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AAS: Phase II Alternatives Analysis

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Subject: Ann Arbor Intermodal Passenger Rail Station—Alternatives Analysis Phase II Report

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1.0 Introduction and Overview of Alternatives Analysis

This report presents Phase II of the Alternatives Analysis for a proposed new multi-modal station: including facilities allowing for "intermodal" transitions from one mode of transportation to another (e.g., from bus to train); "intercity" train travel between cities (typically of a longer distance and greater speed than commuter or regional trains); and "commuter" train travel (typically daily, between cities within a region at a lower speed and with more frequent stops than intercity trains). The purpose of the Alternatives Analysis process is to screen potential station locations against defined criteria and identify reasonable station build alternatives to carry forward into the Environmental Assessment (EA).

This Alternatives Analysis is the result of technical and environmental analysis compliant with the National Environmental Policy Act (NEPA) and public input received since February 2014. The Ann Arbor Station planning effort is led by the City of Ann Arbor with the Michigan Department of Transportation (MDOT) and the Federal Railroad Administration (FRA) (collectively referred to as the Project Team).

Alternatives Analysis Overview

The Alternatives Analysis process was divided into two phases:

Phase I

The Phase I report (included as Appendix A) identified and screened 8 possible sites for the multi-modal station according to preliminary design and site selection criteria defined in the Purpose and Need for the project. This resulted in 3 potential station sites advancing to the Phase II analysis.

The Phase I report established a preliminary set of site selection criteria in order to identify potential station sites. MDOT, as the current owner of the railroad infrastructure within Ann Arbor, and the National Passenger Rail Corporation (Amtrak), as the intercity passenger rail operator on the line, determined the primary site selection criterion, which was that any new station or enhancements to the existing station should occur along a tangent (straight) section of track. Both MDOT and Amtrak stipulated that the tangent track sections should be at least 1,000 feet long to support railroad operational needs. The Phase I report identified 8 segments of track in Ann Arbor that met this primary criterion.

Based on the Purpose and Need for the project, the Phase I station site selection criteria also stipulated that the potential sites should:

- Lie along the existing Amtrak railroad corridor within City of Ann Arbor limits;
- Provide convenient access to downtown Ann Arbor and major activity areas;
- Include enough land to accommodate all required site features (i.e., station design requirements);
- Allow convenient access to existing roadway networks;
- Support connections to public transit services and non-motorized transportation facilities; and
- Minimize impacts to environmental resources.

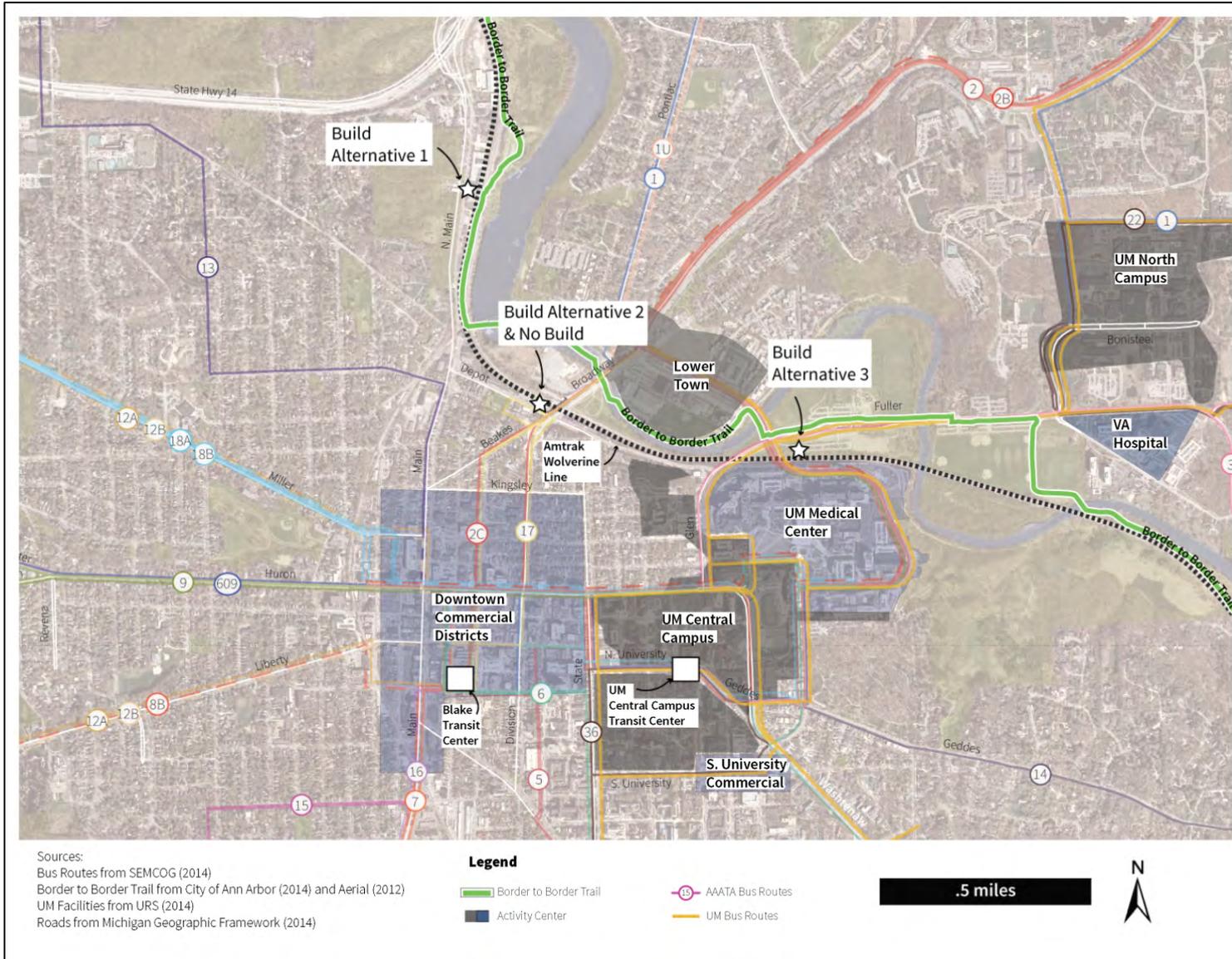
These preliminary site selection criteria were applied to screen 8 potential station sites (referred to as "segments" in the Phase I report), which resulted in the elimination of 5 station sites that did not reasonably meet the criteria. The remaining 3 station sites advanced to this Phase II of the Alternatives Analysis. (See Figure 1).

Phase II

Following the Phase I analysis, additional data was collected to further analyze the 3 station sites that were advanced from Phase I. In the following sections of this Phase II report, design alternatives for each of the remaining 3 sites were further developed, assessed, and screened, as follows:

- **Design Criteria (Section 2.0).** The design criteria for developing Phase II design alternatives were set forth to identify the programmatic needs for a station.
- **Purpose and Need Screening (Section 3.0).** Any station site or design alternative that did not reasonably meet the requirements of the project Purpose and Need was eliminated.
- **Phase II Design Alternatives (Section 4.0).** Conceptual-level design alternatives, including station footprints, were developed for each station site based on the Design Criteria set forth in Section 2.0.
- **Phase II Design Alternatives Screening Criteria (Section 5.0).** The process and criteria that were used to screen the design alternatives were set forth.
- **Phase II Design Alternatives Screening (Section 6.0).** The design alternatives were screened under the criteria established in Section 5.0. Design alternatives that did not reasonably meet the screening criteria were eliminated.
- **Summary and Conclusion (Section 7.0).** Design alternatives that will be carried forward into the Environmental Assessment are summarized.

Figure 1: Phase II Potential Station Site Locations in Ann Arbor



2.0 Design Criteria

This section describes the design criteria used for development of the Phase II station design alternatives. In 2014, the Project Team and stakeholders developed a set of preliminary design criteria for a new Ann Arbor intermodal passenger rail station. The design criteria for the Phase II design alternatives were generally carried over from the Phase I evaluation and were based on stakeholder input and analysis of data to identify the programmatic needs for the station. The Phase II Design Criteria are described below and summarized in Table 1.

The Phase II design alternatives include areas sized to accommodate the station building and associated elements; vertical circulation elements; platform(s); plazas; stormwater management areas; intermodal elements, including transit, parking, bicycle storage, taxis and private shuttles; and appropriate site access including drives and sidewalks.

Station Building Requirements

The design alternatives for the new station building reflect current needs and anticipated 2035 needs, which account for projected future ridership.¹

It is anticipated that some elements of the station development can be phased and constructed as needed, including additional

¹ 2035 ridership derived from the Chicago-Detroit/Pontiac Tier 1 Draft Environmental Impact Statement (EIS), Appendix E (available at <http://greatlakesrail.org/~grtlakes>); station building needs derived from Amtrak Station Program and Planning Guidelines (available at <http://www.greatamericanstations.com/planning-development/station-planning-guidelines>) (both accessed on July 26, 2016).

parking deck levels and a second track and/or platform. However, it is not cost effective to change the size of the station building and interior spaces (such as the waiting room) as ridership increases. Therefore, the station building was designed for anticipated future needs, including both required and optional interior spaces. Required interior spaces are derived from the Amtrak Station Program and Planning Guidelines. (See footnote 3). Potential uses of optional interior spaces include a café, retail, community gatherings, or cultural enrichment.

The Project Team performed an analysis, based on demand forecasts from the Chicago-Detroit/Pontiac Tier 1 Draft Environmental Impact Statement (EIS) to consider how existing boarding patterns inform station building space requirements as ridership increases. The analysis regarding station building requirements and a detailed description of required interior spaces is provided in Appendix B. The analysis concluded that a minimally-sized waiting room reflecting anticipated ridership and Amtrak design criteria should contain roughly 2,200 square feet of floor space to meet anticipated 2035 ridership demand. Other required interior spaces comprise an additional 6,300 square feet. An additional 600 square feet was also included to represent 1 small optional interior space. The total gross floor space deemed necessary for a new or refurbished station building for each design alternative is therefore approximately 9,100 square feet. This compares to roughly 3,200 square feet provided at the existing Ann Arbor Amtrak station building.

Station Parking

Amtrak's anticipated future demand for long-term intercity rail parking in Ann Arbor (year 2035) is roughly 870 spaces.² The Project Team also performed an access demand analysis, which

² Communication from Amtrak dated April 27, 2014.

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reached a similar conclusion regarding intercity rail parking demand. (See Appendix C). The access demand analysis considered:

- Station activity estimates from the Chicago-Detroit/Pontiac Tier 1 Draft EIS;
- Central Ann Arbor urban setting and transportation patterns;
- Non-motorized travel and travel modes to work and education in Ann Arbor (US Census American Community Survey, 2014);
- University of Michigan enrollment compared to the general population;
- Estimated origins and destinations of Ann Arbor riders in the Chicago-Detroit/Pontiac Tier 1 Draft EIS; and
- Directional travel between Ann Arbor and other line stations.

In addition to intercity rail passenger parking, the Southeast Michigan Council of Governments (SEMCOG) has in previous years anticipated demand for approximately 200 additional parking spaces in Ann Arbor for the proposed Ann Arbor to Detroit Commuter Rail Project. The Regional Transit Authority for Southeast Michigan is currently partnering with MDOT and SEMCOG to explore Commuter/Regional Rail options in a shared corridor with intercity rail. Parking demand estimates for regional rail transit in a blended corridor are anticipated to be available in winter of 2016.

Short-term parking needs are projected to require approximately 50 typical parking spaces, either parallel to the curb in a queue lane or perpendicular. This includes 25 typical spaces for pick-

up/drop-off, 10 for taxi, and 10 for private shuttle (at 1.5 typical parking spaces per shuttle).

The Phase II design alternatives all assume structured long-term parking, both to minimize the station footprint and because little land is available for surface parking. Each parking deck level would accommodate roughly 250 parking spaces, which could be phased vertically as needed.

Table 1: Design Criteria for Design Alternatives

Design Criteria Category	Elements	Notes
Consistency with Amtrak Guidelines	All Station Elements.	Consistency with most current version of the <i>Amtrak Station Program and Planning Guidelines</i> (May 2013) ³
Accessibility	All station design elements compatible with Americans with Disabilities Act and accessibility best practices.	This includes all on-site circulation spaces, the grade-separated track crossing, vertical circulation, and accessible connections to nearby sidewalks.
Station Building	Total area for required interior spaces: 8,500 square feet; an additional 600 square feet are included for optional interior spaces. Total area: 9100 square feet.	Required interior spaces meet <i>Amtrak Station Program and Planning Guidelines</i> (May 2013) for 2035 ridership projections. Potential uses of optional interior spaces include a café, retail, community gatherings, or cultural enrichment.
Platforms	High-level platforms meeting Amtrak specifications, up to 800 feet in length, to be located on both sides of the tracks.	Grade-separated passenger circulation to be provided between the platforms. 800-foot platforms within 1,000-foot platform envelopes, positioned along 1,000-foot tangent track segments. Only one platform may be required for start-up operations. Platform features will likely include canopies, electronic variable signage, sound systems, portable lifts as required, benches, and trash receptacles. The platforms will include moveable edges where needed to accommodate high-wide freight traffic on the adjacent track.
Multi-Modal Access Areas (not including station parking)	Multi-modal access drives and circulation areas for transit buses, motorcoaches, station parking access, passenger drop-off/pick-up, taxis, shuttles, and non-motorized travel.	Transit access will be separated from general station traffic to the extent possible. Circulation will be separated from queue areas for general parking deck access.
	Minimum 9 transit and intercity bus berths.	Berths: Amtrak Thruway connecting buses (2), The Ride (Ann Arbor Area Transportation Authority) (3), UM Transportation (2), Greyhound (2) = 9 total berths.
	Minimum 30 bicycle parking spaces, with a combination of enclosed and rack spaces. Also reserve space for a potential bike share program.	Bicycle parking will be designed for consistency with City code provisions. Optional spaces and services may include showers associated with bicycle parking and supporting retail, equipment rentals, and repair.
	Non-motorized connectivity to city neighborhoods and the region.	On-site circulation for traffic to and from regional non-motorized facilities.

³ Available at <http://www.greatamericanstations.com/planning-development/station-planning-guidelines> (accessed on July 26, 2016).

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Station Parking (suitable area to accommodate)	Space to accommodate approximately 1,120 ⁴ parking spaces.	Parking to be provided in a structure to minimize footprint. Some short-term parking may be parallel in a queue lane or outside the structure to the extent practical. This parking space count represents 870 long-term parking spaces per Amtrak's intercity passenger forecast, up to 200 spaces of commuter rail parking, subject to refinement pending further data from the Regional Transit Authority of Southeast Michigan, and up to 50 spaces of short-term parking. The parking supply would be phased to match rollout of expanded service.
Stormwater Management and Utilities	On-site stormwater detention and utilities for all station elements.	Includes avoidance of existing major utilities. No stormwater detention will be located within the 100-year floodplain.
Design Supporting Station-Oriented Development	Circulation oriented to existing and potential development sites.	
Recreational Lands	Avoid or minimize use of recreational lands.	The City has expressed a policy preference to avoid or minimize the use of recreational lands.

⁴ Subject to refinement in subsequent phases.

3.0 Purpose and Need Screening

The project purpose is:

“to provide an intermodal facility that will accommodate existing and future intercity passenger rail ridership; improve intermodal connectivity within the City of Ann Arbor and its neighboring communities, including proposed commuter rail in the City of Ann Arbor; and improve the integration of the station within the City of Ann Arbor.”⁵

The project need is based on the following factors:

- Insufficient quality and comfort for passengers provided by the existing station;
- Inadequate space for intermodal connectivity at the existing station;
- Substantial existing and projected future passenger demand; and
- Limited integration of the existing station within Ann Arbor and limited access to City neighborhoods and the region.⁶

An alternative must reasonably meet the project Purpose and Need to be considered a reasonable alternative; otherwise it is eliminated.

The Phase I report identified 3 station sites that the Project Team determined could meet the Purpose and Need. Development of

⁵ Page 4, Ann Arbor Station Environmental Review Purpose and Need.” Ann Arbor Station Project Team, including the City of Ann Arbor, MDOT, FRA, URS/AECOM and its subconsultants (2015). “Approved on January 15, 2015. http://www.a2gov.org/departments/systems-planning/Transportation/Documents/FINAL_AAS_Purpose_and_Need.pdf

⁶ See previous footnote.

design alternatives for Sites 2 and 3 (shown in Figures 3-6) showed that these could accommodate the station program and confirmed the Project Team's initial assessment that Sites 2 and 3 met the Purpose and Need. These alternatives are discussed in Section 4.0.

The Project Team initially recommended eliminating Site 1, the North Main Street site, because of its low score with regard to the preliminary site selection criteria, which were derived from the Purpose and Need. However, stakeholder feedback expressed a desire for further study of Site 1 to assess whether its potential to spur redevelopment of the North Main Street corridor would outweigh its site location disadvantages. In response, the Project Team recommended advancing Site 1 to Phase II for further development and analysis of specific design alternatives for the site. Upon further development of these design alternatives, it became clear that Site 1 could not meet the Purpose and Need and should be eliminated, as discussed in more detail below.

3.1 Elimination of Site 1 (North Main Street)

Site 1 is located north of central Ann Arbor between North Main Street and the Huron River, adjacent to the City of Ann Arbor's Bandemer Park. (See Figure 1). The Project Team made a determination that this site did not meet the Purpose and Need in the Phase I analysis because the prospect of acquiring several properties along the segment and relocating businesses would raise the capital and socioeconomic costs and leave little buildable land for station-oriented development; access and roadway conditions would create problems for vehicular and non-motorized access between the site and major activity areas; the site had limited potential for transit connections; and the site's environmental constraints were complex. (See Appendix A, pages 12-13). However, based on requests by stakeholders at the June 2014 Leadership Advisory Group, Community Work Group, and Public meetings, a subsequent analysis was conducted. Two preliminary design alternatives were developed (called Concept

3.0 Purpose and Need Screening

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Plan A and B) and a Site 1 technical memorandum was prepared. (See Appendix D). The analysis in the technical memorandum verified the initial recommendation to eliminate Site 1 (North Main Street) from further consideration because it did not meet the Purpose and Need for the project.

In particular, the technical memorandum confirmed that Site 1 at North Main Street did not resolve the problem of “limited integration of the existing station within Ann Arbor and limited access to City neighborhoods and the region” identified in the Purpose and Need. Stakeholders cited the potential for a station at this location to spur redevelopment in the North Main Street Corridor, which would meet that portion of the Purpose defined as “improve the integration of the station within the City of Ann Arbor.” However, further development of the station concepts revealed that in order to accommodate the station program at this site, most of the available private property that would have benefited from redevelopment would be consumed with the overall station program footprint. This site would, therefore, worsen integration of the station within the City because it is farther from downtown and other activity areas than the other remaining sites, including the existing station, and would impair a potential activity center by consuming developable property on North Main Street.

Site 1 also did not meet that portion of the Purpose to “improve intermodal connectivity within the City of Ann Arbor and its neighboring communities.” The walking, biking and transit options of Site 1 were limited. These limitations are described in the following points:

Transit Access

The existing Ann Arbor transit network provides limited connectivity between Site 1, Ann Arbor activity areas, surrounding neighborhoods, and the wider region. Only one Ann Arbor Area

Transportation Authority (AAATA) bus route, Route 13 (now 33), travels near Site 1. The closest stop on Route 33 is about three blocks' distance from the southern limit of the station site. Other existing bus routes would require diversions of a mile or more to serve the site. Adding or diverting bus routes in this location would be an additional expense for AAATA.

Intermodal commuter rail connections would also be less efficient at this alternative due to its distance from residential population centers, activity centers, and employment concentrations.

Pedestrian and Bicycle Access

The one-mile distance between Site 1 and downtown Ann Arbor is greater than the national walking tolerance average of ½-mile to fixed guideway transit.⁷ Other major activity areas are farther from the site. The primary connection to the area is North Main Street, which is a four-lane road with a 45 miles per hour (mph) speed limit and no bicycle lanes. A sidewalk exists only along the east side of the roadway and there are few other amenities for walking or bicycling, making connections to the central business district/downtown difficult. The Border-to-Border/Iron Belle multi-use trail would provide a direct connection to the eastern, Huron River-side of the railroad tracks at this site. However, this trail follows the river and connections to downtown Ann Arbor from this trail are farther downstream at Broadway or Fuller Road.

Vehicular Access and Parking

Providing roadway access and parking at this site is feasible, but with high socioeconomic costs associated with property

⁷ Transit Cooperative Research Program (2009). Literature Review for Providing Access to Public Transportation Stations. TCRP Web-Only Document 44, available at http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_webdoc_44.pdf.

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acquisitions and the relocation of businesses. Access is constrained by limited roadway movements at the M-14 highway interchange and peak hour congestion along Main Street associated with M-14 access.

Because of all these factors, in addition to the factors identified in the Phase I report, Site 1 did not reasonably meet the Purpose and Need for the project, and was eliminated from consideration.

3.2 Elimination of Preliminary Design Alternative with Station South of the Railroad at Site 2 (Depot Street)

In developing the design alternatives for Site 2, the Project Team considered a ground level station building using the existing Ann Arbor Amtrak Station site on the south side of the railroad. For the reasons discussed below, this potential design alternative was also determined not to meet the Purpose and Need at an early stage of development. Therefore, it was eliminated from consideration.

Site and Building Size

The Design Criteria require a station building containing 9,100 square feet with a waiting area of at least 2,200 square feet. The existing Ann Arbor Amtrak Station is approximately 3,200 square feet, or one third of the total required building space.

Preliminary design efforts revealed that it was not possible to place both a new station building and the required intermodal transit facilities on the parcel south of the railroad. Intermodal transit facilities could not be located on the north side of the tracks along with the parking structure because Amtrak design guidelines call for separate circulation of transit vehicles and private

automobiles.⁸ The design guidelines seek to enable new or renovated stations to most efficiently move passengers within the station and between travel modes. Clear and separate pathways for transit and private automobile modes minimize passenger confusion and congestion during departure and arrival periods, when the station is at maximum usage.

Due to topography, there is only room for a single drive entrance and exit circulation pattern to and from Broadway on the north side of the tracks. Therefore, it is not possible to separate transit and private automobiles with a station building south of the railroad. When trains are departing or arriving, substantial numbers of both transit and private automobiles will access the station at the same time. Placing both in the same traffic pattern would increase congestion. For example, transit vehicles such as buses are generally larger and maneuver more slowly than most private automobiles. To avoid these issues, the other Site 2 design alternatives have separate circulation for transit vehicles on the south side of the railroad tracks.

The existing Amtrak parcel south of the railroad is approximately 31,000 square feet. The dimensions of the parcel are approximately 60 feet wide and 515 feet long. A 9,100 square-foot station building would be approximately 40 feet wide and 225 feet long. An additional 5,400 square feet would be needed for external pedestrian circulation, sidewalks, and a rear service drive allowing access for utility functions, which would leave an area of approximately 16,500 square feet for intermodal facilities.

This area would not be sufficient to accommodate the number of required bus bays and the large turning radius for buses entering and exiting. Therefore, this potential design alternative would not

⁸ Available at <http://www.greatamericanstations.com/planning-development/station-planning-guidelines> (accessed on July 26, 2016).

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provide the intermodal connectivity required by the Purpose and Need and was eliminated from consideration.

4.0 Phase II Design Alternatives

For the two remaining sites under consideration (Sites 2 and 3), the Project Team developed 7 conceptual-level design alternatives that meet the Design Criteria, summarized as follows:

- Design Alternative 2A: Depot Street (ground level station building north of the tracks)
- Design Alternative 2B: Depot Street (elevated station above the tracks)
- Design Alternative 2C: Depot Street (ground level station incorporating the former Michigan Central Depot)
- Design Alternative 3A: Fuller Road (elevated station above the tracks with reduced footprint)
- Design Alternative 3B: Fuller Road (ground level station at the west end of the parking deck)
- Design Alternative 3C: Fuller Road (elevated station above the tracks with expanded footprint)
- Design Alternative 3D: Fuller Road (ground level station incorporated in the middle of the parking deck)

4.1 Design Alternative Descriptions

Site 2 (Depot Street)

Site 2 is located near the existing Amtrak station where Broadway crosses Depot Street and the railroad tracks. It is adjacent to a now mostly unused parcel of land belonging to DTE Energy that extends northward from the Amtrak long-term parking lot to the Huron River. The DTE Energy parcel was formerly used for a coal gasification plant, which left the site polluted. DTE Energy performed environmental remediation of portions of the site in 2012-2013 and has recently expressed an interest in redeveloping

the parcel.⁹ For Site 2, the Project Team developed three Design Alternatives: 2A, 2B, and 2C, which are depicted in Figures 2 through 4.

For Design Alternatives 2A and 2B, the existing Amtrak train platform would be extended as needed to accommodate longer train consists. A second platform would be constructed north of the tracks when a second track is added consistent with future corridor development plans. A pedestrian bridge or concourse would connect to platforms on both sides of the tracks. The weather-protected concourse would pass above the tracks and would be integrated with or adjacent to the sidewalk on the west side of the Broadway Bridge. Elevators and stairwells would connect the concourse to the platform level on both sides of the tracks.

For all Site 2 options, bus stop pullouts would be added along the Broadway Bridge above the tracks to accommodate bus routes that travel on this roadway. An additional elevator connecting to the bridge's east sidewalk and/or a signalized pedestrian crossing of the Broadway Bridge roadway would be required to connect these bus stops to the station building and platforms.

As depicted in the conceptual drawings, taxis and passenger drop-off/pick-up would be provided within the parking structure or at curbside along Depot Street. Intercity bus, urban public transit and shuttle services would use the site of the existing Amtrak station building and the existing short-term parking lot west of the existing Amtrak station building.

⁹ Stanton, R. (2013, January 3). "DTE Energy calling cleanup of riverfront MichCon site in Ann Arbor a huge success." *The Ann Arbor News*, retrieved on July 9, 2015 from <http://www.annarbor.com/news/dte-energy-calls-michcon-cleanup-success/>

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A parking structure, including stormwater collection systems, would be located north of the tracks and west of the Broadway Bridge.

The distinctive elements of the three Site 2 design alternatives are described in the following subsections.

Design Alternative 2A (Elevated Station)

(See Fig. 2)

The station building would be constructed above the tracks on the west side of the Broadway Bridge. Pedestrian access would be provided directly from sidewalk along the west side of the Broadway Bridge. The station building would remain within the railroad right-of-way. This option would provide passengers in the station building with equal distances to access both station platforms.

Design Alternative 2B (Ground Level Station)

(See Fig. 3)

The station building would be constructed west of the Broadway Bridge, at ground level, north of the tracks. The placement of the station building would be closely coordinated with the specific needs for on-site multi-modal facilities. The concourse above the tracks would attach directly to the station building. This option would place the station building adjacent to one railroad platform and across the tracks from the other platform.

Design Alternative 2C (Michigan Central Depot)

(See Fig. 4)

The historic Michigan Central Depot (currently occupied by the Gandy Dancer restaurant) would be acquired for re-use as the station building. Upon completion in 1886, the Depot was

considered “the Michigan Central Railroad's finest station between Buffalo and Chicago.” It was also considered the most important railroad station on the line between Detroit and Chicago.¹⁰ The historic depot, shown in Figure 4, has been listed on the National Register of Historic Places since 1975, and included within the City of Ann Arbor's Division Street local historic district since 1976.¹¹

Building modifications and expansion would be required to adapt the interior of the Michigan Central Depot for station program requirements and to provide full ADA accessibility. The interior of the building has been partitioned for restaurant purposes. It is not known if any interior structural modifications have been made. The exterior includes several temporary or reversible additions and is generally historically intact. A platform-level walkway would extend from the building under the Broadway Bridge to elevators, stairwells, and the pedestrian concourse on the west side of the Broadway Bridge. The historic depot as the station building would be adjacent to one railroad platform and across the tracks from the other platform.

¹⁰ [Shackman](#), Grace (May, 1991). “The Michigan Central depot.” *Ann Arbor Observer*, accessed July 9, 2015: <http://aobserver.aadl.org/aobserver/15258>

¹¹ Information provided by the City of Ann Arbor's historic preservation coordinator from City databases.

Figure 2: Design Alternative 2A

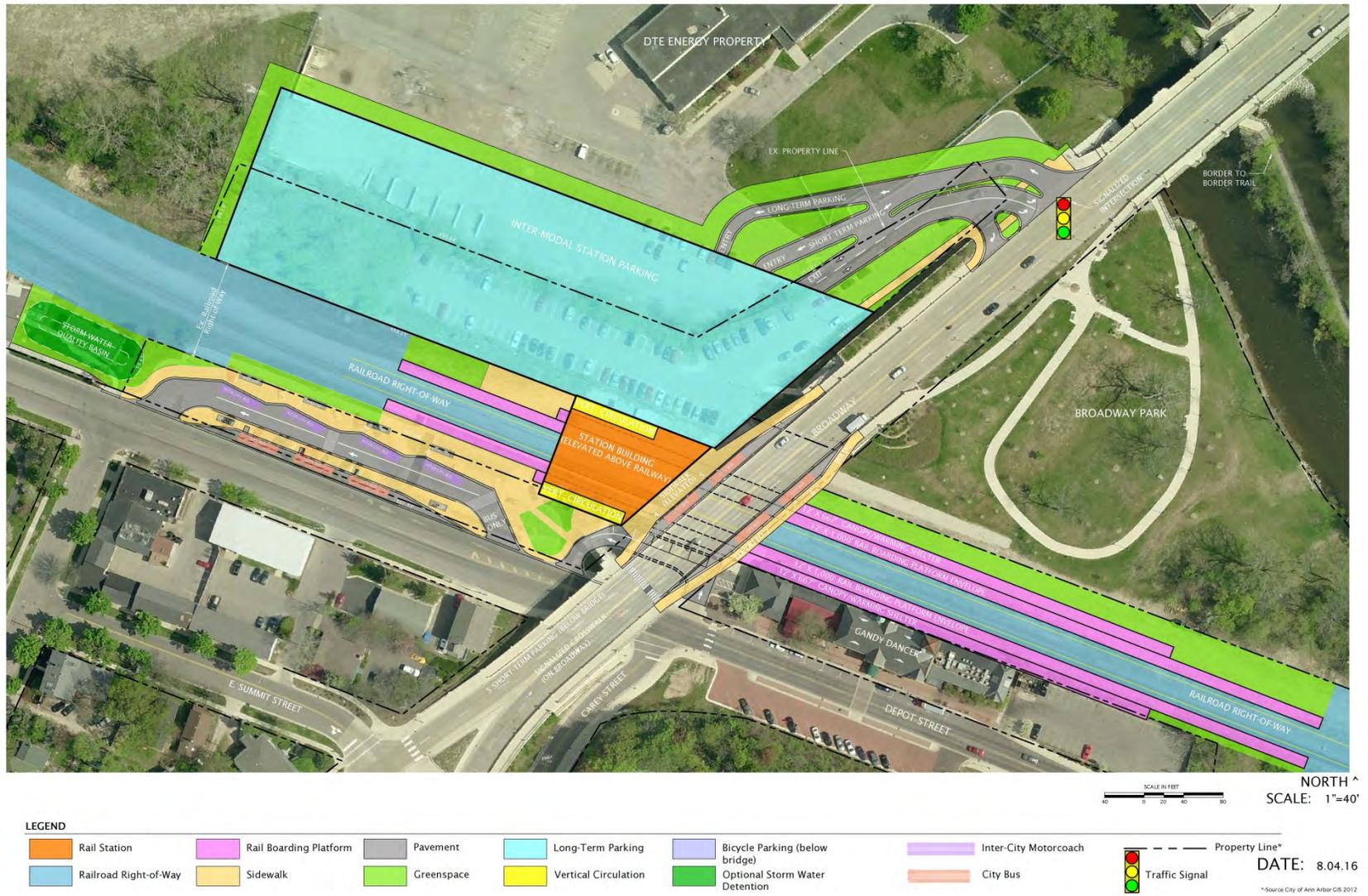
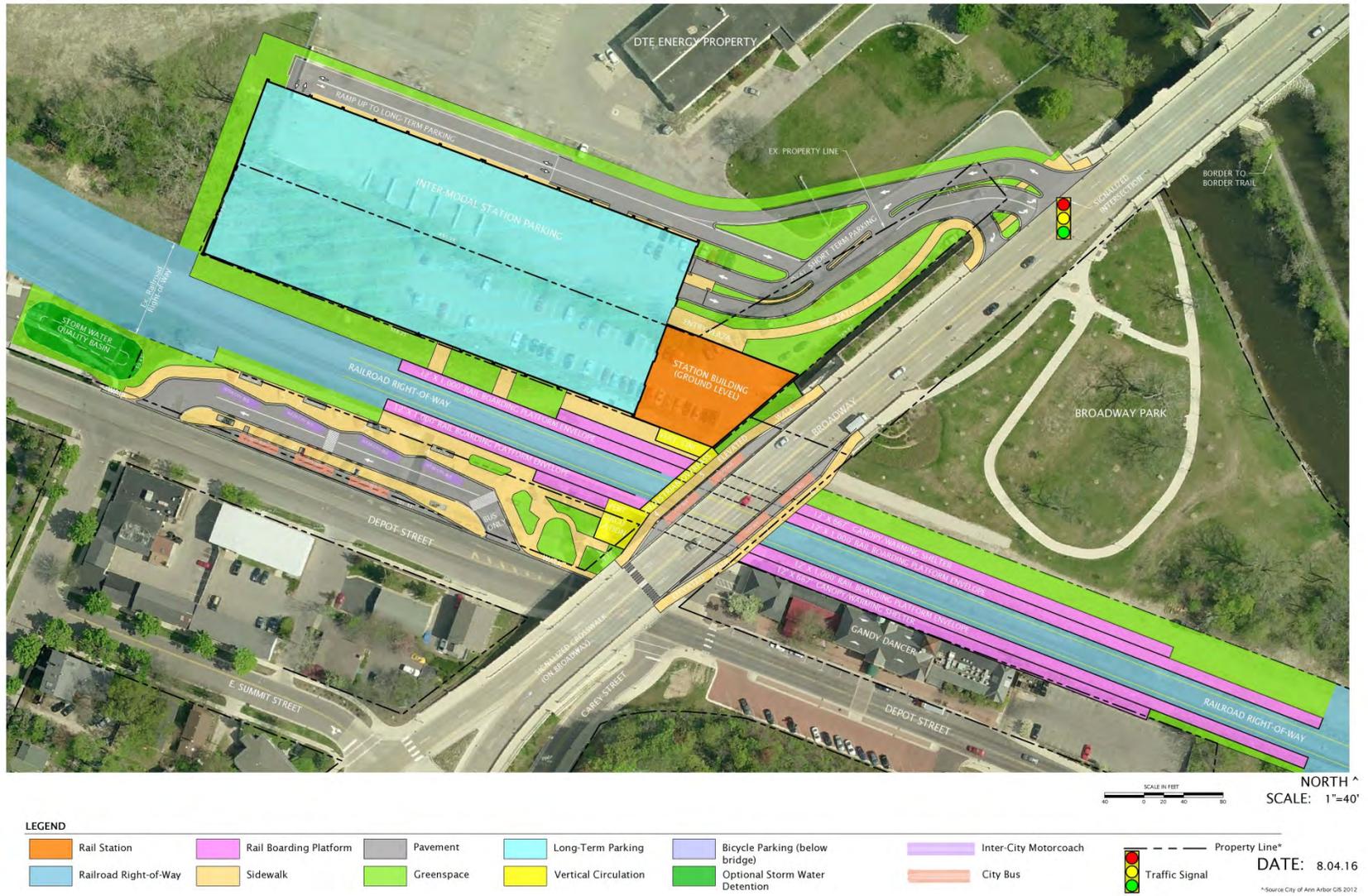


Figure 3: Design Alternative 2B



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Figure 5: Michigan Central Depot/Gandy Dancer Restaurant



(Source: Gandy Dancer Restaurant website at <http://www.muer.com/gandy-dancer/locations.asp>)

Site 3 (Fuller Road – West)

For Site 3, the Project Team developed Design Alternatives 3A, 3B, 3C, and 3D, which are located partly in the City of Ann Arbor's Fuller Park and partly within the adjacent MDOT railroad right-of-way, with a potential pedestrian bridge extending south onto University of Michigan property to connect to East Medical Center Drive. The site is immediately north of and downhill from the University of Michigan Medical Campus, below the Fuller Road and East Medical Center Drive bridges. Design concepts for these alternatives are displayed in Figures 6 through 9.

The north side of the tracks is bordered by Fuller Park, which sits slightly higher in elevation than the tracks. A surface parking lot within Fuller Park extends parallel to the tracks, about 75 feet north of the tracks and containing about 250 spaces. This lot currently serves both the University of Michigan and Fuller Park through a joint use agreement that permits University employees to use the lot during working hours and reserves the lot for park

users in the evening and on weekends. For all design alternatives at this site, a parking structure, including stormwater collection systems, would be placed where the existing parking lot is now located. As such, additional parking for park users may be appropriate mitigation at this site.

The Washtenaw County Border-to-Border Trail (a segment of the state-designated Iron Belle Trail) (B2B) extends along the north sidewalk of Fuller Road, across the street from this station site. The B2B trail crosses Fuller Road at the signalized intersection at Cedar Bend 0.25 miles to the east of the site driveways to the existing parking lot and is accessible from the site via a shared use path on the south side of Fuller Road. Bicycle and pedestrian access would also be available via a bridge link to the sidewalk on East Medical Center Drive.

Design Alternative 3A (Elevated Station with a Reduced Facilities Footprint)

(See Fig. 6)

The station building would be located above the tracks with other site facilities located within the area of the existing surface parking lot, with the exception of station access features. Multi-modal access would be provided on-site north of the tracks and along adjacent streets. Station parking would be provided in a structure.

Design Alternative 3B (Ground Level Station at the West End of a Wider Facilities Footprint)

(See Fig. 7)

The station building would be located at ground level, outside the area of the existing parking lot in an active recreation area of Fuller Park, west of the other site facilities. The other site facilities would be within the area of the existing surface parking lot, with the

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exception of station access features. Multi-modal access would be provided on-site north of the tracks and along adjacent streets. Station parking would be provided in a structure.

Design Alternative 3C (Elevated Station with a Wider Facilities Footprint)

(See Fig. 8)

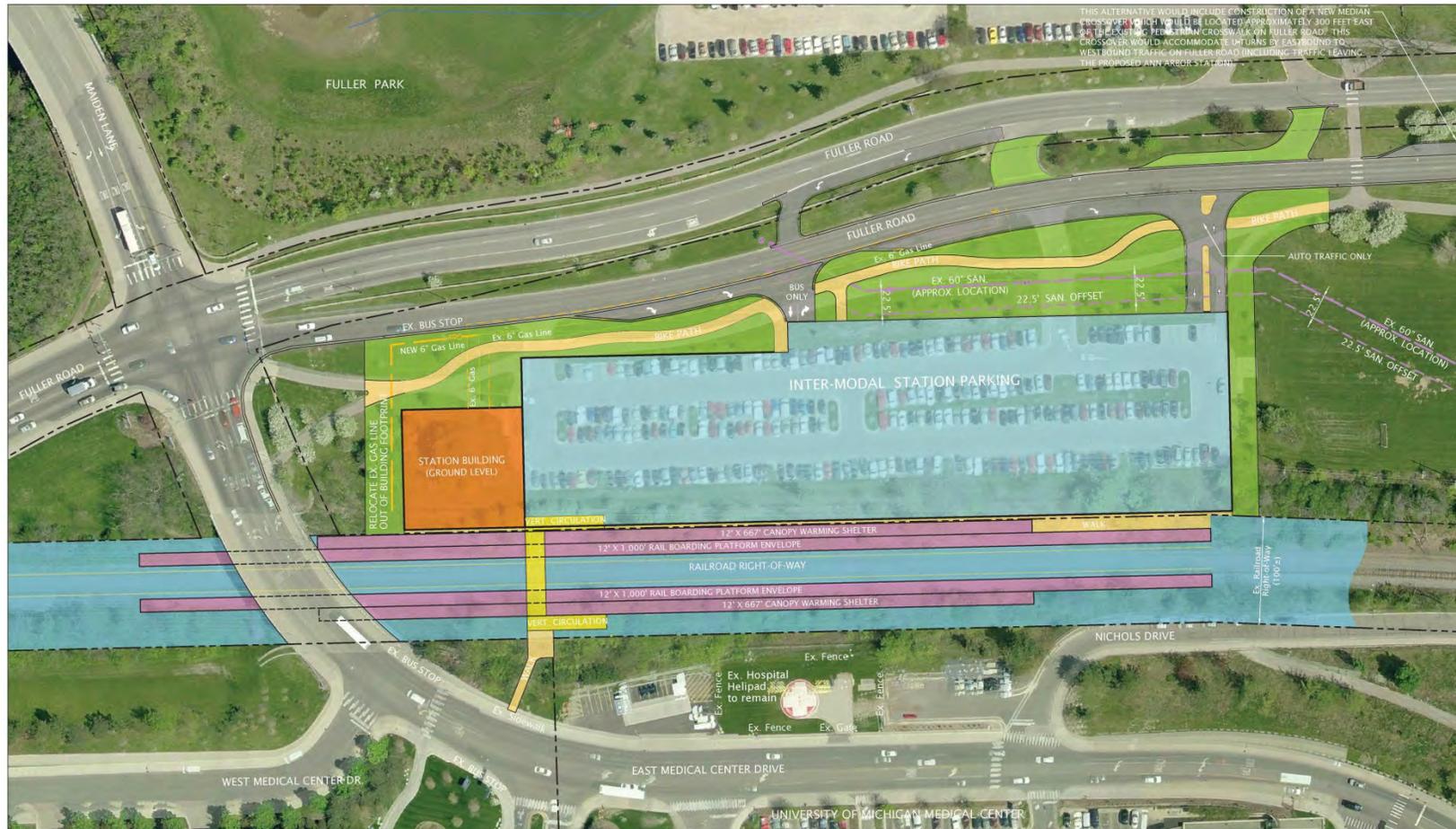
The station building would be located above the tracks with the other site facilities extending west outside the existing surface parking lot into an active recreation area of Fuller Park. Multi-modal access would be provided on-site north of the tracks and along adjacent streets. Station parking would be provided in a structure.

Design Alternative 3D (Station Integrated into a Wider Facilities Footprint)

(See Fig. 9)

The station building would be located at ground level in the middle of the other site facilities, which would extend west outside the existing surface parking lot into an active recreation area of Fuller Park. Multi-modal access would be provided on-site north of the tracks and along adjacent streets. Station parking would be provided in a structure.

Figure 7: Design Alternative 3B



NORTH ^
SCALE: 1"=40'
SCALE IN FEET
0 20 40 80

LEGEND

- | | | | | | |
|-----------------------|------------------------|------------|----------------------|-------------------------|----------------------|
| Rail Station | Rail Boarding Platform | Pavement | Long-Term Parking | Property Line* | Ex. Gas Easment Line |
| Railroad Right-of-Way | Sidewalk | Greenspace | Vertical Circulation | Existing Sanitary Sewer | Sanitary Offset Line |
| | | | | Gas | Existing Gas Line |

DATE: 8.11.16

*Source: City of Ann Arbor GIS 2012

5.0 Phase II Design Alternatives Screening Criteria

The screening criteria used in this Phase II Alternatives Screening fall into three main categories:

- Location Within the Community
- Accessibility
- Site Assessment

The screening criteria described in this section were determined to be the appropriate considerations and potentially distinguishing factors in selecting a location for an intercity passenger rail station. These criteria were derived from the Purpose and Need, Amtrak's station location guidelines,¹² conversations with MDOT, and stakeholder input.

This section describes the criteria in each category and how the criteria were measured objectively for all design alternatives. Section 6.0 describes how each design alternative was evaluated with respect to each criterion to differentiate the design alternatives within each site and determine which design alternatives were reasonable.

5.1 Location Within the Community

Building on experience since the passage of the *High-Speed Ground Transportation Act of 1965*,¹³ as well as successful

¹² Amtrak Station Program and Planning Guidelines, May 1, 2013. Available at <http://www.greatamericanstations.com/planning-development/station-planning-guidelines>

¹³ Available at <https://www.gpo.gov/fdsys/pkg/STATUTE-79/pdf/STATUTE-79-Pg893.pdf> (accessed July 26, 2016).

examples abroad, the FRA has developed the following general guidelines for locating corridor rail passenger stations in cities.¹⁴

1. Each city should have a station located in or near the central business district (CBD). This is mandatory for larger Metropolitan Statistical Areas (MSAs) with metropolitan populations of 150,000 or more, since to do otherwise would undermine the inherent advantages of rail passenger systems. This central station should have direct access to local transit systems (bus, rail, taxi, etc.), as well as appropriate amounts of parking for private cars.
2. Every effort should be made to have each corridor station serve as a regional intermodal passenger terminal for all forms of regional and local transportation systems.

The following criteria have been developed for the evaluation of the design alternatives with regard to Location in the Community:

Enhancement of Urban Areas – This criterion measures the potential for each design alternative to enhance existing mixed-use development or spur development on underdeveloped or vacant, developable sites. The evaluation presumes that the station will have a beneficial effect on development of surrounding sites due primarily to increased pedestrian traffic generated by the station and demand for proximate services by users of the station. Therefore, data was collected within the national walking tolerance of ½ mile radius around each station site.¹⁵

¹⁴ Railroad Corridor Transportation Plans: A Guidance Manual, July 8, 2005. Available at <https://www.fra.dot.gov/eLib/Details/L04161>.

¹⁵ Transit Cooperative Research Program (2009). Literature Review for Providing Access to Public Transportation Stations. TCRP Web-Only Document 44, available at http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_webdoc_44.pdf.

5.0 Phase II Screening Criteria

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To determine the effect on existing development, data was collected on the number of residents and jobs within the 1/2 mile radius. Alternatives that included more residents and jobs were ranked higher.

To determine the effect on vacant, developable sites, data was collected on the number and size of such sites within 1/2 mile. Design alternatives with more vacant sites within the 1/2 miles radius were ranked higher. Because the area around each design alternative is urban and already mostly developed, any development is expected to be relatively dense infill development and no urban sprawl effect is anticipated.

Potential for Multimodal Connectivity – This criterion addresses each design alternative’s potential to serve as an effective intermodal passenger terminal for all forms of regional and local transportation systems. Data was collected on the number and capacity of different existing or planned modes that would serve or pass by each design alternative. Design alternatives with a greater number of modes or greater capacity were ranked higher.

5.2 Accessibility

Passenger stations are critically important in attracting riders to intercity trains. Accessibility to a wide range of users is a key in transit station design. Accessibility is defined by the ease of use or approach to a particular space or area. Accessibility is directly tied to the ridership of the station – if roadways approaching a station are too congested, or the station is located in a residential neighborhood, far from arterial streets, it will attract fewer riders than a station that is located near major roadways with efficient traffic flow and that is sufficiently signed to direct motorists to the station. With respect to internal pedestrian circulation, it is desirable to have short and simple paths between station

elements. Other modes of transportation, including pedestrians, bicycles, and buses, should also have convenient access incorporated into the site and station design. Based upon these concepts, the following criteria have been developed to evaluate the design alternatives with regard to Accessibility:

Off-Site Traffic Infrastructure Improvements – This criterion is used to evaluate the level of off-site traffic infrastructure investments required for each design alternative within at least one signalized intersection in any direction from the access point(s) of each design alternative.

Data was collected on the number, scope, and feasibility of improvements to the external roadway system (including intersections) that would be necessary to ensure adequate traffic service levels accessing each design alternative. Design alternatives that required fewer, smaller, more feasible improvements were ranked higher.

Site Access Infrastructure Improvements – This criterion addresses site access at the point of connection from external transportation networks to the each design alternative for both motorized and non-motorized transportation modes. This criterion evaluates the feasibility and extent of required improvements to allow access to and from each design alternative for all transportation modes, both existing and potential. Design alternatives requiring fewer, smaller, more feasible improvements were ranked higher.

Internal Pedestrian Circulation – This criterion addresses movement of pedestrians within each design alternative. To evaluate pedestrian circulation, central nodes were assigned to the major station elements and the distances between them were measured to establish average pedestrian distances between

5.0 Phase II Screening Criteria

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nodes. The analysis evaluated two representative circulation patterns:

- From parking to station to platform
- From transit to station to platform

In general, clear and direct walking paths are desirable. Design alternatives with lesser distances were ranked higher, indicating easier pedestrian navigation.

5.3 Site Assessment

These criteria address the physical and ownership characteristics that distinguish the parcel(s) of land used for each design alternative, including potential environmental impacts. The following criteria have been developed to evaluate the design alternatives with regard to Site Assessment:

Environmental Factors – For this Phase II assessment, the following environmental criteria were used to evaluate design alternatives:

- **Floodplain**
The amount of land in a floodplain (including floodway and flood fringe) at each design alternative was determined from Federal Emergency Management Agency (FEMA) maps. Design alternatives not in a floodplain were ranked higher.
- **Hazardous Materials**
Each design alternative was examined for known hazardous materials based on a search of existing windshield surveys and regulatory databases using the Environmental Data Research database. Design alternatives with fewer known hazardous materials were ranked higher.
- **Cultural/Historic Resources**
The number and nature of cultural or historic resources that would be used by of each design alternative was determined based on the National Register of Historic Places, City of Ann Arbor Local Historic Districts, and Native American Graves Protection and Repatriation Act databases. Design alternatives that would have the potential to avoid cultural or historic resources were ranked higher.

- **Recreational Lands**

Past actions of the City with respect to potential train station development have consistently sought to minimize use of recreational lands. The City Council previously approved an MOU for the Fuller Road Station project that specifically provided that the land to be used for the station was the existing parking lot area.¹⁶ The City's application through MDOT to the FRA for NEPA/ PE project funding for Fuller Road Station also stated that the project would be on the footprint of the parking area. "Ann Arbor Station, also known as Fuller Road Station, (FRS) is planned to be located on a city-owned surface parking lot in the City of Ann Arbor immediately south of Fuller Road and east of East Medical Center Drive." The amount of recreational lands that would be used by each design alternative was determined using City of Ann Arbor Parks and property databases. Design alternatives that would not use recreational land were ranked higher.

In order to evaluate these potential environmental impacts, the Project Team conducted a search of existing databases in these environmental categories. A more detailed study of potential environmental impacts will occur during the subsequent Environmental Assessment phase of the NEPA analysis.

Property Ownership – This criterion addresses the property ownership. Ownership was evaluated to determine the number of private property owners potentially affected for each design alternative.

¹⁶ See paragraph 4 on page 2 of the approved Memorandum of Understanding Between the City of Ann Arbor and the Regents of the University of Michigan for the Development of the Fuller Road Station. Available at <http://a2gov.legistar.com/LegislationDetail.aspx?ID=536140&GUID=FA5BA616-56DF-4B49-9918-949BEF02BF96&> (accessed on July 26, 2016).

6.0 Design Alternatives Screening

6.1 Methodology

Each of design alternatives described in Section 4.0 was screened based on the criteria described in Section 5.0. The design alternatives for each station site were then ranked sequentially based on their relative performance under each criterion. The highest performing alternative received a score of 1, with scores of 2, 3, etc. indicating progressively worse performance in comparison. Where design alternatives performed relatively equally, they received the same score and the next design alternative received the next ranking number (e.g. 1, 2, 2, 3).

The rankings for all criteria were then aggregated to determine which design alternative(s) showed overall higher performance relative to the others within that station site. If a design alternative failed to reasonably meet any criterion based on the data and analysis available, it was eliminated from further consideration. The results of this analysis are described throughout this Section and summarized in Section 6.5.

6.2 Location Within the Community

Table 2 shows the ranking of each design alternative with respect to the criteria for Location Within the Community. The rationale for each rating is discussed below.

Table 2: Location Within the Community Ranking

Criteria	Design Alternative		
	2A	2B	2C
Enhancement of Urban Areas	1	1	1
Potential for Multimodal Connectivity	1	1	1
Summary	2	2	2

Criteria	Design Alternative			
	3A	3B	3C	3D
Enhancement of Urban Areas	1	1	1	1
Potential for Multimodal Connectivity	1	1	1	1
Summary	2	2	2	2

6.0 Design Alternatives Screening

AAS: Phase II Alternatives Analysis

Enhancement of Urban Areas

Design Alternatives 2A, 2B, and 2C are within ½ mile of:

- 1) A population of 5,275 residents and employment of 11,080 ;
- 2) 23.5 acres of vacant property;
- 3) The existing Lower Town commercial area along Broadway northeast of Swift Street.

Design Alternatives 3A, 3B, 3C, and 3D are within ½ mile of:

- 1) A population of 5,327 and employment of 17,231;
- 2) 7.9 acres of vacant property;
- 3) The existing Lower Town commercial area along Broadway northeast of Swift Street.

(See Figure 10 for illustration.)

The amount of vacant land is low for all alternatives. Design Alternatives 2A, 2B, and 2C are near to more vacant property than 3A, 3B, 3C and 3D particularly the Amtrak and DTE Energy property north of the tracks. However, the Site 2 design alternatives also occupy a substantial amount of the developable portion of this vacant land.

Design alternatives 3A, 3B, 3C, and 3D are surrounded on the north by parkland, which has very low potential for development. On the south, 3A, 3B, 3C, and 3D are bounded by the University of Michigan Medical Campus, which is largely already developed, but which may have modest potential for redevelopment or additional development between the railroad and East Medical Center Drive, which is currently the site of parking lots, a driveway, and heliport facilities.

Because the urban environment surrounding each station site is largely developed, the effect of any design alternative would likely be more substantial on existing development than on potential

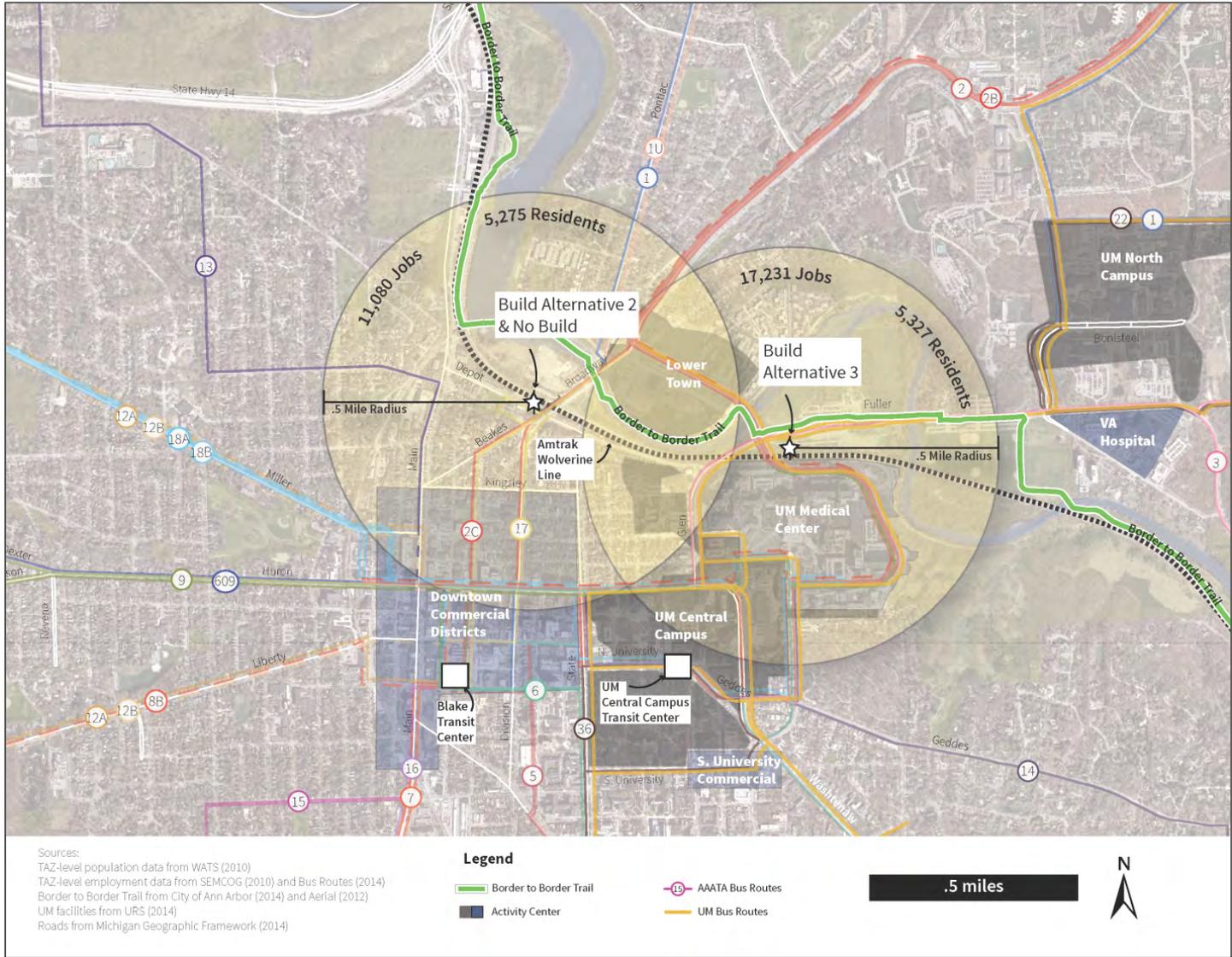
development. Alternatives 2A and 2B are well-located relative to the existing Lower Town commercial area on Broadway northeast of Swift Street. Alternative 2B would likely have slightly less catalytic effect on Lower Town because pedestrians would enter and exit the station below the grade of Broadway and hence have a less direct connection to Lower Town. Alternative 2C is located along Depot Street and, therefore, would likely provide a slightly lesser effect on Lower Town than the other Site 2 alternatives. Alternatives 3A, 3B, 3C and 3D benefit from proximity to greater populations of existing development including the University of Michigan’s Medical Campus, which contains the highest density of employment in the City.

Overall, the differences between the Site 2 design alternatives with respect to development are not great and therefore none appears unreasonable in comparison with the others. Similarly, the Site 3 design alternatives appear to have a more or less equal effect on development and therefore none appears unreasonable in comparison with the others. Table 3 below summarizes the affected population and employment by alternative:

Table 3: Summary of Urban Environment Within 1/2 Mile

Alternative	Population within 1/2 mile	Employment within 1/2 mile	Total
2A, 2B, 2C	5,275	11,080	16,355
3A, 3B, 3C,3D	5,327	17,231	22,558

Figure 10: Ann Arbor Activity Areas, Plus Jobs and Residents within 1/2 Mile of Final Alternatives



6.0 Design Alternatives Screening

AAS: Phase II Alternatives Analysis

Potential for Multimodal Connectivity

Due to topographical constraints, Design Alternatives 2A, 2B, and 2C would require automobile and transit boarding locations to be on opposite sides of the tracks in order to achieve separate drive circulations for each. The transit boarding areas are located along Depot Street, which is subject to recurring congestion. Presently, only three AAATA Bus Routes 1 (now 22) and 2C (now 65) travel on the Broadway Bridges, and Route 17 (now 21) stops at the current Amtrak station. These routes carried approximately 3,000 weekday passengers in 2010. Because of the topography of Depot Street, adding additional transit connections is likely not feasible, limiting the potential for multimodal expansion. All the Site 2 design alternatives appear able to accommodate the required multimodal facilities and share similar constraints with respect to separation of modes, therefore none is unreasonable in comparison with the others.

Alternatives 3A, 3B, 3C and 3D have an integrated auto and transit operations center within the intermodal station/parking structure footprint, with separate drive circulations for each. AAATA bus routes that travel along Fuller Road or East Medical Center Drive include Routes 1U (now 63), 2A (now 23), 2B (now 23), and 3. In 2010, these routes transported an estimated 4,000 weekday riders. Almost all University of Michigan bus routes provide service in the area of Site 3, with ridership levels that are significantly higher than the AAATA routes. Approximately 34,000 passengers rode the University buses each weekday in 2010 during the school seasons.¹⁷ In total, various transit routes carry approximately 38,000 weekday transit riders past Design Alternatives 3A, 3B, 3C, and 3D when the University is in session. Additionally, a planned future high capacity transit service (“The Connector”) is planned to

¹⁷ SEMCOG regional ridership report for 2010. All U-M routes serve the Site 3 area except the Oxford Shuttle and Night Owl routes.

pass along the south edge of the site and can be integrated into the intercity and regional commuter services of this alternative. All the Site 3 design alternatives appear able to accommodate the required multimodal facilities, and the multi-modal facilities are generally in the same location for each design alternative, therefore none is unreasonable in comparison with the others.

6.3 Accessibility

Table 4 shows the ratings of each design alternative for Access and Parking. The rationale for each rating is discussed below.

Table 4 Accessibility and Parking Ratings

Criteria	Design Alternative		
	2A	2B	2C
Off-Site Traffic Infrastructure Improvements	1	1	1
Site Access Infrastructure Improvements	1	1	1
Internal Pedestrian Circulation	1	1	2
Summary	3	3	4

6.0 Design Alternatives Screening

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Criteria	Design Alternative			
	3A	3B	3C	3D
Off-Site Traffic Infrastructure Improvements	1	1	1	1
Site Access Infrastructure Improvements	1	1	1	1
Internal Pedestrian Circulation	1	2	1	1
Summary	3	4	3	3

Off-Site Traffic Infrastructure Improvements

Design Alternatives 2A, 2B, and 2C have similar infrastructure needs. Depot Street serves as a primary commuter corridor between highway M-14 via North Main Street and the University of Michigan Medical Center, and is subject to recurring peak hour congestion. Depot Street west of the Broadway Bridges is a three-lane roadway that is constrained from expansion by Wheeler Park on the south, and commercial development on the north and south. Depot Street underneath and east of the Broadway Bridges to State Street is a two-lane roadway that is constrained on the north by the former Michigan Central Depot and by the supports and grade approach to the Broadway Bridges. Widening Depot Street is not currently planned.

In addition to rush hour congestion, Depot Street also currently experiences congestion from station traffic in the mornings and afternoons. This is associated primarily with kiss-and-ride activity as passengers are picked up and dropped off with the arrival and departure of trains. These conditions have the potential to worsen under the current station design as railroad ridership increases.

For Design Alternative 2C, an additional controlled intersection (including signalization) may be required at Depot Street and State Street because the location of the station building in the Michigan Central Depot would encourage traffic access from State Street, which currently prohibits left turns onto Depot Street due to sightlines. Because the location of the station building would be farther west in Design Alternatives 2A and 2B, traffic would be more likely to access the station from Division to Carey Street, the intersection of which has clear sightlines and would not require signalization.

All Site 2 design alternatives would need similar off-site traffic infrastructure improvements, therefore none is unreasonable in comparison to the others.

For Design Alternatives 3A, 3B, 3C, and 3D improvements would likely be needed at the Fuller Road/East Medical Center Drive/Maiden Lane intersection to maintain an acceptable level of service at the station. This intersection presently experiences recurring peak hour congestion. The City of Ann Arbor has a planned improvement in its Capital Improvement Plan to address this intersection.¹⁸ The City plans to construct this improvement regardless of where the station is located.

All Site 3 design alternatives would need the same off-site traffic infrastructure improvements, therefore none is unreasonable in comparison to the others.

Site Access Infrastructure Improvements

Design Alternatives 2A, 2B, and 2C would have primary automobile and parking access on Broadway and primary bus, transit, private shuttle, and taxi access on Depot Street. To accommodate ingress and egress on Broadway, a new signal would be necessary.¹⁹ This new signal may cause traffic control delays at the intersection of Broadway, Plymouth Road, Maiden Lane, and Moore Street.

Ingress and egress lanes for each design alternative will be evaluated for compliance with City of Ann Arbor code and other applicable standards and requirements. To the extent that separate turning lanes at the automobile entrances on the north side of the tracks may be required, some reconstruction or modification of the Broadway Bridges may be necessary for all of the Site 2 design alternatives. For transit access on Depot Street,

¹⁸ [http://www.a2gov.org/departments/systems-planning/capital-improvements/Documents/FY2014-FY2019/Transportation_Street%20Construction\(2\).pdf](http://www.a2gov.org/departments/systems-planning/capital-improvements/Documents/FY2014-FY2019/Transportation_Street%20Construction(2).pdf)

¹⁹ Segment 4 Traffic analysis, dated September 8, 2014.

6.0 Design Alternatives Screening

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access would be impaired by the recurring congestion, with queues that would back up past driveways or transit bays on a regular basis. Signalization at transit access drives may be necessary to allow effective transit operations at congested times.

In order to access east-west bus routes on Broadway, bus stops would likely need to be constructed on the Broadway Bridge at the station. To mitigate congestion, bus pullouts on the Broadway Bridge may be necessary, in which case the bridge would need to be widened. The pedestrian crossing on the Broadway Bridge would require an additional traffic signal, likely synchronized with the new traffic signal that would be required at the parking structure ingress/egress point.

Design Alternatives 3A, 3B, 3C, and 3D would have one entrance for all street-based transit modes and a separate entrance for automobile traffic. All Site 3 design alternatives would also require reconfiguration of the existing crossovers along Fuller Road in front of the site. The existing westbound to eastbound crossover would need to shift to the west to allow direct access to the station for westbound traffic on Fuller Road. The existing eastbound to westbound crossover would need to be relocated to the east to allow traffic exiting from the station access westbound Fuller Road. If the Connector is constructed near this station site, additional infrastructure, such as an elevated pedestrian connection, may be required for access to and from the rail station.

All design alternatives at both Site 2 and 3 could be connected to the existing system of sidewalks and non-motorized shared-use (bike) paths. Where those sidewalks and paths cross station access driveways, traffic volumes would need to be monitored and additional measures, such as signage, may be appropriate to minimize conflicts. For the Site 2 design alternatives, the areas of potential conflict would be the Broadway Bridges sidewalk at the automobile access driveways and the Depot Street sidewalk at the transit access driveways. For the Site 3 design alternatives, the

areas of potential conflict would be at the transit and automobile driveways along the shared-use path on the south side of Fuller Road.

The Site 2 design alternatives all share very similar access arrangements and would need similar site access infrastructure improvements. Therefore none of the Site 2 design alternatives is unreasonable in comparison to the others. The Site 3 design alternatives all have the same access arrangements and would need the same site access infrastructure improvements. Therefore none of the Site 3 design alternatives is unreasonable in comparison to the others.

Internal Pedestrian Circulation

Internal pedestrian circulation distances are summarized and overall averages given in Table 5.

Of the Site 2 design alternatives, Design Alternative 2A has the shortest cumulative internal pedestrian circulation distances. Design Alternative 2B is approximately 100 feet longer, followed by 2C, which is approximately 600 feet longer than 2B. Although Design Alternatives 2B and 2C have longer cumulative distances, neither appears unreasonable in comparison to the others.

Of the Site 3 design alternatives, Design Alternatives 3A and 3C have the same measurements and the shortest cumulative distances. Design Alternative 3D has almost the same cumulative distances (approximately 30 feet longer than 3A). Design Alternative 3B has considerably longer distances at over 600 feet longer than the other Site 3 design alternatives. Although Design Alternative 3B has longer cumulative distances, neither appears unreasonable in comparison to the others.

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Table 5: Internal Pedestrian Circulation

Site 2A	<i>Feet</i>
WB Platform to Station	145
EB Platform to Station	145
Parking to Station	250
Transit to Station	
<i>On-Site Bus Bays near Depot Street</i>	490
<i>NW Broadway Bridge</i>	35
<i>SE Broadway Bridge</i>	100
<i>Average Total</i>	208.33

Site 2B	<i>Feet</i>
WB Platform to Station	115
EB Platform to Station	230
Parking to Station	260
Transit to Station	
<i>On-Site Bus Bays near Depot Street</i>	575
<i>NW Broadway Bridge</i>	110
<i>SE Broadway Bridge</i>	175
<i>Average total</i>	286.67

Site 2C	<i>Feet</i>
WB Platform to Station	430
EB Platform to Station	155
Parking to Station	670
Transit to Station	
<i>On-Site Bus Bays near Depot Street</i>	705
<i>NW Broadway Bridge</i>	305
<i>SE Broadway Bridge</i>	240
<i>SE Broadway Bridge (no SE elevator)</i>	360
<i>Average total</i>	402.5

Site 3A / 3C	<i>Feet</i>
WB Platform to Station	30
EB Platform to Station	30
Parking to Station	150
Transit to Station	
<i>NB Med Ctr</i>	300
<i>SB Med Ctr</i>	260
<i>On-Site Bus Bay Area Within Parking Deck</i>	190
<i>Average total</i>	250

Site 3B	<i>Feet</i>
WB Platform to Station	315
EB Platform to Station	410
Parking to Station	370
Transit to Station	
<i>NB Med Ctr</i>	250
<i>SB Med Ctr</i>	364
<i>On-Site Bus Bay Area Within Parking Deck</i>	480
<i>Average total</i>	364.67

Site 3D	<i>Feet</i>
WB Platform to Station	105
EB Platform to Station	170
Parking to Station	0
Transit to Station	
<i>NB Med Ctr</i>	460
<i>SB Med Ctr</i>	400
<i>On-Site Bus Bay Area Within Parking Deck</i>	115
<i>Average total</i>	325

6.0 Design Alternatives Screening

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All Station Alternatives	2A	2B	2C	3A/C	3B	3D
Average Dist. Platforms to Stations	145	172.5	292.5	30	362.5	137.5
Approx. Dist. Parking to Stations	250	260	670	150	370	80
Average Dist. Transit to Stations	208	287	403	250	365	325
<i>Cumulative Feet</i>	603	719	1,365	430	1,097	543

6.4 Site Assessment

Table 6 shows the ratings of each design alternative for Site Assessment. The rationale for each rating is discussed below.

Table 6: Site Assessment Ratings

Criteria	Design Alternative		
	2A	2B	2C
Floodplain	1	1	1
Hazardous Materials	1	1	1
Cultural/Historic Resources	1	1	2
Recreational Lands	1	1	1
Property Ownership	1	1	2
Summary	5	5	7

Criteria	Design Alternative			
	3A	3B	3C	3D
Floodplain	1	1	1	1
Hazardous Materials	1	1	1	1
Cultural/Historic Resources	1	1	1	1
Recreational Lands	1	2	2	2
Property Ownership	1	1	1	1
Summary	5	6	6	6

Environmental Factors

(See Figs. 11 and 12)

Floodplain

Design Alternatives 2A, 2B, and 2C would be located in the floodplain. Design Alternatives 3A, 3B, 3C, and 3D would not be located in a floodplain.²⁰

Hazardous Materials

Design Alternatives 2A, 2B, and 2C all have potential impacts from hazardous materials due to structures located on known contaminated lands). Design Alternatives 3A, 3B, 3C, and 3D would not be located on a site with known hazardous materials located on-site.²¹

Cultural/Historic Resources

Design Alternative 2C incorporates a national register historic building (the former Michigan Central Depot) and requires use of property that is within a local historic district for short-term parking. Design Alternatives 2A and 2B are adjacent to the historic depot and historic district and may have impacts on the viewshed of the historic resource. Design Alternative 3A, 3B, 3C, and 3D have no known cultural or historic resources on site or within view.

Recreational Lands

Design Alternatives 2A, 2B and 2C do not use any recreational lands, although they are adjacent to or in view of several City parks or recreation areas within 500 feet, including Wheeler Park, Broadway Park, Argo Cascades, Riverside Park, and Fuller Park.

²⁰ See Figure XX

²¹ See Figure 11

6.0 Design Alternatives Screening

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Design Alternative 3A is located in the City of Ann Arbor's Fuller Park. Approximately 3 acres of the 60-acre park would be used, of which a majority is land currently used as a parking lot. The proposed footprints of the Design Alternative 3A buildings are in the parking lot area and railroad right-of-way, while site access elements link the station to Fuller Road.

Design Alternatives 3B, 3C, and 3D would use approximately 3.5 acres of the 60-acre park. In addition to use of the current parking lot area, the footprints would also use some recreational lands west of the footprint of the parking lot.

The Site 2 design alternatives have very similar issues with respect to these environmental factors. The primary difference is that Design Alternative 2C proposes to use a historic building, while the other alternatives may have an impact on the viewshed of the historic building. Given the identified space requirements, it may be possible to use the historic station without substantial modification, therefore none of the Site 2 design alternatives are unreasonable in comparison with the others.

The Site 3 design alternatives are very similar except that Design Alternative 3A is the only one that does not consume recreational lands west of the existing parking lot. As discussed above in Section 5.3, the City's policy has been to avoid use of recreational lands in Fuller Park and public comment has also reflected this desire. Therefore, Design Alternatives 3B, 3C, and 3D are not reasonable in comparison to Design Alternative 3A.

Property Ownership

The current expectation is that the City of Ann Arbor would own the station and the parking facilities and would operate the parking facilities. Amtrak (and potentially other entities) would occupy and

operate the station. MDOT owns the railroad infrastructure and controls the railroad right-of-way.

Design Alternatives 2A, 2B, and 2C would be built primarily on property owned by Amtrak, which also owns the existing station building. These design alternatives would also require acquisition or use of some adjacent land owned by DTE Energy. In addition, Design Alternative 2C would require acquisition of the building housing the Gandy Dancer restaurant.

All the Site 2 design alternatives require acquisition or use of private property. Therefore none is unreasonable in comparison with the others.

Design Alternatives 3A, 3B, 3C, and 3D are within Fuller Park and the railroad right-of-way, which are owned by the City of Ann Arbor and MDOT respectively. All the Site 3 design alternatives are within property owned by public entities. Therefore none is unreasonable in comparison with the others.

Figure 11: Environmental Elements for Design Alternatives 2A, 2B, and 2C

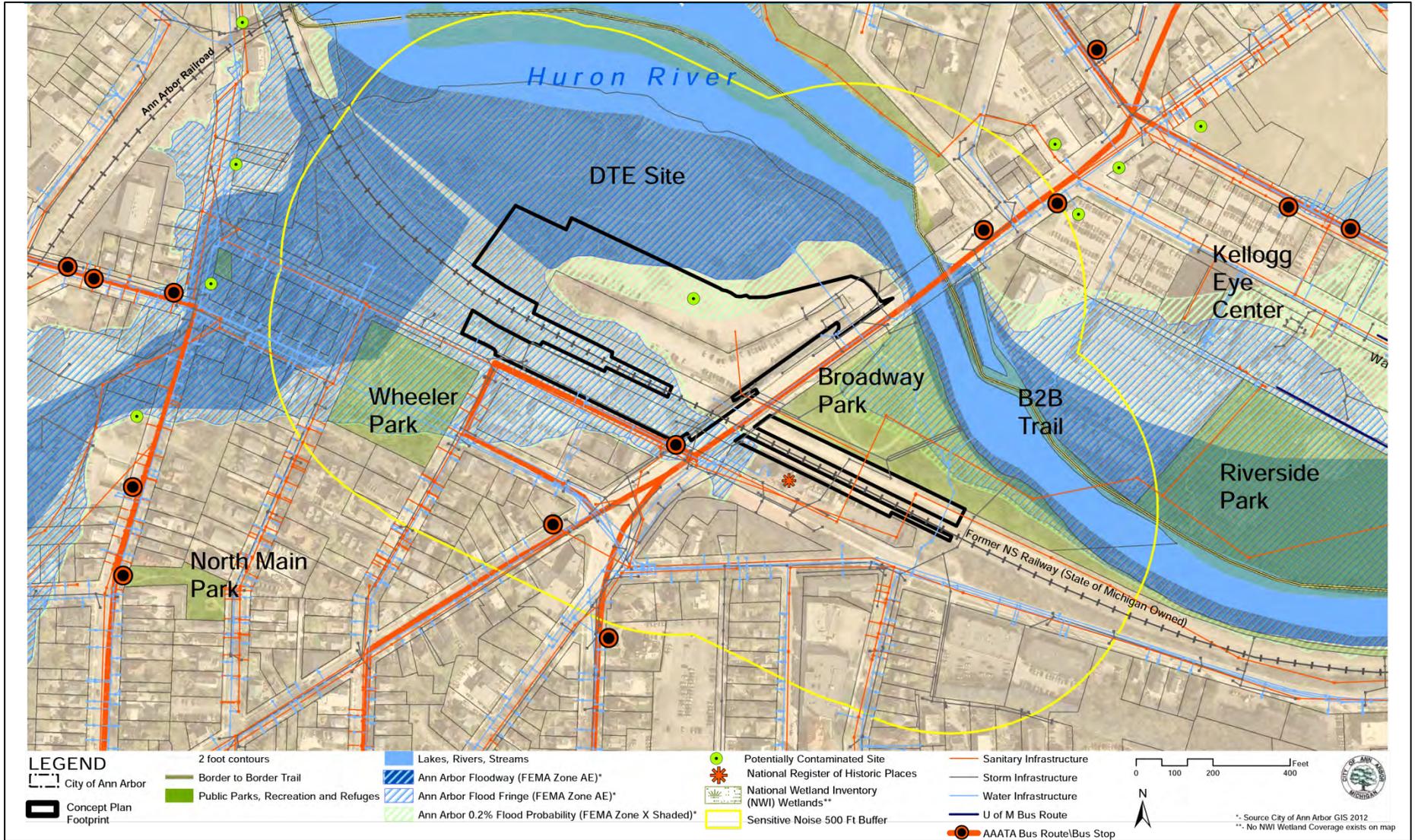
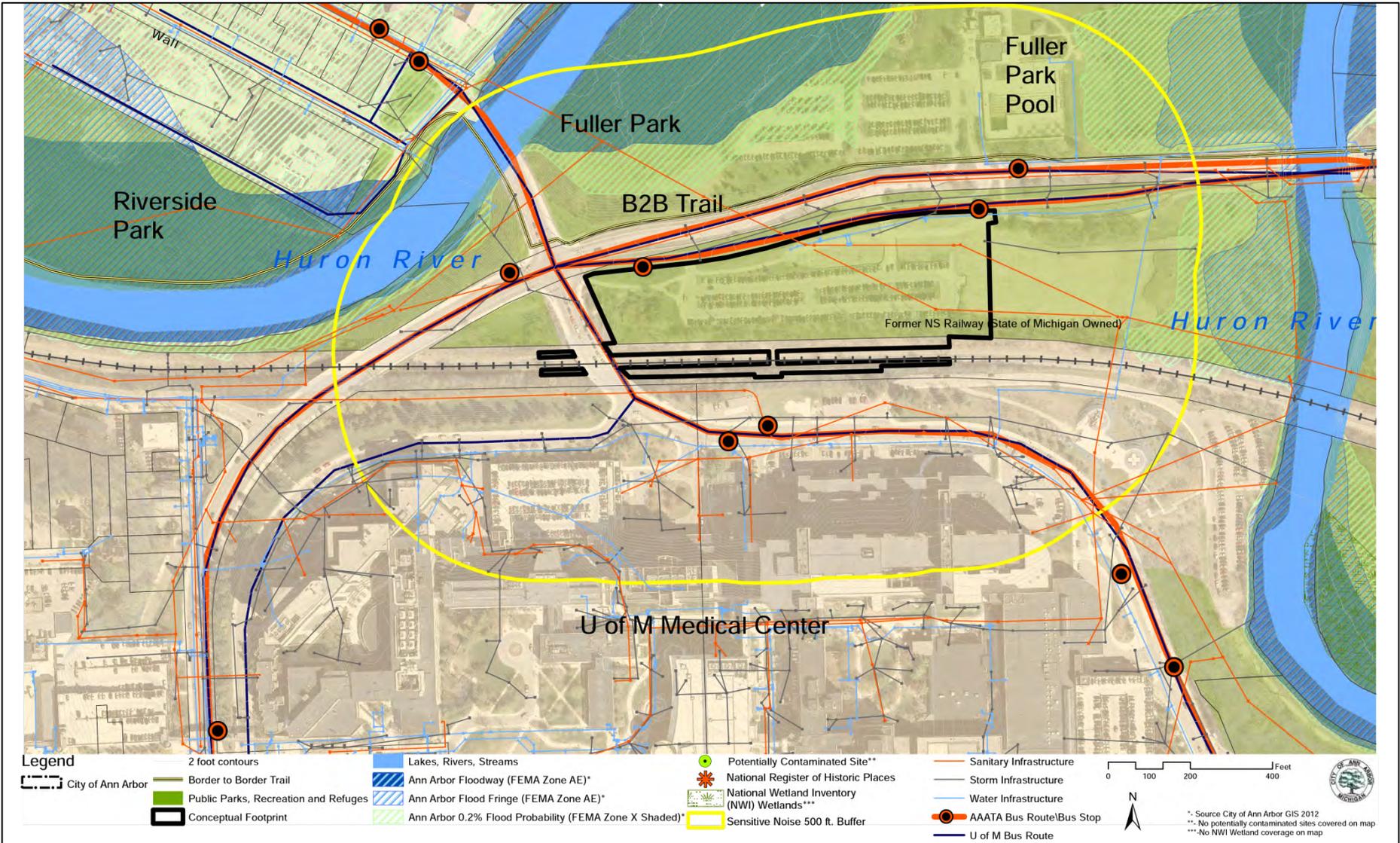


Figure 12: Environmental Elements for Design Alternative 3A, 3B, 3C, and 3D



6.0 Design Alternatives Screening

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6.5 Screening Summary

Table 7 summarizes and aggregates the rankings of each design alternative from Section 6.0.

Table 7: Screening Summary

Criteria	Design Alternative		
	Site 2A	2B	2C
Location within the Community	2	2	2
Accessibility and Parking	3	3	4
Site Assessment	5	5	7
Aggregate Rating	10	10	13

Criteria	Design Alternative			
	Site 3A	3B	3C	3D
Location within the Community	2	2	2	2
Accessibility and Parking	3	4	3	3
Site Assessment	5	6	6	6
Aggregate Rating	10	12	11	11

and 3D have impacts to public recreational lands in Fuller Park, contrary to City policy, which makes them unreasonable alternatives in comparison to Design Alternative 3A and eliminates them from consideration. Design Alternatives, 2A, 2B, 2C and 3A are identified as reasonable alternatives that will be advanced into the Environmental Assessment for further analysis consistent with the requirements of NEPA.

The comparative rankings suggest that each design alternative may have challenges with respect to particular issues. However, at this stage of data collection and analysis, four of the seven design alternatives appear to have the potential to meet the Purpose and Need, include all required design elements, and avoid the potential for substantial environmental impacts. Design Alternatives 3B, 3C,

7.0 Summary and Conclusion

Summary

This Phase II Report was prepared as the second step in the Ann Arbor Intermodal Station Alternatives Analysis. The purpose of the Alternatives Analysis is to determine which of the potential station design alternatives were reasonable to carry forward into the Environmental Assessment phase. This report evaluated the three station sites that advanced from Phase I by:

- 1) Establishing Design Criteria for station design alternatives.
- 2) Designing conceptual-level footprints for station design alternatives at each station site.
- 3) Evaluating the station design alternatives to determine whether they met the project Purpose and Need.
- 4) Evaluating the station design alternatives to determine whether they were reasonable in comparison to the other design alternatives at the same station site.

Site 1 (North Main Street) and its two design alternatives (Concept Plan A and B) were eliminated as not meeting the project Purpose and Need. This site had scored poorly in the Phase I report, but further analysis was conducted at stakeholder request. Further evaluation showed that the site could not accommodate the station program in a manner that met the project Purpose and Need. The remaining two sites – Site 2 (Depot Street) and Site 3 (Fuller West) and their respective Design Alternatives 2A, 2B, and 2C and 3A, 3B, 3C, and 3D satisfied the factors outlined in the project Purpose and Need.

The seven design alternatives were screened under the Phase II Design Alternatives Screening Criteria defined in Section 5.0 to determine whether they were reasonable to advance into the Environmental Assessment. These criteria were selected because they were determined to be the appropriate considerations and

potentially distinguishing factors in selecting a location for an intercity passenger rail station.

Conclusion and Next Steps

This report concluded that, given the current level of data and analysis, Design Alternatives 2A, 2B, 2C, and 3A are reasonable alternatives that should be advanced into the Environmental Assessment for further analysis consistent with the requirements of NEPA. Design Alternatives 3B, 3C, and 3D were eliminated from consideration because they were unreasonable in comparison to Design Alternative 3A due to their use of recreational lands in Fuller Park.

Upon release of this report, a public meeting will be held and comments will be collected, which will be included in the Environmental Assessment. The Environmental Assessment will contain an evaluation of potential environmental impacts for Design Alternatives 2A, 2B, 2C and 3A, consistent with the requirements of NEPA, and will identify the Preferred Alternative.

Following the release of the Environmental Assessment, a 30-day public comment period will begin. After comments are received and responses are provided, if it is evident that there are no significant impacts associated with the project pursuant to NEPA, FRA may prepare a Finding of No Significant Impact (FONSI) determination. A FONSI would be the final action in the FRA's NEPA process for the Ann Arbor Intermodal Passenger Rail Station.

Following completion of the Environmental Assessment, the project planning and design process will proceed with Preliminary Engineering (PE). The PE phase will include opportunities for public input. With the completion of PE, the plan for the Preferred Alternative will have been refined to a level of detail necessary to allow the project to advance to the Final Design and Construction phases.

No-Build Alternative

The National Environmental Policy Act and related regulations also require that a "No-Build Alternative" be evaluated in the Environmental Assessment. The No-Build Alternative for this project incorporates the existing Ann Arbor Amtrak Station (the busiest passenger rail station in the state of Michigan) and the associated long-term parking lot located north of the railroad tracks from the station itself. The station is located about one-half mile north of the center of downtown Ann Arbor. Current station utilization is about 150,000 annual passengers. The Amtrak station building is situated south of the tracks on Depot Street where the street passes beneath the Broadway Bridge. The site is near the historic Michigan Central Depot building. Public parking lots containing over 50 total short-term metered spaces about the station building.

The immediate Depot Street area contains a low-density mix of commercial properties. Beyond the commercial properties, a mix of single-family homes, apartment buildings, institutions, and parks extend south of the station along an urban street grid. The area includes two Historic Districts: the Division Street Historic District (which includes the historic station building) and the Old Fourth Ward Historic District (which extends from Depot Street to downtown and does not include the historic Depot). The area's urban mix gains intensity as it reaches the fringes of downtown.

North of the tracks, an L-shaped Amtrak parcel contains 70-80 long-term parking spaces for the station and a storm water management area associated with the parking area. Grassy berms in the area and the parking lot's driveway throat function as overflow parking. The Broadway Bridge divides these properties from Broadway Park.



Appendix A: AAS: Phase I Alternatives Analysis

Date: October 14, 2014

To: Eli Cooper, Transportation Manager, City of Ann Arbor

From: Project Team

Subject: Ann Arbor Station—Phase I Alternatives Analysis

The purpose of this memorandum is to describe the process for identifying and screening locations for a potential new multi-modal, intermodal, intercity and commuter passenger rail station in Ann Arbor (Ann Arbor Intermodal Passenger Rail Station). This Alternatives Analysis process is one element of the Ann Arbor Station Environmental Review. This effort, led by the City of Ann Arbor, began in January 2014 and is scheduled to conclude in December 2014. The Environmental Review is a concept planning study for:

- a. Defining the long-term needs for an Ann Arbor Intermodal Passenger Rail Station;
- b. Identifying potential sites and station options;
- c. Evaluating benefits and impacts of various station options, including a No-Build Alternative (continued use of the existing station); and
- d. Complying with Federal and State requirements for financing, building, and operating an Ann Arbor Intermodal Passenger Rail Station.

The Alternatives Analysis process is divided into two phases:

- **Phase I:** Identification of possible station sites and an initial screening of those sites; and
- **Phase II:** Development of conceptual station design alternatives for the sites identified in Phase I and review of those design alternatives to determine which are reasonable to advance into the Environmental Assessment phase.

Phase I is presented in this memorandum. Content contained here will be incorporated into an Environmental Assessment (EA) report, which will officially document the Environmental Review process.

Purpose and Need

The Ann Arbor Station Environmental Review is guided by a Purpose and Need document, which has been reviewed by the Michigan Department of Transportation (MDOT) and the Federal Railroad Administration (FRA). All station alternatives must comply with the Purpose and Need. The purpose of the proposed action is to:

“provide an intermodal facility that will accommodate existing and future intercity passenger rail ridership; improve intermodal connectivity within the City of Ann Arbor and its neighboring communities, including proposed commuter rail in the City of Ann Arbor; and improve the integration of the station within the City of Ann Arbor.”¹

All station improvements would fully comply with accessibility requirements within the Americans with Disabilities Act (ADA).

As stated in the Purpose and Need document, the following elements contribute to the need for an enhanced, intermodal and multi-modal passenger rail station in Ann Arbor:

- Insufficient quality and comfort for passengers provided by the existing station
- Inadequate space for intermodal connectivity at the existing station
- Substantial existing and projected future passenger demand

¹ Ann Arbor Station Environmental Review Draft Purpose and Need, revised on October 14, 2014.



- Limited transportation choices between the existing station, Ann Arbor activity areas and surrounding communities.²

The Purpose and Need creates the framework for designing a new Ann Arbor Intermodal Passenger Rail Station. Thus, each station alternative must correspond with the Purpose and Need. Those alternatives that appear unable to meet the Purpose and Need are not recommended for further consideration. The complete Purpose and Need document will soon be available on the Ann Arbor Station website. A summary of the document is currently available on the website at:

http://www.a2gov.org/government/publicservices/systems_planning/Transportation/Pages/Ann-Arbor-Station.aspx

Potential Station Site Identification

Site selection criteria were developed in order to identify potential station sites. The primary criterion was provided by MDOT and the National Passenger Rail Corporation (Amtrak). Both entities requested that any enhancements to the existing station, or construction of a new station, should occur along a tangent (straight) section of track. This meets train operational objectives that ensure ADA compliance (manageable gaps between the trains and platforms), promote passenger convenience and safety, and protect railroad equipment and infrastructure. Both MDOT and Amtrak stipulated that the tangent track sections should be at least 1000 feet long to support railroad operational needs.

Based on the Purpose and Need, other station site identification criteria stipulated that the potential sites should:

² *Ibid.*

Appendix A: AAS: Phase I Alternatives Analysis

- Lie along the existing Amtrak railroad corridor within City of Ann Arbor limits;
- Provide convenient access to downtown Ann Arbor and major activity areas. These other activity areas include notable trip generators in the City of Ann Arbor, including the University of Michigan (U-M) Central Campus, Medical Campus, and North Campus, and the Ann Arbor Department of Veterans Affairs (VA) Hospital. A proposed benchmark for convenience is proximity. Specifically, the Project Team (which includes URS, its subconsultants, and City staff) proposes using the national walking tolerance average of one-half mile to fixed guideway transit as optimal.³ Station sites within one-half mile of activity areas that include reasonable pedestrian accommodations can be expected to promote walking access. All other access modes also benefit from this proximity.
- Include enough land to accommodate all required site features. The Project Team’s preliminary estimate was that sites meeting the Purpose and Need would require at least three acres of suitable land for station facilities.⁴ Given that ridership and station volume estimates have increased since this initial estimate, the amount of land required for a station has increased. Land requirements will be considered in detail as part of the Phase II analysis. During Conceptual Design, the

³ Transit Cooperative Research Program (2009). *Literature Review for Providing Access to Public Transportation Stations*. TCRP Web-Only Document 44, available at http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_webdoc_44.pdf.

⁴ Three acres is the Project Team’s preliminary minimum land estimate for accommodating station facilities, including a station building, multi-modal transfer center, platforms along both sides of a double-tracked rail corridor, a grade-separated track crossing for passengers—meaning a pedestrian bridge or tunnel meeting Americans with Disabilities Act (ADA) access requirements—and station parking.

project team will consider how the station can be built in stages and expanded as necessary;

- Allow convenient access to existing roadway networks. The station's high utilization projections⁵ will require direct access to high volume roadway networks;
- Support connections to public transit services and non-motorized transportation facilities; and
- Minimize impacts to environmental resources. A list of environmental categories required for analysis as part of FRA-funded projects is provided on the FRA website.⁶ Many of these criteria were considered generally during Phase I of the analysis and will be reviewed in detail for the small set of station sites advanced to Phase II.⁷ The environmental category receiving the most stakeholder comments has been parks and recreational properties. The National Environmental Policy Act (NEPA) process requires special consideration of these properties, which are identified in the U.S. Department of Transportation Act of 1966 Section 4(f). Specifically,

⁵ Ann Arbor Station internal memorandum on ridership and station utilization, August 8, 2014.

⁶ The FRA environmental categories list can be found at <https://www.fra.dot.gov/eLib/details/L02561>. These were published in the Federal Register, Volume 64, Number 101, page 28550, on Wednesday, May 26, 1999. This 1999 categories list has yet to be superseded in final rulemaking.

⁷ The environmental categories considered during the Phase I analysis are shown in the legends of the figures for this memorandum. These categories represent readily available data and the most prominent factors for screening alternatives. The analysis assumes that further evaluation would be performed in Phase II and for the Preferred Alternative.

“Before an alternative involving the use of a Section 4(f) resource can be selected, avoidance alternatives and minimization measures must be considered.”⁸

The Phase I criteria were reviewed by Ann Arbor stakeholders and citizens at public meetings in April 2014 and met with general approval. Stakeholders have since expressed interest in additional evaluation criteria, with numerous requests received for consideration of implementation costs and station-oriented development. Cost implications are considered generally in Phase I, in that land acquisition, relocations, required infrastructure and associated investments would increase project costs. However, implementation costs cannot be estimated until conceptual designs are developed. For these reasons, cost is not included as a specific criterion during Phase I. An alternative's economic constraints on local government is considered in the socioeconomic environmental category; thus general considerations to comparative costs are included in the Phase I analysis. Station-oriented development is also generally considered in the environmental categories, as it relates to compatible land uses and economic impacts.

In accordance with the site selection criteria, the Project Team has identified eight 1000-foot tangent track segments within the City of Ann Arbor. Figure 1 displays these track segments. Figure 2 shows the segments in context with half-mile radius circles around major activity areas. Figure 3 shows the segments in context with the public transit network.

⁸ US Federal Highway Administration website: <http://www.environment.fhwa.dot.gov/section4f/avoidance.aspx>

Figure 1: 1000-Foot Straight Track Segments along Amtrak Corridor in Ann Arbor



Figure 2: Proximity of Segments to Downtown Ann Arbor and Major Activity Areas

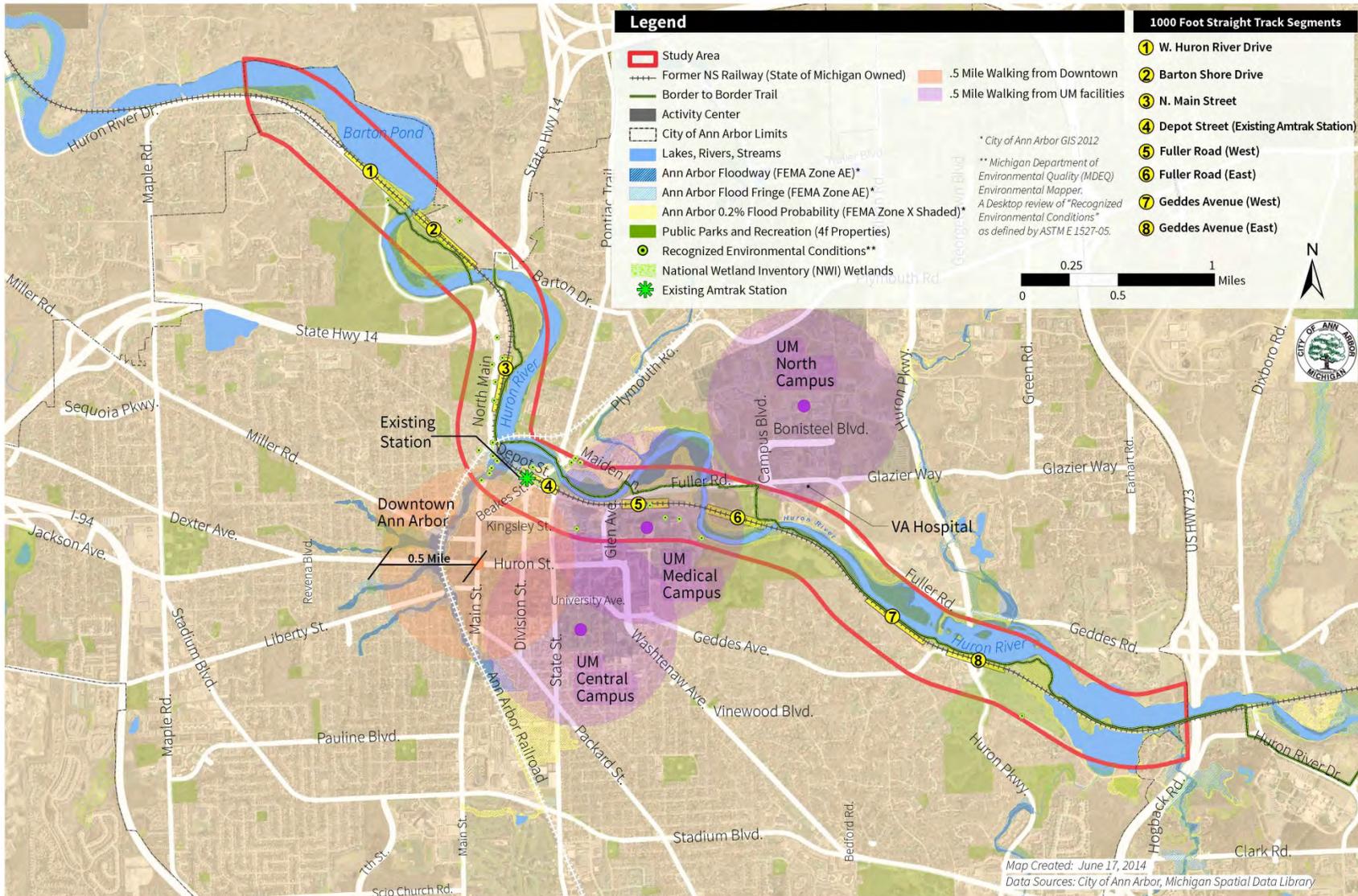
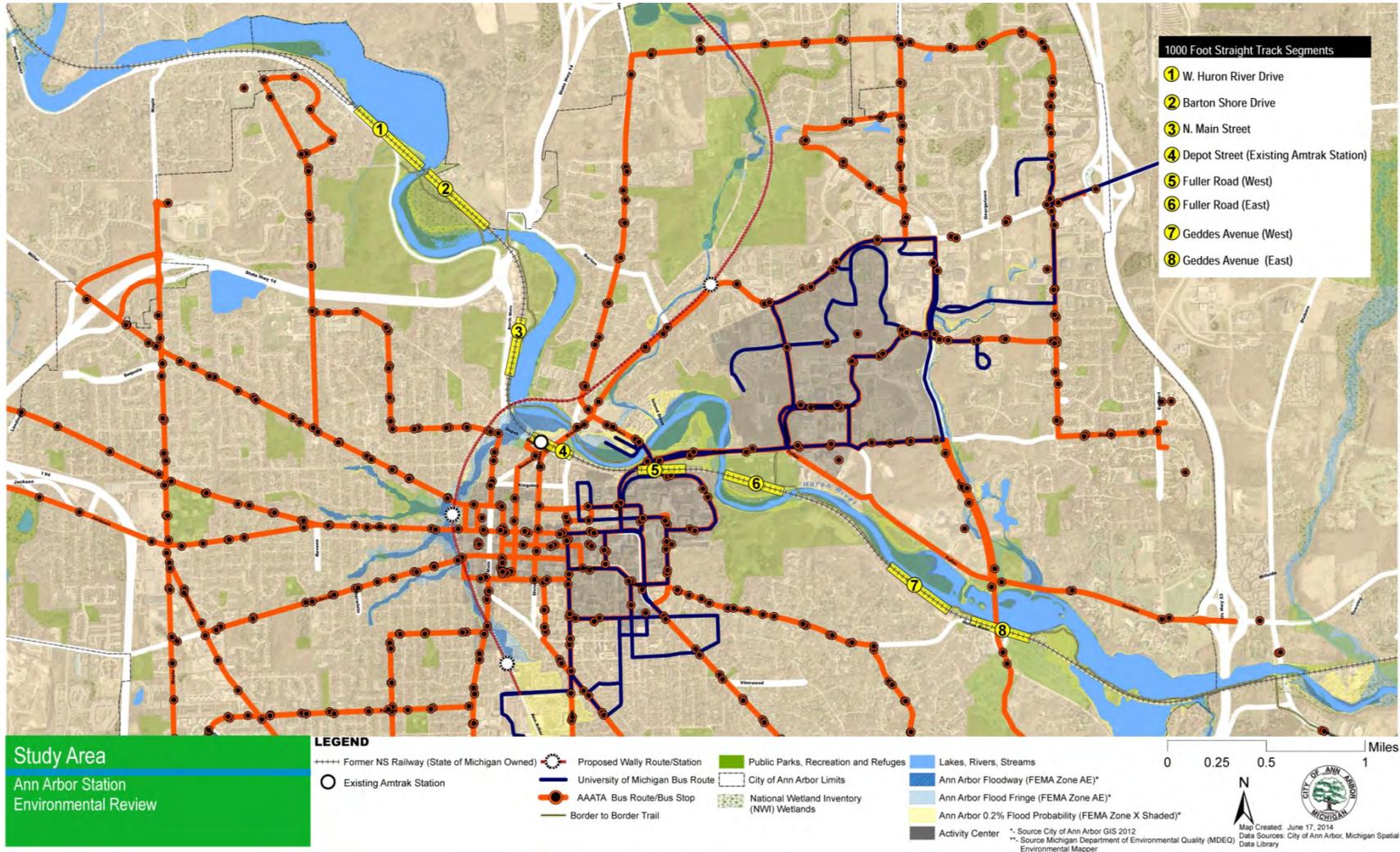


Figure 3: Segments in Context with Ann Arbor Transit Network





Segment identifiers are provided in Table 1.

Table 1: 1000-Foot Straight Track Segments along Amtrak Corridor in Ann Arbor

Segment #	Segment Name	Approximate Track Milepost*	Approximate Length (Feet)
1	West Huron River Drive	38.5	2300
2	Barton Shore Drive	38.4	2200
3	North Main Street	37.9	1500
4	Depot Street (Existing Amtrak Station)	37.3	1200
5	Fuller Road (West)	36.8	1300
6	Fuller Road (East)	36.2	1600
7	Geddes Avenue (West)	35.1	2000
8	Geddes Avenue (East)	34.8	1700

**From the 1999 Consolidated Rail Dearborn Division track charts, Michigan Line. These mileposts appear to land within the segments and do not represent surveyed midpoints.*

The existing railroad corridor follows the Huron River and has operated continuously along the river for over 100 years. Accordingly, potential stations present possible impacts to the river or riverfront areas. These and other potential environmental impacts are considered generally in Phase I of the analysis. Phase II and the Environmental Assessment will include more in-depth environmental evaluation.

Phase I Segment Descriptions and Scoring

The following sections describe the set of eight Phase I track segments identified for evaluation. The segments are described in context with the site selection criteria. Each segment evaluation criterion is assigned a preliminary score ranging from -2 (least compliant) to +2 (most compliant). This scoring represents an effort to generally gauge the feasibility and reasonableness of locating a station meeting the Purpose and Need at each segment. The goal of this process is to screen the segments to a small set worthy of detailed Phase II analysis. This memorandum does not rank the Phase II segments in any way; Phase II will commence a wholly new evaluation process for the remaining segments.

For a summary matrix showing how the Project Team scored each Phase I segment, please see Page 30.



Appendix A: AAS: Phase I Alternatives Analysis

Segment 1: West Huron River Drive (Figure 4)

This site in the city’s far northwest corner and surrounded by parkland and natural resources meets few of the site identification criteria. Correspondingly, a brief description of the site’s constraints is here provided.

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

Segment 1 is located in the northwestern corner of the city. It is over 2.5 miles from the center of downtown and other major activity areas. This site does not meet the criterion for convenient access.

Criterion: Suitable Land for a Station

The track segment is surrounded by the Bird Hills Park / Nature Area and part of the segment is immediately adjacent to both the Huron River and West Huron River Drive. Nearby developed areas consist entirely of single-family homes, aside from the tracks themselves and the nearby Barton Dam on the river. There appears to be very little land for a station here, even if parkland were to be included for station use.

Criterion: Convenient Access to Existing Roadways

The segment is accessed via a winding two-lane road (West Huron Drive), which would require modifications to accommodate station access. The nearest high capacity roadways are further than one mile from the segment.

Criterion: Public Transit Connections

One existing Ann Arbor Area Transportation Authority (AAATA) bus route, Route 13, loops through a residential area within one block of Segment 1, at the end of its route. The route operates between the area and downtown Ann Arbor at peak 30-minute headways and

hourly during the midday. Route 13 could potentially extend to a station at the segment to provide a very basic transit connection.

Criterion: Minimizing Environmental Impacts

The segment is within flood zones, which limits opportunities for a station in the area. A station would also present potential impacts to surrounding parkland, the Huron River, wetland areas, wildlife habitat, and a low-density residential area.

Summary

Segment 1 is not a reasonable station site, as it meets very few of the site identification criteria. It is not recommended for further consideration. Phase I scoring for this segment is shown in the matrix below. The Segment 1 area is displayed in Figure 4.

Segment 1: West Huron River Drive	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	-2
Suitable Land for Station Facilities	-2
Accessed by Existing Roadways	-1
Public Transit Connection Potential	-1
Minimize Environmental Impacts	-2
Phase I Score	-8

Figure 4: Segment 1—West Huron River Drive





Appendix A: AAS: Phase I Alternatives Analysis

Segment 2: Barton Shore Drive (Figure 5)

Segment 2 meets few of the site identification criteria. The tracks follow the border between City parkland (the Barton Nature Area) and the Barton Hill Village incorporated area north of the city of Ann Arbor. The tracks bridge the Huron River at either end of the segment. Barton Shore Drive extends along the far side of the farmland from the tracks and is the nearest roadway. The City parkland is actually on a peninsula surrounded by the Huron River and thus is disconnected from the rest of the city except by two footbridges across the river. On the north side of the tracks is a meadow behind the Barton Hills Village Hall. A Barton Nature Area access trail crosses under the tracks at the northwestern end of the segment.

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

This segment is north of the city (except for the bordering parkland). It is located about 2 miles from downtown and is further from other major activity areas. It is well outside the half-mile walk shed of major activity areas.

Criterion: Suitable Land for a Station

The only place to construct a station along Segment 2 is on the meadow north of the tracks. A station on these properties would be in Barton Hills Village, and thus does not meet the criterion of a station within the City of Ann Arbor. The meadow north of the tracks is large enough to host a station, but the land is outside Ann Arbor city limits and further than a mile from identified activity centers.

Criterion: Convenient Access to Existing Roadways

The Segment 2 area is not linked to a public road. A new street would need to be constructed to access a potential station site. Barton Shore Drive is a private, two-lane, tree-lined facility that connects to

Barton Drive at a stop sign-controlled intersection. This intersection includes M 14 highway on and off ramps, which would be advantageous for this segment if local roadways connected the intersection to the segment. The meadow properties separate the tracks from the intersection and all local roadways.

Criterion: Public Transit Connections

No public transit routes travel in nearby areas.

Criterion: Minimizing Environmental Impacts

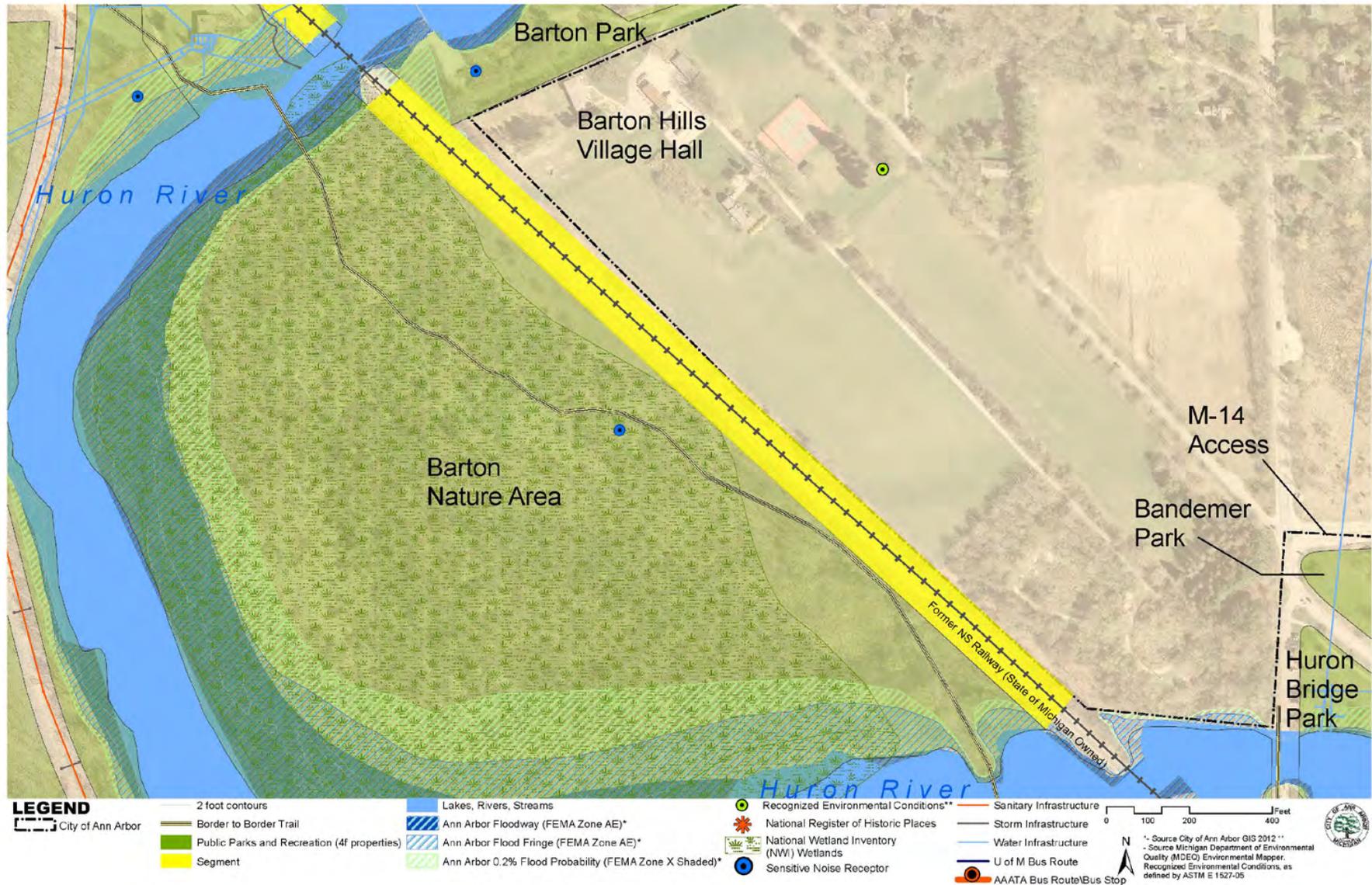
Station construction and operations present potential impacts to surrounding wetland areas and parklands. Siting a station here would displace meadow land and dramatically change the area's character.

Summary

Segment 2 meets few of the site identification criteria and thus is not recommended for further consideration. Phase I scoring for this segment is shown in the matrix below. The Segment 2 area is displayed in Figure 5.

Segment 2: Barton Shore Drive	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	-2
Suitable Land for Station Facilities	-1
Accessed by Existing Roadways	-1
Public Transit Connection Potential	-2
Minimize Environmental Impacts	-2
Phase I Score	-8

Figure 5: Segment 2—Barton Shore Drive



Segment 3: North Main Street (Figure 6)

Segment 3 is located about one mile northwest of downtown Ann Arbor. Through this area, the tracks extend between a light industrial zone along North Main Street and Bandemer Park. At the southern end of the segment, the railroad right-of-way includes the Border-to-Border (B2B) Trail shared-use pathway, which sits on an easement provided by the railroad. In this area, the tracks and B2B Trail are immediately adjacent to the Huron River. The track area, Bandemer Park, and the B2B Trail are accessed via Lake Shore Drive, a private drive that connects perpendicularly with North Main Street and crosses the tracks at grade.

The railroad right-of-way is exceptionally wide along parts of Segment 3. The area historically included industrial access yard tracks, and an active excursion rail platform exists along this segment. Two siding tracks in the area are used for storing vintage railroad cars owned by Artrain/Mid America Railcar Leasing LLC (<http://www.midamericarailcar.com/index.html>). A trackside platform and shelter serves as a waiting area for visiting the railcars and excursion and educational trips using the vintage railcars.

The Artrain rail shelter sits adjacent to a parking lot for the NEW Center, a facility housing non-profit organizations at 1100 North Main Street. The parking lot contains just over 50 parking spaces adjacent to the tracks.

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

The one mile distance between Segment 3 and downtown is greater than the national walking tolerance average of one-half mile to fixed guideway transit. Other activity areas are further from the segment. The primary connection to the area is North Main Street, which offers a sidewalk along the east side of the roadway and few other

amenities for walking or bicycling between Downtown, Ann Arbor neighborhoods, and the segment area. The B2B Trail provides regional bicycle access to the area.

Criterion: Suitable Land for a Station

The wedge of properties between North Main Street and the tracks contains several light industrial and office businesses. One or more of these properties would need to be acquired in order to locate a multi-modal station in the area. An industrial use exists across North Main Street opposite Lake Shore Drive. A few other businesses are scattered along the west side of North Main Street. The majority of the west side of North Main Street contains a heavily wooded slope. This is part of the Bluffs Nature Area, which covers the hillside and borders North Main Street for much of its length through the area.

Criterion: Convenient Access to Existing Roadways

North Main Street is a major four-lane arterial through this area with connections to Downtown and M 14. For station access, North Main Street would likely require a signalized intersection and other improvements at Lake Shore Drive or a nearby site entry point. Lake Shore Drive is not currently a public road, which creates another challenge to access this location.

Criterion: Public Transit Connections

Only one AAATA bus route, Route 13, travels in the general Segment 3 area. It operates about three blocks from the southern limit of this segment. Other bus routes would need to make major diversions to serve the area. The proposed Washtenaw and Livingston Line (WALLY) commuter rail service may be implemented about 400 yards south of the segment. WALLY would travel between downtown Ann Arbor and Howell. At a point between Segments 3 and 4, the Ann Arbor Railroad tracks pass above the Amtrak tracks on a viaduct. Both railroads navigate sharp curves at the crossing point, which eliminates the option of locating the intercity rail station at the



Appendix A: AAS: Phase I Alternatives Analysis

crossing. The WALLY project has not proposed a station in the vicinity of the crossing point.

Criterion: Minimizing Environmental Impacts

Notable environmental impacts of a station along Segment 3 would be the cost to the City of acquiring multiple properties and relocation of several businesses. Potential impacts to nearby park areas, associated wetlands, and the Huron River would also need consideration. Also to be considered: the cost to redesign North Main Street and nearby intersections to provide multi-modal site access.

Summary

It appears possible to locate an intermodal passenger rail station at Segment 3. However, the segment does not meet the Purpose and Need. The prospect of acquiring several properties along the segment and relocating businesses raises the capital and socioeconomic costs of locating a station here. Access and roadway conditions create problems for vehicular and non-motorized access between the site and major activity areas. This site has limited potential for transit connections. The site’s environmental constraints are complex, and thus the Project Team initially did not recommend advancing Segment 3 for further analysis.

Postscript: At June stakeholder and public meetings, a few participants expressed support for further consideration of this segment area. Several other meeting participants concurred with the requests, with no dissent. As a result, the Project Team advanced Segment 3 for further consideration in the Phase II analysis, along with Segment 4 (Depot Street/Existing Amtrak) and Segment 5 (Fuller Road—West).

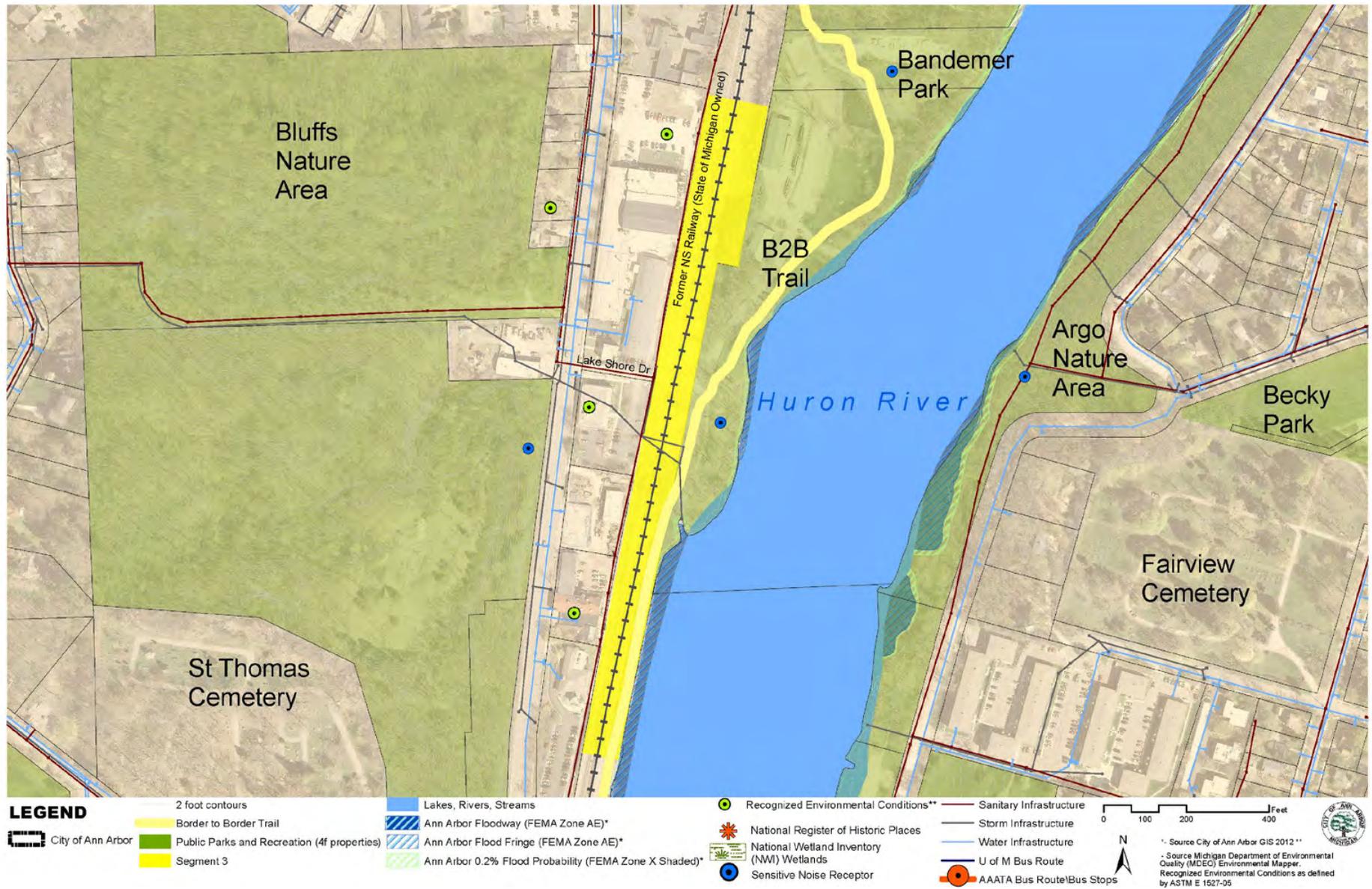
The Project Team performed further analysis on this site and developed conceptual designs after the conclusion of Phase I. The Team concluded that the station program would require considerably

more land than originally anticipated and that very little buildable land would remain for station-oriented development. All businesses between North Main Street and the Huron River and within 700 feet of Lake Shore Drive would be relocated for this segment. This information was shared with diverse stakeholders during a site tour on September 15, 2014. Accordingly, tour participants and meeting attendees expressed little support for this site after the tour. The Project Team once again recommends eliminating Segment 3 from further consideration. Concept designs for this site and further analysis will be included in a Phase II Alternatives Analysis technical memorandum.

Phase I scoring for this segment is shown in the adjoining matrix. The Segment 3 area is displayed in Figure 6.

Segment 3: North Main Street	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	0
Suitable Land for Station Facilities	0
Accessed by Existing Roadways	1
Public Transit Connection Potential	0
Minimize Environmental Impacts	-1
Phase I Score	0

Figure 6: Segment 3—North Main Street



Segment 4: Depot Street (Existing Amtrak Station) (Figure 7)

The Segment 4 area includes the existing Ann Arbor Amtrak Station, the busiest passenger rail station in the state of Michigan. The station is located about one-half mile from the center of downtown Ann Arbor. Current station utilization is about 150,000 annual passengers. Segment 4 is also the location of the historic Ann Arbor train station building (now the Gandy Dancer restaurant), which sits next door to the Amtrak station. The Amtrak station building is situated south of the tracks on Depot Street, where the street passes beneath the Broadway Street Bridge. Public parking lots containing over 50 total metered spaces abut the station building.

The immediate Depot Street area contains a low-density mix of commercial properties. Beyond the commercial properties, a mix of single-family homes, apartment buildings, institutions and parks extends south of the station along an urban street grid. The area includes two Historic Districts: the Division Street Historic District (which includes the historic station building) and the Old Fourth Ward Historic District (which extends from Depot Street to downtown). The area's urban mix gains intensity as it reaches the fringes of downtown. North of the tracks, an L-shaped Amtrak parcel contains 70-80 long-term parking spaces for the station and a stormwater management area associated with the parking area. Grassy berms and the driveway throat in the area function as overflow parking. A large, previously developed parcel (owned by DTE Energy) extends northward from the Amtrak long-term parking lot to the Huron River. This land was used decades ago for energy manufacturing—a process that left the site polluted. DTE performed environmental remediation of the site in 2012-2013.⁹ The Broadway Street Bridge divides these properties from Broadway Park. The area

⁹ <http://www.annarbor.com/news/dte-energy-calls-michcon-cleanup-success/>

north of the river along Broadway Street contains a few sidewalk-oriented commercial buildings. The Kellogg Eye Center Hospital and other U-M facilities are situated along Wall Street just to the northeast of this location.

The total amount of parking currently available to Amtrak customers includes:

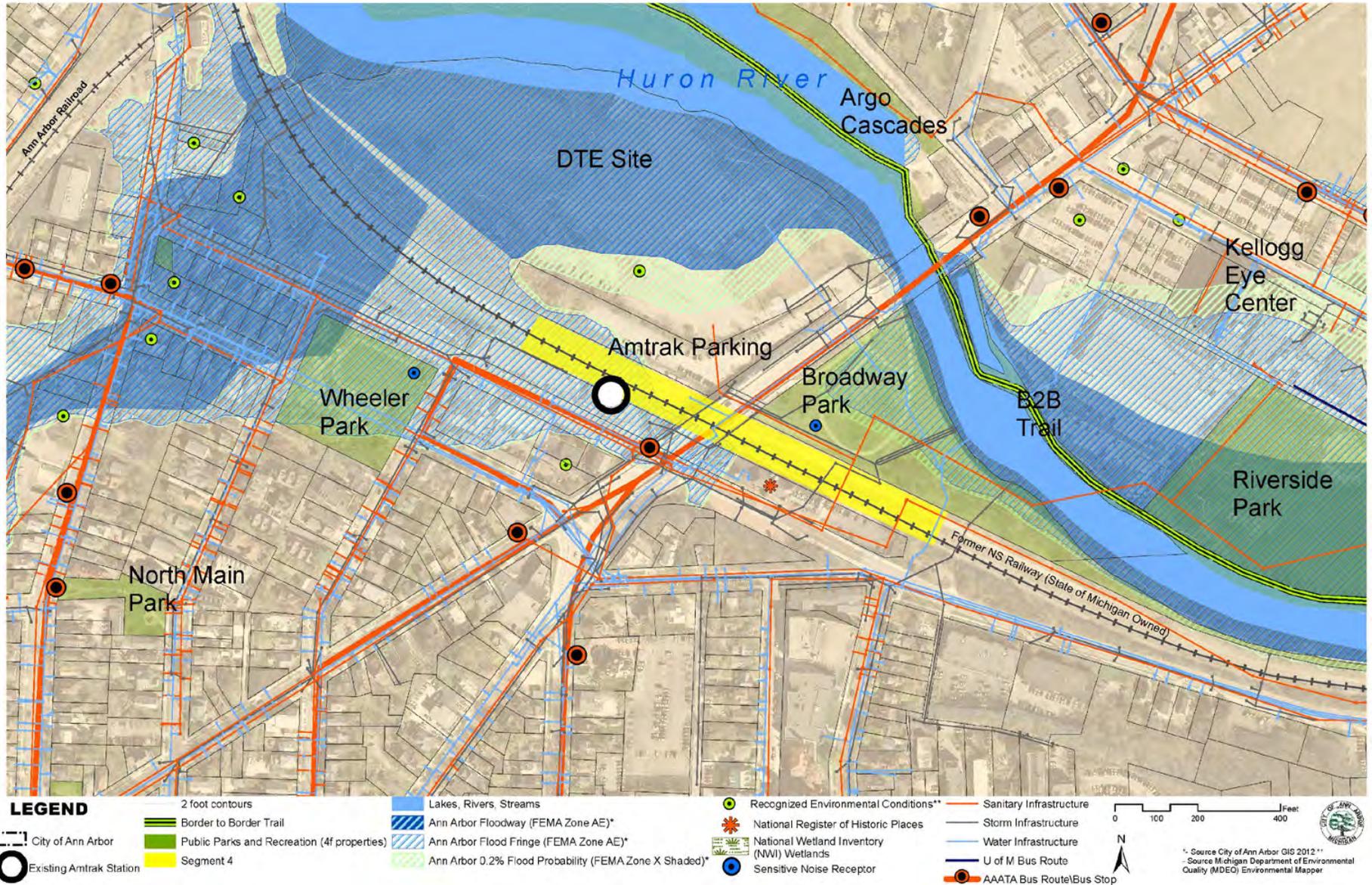
- 70-80 spaces north of the tracks and some additional open land used for parking (Long Term Parking). This parking is available at no charge and parking restrictions are lightly enforced. Riverfront recreational users and visitors to the nearby Kellogg Eye Center hospital reportedly use up to 50 percent of these spaces periodically;
- About 38 short-term metered spaces in the city lot west of the station, including 2 “blue” accessible spaces, and
- About 14 short-term metered spaces beneath the Broadway Bridge, just south of the station building.

The existing Amtrak station building is undersized for its present use, and station activity is expected to grow more than seven fold by 2035. The station building lacks many amenities generally associated with busy intercity passenger rail stations. Also problematic: the long-term station parking area, located north of the tracks, is at capacity. Access to the parking area is a problem as well: the walk via the Broadway Street Bridge currently requires multiple flights of stairs. The narrowness of Depot Street, limited curbside space, and complex station traffic cause local congestion.¹⁰

The Segment 4 area is displayed in Figure 7.

¹⁰ More information on the existing Ann Arbor Amtrak station is available in an Existing Conditions memorandum prepared by the Project Team for the Environmental Review and dated March 5, 2014.

Figure 7: Segment 4—Depot Street (Existing Amtrak Station)



(Segment 4: Depot Street {Existing Amtrak Station}, continued)

Several community members have expressed interest in repurposing the historic station building /Gandy Dancer Restaurant as part of a new Ann Arbor Intermodal Passenger Rail Station. Factors complicating this reuse include:

1. The historic station building and its surrounding land are privately owned. This building and surrounding brick streets are in the Division Street Local Historic District, which could limit alteration and new construction;
2. The projected 2035 ridership at a new Ann Arbor Intermodal Passenger Rail Station is over 1 million annual riders. Amtrak guidelines for a station accommodating this passenger volume call for a building larger than the historic station building;
3. Land on the east side of the Broadway Street Bridge, which is where the historic station building is, is more constrained than land west of the bridge. Broadway Park borders the tracks opposite the historic station building, which limits grade-separated pedestrian crossing options at this location. The impacts of a pedestrian bridge or tunnel between the historic building, a second passenger platform and parking across the tracks also need consideration;
4. The narrow, linear parking lot across Depot Street from the historic station building contains 20 parking spaces. Modifications to this lot for additional parking or multi-modal access are constrained by an adjoining forested slope that includes and borders residential structures. Also, this parking lot is in the Old Fourth Ward Local Historic District, which could limit construction on the site. A second parking lot east of the historic station building, including about 40 parking spaces, could possibly extend linearly. However, is probably too narrow to enable vertical station parking; and

5. Existing station parking and large parcels that can possibly host expanded parking are on the west side of the Broadway Street Bridge and north of the tracks. A building along the segment for a new Ann Arbor Intermodal Passenger Rail Station would connect directly with these parcels, and thus would most likely be located west of the Broadway Street Bridge.

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

Of all the segments, Segment 4 is the closest to downtown Ann Arbor. It sits approximately one-half mile from the heart of downtown—a walkable distance. The U-M Medical Campus is located about two-thirds of a mile away, and the U-M Central Campus is less than a mile away. The city's street grid connects the station area to the entire city. Topography, an elevated roadway, and high speed vehicular approaches to the Broadway Street Bridge create some local non-motorized and barrier-free access problems. Mitigation measures may be able to address these problems, but would add to a new station's implementation costs.

Criterion: Suitable Land for a Station

The existing station properties on both sides of the tracks provide about 2.5 acres of relatively unencumbered land as a starting point. City-operated parking lots adjacent to the station are potentially suitable for station development. Other nearby land could possibly be acquired for the station; this includes DTE parcel(s), properties associated with the landmark historic station building (the Gandy Dancer restaurant), and commercial properties along Depot Street.

Criterion: Convenient Access to Existing Roadways

While the Segment 4 area is connected to the Ann Arbor street grid, previously-noted topographical and roadway conditions create challenges for local access. While land may be available for station parking on the north side of the tracks, access to and from Broadway



Appendix A: AAS: Phase I Alternatives Analysis

Street is currently funneled to a single, unsignalized access point. The station parking access drive would likely require a traffic signal and potentially require an additional access point. The grade differential between trackside parcels and the Broadway Street Bridge creates access challenges. It is possible that these issues can be addressed with mitigation measures, but at additional cost to the station project.

Criterion: Public Transit Connections

Existing transit service connects the Segment 4 area with downtown Ann Arbor, the U-M Central Campus, and the U-M North Campus. Three AAATA bus routes serve the immediate area. AAATA Route 17 stops on Depot Street in front of the existing station. Two other routes (AAATA Routes 1 and 2C) follow Broadway Street across the bridge, and thus travel above the station. The Project Team recommends exploring opportunities to connect these routes to the station in the next phase of the Environmental Review. Options include stops on the bridge with a crosswalk and vertical circulation, or a route diversion to the station. Improvements to enable Broadway Street routes to connect would add to the project cost.

U-M bus routes travel within one-quarter mile of the Segment 4 area and can possibly be extended to connect to the area. To summarize, connecting sufficient transit to a station at Segment 4 seems achievable.

Criterion: Minimizing Environmental Impacts

Impacts to Amtrak operations during development of a new station would require careful staging. Parts of the existing station property and much of the surrounding land lie within identified flood zones. Traffic impacts related to station and access improvements would need consideration and, conceivably, mitigation measures. Should property in addition to Amtrak parcels be required for a new station at the site, the financial and socioeconomic impacts of property acquisitions must be considered. The historic station building (now

Gandy Dancer restaurant) is on the National Register of Historic Places. Thus, impacts to the historic station building must be avoided.

Summary

Segment 4 contains the city’s passenger rail station today and may possibly host a new intermodal station meeting the Purpose and Need. An exploration of station options at this site is recommended for further consideration. Phase I scoring for this segment is shown in the matrix below.

Segment 4: Depot Street (Existing Amtrak)	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	2
Suitable Land for Station Facilities	1
Accessed by Existing Roadways	1
Public Transit Connection Potential	1
Minimize Environmental Impacts	1
Phase I Score	6

Segment 5: Fuller Road (West) (Figure 8)

Segment 5 is located immediately north of and downhill from the U-M Medical Campus, below the Fuller Road and East Medical Center Drive bridges. The north side of the tracks is bordered by Fuller Park, which sits slightly higher in elevation than the tracks.

The Segment 5 area contains a dense employment concentration—far exceeding the other segment areas. It also contains multiple large parking lots and structures that support local employment, education and recreation. One of the parking areas within Fuller Park extends parallel to the tracks, about 75 feet north of the tracks. The lot contains about 250 spaces. Another large parking lot is located further north from the segment, on the far side of Fuller Road. This additional lot next to the Fuller Park Outdoor Pool and Waterslide contains about 235 spaces. Both of these parking lots appear to be used, in part, by commuters. South of the tracks and up the hill, the multi-level M15 North Entrance Parking Structure is nestled into the Medical Campus. Other parking structures and lots surround the Medical Campus, some of which are near the track segment.

The area also contains a nearby multi-family residential area, located across the Huron River from the segment along Maiden Lane. The Kellogg Eye Center Hospital is just beyond the housing areas. U-M recreational fields are east of the segment along Fuller Road, as are some U-M North Campus facilities and the VA Hospital.

The Segment 5 area is displayed in Figure 8.

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

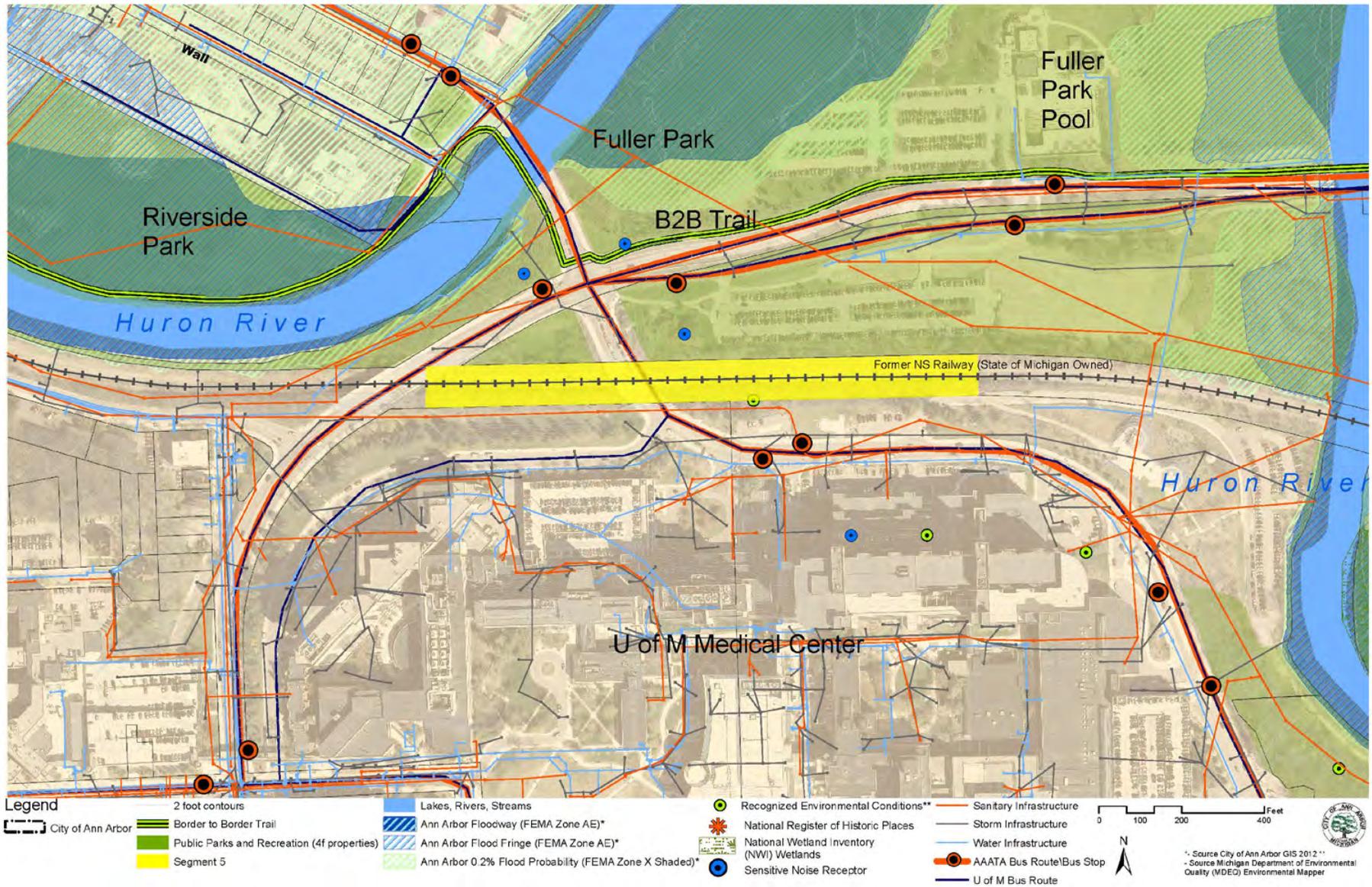
Segment 5 is located about one mile from the center of downtown Ann Arbor, beyond the typical distance passengers would be willing to walk. Frequent transit service between the segment area and downtown helps bridge that walking gap. A planned high-capacity transit service, the Connector, is proposed to link the area with downtown, U-M campuses, and other major activity areas. The segment is about 100 yards from the nearest U-M Medical Campus buildings.

The Medical Campus has one of the highest concentrations of jobs in Washtenaw County. The difference in elevation between the tracks and the Medical Campus would require vertical circulation, including elevators to serve persons with disabilities. The U-M Central Campus is located about two-thirds of a mile from the segment—a long walk. Both the Central and North Campuses connect to the area by frequent bus services.

Criterion: Suitable Land for a Station

The Segment 5 area has land uses to support a station. Platforms and vertical circulation may fit within railroad property, but a station building and other facilities would be located a) on City-owned designated park land now occupied by parking, b) in air rights above the MDOT tracks, c) on University property that is densely built-out with medical facilities, and/or d) along area roadways. While these issues appear complicated, further analysis would clarify the feasibility and reasonableness of a station along this segment.

Figure 8: Segment 5—Fuller Road (West)





Appendix A: AAS: Phase I Alternatives Analysis

(Segment 5: Fuller Road (West), continued)

Criterion: Convenient Access to Existing Roadways

The Segment 5 area is surrounded by high-capacity roadways. It is the most likely station site to absorb station traffic without significant roadway modifications. The impacts of adding station traffic to the already congested area roadways will require detailed traffic analysis in Phase II.

Fuller Road is a multi-lane parkway facility. The intersection with Maiden Lane and East Medical Center Drive is under consideration for an improvement by the City of Ann Arbor to address existing traffic issues. Sidewalks exist on all public streets with the sidewalk width of 8-10' allowing them to serve as shared-use paths. The regional B2B Trail is designated on the paths on the north side of Fuller Road through the area.

Criterion: Public Transit Connections

The Segment 5 area is second only to the City and University transit centers in its concentration of existing bus service. All points in the city and much of Washtenaw County can connect to the area via existing transit routes. AAATA bus routes serving the area include Routes 1U, 2A, 2B, and 3. Several other AAATA routes travel within one-third mile of the segment at the U-M Hospital Mott transit center and conceivably could extend to a station at Segment 5. These include Routes 4A, 14, 18A, 609, C, IC, and RL. All eleven U-M bus routes except the Oxford / Oxford Shuttle and Night Owl services travel in the immediate Segment 5 area.

In addition to existing transit routes, the planned Connector high-capacity transit corridor would serve the U-M Medical Campus, with a station just north of E. Medical Center Drive. Segment 5 is the only track segment where a Connector station is proposed in the immediate vicinity. All of the Connector alignments under consideration include a station in the Segment 5 area. Should the

Connector advance to implementation, its corridor would extend from Segment 5 to a downtown area in the vicinity of a proposed WALLY commuter rail station near the intersection of W. Washington Street and S. 1st Street.

Criterion: Minimizing Environmental Impacts

A major environmental consideration for Segment 5 is its ability to accommodate station facilities north of the tracks, with resulting impacts to designated parkland. Much of the parkland adjacent to the track segment is currently used for commuter parking. Parkland impacts and associated mitigation measures will need careful consideration in the Phase II analysis.

Summary

Segment 5 presents significant opportunities as well as challenges. It also meets the Purpose and Need requirements if a station can be located along the segment. It is recommended for inclusion in the Phase II analysis. Because the station would use designated park lands, other alternatives and minimization measures will be considered during Phase II. Phase I scoring for this segment is shown in the matrix below.

Segment 5: Fuller Road (West)	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	2
Suitable Land for Station Facilities	1
Accessed by Existing Roadways	2
Public Transit Connection Potential	2
Minimize Environmental Impacts	1
Phase I Score	8

Segment 6: Fuller Road (East) (Figure 9)

The track distance between Segment 6 and Segment 5 is only one-quarter mile. By comparison, though, Segment 6 is quite isolated from activity centers. Segment 6 is situated on a peninsula defined by a bend in the Huron River. The tracks cross the river at each end of the segment. The segment is completely surrounded by U-M land, including recreation fields (U-M Mitchell Field) on the north side of the tracks, and a nature area (part of Nichols Arboretum) south of the tracks.

Mitchell Field is a property meeting the definition of the U.S. Department of Transportation Act of 1966 Section 4(f) recreational lands. The University of Michigan website explains that:

“Mitchell Field is used for scheduled activities and rentals. This facility is not available for drop-in play. Facilities include a large field area for soccer, softball, flag football, and ultimate frisbee.”¹¹

Two large parking lots straddle Fuller Road north of the recreation lands adjacent to the segment. These lots contain about 765 parking spaces (about 470 spaces south of Fuller Road and about 295 spaces north of Fuller Road). These lots are used by commuters. U-M and AAATA bus services connect the lots to locations throughout the city. Nearby activity areas include the Ann Arbor VA Hospital and North Campus facilities, both located about one-third mile from the segment. At their nearest, the parking lots are within 170 yards of the track segment. The average distance between the lots and the tracks is about 275 yards. No roadways connect the lots to the track area; one pathway generally makes that connection.

¹¹ University of Michigan website:
<http://recsports.umich.edu/article/mitchell-fields>

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

This segment is about 1.5 miles from downtown Ann Arbor. A series of physical barriers separate the segment from all activity areas. For example: spanning the two-tenths-mile gap between the segment and the U-M Medical Campus would require a footbridge across the river, vertical circulation, and new pathways.

The Gallup Park Pathway (shared-use trail) passes near the segment, conveying the B2B Trail through the area. This path creates a connection to Fuller Road and transit services, but requires a 400-yard walk. No existing roadway connects to the segment. Substantial modifications to Mitchell Field would be required to establish direct connections between Fuller Road and the segment, thus providing connections to the rest of the city and activity centers.

Criterion: Suitable Land for a Station

Portions of Mitchell Field would need to be converted to other uses to enable a station along the segment. These uses would need to extend somewhat to the portion of Nichols Arboretum on the south side of the tracks, which is a pristine nature area.

Criterion: Convenient Access to Existing Roadways

While Fuller Road travels near the segment and is a high-capacity arterial, no roadway connects Segment 6 to Fuller Road.

Criterion: Public Transit Connections

Nearby Fuller Road and East Medical Center Drive are busy transit corridors conveying almost all U-M bus routes. AAATA Route 3 follows Fuller Road through the area, and several other AAATA routes serve the nearby U-M North Campus and Medical Campus. These bus corridors, Fuller Road and East Medical Center Drive, are each about 230 yards from the segment. However, no roadways connect these bus corridors to the segment.



Criterion: Minimizing Environmental Impacts

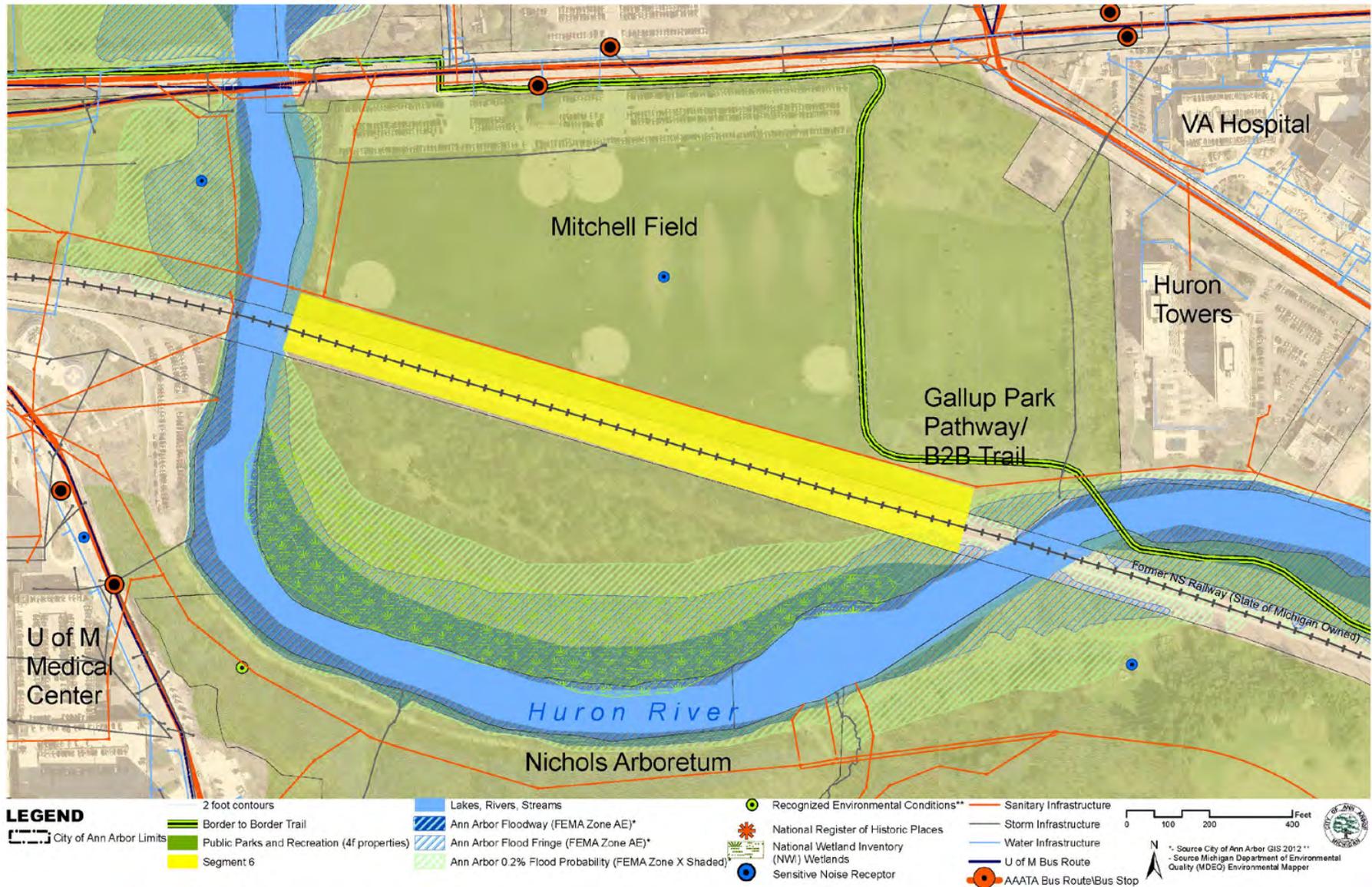
A station at Segment 6 would require converting a substantial portion of U-M Mitchell Field, which meets the Section 4(f) recreation land definition, to station uses. The Nichols Arboretum nature area south of the tracks, another Section 4(f) property, would also be used to some extent.

Summary

Segment 6 meets few of the site identification criteria. In particular, it offers insufficient access and suitable land meeting the Purpose and Need and requires substantial Section 4(f) property uses. It is not recommended for further analysis. Phase I scoring for this segment is shown in the matrix below. The Segment 6 area is displayed in Figure 9.

Segment 6: Fuller Road (East)	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	0
Suitable Land for Station Facilities	0
Accessed by Existing Roadways	-1
Public Transit Connection Potential	-1
Minimize Environmental Impacts	-1
Phase I Score	-3

Figure 9: Segment 6—Fuller Road (East)





Appendix A: AAS: Phase I Alternatives Analysis

Segment 7: Geddes Avenue (West) (Figure 10)

Segment 7 lies along a sliver of riverfront Gallup Park land in residential east Ann Arbor. It offers the fewest characteristics meeting the Purpose and Need of all the segments.

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

While Segment 7 offers direct access to the Gallup Park Pathway / B2B Trail, major activity areas are well beyond the half-mile walking distance from the segment. The segment is over 2.5 miles from downtown Ann Arbor.

Criterion: Suitable Land for a Station

Segment 7 offers virtually no suitable land for a station. The tracks are separated from the Huron River by a narrow strip of riparian forest. Opposite the tracks from the river is a strip of wooded backyards of single-family homes.

Criterion: Convenient Access to Existing Roadways

No existing roadway meets Segment 7. Geddes Avenue, a winding two-lane arterial travels near the segment's eastern end.

Criterion: Public Transit Connections

Two bus routes serve the general segment area. AAATA Route 22 follows Huron Parkway one-third mile east of Segment 7. Another route, AAATA Route 3, shifts its operation between Huron Parkway and Fuller Road. Both of these corridors are on the opposite side of the Huron River and Gallup Park from the segment, about one-third mile from the segment. These routes could conceivably make significant deviations to serve the segment area, but no roadway allows them to connect directly.

Criterion: Minimizing Environmental Impacts

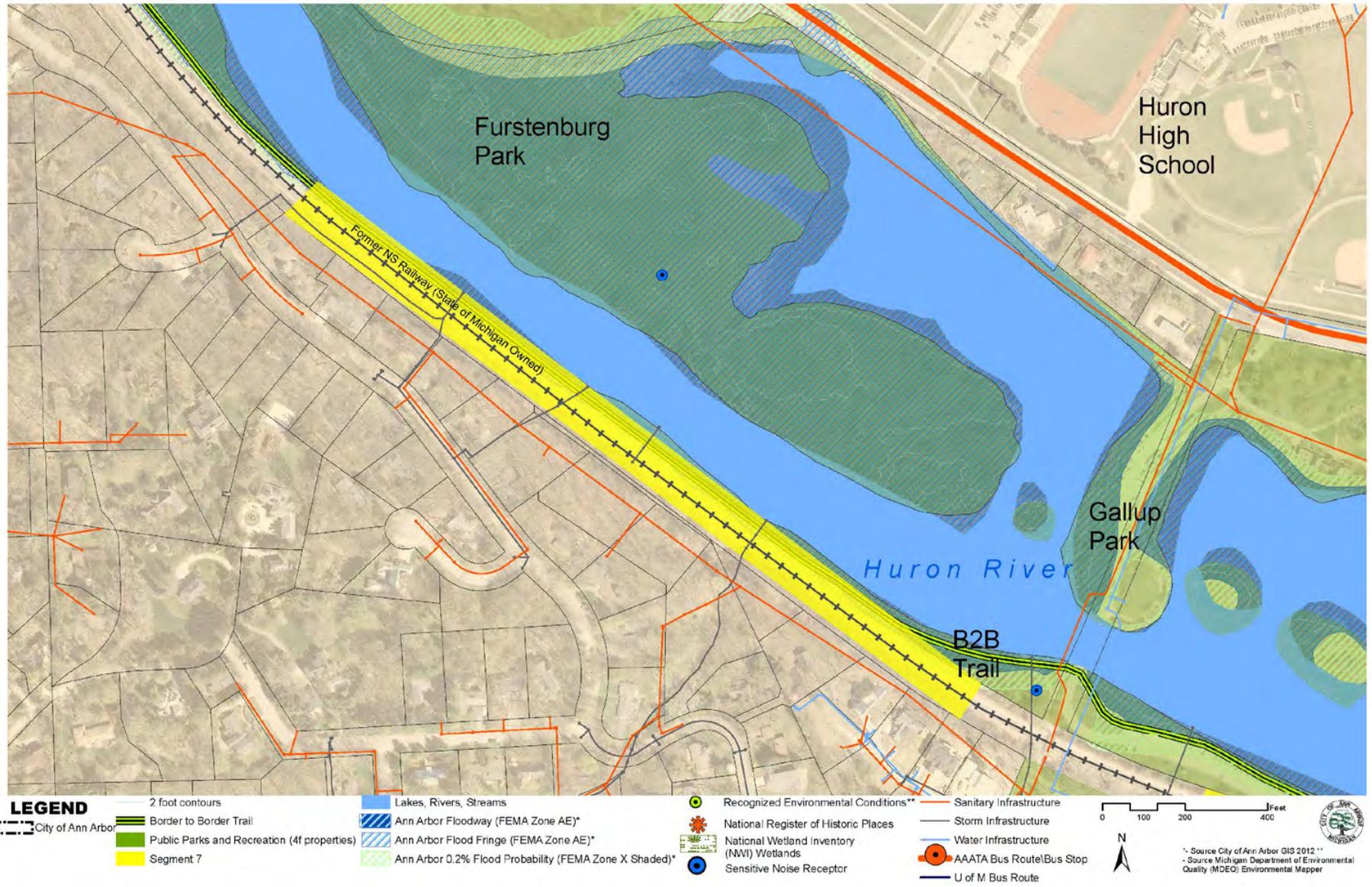
A station at Segment 7 would face many environmental impacts: to parkland, wetlands, the river, a single-family residential area, narrow roadways and park drives.

Summary

Segment 7 meets none of the site identification criteria and is not recommended for further consideration. Phase I scoring for this segment is shown in the matrix below. The Segment 7 area is displayed in Figure 10.

Segment 7: Geddes Avenue (West)	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	-2
Suitable Land for Station Facilities	-2
Accessed by Existing Roadways	-2
Public Transit Connection Potential	-2
Minimize Environmental Impacts	-2
Phase I Score	-10

Figure 10: Segment 7—Geddes Avenue (West)





**Segment 8: Geddes Avenue (East)
(Figure 11)**

Segment 8 extends along the southern banks of the Huron River, adjacent to Gallup Park and Geddes Avenue under the Huron Parkway Bridge. It is situated in the city’s eastern extent, near the Huron Hills Golf Course and the Racquet Club of Ann Arbor. Adjacent properties consist solely of park and recreation land and facilities. The segment meets few site identification criteria.

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

Segment 8 is over 2.5 miles from downtown Ann Arbor with no direct roadway connection. It is well beyond the half-mile walking distance from other activity centers.

Criterion: Suitable Land for a Station

To obtain the minimum 3 acres of land for a station at Segment 8 would require acquisition of private land (the Racquet Club) or converting part of the Huron Hills Golf Course, a city park, to station uses.

Criterion: Convenient Access to Existing Roadways

Huron Parkway is a major arterial crossing above the segment and provides a local access connection to the area at Geddes Avenue. Thus, a sufficient roadway connection to the segment may be feasible. This roadway connection would be far removed from Downtown and activity centers.

Criterion: Public Transit Connections

One AAATA bus route, Route 22, follows Huron Parkway through the area. This cross-town route operates at 30-minute headways throughout the day. It could possibly divert to connect to the segment, creating a very basic transit connection.

Criterion: Minimizing Environmental Impacts

A station at Segment 8 would cause significant socioeconomic impacts associated with the relocation of the Racquet Club, golf course, or both. These would raise the implementation cost of a station at the segment. Also, the segment is squeezed between two parks: Gallup Park and the golf course. Both would likely be impacted.

Summary

Segment 8 is in an outlying city area with poor access to downtown Ann Arbor and other activity areas. A station at this track segment would incur substantial socioeconomic impacts and would likely require Section 4(f) parkland uses. Segment 8 is not recommended for further consideration. Phase I scoring for this segment is shown in the matrix below. The Segment 8 area is displayed in Figure 11.

Segment 8: Geddes Avenue (East)	Scoring
Convenient Access to Downtown Ann Arbor and Major Activity Centers	-2
Suitable Land for Station Facilities	0
Accessed by Existing Roadways	0
Public Transit Connection Potential	-1
Minimize Environmental Impacts	-2
Phase I Score	-5

Figure 11: Segment 8—Geddes Avenue (East)



Station Site Identification Findings

Table 2 (page 30) provides an evaluation matrix for the eight track segments under consideration. The matrix shows each segment's performance according to the site identification criteria. This scoring system is used exclusively to screen the segments from eight to a smaller set for detailed analysis. No ranking order for the remaining segments will be carried into the Phase II analysis. The following bullets summarize the Phase I Alternatives Analysis findings:

- Segments 1, 2, 6, 7 and 8 do not perform well against the Ann Arbor Station Site Identification Criteria. In general, they offer limited access to downtown Ann Arbor and other activity areas, and lack suitable space for needed station facilities.
- Segment 3 (North Main Street) offers land that could be converted from light industrial and office use to station uses. Using these properties for the station would require substantial land acquisitions and business relocation. A station along this segment also has potential impacts to parks and open space resources. It is a relatively inconvenient location for transit and non-motorized access. While not initially recommended for advancement, a handful of participants at the June stakeholder and public meetings expressed support for further consideration of this area for a new station, and other meeting participants consented. As a result, the Project Team recommended including Segment 3 in the Phase II analysis. *(As noted in the postscript to the Segment 3 evaluation, the Project Team no longer recommends consideration of Segment 3. This position will be explained in the Phase II memorandum.)*
- Segment 4 (Depot Street/Existing Amtrak Station) is in proximity to downtown Ann Arbor and key activity centers. However, the segment may offer challenges in terms of

floodways, traffic impacts, space available and access features.

- Segment 5 is also well-positioned in the center of the community. It is near a major employment and education area and abundant transit service. This area has potential environmental concerns related to parks and open space impacts.

Based on the initial screening analysis of the eight viable track segments along the corridor, three of these (Segments 3, 4 and 5) were recommended for further analysis during Phase II, in addition to the No-Build Alternative. A key consideration is expected to be the feasibility and reasonableness of using space at or adjacent to the existing Ann Arbor Amtrak station (Segment 4: Depot Street/Existing Amtrak) and accommodating station traffic and multi-modal access at this location. This is the only segment to be advanced that requires no park land uses. Since Segment 4 has not yet been demonstrated to be feasible and reasonable, the Project Team recommends advancing the two other locations as options for analysis. Of the considered locations other than Segment 4, Segment 5 (Fuller Road—West) most closely meets the Site Identification Criteria. A more detailed evaluation of potential environmental impacts and benefits associated with Segments 3, 4 and 5 will be the subject of Phase II.

The term "Segment" proved useful during Phase I to identify those track sections that could potentially accommodate a station. Moving forward, the potential locations for new stations will be referred to as station sites. These station site locations have thus been renamed as follows:

- Site 1 (North Main Street);
- Site 2 (Depot Street/Existing Amtrak); and
- Site 3 (Fuller Road—West).

Table 2: Evaluation Matrix—Ann Arbor Station Site Identification

(2 = Excels according to criteria; 1 = Meets criteria; 0 = Neutral; -1 = Does not meet the criteria; -2 = Very poor performance according to criteria)

Segment #	1	2	3	4	5	6	7	8
Name	W. Huron River Drive	Barton Shore Drive	N. Main Street	Depot Street (Exist. Amtrak Station)	Fuller Road (West)	Fuller Road (East)	Geddes Avenue (West)	Geddes Avenue (East)
Convenient Access to Downtown Ann Arbor and Major Activity Centers	-2	-2	0	2	2	0	-2	-2
Suitable Land for Station Facilities	-2	-1	0	1	1	0	-2	0
Accessed by Existing Roadways	-1	-1	1	1	2	-1	-2	0
Public Transit Connection Potential	-1	-2	0	1	2	-1	-2	-1
Minimize Environmental Impacts	-2	-2	-1	1	1	-1	-2	-2
Phase 1 Score	-8	-8	0	6	8	-3	-10	-5



May 24, 2016

VIA Email

RE Ann Arbor Station Environmental Review - 2035
Architect's Project Number: 214057
Ann Arbor Station Peak Boarding Ridership / Waiting Room Program Area

INTRODUCTION

The purpose of the following narrative and supporting documentation is to present a methodology for developing the appropriate level of peak boarding ridership that can be anticipated for the Ann Arbor intermodal station. The anticipated ridership will then form the basis for the required area of the waiting room for the multimodal train station. The basis for the anticipated ridership numbers outlined in this analysis is based on the latest and best information available. The number of occupants and required area will be based on the following factors:

- **Design Parameters** – This evaluation will be based on anticipated station passenger volumes as documented in MDOT's "Chicago – Detroit / Pontiac Passenger Rail Corridor Program Tier 1 EIS" Appendix E for a 10 round trip, full build out, 2035 scenario and current MDOT station boarding information. The current peak ridership trends per train will also be considered in this evaluation since no peak ridership per train has been developed for the full build-out condition. Pertinent information from these documents related to ridership are attached.
- **Peak Boarding Ridership** – The persons that generally utilize the station facility are those waiting to board a train. Persons deboarding a train generally leave for their destination and do not utilize the station and therefore do not impact the station size.
- **Train Schedule** – The highest level of persons waiting to board a train will occur when a westbound and an eastbound train depart the station at approximately the same time during peak ridership for one or both of the trains.
- **Train Equipment** – Except for rare occasions (Thanksgiving, Christmas, Spring Break, etc.) the rolling stock that will serve the Ann Arbor station in the future can accommodate a maximum of 460 riders.
- **Loading Factor** – To determine the peak board ridership at any station, the loading factor and the ratio of boarding to deboarding passengers needs to be considered along with the rolling stock capacity. The load factor is defined as a measure of capacity utilization of public transport provider "fills seats" and generates fare revenue.
- **Program Waiting Room Area** – The program waiting room area recommendation is based on Amtrak Station Program and Planning Guide (2013) section 5.7.

Appendix B: Station Building Requirements Memorandum

Ann Arbor Station Environmental Review
Architect's Project Number:
Ann Arbor Station Peak Boarding Ridership / Waiting Room Program Area
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PEAK BOARDING RIDERSHIP

The change in Loading Factor at this station will determine the peak ridership for the station. The change that occurs at the Ann Arbor station for the full build-out condition (10 round trips, year 2045) is 19% (60% minus 41% - see attached). Based on current ridership records, the number of deboarding riders for west bound trains at the Ann Arbor station is approximately 12% of the number of peak boarding riders or an additional 2.3% (19% boarding x 12%) of Load Factor percentage to maintain the 19% total change in Load Factor. Based on these assumptions, approximately 21.3% of total rolling stock capacity would be taken at Ann Arbor. Due to slight seasonal variations in ridership an increase in this percentage to 28% is reasonable.

Based on current ridership trends, the highest boarding ridership occurs for the westbound trains heading for Chicago (see attached). The boarding ridership on the westbound trains is relatively equal between the three departing train times at 6:41 a.m., 12:17 p.m., and 7:21 p.m. except during the summer months when the westbound boarding ridership drops substantially at certain train boarding times. The eastbound train's boarding ridership is consistently around 11% of the westbound boarding ridership. The difference in the westbound and eastbound ridership numbers can be attributed to the location of the Ann Arbor station along the Chicago – Detroit / Pontiac line. The eastbound end of the line (Detroit / Pontiac) is relatively close to Ann Arbor and as a result would be far more accessible by car making the train a far less attractive option. This may change in the future as the Detroit area starts recovering economically and the increased number of trains makes daily commuting more practical.

In reviewing the proposed train schedules for the full build-out scenario (10 round trips) there are three times when an eastbound train and a westbound train would depart the station within 15 minutes or less of each other. The three times occur with the #700 (7:44 a.m.) eastbound train and the #709 (7:56 a.m.) westbound train, the # 706 (11:10 a.m.) eastbound train and the #711 (11:10 a.m.) westbound train, and the #714 (4:06 p.m.) eastbound train and the #713 (4:17 p.m.) westbound train. The peak boarding ridership calculation would be as follows:

Peak Westbound Boarding Ridership	129 Riders = 460 x 28% (Based on Train Capacity and Loading Factor)
Peak Eastbound Boarding Ridership	<u>18 Riders (11% Westbound Ridership)</u>
Total Peak Boarding Ridership	147 Riders

Appendix B: Station Building Requirements Memorandum

Ann Arbor Station Environmental Review

Architect's Project Number:

Ann Arbor Station Peak Boarding Ridership / Waiting Room Program Area

May 24, 2016

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WAITING ROOM PROGRAM AREA

Amtrak recommends a waiting room area based on 20 s.f. for 50% of the total peak boarding ridership and 10 s.f. for the remainder of the peak boarding ridership. This calculates to:

Waiting room program area = $(20 \text{ s.f.} \times \frac{1}{2} \times 147) + (10 \text{ s.f.} \times \frac{1}{2} \times 147) = \mathbf{2,205 \text{ s.f.}}$

Chicago-Detroit/Pontiac Passenger Rail Corridor Investment Plan Alternatives Identification and Evaluation

3.4 Full Build (10 DRTs and Improved Travel Time) Passenger Rail Forecast Results

Annual Passenger Rail Station Volumes

Station	2025 Annual Station Volume (thousand ONs and OFFs)	2035 Annual Station Volume (thousand ONs and OFFs)	2045 Annual Station Volume (thousand ONs and OFFs)	2055 Annual Station Volume (thousand ONs and OFFs)
Chicago Union Station, IL	1,672	1,946	2,271	2,644
Northwest Indiana, IN	35	41	47	55
Michigan City, IN	19	23	27	33
New Buffalo, MI	70	81	94	108
Niles, MI	79	91	107	124
Dowagiac, MI	17	19	23	27
Kalamazoo, MI	476	566	673	797
Battle Creek, MI	268	312	367	429
Albion, MI	10	12	14	16
Jackson, MI	155	179	208	240
Ann Arbor, MI	830	969	1,134	1,323
Dearborn, MI	418	483	560	647
Detroit, MI	384	440	507	582
Royal Oak, MI	199	231	268	311
Birmingham, MI	130	151	176	204
Pontiac, MI	90	108	129	154

Segment Loading Factors

Chicago-Detroit/Pontiac Passenger Rail Corridor Investment Plan Alternatives Identification and Evaluation

Passenger Rail Segment Loading Factors

Station Link	2025 Segment Loading Factor	2035 Segment Loading Factor	2045 Segment Loading Factor	2055 Segment Loading Factor
Chicago Union Station, IL-Hammond-Whiting, IN	50%	58%	68%	79%
Northwest Indiana, IN-Michigan City, IN	57%	66%	70%	90%
Michigan City, IN-New Buffalo, MI	57%	66%	70%	90%
New Buffalo, MI-Niles, MI	54%	63%	67%	86%
Niles, MI-Dowagiac, MI	54%	63%	66%	86%
Dowagiac, MI-Kalamazoo, MI	54%	62%	66%	85%
Kalamazoo, MI-Battle Creek, MI	57%	66%	70%	90%
Battle Creek, MI-Albion, MI	54%	63%	74%	86%
Albion, MI-Jackson, MI	54%	63%	74%	86%
Jackson, MI-Ann Arbor, MI	51%	60%	70%	81%
Ann Arbor, MI-Dearborn, MI	36%	41%	48%	56%
Dearborn, MI-Detroit, MI	24%	27%	32%	37%
Detroit, MI-Royal Oak, MI	12%	15%	17%	20%
Royal Oak, MI-Birmingham, MI	7%	8%	9%	11%
Birmingham, MI-Pontiac, MI	3%	3%	4%	5%

MDOT Ridership per Train 2014

Facility

Facility ID: ARB

Facility Name: Ann Arbor Amtrak Station

Year	Trn #	Passenger Type	Boarded/Deboarded	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	N
2014	349	Incy.Rail	Boarded	0	0	0	0	5	69	86	83	38	0	
2014	349	Incy.Rail	Deboarded	0	0	0	0	0	0	0	0	0	0	
2014	350	Incy.Rail	Boarded	197	194	246	220	242	252	220	259	253	243	EASTBOUND 12:55 P.M.
2014	350	Incy.Rail	Deboarded	1,285	998	1,271	1,220	1,142	1,330	1,513	1,763	1,164	1,337	
2014	351	Incy.Rail	Boarded	1,658	1,593	1,688	2,039	2,229	2,239	2,642	2,586	1,774	1,840	WESTBOUND 6:41 A.M.
2014	351	Incy.Rail	Deboarded	159	94	146	132	166	141	130	130	107	139	
2014	352	Incy.Rail	Boarded	296	219	270	395	158	29	19	14	6	286	EASTBOUND 6:26 P.M.
2014	352	Incy.Rail	Deboarded	1,904	1,914	2,180	2,222	1,369	367	289	334	218	2,354	
2014	353	Incy.Rail	Boarded	1,751	1,874	2,058	2,044	1,289	462	425	514	417	2,112	WESTBOUND 12:17 P.M.
2014	353	Incy.Rail	Deboarded	202	238	249	366	151	49	56	75	49	267	
2014	354	Incy.Rail	Boarded	58	45	43	65	53	50	66	45	36	52	EASTBOUND 11:30 P.M.
2014	354	Incy.Rail	Deboarded	2,054	1,562	1,927	2,002	1,802	1,524	1,940	1,921	1,353	2,067	

Figure 4: Full Build 2035 Schedule

EASTBOUND

Station	Miles	Travel Times	Ar/Dp	Train Number											
				700	702	704	706	708	710	712	714	716	718	720	722
CHICAGO III.	0.0	0:00	Dp			6 00A	7 00A	8 00A	10 00A	1100A	12 00P	5 35P	6 00P	6 35P	7 35P
Suburban near Gary, Ind,	16.0	0:18	Dp					8 18A		11 18A		5 53P		6 53P	7 53P
Michigan City, Ind.	52.8	0:53	Dp							1153A		6 28P		7 28P	8 28P
New Buffalo, Mich.	62.9	1:02	Dp					10 02A	12 02P	1 02P		7 37P	8 02P	8 37P	9 37P
Niles, Mich.	89.8	1:22	Dp					10 22A	12 22P	1 22P		7 57P	8 22P	8 57P	9 57P
Dowagiac, Mich.	102.3	1:32	Dp					10 32A	12 32P	1 32P		8 07P		9 07P	10 07P
Kalamazoo, Mich.	138.3	2:01	Dp	6 01A	7 01A	8 40A	9 40A	1101A	1 01P	2 01P	2 40P	8 36P	9 01P	9 36P	10 36P
Battle Creek, Mich.	161.0	2:28	Dp	6 28A	7 28A		10 03A	1128A	1 28P	2 28P		9 03P	9 28P	10 03P	11 03P
Albion, Mich.	185.6	2:51	Dp	6 41A	7 41A					2 51P					
Jackson, Mich.	206.5	3:11	Dp	7 11A	8 11A			12 11A	2 11P	3 11P			10 11P	10 46P	
Ann Arbor, Mich.	243.5	3:44	Dp	7 44A	8 44A	10 06A	11 10A	12 44A	2 44P	3 44P	4 06P		10 44P	11 19P	
Dearborn, Mich.	273.5	4:09	Dp	8 09A	9 09A	10 31A	1135A	1 09A	3 09P	4 09P	4 31P		11 09P	11 44P	
DETROIT, MICH.	282.7	4:24	Ar	8 24A	9 24A	10 46A	1150A	1 24A	3 24P	4 24P	4 46P		11 24P	11 59P	
DETROIT, MICH.	282.7	4:27	Dp	8 27A			1153A	1 27A	3 27P	4 27P	4 49P		11 27P		
Royal Oak, Mich.	292.8	4:51	Dp	8 51A			12 17P	1 51A	3 51P	4 51P	5 13P		11 51P		
Birmingham, Mich.	297.1	4:58	Dp	8 58A			12 24P	1 58A	3 58P	4 58P	5 20P		11 58P		
PONTIAC, MICH.	305.4	5:16	Ar	9 16A			12 42P	2 16P	4 16P	5 16P	5 38P		12 16A		

Figure 4: Full Build 2035 Schedule

WESTBOUND

Station	Travel Times	Miles	Dp/Ar	Train Number												
				701	703	705	707	709	711	713	715	717	719	721	723	
PONTIAC, MICH.	0:00	0.0	Dp		4 03A	4 33A				9 46A	2 53P	3 35P			6 52P	7 20P
Birmingham, Mich.	0:13	8.3	Dp		4 16A	4 46A				9 59A	3 06P	3 48P			7 05P	7 33P
Royal Oak, Mich.	0:20	12.6	Dp		4 23A	4 53A				10 06A	3 13P	3 55P			7 12P	7 40P
DETROIT, MICH.	0:40	22.7	Ar		4 43A	5 13A				10 26A	3 33P	4 15P			7 32	8 00P
DETROIT, MICH.	0:43	22.7	Dp		4 46A	5 16A		7 15A	10 29A	3 36P	4 18P	5 05P	5 35P	7 35P	8 03P	
Dearborn, Mich.	0:54	31.9	Dp		4 57A	5 27A		7 26A	10 40A	3 47P	4 29P	5 16P	5 46P	7 46P	8 14P	
Ann Arbor, Mich.	1:24	61.9	Dp		5 27A	5 57A		7 56A	11 0A	4 17P	4 59P	5 46P	6 16P	8 16P	8 44P	
Jackson, Mich.	1:55	98.9	Dp		5 58A	6 28A		8 27A	11 41A	4 48P			6 47P	8 47P	9 15P	
Albion, Mich.	2:13	119.8	Dp					8 45A	11 59A				7 05P		9 33P	
Battle Creek, Mich.	2:40	144.4	Dp	5 43A	6 43A		7 43A	9 12A	12 26P	5 33P	6 06P		7 32P	9 32P	10 00P	
Kalamazoo, Mich.	3:01	167.1	Dp	6 11A	7 11A	7 41A	8 11A	9 40A	12 54P	6 01P	6 29P	7 11P	8 00P	10 00P	10 29P	
Dowagiac, Mich.	3:29	203.1	Dp	6 36A			8 36A		1 19P						10 53P	
Niles, Mich.	3:42	215.6	Dp	6 49A	7 42A		8 49A		1 32P	6 39P					11 06P	
New Buffalo, Mich.	4:01	242.5	Dp	7 10A	8 03A		9 10A		1 53P	7 00P					11 27P	
Michigan City, Ind.	4:10	252.6	Dp	6 19A			8 19A		1 02P						10 36P	
Suburban near Gary, IN	4:44	289.4	Dp	6 53A			8 53A		1 36P						11 10P	
CHICAGO ,ILL.	5:06	305.4	Ar	7 15A	8 10A	8 21A	9 15A	10 20A	1 58P	7 05P	7 09P	7 51P			11 32P	

5. Program

5.7 Waiting Area Capacity

Waiting area type and capacities are dependent on the type of Amtrak service provided, and whether the station functions as an intermodal transportation center. At Category 1 stations and Category 2 stations with frequent train service, intermodal connections, and significant commuter rail operations, determining the overall waiting area capacity requires careful consideration of the schedules and peak loads of all services.

The Amtrak methodology to determine the space requirements for waiting areas should be used to develop the station program and is presented in the table here. This methodology is based on the type of Amtrak service provided at the station (State Corridor or Long Distance) and the station's daily ridership. Long Distance trains have different requirements than corridor trains, with the long distance traveler likely to arrive an hour or more before departure, requiring more seating than the high speed, regional or state corridor service passenger who typically arrives within fifteen to twenty minutes of train departure.

Waiting Area Capacity

Capacity Requirements are Determined by:

- Commuter vs. intercity differences—standing vs. seated passengers; and
- Seating for groups/space for luggage and carry-ons.

Formula	Comments
<p>1. Determine daily ridership at the station Daily Ridership=Annual Ridership (ons + offs)/270</p>	<p>Daily ridership is calculated by dividing total annual ridership by 270 days. This formula produces a higher number than typical daily ridership in order to account for peak conditions that occur on busy travel days, and variations in weekday/weekend and seasonal travel.</p>
<p>2. Determine peak hour ridership Six or more trains per day: Peak hour ridership (2 way)=0.15 x daily ridership Peak hour ridership (1 way)=0.65 x peak hour ridership (2 way)</p> <p>Fewer than 6 trains per day: Peak hour ridership (2 way)=daily ridership/number of trains per day Peak hour ridership (1 way)=0.65 x peak hour ridership (2 way)</p>	<p>For locations with six or more trains per day, peak hour ridership is calculated as 15 percent of daily ridership.</p> <p>For locations with fewer than six trains per day, peak hour traffic is calculated as daily ridership divided by the number of trains per day.</p>
<p>3. Determine waiting area space requirements Corridor Service Requirements Seated passengers area= 0.50 x (peak hour 1 way ridership) x 20 sf/person Standing passengers area= 0.50 x (peak hour 1 way ridership) x 10 sf/person</p>	<p>Waiting area space requirements are determined based on the number of people waiting for a train at any given time (peak hour ridership 1 way), and on the waiting habits of the ridership population served. One way peak hour ridership numbers are used because those passengers de-boarding the train generally leave the station without utilizing the waiting area.</p>
<p>Long Distance Service Requirements Seated passenger area = 0.75 x (peak hour 1 way ridership) x 20 sf/person Standing passengers area = 0.25 x (peak hour 1 way ridership) x 10 sf/person</p>	<p>Because of the short waiting time, it is assumed that corridor services require seating for only one-half of the peak hour 1 way ridership. And conversely, long distance services require seating for 75 percent of peak hour 1 way ridership. Area requirements are 20 square feet per seated passenger and 10 square feet per standing passenger.</p>

Appendix B: Station Building Requirements Memorandum

ANN ARBOR STATION ENVIRONMENTAL REVIEW

Ann Arbor, Michigan

STATION DESIGN CRITERIA AND PROGRAMMING - FULL BUILD OUT 2035

5/24/2016

ROOM	Ann Arbor Amtrak					Existing Station	DESIGN CRITERIA SOURCES = Standards, Codes, Regulations, and Design Guidelines
	Occupancy	Space	Total	Space	Total	Total	
		Type	Spaces	N.S.F	N.S.F	N.S.F.	
Required Areas							
Vestibule	NA	Public	4	200	800	100	Amtrak Station Program And Planning Guide - 2013
Pay Telephone	NA	Public	4	25	100	In Waiting Area	Amtrak Station Program And Planning Guide - 2013
Waiting	147	Public	1	2,205	2205	1280	Amtrak Station Program And Planning Guide - 2013
Peak One Way Ridership x .5 x 20 s.f. / person							
Peak One Way Ridership x .5 x 10 s.f. / person							
Men's Toilet Room	NA	Public	1	400	400	200	Amtrak Station Program And Planning Guide - 2013
Women's Toilet Room	NA	Public	1	400	400	200	Amtrak Station Program And Planning Guide - 2013
Family Toilet Room	NA	Public	2	65	130	NA	
Janitor's Closet	NA	Secure	1	100	100	40	Amtrak Station Program And Planning Guide - 2013
Electric Water Cooler	2	Public	2	25	50	10	Amtrak Station Program And Planning Guide - 2013
Vending Area	4	Public	4	20	80	60	Amtrak Station Program And Planning Guide - 2013
Information Kiosk	NA	Public	1	150	150	0	Amtrak Station Program And Planning Guide - 2013
Passenger Information Display System (PIDS)	NA	Public	1	40	40	0	Amtrak Station Program And Planning Guide - 2013
Quik - Trak / e - Ticketing with Queing	4	Public	4	50	200	In Waiting Area	Amtrak Station Program And Planning Guide - 2013
News and Brochure Racks	NA	Public	1	150	150	In Waiting Area	Amtrak Station Program And Planning Guide - 2013
Amtrak IT Equipment	NA	Secure	1	100	100	0	Amtrak Station Program And Planning Guide - 2013
Mechanical / Water Service Room	NA	Secure	1	250	250	0	Amtrak Station Program And Planning Guide - 2013
Electrical Service Room	NA	Secure	1	100	100	0	Amtrak Station Program And Planning Guide - 2013
Ticket Office / Baggage Check	4	Secure	4	70	280	120	Amtrak Station Program And Planning Guide - 2013
Baggage Storage	NA	Secure	1	NA	NA	350	Amtrak Station Program And Planning Guide - 2013
Lost Baggage Storage	NA	Secure	1	NA	NA	0	Amtrak Station Program And Planning Guide - 2013
Baggage Work Area	NA	Secure	1	NA	NA	0	Amtrak Station Program And Planning Guide - 2013
Secure Baggage Storage	NA	Secure	1	NA	NA	0	Amtrak Station Program And Planning Guide - 2013
Ticket Agent's Office	NA	Secure	1	150	150	160	Amtrak Station Program And Planning Guide - 2013
Ticket Agent's Toilet	NA	Secure	1	40	40	0	Amtrak Station Program And Planning Guide - 2013
Ticket Agent's Work Niche	NA	Secure	2	25	50	0	Amtrak Station Program And Planning Guide - 2013
Ticket Agent's Locker Room	NA	Secure	1	100	100	0	Amtrak Station Program And Planning Guide - 2013
Ticket Agent's Break Room	NA	Secure	1	200	200	0	Amtrak Station Program And Planning Guide - 2013
Amtrak Storage	NA	Secure	1	100	100	45	Amtrak Station Program And Planning Guide - 2013
CCTV / Security Equipment Room	NA	Secure	1	30	30	0	Amtrak Station Program And Planning Guide - 2013
Building Canopies							Amtrak Station Program And Planning Guide - 2013
Intercity Bus Ticket Office / Information Window		Secure	1	100	100	0	Greyhound Station Program Requirements - 2014
Intercity Bus Terminal Manager's Office		Secure	1	120	120	0	Greyhound Station Program Requirements - 2014
Intercity Bus Accounting / Reports Office		Secure	1	120	120	0	Greyhound Station Program Requirements - 2014
Intercity Bus Office Equipment / Storage		Secure	1	100	100	0	Greyhound Station Program Requirements - 2014
Intercity Bus Baggage Storage and Cart Staging		Secure	1	150	150	0	Greyhound Station Program Requirements - 2014
Intercity Bus Warming Shelters							
Total Occupancy / Net Square Footage					6795	2565	
Grossing Factor - 25%					1699	641	
Total Gross Square Feet					8494	3206	



Appendix C: Intercity Parking Requirements Memorandum

Date: January 28, 2015

To: Eli Cooper, Transportation Manager, City of Ann Arbor

From: Project Team

Subject: Ann Arbor Station—Assumptions for Intercity Parking

The purpose of this memorandum is to document assumptions regarding parking access to a new Ann Arbor intermodal passenger rail station. These assumptions are informed by origin and destination estimates prepared by MDOT consultants for the Chicago-Detroit/Pontiac passenger rail corridor (C-D/P) Tier 1 Draft Environmental Impact Statement (DEIS)¹, Amtrak parking estimates based on C-D/P ridership estimates, responses to a 2011 Michigan Department of Transportation (MDOT) passenger rail survey, and travel patterns in urbanized Washtenaw County.

The C/D-P DEIS estimates that in 969,000 annual boardings and alightings will be made at Ann Arbor Station in the year 2035 full build scenario. This estimate represents approximately 485,000 annual riders using the station. To meet this demand, Amtrak initially requested over 2,200 parking spaces in Ann Arbor to meet the demand. Amtrak subsequently revised its estimate to approximately 870 spaces for year the 2035 full build. This revised estimate reflects urban transportation assumptions for greater Ann Arbor. While Amtrak provided no methodology for their revised estimate, the Project Team assumes that it acknowledges the high percentage of trips in Ann Arbor and Ypsilanti made by walk, bike and public transit modes.

¹ The Draft EIS is available at <http://greatlakesrail.org/~grtlakes/index.php/site/public-hearings>. Appendix E contains ridership forecasts and the transportation analysis zones (TAZs) associated with the origin and destination estimates.

In response to FRA and stakeholder feedback, the Project Team has reviewed transportation patterns in Ann Arbor and Ypsilanti to adjust station parking assumptions. The Team also coordinated with the transportation modeling consultant for C-D/P, Transportation Economics and Management Systems, Inc. (TEMS), to understand how the model can assist in estimating the demand for parking at Ann Arbor Station. The results of this analysis are described in subsequent sections and generally validate Amtrak's 870 space estimate.

Intercity Rail and Commuter Rail

The C-D/P Tier 1 DEIS considers rail travel along the Amtrak *Wolverine* line corridor between Chicago and metropolitan Detroit. It does not include parking projections for the Southeastern Michigan Council of Governments (SEMCOG)'s proposed commuter rail between Ann Arbor and Detroit.

Transit and Non-Motorized Travel in Ann Arbor and Ypsilanti

According to the US Census American Community Survey (ACS), approximately 30% of Ann Arbor residents travel to work by transit, walking or biking.² Assuming that Ann Arbor Station charges some fee for parking, this same percentage seems applicable for station access by City residents who are not full-time students.

Travel Patterns To and From Ann Arbor University and College Campuses

Trips to school (university and college) in Ann Arbor are weighed more heavily toward non-automobile modes than work trips. The ACS does not survey for trips to school, so the Project Team

² http://download.ctpp.transportation.org/profiles_2014/transport_profiles.html



Appendix C: Intercity Parking Requirements Memorandum

performed its own analysis of these trips. This analysis focuses exclusively on the University of Michigan Ann Arbor campuses.

Over 43,600 students were enrolled at the University of Michigan Ann Arbor (U-M) in the fall of 2014³ Of these students, nearly 30% (about 13,000) lived on campus.⁴ Most of these on-campus students likely walk or bike to school (an estimated 10,000). Many other students also walk or bike to school from non-campus housing (perhaps another 5,000).

In addition to students, over 25,700 staff members worked at the Ann Arbor campuses in 2014.⁵ The combined total of students and staff was about 69,400.

In 2010, nearly 35,000 students and staff rode U-M buses on a daily basis.⁶ This volume reflects total trips, with generally half of those in the morning and half in the evening. These trips are made by an estimated 17,500 individuals using the buses daily and represent travel by about 25% of students and staff. In addition, a few thousand of the approximately 11,000 daily Ann Arbor Area Transportation Authority (AAATA) bus trips are to or from the campuses.⁷ The Project Team estimates that roughly 5,000 daily AAATA trips are campus trips, representing about 2,500 travelling individuals. Combined, roughly 20,000 students and staff used transit each day to reach the campuses, or roughly 29% of daily campus visitors.

³ University of Michigan (2014). "University of Michigan - Ann Arbor - Enrollment by Degree Level" (PDF). University of Michigan Office of Budget & Planning. October 20, 2014. Available at http://obp.umich.edu/wp-content/uploads/pubdata/factsfigures/enrollment_umaa_fall14.pdf.

⁴ University of Michigan Housing, at <http://www.housing.umich.edu/about>.

⁵ University of Michigan, at http://obp.umich.edu/wp-content/uploads/pubdata/factsfigures/facultyhrdef_umaa_fall14.pdf

⁶ SEMCOG 2010.

⁷ Project Team assumption based on SEMCOG 2010 reporting.

Between the 15,000 or so students walking or biking to campus and the 20,000 students and staff riding transit to campus, roughly 50% of campus visitors commute by non-automobile modes.

The 2011 MDOT survey of Amtrak passengers in Michigan notes that 14% of *Wolverine* line passengers reported as university/college students.⁸ Many of these are assumed by the Project Team to be U-M students. If 50% of U-M students and staff travel to campus using non-automobile modes, a similar percentage of campus visitors are assumed to access the station using these same modes. This assumes that transit, non-motorized, and taxi/shuttle modes are readily available and convenient during the hours of railroad operation.

The C-D/P Tier 1DEIS assumes 2,830,000 annual *Wolverine* line riders in the full build scenario; this figure represents boardings only. If 14% of these riders are higher education students, then nearly 400,000 of these riders would be higher education students⁹ 485,000 annual train passengers on the line are expected to use Ann Arbor Station, and more than half the higher education students on the line attend U-M Ann Arbor and nearby colleges and universities. Given that, roughly half the Ann Arbor Station passengers can be assumed to be students.

Non-Student Ann Arbor Residents

The Project Team assumes that Ann Arbor residents will access the station using similar travel modes to their work commute trips, with 30% of these trips made by non-automobile modes. The non-automobile mode share assumed for all Ann Arbor travel to and from the station is 40% - the median percentage of campus and city non-automobile travel. Many others will be dropped off and picked up at the station via personal automobiles rather than park a vehicle at the

⁸ 2011 MDOT Intercity Passenger Rail Survey, page 17.

⁹ C-D/P DEIS Appendix E, page E-110.



station. In all, close to 50% of Ann Arbor residents will likely access the station via non-auto modes.

Ypsilanti Residents

In Ypsilanti, about 20% of work trips were made by non-automobile modes in 2000.¹⁰ Given strong transit connections, a similar percentage can be expected to access the multi-modal station without a car. Ypsilanti's resident student population will increase the non-auto access share. A separate analysis for student travel between Eastern Michigan University and Ann Arbor Station has not been performed, though students and staff are expected to have convenient access to public transit linking with the station. The Project Team assumes 30% of all trips between Ypsilanti and Ann Arbor Station are assumed to be made by non-automobile modes. When passenger drop-off and pickup is added, the non-parking percentage is estimated to increase approximately 40%.

Estimated Origins and Destinations of Ann Arbor Station Riders

Projected Ann Arbor Station ridership in the full build 2035 scenario is 969,000 boardings and deboardings. The C-D/P origin and destination model prepared by TEMS does not differentiate between Ann Arbor Station access trips to and from Ann Arbor and Ypsilanti as opposed to other communities. Nor does the TEMS model differentiate between riders originating from one station or zone compared to another. Rather, it shows total estimated passenger rail travel between zones. TEMS describes the model as a "triangulation" as opposed to a traditional origin and destination structure.

The student travel analysis in this memorandum suggests that half the station trips are made by higher education students, and these students are based primarily in Ann Arbor and Ypsilanti. If an

¹⁰ US Census ACS Journey to Work survey 2000, accessed from http://download.cttp.transportation.org/profiles_2014/transport_profiles.html.

Appendix C: Intercity Parking Requirements Memorandum

additional quarter of the trips represent residents of and visitors to the urbanized core of Washtenaw County, then at least 75% of Ann Arbor Station users reside in or visit Ann Arbor and Ypsilanti.

Another factor to consider regarding parking requirements is the region of trip origin. For example, a round trip originating from southeast Michigan may include a car trip to and parking at Ann Arbor Station. A round trip from Chicago to Ann Arbor will not require a parking space at Ann Arbor. The C-D/P model tells us little about the direction of travel between linked station pairs.

The 2011 MDOT Intercity Passenger Rail Survey found that 88% of respondents on the *Wolverine* line traveled from Michigan to points outside Michigan (primarily Chicago).¹¹ However, in the same study "only 69 percent of *Wolverine* passengers reported a home residence in Michigan, with 22 percent of *Wolverine* passengers reporting a home residence in Illinois."¹² It is possible that some of the respondents were students attending Michigan colleges or universities but identifying home residences in Illinois.

The Project Team's impressions of directional travel indicate that the majority of Ann Arbor Station rail round trips start in Ann Arbor—nearly 90%. This round-trip travel flows predominantly from Ann Arbor to points west. 10% or less of Ann Arbor round trips appear to originate from stations other than Ann Arbor. This directional flow may change as service increases and additional trips are available during commuting hours to Ann Arbor destinations. Many of these trips are expected to be captured by the proposed commuter rail service, which would be scheduled and priced for commute trips.

¹¹ 2011 MDOT Intercity Passenger Rail Survey, page 14.

¹² *Ibid*, page 30.



Appendix C: Intercity Parking Requirements Memorandum

Assumed Parking Requirements

This section describes how the travel analysis is used to derive parking estimates. All stated figures represent the year 2035 full build scenario for the Chicago-Detroit/Pontiac passenger rail corridor and associated activity at Ann Arbor Station.

- Annual passengers at Ann Arbor Station: approximately 485,000 (which is half of the boarding of and alighting from trains at the station)
 - 90% of round trips originating at Ann Arbor Station = 436,500 round trips potentially requiring parking at the station
- 75% of station riders are assumed to be residents of Ann Arbor and Ypsilanti. Of the 436,500 travelers that originate round trips from Ann Arbor, these residents represent about 327,400 riders.
 - Approximately 85% of these riders are likely Ann Arbor residents (278,290). 50% are assumed to not park at the station (139,000).
 - Approximately 15% of these riders are likely Ypsilanti residents (49,000). 40% are assumed to not park (19,600).
 - $327,400 - 139,000 - 19,600 = 168,800$ annual Ann Arbor and Ypsilanti resident passengers who would be inclined to park at the station.
- The remaining 25% of station passengers (81,850) are dropped off or park. If 20% are dropped-off/picked-up, then **16,400** extended area passengers are inclined to park.
- $168,800 + 16,400 = 185,200$ annual passengers inclined to park at the station.

Of the 185,200 passengers inclined to park at the station, many would arrive with more than one passenger per car. If 1.5 occupants per vehicle parking is assumed, it reduces the parking demand by 1/3

(demand for 123,300 annual parked vehicles). This averages to 2,370 parked cars per week.

If trip purposes documented in the 2011 MDOT survey carry over, then about 70% of the travel will be recreational with heavy weekend peaking. This indicates demand for 1,660 recreational, longer-term parking spaces each week, which may equate to weekend parking demand.

An aggressive transportation demand management program would reduce the demand for on-site parking. Higher on-site parking charges and shuttles to utilize parking capacity elsewhere in Ann Arbor—especially on weekends—may reduce the demand for on-site weekend parking by 50%. This results in a **peak demand for approximately 830 parking spaces**, a number very similar to Amtrak's revised request for 870 parking spaces. No spaces would be specifically provided for commuter rail customers, though capacity would likely be available for commuter trips on most weekdays.

This independent analysis comports generally with Amtrak's proposed number of intercity parking spaces required in 2035, which is based on Amtrak's proprietary methodology. Therefore, it is reasonable to use the Amtrak number in determining the design criteria for the station.

Additional Accommodation for Intercity Bus Passenger Parking at Ann Arbor Station:

Intercity bus service tends to attract travelers without access to a car. Travel patterns in peer regions shows a demand for express bus services to major airports, for which the parking demand is high. Should this travel mode grow substantially, an additional bus terminal with station parking near highway interchanges would likely be added. No more than 25 aggressively priced intercity bus parking spaces are likely required at Ann Arbor Station.



Appendix D: AAS: Site 1 (North Main Street) Technical Memorandum

Date: May 16, 2016

To: Eli Cooper, Transportation Manager, City of Ann Arbor

From: Project Team

Subject: Ann Arbor Station—Consideration of Site 1 (North Main Street)

The purpose of this memorandum is to evaluate a proposed site for a potential new multi-modal, intermodal, intercity and commuter passenger rail station (Ann Arbor Intermodal Passenger Rail Station) near North Main Street and Lake Shore Drive. This location, situated approximately one mile north of downtown Ann Arbor, is identified as Site 1 (North Main Street). The memorandum includes an evaluation of the option to locate a new station at Site 1. This evaluation was based on outlined criteria, and resulted in a recommendation to remove this site from further consideration. The Site 1 location within Ann Arbor is shown in Figure 1.

The Ann Arbor Station Environmental Review began in February 2014 and is scheduled to conclude in December 2014. Its stated purpose is to:

“provide an intermodal facility that will accommodate existing and future intercity passenger rail ridership; improve intermodal connectivity, including the possibility of commuter rail in the City of Ann Arbor; and to improve the integration of the station with the City of Ann Arbor and its neighboring communities.”¹

¹ Ann Arbor Station Environmental Review Purpose and Need Executive Summary, June 24, 2014. Available at <http://www.a2gov.org/departments/systems->

The Environmental Review is a conceptual planning study for:

- a. Defining the long-term needs for an Ann Arbor Intermodal Passenger Rail Station;
- b. Identifying potential sites and station options;
- c. Evaluating benefits and impacts of various station options, including a No-Build Alternative (continued use of the existing station); and
- d. Complying with Federal, State and local requirements, resulting in approval of a preferred alternative for an Ann Arbor Intermodal Passenger Rail Station.

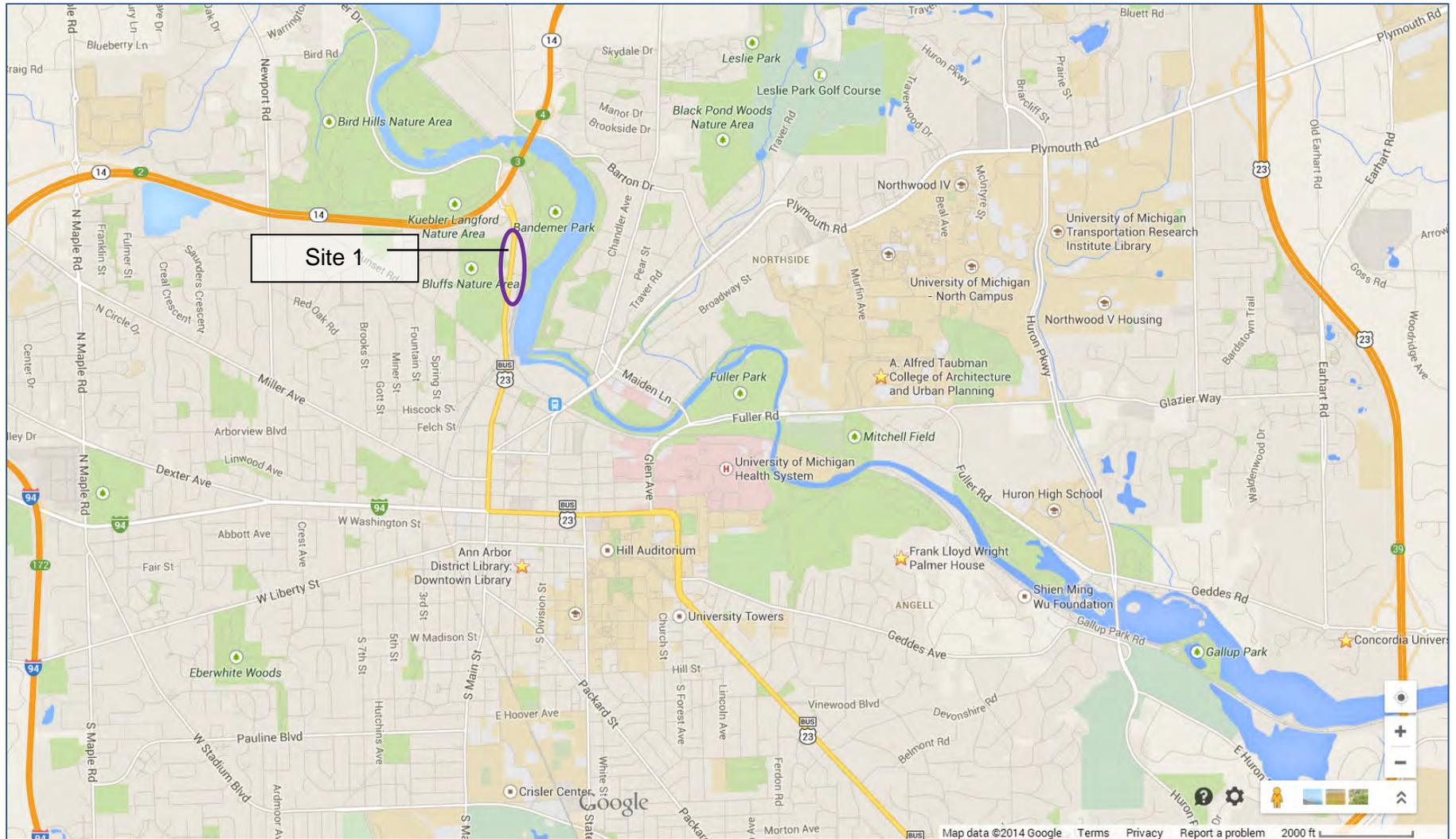
The Alternatives Analysis process is divided into two phases:

- **Phase I:** Identification of possible station sites and an initial screening of those sites; and
- **Phase II:** Development of site-specific station design alternatives for the sites identified in Phase I and review of those sites and design alternatives to determine which are reasonable to advance into the Environmental Assessment phase.

The completed Phase I screening is described in the following section. The Project Team has entered Phase II and completed initial conceptual designs for site-specific station design alternatives.

http://www.a2gov.org/planning/Transportation/Documents/AAS_PurposeNeed_1-Page_Summ_06-24-2014_Final.pdf

Figure 1: Location of Site 1 (North Main Street) Within Ann Arbor



Source: Google Maps



Appendix D: AAS: Site 1 (North Main Street) Technical Memorandum

Phase I Alternatives

Phase I of the Alternatives Analysis identified eight possible station sites based on the selection criteria provided by the Michigan Department of Transportation (MDOT) and the National Passenger Rail Corporation (Amtrak). Both entities requested that any enhancements to the existing station, or construction of a new station, should occur along a tangent (straight) section of the MDOT railroad. This meets train operational objectives that ensure ADA compliance (manageable gaps between the trains and platforms), promotes passenger convenience and safety, and protects railroad equipment and infrastructure. Both MDOT and Amtrak stipulated that the tangent track sections should be at least 1,000 feet long to support railroad operational needs.

Eight sites with 1,000-foot tangent track segments within the city of Ann Arbor were identified (the sites were referred to as "segments" in prior documentation). These track segments and their surrounding areas were then evaluated for their compatibility with the Ann Arbor Station program. The eight "segments" are shown in Table 1.

Design and environmental criteria were used to screen the sites. These criteria stipulated that the potential sites should:

- Lie along the existing MDOT railroad corridor along which Amtrak operates, and within City of Ann Arbor limits;
- Provide convenient access to downtown Ann Arbor and major activity areas;
- Include enough land to accommodate all required site features;
- Allow convenient access to existing roadway networks;
- Support connections to public transit services and non-motorized transportation facilities; and
- Minimize impacts to environmental resources.

**Table 1:
1,000-Foot Straight Track Segments along the MDOT Corridor
in Ann Arbor**

Segment #	Name	Approximate Track Milepost*	Approximate Length (Feet)
1	West Huron River Drive	38.5	2,300
2	Barton Shore Drive	38.4	2,200
3	North Main Street	37.9	1,500
4	Depot Street (Existing Amtrak Station)	37.3	1,200
5	Fuller Road (West)	36.8	1,300
6	Fuller Road (East)	36.2	1,600
7	Geddes Avenue (West)	35.1	2,000
8	Geddes Avenue (East)	34.8	1,700

**From the 1999 Consolidated Rail Dearborn Division track charts, Michigan Line. These mileposts appear to land within the segments and do not represent surveyed midpoints.*

These criteria were reviewed by Ann Arbor stakeholders and citizens at public meetings in April 2014 and met with general approval. An evaluation of the eight segments was presented at a round of meetings in June 2014. Two of the segments were initially recommended for further evaluation in Phase II: Segment 4 (Depot Street/Existing Amtrak Station) and Segment 5 (Fuller Road—West).

Segment 3 (North Main Street) was determined to not meet the criteria and was not recommended for inclusion in Phase II.

During the June meetings, stakeholders expressed interest in additional evaluation criteria, with numerous requests received to consider implementation costs and station-oriented development. Several stakeholders questioned the evaluation of Segment 3 (North Main Street) and requested its inclusion in the Phase II analysis. Of particular interest was the idea of redeveloping the area with station-oriented development. While Segment 3 did not meet the initial criteria, the Project Team agreed to further evaluate Segment 3 in Phase II of the Alternatives Analysis. In the Phase II report, the "segments" are referred to as "sites" and are numbered as follows:

- Site 1: North Main Street. This site is located along the tracks east of North Main Street near Lake Shore Drive;
- Site 2: Depot Street/Existing Amtrak. This site would reuse the property currently occupied by the Ann Arbor Amtrak station, along Depot Street adjacent to the historic depot; and
- Site 3: Fuller Road (West). This site extends along the tracks south of Fuller Road near the East Medical Center Drive overpass.

As the Project Team proceeded with the Phase II analysis, further concerns arose regarding the viability of Site 1. These concerns are documented in the following sections of this technical memorandum.

Considerations Regarding Site 1 (North Main Street)

Location Description

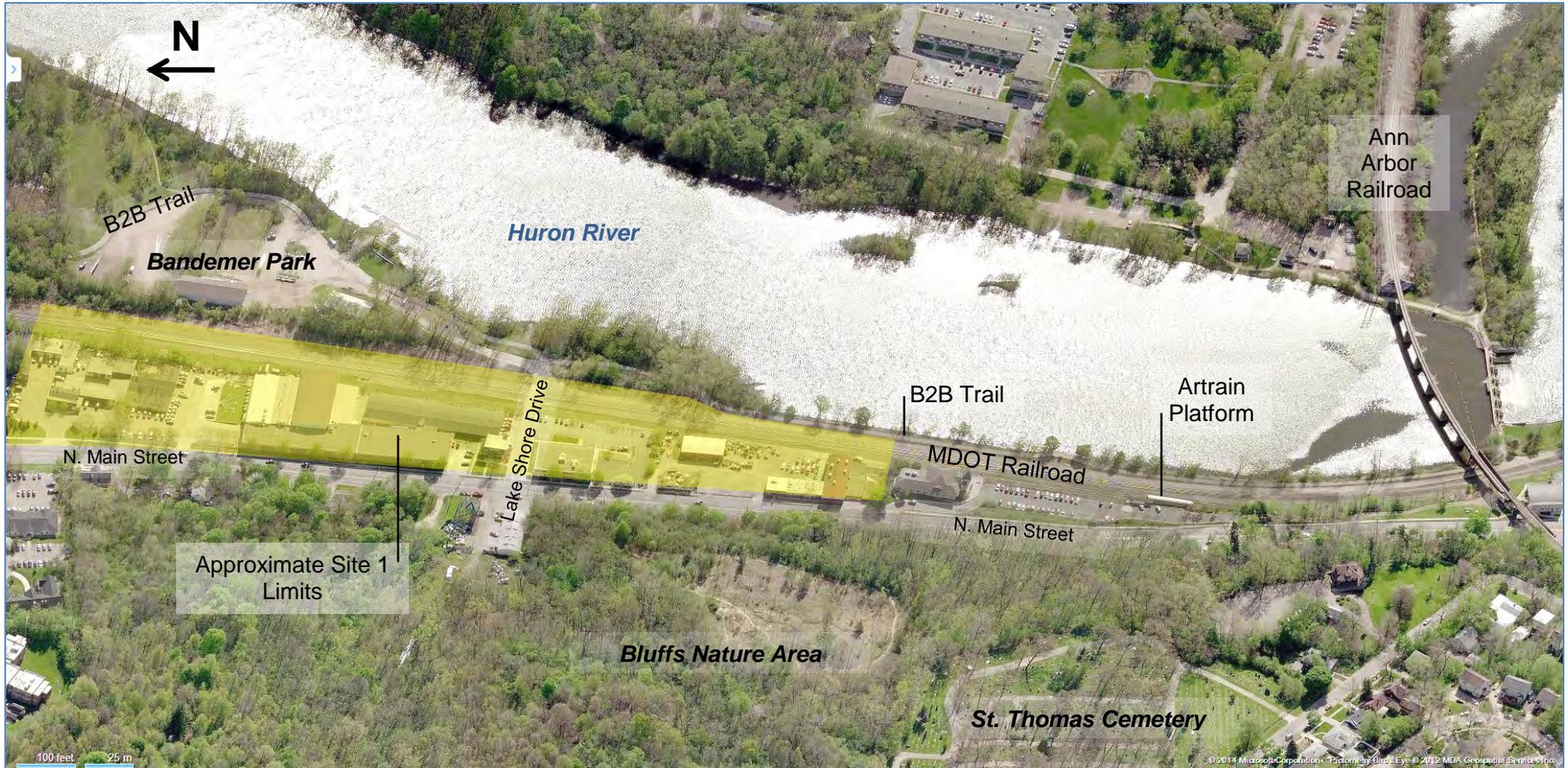
Site 1 is located approximately one mile northwest of downtown Ann Arbor, near the intersection of North Main Street and Lake Shore Drive (a private road). Here the tracks extend between two contrasting uses: a light industrial zone lining North Main Street, and Bandemer Park. The Site 1 area is shown in Figure 2. Two conceptual design alternatives for the site are provided in Attachment 1 (Concept Plan A and B).

The track area and Bandemer Park are accessed via Lake Shore Drive, a private roadway that connects perpendicularly with North Main Street and crosses the tracks at grade. Lake Shore Drive is also the only access point in the area for the Border-to-Border (B2B) Trail shared-use pathway, which extends through the park. At the southern end of the 1,000-foot track segment at this site, the B2B Trail transitions to an easement provided by the railroad. Here the tracks and B2B Trail are immediately adjacent to the Huron River.

The railroad right-of-way is exceptionally wide through much of the Site 1 area. Historically, this area included industrial access yard tracks. Artrain/Mid America Railcar Leasing LLC (<http://www.midamericarailcar.com/index.html>) uses two remaining siding tracks to store vintage railroad cars. A trackside platform and shelter serves provides access to the cars.

The Artrain rail shelter sits adjacent to a parking lot for the NEW Center, a facility housing nonprofit organizations at 1100 North Main Street. The parking lot contains just over 50 parking spaces adjacent to the tracks.

Figure 2: Site 1 Area Overview



Source: Bing Maps

Phase I Evaluation

Criterion: Convenient Access to Downtown Ann Arbor and Major Trip Generators

The one mile distance between Site 1 and downtown Ann Arbor is greater than the national walking tolerance average of one-half mile to fixed guideway transit. Other major activity areas are farther from the site. (As a point of comparison, Sites 2 and 3 are located within one-half mile of major activity areas.) The primary connection to the area is North Main Street, which has a sidewalk along the east side of the roadway, but few other amenities for walking or bicycling between Downtown, Ann Arbor neighborhoods, and the site. The Washtenaw County Border-to-Border Trail (B2B) provides regional bicycle access to the area, with the only connection to the train tracks in the area at Lake Shore Drive.

Upon further consideration, it was determined that constructing the station program at this site would require relocating Lake Shore Drive. Vehicular access to Bandemer Park would likely be shifted to a new roadway, to be constructed about 500 feet to the north of the existing Lake Shore Drive alignment. This would be required because no roadways can cross the train platforms, which would need to be nearly centered on the existing Lake Shore Drive. A pedestrian overpass to Bandemer Park and the B2B Trail would need be provided in the area of the present Lake Shore Drive. This bridge would provide elevators on either side of the tracks and would be required to access train platforms that would be located on both sides of the tracks.

Criterion: Suitable Land for a Station

The wedge of properties between North Main Street and the tracks contains several light industrial and office uses. The Project Team’s initial expectation was that one or more of these properties would need to be acquired in order to locate a multi-modal station in the area.

In August 2014, the team developed two preliminary conceptual design alternatives for the site (See Concept Plan A and B in Attachment 1). Both designs assumed a station building above the tracks due to the narrow site and structured parking with transit multi-modal facilities on the ground floor of the parking deck. Concept Plan A placed kiss-and-ride, taxi, and short-term parking facilities outside of the parking deck. Concept Plan B placed these facilities under the parking deck to reduce the site footprint. Both concepts assumed higher parking demand than is currently assumed. Should the plans be revised to reflect current assumptions, the parking decks would be taller but would likely have a similar footprint.

The team concluded that the relatively narrow site required an elongated station form extending several hundred feet in each direction from the existing Lake Shore Drive. This is reflected in the concept plans. Thus, the station would require more property than was initially assumed: between 6.25 and 10 acres of property to fit the station program at the site. Accordingly, all properties between the tracks and North Main Street and within at least 600 feet of Lake Shore Drive would be required for the station program. This would necessitate relocating multiple manufacturing and office uses.

Criterion: Convenient Access to Existing Roadways

North Main Street is a major four-lane arterial through this area with connections to Downtown and M 14. Upon further consideration, North Main Street would likely require at least two signalized intersections plus a turn lane at vehicular entry points.

Criterion: Public Transit Connections

Only one AAATA bus route, Route 13, travels in the general Site 1 area. It operates about three blocks from the southern limit of the potential station. Other bus routes would need to make major

diversions to serve the area. The proposed Washtenaw and Livingston Line (WALLY) commuter rail service may be implemented within one-quarter mile of the southern end of Site 1. The Ann Arbor Railroad, along which WALLY would operate, crosses above the MDOT railroad at this point. Both railroads navigate sharp curves at the crossing point. The WALLY project has not proposed a station in the vicinity of the crossing point. Track curvature makes a direct railroad-to-railroad vertical transfer at the crossing unfeasible.

Criterion: Minimizing Environmental Impacts

The need to acquire land from private office and industrial properties would be greater than initially anticipated, which would increase the site's costs. Potential uses of nearby park areas would also need consideration. One elevator tower for the pedestrian crossing would be immediately adjacent to parkland and may require parkland usage. A new roadway to replace the Lake Shore Drive crossing would use an undeveloped edge of Bandemer Park, with associated park land impacts. Also to be considered: the cost to redesign North Main Street and nearby intersections to provide multi-modal site access.

Phase II Evaluation

Additional Evaluation Criteria Requested by Stakeholders

Station-Oriented Development

The subjects of most frequent comment supporting further evaluation of this site were redevelopment and station-oriented development. Repeatedly mentioned was the recent North Main-Huron River Corridor Vision Project, which advocated a multi-modal streetscape and improved connections to the B2B Trail and riverfront.² These requests were the primary justification for retaining Site 1 in the Phase II analysis.

² This project was active between spring 2012 and summer 2013. Sources: Renew North Main at <http://www.renewnorthmain.org/>; and Stanton, R.J.,

The potential for station-oriented development in the immediate Site 1 area is limited. As previously stated, the station program would require up to 10 acres, including all land between North Main Street and the tracks within at least 600 feet of Lake Shore Drive. The station program would leave no ground space for redevelopment. The entire area would be required for features such as a bus transfer facility, parking structure, and passenger drop-off area. Development east of the site is prevented by Bandemer Park and the river. Development west of the site is prevented by the Bluffs Nature Area. Remaining areas include:

West of Main:

- A small industrial area at 1251 North Main;
- A few single family homes along Main; and
- A newer office and assisted living redevelopment at Huronview Boulevard.

East of Main:

- The New Center nonprofit organization redevelopment south of the site (existing redevelopment); and
- Industrial properties at 1342 North Main and extending north to the M14 interchange.

In short, station-oriented development potential at and around Site 1 is highly constrained.

Ann Arbor News, May 8, 2012. "New task force will develop vision for connecting North Main Street and Huron River."
<http://www.annarbor.com/news/new-task-force-will-develop-vision-for-connecting-north-main-street-and-huron-river/>.



Conclusions

It appears possible to locate an intermodal passenger rail station at the Site 1 (North Main Street) location. However, the prospect of acquiring several properties along the segment and relocating businesses raises the capital and socioeconomic costs of locating a station here. Access and roadway conditions create problems for vehicular and non-motorized access between the site and major activity areas and require parkland uses. This site has limited potential for transit connections compared to the other remaining sites. The site's environmental constraints are complex, and thus the Project Team initially did not recommend advancing this site for further analysis. Based on subsequent analysis requested by stakeholders, the initial recommendation to eliminate Site 1 (North Main Street) from further consideration has been reaffirmed.

Recent developments for a separate project are also relevant to the Site 1 evaluation. The Regional Transit Authority of Southeast Michigan (RTA) has partnered with MDOT to refine commuter / regional rail alternatives in the existing Amtrak Wolverine corridor between Ann Arbor and Detroit. The proposed Locally Preferred Alternative (scheduled for Board review and potential adoption in 2016) includes rail facilities at Site 1. These include a reversing siding and layover yard, which would incorporate a connection track between the MDOT and Ann Arbor railroads. The connection track can be located at this site only, and no other layover site at the Ann Arbor end of the corridor is currently under consideration. The Site 1 station layout would also directly conflict with these proposed facilities.