Section 5

ENVIRONMENTAL CONSEQUENCES

5.0 Environmental Consequences

The environmental impacts for each of the reasonable alternatives were assessed as defined by the FRA's Procedures for Considering Environmental Impacts, resource agency input, and public comments. Field surveys were conducted for resources that have a potential for impacts. Surveys were conducted for ambient conditions for noise and vibration modeling, historic structures and archaeological sites, endangered and threatened species, and wetlands. Newsletters, a project website, telephone call-in numbers and numerous community presentations were provided for interested neighborhood groups throughout the project area to solicit comments and feedback from the public. Refer to Chapter 6.0 for additional information on the public involvement program.

Table 5-1 summarizes the environmental impacts of Alternatives 2A and 2B for further study. The methodology used for the resources having potential impacts is discussed in Section 4.0. Access changes will result in modifications to existing access but there will be no permanent access loss to these properties.

Table 5-1. Environmental Impact Summary of Alternatives 2A and 2B

Impact Category	Alternative		No-Build Alternative
	2A	*2B*	
Right-of-Way Acquisition (Acres)	42.0	42.6	0
Displacements	157	164	0
Residential	108	108	0
Commercial	49	56	0
Access Changes	29	41	0
Farmland Conversion (Acres)	0	0	0
Cultural Resources			
National Register Listed (or Eligible) Sites	0	1[(3)]	0
Known Archaeological Sites	0	0	0
Natural Resources			
Threatened/Endangered Species (Number of Species)	0	0	0
Natural Areas (Number)	0	0	0
Native Vegetation (Acres)	0	0	0

Impact Category	Alternative		No-Build Alternative
	2A	*2B*	
Affected Lakes and Streams	0	0	0
100-yr. Floodplains Crossings	0	0	0
Wetlands (Acres)	0	0	0
Parks (Number)	0	0	0
Special Waste Sites (Number within one block)			
CERCLIS[1]	2	2	0
LUST[2]	20	20	0

[1]Comprehensive Environmental Response, Compensation and Liability Information System.
[2]Leaking Underground Storage Tank.
[3] Current access to the Great Western Railroad Depot will be relocated to the west along the same block. Therefore, there will be no permanent impact to this structure.

Alternatives 2A and 2B are shown in Exhibits 5-1 and 5-2. Exhibit 5-2 only includes the sheets where Alternatives 2A and 2B differ. The differences for Alternative 2B are noted.

5.1 Land Use Impacts

5.1.1 No-Build Alternative

Rail service for the No-Build Alternative would continue along the existing three rail corridors that are present today (i.e., 3rd Street, 10th Street and 19th Street). Land use opportunities would remain more limited with three active railroad corridors than with either of the retained alternatives due to the increase in traffic congestion, delay times, safety and noise impacts. In addition, with rail traffic remaining on the 3rd Street corridor, as in the No-Build Alternative, expansion of the Medical District would be hindered with this rail corridor bisecting future plans for their additional facilities. Additional right-of-way requirements would also affect more businesses with impacts to potential expansion, parking, access, and relocation.

Access and close proximity to National Register Historic sites such as the Dana-Thomas House would also result in a negative impact to tourism because of reduced parking and safety of crossing the tracks and its associated noise from train horns. This alternative is not supported by the Springfield Chamber of Commerce and negatively impacts the Springfield 2030 Comprehensive Plan, the area's Long Range Transportation Plan, the R/UDAT Downtown Redevelopment Plan, as well as the state commissioned Mid-Illinois Medical District's Master Plan.

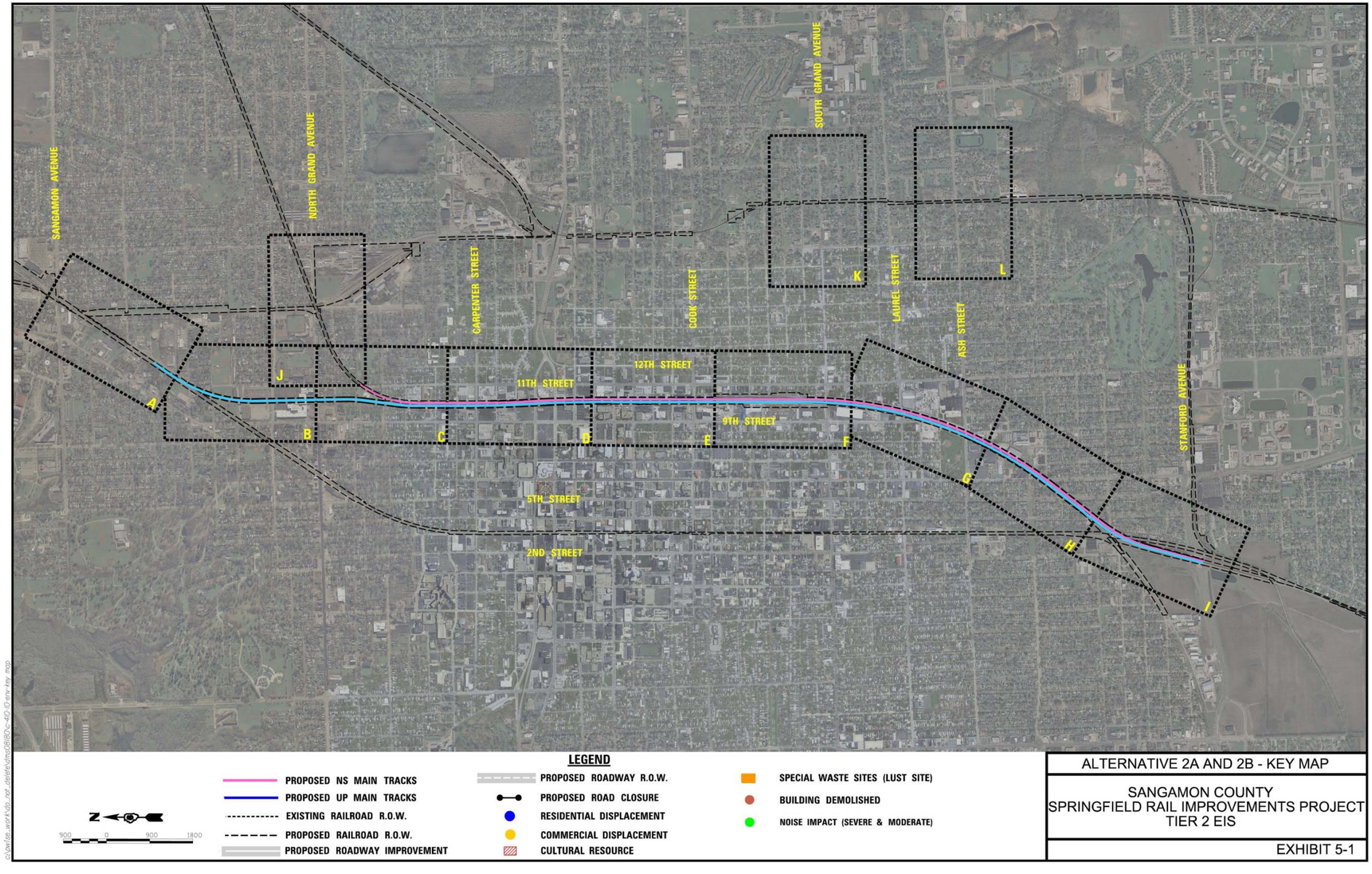


Exhibit 5-1. Alternative 2A and 2B – Key Map

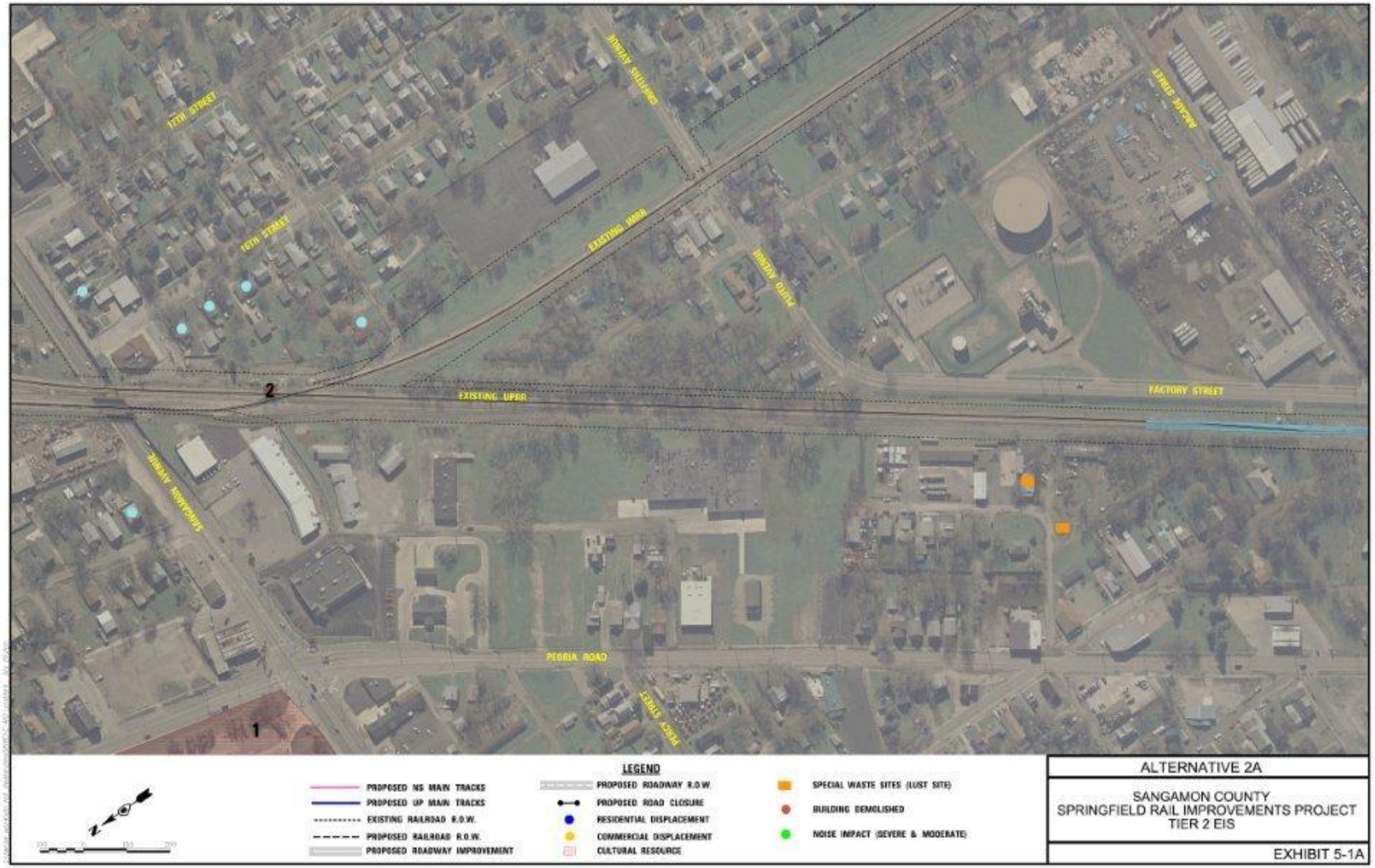


Exhibit 5-1A. Alternative 2A

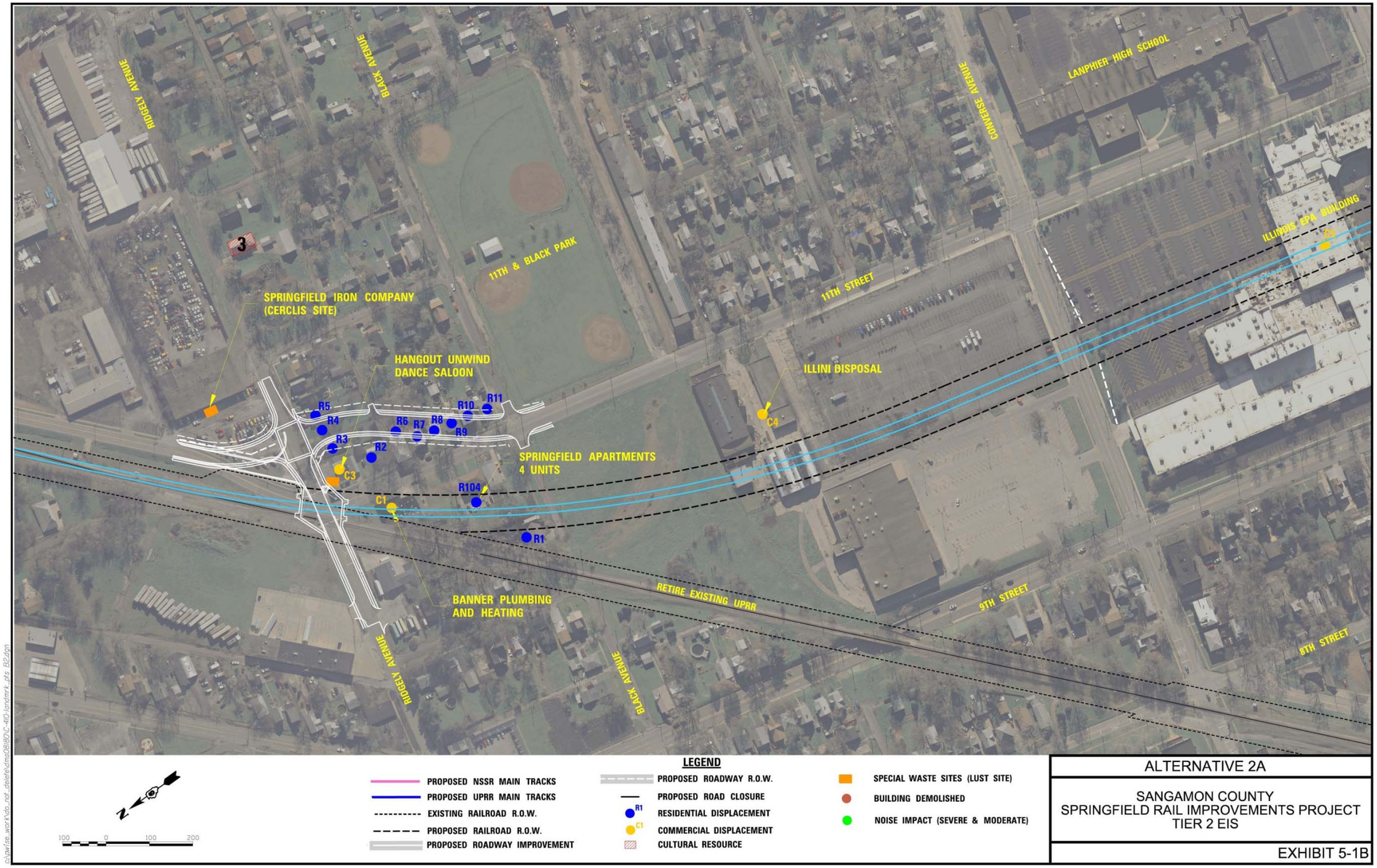


Exhibit 5-1B. Alternative 2A

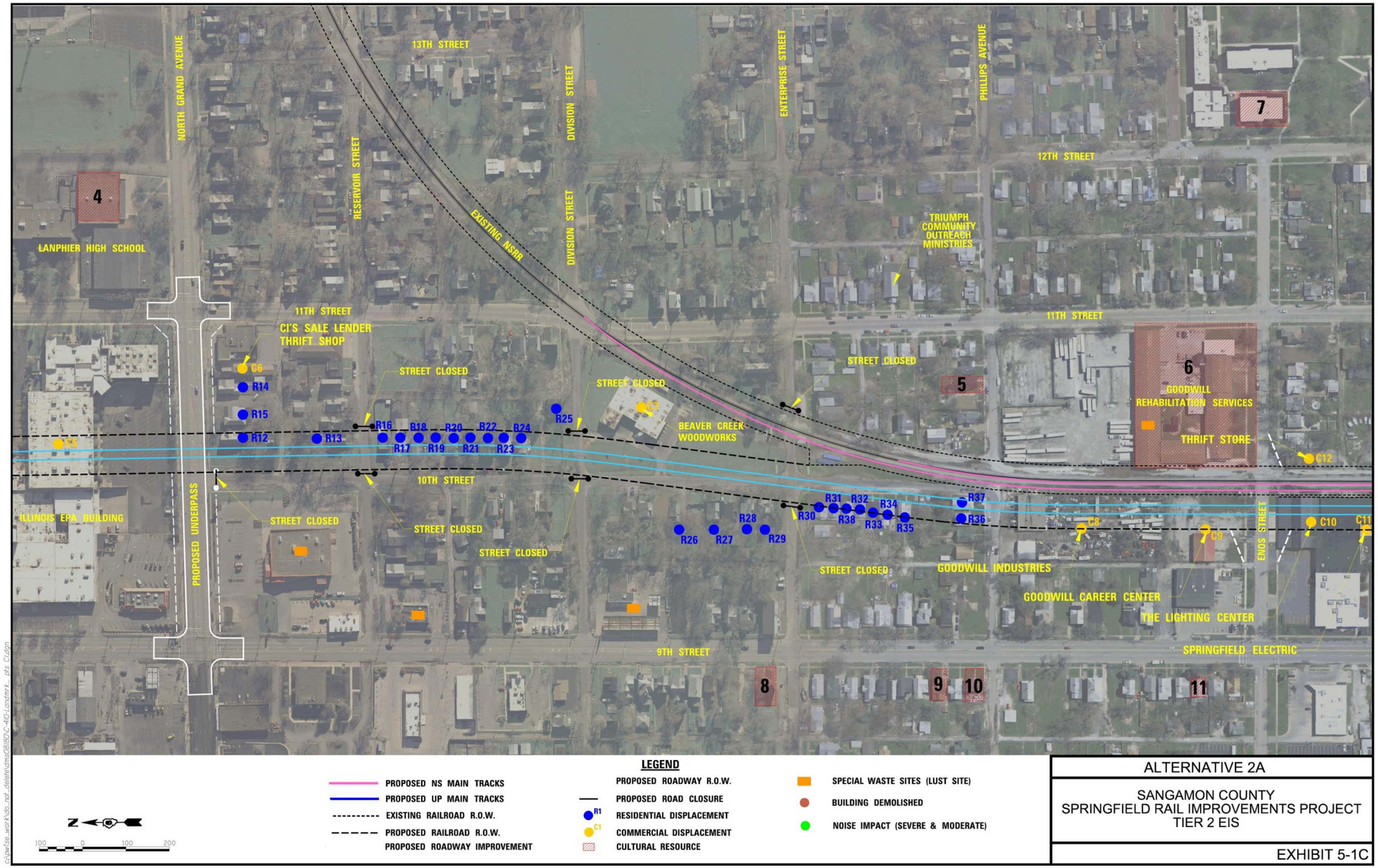


Exhibit 5-1C. Alternative 2A

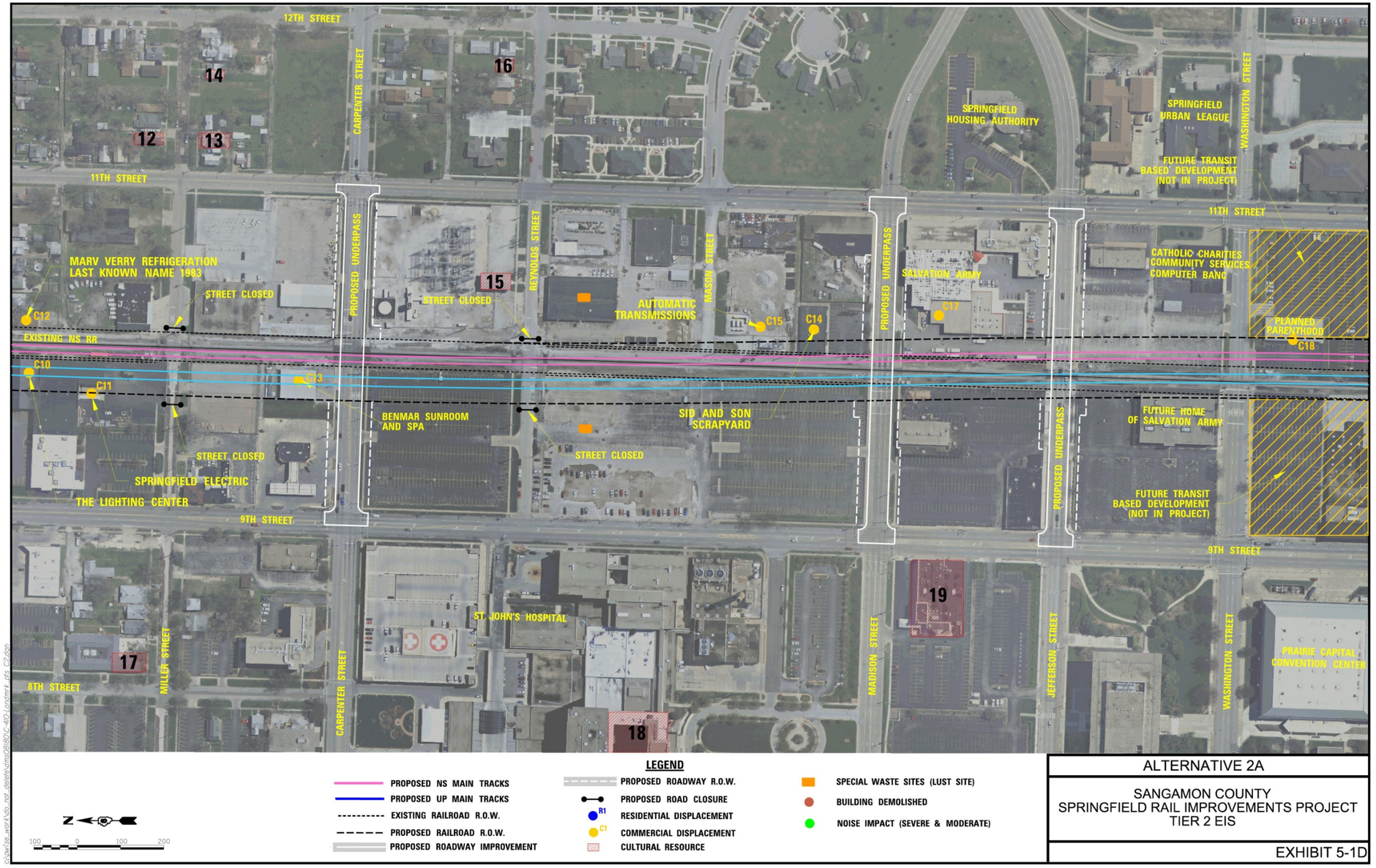


Exhibit 5-1D. Alternative 2A

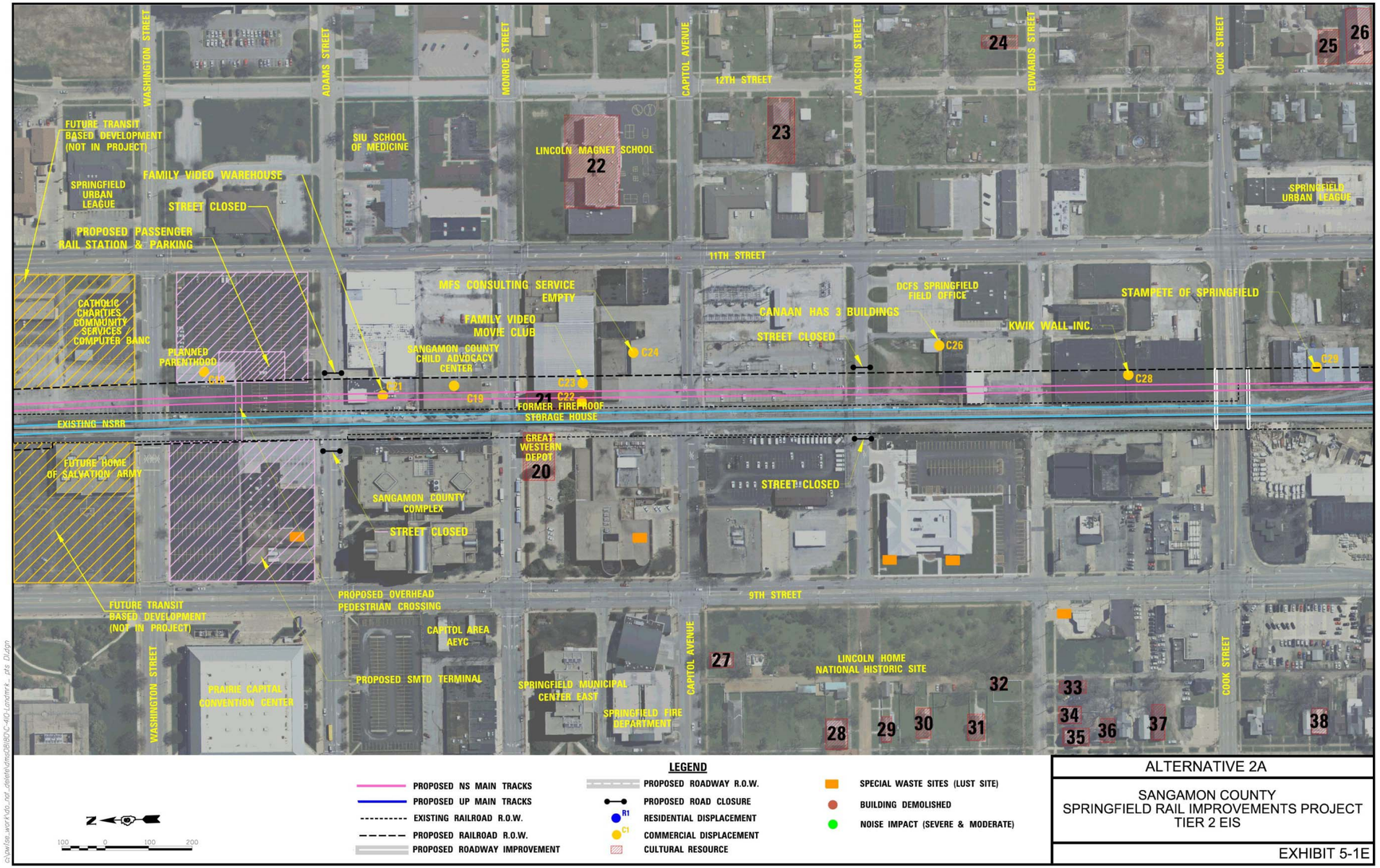
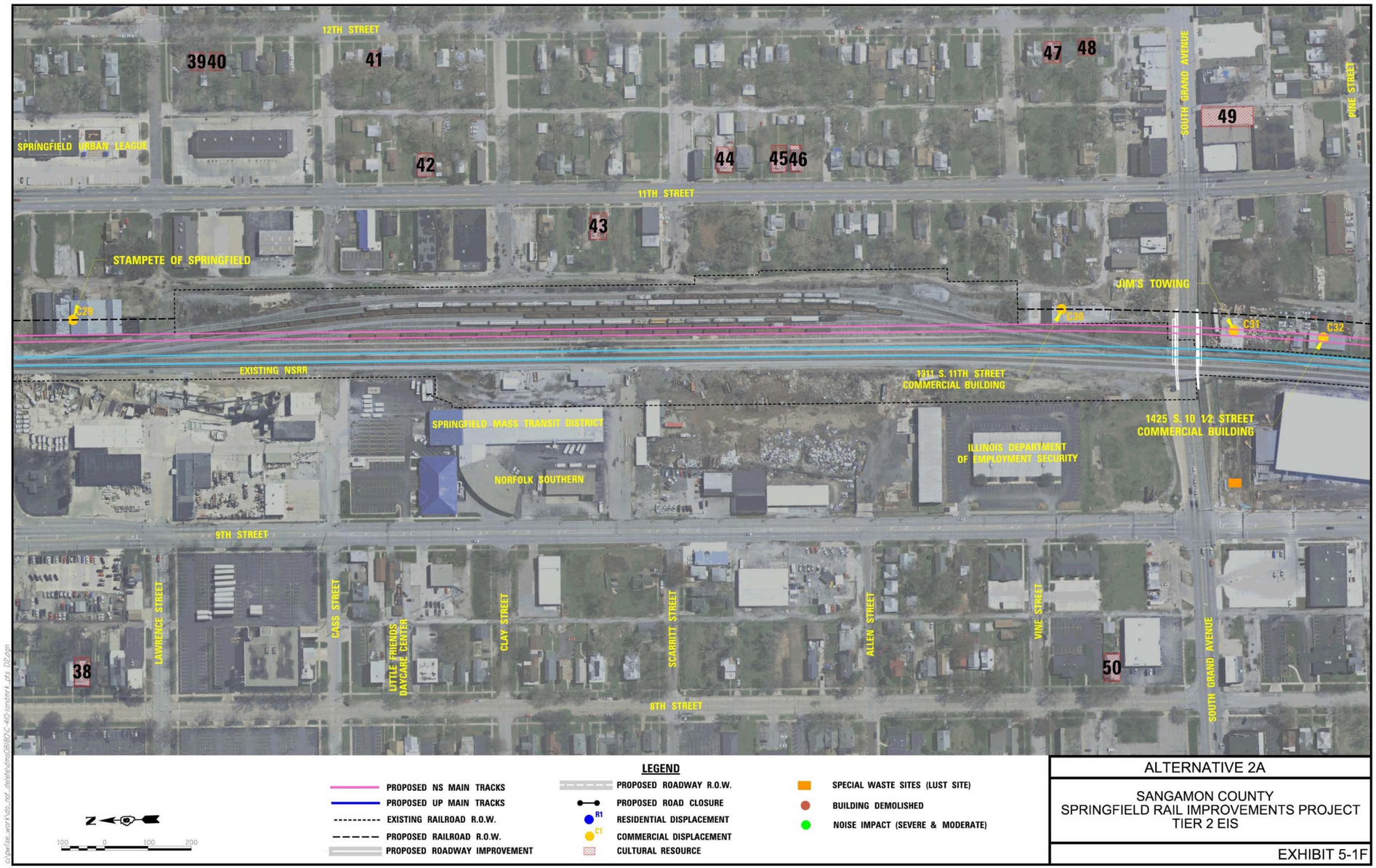


Exhibit 5-1E. Alternative 2A



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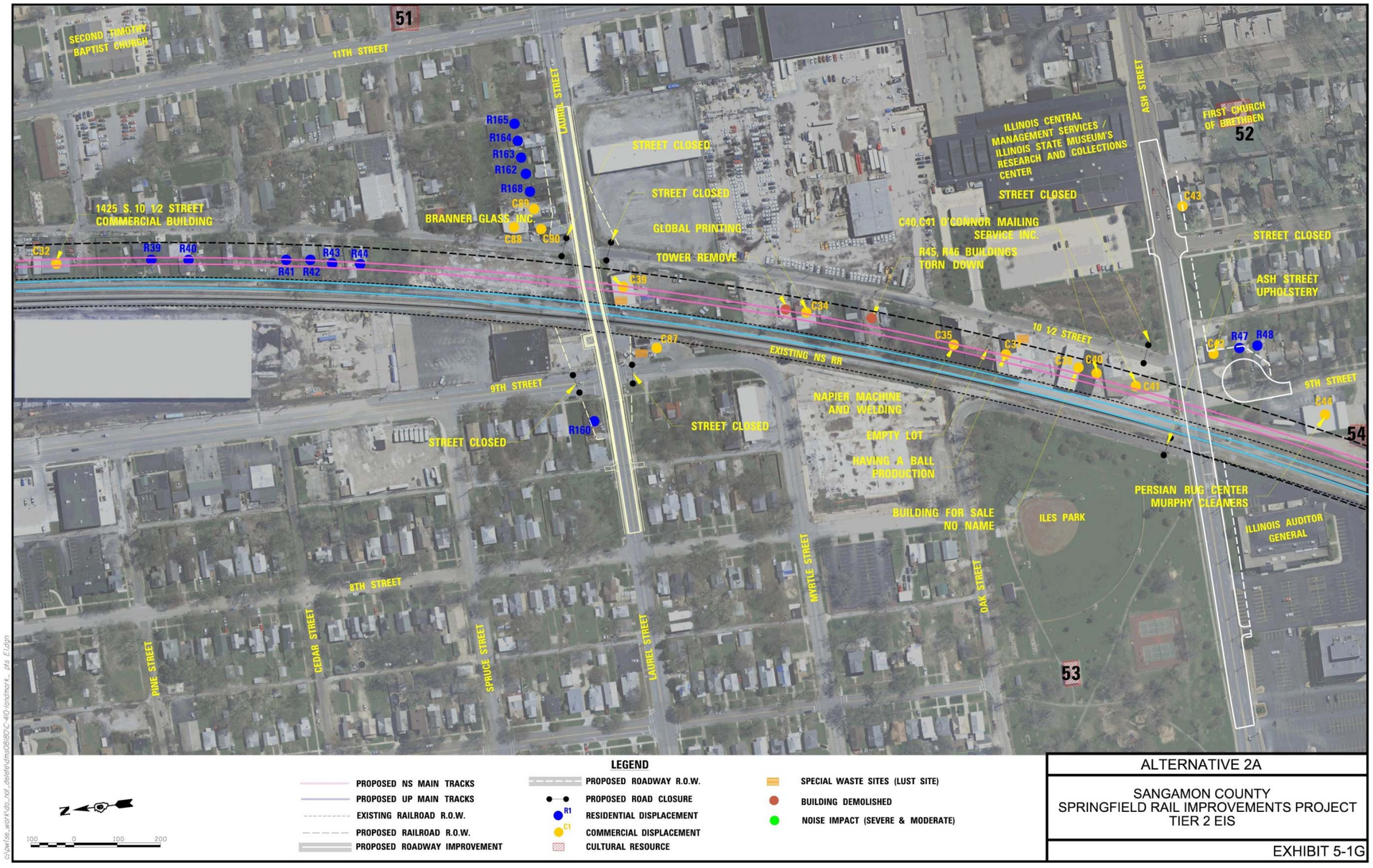

Exhibit 5-1G. Alternative 2A

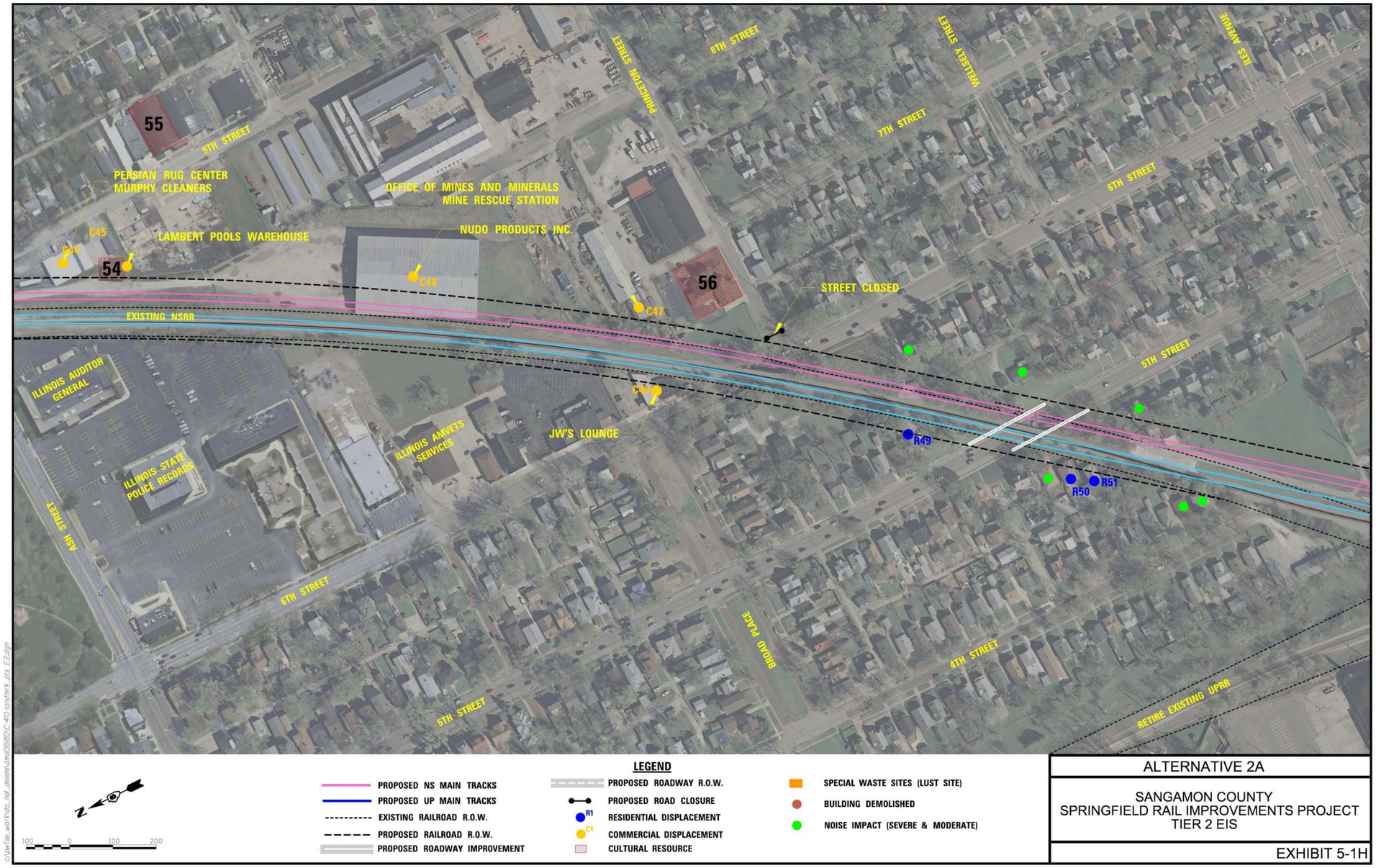

Exhibit 5-1H. Alternative 2A

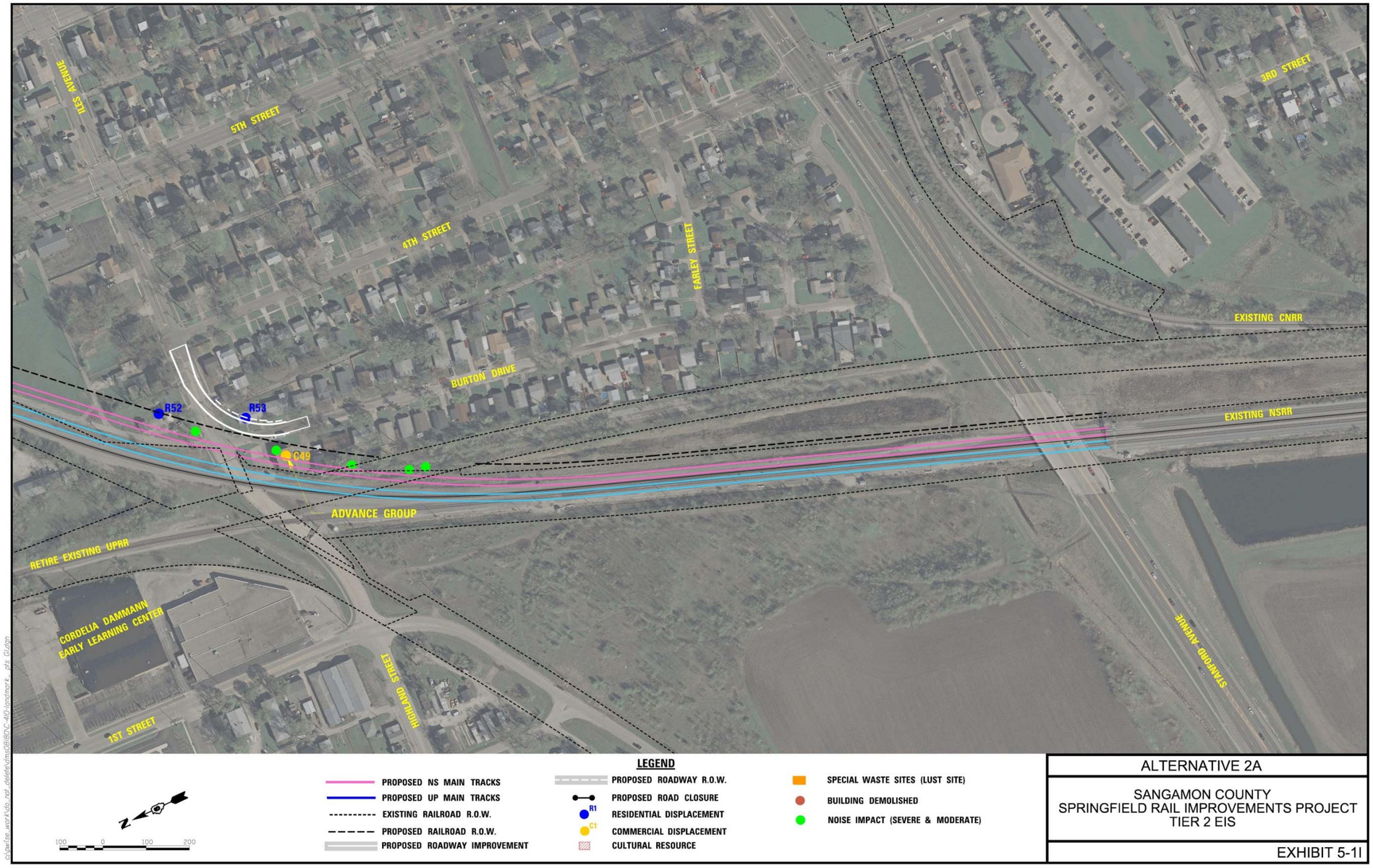

Exhibit 5-1I. Alternative 2A

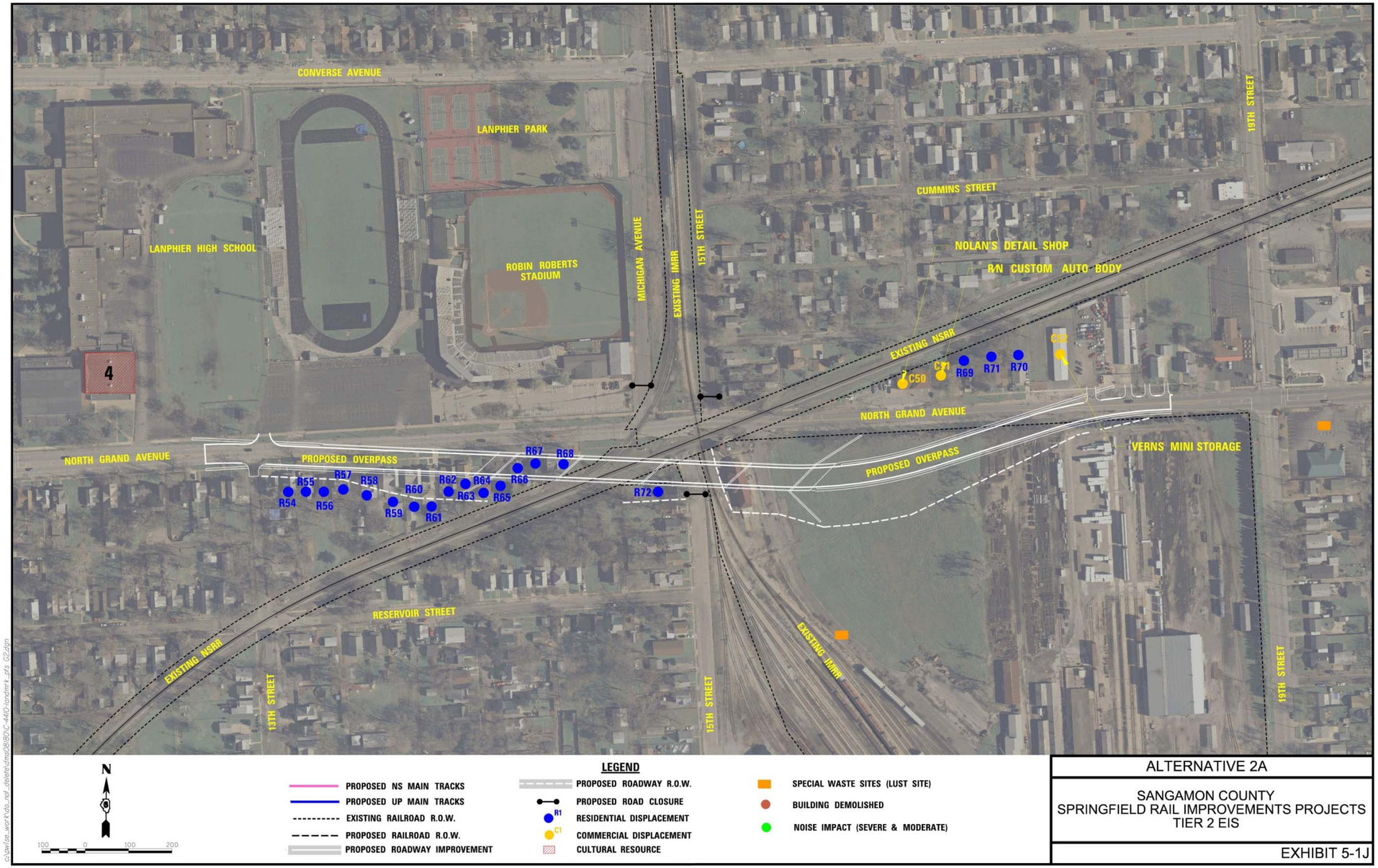

Exhibit 5-1J. Alternative 2A

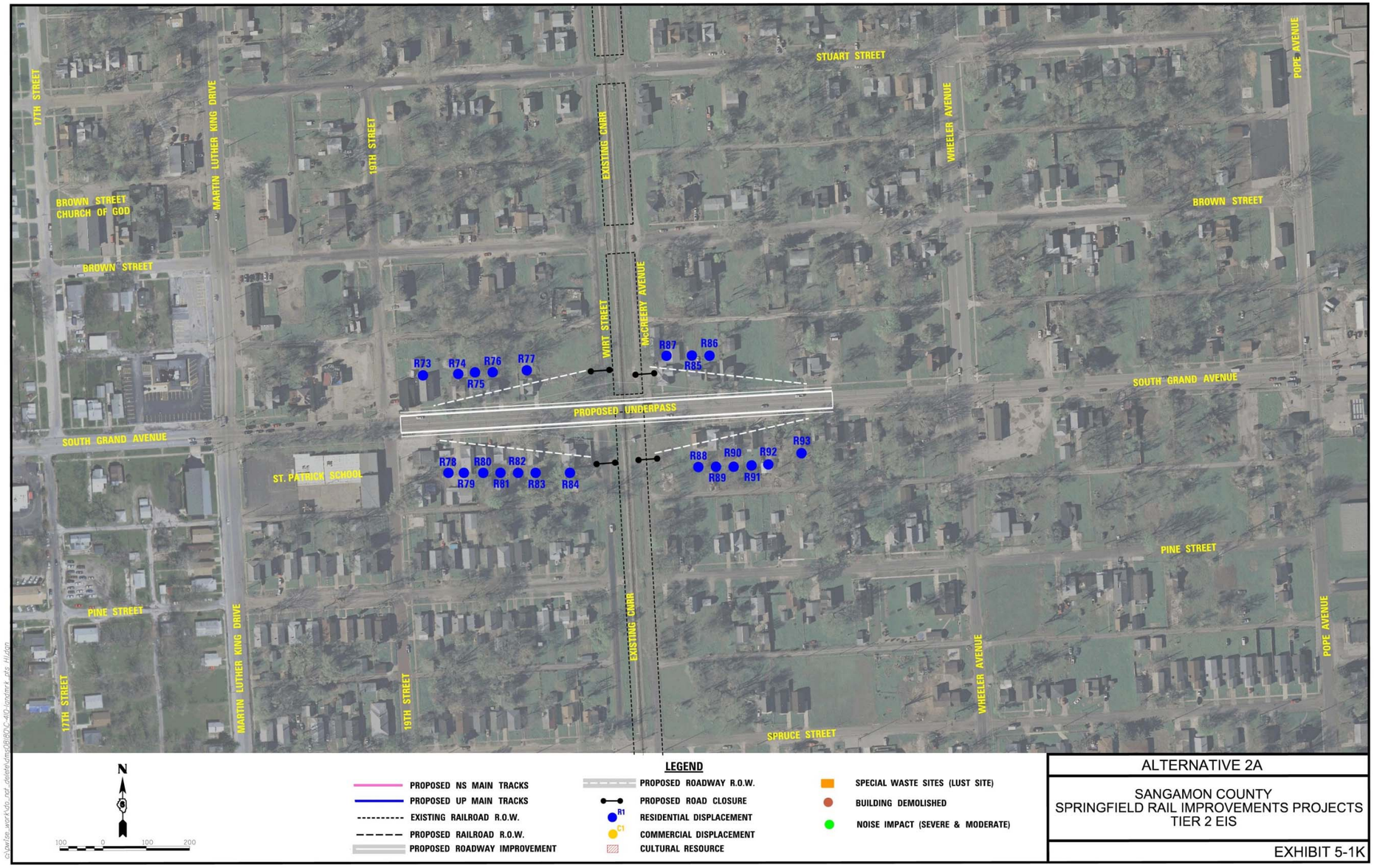

Exhibit 5-1K. Alternative 2A

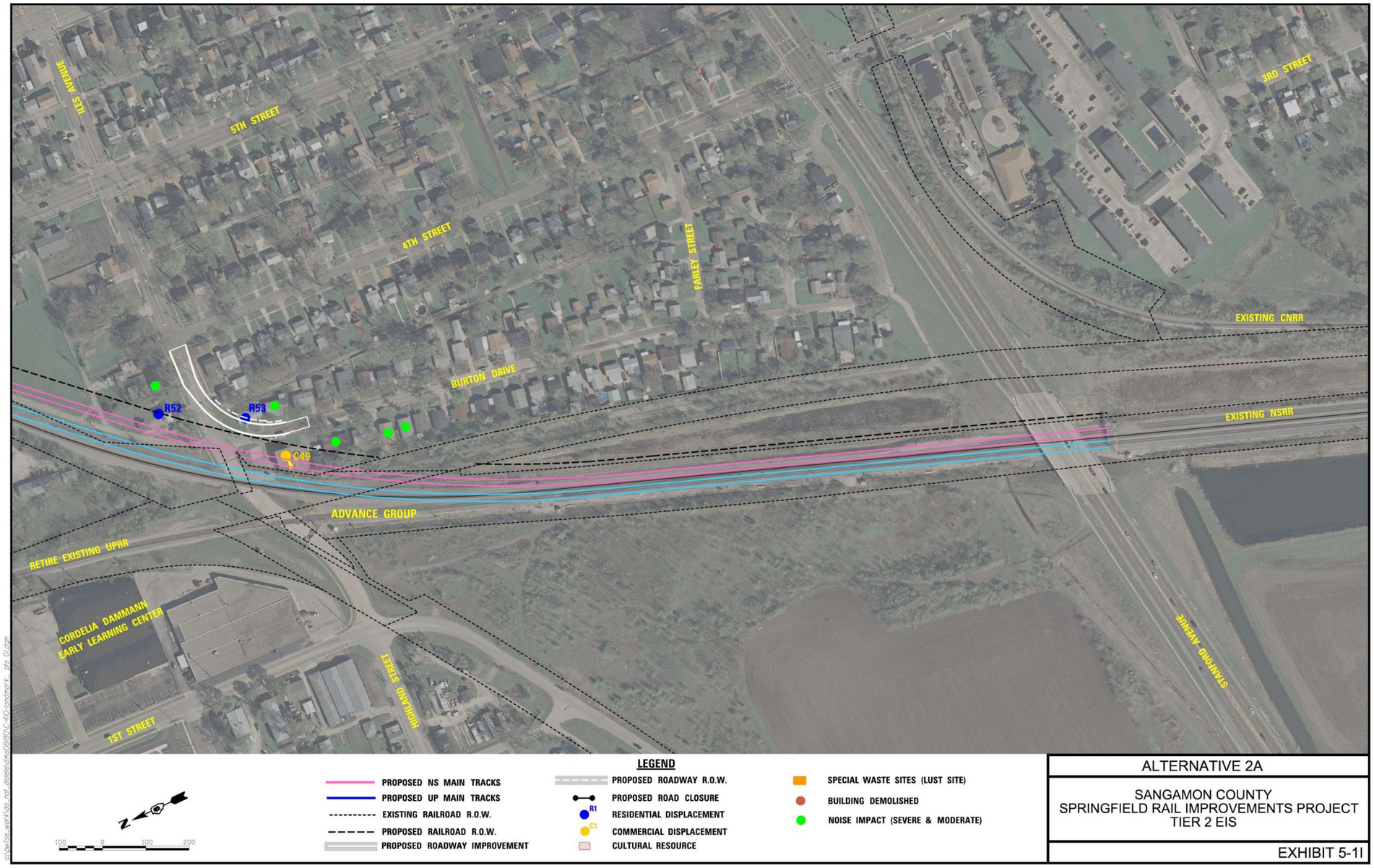

Exhibit 5-1L. Alternative 2A

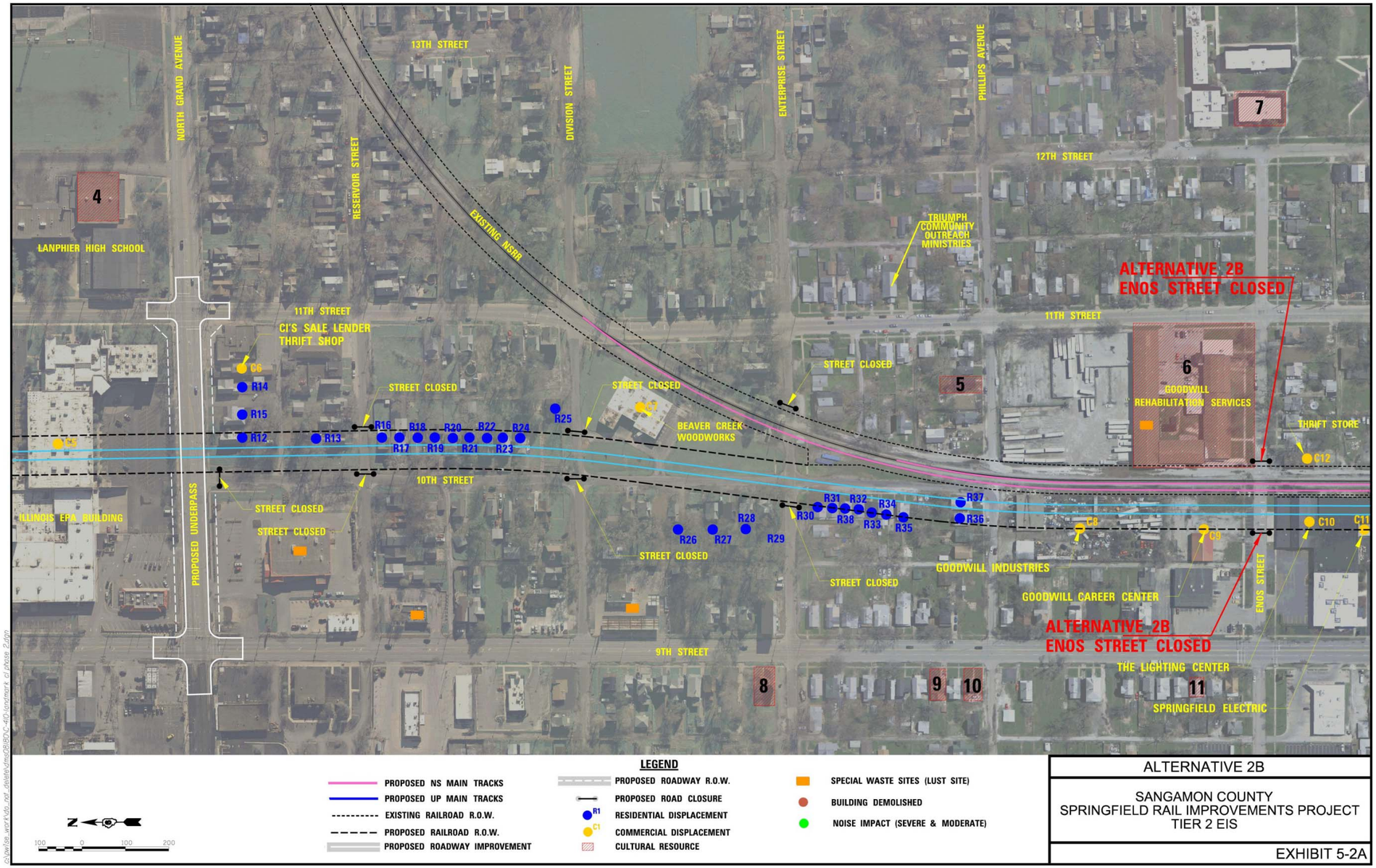

Exhibit 5-2A. Alternative 2B

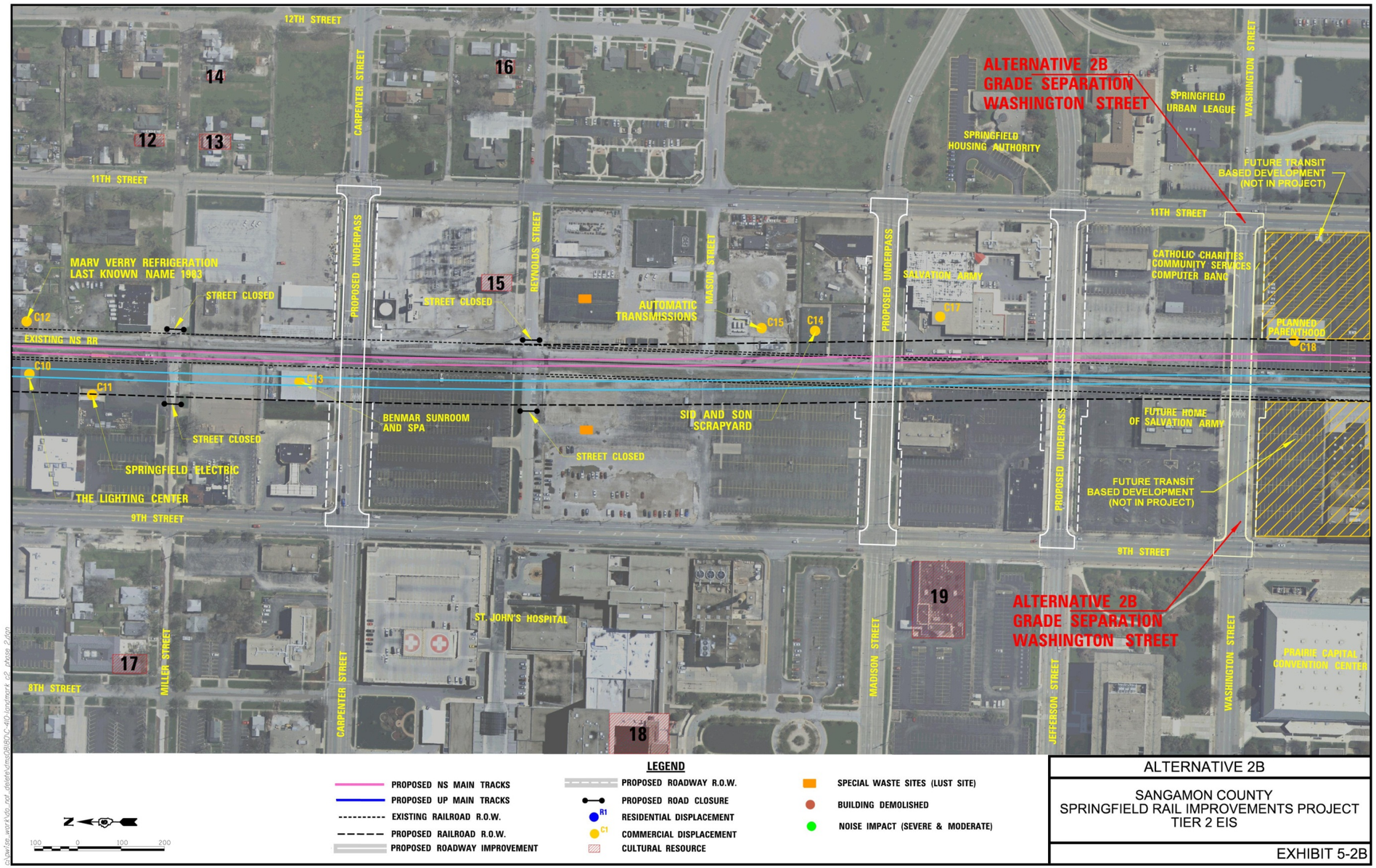

Exhibit 5-2B. Alternative 2B

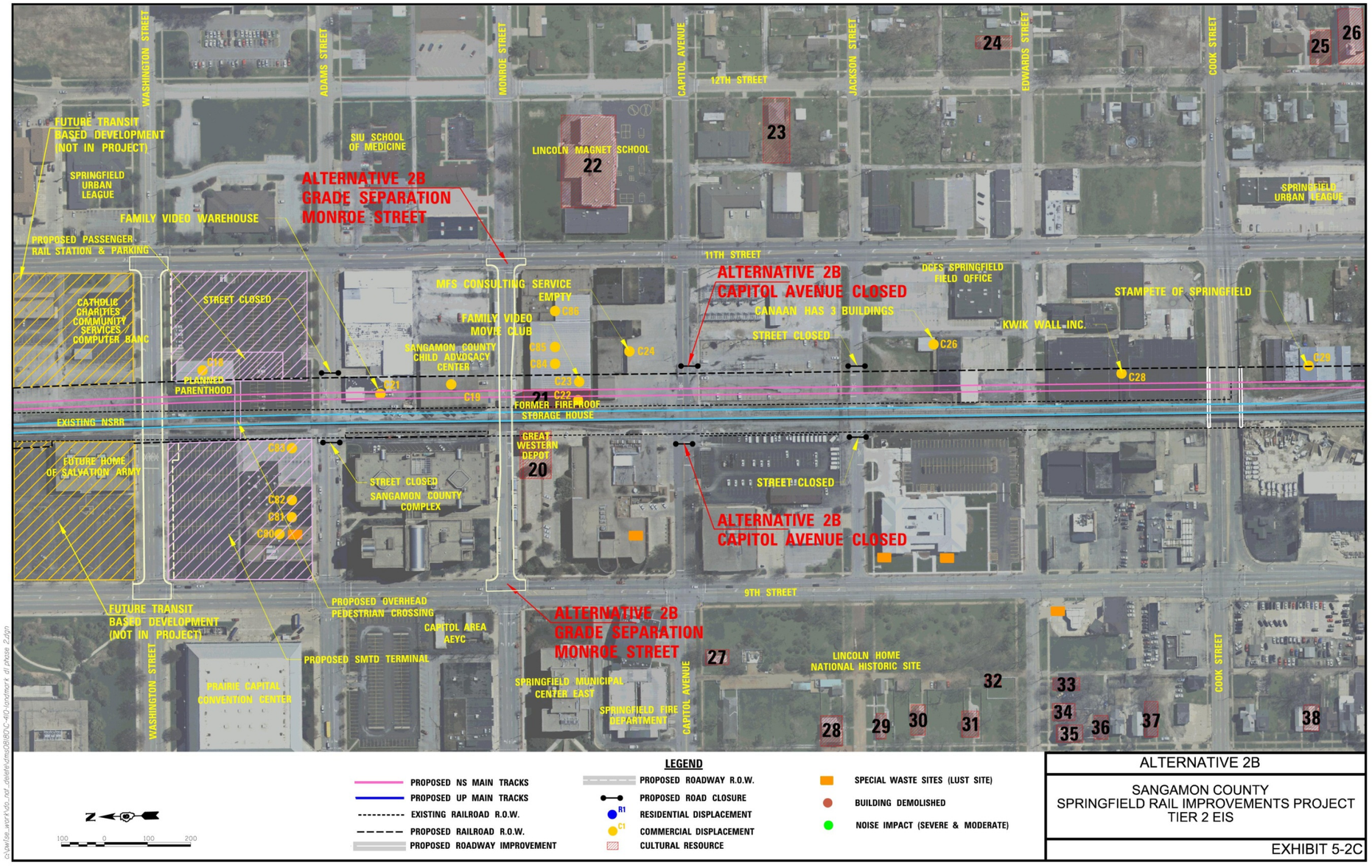

Exhibit 5-2C. Alternative 2B

5.1.2 Alternatives 2A/2B

The relocation of the 3rd Street Corridor to the 10th Street Corridor for Alternative 2A or 2B would allow for the expansion of businesses and the Medical District along 3rd Street. Other opportunities would also be possible along the abandoned 3rd Street Corridor, such as a city-wide pedestrian/bike path or parkway for additional green space. This enhancement to the community could provide the opportunity for businesses to cater to needs of additional visitors to the Downtown area and the Lincoln sites. In addition, a multimodal facility, consisting of a train station and transit hub for buses and taxi service, has been planned by the City of Springfield for the 10th Street Corridor. This facility is intended to provide services and jobs to Springfield's east side. This complex is proposed to be constructed on about four city blocks and may contain restaurants, shops, office space, a daycare facility, meeting rooms, and parking. This facility conforms to the city's Downtown Redevelopment Plan and Springfield's 2030 Comprehensive Plan.

About 108 residences and 50 commercial businesses may be relocated as a result of the construction of Alternative 2A or 2B. These relocations are a result of about 42 acres of right-of-way required for the additional railroad tracks necessary for the project. Springfield has sufficient comparable housing and commercial space available for these relocatees. Right-of-way purchases would be conducted in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act) (Title 42 United States Code Sections 4601-4655), as amended, and the U.S. Department of Transportation implementing regulations, which apply to all federal or federally assisted activities that involve the acquisition of real property or the displacement of residences or businesses. IDOT would implement the provisions of the State of Illinois Relocation Assistance Plan in accordance with the Uniform Relocation Act.

5.2 Socioeconomics and Environmental Justice

5.2.1 Displacements

The No-Build Alternative would not result in any residential or commercial displacements.

Table 5-1 depicts the number of residential and commercial displacement for each of the build alternatives. Also shown are the number of properties which would have their existing street access changed. Most of these access changes are because of grade separations and would reduce the number of access points to the property. Table 5-2 lists all of the proposed residential and commercial displacements of the retained alternatives. The displacement numbers can be referenced in Exhibit 5-1 and 5-2.

5.2.1.1 Environmental Justice and Title VI

In accordance with the U. S. Dot Order 1510.2, compliance with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (EA 1994) directs federal agencies to "promote nondiscrimination in federal

programs substantially affecting human health and the environment, and provide minority and low-income communities access to public information on, and an opportunity for public participation in matters relating to human health or the environment." The EO directs agencies to use existing laws to ensure that when they act:

- They do not discriminate on the basis of race, color, or national origin;
- They identify and address disproportionately high and adverse human health or environmental efforts of their actions on minority and low-income communities; and
- They provide opportunities for community input during the National Environmental Policy Act (NEPA) process, including input on potential efforts and mitigation measures.

Road closures along the retained alternatives are primarily in industrial areas where the business would be displaced and moved to a new location or access would not require adverse travel.

Of the proposed road closures mentioned in Section 5.1.4, only a few are within residential neighborhoods that contain a predominance minority and/or low-income populations. Adverse travel is the additional length of roadway a motorist must travel due to a closed road. Adverse travel for these residents would be limited to no more than one block at the most, except for the area between Reservoir Street and Enterprise Street. This two block area also contains Division Street and all three streets are proposed to close under Alternative 2B. Residents within this area may encounter up to a maximum of eight blocks of adverse travel under Alternative 2B if their destination is located immediately across the proposed rail corridor. This adverse travel would only be borne by residential visits, which is presumed to be negligible. Adverse travel resulting from road closures is not a factor for residents going shopping or for emergency services, or access to public facilities since the primary east-west arterial is North Grand Avenue located one block north of Reservoir Street.

Residential and business relocations will likely affect a small percentage of minority and/or low-income individuals, however the cumulative impacts are not anticipated to be disproportionate for the retained alternatives (2A or 2B) (see Section 4.2.5). The No-Build Alternative will not directly impact minority or low income populations with displacements, however increasing train frequency and longer duration of train horn noise will create additional impacts.

Table 5-2. Residential and Commercial Displacements

Displacement No. (2A & 2B)	Street Address
R160	1731 S 9TH STREET
C87	900 E LAUREL
C88	1716 S 10 1/2 STREET
C89	1013 E LAUREL
R161	1015 E LAUREL
R162	1017 E LAUREL
R163	1019 E LAUREL
R164	1021 E LAUREL
R165	1023 E LAUREL
C90	1011 E LAUREL
Displacement No. (2A & 2B)	**Street Address**
C42	906 E ASH
R47	2110 S 9TH STREET
R48	2114 S 9TH STREET
C43	1008 E ASH
Displacement No. (2A & 2B)	**Street Address**
R14	1020 E NORTH GRAND AVENUE
C6	1024 E NORTH GRAND AVENUE
R15	1010 E NORTH GRAND AVENUE
Displacement No. (2A & 2B)	**Street Address**
R54	1308 E NORTH GRAND AVENUE
R55	1310 E NORTH GRAND AVENUE
R56	1320 E NORTH GRAND AVENUE
R57	1322 E NORTH GRAND AVENUE
R58	1326 E NORTH GRAND AVENUE
R59	1328 E NORTH GRAND AVENUE
R60	1330 E NORTH GRAND AVENUE
R61	1332 E NORTH GRAND AVENUE
R62	1334 E NORTH GRAND AVENUE
R63	1336 E NORTH GRAND AVENUE
R64	1338 E NORTH GRAND AVENUE
R65	1340 E NORTH GRAND AVENUE
R66	1404 E NORTH GRAND AVENUE
R67	1408 E NORTH GRAND AVENUE

R68	1412 E NORTH GRAND AVENUE
C50	1613 E NORTH GRAND AVENUE
C51	1615 E NORTH GRAND AVENUE
R69	1627 E NORTH GRAND AVENUE
R70	1633 E NORTH GRAND AVENUE
C52	1635 E NORTH GRAND AVENUE
R71	1631 E NORTH GRAND AVENUE
R72	1321 N 15TH STREET
Displacement No. (2B)	**Street Address**
C84	1028 E MONROE
C85	1028 E MONROE
C86	1028 E MONROE
Displacement No. (2A & 2B)	**Street Address**
R94	1917 E ASH
R95	1952 S WIRT
R96	1954 S WIRT
R97	1904 E ASH
R103	2101 S WIRT
R98	2100 S WIRT
R99	2108 S WIRT
R100	2112 S WIRT
R101	2107 E ASH
C53	2103 E ASH
R102	2100 E ASH
Displacement No. (2A & 2B)	**Street Address**
R73	1905 E SOUTH GRAND AVENUE
R74	1913 E SOUTH GRAND AVENUE
R75	1917 E SOUTH GRAND AVENUE
R76	1921 E SOUTH GRAND AVENUE
R77	1929 E SOUTH GRAND AVENUE
R78	1910 E SOUTH GRAND AVENUE
R79	1912 E SOUTH GRAND AVENUE
R80	1918 E SOUTH GRAND AVENUE
R81	1922 E SOUTH GRAND AVENUE
R82	1924 E SOUTH GRAND AVENUE
R83	1926 E SOUTH GRAND AVENUE
R84	1930 E SOUTH GRAND AVENUE

R85	2005 E SOUTH GRAND AVENUE
R86	2009 E SOUTH GRAND AVENUE
R87	2001 E SOUTH GRAND AVENUE
R88	2008 E SOUTH GRAND AVENUE
R89	2010 E SOUTH GRAND AVENUE
R90	2012 E SOUTH GRAND AVENUE
R91	2016 E SOUTH GRAND AVENUE
R92	2020 E SOUTH GRAND AVENUE
R93	2028 E SOUTH GRAND AVENUE
Displacement No. (2A & 2B)	**Street Address**
C1	1645 N 11TH STREET
R1	1005 BLACK AVENUE
R104	1613 N 11TH STREET
C3	1630 N 11TH STREET
R2	1622 N 11TH STREET
R3	1108 RIDGELY
R4	1110 RIDGELY
R5	1118 RIDGELY
R6	1620 N 11TH STREET
R7	1618 N 11TH STREET
R8	1612 N 11TH STREET
R9	1608 N 11TH STREET
R10	1602 N 11TH STREET
R11	1600 N 11TH STREET
C4	1527 N 11TH STREET
C5	1220 N 09TH STREET
R12	1006 E NORTH GRAND AVENUE
R13	1003 RESERVOIR STREET
R16	1132 N 10TH STREET
R17	1130 N 10TH STREET
R18	1128 N 10TH STREET
R19	1126 N 10TH STREET
R20	1124 N 10TH STREET
R21	1122 N 10TH STREET
R22	1110 N 10TH STREET
R23	1108 N 10TH STREET
R24	1106 N 10TH STREET
R25	1017 DIVISION
R26	1023 N 10TH STREET
R27	1011 N 10TH STREET

R28	1005 N 10TH STREET
R29	1003 N 10TH STREET
C7	1020 N 10TH STREET
R30	933 N 10TH STREET
R31	931 N 10TH STREET
R32	927 N 10TH STREET
R33	925 N 10TH STREET
R34	923 N 10TH STREET
R35	921 N 10TH STREET
R36	921 PHILLIPS
R37	923 PHILLIPS
R38	929 N 10TH
C8	920 PHILLIPS
C9	915 E ENOS AVENUE
C10	918 E ENOS AVENUE
C11	718 N 09TH STREET
C12	1004 E ENOS AVE
C13	929 E CARPENTER
C14	1015 E MADISON STREET
C17	221 N 11TH STREET
C18	1000 E WASHINGTON
C19	1001 E MONROE
C21	1000 E ADAMS
C22	1000 E MONROE
C23	1028 E MONROE
C24	1015 E CAPITOL AVENUE
C26	1001 E EDWARDS STREET
C28	1010 E EDWARDS STREET
C29	709 BARRETT
C30	1311 S 11TH STREET
C31	1403 S 10 1/2 STREET
C32	1425 S 10 1/2 STREET
R39	1515 S 10 1/2 STREET
R40	1517 S 10 1/2 STREET
R41	1601 S 10 1/2 STREET
R42	1609 S 10 1/2 STREET
R43	1617 S 10 1\2 STREET
R44	1619 S 10 1\2 STREET
C34	1905 S 10 1/2 STREET
C35	1925 S 10 1/2 STREET
C37	1935 S 10 1/2 STREET
C38	1947 S 10 1/2 STREET

C39	1000 E LAUREL
C40	1943 S 10 1/2 STREET
C41	901 E ASH
C46	2264 S 06TH STREET
C44	2121 S 09TH STREET
C45	2141 S 09TH STREET
C47	631 PRINCETON
C48	830 E ASH
R49	2342 S 05TH STREET
R50	2405 S 05TH STREET
R51	2407 S 05TH STREET
R52	401 E ILES AVENUE
R53	2500 BURTON DRIVE
C49	300 E ILES AVENUE

Included in the commercial designation for both alternatives (2A and 2B) are three government or non-profit establishments: the Illinois Environmental Protection (EPA), the Salvation Army, and Planned Parenthood (see Section 4.1.2). Nearby property appears to be available for these facilities to relocate. The Salvation Army is moving to a new location at 100 N. 9th Street independently of this project.

The Uniform Relocation Act applies to all federal or federally assisted activities that involve the acquisition of real property or the displacement of person or business. In compliance with that Act, property owners would receive just compensation for property acquisitions required for the selected alternative as well as relocation expenses.

5.2.2 Public Services/Facilities

As discussed above, public services and facilities that would be displaced by Alternatives 2A and 2B are the Illinois EPA, the Salvation Army, and Planned Parenthood. The Illinois EPA headquarters is at 1021 North Grand Avenue East. The Illinois EPA is an Illinois agency whose mission is to safeguard environmental quality, consistent with the social and economic needs of the state, so as to protect health, welfare, property, and the quality of life. The agency's primary function is to enforce the environmental laws of the state. The proposed project would dissect the headquarters building, and displace the north entrance, office space, and parking north and south of the building, all of which is leased by the Illinois EPA. Adequate replacement is nearby. Office space could be replaced through the addition of floors, or construction of additional buildings or add-ons to the north of the existing headquarters. Acquiring property to the north may also be possible for replacing lost parking space.

The Salvation Army is at 221 N. 11th Street. The Salvation Army is an evangelical Christian church known for charitable work. This parcel is the site for their Main Thrift Store and Adult Rehabilitation Center. Construction of the proposed underpasses on

Madison Street and Jefferson Street would eliminate access to the existing Salvation Army lot. Currently, the Salvation Army has plans to move to a recently purchased location at 100 N. 9th Street.

The Planned Parenthood Springfield Health Center at 1000 E. Washington Street is a provider of sexual and reproductive health care, education, and information. Their services include family planning, abortion and birth control services, HIV and other STD testing, and men and women's health services. The proposed project would displace the structure. There are comparable locations within the same vicinity for relocation of this facility, resulting in no effect. It could be relocated on the same block lot, or other vacant facilities that are available in the area.

Alternatives 2A and 2B are anticipated to have a net positive effect on access and response times for emergency vehicles serving the Springfield communities once construction is complete. By reducing the number of rail corridors through Springfield and by providing grade separations, the existing rail barriers will be eliminated for improved emergency vehicle access and response times. Response time for emergency vehicles is expected to improve from decreased train delay times and improved roadway access as a result of improved roadway system linkage, elimination of the UP Railroad on the 3rd Street Corridor, construction of eight grade separations, and consolidation of UP and NS railroad traffic into one corridor. Police, fire, and emergency response times may be temporarily affected during construction. Coordination with public response agencies serving the project area would continue during construction to avoid and minimize disruptions to emergency response.

5.2.3 Community Impacts

Each of the three existing rail corridors through Springfield would remain in service for the No-Build Alternative. These corridors create barriers that divide the city neighborhoods and isolate portions of the community. Trains that block crossings also reduce accessibility to certain neighborhoods.

Alternatives 2A and 2B consolidate rail traffic to fewer corridors, which eliminates neighborhood barriers, promotes community cohesion and reduces the length of rail lines that go through residential areas. The miles of corridor with rail traffic passing through residential neighborhoods for each alternative is shown in Table 5-3.

Table 5-3. Miles of Rail Corridor Through Residential Neighborhoods

Alternative	Miles of Corridor in Residential Areas
No-Build	9.1
2A	5.4
2B	5.4

Alternatives 2A and 2B pass through or are adjacent to the Springfield neighborhoods of Pillsbury, Downtown Springfield, Pioneer Park, Mather and Wells, Iles Park, Grand Improvement, Harvard Park, and Springfield South Corridor.

Consolidating UP rail traffic onto the 10th Street Corridor is not expected to result in adverse disruption and further division of these communities. Rail traffic has long existed on the 10th Street Corridor, and the proposed action, while accommodating the predicted increase in rail traffic, would remain on an existing rail alignment. Possible negative community reactions to the proposed action may result from local road closures and changes in travel patterns. The recommendations for grade crossing locations, grade crossing treatments and street closures are therefore a concern to the Springfield community. All grade crossing and street closures were evaluated as part of the EIS process.

Positive impacts to the Springfield communities and neighborhoods would result from the elimination of 32 at-grade crossings, improvements to remaining at-grade crossings, and the elimination of train horn blowing. Benefits from these actions center on increased safety and general noise reduction city-wide. New grade separations would increase safety not only for vehicular traffic but also pedestrians traveling across these railroad crossing locations. Safety would also increase for vehicular and pedestrian traffic from proposed improvements to at-grade crossings remaining along the 10th and 19th Street Corridors. The proposed at-grade crossing treatments would support elimination of blaring noise from train horns traveling through the city's communities.

5.2.3.1 Access Changes Associated With Alternative 2A

Each of the proposed street closures associated with Alternative 2A would result in changes in travel patterns and adverse travel (see Exhibit 5.3). Adverse travel is the additional distance individual vehicles would need to travel because the street is closed.

Abandonment of the 3rd Street Corridor and construction of new grade separations in 10th and 19th Streets would mitigate the delays due to adverse travel by eliminating delays due to trains blocking crossings. All locations within the combined 10th Street Corridor would be within 0.4 miles of a grade separation as opposed to 1.4 miles under the No-Build condition. Even those areas affected by street closures would see improved emergency vehicle access since the risk of crossings being blocked by trains would be eliminated on 3rd Street and dramatically reduced on both 10th Street and 19th Street.

Access would be provided to all businesses and residences that remain.

Specific information regarding adverse travel associated with the proposed street closures is described below.

Reservoir Street

Traffic using Reservoir Street would reroute one block north to North Grand Avenue where a grade separation would be constructed. The current Average Daily Traffic (ADT) on Reservoir Street is 900. The maximum adverse travel for any vehicle is 0.4 miles. There are no important community facilities on Reservoir Street, and closure would not affect emergency vehicle access.

Division Street

Traffic using Division Street would reroute two blocks to the north to North Grand Avenue where a grade separation would be constructed. The current ADT is 800. The maximum adverse travel for any vehicle is 0.6 miles. There are no important community facilities on Division Street, and closure would not affect emergency vehicle access.

Enterprise Street

Traffic using Enterprise Street would reroute three blocks to the north and use the proposed grade separation at North Grand Avenue or two blocks to the south to the at-grade crossing at Enos Street. Since Enos Street is closed in Alternative 2B, Enterprise Street traffic would be diverted to North Grand Avenue to the north or Carpenter Street

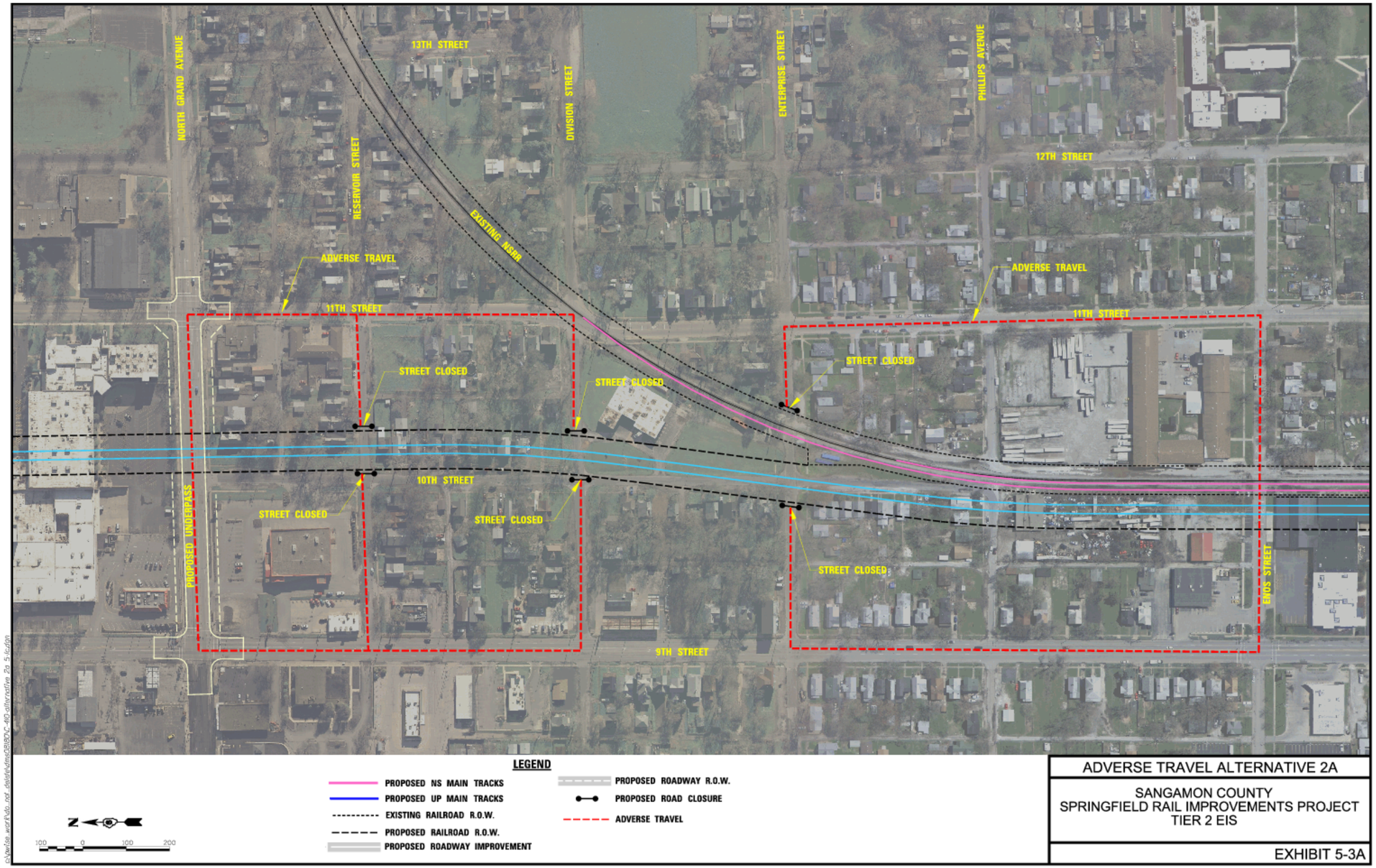

Exhibit 5-3A. Adverse Travel Alternative 2A

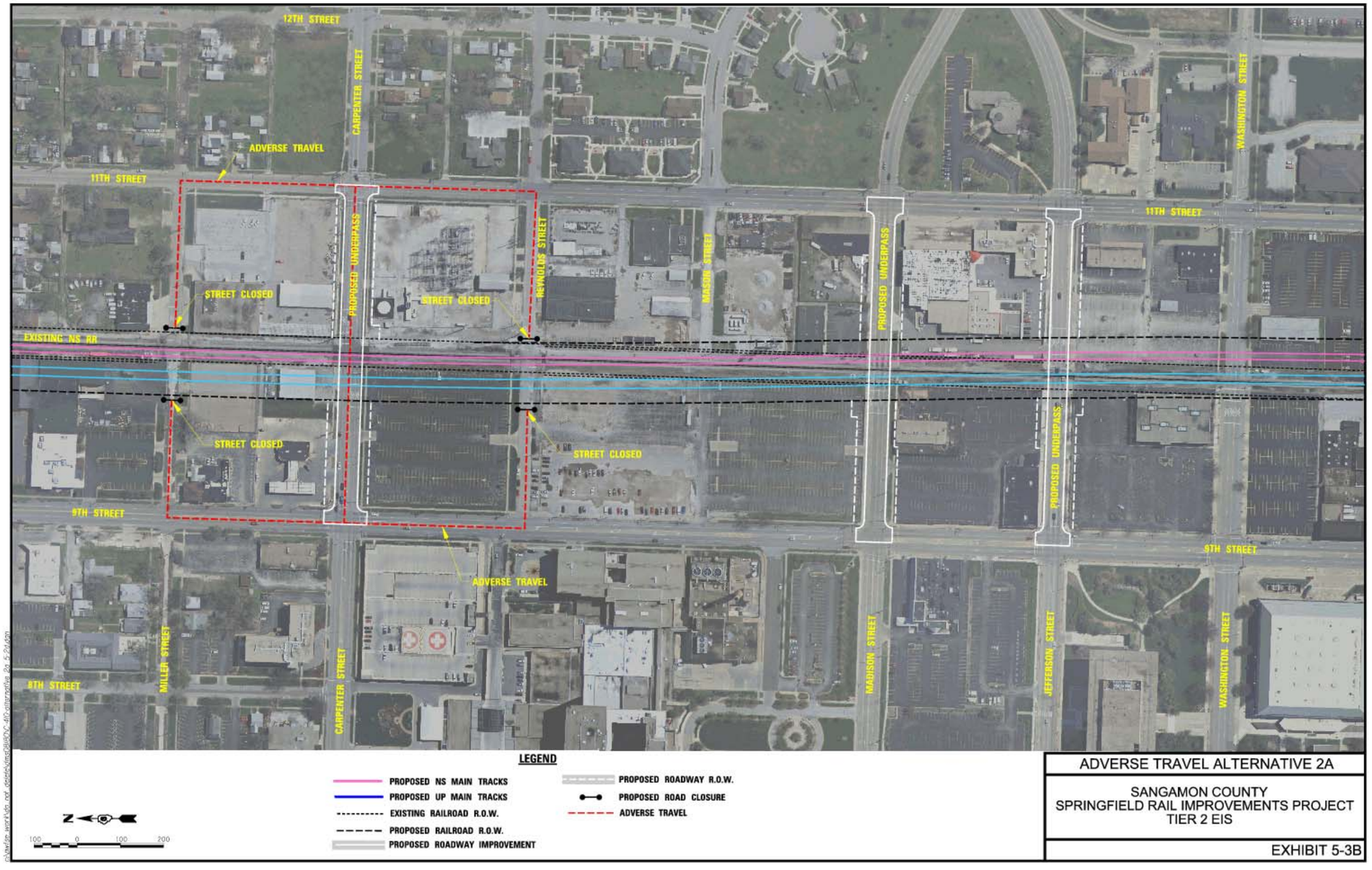

Exhibit 5-3B. Adverse Travel Alternative 2A

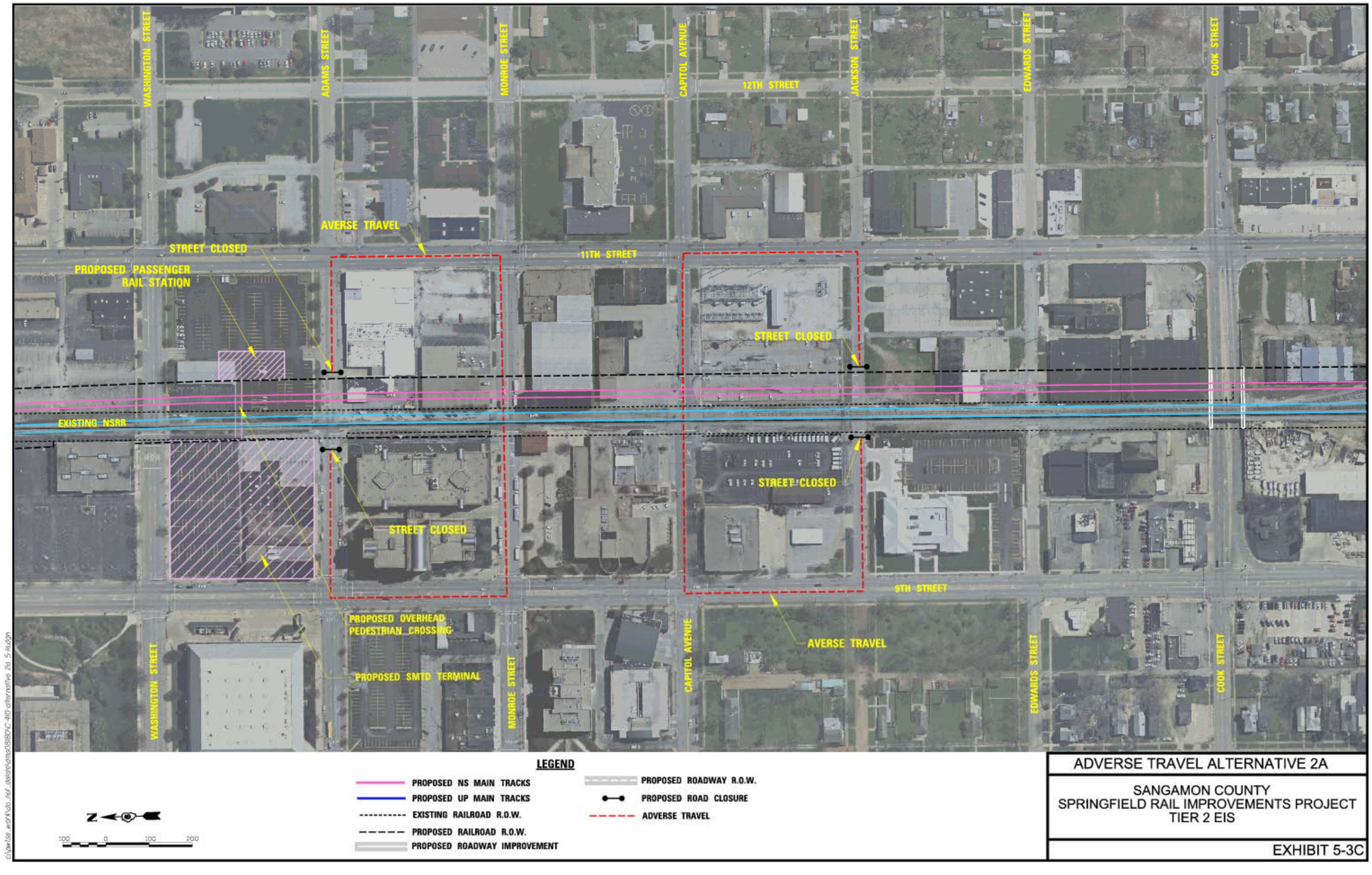

Exhibit 5-3C. Adverse Travel Alternative 2A

to the south. The current ADT is 1,150. The maximum adverse travel is shown in Table 5-4.

Table 5-4. Maximum Adverse Travel for Enterprise Street

Alternative	Adverse Travel (miles)
No-Build	0.0
2A	0.7
2B	0.9

There are no important community facilities on Enterprise Street in this area, and closure would not affect emergency vehicle access.

Miller and Reynolds Streets

Traffic using both of these streets would be diverted one block to the proposed grade separation at Carpenter Street. The current ADT is 500 for Miller Street and 700 for Reynolds Street. The maximum adverse travel for any vehicle is 0.4 miles. There are no critical community facilities on Miller or Reynolds Streets in this area, and closure would not affect emergency vehicle access.

Adams Street

Traffic using Adams Street would be rerouted to the at-grade crossing of Washington Street one block to the north or Monroe Street one block to the south. The current ADT is 2,250. The maximum adverse travel for any vehicle is 0.4 miles. The Sangamon County Complex, including County offices, courtrooms and jail is on the south side of Adams Street between 9th Street and the rail corridor. Visitor parking is west of 9th Street. Employee parking is on the east side of the rail corridor. Some employees would have a longer (up to 600 feet) walk from their parking to the County building. There are no other critical community facilities on Adams Street, and closure would not affect emergency vehicle access.

Jackson Street

Traffic using Jackson Street would be rerouted one block to the north of the Capitol Avenue at-grade crossing or two blocks to the south to the Cook Street grade separation. The current ADT is 350. The maximum adverse travel for any vehicle is 0.4 miles. There are no critical community facilities on Jackson Street in this area, and closure would not affect emergency vehicle access.

5.2.3.2 Access Issues Associated with Alternative 2B

Alternative 2B was developed in response to a request from the UP to consider a fully grade separated corridor where UP tracks would be immediately adjacent to NS tracks. This was accomplished by modifying Alternative 2A as follows:

- Close Enos Street
- Grade Separate Washington Street
- Grade Separate Monroe Street
- Close Capitol Avenue

These modifications would close or grade separate all of the crossings in the project area south of North Grand Avenue (see Exhibit 5-4 for adverse travel associated with Alternative 2B).

Each of these additional street closures and grade separations for Alternative 2B create specific access issues for individual properties as described below. Under the descriptions for each location the access issues associated with construction of these grade separations or street closures would not result in a disproportionately high impact to low-income or minority populations. A benefit/cost ratio was calculated for the grade separations using the assumptions described in Section 3.4.4. Benefits were primarily reductions in delays, accidents, emissions and fuel.

Capitol Avenue (Average Daily Traffic – ADT = 1,600) – The Federal, State and City governments have made a major investment to create a monumental corridor along Capitol Avenue between Martin Luther King Drive and the Capitol Building with 10th Street tracks right in the middle. This monumental corridor would serve as a stage for community events such as parades, festivals and civic ceremonies. Closing Capitol Avenue would eliminate much of the intended benefit of this completed construction. Constructing a grade separation at this location would block the views along Capitol Avenue and cut off access to the State Journal-Register newspaper.

- Monroe Street – A grade separation would cut off current delivery access to the County Building and jail as well as the historic Great Western Depot. Access to the Great Western Depot would be provided by constructing a new entrance from 9th Street through what is currently a private parking lot. This would result in additional land acquisition, but not an adverse effect to the historic resource. ADT = 2,450. The benefit/cost ratio for this grade separations = 0.49.

- Washington Street – A grade separation of Washington Street would make access to the future Amtrak station and bus transfer facility difficult and inefficient. ADT = 1,700. The benefit/cost ratio for this grade separation = 0.75.

- Enos Street – Closure would seriously hamper emergency access and neighborhood connectivity for residents along Enos Street east of 10th Street as the nearest crossings would be North Grand Avenue to the north and Carpenter Street to the south. The affected area is blocked to the east by the I&M rail yard with no other access to school or emergency services. The anticipated ADT on Enos Street is 1,800. Grade separation of Enos street would not be cost effective.

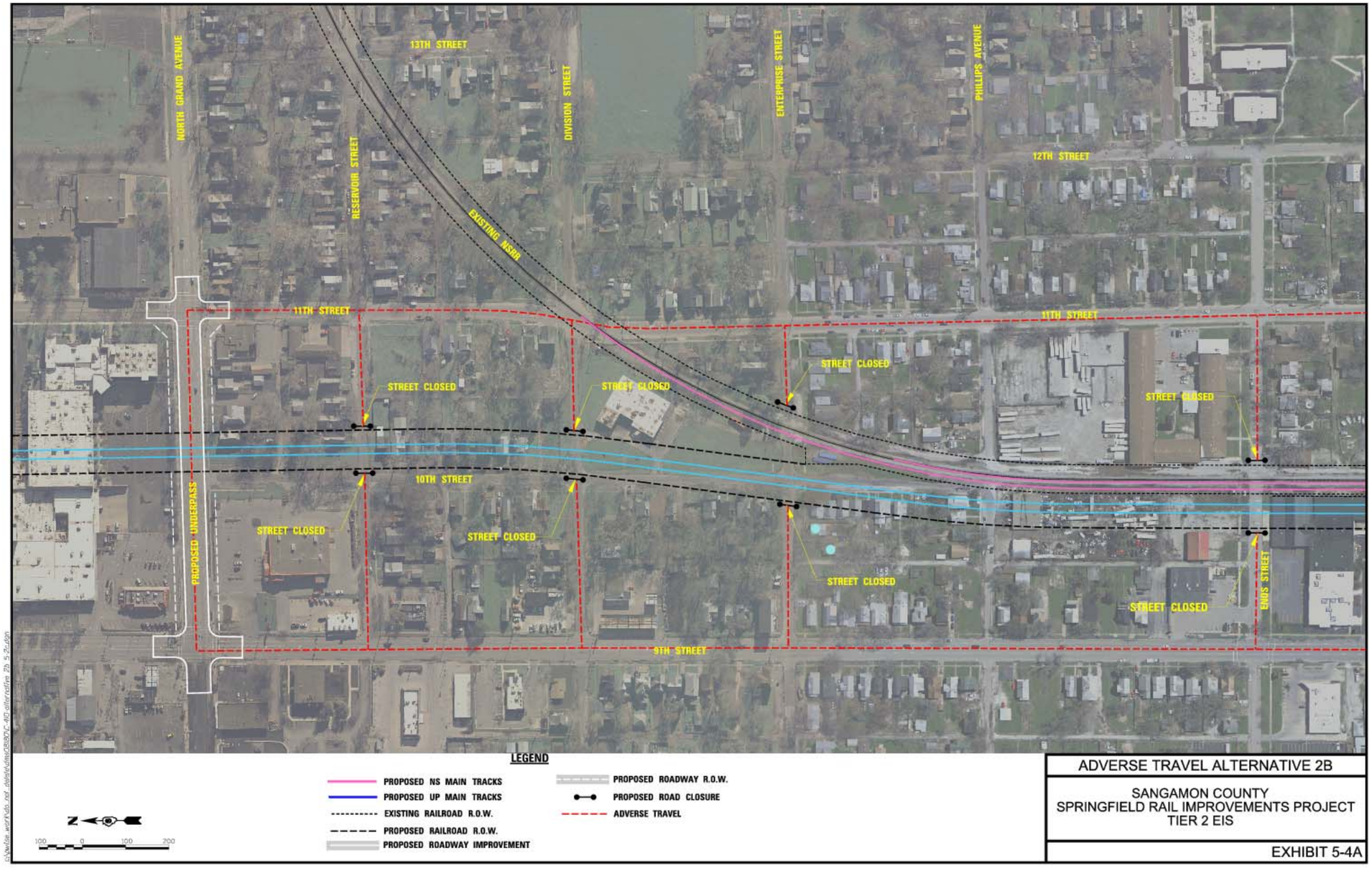

Exhibit 5-4A. Adverse Travel Alternative 2B

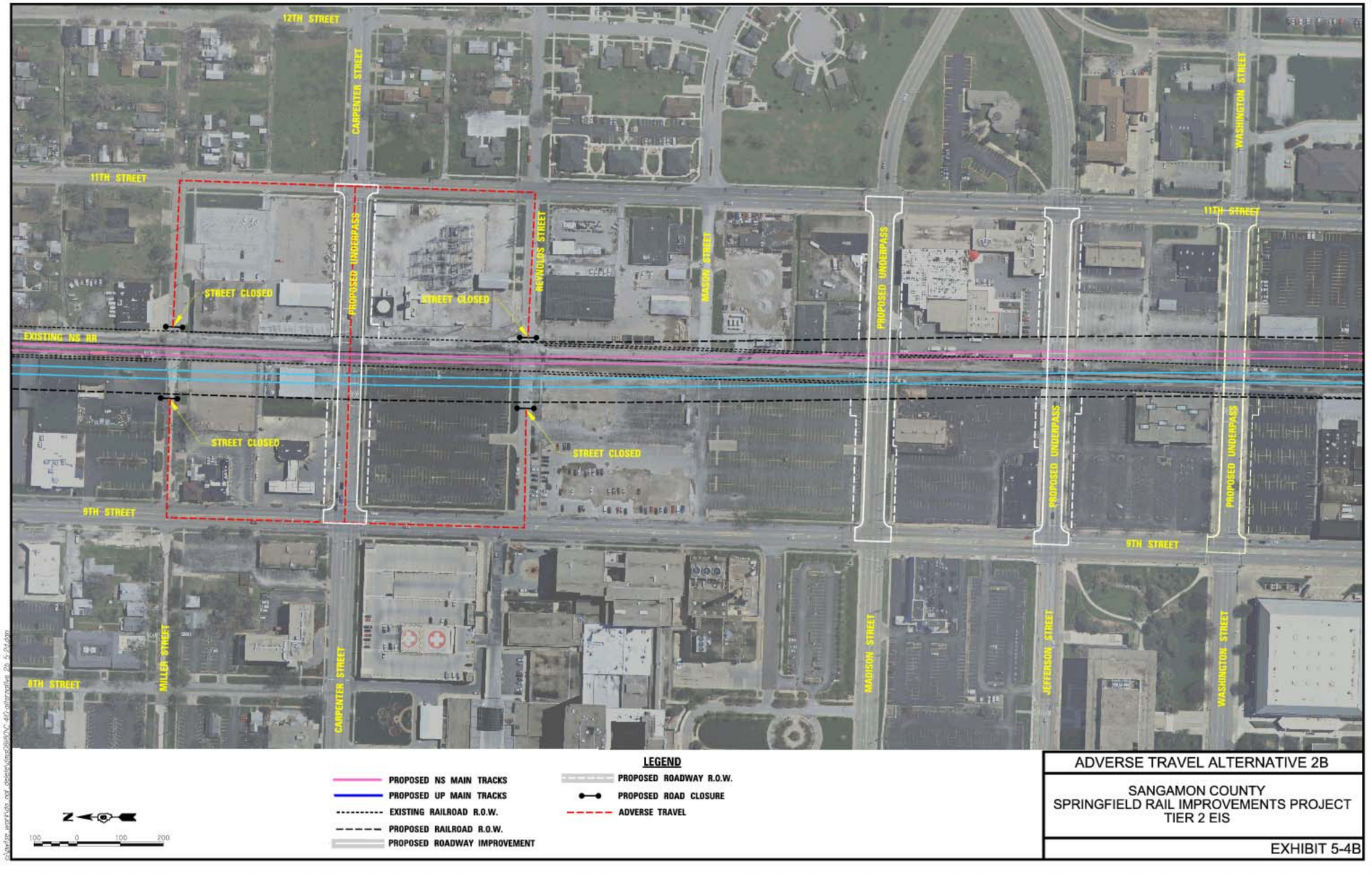

Exhibit 5-4B. Adverse Travel Alternative 2B

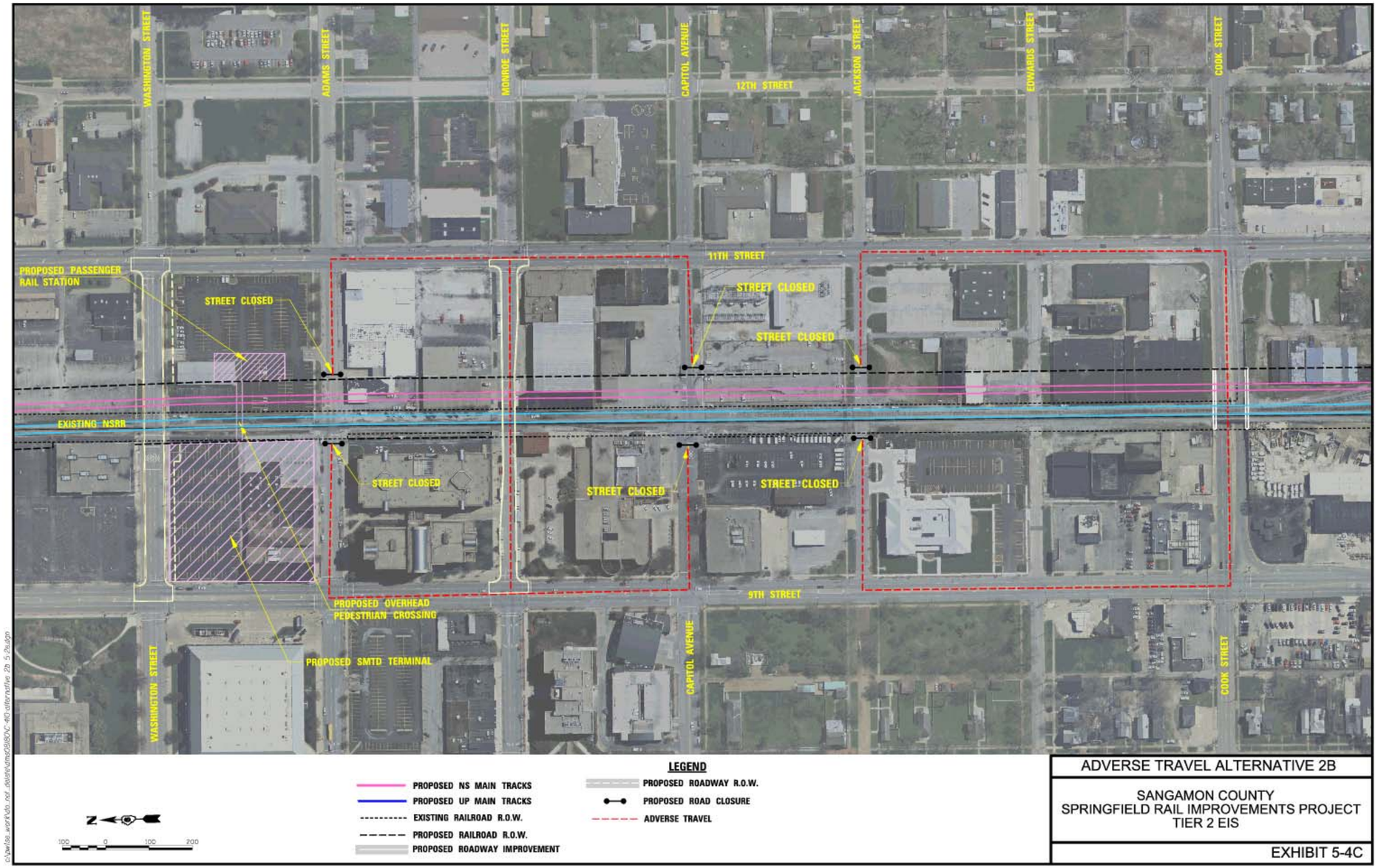

Exhibit 5-4C. Adverse Travel Alternative 2B

5.2.3.3 Grade Separations

Under Alternatives 2A and 2B grade separations would be constructed or upgraded at the locations shown in Table 5-5.

Table 5-5. Grade Separations

			2A	2B	Overpass/ Underpass	Benefit/Cost Ratio
New Grade Separations	10th St.	North Grand Avenue (NS)	X	X	O	1.04
		North Grand Avenue (UP)	X	X	U	1.41
		Carpenter Street	X	X	U	1.09
		Jefferson Street	X	X	U	4.24
		Madison Street	X	X	U	1.60
		Washington Street		X	U	.75
		Monroe Street		X	U	.49
		Laurel Street	X	X	U	1.0
New Grade Separations	10th St.	Ash Street	X	X	U	.96
	19th St.	South Grand Avenue	X	X	U	1.76
		Ash Street	X	X	U	1.20
Upgrade Existing Grade Separations		Cook Street	X	X	U	
		South Grand Avenue	X	X	U	
		5th Street	X	X	U	
		6th Street	X	X	U	

All of the grade separations would be underpasses (road under railroad) except for North Grand Avenue at the NS which would be an overpass due to the length required for crossing both the NS and I&M tracks. Exhibits 5-5 and 5-6 show the anticipated appearance of the 10th Street 19th Street grade separations.

These grade separations would reduce the barrier effect of the railroad tracks by eliminating trains blocking streets, allowing vehicles and pedestrians to cross the tracks safely and without delays. These bridges would tie together neighborhoods and communities now divided by the rail lines. The cost of these grade separations are

shown in Table 3-8 and their Benefit/Cost ratios are in Table 5-5. The impacts are included in the impacts for the alternatives.

5.2.4 Economic Impacts

The expenditure of funds for transportation infrastructure has both direct and indirect economic impacts to the City of Springfield. The direct impacts can be measured by the number of jobs created both in production of materials and equipment used in the project and in actual on-site construction activities. Construction of the project would involve demolition of existing structures, widening and preparing the road bed, placement of new track, installation of signal and safety devices, and construction of grade separations. Firms that produce the signal and safety devices, steel rails, and rolling stock for Alternatives 2A and 2B would create additional jobs. Wages individuals receive are then recycled throughout the economy as new workers buy/rent houses, furniture, groceries and other merchandise. These expenditures, in turn, create new jobs, producing a multiplier effect on the economy. While most of the impact would be within the City of Springfield the total geographic distribution impact would depend upon the location of firms supplying the labor and materials needed on the project.

The economic impacts of Alternatives 2A and 2B would be dispersed through the City of Springfield and Sangamon County. The construction process would create construction jobs. The predicted increase in train traffic by 2020 from about 35 trains per day to 72 trains per day through the City of Springfield would create some new railroad jobs. The precise location of economic impacts would depend on which companies receive contracts to conduct the construction activity. Firms specializing in engineering, construction and manufacturing throughout the State of Illinois would likely feel economic changes.

The impacts of expenditures from rail operation would probably concentrate within the City of Springfield from jobs created to serve the new system. Rail repair and routine rail maintenance would create jobs.

Alternatives 2A and 2B would require the purchase of about 41 acres of additional right-of way. The increased benefits of increased passenger rail traffic through the city and the redevelopment potential of the abandoned 3rd Street Railroad corridor is expected to negate the loss of property tax revenue as a result of the conversion of property to transportation use.

Exhibit 5-5. Underpass – 10th St.

Exhibit 5-6. Underpass Separation – 19th St.

5.3 Energy

Construction of Alternative 2A or 2B would require indirect consumption of energy for processing materials, construction activities, and maintenance for grade separation bridges and miles of rail added within the project area.

Construction of Alternative 2A or 2B would reduce traffic congestion and wait times at crossings along the alignment and thereby reduce vehicle stopping and slowing conditions. As discussed in Section 3.4.1, vehicle delay minutes per day in year 2020 in the Springfield rail corridors are projected to decrease almost in half for the retained alternatives compared to the existing year 2010 delay times, and be nearly reduced by a third compared to the projected No-Build Alternative 2020 delays. Also, a reduction in lifecycle and annual costs from the No-Build condition reflects a measurable benefit of implementing the retained alternatives, primarily as a reduction of delays and accidents. This would result in less direct and indirect vehicle operational energy consumption for the retained alternatives than the No-Build Alternative. Additional energy savings may be possible from the indirect benefits of the redevelopment of the abandoned 3rd Street rail corridor, such as a pedestrian and bicycle accommodations which would increase non-motorized transportation usage. Thus, in the long term, post construction operational requirements should offset construction and maintenance energy requirements and result in new savings in energy usage.

5.4 Cultural Resources

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) of reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by ACHP. Revised regulations, "protection of Historic Properties" (36 CFR Part 800), became effective January 11, 2011.

The value of the architectural and archaeological resources within the project area is determined by their eligibility for listing on the National Register of Historic Places. Eligibility to the National Register is based on four broad criteria that are defined by the National Park Service and used to guide the evaluation process. These criteria state that:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant to our past; or

C. that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history (36CFR60.4 Criteria for Evaluation).

Three sites within the Area of Potential Effect are currently listed on the National Register individually (Table 5-6). One of these—the Abraham Lincoln Home—is also National Historic Landmark. The other two sites include the Lincoln Colored Home and the Mine Rescue Station. The Illinois State Fairgrounds is adjacent to the project area at the northern terminus and is located north of Sangamon Avenue. FRA believes the retained alternatives would have *No Effect* on these properties due to their distance from the proposed action since they are all over 600 feet from the railroad tracks, except for the Mine Rescue Station.

The Mine Rescue Station at 609 East Princeton Avenue is listed on the National Register of Historic Places and is about 75 feet from the existing railroad R.O.W., but this presents no change from its historic setting. This property also has no vibration impacts to the structural integrity of the building, therefore the effects assessment on this property is "No Effect."

Numerous properties inventoried as Lincoln-era structures (pre-1861) are potentially eligible for the National Register are located within the project area (Table 5-6). Many of these houses, although they retain fairly poor architectural integrity, are potentially eligible for listing on the National Register because of their archaeological significance (and thus would be eligible due to Criteria A, C, and/or D). The retained alternatives would have *No Effect* on these properties due to their distance (over 400 feet) from the proposed action, except for the four properties mentioned below.

These properties are adjacent to existing tracks including the Springfield Furniture Factory, the Great Western Railroad Depot and the Mine Rescue Station.

The former Springfield Furniture Factory at 819 North Eleventh Street at the northwest corner of Eleventh Street and Enos Avenue consists of a complex of attached two-story, brick buildings arranged in a C-shaped plan. The facility was constructed in the late nineteenth century as a furniture factory and later occupied by the Desnoyer Shoe Company (1903-1910) and International Shoe Company (1910-1964). The present occupant is Goodwill Industries. The Springfield furniture Factory retains good integrity and is considered eligible to the National Register under Criteria A (industry) and C. The property abuts the existing proposed railroad R.O.W., but this represents no change from its historic setting. Moreover, vibration studies have assessed no structural impact to the property for the retained alternatives. Therefore, the effects assessment on this property is "No Effect."

The Great Western Railroad Depot at Monroe and 10th Street is a two-story, brick, Italianate-style structure. It was constructed in the 1850s with only one story and later raised to two. It was from this site that Abraham Lincoln departed his hometown for Washington, D.C. on February 11, 1861. It also represents the oldest surviving rail depot in Springfield. The Great Western Railroad Depot is considered eligible for the National Register under Criteria A (commerce), B (in relation to Lincoln), and C. The property abuts the existing railroad R.O.W., but this presents no change from its historic setting. Vibration studies have assessed no structural impact to the property for the retained alternatives. However, Alternative 2B would provide an underpass along Monroe Street which would relocate the existing access to the Depot further to the west within the same block. Therefore, the effects assessment on this property is "No Effect."

Alternatives 2A and 2B would displace the former Fireproof Storage House No. 3 at 1000 East Monroe Street (see photo below)(No. 21), directly across from the Great Western Depot (No. 20) on the opposite side of the existing NS tracks and the Peabody Coal Company Office building at 2135 South 9th Street (see photo below) (No. 54). These properties were identified during the Illinois Historic Structures Survey prepared by Fever River Research as potentially eligible for the National Register. Both were considered potentially eligible for listing on the National Register of Historic Places under Criterion A (Social History) and/or C (Architecture). However, through coordination with the Illinois Historic Preservation Agency, IDOT and FRA have determined that these structures are not eligible for the National Register of Historic Places (see Appendix A).

Table 5-6. Properties of Architectural Significance within the Area of Potential Effect- 10th Street Corridor [1]

Exhibit ID	Property Name	Address	NR	Pot. NR	National Register Eligibility Criterion[4]	Likely Effect
1	Illinois State Fairgrounds[5]	Sangamon & Peoria Rd.	X			No Effect
2	Ridgely Interlocking Tower[2]	1501 Percy Avenue		X	A and C	No Effect
3	[5]	1120 East Ridgely		X		
4	Lanphier HS Gymnasium	1121 East North Grand		X	A and C	No Effect
5	[Brick Italianate Commercial]	1001 North 9th		X	A and C	No Effect
6	Springfield Furniture Factory[2]	819 North 11th		X	C	No Effect
7	Concordia Seminary	North 12th & Enos		X	A and C	No Effect
8	[Queen Anne Cottage]	1021 East Phillips		X	C	No Effect
9	[Frame Queen Anne Cottage]	919 North 9th		X	C	No Effect
10	[Frame House]	901 North 9th		X	C	No Effect
11	[Frame House]	809 North 9th		X	C	No Effect
12		1105 East Miller		X	A, C and/or D	No Effect
13		1106 East Miller		X	A, C and/or D	No Effect
14		1122 East Miller		X	A, C and/or D	No Effect
15	Municipal Substation	1013 East Reynolds		X	Not Eligible	No Effect
16		1121 East Reynolds		X	A, C and/or D	No Effect
17		801 East Miller		X	A, C and/or D	No Effect
18	St. John's Hospital	800 East Carpenter		X	A and C	No Effect
19	GIPS Co. General Warehouse	217 North 9th		X	C	No Effect
20	Great Western RR Depot[2]	East Monroe & 10th		X	A, B and C	No Effect
21	**Fireproof Storage House No. 3[3]**	**1000 East Monroe**			**Not Eligible[6]**	**N/A**
22	Lincoln School	1115 East Capitol		X	A and C	No Effect
23	Lincoln Colored Home	427 South 12th	X			No Effect
24		1201 East Edwards		X	A, C and/or D	No Effect
25	Sacred Heart Rectory	722 South 12th		X	A and C	No Effect
26	Sacred Heart RC Church	South 12th & Lawrence		X	A and C	No Effect
27	Morse, James, House	818 East Capitol		X		No Effect
28	Abraham Lincoln Home	South 8th & Jackson	X		A, B, C and D	No Effect
29	Charles Arnold House[5]	810 East Jackson		X		No Effect
30	Cook House	508 South 8th		X		No Effect
31	Henson Robinson House[5]	520 South 8th		X		No Effect
32	Solomon Allen Barn	530 South 8th		X		No Effect
33	[Frame Queen Anne House]	814 East Edwards		X	C	No Effect
34		810 East Edwards		X	A, C and/or D	No Effect

Exhibit ID	Property Name	Address	NR	Pot. NR	National Register Eligibility Criterion[4]	Likely Effect
35	[Frame Queen Anne House]	802 East Edwards		X	C	No Effect
37	[Italianate Frame House]	718 South 8th		X	C	No Effect
38		612 South 8th		X	A, C and/or D	No Effect
39		805 South 12th		X	A, C and/or D	No Effect
40		809 South 12th		X	A, C and/or D	No Effect
41		902 South 12th		X	A, C and/or D	No Effect
42		920 South 11th		X	A, C and/or D	No Effect
43		1019 South 11th		X	A, C and/or D	No Effect
44		1104 South 11th		X	A, C and/or D	No Effect
45		1122 South 11th		X	A, C and/or D	No Effect
46		1124 South 11th		X	A, C and/or D	No Effect
47		1209 South 12th		X	A, C and/or D	No Effect
48		1219 South 12th		X	A, C and/or D	No Effect
49	Old Southtown Theater Marquee[5]	1110 East South Grand		X	A and C	No Effect
50	[Victorian Frame House]	1314 South 8th		X	C	No Effect
51	Claus Grocery Store[5]	1700 South 11th		X	A and C	No Effect
52	First Brethren Church	2117 South Yale		X	A and C	No Effect
53	Iles Park Shelter	East Ash & 6th		X	A and C	No Effect
54	**Peabody Coal Company Office[3]**	**2135 South 9th**			**Not Eligible[6]**	**N/A**
55	Weaver Building	2150 South 9th		X	A and C	No Effect
56	Mine Rescue Station[2]	609 Princeton Avenue	X		A and C	No Effect

NR=National Register (individually listed); **Pot. NR**=Potentially National Register eligible;

1) The corridor represents two blocks on either side of the tracks.

2) Denotes properties adjacent to existing NS right-of-way. No new ROW acquisition is anticipated. See Cultural Resource Evaluation Report.

3) Properties in bold would be displaced by the Retained Alternatives.

4) See Section 4.4.1 for National Register criteria.

5) Adjacent to project area or No Effect.

6) Finding confirmed by the IHPA, see coordination in Appendix A. Not eligible only after SHPO coordinates – left in for reader information.

Former Fireproof Storage House No. 3 (No. 21) at left, 1000 E. Monroe Street

Peabody Coal Company Office (No. 54), 2135 South 9th Street

Numerous other structures were identified within the APE (Table 5-6). The majority of these structures, most of which would be eligible for listing on the National Register under Criterion A and C, would not be affected by either of the retained alternatives (*No Effect*). However, the Great Western Railroad Depot would have its existing access shifted to the western end of the block it is contained in due to the proposed underpass on Monroe Street for Alternative 2B. Therefore, this property was listed as a potential impact since an Adverse Effect determination from the SHPO is likely through the Section 106 consultation process for Alternative 2B in Table 5-1.

5.4.1 Archaeological Resources

Alternatives 2A and 2B would avoid the Lincoln Home National Historic District; therefore, the project would not impact any known archaeological sites. No archaeological surveys or testing were conducted during the Phase I cultural resources evaluation because of the previous disturbance of the railroad corridors. New right-of-way would be subjected to a Phase I archaeological survey to identify potentially significant archaeological resources. Several of these potentially significant archaeological resources including the former coal-mining communities of Starne and Iles Junction, the rail yard and shops of the Great Western/Wabash Railroad, as well as pre-Civil War domestic neighborhoods of downtown Springfield would be investigated prior to construction. The evaluation of potential impacts to unknown archaeological resources within the project area would require continued coordination with the IHPA through the Section 106 process which will occur with their review of the Tier 2 Draft Document. This evaluation would occur after an alternative is selected by the FRA and will be provided in the Final EIS.

5.5 Agriculture

Alternative 2A and 2B would require no farmland acquisition. All improvements would be constructed either within existing railroad right-of-way or adjacent to existing railroad right-of-way along the 10th Street corridor, except for the proposed grade separations on existing urban streets along the 10th Street and 19th Street corridors. The land required for these improvements is entirely urban. Therefore, Alternatives 2A and 2B would not impact prime, unique, or important farmland.

5.6 Air Quality

5.6.1 Conformity

All areas of Sangamon County affected by the project are classified as attainment areas for the six criteria air pollutants which include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), particulate matter (PM10 and PM2.5), ozone (O_3), and sulfur dioxide (SO_2). Accordingly, a conformity determination of the project's capacity to cause or exacerbate exceedances of the National Ambient Air Quality Standards (NAAQS) is not required.

5.6.2 Local Air Quality

Alternatives 2A and 2B would combine existing 3rd Street corridor rail traffic with 10th Street corridor rail traffic; thereby, increasing the potential for local emission concentrations of air pollutants. Because the proposed project would better accommodate existing and projected rail traffic through Springfield and not result in new sources of rail traffic, substantial increases in the amount of emissions-producing traffic are not expected. Alternatives 2A and 2B are not anticipated to have a substantial impact on current or future air quality standards or lead to the establishment of a non-attainment area.

Recent Microscale CO analyses were performed for the 2003 Final Environmental Impact Statement, Chicago to St. Louis, High-Speed Rail Project. Microscale analyses were performed at a worst-case highway-railroad grade crossing in Springfield (Carpenter Street) and at the Amtrak station. The estimated CO concentrations were well below the NAAQS one-hour and eight-hour standards. Maximum one-hour concentrations were estimated to be no greater than 7.4 ppm, and estimated eight-hour concentrations were no greater than 4.6 ppm. Recent study shows concentrations well below threshold levels and existing conditions have not changed enough to warrant additional analysis.

For 4,000-horsepower locomotives emitting CO at the maximum rate permitted under federal regulation, total CO emissions per mile per day along this portion of the corridor would be equivalent to approximately 46 to 100 daily motor vehicles, well below the 16,000 ADT trigger for COSIM analysis at roadway intersection. This means project-generated increases in wayside train activity would not be expected to be sufficiently large to cause or substantially contribute to a localized violation of the CO NAAQS. Similar reasoning would apply to $PM_{2.5}$ – another criteria air pollutant that can be associated with localized impact – as well as air toxics.

In addition, the proposed construction of grade separations along the 10th Street and 19th Street corridors would decrease vehicular delay times. This decrease in vehicular delay time is anticipated to decrease the build-up of CO concentrations at locations currently served by at-grade crossings. Therefore, Alternatives 2A and 2B are not anticipated to result in CO concentrations in excess of the one-hour or eight-hour NAAQS of 35 ppm and 9 ppm, respectively. Additional information on air quality can be referenced in the Tier 1 Chicago- St. Louis High-Speed Rail Draft Environmental Impact Statement.

5.6.3 Construction Impacts

Potential impacts to local air quality during construction are possible. These potential impacts include fugitive dust emissions, direct emissions from construction equipment and truck exhausts, increased emissions and dust from construction vehicles on the streets, and emissions from re-routed vehicular traffic. Fugitive dust emissions vary with the nature of the operations and the dust control methods employed. Fugitive dust generated during construction generally consists of large-sized particulates which settle on nearby buildings and vehicles. People near a construction site would be exposed to higher than average amounts of inhalable particulates. However, the impacts associated with construction activities are normally negligible, local, and temporary.

IDOT's Standard Specifications for Road and Bridge Construction include provisions on dust control. Under these provisions, dust and airborne dirt generated by construction activities would be controlled through dust control procedures or a specific dust control plan, when warranted. The contractor and the Department would meet to review the nature and extent of dust-generating activities and would cooperatively develop specific types of control techniques appropriate to the specific situation. Techniques that may warrant consideration include measures such as minimizing track-out of soil onto nearby publicly–traveled roads, reducing speed on unpaved roads, covering haul vehicles, and applying chemical dust suppressants or water to exposed surfaces,

particularly those on which construction vehicles travel. With the application of appropriate measures to limit dust emissions during construction, this project would not cause any significant, short-term particulate matter air quality impact.

5.7 Noise/Vibration

In accordance with Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) guidelines, a noise and vibration impact assessment was conducted for the proposed project. This section presents the information used in conducting the noise and vibration assessment, the results of the assessments and potential mitigation measures for both noise and vibration, where appropriate.

5.7.1 Noise and Vibration Projections

Alternatives 2A and 2B include consolidation of the 3rd Street and 10th Street rail traffic onto the 10th Street corridor. The project also includes the construction of grade separations at select streets throughout the city, street closures at some grade crossings, and the establishment of quiet zones throughout the city. The noise and vibration assessment includes projections of the UP freight and Amtrak passenger train traffic, NS freight traffic, CN freight traffic, and I&M freight traffic throughout Springfield. This assessment also includes the No-Build condition which includes future projected growth in train traffic but does not include the relocation of any tracks or the establishment of quiet zones.

For these alternatives, UP and Amtrak trains were modeled on new tracks along the 10th Street corridor adjacent to the existing NS tracks from Stanford Avenue in the south to Phillips Street in the north. From Phillips Street to Ridgely Avenue there would be a section of new UP track, which would connect with the existing UP tracks to the north of Ridgely Avenue. In addition, NS trains were modeled in their existing locations throughout the city with the track being shifted slightly in some areas along 10th Street to accommodate the new UP tracks. CN and I&M trains were modeled in their current locations with no proposed changes to the tracks.

For the No-Build Alternative, UP and Amtrak trains were modeled on the existing 3rd Street tracks, NS and CN trains were modeled on the existing 10th Street and 19th Street tracks respectively, and I&M trains were modeled on the existing 19th Street tracks and I&M tracks north of East Clear Lake Avenue.

5.7.1.1 Noise Projections

The primary components of wayside noise from train operations are engine/exhaust noise for diesel locomotives and wheel/rail noise from the steel wheels rolling on steel rails for freight railcars and passenger cars. The projection of wayside noise was carried out using models specified in the FTA Guidance Manual, with the following assumptions:

- Existing noise levels were measured throughout the project area to determine existing noise levels. The existing noise measurements were used to determine the impact criteria for the project throughout Springfield.

- For the No-Build Alternative, all trains were assumed to sound the locomotive warning horns at all at-grade crossings in the project area.

- For Alternatives 2A and 2B all at-grade crossings in the project area were assumed to be part of quiet zones where locomotive warning horns would not be sounded during normal operating conditions. Modeling for Alternatives 2A and 2B omitted train horn noise.

- The UP operations were assumed to consist of a total of 21 daytime and six nighttime trains. UP trains were assumed to consist of two locomotives and 75 railcars, with an approximate total train length of 6,500 feet. UP trains were assumed to operate at 40 mph. UP operations on 3rd Street were assumed to increase from five existing trains per day to a total of 27 trains per day for the No-Build Alternative.

- The Amtrak passenger train operations were assumed to consist of a total of 17 daytime and one nighttime trains. Amtrak trains were assumed to consist of two locomotives and four passenger cars, with an approximate total train length of 500 feet. Amtrak trains were assumed to operate at 40 mph since they will all stop in Springfield. Amtrak operations on 3rd Street were assumed to consist of 10 trains per day for the No-Build Alternative. The UP freight operations will occupy all of the remaining No-Build track capacity. Additional passenger trains will require a second track. This is discussed in more detail in Volume 1.

- The NS operations were assumed to consist of a total of 18 daytime and nine nighttime trains. NS trains were assumed to consist of two locomotives and 57 railcars, with an approximate total train length of 5,000 feet. NS trains were assumed to operate at 40 mph. For the No-Build Alternative the NS operations were assumed to increase from a total of 16 existing trains per day to a total of 27 trains per day.

- The CN operations were assumed to consist of a total of six daytime and three nighttime trains. CN trains were assumed to consist of two locomotives and 57 railcars, with an approximate total train length of 5,000 feet. CN trains were assumed to operate at 10 mph. For the No-Build Alternative the CN operations were assumed to increase from a total of four existing trains per day to a total of nine trains per day.

- The I&M operations were assumed to consist of a total of six daytime and three nighttime trains. I&M trains were assumed to consist of two locomotives and 57 railcars, with an approximate total train length of 5,000 feet. I&M trains were assumed to operate at 10 mph. I&M operations were assumed to increase from four to nine trains per day for the No-Build Alternative.

- Based on FTA guidance, the predictions assume that a single diesel locomotive operating at 50 mph on ballast and tie track with continuous welded rail (CWR) generates a Sound Exposure Level (SEL) of 92 dBA at a distance of 50 feet from the track centerline.

- Based on FTA guidance, the predictions assume that a single freight railcar or passenger car operating at 50 mph on ballast and tie track with continuous welded rail (CWR) generates an SEL of 82 dBA at a distance of 50 feet from the track centerline.

- Warning bells, generating a sound level of 73 dBA at 50 feet (FTA-VA-90-1003-06, May 2006), were assumed to be sounded at all gated crossings before and during each train pass-by for a total duration of 30 seconds. Train horn noise was measured for this project and not assumed.

- Wheel impacts at turnouts typically cause localized noise increases of 6 dB (HMMH measurement data).

5.7.1.2 Vibration Projections

The potential vibration impact from trains in the project area was assessed on an absolute basis using the FTA criteria. The following factors were used in determining potential vibration impacts along the proposed rail alignment:

- Existing ground-borne vibration measurements were conducted at six sites in the project area. These measurement results were compared with the typical locomotive maximum vibration level versus distance curve in the FTA Guidance Manual, as shown in Section 2.8. This curve was used to model vibration levels at all sensitive receptor locations along the 10th Street corridor and the section of new UP track between Phillips Street and Ridgely Avenue.

- Because the only changes to the CN, NS and I&M operations is the establishment of quiet zones outside the 10th Street Corridor, vibration was not assessed for the CN, I&M, or on the NS tracks north of Phillips Street. For the No-Build Alternative, no impact is assessed for the 10th Street corridor because there is not a significant increase in the number of events (doubling of events) and there are no new or relocated tracks (FTA-VA-90-1003-06, May 2006).

- The existing vibration conditions in the project area were assumed to be in the category of a "Heavily Used Rail Corridor," as defined in the FTA Guidance Manual.

- In locations where the existing train vibration exceeds the impact criteria, the project would cause additional impact with an approximate doubling of train events. If there is not a doubling of events, there would only be impact if the project vibration is 3 VdB or more higher than existing vibration levels.

- In locations where the existing train vibration does not exceed the impact criteria, or for locations with new track, such as the UP between Phillips Street and Ridgely Avenue, impact is assessed based on an exceedance of the vibration criteria.

- Because of the length of freight trains and the amount of time that the vibration events last, freight operations were assessed using the "Frequent Events" category in the vibration impact criteria, as defined by the FTA Guidance Manual.

- The vibration projections assumed that all UP freight, Amtrak passenger, and NS freight trains are operating at a speed of 40 mph in the 10th Street corridor.

- Wheel impacts at turnouts typically cause localized increases in vibration of 10 VdB (FTA-VA-90-1003-06, May 2006).

5.7.2 Noise and Vibration Impact Assessment

No-Build Alternative

A report entitled Springfield Railroad Consolidation Study – Noise and Vibration Technical Report, June 1, 2012 was prepared for this project and can be referenced for additional information.

Table 5-7 summarizes the combined results of the No-Build Alternative noise impact assessment at residential and institutional locations. The term "number of noise impacts" means the number of noise-sensitive receptors that would experience moderate or severe noise impacts. For the No-Build Alternative, the noise levels include locomotive warning horns. In locations where no noise impacts are projected, the data are provided for the noise sensitive receptor nearest to the tracks at each location. No noise impacts are projected at any institutional locations for the No-Build Alternative.

The results of the No-Build Alternative noise impact assessment indicate that there would be 1,789 severe noise impacts and 5,978 moderate noise impacts at residential locations. All of the impacts for the No-Build Alternative occur at residential locations with the exception of five hotels and nine hospital/medical buildings and the Sangamon County Jail. These noise impacts for the No-Build Alternative are along the UP, NS, CN and I&M tracks throughout the City and are a result of the projected additional UP, NS, CN and I&M trains in areas where the existing noise levels are relatively high. All trains in the No-Build Alternative would be sounding the horns.

5.7.2.1 Noise Impact Assessment

Proposed Project Compared to No-Build

Table 5-7 summarizes the results of the noise impact assessment for the Proposed Project compared to the No-Build at residential and institutional locations. For the No-Build the noise levels include locomotive warning horns and for the Proposed Project case the projected future noise levels do not include horn noise due to the establishment of quiet zones. In locations where no noise impacts are projected the data are provided in the noises sensitive receptor located nearest to the tracks at each location. No noise impacts are projected at institutional receivers for the proposed project.

The results of the noise impact assessment for the Proposed Project compared to the No-Build indicate that there would be nine severe noise impacts and nine moderate noise impacts at residential location from the project. These noise impacts are limited to one area as shown in Exhibit 5-1I. The noise impacts are located in the southern portion of the study area near the intersection of the NS tracks and the existing UP tracks.

The noise impacts are due to the projected additional UP and NS trains in the 10th Street corridor in an area where the No-Build noise levels are lower than in other areas along the 10th Street corridor where the noise environment is dominated by train horn noise at grade crossings. In the southern portion of the 10th Street corridor, there are grade separation and closures where existing trains do not currently sound their horns.

Overall noise impacts would be reduced throughout the rail corridor of the recommended alternatives because of the proposed quiet zone. The retained alternatives (either 2A or 2B) would eliminate train horns from being sounded throughout the City, on all rail corridors. This positive affect for not only the residents living and working along the 10th Street Corridor, but city-wide, will benefit from the proposed action even with an increase in the overall number of trains.

Table 5-7 represents a summary of noise impact results between the No-Build Alternative and Alternatives 2A and 2B.

Table 5-7. Summary of Noise Impact Results

Receptor Location	No-Build		Alternatives 2A and 2B	
	Number of Impacts		Number of Impacts	
	Moderate	Severe	Moderate	Severe
UP/I&M Intersection	210	21	0	0
UP 3rd Street Corridor from UP/I&M Intersection to UP/NS Intersection	2,248	632	N/A[2]	N/A[2]
Relocated UP from I&M to NS	N/A[1]	N/A[1]	0	0
10th Street Corridor from Relocated UP/NS Intersection to East Stanford Avenue	2,083	113	9	9
NS from East Sangamon Avenue to Relocated UP	716	233	0	0
I&M from UP to CN	388	63	0	0
19th Street Corridor from I&M/CN Intersection to East Stanford Avenue	130	522	0	0
CN from East Sangamon Avenue to I&M	203	205	0	0
TOTAL	**5,978**	**1,789**	**9**	**9**

[1] This location is outside of the project area.
[2] This location is outside of the project area.
Source: Harris Miller Miller & Hanson Inc., 2011

5.7.2.2 Vibrations Impact Assessment

No vibration impacts are projected for the No-Build Alternative. The 10th Street corridor is currently defined as "heavily-used" (more than 12 trains per day). For the No-Build Alternative, there is no change to the train speeds or track locations, only an increase in the number of trains per day. Because the number of trains per day is not doubling on the 10th Street corridor in the No-Build Alternative, there would be no vibration impacts.

Tables 5-8 and 5-9 summarize the results of the vibration impact assessment at residential (Category 2) and institutional (Category 3) locations, respectively. The tables provide information by track location, including the distance to the nearest existing and future tracks, train speeds in each location, existing and projected future vibration levels, impact criterion, and number of vibration impacts. The "number of vibration impacts" means the number of vibration-sensitive receptors that would experience vibration impacts. Where vibration impacts are predicted, the tables provide the range of vibration levels for those impacted receptors.

The results of the vibration impact assessment for Alternatives 2A and 2B indicate that there would be 129 impacts at residential (Category 2) locations and two impacts at institutional (Category 3) locations. The vibration impacts from the project are on the 10th Street corridor, the new UP tracks between Phillips Street and Ridgely Avenue, and on the new double track portion of the UP north of Ridgely Avenue. The vibration impacts along the 10th Street corridor result from the new tracks and a significant increase in train traffic along the corridor. The impacts between Phillips Street and Ridgely Avenue result from the introduction of the new UP tracks in this location. The vibration impacts on the existing UP corridor north of Ridgely Avenue result from the changes in the tracks and the presence of a number of crossovers. Vibration impacts are also projected at the Caritas Hall Association and the Great Western Railroad Depot. The Great Western Railroad Depot currently experiences vibration impacts with existing rail traffic, the proposed project would reduce vibration levels from the No-Build condition. All vibration impacts are limited to human annoyance, and the projected vibration levels are below the criteria for potential damage to any building structures.

There are no vibration impacts projected on the section of the NS track north of Phillips Street, or on the CN or I&M tracks because there is no change in the vibration levels in those locations because of the proposed project. Future operations would be on the existing tracks with no change in speed. Therefore there would not be any change in the ground-borne vibration levels at sensitive receptors adjacent to these portions of the proposed project.

Alternatives 2A and 2B would reduce existing vibration levels and result in no train-related vibration impacts at any sensitive receptors located along 3rd Street, including the historic Dana Thomas House and the Memorial Medical Center and the Springfield Clinic. These facilities are located approximately 3,000 feet from the 10th Street tracks and the existing 3rd Street train traffic will be relocated to the 10th Street corridor.

Table 5-8. Alternatives 2A and 2B Land Use Category 2 Vibration Impact Summary

Receptor Location	Distance To Near Track (ft)		Train Speed (mph)	Existing/No-Build Vibration Level[1]	Projected Vibration Level[1]	Vibration Impact Criterion[1]	Number of Vibration Impacts[(3)]
	Existing/No-Build	Future					
UP/I&M Intersection							
E Sangamon Ave to E Griffiths Ave	65-260	65-220	10-40	70-84	72-84	72	10
UP from I&M to NS							
E Griffiths Ave to E Black Ave	100-170	70-125	40	70-75	73-80	72	5
E Black Ave to N Grand Ave E[2]	95	300	40	76	61	72	0
N Grand Ave E to E Division St	80-710	45-135	40	55-78	72-85	72	19
UP/NS Intersection							
E Division St to E Phillips St	40-280	40-185	40	63-85	72-85	72	23
10th Street Corridor from UP/NS Intersection to Existing UP (East Iles Avenue/West Highland Avenue)							
E Phillips St to E Carpenter St	35-85	40-95	40	77-86	76-85	72	3
E Madison St to E Monroe St	70-95	45-75	40	76-80	79-84	72	2
E Cook St to E Kansas/E Scarritt St[2]	230	155	40	67	71	72	0
E Kansas/E Scarritt St to E Cedar St	195-200	100-105	40	68	75	72	3
E Cedar St to E Ash St	130-200	95-140	40	68-73	72-76	72	5
E Ash St to E Princeton/Broad Pl	185-200	115-130	40	68-69	73-74	72	3
E Princeton/Broad Pl to E Iles/W Highland Ave	35-205	40-135	40	68-86	72-86	72	44
UP/NS from Existing UP Track to East Stanford Avenue							
E Stanford to E Iles/W Highland Ave	100-190	40-145	40	69-75	73-85	72	12
TOTAL							**129**

[1] Vibration levels are measured in VdB referenced to 1 µ-inch/second.
[2] There are no vibration impacts in this section. Data are for closest receptor in this location.
[3] Vibration impacts are limited to human annoyance and are below thresholds for structural damage.
Source: Harris Miller Miller & Hanson Inc., 2011

Table 5-9. Alternatives 2A and 2B Land Use Category 3 Vibration Impact Summary

Receptor Name	Receptor Location	Distance To Near Track (ft)		Train Speed (mph)	Existing Vibration Level[1]	Projected Vibration Level[1]	Vibration Impact Criterion[1]	Number of Vibration Impacts[(2)]
		Existing/No-Build	Future					
UP from I&M to NS								
Caritas Hall Association	E Black Ave to N Grand Ave E	400	65	40	42	80	75	1
10th Street Corridor from UP/NS Intersection to Existing UP (East Iles Avenue/West Highland Avenue)								
Lincoln Depot	E Monroe St to E Cook St	25	30	40	88	87	75	1
TOTAL								**2**

[1] Vibration levels are measured in VdB referenced to 1 µ-inch/second.

[2] Vibration impacts are limited to human annoyance and are below thresholds for structural damage.

Source: Harris Miller Miller & Hanson Inc., 2011

5.7.3 Construction Noise Impact Assessment

Construction noise varies greatly depending on the construction process, type and condition of equipment used, and layout of the construction site. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately estimate levels of construction noise. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment. For most construction equipment, the engine, which is usually diesel, is the dominant noise source. This is particularly true of engines without sufficient muffling. For special activities such as impact pile driving and pavement breaking, noise generated by the actual process dominates.

Construction noise at a given noise-sensitive location depends on the magnitude of noise during each construction phase, the duration of the noise, and the distance from the construction activities. Projecting construction noise requires a construction scenario of the equipment likely to be used and the average utilization factors or duty cycles (i.e., the percentage of time during operating hours that the equipment operates under full power during each phase). The noise impact assessment for a construction site is based on:

- an estimate of the type of equipment that would be used during each phase of the construction and the average daily duty cycle for each category of equipment,
- typical noise emission levels for each category of equipment, and
- estimates of noise attenuation as a function of distance from the construction site.

Construction noise estimates are always approximate because of the lack of specific information available at the time of the environmental assessment. Decisions about the procedures and equipment to be used are made by the contractor. Project designers usually try to minimize constraints on how the construction would be performed and what equipment would be used so that contractors can perform construction in the most cost effective manner. The project sponsor would evaluate potential construction noise impact during engineering and design of the project, as more details of the construction scenarios are known, including potential haul routes for excavated material.

5.7.4 Noise and Vibration Mitigation

5.7.4.1 Train Noise Mitigation Measures

Quiet zones are proposed to be established throughout the project area. Train horns sounded near at-grade crossings are the major noise source in the project area. Quiet zones would eliminate this major noise source from freight train activities throughout the project area.

5.7.4.2 Train Vibration Mitigation Measures

The assessment assumes that the vehicle wheels and track are maintained in good condition with regular wheel truing and rail grinding. Beyond this, there are several approaches to reduce ground-borne vibration from train operations, as described below.

Ballast Mats: A ballast mat consists of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties, and rail on top. The reduction in ground-borne vibration provided by a ballast mat is strongly dependent on the vibration frequency content and the design and support of the mat.

Resiliently Supported Ties: Resiliently supported ties have a rubber or other resilient material placed between the ties and the ballast. These ties may be effective in reducing vibration 10 VdB at frequencies above 15 Hz.

Resilient Rail Fasteners: Resilient rail fasteners which are specially-designed fasteners between the rails and the ties. Resilient rail fasteners may reduce vibration by 5 to 10 VdB at frequencies above 30 to 40 Hz.

Tire Derived Aggregate (TDA): Also known as shredded tires, a typical TDA installation consists of an underlayment of 12 inches of nominally 3-inch size tire shreds or chips wrapped with filter fabric, covered with 12 inches of sub-ballast and 12 inches of ballast above that to the base of the ties. Tests suggest that the vibration attenuation properties of this treatment are midway between that of ballast mats and floating slab track. While this is a low-cost option, it has only been installed on two U.S. light rail transit systems (San Jose and Denver).

Floating Slabs: Floating slabs consist of thick concrete slabs supported by resilient pads on a concrete foundation; the tracks are mounted on top of the floating slab. Most successful floating slab installations are in subways, and their use for at-grade track is less common. Although floating slabs are designed to provide vibration reduction at lower frequencies than ballast mats, they are extremely expensive.

Special Trackwork at Crossovers and Turnouts: Because the impacts of vehicle wheels over rail gaps at track turnout locations increases ground-borne vibration by about 10 VdB, turnouts are a major source of vibration impact when they are located in sensitive areas. If turnouts cannot be relocated away from sensitive areas, another approach is to use spring-rail, flange-bearing or moveable-point frogs in place of standard rigid frogs at turnouts. These devices allow the flangeway gap to remain closed in the main traffic direction for revenue service trains.

Property Acquisitions or Easements: Additional options for avoiding vibration impacts (and noise impacts also) are for the transit agency to purchase residences likely to be impacted by train operations or to acquire easements for such residences by paying the homeowners to accept the future train vibration conditions. These approaches are usually taken only in isolated cases where other mitigation options are infeasible, impractical, or too costly.

Vibration impacts are projected along the 10th Street corridor at the new UP tracks between Phillips Street and Ridgely Avenue, and on the new double track portion of the

UP north of Ridgely Avenue. A mix of special trackwork and other vibration mitigation measures could reduce vibration levels at some locations. However, vibration mitigation generally does not perform well for freight trains because of the high axle loads. Some vibration mitigation measures would have limited effects at reducing vibration levels from freight trains, but would not reduce vibration levels to below the impact thresholds at all locations. Also the vibration impacts are only for human annoyance levels and not for any structural damage to homes or businesses.

5.7.4.3 Construction Noise Mitigation Measures

Temporary noise during construction has the potential of being intrusive to residents near the construction sites. Construction activities would be carried out in compliance with all applicable local noise regulations. In addition, specific residential property line noise limits would be developed during final design and included in the construction specifications for the project, and noise monitoring would be performed during construction to verify compliance with the limits. This approach allows the contractor flexibility to meet the noise limits in the most efficient and cost-effective manner. Noise control measures that would be applied as needed to meet the noise limits include the following:

- Avoiding nighttime construction in residential neighborhoods.
- Using specially quieted equipment with enclosed engines and/or high-performance mufflers.
- Locating stationary construction equipment as far as possible from noise-sensitive sites.
- Constructing noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
- Re-routing construction-related truck traffic along roadways that would cause the least disturbance to residents.

5.8 Water Quality/Resources

5.8.1 Surface Water Impacts

The consolidation of rail to the 10th Street corridor would require regrading existing drainage ditches alongside the additional rail alignments. Additional impervious surfaces as a result of implementing either Alternative 2A or 2B would be the newly constructed grade separations. Stormwater runoff in the project area would be collected and treated in the same manner as the existing system. Over 90 percent of stormwater in the project area would be collected in city combined sewers and routed for treatment to the Sugar Creek Treatment Plant (for areas south of South Grand Avenue) or the Spring Creek Treatment Plant (for areas north of South Grand Avenue). Stormwater runoff near the project limits at Stanford Avenue and Sangamon Avenue are collected in city storm sewers and routed to detention basins prior to discharge to waterways. Treatment and

detainment of stormwater runoff would prevent further impairment of any receiving waters as a result of the project. The No-Build Alternative also has its stormwater runoff collected in the City's combined sewers.

Construction and maintenance can potentially affect water resources in a variety of ways. Short-term and long-term impacts to surface waters as a result of construction should be minimal because there are no waters of the U.S. (streams or lakes) within the railroad right-of-way where construction is proposed.

Short-term construction impacts can result most directly from clearing, excavation and fill activities that expose soils to erosion and elevate turbidity levels and siltation in receiving waters. Increases in suspended solids also can result in elevated levels of coliform bacteria, total phosphorus, heavy metals and organic chemicals, such as pesticides and herbicides. Most of the discharges associated with construction activities would be as temporary stormwater runoff into the City's combined sewer system and treated.

Stormwater runoff from the project limit areas at Sangamon Avenue and Stanford Avenue would be detained in stormwater basins and eventually discharge to Spring Creek and Sugar Creek which flow to the Sangamon River.

Turbidity and sedimentation in the Sangamon River are expected to return to No-Build levels soon after construction. Implementing erosion control measures outlined in the Stormwater Pollution Prevention Plan before, during, and after construction would minimize impacts to the water quality of receiving waters as a result of stormwater discharges from construction sites.

5.9 Utilities

Each of the alternatives would require utility relocation, especially at any new underpass. Each of the city streets that are to be reconstructed as grade separations includes both overhead and underground utilities including gas, water, sewer, telephone, cable TV and electric. These utilities are located within public right-of-way and will remain within public right-of-way after construction. Cost and impacts for utility relocation are included in the overall project. The existing utilities in 3rd Street adjacent to the UP would need to be abandoned or relocated since the street would be transferred to UP ownership to provide the required minimum right-of-way width for a second track.

The most significant utility relocation at the grade separations would be the large diameter sewer on Ash Street. This would be relocated to behind the abutments and encased beneath the railroad tracks. The cost of utility relocation is included in the initial cost estimates. The No-Build Alternative would require no utility relocation.

5.10 Visual and Aesthetic Quality

There is one sensitive visual resource that would be visible from Alternatives 2A and 2B. The Great Western Railway Station - a historic structure that was the location of President Lincoln's departure to Washington. This resource would also be visible from the No-Build Alternative with existing rail traffic on the 10th Street tracks.

Since no vertical elements, such as overpasses, would be added or removed at this location, the change in the view would be minor since the view of the structure would not be obscured by an overpass. .

The NS overpass at North Grand Avenue would present a visual impact to the surrounding homes and businesses. Most homes and businesses are one or two stories and the overpass would be 30 feet high.

5.11 Special Waste

The USEPA listing of potential, suspected, and known hazardous waste or hazardous substances sites in the project area (i.e., the Comprehensive Environmental Response Compensation and Liability Information System of CERCLIS list) was reviewed on February 10, 2012, to ascertain whether the proposed project would involve any listed sites. Based on this review, the proposed improvements associated with this project would require right-of-way from one listed CERCLIS site, the Springfield Iron Company at the northeast corner of the intersection of Ridgely Avenue and Factory Street (see Exhibit 5-1B). Another CERCLIS site, Nutronics, Inc., located at 1703 Peoria Road would be within one block of the proposed improvements. More information regarding these sites is located in Section 4.11.1 and Appendix B.

Based on the information reviewed at this time, rail construction may encounter petroleum-contaminated soils at several locations within the project area. Construction activities may require coordination with the responsible parties of the CERCLIS and LUST sites and other reported sites concerning the disposal of excavated materials (see Exhibits 5.1 and 5.2 for LUST site locations). Alternatives 2A and 2B both affect the same number of CERCLIS and LUST sites. However, these sites are not anticipated to present significant impairments to rail improvements associated with Alternatives 2A or 2B. A Preliminary Environmental Site Assessment (PESA) for special waste is recommended prior to construction to determine risks and liabilities prior to land acquisition and construction activities.

5.12 Special Lands

The proposed action is adjacent to three Section 4(f) properties. These properties include 11th and Black Park, Iles Park and Lanphier Park (see Exhibits 5-1 and 5-2). There are also three historic properties adjacent to the proposed rail R.O.W. These properties include the Springfield Furniture Factory, Great Western Railroad Depot, and the Mine

Rescue Station. No R.O.W. will be purchased from any of these properties and there is no noise, vibration or aesthetic impacts resulting in Constructive Use, therefore these properties do no result in any Section 4(f) impacts.

11th and Black Park is two blocks north of North Grand Avenue. Eleventh Street borders its west side with Black Avenue along the north, and a dead-end street along the east side. This park has four baseball diamonds that are primarily used for league play. A pavilion and restroom facilities are on the north side of the park. Parking is provided along the north side of the park.

A modified intersection at 11th and Black Avenue would be constructed. This intersection is at the northwest corner of the park and is not anticipated to impact the park access, parking, or require any right-of-way.

Iles Park is along South 6th Street between Oak and Ash streets. Iles Park is city-owned and is one of the oldest city parks in Springfield having been acquired in 1903. The Iles Park shelter was constructed in 1915 and is considered to be eligible to National Register under Criteria A and C. However, the park has always experienced an adjacent railway and no effects from Constructive Use or any additional right-of-way are anticipated from the proposed project. To the north are residences and to the east and south are commercial offices and warehousing. This 10.5 acre park has a variety of recreational facilities and features including many mature trees that provide an attractive visual quality to the park and surrounding area. The park is a popular lunch location for people in nearby offices.

The park contains a stone picnic shelter, a smaller picnic shelter and restrooms. There is also a playground, a lighted ball field, tennis courts and horseshoe courts provided in the park.

On-street parking is provided along Oak Street and along 9th Street. The park is accessible to pedestrians from the surrounding residential neighborhoods by city sidewalks. Two primary walkways are provided diagonally through the park.

The existing 10th Street railroad tracks are along the east side of the park separated by 9th Street. The 9th Street access onto Ash Street would be closed. However, no impacts or access changes to this park are anticipated.

Robin Roberts Stadium is located in the south portion of Lanphier Park immediately north of North Grand Avenue and is included in the park property. . This 5,200-seat baseball stadium is served by a 100-vehicle parking lot, an office and maintenance building and a players' club house. The stadium is owned by the Springfield Park District. This irrigated ball field is home of two collegiate level baseball programs and several annual baseball tournaments.

Lanphier Park includes Robin Roberts Stadium and the area north of the stadium between North Grand Avenue and Converse Avenue just east of Lanphier High School and Memorial Stadium. The north part of the park has a picnic shelter, six lighted tennis courts, a paddle tennis court, two full-size basketball courts and small facilities including a shuffleboard and horseshoe courts. The courts north of the stadium are used by adjacent Lanphier High School and the surrounding neighborhoods.

The proposed overpass at North Grand and the NS and I&M tracks would cause the current access into Robin Roberts Stadium to be relocated about 500 feet to the west (see Exhibit 5-1J). No additional right-of-way or other impacts are anticipated to this park. Since the proposed project would not significantly affect the recreational activities, features, and attributes that make this property eligible as a Section 4(f) property, a *de minimus* use determination is anticipated. A *de minimis* impact is one that does not adversely affect the features and attributes of the 4(f) resource. Negotiations with the property owner are continuing regarding this preliminary determination. A letter of concurrence will be requested from the jurisdictional authority for any change in access to the stadium. Coordination with the Park District will proceed until a concurrence letter is received. Correspondence will be published in the Final EIS.

Since there are no property takes from any of the three parks by the retained alternatives, no Section 4(f) uses are anticipated (Table 5-10). In addition, there would be no impairment to any recreational activity of any of these parks as well, therefore no substantial proximity effects would occur.

Table 5-10. Potential Resources Not Qualifying for Protection Under Section 4(f)

Site Designation	Site ID[(1)]	Type	Description	Potential 4(f) Impact
11th and Black Park	5-1B	City Park	Adjacent to proposed project	No right-of-way required and no substantial impairment to recreational activities therefore no Section 4 (f) use.
Iles Park	5-1G	City Park	Adjacent to proposed project	No right-of-way required and no substantial impairment to recreational activities therefore no Section 4(f) use.
Lanphier Park	5-1J	City Park	Relocating parking lot access 500 feet	No right-of-way required and no substantially diminished impairment to recreational activities. However, a change in access to the parking lot is proposed.

[(1)]Refer to exhibit number for location.

5.13 Public Health, Safety and Security

Reducing the number of crossings and improving crossing protection are the primary ways to improve safety. The anticipated number of vehicle-train crashes in the design year 2030 is shown for each alternative in Table 5-11. These were predicted using

USDOT Grade Crossing Accident Prediction based on the method published in summary of the IDOT Rail-Highway Crossings Resource Allocation Procedure-Revised, June 1987 and Rail-Highway Crossing Resource Allocation Procedure: User's Guide, Third Edition, August 1987.

Table 5-11. Predicted Crashes

Alternative	Predicted Crashes per Year (2030)
No-Build	1.30
2A	0.26
2B	0.08

Alternatives that consolidate rail traffic on corridors with grade separations at the busiest streets (2A and 2B) have the lowest projected number of crashes. Simply building more grade separations without consolidating is not as effective as consolidating and building grade separations (2A and 2B). The No-Build Alternative would also not fully address the 3rd Street pedestrian safety issues because rail traffic would remain on the 3rd Street corridor.

Each of the existing rail corridors through Springfield creates barriers to emergency access during grade crossing closures. Alternatives that consolidate rail traffic and construct grade separations on future corridors (2A and 2B) are most effective in eliminating the barriers to emergency vehicle access.

The 10th Street corridor would be fenced for each of the alternatives to minimize trespassing on railroad property. Alternatives 2A and 2B result in the fewest miles of unfenced railroad property through the city.

The passenger station would be in a well-lighted, highly visible location for each of the alternatives.

5.14 Permits

The following permits are anticipated for the construction of Alternative 2A or 2B:

- National Pollutant Discharge Elimination System (NPDES) permit

It is anticipated this project would result in the disturbance of one or more acres of total land area. Accordingly, it is subject to the requirements for a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges from the construction sites. The NPDES program requires a Notice of Intent, the development of a Storm Water Pollution Prevention Plan, and the submission of a Notice of Termination when final stabilization of the construction site has been achieved. The Storm Water Pollution Prevention Plan would identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges from the construction site and would describe and ensure the implementation of practices which

would be used to reduce the pollutants in discharges associated with construction site activities and assure compliance with the terms of the permit.

Since no waters of the U.S. or wetlands would be impacted by the proposed action, it is not anticipated that a Section 404 permit of the Clean Water Act would be necessary.

5.15 Construction Impacts

All of the necessary track work likely would need to be constructed prior to relocation of rail traffic from 3rd Street to 10th Street. This work would be completed in stages. The underpasses on the 10th Street corridor could be constructed concurrent with the track work to minimize disruption of rail and street traffic. NS traffic likely would use a combination of existing and proposed tracks and UP traffic would remain on 3rd Street until cutover to the new corridor.

Construction of grade separations could be staged to minimize street closures. This could be accomplished primarily by closing the outside lanes during retaining wall and bridge abutment construction while maintaining traffic on the inside lanes. Street closure could be limited to four to six months for underpass excavation and placement of new street pavement. The adjacent parallel streets would be used for detour traffic during street closure. The contractor would work with the railroads and the City to develop a construction staging plan that minimizes impacts to motorists and businesses.

The overpass at 15th Street and North Grand Avenue, and the underpasses at 19th Street and Ash, and 19th Street and South Grand Avenue could be constructed separately from the track work based on the availability of funding.

5.16 Indirect and Cumulative Impacts

5.16.1 Indirect Impacts

Indirect impacts are defined as reasonably foreseeable future consequences to the environment that are caused by the proposed action, but that would occur either in the future (later in time) or near, but not in the same location as, direct impacts associated with implementation of a build alternative. Under the CEQ regulations, indirect impacts are defined as those that are "… caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects would include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8b).

Indirect impacts can be associated with the consequences of land-use development that would be indirectly supported by changes in local access or mobility. Indirect impacts differ from those directly associated with the construction and operation of a project itself and are often caused by what is commonly referred to as "induced development." Induced development would include a variety of alterations such as changes in land use, economic vitality, property values and/or population density. The potential for indirect

impacts to occur is determined in part by local land-use and development-planning objectives and the physical location of a proposed action.

With the No-Build Alternative, the existing rail service along the project corridor would continue. Over time, continued and increasing delays of vehicular traffic at roadway crossings, air quality would worsen in the rail crossing vicinity.

Alternatives 2A and 2B would result in indirect impacts as the additional passenger train service could stimulate further development in the vicinity of the station. The train station and associated parking will be located on the block east of 10th Street (see Exhibit 3-7). Access would be from Adams Street and 11th Street. The impacts are included with overall project impacts. This development would be transit-oriented and occur in already built-up areas and would be consistent with local plans. The Sangamon County Regional Planning Commission has proposed a multi-use transportation facility and surrounding residential housing and recreational areas for the area around the proposed train station. Local planning agencies would be responsible for investigating the impacts to water, sewer, traffic and other environmental factors from any future development.

Alternatives 2A and 2B would eliminate rail traffic on the 3rd Street corridor encouraging renewed economic development in both the Downtown area and the Medical District. Growth in these areas has long been inhibited by the presence of an active rail line. Removal of that rail line would increase the attractiveness of Downtown to a variety of businesses, especially commercial and retail. It would also make the Downtown area more desirable for residential development.

The Medical District's master plan calls for growing the Memorial Medical Center and St. John's Hospital campuses towards one another along Carpenter Street to ultimately create an integrated medical community serving patients from central and southern Illinois. The master plan envisions a combined live-work campus where residential development supports the expansion of medical facilities and professional employment.

Relocating the corridor would open up the opportunity for new construction and the jobs associated with building new facilities, such as permanent, high-wage medically-related jobs normally associated with new clinical facilities.

This growth in the corridor would likely result in an increase in property values, economic vitality and population density. Since the project area is primarily urban, other environmental resources will not be significantly affected. Small areas of undeveloped land and agriculture will likely be developed for commercial or multi-residential use.

Eliminating rail traffic in the 3rd Street corridor, and train horn noise in all of the corridors, would improve the attractiveness of residential property in those neighborhoods. The new overpasses along 10th Street and 19th Street would improve access, especially for emergency vehicles and reduce the barrier effect of the rail lines. This would work to increase property values and aid in encouraging the trend toward a population increase in these communities.

5.16.2 Cumulative Impacts

The consideration of cumulative effects consists of an assessment of the total effect on a resource, ecosystem, or community from past, present, and future actions that have altered the quantity, quality, or context of those resources within a broad geographic scope. Under the CEQ regulations, cumulative effects are defined as "… the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). The cumulative effects analysis considers the aggregate effects of direct or indirect impacts – from federal, non-federal, public, or private actions – on the quality or quantity of a resource.

The intent of a cumulative-effects analysis is to determine the magnitude and significance of cumulative effects, both beneficial and adverse, and to determine the construction of the proposed action of those aggregate effects. Contributions to cumulative effects associated with the No-Build Alternative on the resources analyzed would be limited to those derived from the direct and indirect impacts of the action.

The Baseline Alternative would have a negative contribution to cumulative impacts. The No-Build Alternative would not provide as many benefits to safety, traffic congestion and delay times as Alternatives 2A and 2B primarily because trains would continue to run along two independent corridors and there would not be as many grade separations constructed. In addition, with increasing delay times at at-grade crossings, air quality would worsen in the vicinity of rail crossings.

The construction of Alternative 2A or 2B would allow for the continued planning and future construction of a multimodal facility on 10th Street between Washington and Adams Street (see Exhibit 5-1E). This multimodal facility would facilitate transit between trains, busses (both intercity and city), and taxi service. This facility would be a catalyst for growth on Springfield's east side. The proposed complex would provide small shops, restaurants, office space for new businesses, daycare, meeting rooms, mini-parks and parking. This facility would create much needed jobs in the neighborhood. Additional information for this proposed development can be found on the Sangamon County Regional Planning Commission's website at: www.co.sangamon.il.us/Departments/RegionalPlanning/Special_Projects_Programs/ThinkingBeyondTransit: Transit Oriented Development in Springfield, IL: A Planning and Urban Design Exercise.

The proposed improvement to freight and passenger rail service, in conjunction with the proposed grade separations, would have beneficial contributions to the cumulative impact to air quality of previous projects and foreseeable future projects along the 10th Street corridor. The largest anticipated contribution to air quality is the implementation of grade separations at several high traffic crossings. Free flow of vehicular traffic along the rail line would reduce concentrated build-ups of air pollutants such as CO. Also, the proposed project would have an overall reduction in impacts to natural resources

resulting from the reduction of sprawl into undeveloped areas around the perimeter of Springfield.

5.17 Other Impacts

5.17.1 Railroad Operations

Alternatives 2A and 2B would have identical length, travel time, and switching requirements; the only difference being the number of at-grade street crossings. Neither of the alternatives would require additional switching at turnouts or crossovers. There would be no appreciable change in length from existing operations for any of the railroads. Each of these alternatives would require the same number of tracks through the City. None of the affected railroad companies have expressed opposition to these alternatives.

At-grade street crossings provide conflict points for rail traffic, safety concerns and vehicle delays. Minimizing these conflicts benefits both street and rail users. The number of at-grade street crossings, length and travel time for each alternative is shown in Table 5-12.

Table 5-12. Number of At-Grade Street Crossing for each Alternative

Alternative	Number of At-Grade Street Crossings	Length (miles)	Travel Time at 40 MPH (minutes)
No-Build	68	4.77	7.1[(1)]
2A	32	4.77	7.1
2B	28	4.77	7.1

[(1)] The improvements to the UP line that are currently being constructed (the No-Build Alternative) will allow UP freight and passenger traffic to operate at 40-50 mph through Springfield. The passenger operations will continue to operate at the same average speed through Springfield under the Build Alternative, due to the need to stop at the Springfield station.

5.17.2 Reduce Train Horn Blowing

The large number of at-grade street crossings in Springfield produces frequent train horn blowing, which can affect livability. The most effective ways to reduce the frequency of train horns is to consolidate rail traffic to corridors that have fewer at-grade crossings or to create quiet zones. A quiet zone is a segment of track where normal train horn blowing is eliminated. This is typically achieved with the installation of four quadrant gates or raised medians to prevent vehicles from entering the crossing when the gates are down.

The predicted duration of train horn blowing in minutes per day is shown in Table 5-13. This was calculated based on the number and duration of horn blowing for each train as it approaches each crossing in the City. Horn blowing sequences are prescribed by law. Alternatives 2A and 2B assume that quiet zones are established.

Table 5-13. Horn Blowing

Alternative	Horn Blowing min/day (2030)
No-Build	314
2A	0
2B	0

Under Alternatives 2A and 2B, quiet zones will be created along both the 10th Street and 19th Street corridors by installing four quadrant gates or raised medians to prevent vehicles from driving around the gates.

5.18 The Relationship Between Local Short-Term Uses and Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

National Environmental Policy Act (NEPA) regulations [40 CFR 1502.16] require a discussion of the "relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity" as part of an Environmental Impact Statement (EIS). NEPA requires the evaluation of a project to determine whether long-term benefits are worth the short-term adverse effects.

Short-term effects are anticipated with the construction of any of the build alternatives. These effects include, but are not limited to, energy use during construction, travel delays, traffic congestion, restricted access to residences, visual intrusions to residents and motorists, and dust and noise to residents.

Construction mitigation would reduce short-term effects, but temporary construction-related disruptions would still occur. In the long-term, any of the build alternatives would increase the railroad's system capacity and passenger services and improve safety, traffic congestion and delays through Springfield.

While the project would require a commitment of resources in the short-term railroad construction, it would conform to national and regional planning and would result in long-term benefits by accommodating anticipated train and vehicular traffic volumes, reducing air emissions through an efficient flow of rail and vehicular traffic, and limiting encroachment into sensitive environmental resources by utilizing existing right-of-way to the extent possible.

5.19 Irreversible and Irretrievable Commitments of Resources

To facilitate a comparison of project alternatives, NEPA requires a consolidated discussion of environmental consequences to focus on any irreversible and irretrievable commitments of resources. Irreversible resource commitments represent a loss of future options. It applies primarily to the use of nonrenewable resources, such as cultural resources or fossil fuels, and to factors that are renewable only over long time spans. An

irretrievable commitment of resources represents opportunities that are foregone for the period of the proposed action. It relates to the use of renewable resources, such as timber or human effort, as well as other utilization opportunities that are foregone in favor of the proposed action.

Implementation of the proposed action would result in the irreversible and irretrievable commitment of natural and man-made resources to the construction and operation of the proposed action. The primary commitment of resources would come from the construction phase, but there would be some commitment of resources for operation of the rail line. In general, the commitment of resources would be common for all of the build alternatives.

The build alternatives would result in the irreversible and irretrievable commitment of construction materials, such as steel, concrete, ballast rock, and wood. Though largely irretrievable, these resources are not in short supply and many of the materials could be recycled for other projects when they no longer meet the design needs of the passenger or freight rail service. In addition, energy resources (fuel) and financial resources would be committed to the project for construction, operation, and maintenance. Some land for additional right-of-way would also be irretrievably and irreversibly committed for conversion to the railroad.

Human effort would be irretrievably committed during the planning, construction and operation phases of the project. The commitment of time and available labor in the construction of the proposed action would also represent an irretrievable commitment of resources.

5.20 Transportation Impacts

5.20.1 Service Development Plan

There are no differences among the Springfield alternatives regarding:

- Rail service alternatives
- Service levels/frequencies
- Ridership/revenue

These issues are evaluated at the overall Chicago to St. Louis corridor level.

5.20.2 Capital Cost

Capital costs for each alternative were estimated based on the required infrastructure improvements, including station improvements and grade separations necessary to accommodate increased freight and High-Speed passenger traffic (Table 5-14). These costs include construction, right-of-way, engineering and utility relocations. Construction quantities were computed for each of the major items of construction, and average unit prices were applied to these quantities. An appropriate contingency

varying from 20 percent to 25 percent of construction cost, depending on the complexity of construction, was added along with engineering costs. Land acquisition costs were based on assessed values. Costs were estimated in 2011 dollars.

Table 5-14. Capital Cost for each Alternative

Alternative	Cost in Millions (2011)
No-Build	0
2A	$315
2B	$338

5.20.3 Travel Benefits

There are no differences among the Springfield Build alternatives regarding:

- Rail travel time
- Rail reliability
- Passenger train operational capacity
- Improvements in travel, more choices

The No-Build Alternative would not provide the same rail reliability as the Build Alternatives since passenger trains would operate on the single track UP line. There is not sufficient capacity on the single track to accommodate 27 UP freight trains and the proposed High Speed Rail service.

These issues are evaluated at the overall Chicago to St. Louis corridor level, Volume 1.

5.20.4 Additional Impacts to Rail, Air and Bus Service

None of the Springfield alternatives would impact commuter rail services. Under the No-Build Alternative, UP freight rail would continue to operate, along with passenger service, on a single track corridor. The Build Alternatives include two tracks for UP freight and passenger service. The UP line would relocate from 3rd Street to 10th Street and would be the same length as existing. NS freight would relocate to a corridor immediately adjacent to the existing NS corridor. No change in length or operations are anticipated. CN freight operations would remain unchanged. The City of Springfield plans to construct a multimodal (rail, bus and airport shuttle) station on 10th Street. This would improve access to air service by providing additional service to the airport. Public transit riders will have improved access to rail service since the bus station would be adjacent to the rail station. This corresponds to Alternatives 2A and 2B.

5.21 Mitigation Actions

Table 5-15 summarizes proposed mitigation actions as they apply to each resource.

Table 5-15. Mitigation Actions

Resource Impacted	Mitigation
Land Use	IDOT would implement the provisions of the State of Illinois Relocation Assistance Plan in accordance with the Uniform Relocation Act as mitigation action where ROW acquisitions and land use changes occur.
Social/Economic	Any adverse impacts of the proposed project would not be disproportionately borne by minority or low-income populations yielding no need for mitigation action.
Cultural	The Section 106 process would continue with Memoranda of Understanding for any adverse effects to National Register or National Register eligible sites pending SHPO's review of this Draft Document.
Natural Resources	Avoidance, minimization, and best management practices implementation would reduce adverse impacts. Section 7 of the Endangered Species Act consultation would be ongoing to protect threatened and endangered species in the project area.
Air Quality	IDOT's Standard Specification on dust control would be implemented during construction to limit dust emissions during construction.
Noise and Vibration	Quiet zones would be created throughout the City on all rail corridors traversing the City.
Water Quality/Resources	BMPs would be utilized to protect water quality. Almost all runoff from construction would be diverted directly into the City's combined sewer system during and after construction and treated by the Springfield Metro Sanitary District.
Visual and Aesthetic Quality	Views of trains and new rail lines would be considered a minor adverse visual impact. IDOT would determine potential ways to help reduce minor impacts, such as planting vegetation screens or providing aesthetically pleasing features as part of the design.
Special Waste	Special waste sites purchased for additional right-of-way would be remediated prior to construction of the proposed action.

5.22 Preferred Alternative

IDOT recommends selection of Alternative 2A. FRA will identify the Preferred Alternative in the Final EIS after consideration of public and agency comments on the Draft EIS.

Alternative 2A consists of relocating the existing UP freight and passenger rail corridor to a new location parallel to the NS tracks on 10th Street. The improvement consists of constructing two UP tracks at 20 foot centers in a 75 foot right-of-way. The NS right-of-way would be 65 feet wide with one main track and provision for a future track at 15 feet from the main track. The existing underpasses at Cook Street, South Grand Avenue, 5th Street and 6th Street would remain and be modified as necessary to accommodate the new track.

New grade separations would be constructed at the following locations:

- Ash at 10th (underpass)
- Laurel at 10th (underpass)
- Madison at 10th (underpass)
- Jefferson at 10th (underpass)
- Carpenter at 10th (underpass)
- North Grand at new UP track (underpass)
- North Grand at NS (overpass)
- Ash at CN (19th Street) (underpass)
- South Grand at CN (19th Street) (underpass)

The existing rail crossings would be closed at 10th Street and:

- Jackson
- Adams
- Reynolds
- Miller
- Enterprise

Streets would be closed at the following locations:

- Princeton at 6th
- 9th at Ash
- 10 ½ at Ash
- 9th at Laurel
- 10 ½ at Laurel
- Division at new UP
- Reservoir at new UP
- 10th at North Grand

- Michigan at North Grand
- Wirt at Ash
- McCreery at South Grand

Improvements would be made to the remaining at-grade crossings to allow implementation of quiet zones on the CN, UP and NS rail corridors in the project area.

The new rail passenger station would be located adjacent to the 10th Street rail corridor north of Adams Street. The cost and impacts for the station are included with the overall project. The existing NS rail yard would be purchased. Costs are included in overall project costs.

Rail traffic would be eliminated from the existing UP corridor from north of Ridgely Avenue to south of Iles Avenue. Portions of Ridgely Avenue, Factory Street, Iles Avenue and Burton Drive would be realigned to accommodate the track improvements.

Alternative 2A is the IDOT Recommended Alternative for the following reasons:

- Alternative 2A would have lower capital cost than Alternative 2B.
- Alternative 2B would have lower delays, crash rates and lifecycles costs, but this results primarily from constructing new grade separations at Monroe and Washington Streets and closing Capitol Avenue and Enos Streets. The grade separations both have a benefit/cost ratio much less than 1.0. The grade separations and street closures create undesirable access and adverse travel issues as discussed in Section 5.2.3.1 and 5.2.3.2.
- Alternative 2B would require more right-of-way acquisition, and would result in more commercial displacements and more parcels with a change in access.
- Alternative 2B changes the access to the Great Western Railroad Depot due to the construction of an underpass grade separation along Monroe Street.
- There are no other anticipated differences between the impacts for Alternatives 2A and 2B including environmental justice concerns, Section 4(f) properties, noise or vibrations impacts.