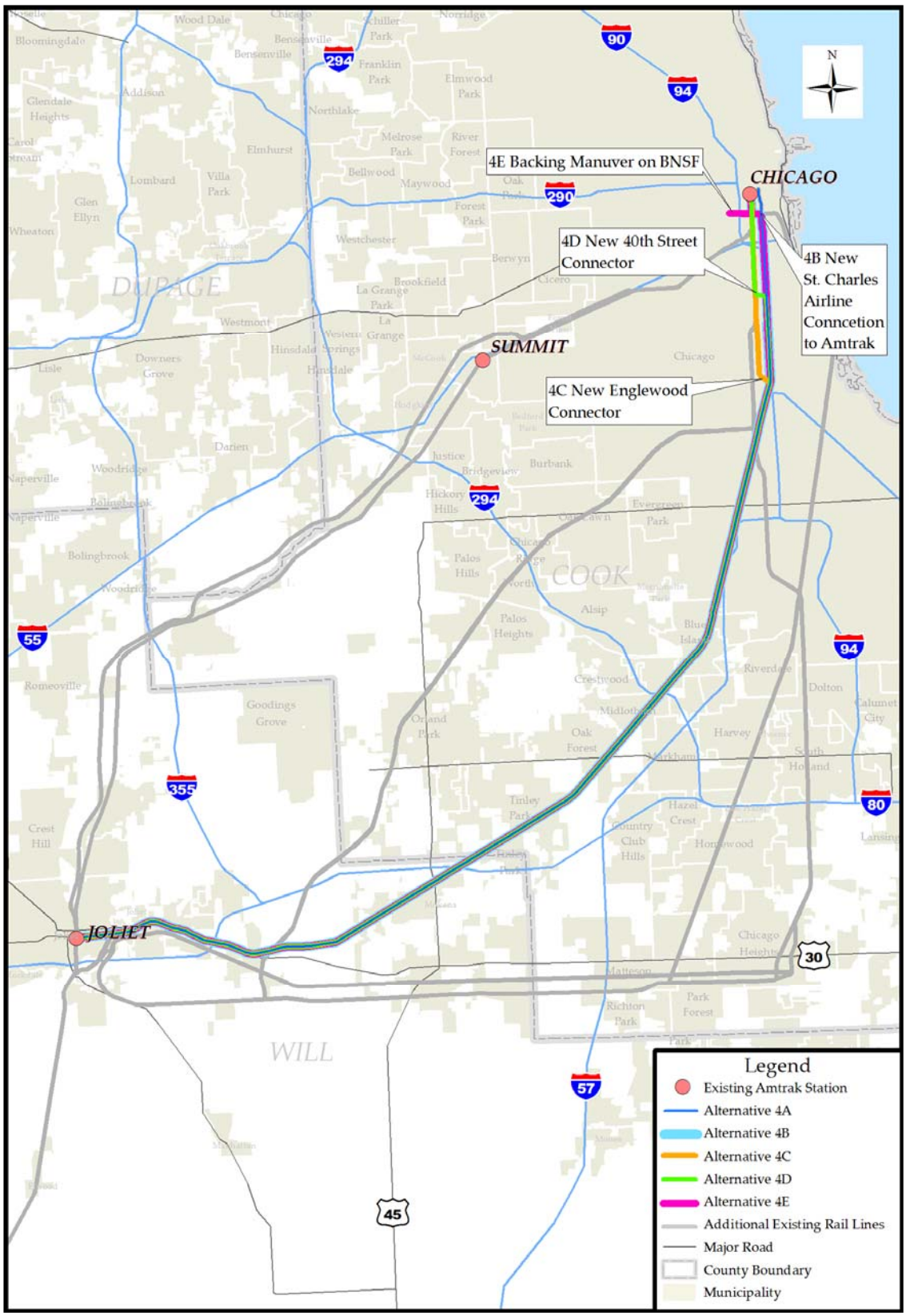


Exhibit 3.3-2. Initial Range of Chicago to Joliet Alternatives (Alternatives 4A – 4E)

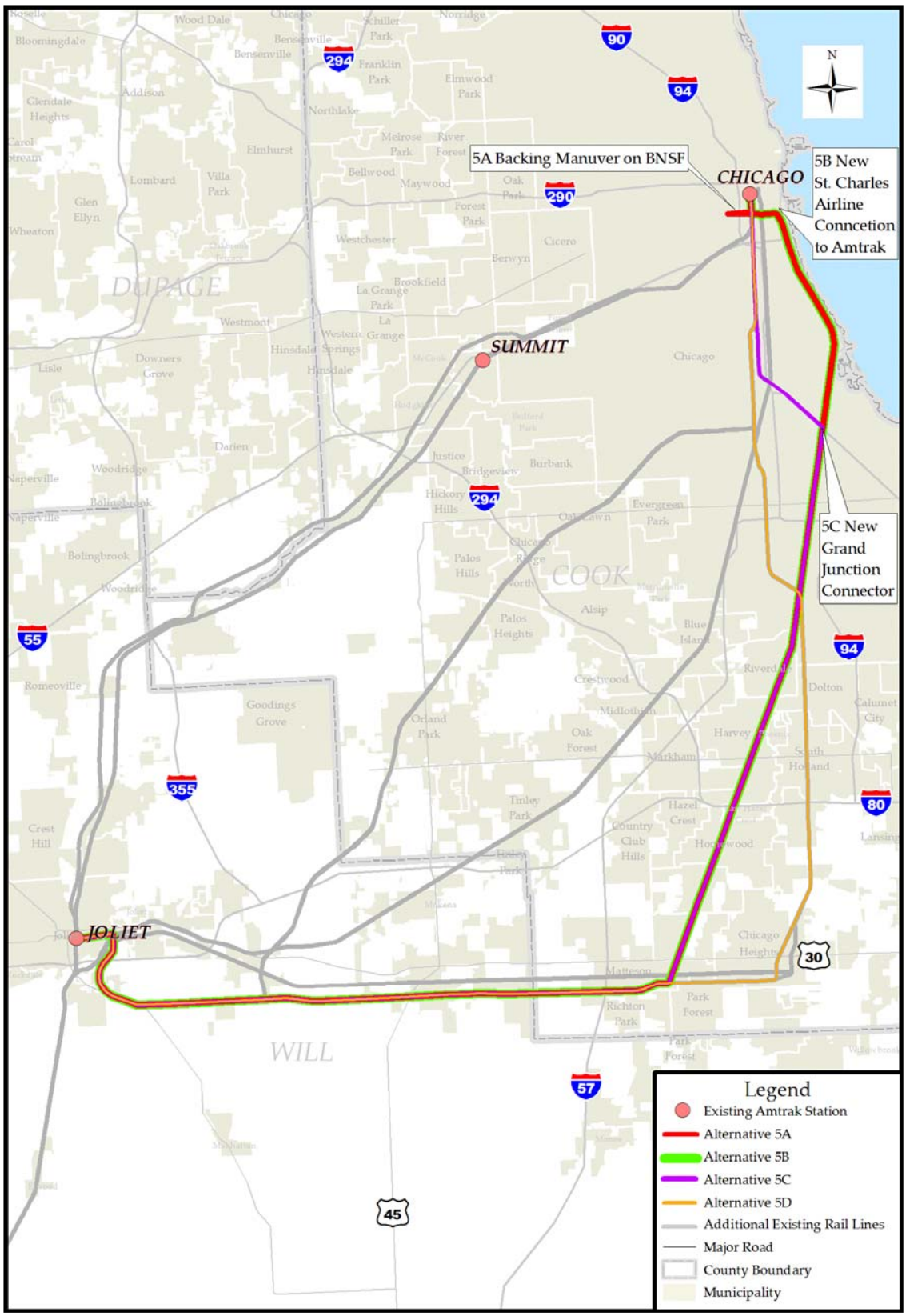


Exhibit 3.3-3. Initial Range of Chicago to Joliet Alternatives (Alternatives 5A – 5D)

Exhibit 3.3-4. Initial Range of Chicago to Joliet Alternatives (Alternatives 6A – 6D)

- Potential flyovers at Indiana Harbor Belt (IHB) west of Summit, Belt Railway Company (BRC) east of Cicero Avenue, Corwith Yard entrance, and Norfolk Southern/CSX Transportation (NS/CSX) near Western Avenue.

Chicago to Joliet Alternative 2 - CN to Chicago Union Station

This alternative would include utilizing the current Amtrak route along the CN from Joliet Union Station, to Amtrak south of Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the connection to Amtrak near 21st Street; and
- Potential flyovers at IHB west of Summit, BRC east of Cicero Avenue, BNSF north of Corwith Yard; and CSX/NS near Western Avenue.

Chicago to Joliet Alternative 3 - Metra Southwest to Chicago Union Station

This alternative would include utilizing the Northeast Illinois Regional Commuter (NIRC) Rock Island District (RID) from Joliet Union Station to NS (NIRC) north of New Lenox, NS (NIRC) to Amtrak south of Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, NS (NIRC) around Landers Yard, NS (NIRC) from north of New Lenox to just north of 143rd Street in Orland Park (9.6 miles), and between 43rd Street and 41st Street in Chicago;
- Station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center, and location and construction of a new suburban Amtrak station;
- A new double track connection of the NIRC RID to the NS (NIRC) north of New Lenox; and
- Potential flyovers at EJ&E railroad east of Joliet, IHB/CSX near Ridgeland Avenue, CN near 83rd Street, and CSX between Damen Avenue and Western Avenue.

This alignment would require additional coordination with Metra regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. Additionally, Metra SouthWest Service would be shifted to the RID at around 75th Street.

Chicago to Joliet Alternative 4A - Metra Rock Island

This alternative would include utilizing the NIRC RID from Joliet Union Station to the LaSalle Street Station. Improvements would include:

- An additional tracks at the existing single track UP to NIRC RID connection at Joliet Union Station and NIRC RID from Joliet Union Station to near Union Street;
- Station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and construction of a new suburban Amtrak Station; and

- Potential flyovers at EJ&E east of Joliet and St. Charles Air Line (SCAL) near 16th Street.

This alignment would require additional coordination with Metra regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations.

Chicago to Joliet Alternative 4B - Metra Rock Island

This alternative would utilize the NIRC RID from Joliet Union Station to SCAL, the SCAL to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, and the existing single track connection between the NIRC RID and SCAL;
- Station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak station;
- A new double track connection between the SCAL and Amtrak south of Chicago Union Station; and
- Potential flyovers at EJ&E east of Joliet and CN near 16th Street.

This alignment would require additional coordination with Metra and SCAL (25 percent BNSF, 25 percent UP, and 50 percent CN) regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations.

Chicago to Joliet Alternative 4C - Metra Rock Island

This alternative would utilize the NIRC RID from Joliet Union Station to the NS near 63rd Street in Chicago, the NS to NS (NIRC) near 43rd Street in Chicago, the NS (NIRC) to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station and NIRC RID from Joliet Union Station to near Union Street; station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of new suburban Amtrak Station;
- A new double track connection from the NIRC RID to the NS near 63rd Street in Chicago; and
- A potential flyover at EJ&E east of Joliet.

This alignment would require additional coordination with Metra and NS regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations.

Chicago to Joliet Alternative 4D - Metra Rock Island

This alternative would utilize the NIRC RID from Joliet Union Station to the NS near 40th Street in Chicago, the NS west to NS (NIRC) near 40th Street in Chicago, the NS (NIRC) to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, and the existing single track connection from the NIRC RID to the NS near 40th Street in Chicago, station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak Station;
- Construction of a new double track connection from the NS to the NS (NIRC) near 40th Street in Chicago; and
- A potential flyover at EJ&E east of Joliet.

This alignment would require additional coordination with Metra and NS regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations.

Chicago to Joliet Alternative 4E - Metra Rock Island

This alternative would utilize the NIRC RID from Joliet Union Station to SCAL, the SCAL to the BNSF, and BNSF to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, and at the existing single track connection between the NIRC RID and SCAL; station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak Station; and
- Potential flyovers at EJ&E east of Joliet and at SCAL connector at CN near 16th Street.

This alignment would require additional coordination with Metra and SCAL (25 percent BNSF, 25 percent UP, and 50 percent CN) regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations..

Chicago to Joliet Alternative 5A - Metra Rock Island Elgin, Joliet & Eastern (EJ&E) to CN

This alternative would utilize the NIRC RID from Joliet Union Station to the CN (EJ&E) east of Henderson Avenue in Joliet, the CN (EJ&E) to the CN near Matteson, the CN to the SCAL, the SCAL to the BNSF, the BNSF to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, and EJ&E from Nelson Road to west of Wolf Road (5 miles); and
- Station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak Station.

This alignment would require additional coordination with Metra and SCAL (25 percent BNSF, 25 percent UP, and 50 percent CN) regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains.

Chicago to Joliet Alternative 5B - Metra Rock Island EJ&E to CN

This alternative would utilize the NIRC RID from Joliet Union Station to the CN (EJ&E) east of Henderson Avenue in Joliet, the CN (EJ&E) to the CN near Matteson, the CN to the SCAL, the SCAL to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, EJ&E from Nelson Road to west of Wolf Road (5 miles), and EJ&E from west of Sauk Trail to East of IL 50 (5.7 miles);
- Station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak Station; and
- Construction of new double track connections at NIRC RID to the CN (EJ&E) in eastern Joliet and at SCAL to Amtrak south of Chicago Union Station.

This alignment would require additional coordination with Metra and SCAL (25 percent BNSF, 25 percent UP, and 50 percent CN) regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains.

Chicago to Joliet Alternative 5C - Metra Rock Island EJ&E/CN

This alternative would utilize the NIRC RID from Joliet Union Station to the CN (EJ&E) east of Henderson Avenue in Joliet, the CN (EJ&E) to the CN near Matteson, the CN to the NS near 75th Street, the NS to the NS (NIRC) near 43rd Street in Chicago, the NS (NIRC) to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, EJ&E from Nelson Road to west of Wolf Road (5 miles), EJ&E from west of Sauk Trail to East of IL 50 (5.7 miles);

- Station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak Station; and
- Construction of new double track connections at NIRC RID to the CN (EJ&E) in eastern Joliet and at CN to NS near 75th Street.

This alignment would require additional coordination with Metra and NS regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains.

Chicago to Joliet Alternative 5D - Metra Rock Island EJ&E/UP

This alternative would utilize the NIRC RID from Joliet Union Station to the CN (EJ&E) east of Henderson Avenue in Joliet, the CN (EJ&E) to the UP near Chicago Heights, the UP to the NS near 80th Street, the NS to the NS (NIRC) near 74th Street, the NS (NIRC) to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, EJ&E from Nelson Road to west of Wolf Road (5 miles), EJ&E from west of Sauk Trail to East of IL 50 (5.7 miles), from south of 80th Street to north of 74th Street, and from 41st to 43rd Street;
- Station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak Station; and
- Construction of new double track connections at NIRC RID to the CN (EJ&E) in eastern Joliet and at CN (EJ&E) to the UP near Chicago Heights; potential flyovers at IHB near Dolton and at CN/CSX near 163rd Street.

This alignment would require additional coordination with Metra and NS regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains nor would the UP.

Chicago to Joliet Alternative 6A - New Alignment Connector to EJ&E/CN

This alternative would utilize a new alignment from the UP south of Zurich Road south of Joliet to a utility corridor between Bradford Road and Edison Road south of Joliet, along the utility corridor to the CN (EJ&E) southeast of Joliet, the CN (EJ&E) to the CN near Matteson, the CN to the SCAL, the SCAL to the BNSF, the BNSF to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track from Nelson Road to west of Wolf Road (5 miles) and from west of Sauk Trail to east of Illinois 50 (5.7 miles); station improvements including construction of a new Joliet high speed rail station along Illinois 53 south of Joliet and location and construction of a new suburban Amtrak Station; and

- Construction of a new double track alignment from the UP south of Zurich Road to the CN (EJ&E) southeast of Joliet (3 miles).

This alignment would require additional coordination with Metra, NS, and SCAL (25 percent BNSF, 25 percent UP, and 50 percent CN) regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains..

Chicago to Joliet Alternative 6B - New Alignment Connector to EJ&E/CN

This alternative would utilize a new alignment from the UP south of Zurich Road south of Joliet to a utility corridor between Bradford Road and Edison Road south of Joliet, along the utility corridor to the CN (EJ&E) southeast of Joliet, the CN (EJ&E) to the CN near Matteson, the CN to the SCAL, the SCAL to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track from Nelson Road to west of Wolf Road (5 miles and from west of Sauk Trail to east of Illinois 50 (5.7 miles); station improvements including construction of a new Joliet high speed rail station along Illinois 53 south of Joliet and location and construction of a new suburban Amtrak Station; construction of a new double track alignment from the UP south of Zurich Road to the CN (EJ&E) southeast of Joliet (3 miles); and
- Construction of a new double track connection at SCAL to Amtrak south of Chicago Union Station.

This alignment would require additional coordination with Metra, NS, and SCAL (25 percent BNSF, 25 percent UP, and 50 percent CN) regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains.

Chicago to Joliet Alternative 6C - New Alignment Connector to EJ&E/CN

This alternative would utilize a new alignment from the UP south of Zurich Road south of Joliet to a utility corridor between Bradford Road and Edison Road south of Joliet, along the utility corridor to the CN (EJ&E) southeast of Joliet, the CN (EJ&E) to the CN near Matteson, the CN to the NS near 75th Street, the NS to the NS (NIRC) near 43rd Street in Chicago, the NS (NIRC) to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track from Nelson Road to west of Wolf Road (5 miles) and from west of Sauk Trail to east of Illinois 50 (5.7 miles);
- Station improvements would include construction of a new Joliet high speed rail station along Illinois 53 south of Joliet and location and construction of a new suburban Amtrak Station;
- Construction of a new double track alignment from the UP south of Zurich Road to the CN (EJ&E) southeast of Joliet (3 miles); and
- Construction of a new double track connection at CN to NS near 75th Street.

This alignment would require additional coordination with Metra, NS, and SCAL (25 percent BNSF, 25 percent UP, and 50 percent CN) regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains.

Chicago to Joliet Alternative 6D - New Alignment Connector to EJ&E/CN

This alternative would utilize a new alignment from the UP south of Zurich Road south of Joliet to a utility corridor between Bradford Road and Edison Road south of Joliet, along the utility corridor to the CN (EJ&E) southeast of Joliet, the CN (EJ&E) to the UP near Chicago Heights, the UP to the NS near 80th Street, the NS to the NS (NIRC) near 74th Street, the NS (NIRC) to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include:

- Additional track from Nelson Road to west of Wolf Road (5 miles), from west of Sauk Trail to east of Illinois 50 (5.7 miles), and from south of 80th Street to north of 74th Street, from 41st Street to 43rd Street; station improvements would include construction of a new Joliet high speed rail station along Illinois 53 south of Joliet and location and construction of a new suburban Amtrak Station;
- Construction of a new double track alignment from the UP south of Zurich Road to the CN (EJ&E) southeast of Joliet (3 miles),
- Construction of a new double track connections at CN (EJ&E) to the UP near Chicago Heights; and
- Potential flyovers at IHB near Dolton and CN/CSX near 163rd Street.

This alignment would require additional coordination with Metra and NS regarding sharing of this route with high speed rail passenger service and the specifics of those accommodations. The CN would not share the EJ&E with passenger trains.

For the Chicago to Joliet alternatives that would require use of the existing Metra routes, Metra station improvements would be necessary to allow Amtrak trains to safely operate through the station area. The following RID and Heritage Corridor (HC) Metra stations north and east of Joliet would require improvements under the Build Alternatives:

- HC Stations
  - Lockport
  - Romeoville (Planned Station)
  - Lemont
  - Willow Springs
  - Summit
- RID Stations

- New Lenox
- Mokena
- Hickory Creek
- Tinley Park – 80th Avenue
- Tinley Park
- Oak Forest
- Midlothian
- Robbins
- Blue Island – Vermont Street
- 103rd Street – Washington Heights
- 95th Street – Longwood
- Gresham
- Auburn Park (Planned Station)

Improvements could include:

- Pedestrian gates with escape areas to prevent pedestrian track access when trains are present;
- Inter track fencing including extensions beyond platform areas to address pedestrian flows from parking areas;
- Platform end diversions to channel pedestrian flow away from tracks and behind pedestrian gates;
- Platform relocation to correct pedestrian flow problems and eliminate staggered platforms;
- Mid-platform crossing elimination to allow pedestrian crossings only at gated areas;
- Another Train Warning System with light and audible warning systems;
- Improved station speaker systems to alert pedestrians of approaching trains;
- Upgrade passive signage with brighter colors and more conspicuous location; and
- Grade separated pedestrian platform access where possible at high volume stations.

3.3.4.2 Screening Results for Chicago to Joliet Alternatives

This section summarizes the results of the Tier 1 screening of alternatives in the Chicago to Joliet portion of the study corridor and provides reasons for eliminating alternatives from further consideration. Information and data developed for the Tier 1 screening process is summarized in Table 3.3-3. The alternatives that were eliminated are indicated with red shading in the cell containing the alternative names in Table 3.3-3. Orange shaded cells in the table indicate the primary reasons for eliminating those alternatives, and yellow shaded cells indicate secondary reasons.

The Chicago to Joliet Tier 1 screening alternatives that were carried forward for further study in the Tier 1 Draft EIS based on the alternatives screening conducted for this program include:

- Chicago to Joliet Alternative 2; and
- Chicago to Joliet 4D

These two alternatives are discussed in more detail as part of the overall Build Alternative descriptions in Section 3.3.6.

The Tier 1 screening eliminated the following alternatives from further consideration:

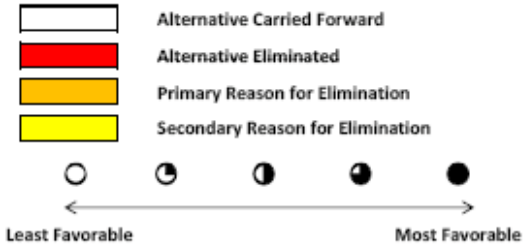
- Chicago to Joliet Alternative 1 primarily because of poor travel time, operational issues, and anticipated difficulties related to the host railroad's readiness to accommodate high speed passenger service on their tracks.
- Chicago to Joliet Alternative 3 primarily because of operational issues, anticipated difficulties related to the host railroad's readiness to accommodate high speed passenger service on their tracks, higher potential right-of-way impacts because of a section of existing single track, potential Section 4(f) impacts, and generally a higher potential for environmental impacts.
- Chicago to Joliet Alternative 4A primarily because of a lack of accessibility to passenger rail and anticipated difficulties related to the host railroad's readiness to accommodate high speed passenger service on their tracks.
- Chicago to Joliet Alternative 4B primarily because of operational issues and anticipated difficulties related to the host railroad's readiness to accommodate high speed passenger service on their tracks.
- Chicago to Joliet Alternative 4C primarily because of operational issues. (Alternative 4D is similar to 4C, but the potential connection to the NS railroad at 40th Street is considered a more viable option than providing a new connection at the Englewood flyover.)
- Chicago to Joliet Alternative 4E primarily because of poor travel times and operational issues. This alternative includes the backup maneuver into Union Station currently used by Amtrak's Illini-Saluki-New Orleans trains.

Table 3.3-3. Summary of Chicago to Joliet Tier 1 Screening

Evaluation Criteria	Chicago to Joliet Alternative: 1	2	3	4A	4B	4C	4D	4E	5A	5B	5C	5D	6A	6B	6C	6D
Meet Purpose and Need																
Passenger Travel Length (mi)	37.97	36.99	39.79	40.17	40.54	40.48	40.6	40.91	51.93	50.56	50.27	52.75	49.97	48.64	48.34	50.9
Passenger Travel Time (min)	0:53:37	0:41:32	0:37:57	0:28:12	0:28:12	0:32:56	0:34:06	0:45:50	1:05:47	0:49:00	0:50:23	0:50:46	0:58:50	0:44:04	0:45:27	0:45:50
Connectivity to Passenger Rail	Good	Good	Good	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Fair	Fair	Fair	Fair
Minimize Operational and Construction Issues																
Operational Issues	Medium	Low	Medium	Medium	High	Medium	Medium	High	High	High	High	High	High	High	High	High
Number of Railroads along Route	4	3	4	4	4	4	4	4	7	6	5	7	7	6	5	7
Estimated Average Number of Trains Per Day	82	26	62	104	104	104	104	104	32	32	32	32	32	32	32	32
Number of Railroad Flyovers	4	5	4	3	2	1	1	1	0	0	0	3	0	0	0	3
Number of At-Grade Highway Crossings	10	31	34	34	34	35	35	34	23	23	24	54	18	18	19	50
Construction Impact Rating	High	High	High	Medium	Medium	Low	Low	Low	Low	Low	Low	Medium	Low	Low	Low	Medium
Minimize Capital and Maintenance Costs																
Capital Cost ($M)	1,521	1,576	1,594	1,258	1,213	1,061	1,046	1,076	729	732	794	1,434	752	757	819	1,448
Maintenance Costs (Cost Per Year)	$1,822,560	$1,775,520	$1,909,920	$1,928,160	$1,945,920	$1,943,040	$1,948,800	$1,963,680	$2,492,640	$2,426,880	$2,412,960	$2,532,000	$2,398,560	$2,334,720	$2,320,320	$2,443,200
Minimize Impacts to the Environment																
Right-of-way Impacts (ac)	97	82	163	63	68	71	54	64	20	22	34	63	31	33	44	71
Schools Within 200-foot Corridor	0	0	4	9	9	9	7	9	8	8	5	7	8	7	5	7
Length of Residential Areas Along Alignment (miles)	7.98	16.56	30.53	28.02	27.55	30.51	29.00	28.11	33.70	33.14	36.05	35.00	32.91	32.35	35.27	34.22
Water Resources (crossings)	8	10	17	11	11	11	11	11	12	12	12	13	11	11	11	12
Floodplain Impacts (crossings)	16	9	22	15	15	15	15	15	14	14	14	17	16	16	16	19
Wetlands (ac)	73.12	10.20	25.84	20.02	20.00	21.51	21.57	20.81	9.95	9.95	10.46	21.50	9.07	9.06	9.52	20.55
Threatened and Endangered Species	10	6	1	3	2	2	2	2	0	0	0	0	0	0	0	0

Table 3.3-3. Summary of Chicago to Joliet Tier 1 Screening (continued)

Evaluation Criteria	1	2	3	4A	4B	4C	4D	4E	5A	5B	5C	5D	6A	6B	6C	6D
Environmental Justice (Number of Census Tracts where Population Below Poverty Level Exceeds 50%)	3	3	8	12	12	8	12	14	6	6	10	10	6	6	10	10
Environmental Justice (Number of Census Block Groups where Minority Population Exceeds 50%)	27	28	62	72	72	73	73	77	111	107	103	97	107	103	99	92
Cultural Resources Within Proposed ROW	0	0	2	0	0	0	0	0	0	0	0	0	3	3	3	3
Parks and Recreation (Potential Section 4(f) Properties)	0	0	7	0	0	0	0	0	0	0	0	2	0	0	0	2



- Chicago to Joliet Alternatives 5A through 5D primarily because of poor travel times, operational issues, and anticipated difficulties related to the host railroad's readiness to accommodate high speed passenger service on their tracks. Alternative 5D also has a high number of at-grade highway-rail crossings and costs substantially more than the other Alternative 5s.
- Chicago to Joliet Alternatives 6A through 6D primarily because of poor travel times, connectivity to passenger rail, operational issues, and anticipated difficulties related to the host railroad's readiness to accommodate high speed passenger service on their tracks. Alternative 6D also has a high number of at-grade highway-rail crossings and costs substantially more than the other Alternative 6s.

3.3.5 Alternative Route Screening for Springfield

3.3.5.1 Initial Range of Springfield Alternatives

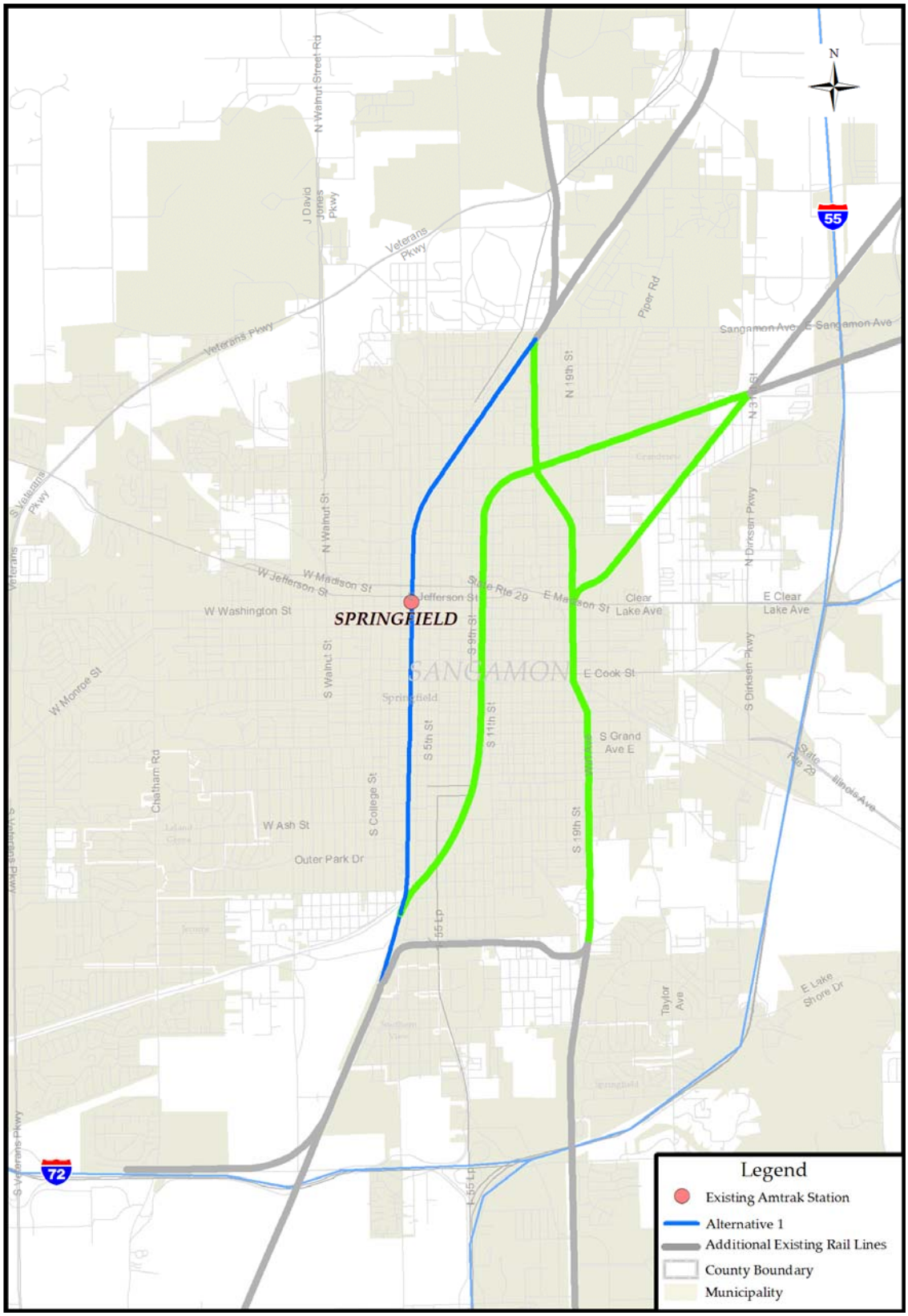
Several options exist for routing passenger and freight trains through Springfield on existing and/or potential new railroad alignments. As part of preliminary work completed for a separate study referred to as the "Springfield Rail Improvements Project" (http://springfieldrailroad.com/newsite/), a broad range of alternatives were pre-screened prior to the screening of alternatives for the Tier 1 EIS. The Springfield Rail Improvements Project was funded by IDOT and managed by the City of Springfield. The preliminary alternatives previously studied were established using input from that project's Steering Committee, advisory groups, and public meetings in April and November 2010. The pre-screening process eliminated 10 preliminary alternatives from further study based on their inability to meet the objectives of the project, as measured by projected vehicle crashes, delays, and train horn noise, or because they would have disproportionate costs and/or environmental impacts. At the conclusion of the "Springfield Rail Improvements Project" pre-screening process, five alternatives remained for further evaluation in thescreening process. Exhibits 3.3-5 through 3.3-7 depict the five alternatives that were studied during the current screening process in Springfield.

The five alternatives through Springfield that passed the Tier 1 screening process were also evaluated against Tier 2 level screening criteria. The Tier 2 screening process and criteria for the "Springfield Rail Improvements Project" alternatives is described in the separate Tier 2 Environmental Evaluation for Springfield contained in Volume II of this EIS.

The following is a brief description of each of the alternative routes that was considered during the screening process in Springfield:

Springfield Alternative 1

This alternative would leave UP freight trains and Amtrak passenger trains on Third Street. An additional track would be provided.



Exhibits 3.3-5. Initial Range of Springfield Alternatives (Alternative 1)

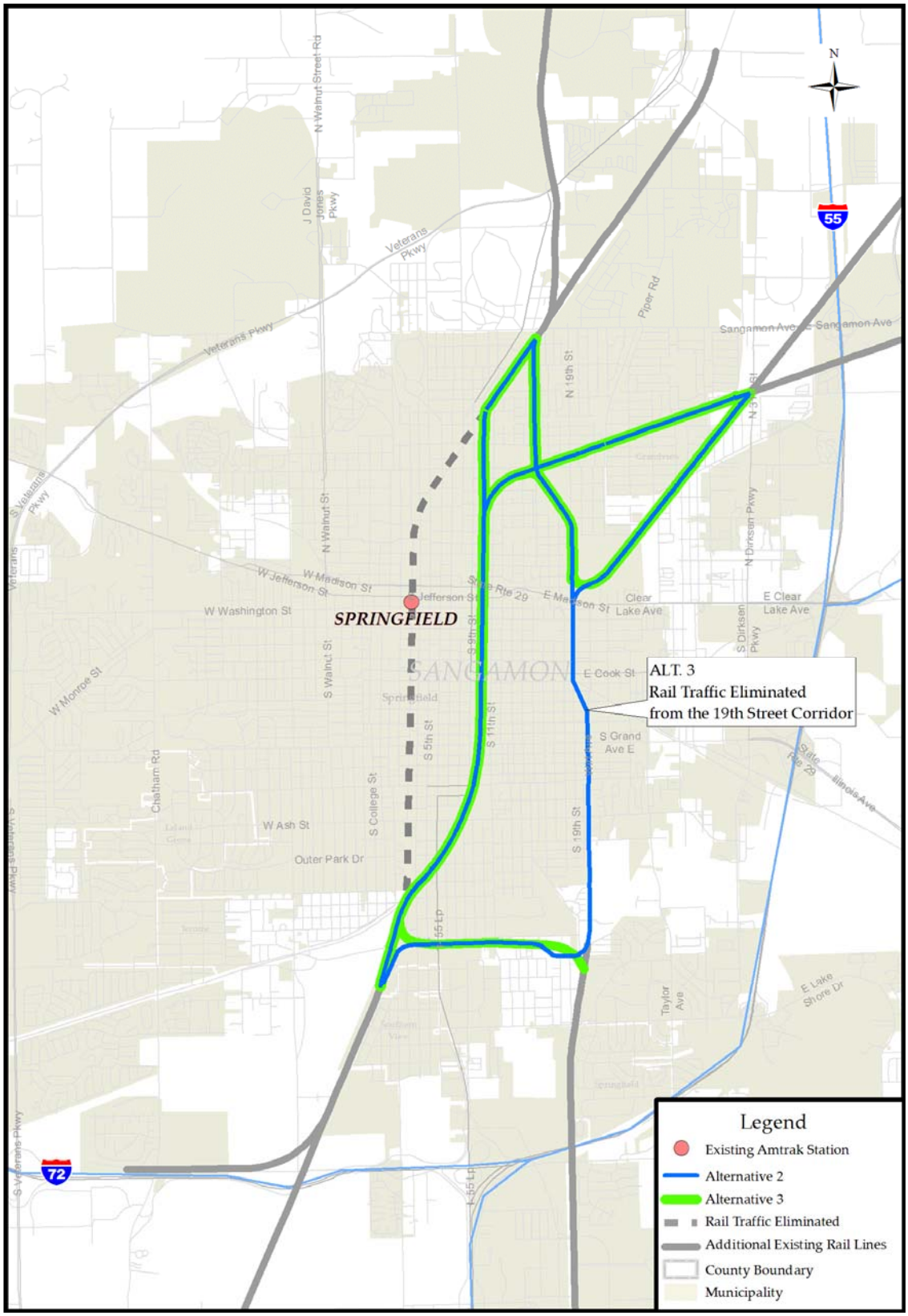


Exhibit 3.3-6. Initial Range of Springfield Alternatives (Alternatives 2 and 3)

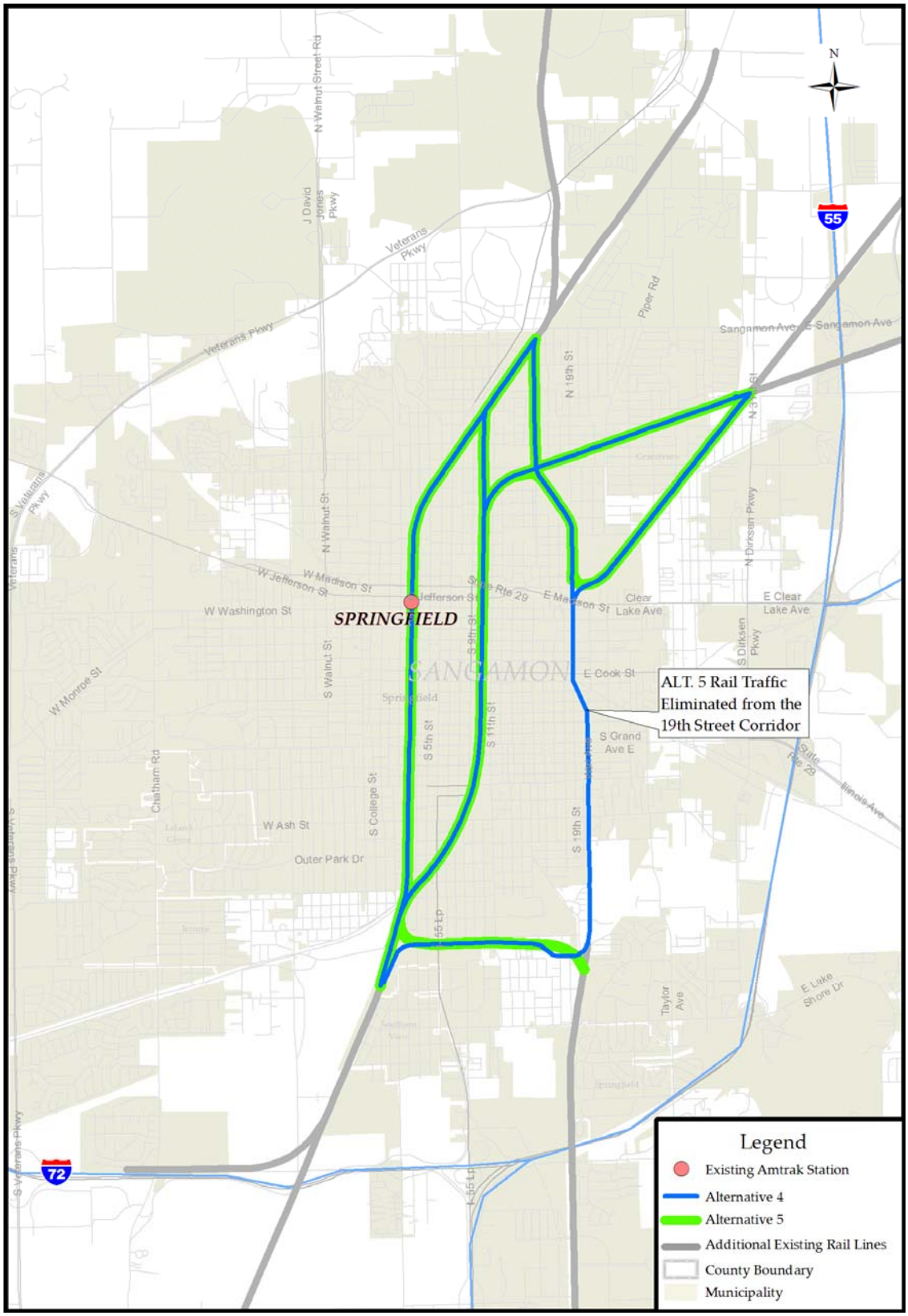


Exhibit 3.3-7. Initial Range of Springfield Alternatives (Alternatives 4 and 5)

Springfield Alternative 2

This alternative would shift UP freight trains and Amtrak passenger trains from Third Street to Tenth Street abandoning the Third Street corridor from near Ridgely Avenue to South of Iles Avenue. Additional tracks would be provided along Tenth Street.

Springfield Alternative 3

This alternative would shift UP freight trains and Amtrak passenger trains from Third Street to Tenth Street as well as CN, I&M and KCS freight trains from the Nineteenth Street corridor to the Tenth Street corridor. The Third Street corridor from near Ridgely Avenue to South of Iles Avenue would be abandoned as would the Nineteenth Street corridor from north of Clear Lake Avenue to near Stanford Avenue. Additional tracks would be provided along Tenth Street.

Springfield Alternative 4

This alternative would shift UP freight trains to Tenth Street and leave Amtrak passenger trains on Third Street. Additional tracks would be provided along Tenth and Third Streets.

Springfield Alternative 5

This alternative would shift UP freight trains to Tenth Street and leave Amtrak passenger trains on Third Street. This alternative would also shift CN, I&M and KCS freight trains from the Nineteenth Street corridor to the Tenth Street corridor. Additional tracks would be provided along Tenth and Third Streets.

3.3.5.2 Screening Results for the Springfield Alternatives

This section summarizes the results of the Tier 1 screening of alternatives in the Springfield portion of the study corridor and provides reasons for eliminating alternatives from further consideration in the Tier 1 Draft EIS. Information and data developed for the Tier 1 screening process is summarized in Table 3.3-4.

The alternatives that were eliminated are indicated with red shading in the cell containing the alternative names in Table 3.3-4. Orange shaded cells in the table indicate the primary reasons for eliminating those alternatives, and yellow shaded cells indicate secondary reasons. The Springfield Tier 1 screening alternatives that were carried forward for further study in the Tier 1 Draft EIS based on the alternatives screening conducted for this program include:

- Springfield Alternative 1; and
- Springfield Alternative 2.

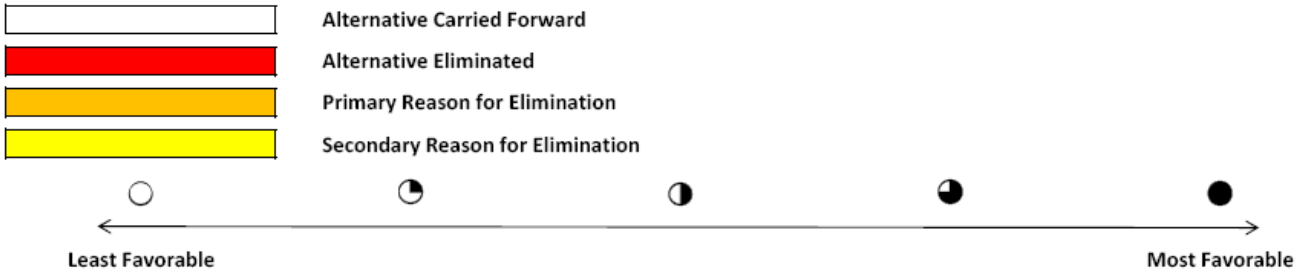
These two alternatives are discussed in more detail as part of the overall Build Alternative descriptions in Section 3.3.6.

Table 3.3-4. Summary of Springfield Tier 1 Screening

	Springfield Alternative:				
Evaluation Criteria	**1**	**2**	**3**	**4**	**5**
Meet Purpose and Need					
Passenger Travel Length (mi)	4.8	4.8	4.8	4.8	4.8
Passenger Travel Time (min)	5.8	5.8	5.8	5.8	5.8
Connectivity to passenger rail	N/A	N/A	N/A	N/A	N/A
Minimize Operation and Construction Issues					
Operational Issues	Minimal	Minimal	CN does not support	Additional Switching Required	Additional Switching Required
Number of Railroads along Route	1	1	1	1	1
Number of Railroad Flyovers	0	0	0	0	0
Number of At-Grade Highway Crossings	52-67	28-32	17-21	50-54	39-43
Construction Issues	Limited to UP plus grade separations	Primarily NS freight	Primarily NS freight	UP plus NS	UP plus NS
Minimize Capital and Maintenance Costs					
Capital Cost ($M)	113-377	315-338	461-486	412-435	558-584
Maintenance Costs (Cost per Year)	$230,400	$230,400	$230,400	$230,400	$230,400
Minimize Impacts to the Environment					
Right-of-way Impacts (ac)	6.0-22	42-43	81-84	48-49	87-90
Residential and Neighborhood (mi)	9.1	5.4	3.6	9.1	7.3
Water Resources (crossings)	0	0	0	0	0
Floodplain Impacts (crossings)	0	0	0	0	0
Wetlands (ac)	0	0	0	0	0
Threatened and Endangered Species	0	0	0	0	0

Table 3.3-4. Summary of Springfield Tier 1 Screening (continued)

Evaluation Criteria	1	2	3	4	5
Environmental Justice (Number of Census Tracts where Population Below Poverty Level Exceeds 50%)	0 ●	0 ●	0 ●	0 ●	0 ●
Environmental Justice (Number of Census Block Groups where Minority Population Exceeds 50%)	208 ◔	178 ◑	75 ◕	208 ◔	105 ◕
Cultural Resources within Proposed ROW	1 ◕	0 ●	0 ●	1 ◕	1 ◕
Parks and Recreation (Potential Section 4(f) Properties)	0 ●	0 ●	0 ●	0 ●	0 ●



The Springfield Tier 1 screening eliminated the following alternatives from further consideration:

- Springfield Alternative 3 was eliminated because of lack of support from the CN Railroad, the high capital costs, and the large area of right-of-way required. This alternative had the fewest environmental justice and neighborhood impacts, but constructing the grade separations on the CN corridor included within Alternatives 1 and 2 was seen as a more cost effective way to mitigate these issues.
- Springfield Alternative 4 was eliminated because of the operational issues associated with introducing crossovers in the UP line north and south of the City, the high capital cost, and the community impact. This alternative was among the highest in terms of length of rail corridor through residential neighborhoods and environmental justice areas. The alternative did not provide any notable advantage relative to the other alternatives.
- Springfield Alternative 5 was eliminated because of the operational issues associated with introducing crossovers in the UP line north and south of the City and the increased length of CN track. This alternative also would have the highest capital cost and the largest area of new right-of-way required. This alternative was among the highest in terms of length of rail corridor through residential neighborhoods. It did not provide any notable advantages relative to the other alternatives.

3.3.6 Alternative Route Screening for Alton to St. Louis

3.3.6.1 Initial Range of Alternatives Alton to St. Louis

In the St. Louis area, there are two rail bridges over the Mississippi River that could be used to route passenger trains into and out of the St. Louis Station. Ultimately, seven alternative route options were identified between Alton and St. Louis that were included in the screening process. Exhibits 3.3-8 and 3.3-9 depict the initial range of alternatives studied during the screening process between Alton and St. Louis.

The following is a brief description of each of the alternative routes considered during the screening process between Alton and St. Louis:

Alton to St. Louis Alternative 1 - MacArthur Bridge - This alternative would utilize the current Amtrak route on the UP to the TRRA near East St. Louis and the TRRA across the MacArthur Bridge into the St. Louis Amtrak Station. Freight trains would continue their current use of bridges. Improvements would include:

- Construction of a double track east approach to the MacArthur Bridge;
- New elevated railroad deck on the MacArthur Bridge including new western approach; and
- New double track connection to St. Louis Amtrak Station.

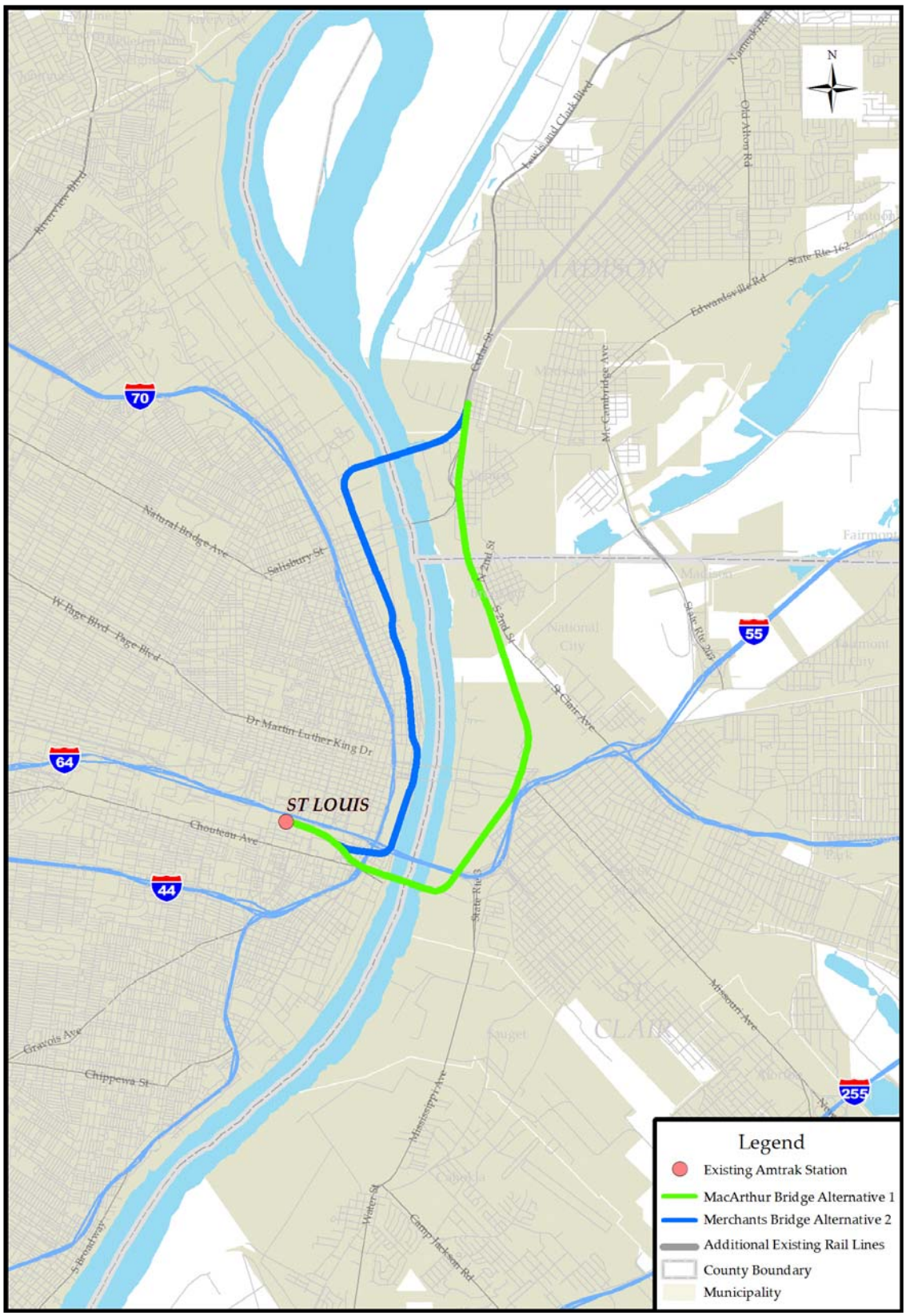


Exhibit 3.3-8. Initial Range of St. Louis Alternatives (Alternatives 1 and 2)

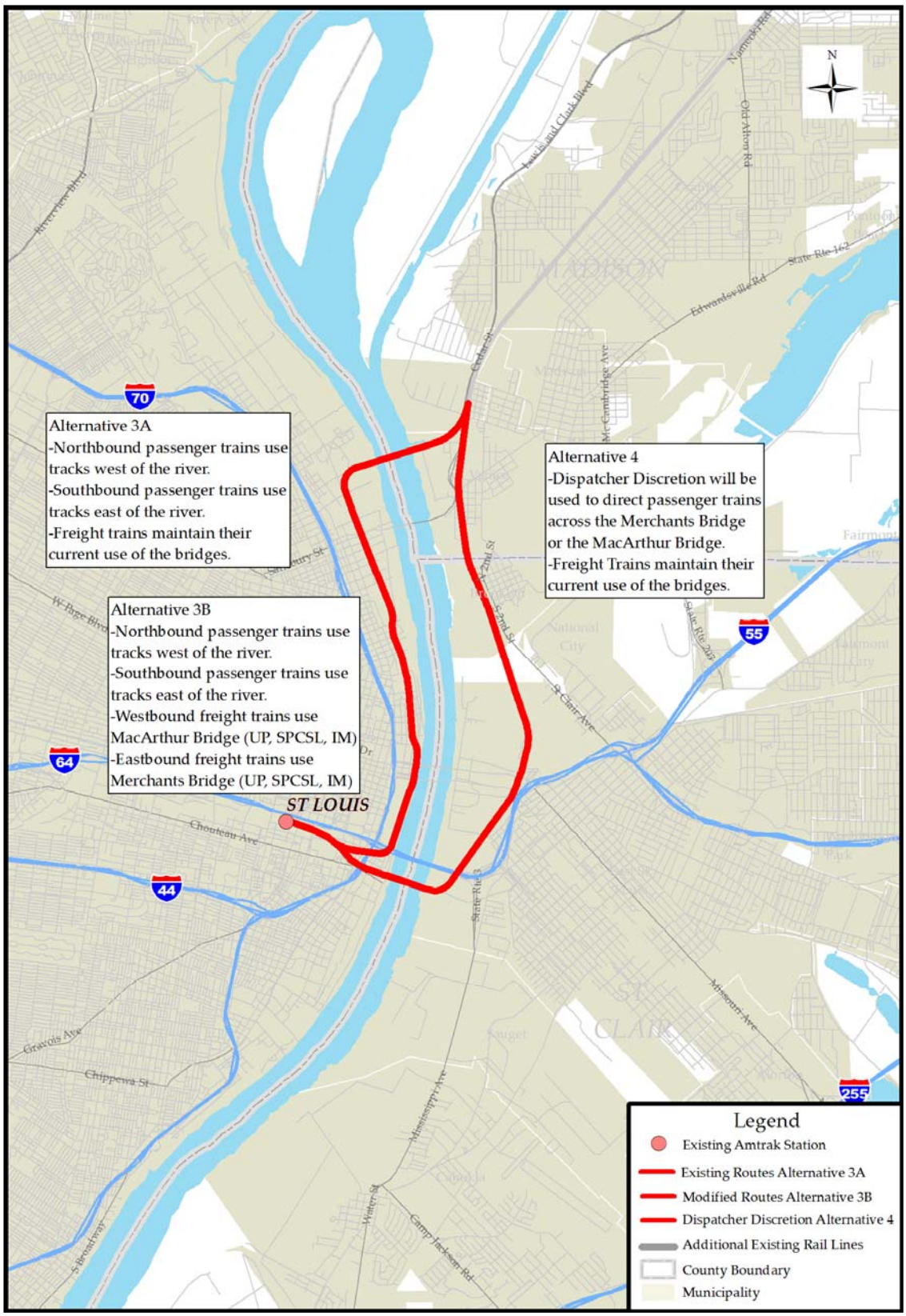


Exhibit 3.3-9. Initial Range of St. Louis Alternatives (Alternatives 3A, 3B, and 4)

Alton to St. Louis Alternative 1A - MacArthur Bridge - This alternative would utilize the current Amtrak route on the UP to the TRRA near East St. Louis and the TRRA across the MacArthur Bridge into the St. Louis Amtrak Station. Freight trains would continue their current use of bridges. Improvements would include:

- Construction of a double track parallel to the existing track east of the approach to a new double track structure;
- Construction of a new double track structure adjacent to the north side of the existing MacArthur Bridge;
- New double track east and west approaches to the new bridge; and
- New double track connection to St. Louis Amtrak Station.

Alton to St. Louis Alternative 1B - MacArthur Bridge - This alternative would utilize the current Amtrak route on the UP to the TRRA near East St. Louis and the TRRA across the MacArthur Bridge into the St. Louis Amtrak Station. Freight trains would continue their current use of bridges. Improvements would include:

- Construction of a double track parallel to the existing track east of the approach to a new four track structure;
- Construction of a new four track structure adjacent to the north side of the existing MacArthur Bridge;
- New east and west approaches to the new bridge; and
- New double track connection to St. Louis Amtrak Station. Alton to St. Louis

Alternative 2 - Merchants Bridge – For passenger trains, this alternative would utilize the UP to the TRRA Merchants Bridge, the TRRA down the west side of Mississippi River to the St. Louis Amtrak Station. Freight trains would continue their current use of bridges. An East St. Louis Station is not feasible with this alternative. Improvements would include:

- Construction of a new double track connection from the UP to the TRRA Merchants Bridge in Venice, Illinois;
- Replacement of the Merchants Bridge superstructure including approaches;
- Double tracking the TRRA from near North Market Street to near Gratiot (including the TRRA elevated south of the Arch to Gratiot); and
- Speed improvements (25-30 mph to 60 mph) from the west end of the Merchants Bridge approach to the beginning of the TRRA elevated south of the Arch.

Alton to St. Louis Alternative 3 – Directional Alternative – This alternative would route northbound passenger trains on the TRRA track on the west side of the Mississippi River. Southbound passenger trains would use the UP and TRRA tracks on the East side of the Mississippi River. Freight trains would continue their current use of bridges.

Other optional directional changes under Alternative 3 could include having westbound UP Southern Pacific Chicago-St. Louis (SPCSL) IM freight trains use the MacArthur Bridge and eastbound UP SPCSL IM freight trains use the Merchants Bridge. Under this option all other freight trains would continue their current bridge usage.

An East St. Louis Station is not feasible with this alternative. Improvements would include:

- Construction of a new double track connection from the UP to the TRRA Merchants Bridge in Venice, Illinois;
- Replacement of the Merchants Bridge superstructure including approaches;
- Double tracking the TRRA from near North Market Street to near Gratiot (including the TRRA elevated south of the Arch to Gratiot);
- Speed improvements (25-30 mph to 60 mph) from the west end of the Merchants Bridge approach to the beginning of the TRRA elevated south of the Arch; and
- Construction of a double track east approach to the MacArthur Bridge.

Alton to St. Louis Alternative 4 – Dispatcher Directional Alternative – This alternative would route passenger trains over either the Merchants Bridge or the MacArthur Bridge based on dispatcher discretion in reaction to actual traffic levels and available capacity. Freight trains would continue their current use of bridges. An East St. Louis Station is not feasible with this alternative. Improvements would include:

- Construction of a new double track connection from the UP to the TRRA Merchants Bridge in Venice, Illinois;
- Replacement of the Merchants Bridge superstructure including approaches; double tracking the TRRA from near North Market Street to near Gratiot (including the TRRA elevated south of the Arch to Gratiot);
- Speed improvements (25-30 mph to 60 mph) from the west end of the Merchants Bridge approach to the beginning of the TRRA elevated south of the Arch; and
- Construction of a double track east approach to the MacArthur Bridge.

3.3.6.2 Screening Results for Alton to St. Louis Alternatives

This section summarizes the results of the Tier 1 screening of alternatives in the Alton to St. Louis portion of the study corridor and provides reasons for eliminating alternatives from further consideration in the Tier 1 Draft EIS. Information and data developed for the Tier 1 screening process is summarized in Table 3.3-5. The alternatives that were eliminated are indicated with red shading in the cell containing the alternative names in Table 3.3-5. Orange shaded cells in the table indicate the primary reasons for eliminating those alternatives, and yellow shaded cells indicate the secondary reasons.

The Alton to St. Louis Tier 1 screening alternatives that were carried forward for further study in the Tier 1 Draft EIS based on the alternatives screening conducted for this program include:

Table 3.3-5. Summary of Alton to St. Louis Tier 1 Screening

Evaluation Criteria	Alton to St. Louis Alternative: 1	1A	1B	2	3	4
Meet Purpose and Need						
Passenger Travel Length (mi)	6.87	6.87	6.87	6.42	6.87	6.87
Passenger Travel Time (min)	0:33:34	0:33:34	0:33:34	0:30:53	0:33:34	0:33:34
Connectivity to passenger rail	Good	Good	Good	Good	Good	Good
Minimize Operational and Construction Issues						
Operational Issues	Low	Low	Low	Low	Medium	Medium
Number of Railroads along Route	1	1	1	1	1	1
Estimated Average Number of Trains Per Day	64	64	64	39	103	103
Number of Railroad Flyovers	0	0	0	0	0	0
Number of At-Grade Highway Crossings	0	0	0	17	17	17
Construction Impact Rating	Medium	Low	High	High	High	High
Minimize Captial and Maintenance Costs						
Capital Cost ($M)	586	525	546	638	684	678
Maintenance Costs (Cost Per Year)	$329,760	$329,760	$329,760	$308,160	$0	$0
Minimize Impacts to the Environment						
Right-of-way Impacts (ac)	17	17	17	9	26	26
Schools Within 200-foot Corridor	0	0	0	0	0	0
Length of Residential Areas Along Alignment (miles)	1.58	1.58	1.58	0.10	1.68	1.68
Water Resources (crossings)	3	3	3	1	4	4
Floodplain Impacts (crossings)	1	1	1	1	2	2
Wetlands (ac)	15.33	15.33	15.33	10.66	25.99	25.99
Threatened and Endangered Species	0	0	0	1	1	1

Table 3.3-5. Summary of Alton to St. Louis Tier 1 Screening (continued)

Evaluation Criteria	1	1A	1B	2	3	4
Environmental Justice (Number of Census Tracts where Population Below Poverty Level Exceeds 50%)	2	2	2	1	3	3
	◑	◑	◑	◕	◔	◔
Environmental Justice (Number of Census Block Groups where Minority Population Exceeds 50%)	6	6	6	7	11	11
	◑	◑	◑	◔	○	○
Cultural Resources Within Proposed ROW	0	0	0	0	0	0
	●	●	●	●	●	●
Parks and Recreation (Potential Section 4(f) Properties)	1	1	1	1	2	2
	◑	◑	◑	◑	◔	◔

Alternative Carried Forward

Alternative Eliminated

Primary Reason for Elimination

Secondary Reason for Elimination

○ ◔ ◑ ◕ ●

Least Favorable ⟷ Most Favorable

- Alton to St. Louis Alternative 1A; and
- Alton to St. Louis Alternative 1B.

These two alternatives are discussed in more detail as part of the overall Build Alternative descriptions in Section 3.3.6.

The Tier 1 screening eliminated the following alternatives between Alton and St. Louis from further consideration:

- Alton to St. Louis Alternative 1 primarily because of construction issues with adding another deck on the existing MacArthur Bridge;
- Alton to St. Louis Alternative 2 primarily because of its higher construction costs, poor construction impact rating, more at-grade highway-rail crossings, and potential effects to Jefferson National Expansion Memorial Park; and
- Alton to St. Louis Alternatives 3 and 4 primarily because they would require improvements along two railroad routes, resulting in much higher overall costs, while still potentially affecting the Jefferson National Expansion Memorial Park.

3.3.7 Tier 1 Build Alternatives from Chicago to St. Louis

As a result of the alternative screening process, seven individual sections of alternative alignments remained available for consideration to be improved and utilized for high speed passenger trains within the Chicago to St. Louis corridor. This included two sections in Chicago (Alternative 2 and Alternative 4D carried forward from the Chicago to Joliet screening alternatives); one section between Joliet and Springfield, two sections in Springfield (Alternative 1 and Alternative 2 carried forward from the Springfield screening alternatives), one section between Springfield and Alton, and finally one section between Alton and St. Louis (Alternatives 1A and 1B, which share the same alignment and are carried forward from the Alton to St. Louis screening alternatives). Each of these sections is described in Section 3.3.7.1 below.

In order to provide full length alternatives to study, the individual alignment sections were pieced together using the available combinations to create four complete, or full length, alternative alignments between Chicago and St. Louis. Although looking at the individual sections was. beneficial to help identify potential problem areas that might require additional attention; for overall comparison purposes, the full length alternatives were also studied to ensure that the overall goals and objectives of the high speed rail program are fulfilled and that the impacts to human and natural environments are considered at all levels. The full length Build Alternatives are described in Section 3.3.7.2 below.

3.3.7.1 Description of the Alignment Sections between Chicago and St. Louis

The individual sections used to create the full length alternatives include:

- Section 1 – Existing Route Chicago to Joliet (Previously referred to as the Chicago to Joliet Alternative 2 during the Tier 1 screening process);

- Section 2 – Proposed New Route Chicago to Joliet (Previously referred to as the Chicago to Joliet Alternative 4D during the Tier 1 screening process.)
- Section 3 – Existing Route Joliet to Springfield;
- Section 4 – Existing Route through Springfield (Previously referred to as the Springfield Alternative 1 during the screening process);
- Section 5 – Proposed New Route through Springfield (Previously referred to as the Springfield Alternative 2 during the screening process);
- Section 6 – Existing Route Springfield to Alton; and
- Section 7 – Existing Route Alton to St. Louis (Previously referred to as Alton to St. Louis Alternative 1A and 1B during the Tier 1 screening process).

Exhibit 3.3-10 shows the location of the individual alignment sections used to create the full-length Build Alternatives from Chicago to St. Louis.

Each of the sections are described in more detail, including the primary proposed improvements anticipated within each section, in the following paragraphs:

- Section 1 - Chicago to Joliet on Existing Route - This section of the alternatives would include utilizing the current Amtrak route along the CN from Joliet Union Station, to Amtrak south of Union Station, and Amtrak to Chicago Union Station. Improvements would include: additional track at the connection to Amtrak near 21st Street; potential flyovers at IHB west of Summit, BRC east of Cicero Avenue, BNSF north of Corwith Yard; and CSX/NS near Western Avenue.
- Section 2 - Chicago to Joliet using Rock Island Route - This section would utilize the NIRC RID from Joliet Union Station to the NS near 40th Street in Chicago, the NS west to NS (NIRC) near 40th Street in Chicago, the NS (NIRC) to Amtrak south of Chicago Union Station, and Amtrak to Chicago Union Station. Improvements would include: additional track at the existing single track UP to NIRC RID connection at Joliet Union Station, NIRC RID from Joliet Union Station to near Union Street, and the existing single track connection from the NIRC RID to the NS near 40th Street in Chicago, station improvements including relocating the platforms at Joliet Union Station as well as the proposed Transportation Center and location and construction of a new suburban Amtrak Station; construction of a new double track connection from the NS to the NS (NIRC) near 40th Street in Chicago; and a potential flyover at EJ&E east of Joliet. Neither Metra nor the NS has determined whether they would support sharing this route with high speed rail passenger service.
- Section 3- Joliet to Springfield - This section would utilize the existing Amtrak route between Joliet and Springfield. Proposed improvements would include: addition of a second mainline track from north of Mississippi Street in Elwood to the NS crossing in Dwight including at-grade crossing modifications; installation of approximately four miles of siding from north of Braidwood to Mazonia; addition of a second mainline track from NS crossing in Dwight to Sangamon Avenue in Springfield including at-grade crossing modifications; construction of a 12,500 ft.

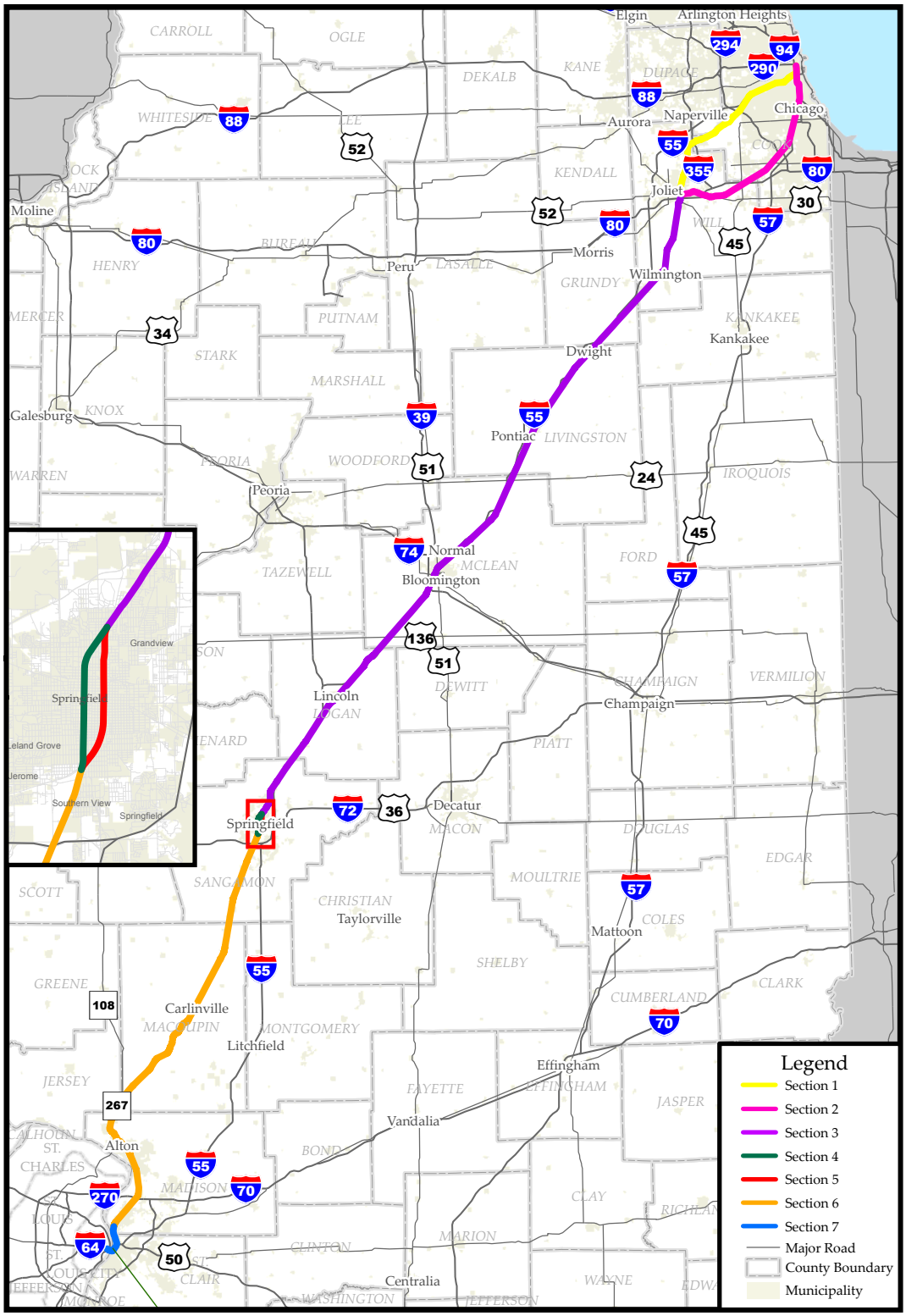


Exhibit 3.3-10. Build Alternative Sections between Chicago and St. Louis

siding between O'Dell and Dwight; construction of a 12,500 ft. siding between O'Dell and Bunge; construction of a 20,000 ft. siding between Lexington and Chenoa; construction of a 25,000 ft. siding from north of Towanda to south of Towanda; construction of approximately 2.5 miles of siding between Atlanta and McLean; construction of approximately 1.4 miles of siding from Williamsville to south of Elkhart; construction of a 10,000 ft. siding from the Sangamon River to Sangamon Avenue; construction of a 12,500 ft. siding on the I&M from Andrew south; replacement of the Ridgely diamond with a crossover; and station improvements in Dwight, Pontiac, and Lincoln.

- Section 4 – Springfield on Existing 3rd Street Route - In this section, both Amtrak passenger trains and UP freight trains would remain on the existing Third Street route through Springfield. This alternative would leave UP freight trains and Amtrak passenger trains on Third Street and would include no improvements to the Tenth or Nineteenth Street corridors. Proposed improvements would include the addition of a second mainline track and station improvements.
- Section 5 - Springfield using 10th Street Route - In this section, UP freight trains and Amtrak passenger trains would be shifted from Third Street to Tenth Street resulting in abandonment of the Third Street corridor (Section 4 above) from near Ridgely Avenue to South of Iles Avenue. Proposed improvements include additional tracks and a new Springfield Station.
- Section 6 – Springfield to Alton - This section would utilize the existing Amtrak route between Springfield and Alton. Propose improvements in this section include: addition of a second mainline track from south of Stanford Avenue to north of Virden including at-grade crossing modifications; construction of a grade separation with the NS north of I-72; construction of a grade separation at Woodside Road in Sangamon County; construction of a grade separation at Iron Bridge Road in Sangamon County; construction of a 10,000 ft. siding at Nilwood; addition of a second mainline track from Nilwood to Nicholas Street in Carlinville including at-grade crossing modifications; construction of a 12,500 ft. siding between Carlinville and Plainview; addition of a second mainline track from south of Rinaker Road in Macoupin County to north of Illinois 16 in Shipman including at-grade crossing modifications; construction of a 12,500 ft. siding north of Illinois 16 at Shipman; construction of a 12,500 ft. siding at Godfrey including at-grade crossing modifications; addition of a second mainline track from Pearl Street in Godfrey to Wood River including at-grade crossing modifications; replacement of diamond with crossover at NS in Wood River; replacement of diamond with crossover at TRRA at WR Tower; additional siding near Seventh Street in Wood River; and station improvements at Carlinville. The Alton Station will be relocated by another project. The City of Alton received a Transportation Investment Generating Economic Recovery (TIGER) grant that would be used to relocate the Alton train station to a different location.
- Section 7 – Alton to St. Louis - This section would utilize the existing Amtrak route from near Alton to the St. Louis Amtrak Station in downtown St. Louis. Improvements in this section would depend on which of the two remaining Alton to

St. Louis options in this section are selected based on either the Tier 1 or subsequent Tier 2 study. The primary difference in these two options is at the Mississippi River crossing. The options include construction of a new double track structure just upstream of the existing MacArthur Bridge (Option 1A) or construction of a new four track structure just upstream of the existing MacArthur Bridge (Option 1B). Provision of additional rail capacity over the Mississippi River will need to be studied in more detail in a Tier 2 study. More detailed exhibits of the Build Alternatives are provided in Appendix A.

3.3.7.2 Description of Full-length Build Alternatives from Chicago to St. Louis

This section describes the location of each of the four full length Build Alternatives that were carried forward, extending from Chicago to St. Louis. The proposed improvements associated with each full length alternative are described under each of the individual sections making up those alternatives described in the previous section, Section 3.3.6.1. The environmental consequences of these four alternatives are described in the environmental consequences sections under each resource category in Chapter 5.

Alternative A (Sections 1, 3, 4, 6, 7)

Alternative A would begin at Chicago Union Station and follow the existing Amtrak route through the entire corridor ending at the existing St. Louis Amtrak Station. This alternative would utilize Sections 1, 3, 4, 6, and 7.

Alternative B (Sections 1, 3, 5, 6, 7)

Alternative B would begin at Chicago Union Station and follow the existing Amtrak route from Chicago to northern Springfield. In northern Springfield, the proposed route would break off to the southeast following a small section of proposed new alignment that would connect to the existing rail following the 10th Street corridor in Springfield. The alternative would then follow the existing 10th Street corridor through Springfield before reconnecting with the existing route south of Springfield, where it would continue southward and eventually end at the existing St. Louis Amtrak Station. This alternative would utilize Sections 1, 3, 5, 6, and 7.

Alternative C (Sections 2, 3, 4, 6, 7)

Alternative C would begin at Chicago Union Station and follow the existing Amtrak route before connecting onto the NS (NIRC) route. The alignment would follow the NS (NIRC) route and then connect to NS and follow it to near 40th Street in Chicago where it connects onto the NIRC-RID route. The route would then continue southward to the Joliet Union Station. From Joliet Union Station the alignment would follow the existing Amtrak route southward finally end at the St. Louis Amtrak Station. This Alternative would utilize Sections 2, 3, 4, 6, and 7.

Alternative D (Sections 2, 3, 5, 6, 7)

Alternative D would begin at Chicago Union Station and follow the existing Amtrak route before connecting onto the NS (NIRC) route. The alignment would follow the NS (NIRC) route and then connect to NS and follow it to near 40th Street in Chicago where it connects onto the NIRC-RID route. The route would then continue southward to the Joliet Union Station. From Joliet Union Station the alignment would follow the existing

Amtrak route southward to northern Springfield, where it would break off to the southeast following a small section of proposed new alignment that would connect to the existing rail following the 10th Street corridor in Springfield. The alternative would then follow the existing 10th Street corridor through Springfield before reconnecting with the existing route south of Springfield, where it would continue southward and eventually end at the existing St. Louis Amtrak Station. This alternative follows Sections 2, 3, 5, 6, and 7.

Table 3.3-6 provides a summary of the estimated amount of new right-of-way that would be required with construction of each of the four Build Alternatives carried forward. The amount of new right-of-way required is reported because it typically directly affects the overall impacts associated with a project. This is because land acquisition and subsequent construction within new right-of-way areas typically involves additional impacts to the affected environment when compared to construction that stays within existing right-of-way areas. For example, where new right-of way is required in areas that are already developed, costs can be higher due to higher property costs, building displacements, and existing infrastructure/utilities requiring relocation. Alternatively, acquisition and subsequent construction within new right-of-way areas within rural or previously undeveloped areas often results in additional impacts to desirable natural resources, farmland, and/or open spaces. The impacts to various resources of concern are discussed throughout Chapter 5.

Table 3.3-6. Proposed New Right-of-Way for each Build Alternative by Section

Section ID (Tier 1 Screening Name)	Number of Acres of New Right-of-Way Required			
	Alternative A	Alternative B	Alternative C	Alternative D
No-Build (Baseline)				
Chicago to Joliet Sections				
1(2)	62	62		
2 (4D)			120	120
Joliet to Alton(Excluding Springfield) Sections				
3 and 6	520	520	520	520
Springfield Sections				
4	6 to 22		6 to 22	
5		42 to 43		42 to 43
Alton to St. Louis Section				
7 (1A)	54	54	54	54
7 (1B)	54	54	54	54
TOTAL:	**642 to 658**	**678 to 679**	**700 to 716**	**736 to 737**

Note: The total amount of right-of-way required under each Build Alternative is provided as a range because there are various improvement options that could be constructed within the individual Springfield sections.

3.3.7.3 Stations

Table 3.3-7 summarizes the station improvements planned as part of the 2004 ROD improvements which are assumed to be in place under the No-Build Alternative, and the station improvements that are proposed as part of the build alternatives.

Additionally, potential new stations in suburban Chicago (between Chicago and Joliet) and St. Louis (between St. Louis and Alton) would be evaluated in Tier 2 studies. It is assumed that the location of new stations would be easily accessible from the highway and arterial system. Provision of suburban stations adjacent to the highway system would increase the attractiveness of intercity passenger rail service because it will enhance passenger accessibility to HSR service, allowing potential travelers an additional option of not travelling to downtown to board a train. Between Chicago and Joliet, use of an existing Metra station also would be considered.

Table 3.3-7. Summary of Station Improvements

Station	No-Build Alternative	Build Alternatives
Chicago	No Change	No Change
Summit	No Change	No Change[1]
Joliet	Station improvements are being advanced by a city-led effort. Details of the proposed improvements are not available at this time.	No change beyond improvements included with the No-Build Alternative.
Dwight	New station, platform, and parking at existing station site.	Additional station and platform improvements, passenger grade separation.
Pontiac	New station, platform, and parking at a site located one block south of the existing station.	Additional station and platform improvements, parking, and passenger grade separation.
Bloomington-Normal	Station improvements are being advanced by a city-led effort. Construction is currently underway.	No change beyond improvements included with the No-Build Alternative.
Lincoln	Renovate existing station, new platform and parking at existing station site.	Additional station and platform improvements, parking, and passenger grade separation.
Springfield	To be determined.	To be determined[2].

Table 3.3-7. Summary of Station Improvements (continued)

Station	No-Build Alternative	Build Alternatives
Carlinville	New station, platform, passenger grade separation, and parking at existing station site.	No change beyond improvements included with the No-Build Alternative.
Alton	New station, platform, passenger grade separation, and parking at a site located south of the existing station.	Additional station and platform improvements and parking. City is considering relocation of station to a different location.
St. Louis	No Change	No Change

[1] The Summit Station is located along Alternatives A and B only.

[2] Station improvements for Springfield are discussed further in the Tier 2 Environmental Evaluation in Volume II for the Springfield Rail Improvements Project.

3.4 Costs

3.4.1 Capital Costs

The capital costs for the alternatives were developed based on the required infrastructure improvements identified as necessary to accommodate high-speed passenger traffic. These costs were divided into various similar construction activities, quantities along each alignment identified, and unit costs then applied. Costs were estimated in 2011 dollars. The following types of costs were evaluated:

- Rolling Stock. Rolling Stock was estimated based on unit costs for locomotives and coaches as required by ridership forecasts.
- Maintenance Facilities. Unit costs were developed for a maintenance facility. Two maintenance facilities were assumed and all alternatives had the same maintenance facility costs. It is assumed that a new maintenance facility would be required in St. Louis and either a new facility or expansion of the existing Amtrak maintenance facility would be required in Chicago.
- Station Facilities. Lump sum costs were assumed for facility improvement requirements at Chicago Suburban Stations, Pontiac, Dwight, Lincoln, Springfield, Carlinville, and Alton stations. East St. Louis Station costs were provided by others.
- Roadway. Since the improvements to the alternatives would affect crossing roadways or highway structures, costs were developed for these general items:
  - Removal – Removal items include all surface elements of the existing roadway down to existing sub-base.
  - Pavement and Appurtenances –Unit values for pavement, sidewalk, retaining walls, drainage roadway signals, fencing lighting and landscaping were developed to provide costs for the replacement of items impacted by the rail

improvements. These items were quantified on a normalized location basis for at-grade crossings or highway bridge replacements based on the linear length of the improvement and applied to the number of at-grade crossings or highway bridge replacements.

- Structures – Pedestrian and highway structures were both necessary for the alternatives studied. Unit cost values were developed for each type of structure and applied where required based on the alternative infrastructure improvement.

- Rail. The majority of the improvement costs for each alternative were the rail infrastructure required to support the high-speed passenger service. The rail costs were divided into these general categories:
  - Earthwork – Earthwork requirements were developed based on cross sections for alternatives. Where mapping data is not available, normalized earthwork values were used to estimate the earthwork requirements.
  - Track – Unit costs for track were applied to all alternatives based on their overall length of main and/or siding track for track upgrade costs. Track drainage unit costs were included in all urbanized areas where open ditches would not be used. Unit costs were applied to additional mainline and siding track based on available simulation results. For alternatives where simulation data was unavailable, additional needs were estimated based on potential congestion.
  - Crossovers and Turnouts – Unit costs were developed and applied based on the number necessary as identified from the simulation analysis. For those alternatives where simulation analysis was unavailable, those costs were estimated based on per mile costs for turnouts and crossovers from similar alternatives where simulation data was available.
  - Signaling – The alternatives along the corridor vary between those that have baseline installations of advanced train signaling and at-grade protection devices to those that have had no upgrades. Unit costs for each were identified and applied to the alternatives. In those areas where baseline signals will need to be installed, relocation costs were assumed as part of the unit costs for those items.
  - Structures – Most railroad structures along the alternatives had unit costs applied to the linear footage of the bridge where new or replacement structures will be necessary along the alternatives. Major river crossing structures were reviewed on an individual basis to develop planning level costs for the improvements required for those alternatives.
  - Miscellaneous Items – Fencing costs were developed for all urbanized areas where infrastructure improvements would be required based on simulation analysis. Crossing surface costs were included as linear items at crossing locations and clearing and removal items included on a unit cost basis. Utility

costs were included along the alignment as a linear item dependent upon the location of the alternative and the expected presence of utilities. Railroad force account work necessary during construction of the alternative was included as a percentage of the construction cost.

- Program Implementation Costs. Preliminary engineering and environmental costs were estimated at two percent of construction cost including all work necessary to secure all permits, NEPA approvals, etc.
  - Construction plans and specification costs were estimated at nine percent of construction cost for a traditional design-bid-build procurement process.
  - Construction engineering costs were estimated at eight percent of construction cost.
  - Program management costs were estimated at two percent of construction cost.
- Right-of-Way Costs. The right-of-way costs were estimated for the footprint of the required infrastructure improvements. The land required for the alternative was determined based on typical sections of track required, including the number of main tracks, siding tracks, access roads adjacent required roadway improvements or footprints of anticipated flyovers. These typical sections were then applied along the alternatives, schematic level construction limits determined, and the differences between the existing right-of-way along the alternatives and the construction limits identified. Separate land values were applied for urban and rural right-of-way and included in the capital costs of the alternative. Because land values are substantially higher in Chicago, factors for Chicago urban land were differentiated from downstate urban land within the cost estimate.
- Contingencies. A contingency was added to allow for items and conditions that cannot be determined at this level of analysis. A contingency of 30 percent was applied to all construction and land acquisition costs. A contingency of 20 percent was applied to all rolling stock costs.

The Chicago to Joliet alternative costs were developed based on track mile costs, estimated infrastructure improvements and new connection and flyover costs where applicable. Other construction and right-of-way costs were estimated on a per mile or per location basis for the type of infrastructure estimated. The most substantial cost impact item was the flyovers estimated along the routes. For consistency in the estimates, any location an alternative crossed a double track, it was assumed that a flyover would be required. A prototype flyover was developed for typical cost and right-of-way impacts.

For the Chicago to Joliet portion of the alternatives that would require use of the existing Metra routes, Metra station improvements would be necessary to allow Amtrak trains to safely operate through the station area. Specific improvements would be determined during the Tier 2 studies. While the scope of the improvements is not yet determined, it is possible to estimate the likely total cost based on recent similar improvements to the

Metra UP West Line considering the respective number of stations. Using this data, $5 Million dollars was estimated for the Heritage Corridor and $15 Million dollars was estimated along the Rock Island District.

In the Alton to St. Louis study corridor, the majority of the cost would be for bridge crossing improvements over the Mississippi River along with the cost of elevated structures and grade crossing improvements along the alternatives. The directional Alternatives 3 and 4 are higher in cost since they require upgrades to rail facilities on both the east and west side of the Mississippi River. Alternatives 1A, 1B, and 2 are comparable.

Table 3.4-1 shows the estimated capital costs for the Build Alternative sections that were considered in the Tier 1 Draft EIS. Table 3.4-2 shows the costs for each full length alternative based on the costs of the individual sections making up each alternative.

Table 3.4-1. Capital Cost for each Build Alternative Section

Build Alternative Section (Tier 1 Screening Name)	Cost in Millions (2011)
No-Build (Baseline)	$0
Chicago to Joliet Sections	
1 (2)	$1,900
2 (4D)	$1,600
Joliet to Alton(Excluding Springfield) Sections	
3 and 6	$2,561
Springfield Sections	
4 (1)	$113 to $377
5 (2)	$315 to $338
Alton to St. Louis Section	
7 (1A)	$638
7 (1B)	$694

Table 3.4-2. Capital Cost for each Build Alternative Section

Build Alternative (Sections)	Cost in Millions (2011)
No-Build (Baseline)	0
Alternative A (Sections 1, 3, 4, 6, 7)	$5,212 to $5,532
Alternative B (Sections 1, 3, 5, 6, 7)	$5,414 to $5,493
Alternative C (Sections 2, 3, 4, 6, 7)	$4,912 to $5,232
Alternative D (Sections 2, 3, 5, 6, 7)	$5,114 to $5,193

3.4.2 Maintenance Costs

Annual maintenance cost estimates were developed for the Build Alternatives with consideration given to the shared use of the rail by both freight and high speed passenger trains. The costs are "steady state" costs, (i.e., the annual costs of maintaining the track at the class of rail that will result from all proposed upgrades having been completed to support high speed trains). Maintenance costs were based on the average estimated costs to maintain one mile of rail each year.

The total annual maintenance cost per track mile includes:

- Track maintenance ("operating") expenses;
- Cyclic capital expenditures for track;
- Bridge & building costs (maintenance and capital); and
- Communications and signals costs (maintenance and capital).

The estimated maintenance cost for the Build Alternatives is assumed to be $48,000 per mile per year. The costs in Tables 3.4-1 and 3.4-2 above include the first year of maintenance costs. However, all subsequent years throughout the life of the rail would require an additional $48,000 per track mile per year to maintain the infrastructure. This cost would be shared by various freight and passenger train users based on a corridor maintenance agreement between the owner of the rail and each user.

3.5 Preferred Alternatives

Alternatives C (Sections 2, 3, 4, 6, and 7) and D (Sections 2, 3, 5, 6, and 7), both of which include Section 2, have been identified as the Preferred Alternatives based on the following comparison of Section 1 (i.e., Canadian National (CN) railroad) and Section 2 (i.e., Rock Island District (RID) railroad). Because all of the Alternatives A, B, C, and D include Sections 3, 6, and 7, the impacts and performance measures within these sections are the same for all of the alternatives. Therefore, there were no differentiating factors that could be used in selecting one alternative over another based on these sections. Because the Tier 1 study did not include a selection between Sections 4 and 5 that travel through Springfield, two Preferred Alternatives had to be selected with one including Section 4 and the other including Section 5. As a result, the selection of the two Preferred Alternatives was limited to comparing the differences in impacts and performance measures between the alternatives that include Section 1 (i.e., Alternatives A and B) and the alternatives that include Section 2 (i.e., Alternatives C and D).

3.5.1 Hine's Emerald Dragonfly

Section 1 would impact 3.7 acres of Critical Habitat for the federally and state endangered Hine's emerald dragonfly. Because the Critical Habitat is on both sides of the existing railroad alignment and immediately adjacent to the right-of-way, these impacts would be difficult to avoid and mitigate. In addition, the USFWS has expressed concern regarding the project's impacts to the Critical Habitat and the potential increase

in train-dragonfly collisions. Section 2, however, would not result in any impacts to the Hine's emerald dragonfly.

3.5.2 Operational

Operational performance of the Preferred Alternatives to achieve acceptable on-time performance standards was of high importance when selecting an alternative. Currently, Amtrak is pursuing relief from the Surface Transportation Board for failure of the CN railroad (Section 1) to properly dispatch Amtrak trains to avoid delays. The RID railroad (Section 2) is dispatched by Metra, which more clearly understands the needs for on-time performance on a passenger rail line. While Section 2 has considerably more traffic than Section 1, the Metra trains are on a fixed timetable with a 95% on-time performance record. Section 1 has unpredictable freight traffic including shipper servicing which makes on-time performance more difficult to achieve. Incremental infrastructure improvements to Section 2 can be made to preserve or enhance on-time performance in a shorter time frame at a lower cost. Section 1 requires that four costly and time consuming flyovers be constructed to preserve or enhance on-time performance. In comparison, the Section 2 requires only one flyover at the EJ&E Railroad.

3.5.3 Cost

Section 2 costs $200 to $500 million less than Section 1 primarily due to the need for the four flyovers.

3.5.4 Public Policy

If Amtrak service is no longer on Section 1, two Chicago Region Environmental and Transportation Efficiency (CREATE) Project flyovers on that route may not be needed. The ability to reprioritize limited CREATE resources for more urgent projects would be of significant public benefit as well as reduce the total cost of the CREATE program. Additional infrastructure investment along Section 2 would not only benefit the High-Speed Rail Program but also would place that investment in a publicly owned corridor.

3.5.5 Summary

Alternatives C and D, both of which include Section 2, have been identified as the Preferred Alternatives based on the following reasons:

- Avoids Critical Habitat of the federally and state endangered Hine's emerald dragonfly.
- More passenger friendly dispatching.
- Fewer unpredictable train events to affect on-time performance.
- On-time performance can be preserved or enhanced with smaller incremental improvements in a shorter time frame at lower cost.
- Total cost is less.
- Allows potential CREATE program reprioritization or program cost savings.

- Invests public funds in a publically owned transportation corridor.

It should be noted for the Preferred Alternatives that while the MacArthur Bridge is recognized as the preferred route for the Chicago – St. Louis High-Speed Rail Program, it is recognized that the Merchants Bridge also plays an important role in serving as an alternate route during maintenance or unexpected disruptions, and also as a key part of the St. Louis area rail network providing potential benefits to both freight and passenger traffic.

It should also be noted that during the Tier 2 studies for Section 2, alternative connections that would provide access to Union Station could be considered if that connection would be deemed better than the connection at 40th Street.