

Appendix L – Technical Memorandum 2 - LRT 3E Alternative



SOUTHWEST
transitway

green means go.

Southwest Transitway Draft Environmental Impact Statement (DEIS)

Scoping Technical Memorandum #2: Analysis of Alternative LRT 3E

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APPENDIX A: CONCEPTUAL ALIGNMENT PLANS

1. BACKGROUND AND PURPOSE OF ANALYSIS

During National Environmental Policy Act/Minnesota Environmental Policy Act (NEPA/MEPA) Scoping for the Draft Environmental Impact Statement (DEIS) for the Southwest Transitway Project (Project), the Cedar Isles Dean Neighborhood Association (CIDNA) submitted an alternative alignment and design concept to the LRT 3C that was identified in the Alternatives Analysis (AA) for further evaluation in the DEIS. CIDNA's proposed alternative has been relabeled as LRT 3E.

This Technical Memorandum evaluates LRT 3E to determine if it is a reasonable alternative to be considered for further evaluation in the DEIS.

Federal regulations that govern the preparation of Environmental Impact Statements dictate, "The draft EIS shall evaluate all reasonable alternatives to the action and discuss the reason why other alternatives which may have been considered were eliminated from detailed study" (23 CFR 771.123). According to 40 CFR §1502.14 it "includes all reasonable alternatives which are rigorously explored and objectively evaluated, as well as those other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them" (See also 46 Fed. Reg. 18026, question 1a).

The test of 'reasonableness' for alternatives is one that is determined with respect to purpose and need of project and CEQ regulations clearly state that "(w)hat constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in the case" (46 Fed. Reg. 18026, question 1b).

CEQ regulations further address reasonable alternatives as "those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant" (46 Fed. Reg. 18026, question 2b).

U.S. DOT considers that an alternative is not feasible if it cannot be built as a matter of sound engineering judgment, and an alternative is not prudent if:

1. It compromises the project to a degree that it is unreasonable to proceed in light of its stated purpose and need;
2. It results in severe safety or operation problems;
3. After reasonable mitigation, it still causes severe social, economic, or environmental impacts, disruption to established communities, disproportionate impacts to minority or low income populations or severe impacts to environmental resources protected under other Federal statutes;
4. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
5. It causes other unique problems or unusual factors; or
6. It involves multiple factors in paragraphs described above, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude. (23 USC §771.135).

For purposes of this analysis, reasonable alternatives are those that:

- Are consistent with the Purpose and Need for the Southwest Transitway
- Are consistent with State, Regional and Local Planning
- Are based on sound engineering practices and are practical and feasible
- Perform as well or better than the LRT alternatives identified for inclusion in the Southwest Transitway DEIS.

The proposed alternative LRT 3E will be evaluated on the criteria list above to determine if it warrants inclusion in the Southwest Transitway DEIS.

2. DESCRIPTION OF LRT 3E

During the Scoping Comment Period, Mr. Arthur Higinbotham on behalf of CIDNA submitted multiple written descriptions of LRT 3E with variations, additions and deletions. The Project Team prepared a draft description and alignment map based on the information received, sound engineering practices and Metro Transit Light Rail Design Criteria. The description and map were provided to Mr. Higinbotham for review and approval by the CIDNA. The Project Team was provided verification that the interpretation and map represented the intent of the proposal. For more information see Appendix A. Figure 1 illustrates a general routing diagram for LRT 3E. The conceptual engineering for the alignment are presented in Appendix A.

The description of the route for LRT 3E is divided into three segments for the purpose of describing the general alignment and physical characteristics only. Southwest of the West Lake Station the remainder of the alternative is assumed to be consistent with LRT 3C as described in the Southwest Transit DEIS Scoping Information Booklet and is not described here.

Segment A – West Lake Station to Park Avenue via the Midtown Corridor

In contrast with LRT 3C the proposed LRT 3E eliminates the West Lake Station and replaces it with a new station located in the vicinity of Dean Parkway with a park and ride assumed to be located near the station. From the Dean Parkway station the alternative follows the LRT 3C alignment through the Midtown Corridor. LRT 3E would be grade separated over Irving Avenue South and Humboldt Avenue South. No grade separation would be provided at James Avenue South. East of Humboldt Avenue, the light rail transit (LRT) guideway would enter the Midtown Corridor with stations at Uptown Transit Center (Hennepin Avenue), Lyndale Avenue South, Nicollet Avenue and 5th Avenue South. From 5th Avenue, the guideway would continue east in the Midtown Corridor to Park Avenue.

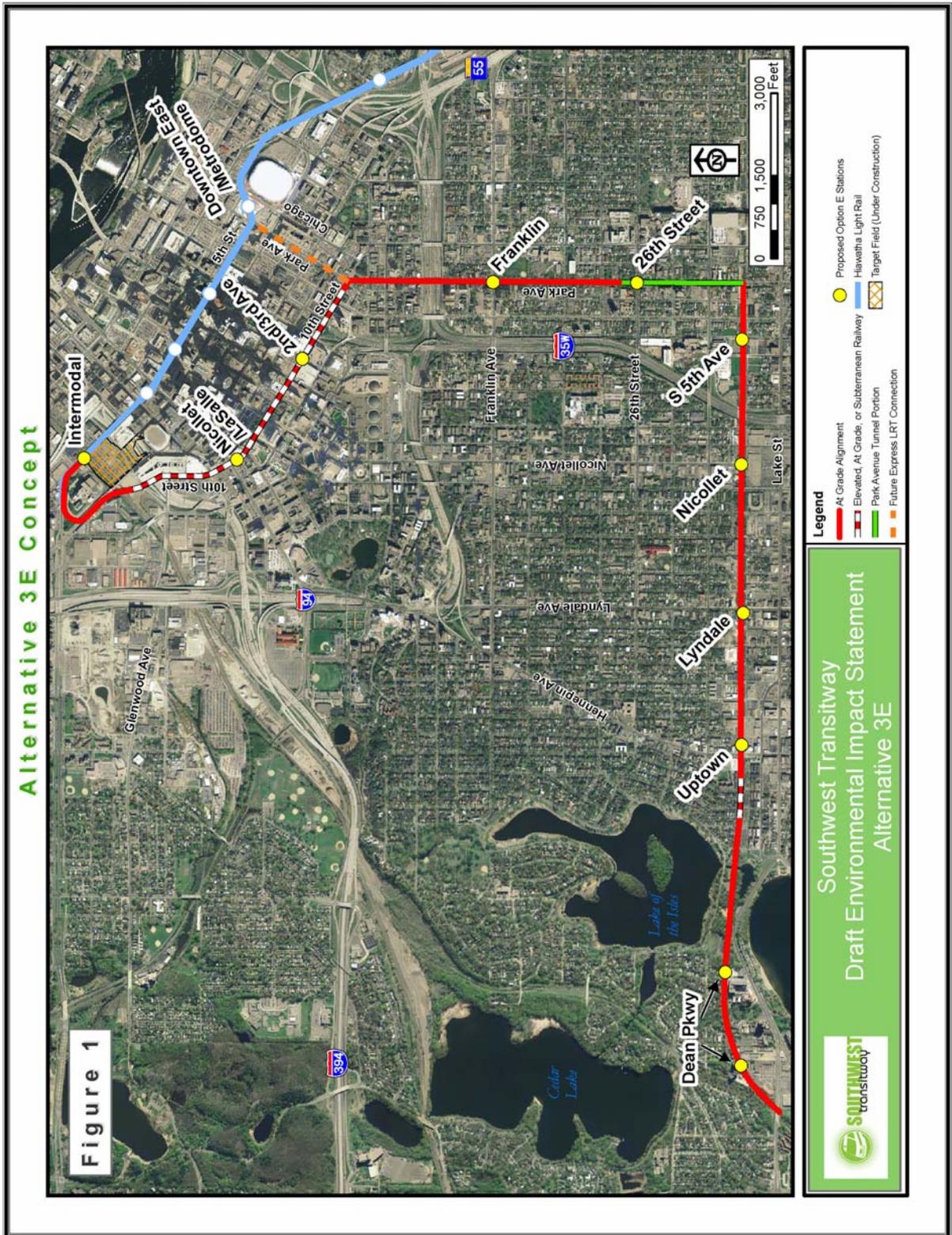
Segment B – Park Avenue to 10th Street with extension to Hiawatha Metrodome Station

At Park Avenue the guideway¹ would transition into a tunnel having a 300-foot radius turn to the north to align with Park Avenue. The tunnel would extend north under Park Avenue with the guideway transitioning to street-grade between 25th and 26th streets. A station would be located near the intersection of 26th Street and Park Avenue. The alignment would then run at-grade to 10th Street South, and a station would be located near the intersection of Franklin and Park Avenues. South of the intersection at Park Avenue and 10th Street, the guideway would start to transition to an elevated section so that it is fully elevated as the guideway turns northwest onto 10th Street. The guideway and roadway configuration for the at-grade portion of the alignment are assumed to be the same as LRT 3D, which was previously evaluated during the Alternatives Analysis phase of the project, or a double track two-way guideway located in the center of the right-of-way, with one vehicle travel lane on both the east and west sides of the guideway, protected left turns at signalized intersections and on-street parking where space allows.

Near the intersection of Park Avenue and 10th Street, the guideway would split into two alignments using a 'Y' junction that would allow trains to access the 10th Street Line or continue north to the Metrodome Station and interline with the Hiawatha Line. The second guideway would continue north on Park Avenue, transition to grade between 9th and 8th streets and continue north on Park Avenue to 5th Street. At 5th Street, there would be a second 'Y' junction so that northbound Southwest LRT trains could continue southeast on the Hiawatha LRT, westbound Hiawatha trains could interline with Southwest LRT and continue south, and both east and west bound Hiawatha trains could operate on 5th Street South.

¹ "Guideway" includes all physical elements of the running surface for a LRT system. It includes the track bed, track, switches, overhead power system, poles, signals, and stations.

Figure 1 LRT 3E Option Concept



Segment C – Park Avenue to Intermodal Station via 10th, 7th streets and 6th Avenue.

From the intersection of Park Avenue and 10th Street South, the guideway would turn northwest onto 10th Street South as an elevated railway and return to an at-grade alignment along 7th Street North. Elevated station platforms would be located at either 2nd or 3rd Avenue South (near the Minneapolis Convention Center) and near the intersection of 10th Street South and LaSalle Avenue. It is assumed that the existing travel lanes on 10th and 7th streets from Glenwood Avenue north to 6th Avenue North cannot be converted to an LRT guideway to maintain vehicle travel capacity on this portion of the route. Therefore, the guideway would require new structures from Glenwood Avenue over I-394 to 6th Avenue North. At 6th Avenue North, the guideway would turn eastward on the south side of 6th Avenue North and tie into the tail tracks for the Hiawatha Line north of the intermodal station. This alignment might require the relocation of the Hennepin Energy Resource Center driveway from 6th Avenue North to North 7th Street.

3. ASSUMPTIONS

The following assumptions about transit operations and the existing conditions were made when evaluating the proposed LRT 3E alternative.

3.1 OPERATING ASSUMPTIONS ROUTING AND FREQUENCY

It is assumed that the Southwest and Hiawatha LRT lines would interline at the Metrodome Station and would operate with an A/B train configuration. The in-bound Southwest A train would turn northwest onto 10th Street at Park to interline with Hiawatha at the intermodal station, continue south on 5th Street to Park, turn south on Park to Southwest end of line (EOL). The inbound Southwest B train would continue north on Park Avenue from 10th Street, turn east at the Metrodome Station to interline with the Hiawatha LRT and continue to the Mall of America (MOA) EOL. The Hiawatha LRT would also operate as an A/B train with a split in-routing at the Metrodome Station. Every other Hiawatha train would travel northwest on 5th Street to the intermodal station where they would interline with the Southwest Line and continue on 6th Avenue North to North 7th Street, turn south on North 7th to 10th Street North, 10th Street North to Park Avenue, and turn south on Park Avenue to Southwest EOL. The Hiawatha 'B' train would turn south on Park Avenue at the 5th Street go to the Southwest EOL. No in-bound Southwest train would be routed to 5th Street or turn northwest on 5th Street. No Hiawatha train would continue to Park Avenue/10th Street and turn northwest on 10th Street.

Southwest trains would operate at 7.5-minute peak period frequencies from the southern end of line (EOL) and the Park/10th Street 'Y'. Hiawatha trains would operate at 7.5-minute frequency from its eastern EOL to the Park and 5th Street North 'Y'. This routing concept provides 15-minute one seat ride from all EOLs to stops on 10th and 5th streets on both lines and 7.5-minute frequency from all EOLs to all other stops. This routing provides a "balanced" routing split required for operation efficiencies. Travel demand may warrant only every other Southwest train going to the Mall of America EOL during peak and an even split during off-peak travel times however, this would overload the track capacity where the Hiawatha and Central Corridor LRT lines share tracks in downtown Minneapolis. Figures 2 and 3 provide schematic diagrams of the interlining and operations concept.

3.2 EXISTING CONDITION ASSUMPTIONS

- Existing bridge over I-94 is assumed to be modified to accommodate LRT and not completely replaced;
- The alignment includes a tunnel section beginning approximately at 28th Street and ending approximately between 26th and 25th Streets;
- Right-of-way widths are based on field observations and GIS data, and are approximate values only;
- The alignment seeks to minimize right-of-way acquisition. Where possible, proposed LRT trackway and lane configurations are designed to remain within existing street right-of-way;
- Vehicles would not be allowed to share the LRT tracks or cross the LRT tracks except at signalized intersection locations; and
- The end-of-line of the Hiawatha is assumed to be as built today with two sets of tail tracks.

Figure 2 Interlining Southwest and Hiawatha Lines

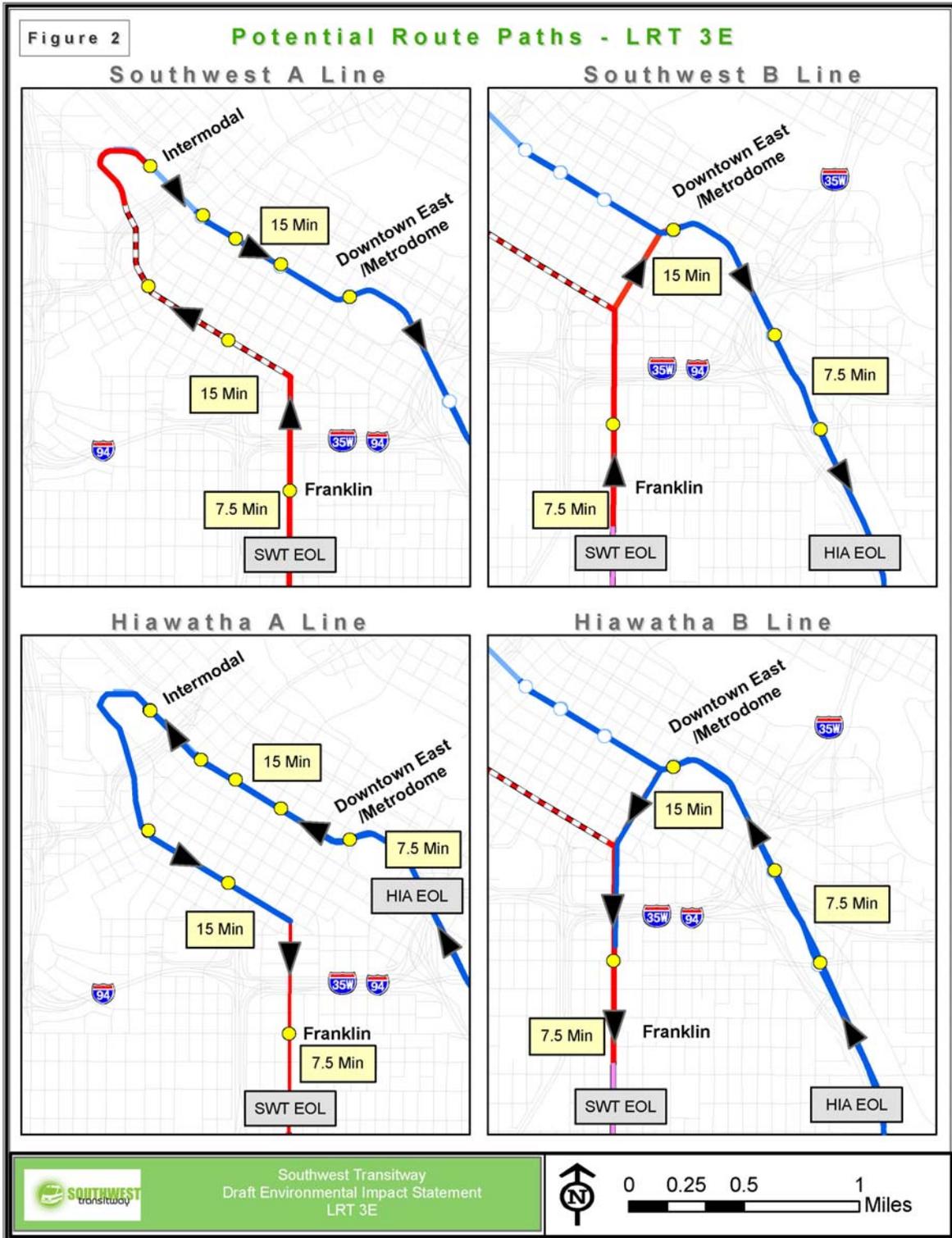
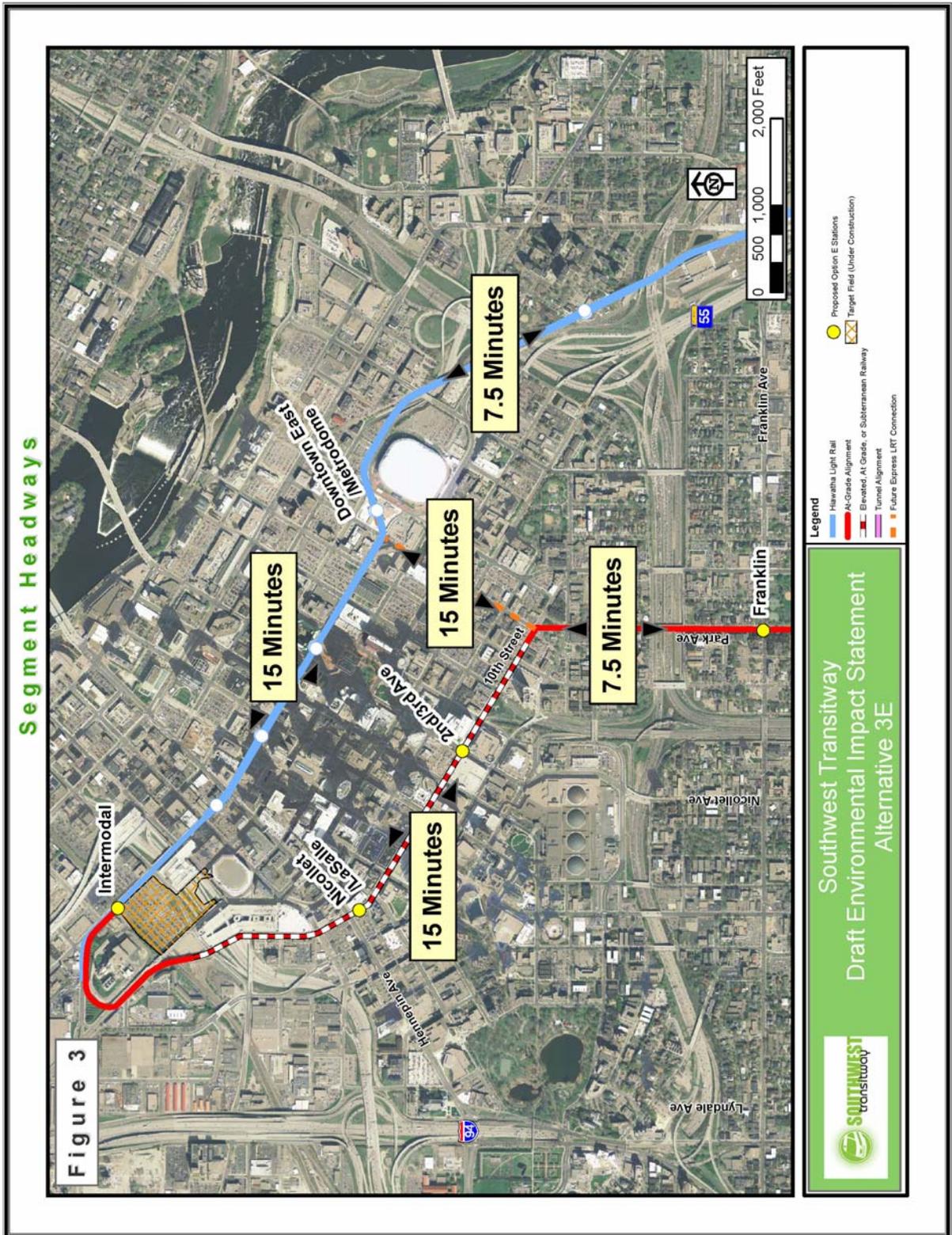


Figure 3 Operational Frequencies



4. EVALUATION

Although CIDNA's base concept for LRT 3E is for the alignment to be aerial (above grade) along 10th Street, CIDNA indicated this portion of the alignment could also be at-grade or in a tunnel. These sub-alternatives were generally evaluated and determined to not be feasible and therefore were not further evaluated. The at-grade alternative would reduce travel capacity on 10th Street to one lane in each direction, disrupt access to I-35W, and would most likely require the street to be converted to a two-way street. In combination, these changes to 10th Street would result in significant traffic impacts, including driver safety implications (such as visibility), increased congestion and decreased levels of service at intersections. The *Access Minneapolis: Downtown Action* plan identified the intersection of 10th Street and 4th Avenue/I-35W entrance as having a capacity issue, with a volume to capacity ratio of 0.96 (LOS² "E"). The removal of a lane of traffic would likely cause this intersection to fail (LOS "F"). The tunnel alignment would result in cost increases two to three times greater than aerial alignment as well as major constructability issues. For these reasons, the above grade alternative was the only option evaluated in this analysis.

To determine if the LRT 3E alternative is a reasonable alternative warranting inclusion in the DEIS the following criteria were applied:

1. Consistency with Regional and Local Planning defined as the *Metropolitan Council's 2030 Transportation Policy Plan (TPP)*, the Hennepin County Transportation System Plan (TSP), and the City of Minneapolis *Access Minneapolis* plan.
2. Are of Sound Engineering Practices and are Practical and Feasible
3. Perform as well or better than the LRT alternatives identified for inclusion in the DEIS which are LRT 1A, LRT 3A, and LRT 3C
4. Consistency with the Purpose and Need Statement for the Southwest Transitway

4.1 CONSISTENCY WITH REGIONAL AND LOCAL TRANSPORTATION PLANS AND PROGRAMS

For purposes of this analysis consistency with regional and local planning was defined as consistency with the *Metropolitan Council's 2030 Transportation Policy Plan (TPP)* and the City of Minneapolis *Access Minneapolis* plan.

4.1.1 METROPOLITAN COUNCIL 2030 TRANSPORTATION POLICY PLAN (TPP) - ROADS

The TPP is the regions long-range plan for transportation, presenting the policies and plans of the Council to guide transportation improvements. The

² Level-of-Service (LOS) is a quality measure describing operational conditions within a traffic stream, general in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience." (Highway Capacity Manual 2000, pg. 2-2). Intersection performance is defined using six levels, A through F, with A being best and F being worst.

TPP calls for planning and investment in multi-modal transportation options, establishing greater connections between land use, transportation, and population density, making efficient use of the regional transportation system, focusing highway investments first on maintenance and second on slowing congestion, building transit ridership, and encouraging local communities to implement an integrated transportation network. The plan specifically identifies investments in transitways and enhancing transit ridership through transit supportive policies as a key component of the region's transportation system. Metropolitan Council adopted an update to the 2030 TPP (originally adopted on December 15, 2004) on January 14, 2009.

Functional Classification

The TPP includes a long-range plan for roadways identifying their functional classification. According to the current TPP, Park and Portland Avenues are identified as A-minor reliever routes for Interstate 35W, the principal arterial³ route for north – south movements through this geographic area.

According to the criteria set forth in the TPP, A-minor relievers in urban areas provide direct relief for traffic on Metropolitan Highway Principal Arterials, serve medium-to-short trips (2–6 miles), have parking restricted as necessary, carry between 5,000–30,000 vehicles per day, posted speed limits of 35–45 miles per hour (mph), average travel speeds of 15 mph during peak periods, with 60–150 feet for right-of-way. There are no criteria based on the number of lanes. A-minor arterials generally provide access to interstates, other principal arterials, collectors⁴, and some local streets.

Park Avenue currently carries 11,500 vehicles per day and serves primarily as a reliever to I-35W, located ¼ mile to the west. The traffic volumes have remained fairly stable since the year 2000. If Park Avenue were converted to accommodate two LRT tracks running down the center with one lane in each direction (with turning lanes at intersections), it is unlikely that Park and Portland Avenues could retain their function as A-minor relievers for I-35W and there is no likely roadway candidates in the area within ¼ mile of I-35W that could perform this function.

4.1.2 ACCESS MINNEAPOLIS PLAN

The *Access Minneapolis* plan is the 10-year action plan for transportation improvements in the City of Minneapolis. The plan was adopted by the Minneapolis City Council on June 29, 2007. The section on transit identifies LRT, BRT, and other forms of mass transit as service modes the city plans to implement, and recognizes the importance of supporting transit with density through land use policies. Methods of improving transit efficiency and ridership include developing information for passengers at transit stops and

³ Functional classification of roadways refers to the grouping of streets and highways into classes or systems. “Principal Arterials” are facilities designed for thru traffic movements with limited access to adjacent lands.

⁴ “Collector” streets are an intermediate category of roadway between arterial roads and local streets. Collector streets often provide increased access points to adjacent lands, but are intended to funnel traffic from local streets to arterial roadways.

evaluating the “frequency, span, and coverage of service on PTN (Primary Transit Network) corridors” (City of Minneapolis, 2007-8).

Pedestrian System - Conflicts with Skyways

Downtown Minneapolis has an extensive skyway system, providing eight miles of above-grade access corridors to nearly 80 city blocks. This largely privately-operated indoor pedestrian network provides convenient access between offices, retail, hotels, parking ramps and the Minneapolis Convention Center.

LRT 3E would result in a physical conflict between three skyways that span over 10th Street. The three impacted skyways are located:

1. Between 2nd Avenue and Marquette Avenue;
2. Between Nicollet Avenue and LaSalle Avenue;
3. Between LaSalle Avenue and Harmon Place.

The conflict results from the difference between top of track elevation and the finish floor elevation of the skyways. The guideway would be approximately 24.5 to 26.5 feet above ground, allowing for sufficient clearance between the tops of the pier structures and grade level, whereas the skyways are located at the second floor level of the adjacent buildings and are 14 to 18 feet above grade. Therefore, where the skyway and guideway intersect the grade difference would be 10 to 12 feet in elevation. There are three s to address this conflict:

1. Raise the finish floor of the skyways to match the elevation of the trackway;
2. Raise the guideway so it passes over the top of the skyway enclosure;
3. Remove the skyways.

The first solution would require the finish floor elevation of the skyways to be raised to the top of track elevation to allow pedestrian crossing. This would require the skyways being raised to the 3rd floor level of the adjacent buildings. These buildings and possibly others adjacent to them would need to reconfigure their internal circulation, including ADA compliant access to the rest of the skyway system, which is located on the 2nd level. This relocation would hinder implementation of some of the goals of the *Access Minneapolis* plans, which calls for a better integration of the skyway system with the sidewalk level by providing highly visible vertical circulation elements located along the outside perimeter of buildings.

Where a skyway intersects with the guideway, special doors, similar to those used on elevators, would have to be installed on both sides of the guideway to control pedestrian crossings when a train is approaching. Because the skyway enclosure would be penetrated by the guideway, thereby opening the skyway to the elements, the doorways would most likely remain closed except when a pedestrian requests to cross by pressing a button. This would restrict the free flow of pedestrians along the skyway.

The second approach would require the height of the guideway to be raised to pass over the top of the skyways. This would increase the top of track to a height of 34.5 to 36.5 feet above street grade and result in additional capital costs.

A third option to deal with the conflict would be to remove skyways to accommodate the elevated LRT on 10th Street. This action would be detrimental to the skyway system. The skyway over 10th Street between 2nd Avenue and Marquette Avenue is a critical link. It provides the only skyway access between the Central Business District (CBD) and Orchestra Hall and the Convention Center. Any action requiring the relocation or removal of this skyway (even temporary) could have negative impacts on Orchestra Hall and Convention Center activities. This skyway also provides the only system link to the CBD for residents in the Marquette Place and Oakwood apartments, some of which are mobility impaired and rely on this skyway for safe access.

The first and third methods to address the conflict between the elevated guideway and existing skyways would result in a deterioration of the pedestrian flow through the skyways, increase pedestrian walk time, and produce results that are inconsistent with the intent of the *Access Minneapolis* plan. The second solution would increase the capital costs to construct LRT 3E and could result in LRT operation issues.

10th Street

10th Street currently carries around 4,000 vehicles per day between I-35W and 5th Avenue South. Between 5th Avenue South and I-394, 10th Street carries between 10,000 and 12,000 vehicles per day. Presently, 10th Street provides access between I-35W, Downtown Minneapolis, and TH 55.

The *Access Minneapolis* plan proposes the conversion of 10th Street from one-way eastbound operations to two-way operations between 5th Avenue South and Park Avenue. Between 5th Avenue and I-394, 10th Street has 3 thru-lanes and metered parking on both sides of the street in many places. Between 5th Avenue and Park Avenue, 10th Street is 44 feet wide, with two thru-lanes, metered parking on the south side of the street, and a 4-foot bicycle lane on the north side of the street. Under the *Access Minneapolis* plan, 10th Street would be one thru-lane in each direction between 5th Avenue and Park Avenue, with parking on the south side of the street and a widening of the bicycle lane on the north side to a standard width (6 feet).

LRT 3E would require the removal of a lane of traffic for the alignment (whether elevated or at grade), and possibly the bicycle lane and/or the metered on-street parking. This would require 10th Street to remain a one-way street, and would be in conflict with the *Access Minneapolis* plan.

Based on Highway Capacity Manual and Institute of Transportation Engineers (ITE) guidelines, 10th Street likely operates at LOS "A" or "B." The *Access Minneapolis* plan identified the intersection of 10th Street and 4th Avenue/I-35W entrance as having a capacity issue with a volume to capacity ratio of 0.96 (LOS "E"). The removal of a lane of traffic would likely cause this intersection to fail (LOS "F").

CONSISTENCY WITH TRANSIT SERVICE

Primary Transit Network

The *Access Minneapolis* plan identified Primary Transit Networks (PTN) routes, defined as high frequency with service every 15 minutes or less, operating 18 to 24 hours per

day, seven days per week. For the geographic area bounded by Nicollet Avenue on the west, Chicago Avenue on the east, Lake Street on the south and 10th Street on the north, the roadways designated for PTN service are Lake Street, Franklin Avenue, Chicago Avenue, Nicollet Avenue and I-35W. Neither Park nor Portland Avenues are identified as warranting high frequency transit service.

Existing Transit Service

Existing transit service within one-quarter-mile of the proposed LRT 3E alignment is robust, with numerous local, limited stop, and express bus routes operating on street corridors which parallel the proposed LRT 3E alignment. Several of the existing routes are high frequency service routes operating at increased service frequencies. Most notably, bus routes 5, 6, 10, 18, and 21 are high frequency service routes running on parallel streets or perpendicular cross streets within one city block of the proposed alignment. Each of these routes operate at 7–10-minute or less headway frequencies during the weekday peak hour periods, and provide service during the weekends. This equates to 16 or more buses per hour in both directions on the streets served by these high frequency bus routes, which include Lake Street, Chicago Avenue, and 10th Street South. In addition to these routes, several other local and limited stop bus routes operate on the same streets or other city streets. The current levels of service allow for sufficient ingress and egress into, around, and out of these corridor areas in all directions.

The LRT 3E alignment would use a portion of the Midtown Corridor paralleling Lake Street. Lake Street is served by the Route 21 bus, a high frequency route, and the Route 53 bus, a limited stop weekday service. Between Hennepin Avenue and Park Avenue on the Midtown Corridor, several streets are served by other high frequency bus routes. On Hennepin Avenue, the Route 6 bus operates at 5–7-minute peak hour headways with approximately 222 weekday trips. The Route 18 bus is also a high frequency bus route operating on Nicollet Avenue, operating at 5-8-minute headways during the peak hour periods with approximately 280 weekday trips. The Route 4 bus provides regular weekday and weekend service on Lyndale Avenue, however, this route is not a high frequency route. In addition to these routes, both Hennepin and Lyndale Avenue are also served by limited stop bus service with connections to the U of M during the academic year.

On Park Avenue between the Midtown Corridor and 10th Street South, the LRT 3E alignment would run below and at grade, paralleling Chicago Avenue one city block to the west. Several local buses and a weekday circulating loop route provide service on Park and Portland Avenues, and the Route 5 bus is a high frequency route operating on Chicago Avenue. The Route 5 bus operates at 5-10-minute service headways during weekday peak hour periods, making 258 weekday trips and providing service on weekends. Route 5 would also parallel the LRT 3E alignment in downtown, traveling within one-quarter mile of the proposed alignment on 7th and 8th Streets. Routes serving Park Avenue include the local Route 24 and 39 buses. Perpendicular cross routes on Park Avenue include the Route 2 bus operating on Franklin Avenue, and the Route 27 bus operating on 26th Street.

Once the alignment reach's 10th Street South in downtown Minneapolis, the alignment would turn northwest and follow 10th Street through the downtown core. Between Park Avenue and Hennepin Avenue, up to 24 bus routes use portions of 10th Street traveling in multiple directions throughout downtown. The entrance and exit points to I-35W make this

a convenient street for express commuter bus traffic, as well as some local bus routes. These entrance and exit points are also being considered as part of the reconstruction of 2nd and Marquette Avenues in downtown for Bus Rapid Transit along I-35W. The Route 10 bus provides high frequency transit service along portions of 10th Street, operating at 7-10-minute headways during weekday peak hour periods and making 191 trips. Other buses serving 10th Street making numerous daily trips include the Route 9 and Route 25 buses.

Duplication of Service

As evidenced, the three regions considered all have a mixture of high frequency local bus service, along with limited or express bus service operating within one city block of the proposed LRT 3E alignment. As a result, the LRT 3E alignment would provide duplicate service to saturated transit markets. Service duplication has several implications, including increased travel times, decreased ridership, intra-agency competitive service, and higher capital costs borne by both the public and operating agencies, excluding construction costs. The existing bus service could not be replaced with the addition of the LRT 3E alignment. Altering or restructuring the current bus patterns to connect with the LRT or onto other streets would reduce access to destinations already served and likely impact current ridership levels. Finally, the LRT 3E alignment is not consistent with the transit plans of the city as outlined in the *Access Minneapolis: Downtown Action Plan* of 2007.

4.2 SOUND ENGINEERING

For purposes of this analysis engineering issues including traffic impacts, new structures, right-of-way, parking, bicycle lanes, bridge impacts and access impacts were evaluated.

4.2.1 ACCESS ISSUES

LRT 3E would require access modifications to and from Park Avenue at several locations. Using the access criteria adopted for the Central Corridor LRT project, vehicles would not be able to cross over the fixed guideway except at signalized intersections located approximately ¼ mile apart. Access at unsignalized intersections would be restricted to right-in, right-out only. Application of these criteria to Park Avenue would eliminate crossing Park Avenue at the following locations:

- 7th Street
- 9th Street
- 14th Street
- 16th Street
- 17th Street
- 19th Street
- 22nd Street
- 25th Street

The loss of access from Park Avenue at 7th, 9th, 14th and 16th streets would be a challenge to drivers that need access to locations along these streets. Each of these streets is one-

way, requiring the navigation of more circuitous routes to reach these destinations, and thus additional travel delay.

Pedestrians would be able to cross Park Avenue at every intersection, with the exception of 14th Street, which may be modified or relocated to accommodate the transition of LRT from at-grade operations to above-grade operations between 15th Street to 10th Street.

4.2.2 BIKE LANE

The placement of the guideway on Park Avenue would result in the displacement of the existing bike lane. The placement of the elevated guideway on 10th Street would require vertical circulation elements between 2nd and 3rd avenues and between Hennepin and Hawthorne avenues for station access, also resulting in loss of the bike lane. The lane could be retained if the street is further widened but this would require the elimination of a parkway on one side of the street or by narrowing of the parkway on both sides. Any disruption of the 10th Street bike lane would be inconsistent with the *Access Minneapolis* plan.

4.2.3 ON-STREET PARKING

The implementation of LRT 3E would require the elimination of all on-street parking on Park Avenue between the transition zone (defined generally as being between 26th and 25th Streets) and 10th Street where the train would transition from the tunnel to the at grade alignment if existing parkways are retained. On-street parking could be retained along the route above the tunnel portion and south of I-94 on those blocks where street widening for stations or left turn bays is not required by removing existing parkways. Parking spaces would have to be removed to provide room for left-turn lanes at 6th, 8th, 15th and 18th streets, Franklin Avenue, and 24th Street. On-street parking would also be eliminated around station platform areas, including a half-block of parking north and south of Franklin Avenue, and a half-block of parking located north of 26th Street. All on-street parking north of Grant Street would be displaced by the guideway and associated street widening.

These actions would result in the removal of nearly 50 to 100 percent of the on-street parking along Park Avenue between 26th Street and the Downtown East/Metrodome Hiawatha LRT station at 5th Street. The reduction in available parking could create quality-of-life issues for local residents, businesses, and institutions, especially those that have on-street parking as their only option.

The loss of on-street parking on Park Avenue could have indirect consequences that are contrary to the Purpose and Need for the Project:

- Could increase the amount of land devoted to off-street parking which would be counter productive to economic development;
- Could decrease property occupancy, land values and rent which would be counter productive to economic development;
- Could encourage transit users to park on adjacent streets or in undesignated parking lots which would be disruptive to the quality of life of the occupants of the neighborhood.

4.2.4 RIGHT-OF-WAY IMPACTS

Based on the conceptual plans developed to assess the impacts of LRT 3E the alignment would require the acquisition of a portion of 40 parcels of land. The portions that require property takes are:

- 1 parcel requiring tunnel at the transition from Midtown Corridor to Park Avenue
- 7 partial takes to maintain travel lanes at 26th Street station and tunnel portal
- 19 partial takes to maintain travel lane at Franklin Street station
- 2 partial takes to transition for Park Avenue to 10th Street
- 2 partial takes to transition from Park Avenue to 5th Street
- 2 partial takes at the 3rd Avenue station
- 1 partial takes at the Hennepin Avenue station
- 6 air rights or ROW takes from Glenwood Avenue to Hiawatha tail track

4.3 PERFORMANCE EVALUATION

For purposes of this analysis, the LRT 3E alternative was evaluated on how it would perform compared to the alternatives recommended from the Alternatives Analysis (AA) for inclusion in the DEIS. The three LRT alternatives are LRT 1A, LRT 3A, and LRT 3C. For purposes of this analysis performance measures included estimated travel times, and estimated capital costs (year 2015).

4.3.1 IMPACT ON HIAWATHA LRT SERVICE FREQUENCIES

This interlining concept has significant implications to both the Southwest LRT and Hiawatha service to the primary downtown station because only every other train for each line would serve these stations. These means that passengers desiring to go to/from the downtown stations to any point on the Southwest Line or Hiawatha Line would have 1 train every 15 minutes for their trip compared to the 7.5-minute service currently programmed for the Hiawatha Line. This may have severe implications for the Hiawatha LRT line which is currently experiencing capacity problems operating on the 7.5-minute frequency.

4.3.2 OUT OF DIRECTION TRAVEL

With LRT 3E, the travel distance between the Midtown Corridor and Nicollet Avenue intersection and the Nicollet Mall Station via the Intermodal Station would be approximately 3.6 miles. With LRT 3C the distance from the Midtown Corridor and Nicollet Avenue intersection and 4th Street Station would be approximately 1.6 miles. This means LRT 3E requires a two-mile out of direction travel penalty for any Southwest LRT passenger going to/from the primary downtown stations or any Hiawatha Line station.

4.3.3 TRAVEL TIMES

Representative travel times by LRT in minutes are presented in Table 4. All times are from the West Lake/Dean Parkway Station to the three primary stations in downtown Minneapolis (Nicollet Mall, Government Plaza, and the Metrodome).

Table 1: Comparative Travel Times (Minutes) – Excludes transfer time

Station	Minutes each alternative			Notes
	LRT 1A/3A	LRT 3C	LRT 3E (A/B)	
FROM: West Lake / Dean Station				
TO: Nicollet Mall/5 th St. (Hiawatha Line Station)	12.9	13.8	20.4	A assume 1-3 A + HAI interline at Intermodal. C assume w/ walk to Nicollet Mall Station. E assume Southwest LRT A train via 10th St to Intermodal
TO: Government Plaza (Hiawatha Line Station)	14.9	17.7	22.4	A assume 1-3 A + HAI interline at Intermodal. C assume w/ walk to Nicollet Mall Station, transfer to HIA. E assume Southwest LRT A train via 10th St to Intermodal
TO Metrodome (Hiawatha Station)	17.9	20.7	25.4 A 11.3 B	A assume 1-3 A + HAI interline at Intermodal. C assume w/ walk to Nicollet Mall Station, transfer to HIA. E assume Southwest LRT A train via 10th St to Intermodal with transfer to HIA

The fastest travel time occurs with LRT 3A because it would have the shortest travel distance and highest train speed. The longest travel time is on LRT 3E because it would have increased travel distance, and a slower speed. LRT 3A or LRT 3C would provide service every 7.5 minutes per direction between the West Lake/Dean station and the three primary downtown stations while LRT 3E 'A' train would provide service every 15 minutes.

The LRT 3E 'B' train would have a faster travel time to the Metrodome station and points east on the Hiawatha line because it bypasses downtown connecting to the Metrodome via Park Avenue.

Table 5 displays the frequency (minutes between trains) of service and the estimated time a typical passenger would have wait for a train (1/2 frequency) for the LRT 3A, LRT 3C, and LRT 3E 'A/B' trains. LRT 3E has the longest time between trains and the longest wait time at any downtown station because of the A/B train operation.

Table 2: Peak Headways/Wait times (Minutes) – Excludes transfer time

Station	Minutes each alternative			Notes
	LRT 1A/3A	LRT 3C	LRT 3E (A/B)	
FROM: West Lake / Dean				
TO: Nicollet Mall/5 th St. (Hiawatha Line Station)	7.5/3.75	7.5/3.75	15.0/7.5	A assume 1-3 A + HAI interline at Intermodal. C assume w/ walk to Nicollet Mall Station. E assume Southwest LRT B train via 10 th St to Intermodal
TO: Government Plaza (Hiawatha Line Station)	7.5/3.75	7.5/3.75	15.0/7.5	A assume 1-3 A + HAI interline at Intermodal. C assume w/ walk to Nicollet Mall Station, transfer to HIA. E assume Southwest LRT B train via 10 th St to Intermodal
TO Metrodome (Hiawatha Station)	7.5/3.75	7.5/3.75	15.0/7.5 15.0/7.5	A assume 1-3 A + HAI interline at Intermodal. C assume w/walk to Nicollet Mall Station, transfer to HIA. E assume Southwest LRT B train via 10 th St to Intermodal with interline to HIA

Table 6 combines the travel time on the LRT and wait time at the station to estimate the total trip time between the representative stations.

Table 3: Total Trip Time (Travel +Wait) – Excludes transfer time

Station	Minutes each alternative			Notes
	LRT 1A/3A	LRT 3C	LRT 3E (A/B)	
FROM: West Lake / Dean				
TO: Nicollet Mall/5 th St. (Hiawatha Line Station)	16.65	17.55	27.9	A assume 1-3 A + HAI interline at Intermodal. C assume w/ walk to Nicollet Mall Station. E assume Southwest LRT B train via 10th St to Intermodal
TO: Government Plaza (Hiawatha Line Station)	18.65	21.5	29.9	A assume 1-3 A + HAI interline at Intermodal. C assume w/ walk to Nicollet Mall Station, transfer to HIA. E assume Southwest LRT B train via 10th St to Intermodal
TO Metrodome (Hiawatha Station)	21.65	24.45	32.9 (A train) 18.8 (B train)	A assume 1-3 A + HAI interline at Intermodal. C assume w/walk to Nicollet Mall Station, transfer to HIA. E assume Southwest LRT B train via 10th St to Intermodal with interline to HIA

LRT 3E experiences significantly greater total trip times than alternatives LRT 3A or LRT 3C except for the 'B' train going directly to the Metrodome. For example, if a Southwest passenger desires to go from the West Lake/Dean station to the Nicollet Mall station, it would take him 16.8 minutes on the A route, 17.5 minutes on the LRT 3C route and 27.9 minutes on the LRT 3E route. The addition 10.4 minutes in trip time for the LRT 3E route compared to the LRT 3C route is because of the additional two miles of travel distance the six addition stations that the LRT 3E route encounters prior to reaching the Nicollet Mall station.

A trip from the West Lake/Dean station to the Metrodome station would take 21.7 minutes on the LRT 3A route, 24.5 minutes on the route (including a 3.4 minute wait time to transfer trains, 32.9 minutes on the LRT 3E route 'A' train (no transfer) or 18.8 minutes on the LRT 3E route 'B' train.

4.3.4 RIDERSHIP

Ridership forecasts were conducted for the LRT 3E alternative and compared to the forecasted ridership of the LRT 3C alternative for this analysis. Because the alignment of the LRT 3E would be similar to that of the LRT 3C alternative south of the West Lake/Dean Parkway station, ridership projections were kept consistent south and west of the proposed West Lake/Dean Parkway station.

Table 4 summarizes the analysis findings for total ridership, new riders, and the system user benefits⁵ for the LRT 3E alternative. According to the analysis results, the LRT 3E is projected to serve 24,500 trips per day, attract 5,300 new transit trips per day, resulting in 1.6 hours of system user benefit. When comparing LRT 3E and LRT 3C, ridership is estimated to be 3,600 riders per day lower or to serve 13 percent fewer trips—estimated to be a uniform drop across the Southwest Transitway stations—despite interlining with the Hiawatha line. The A/B service pattern submitted effectively reduced the service frequency from 7.5 minutes to 15 minutes to the downtown stations from the Southwest LRT line, which had a significant effect on ridership.

The comparison of LRT 3E with LRT 1A shows comparable ridership on the Southwest LRT, but a decrease in Hiawatha ridership for the same reasons as discussed above. The system user benefits for the LRT 3C alternative are calculated to be 2.5 million hours per year, as compared to 1.6 million hours per year for the LRT 3E alternative. The LRT 3C alternative is projected to have higher ridership volumes and reduced travel times, resulting in higher system user benefits. Table 4 summarizes the forecasted ridership for LRT 3C as reported in the Southwest Transitway AA, LRT 3E, and the Hiawatha line associated with each alternative.

⁵ FTA defines user benefits are the equivalent hours of travel time savings associated with improvements in transit service levels for all users of the transportation system.

Table 4: Comparison of Overall LRT Ridership in Year 2030

Measure	LRT Alternative	
	LRT 3E	LRT 3C
SW Boardings ^{1,2}	24,500	28,100
Hiawatha Boardings ³	16,600	22,400
New transit trips	5,300	6,800
System User Benefits (millions hours/yr) ⁴	1.6	2.5

Notes:

- 1: All boardings are for an average weekday, and do not include special events. Alt 3E ridership, required stations and user benefit values are preliminary, and subject to quality assurance checking.
- 2: Alternative 3E, 1A and 3A boardings for SW include all rail trips that use at least one SW station. Alternative 3C boardings for SW represent total trips using any SW station.
- 3: Alternative 3E, 1A and 3A boardings for Hiawatha include the difference between the total boardings on the combined lines minus the SW LRT boardings for that Alternative. Alternative 3C boardings for Hiawatha represent total trips using any Hiawatha station, including those in the Minneapolis CBD.
- 4: User benefits are preliminary only for all alternatives, and subject to more in-depth analysis, though the relative comparison should be valid. The user benefits represent the change from the Enhanced Bus alternative for year 2030.

4.3.5 CAPITAL COSTS (YEAR 2015)

Capital costs for LRT 3E were developed with the same methodology used to develop cost estimates for the Southwest Transitway Alternatives Analysis (AA) described in Technical Memorandum Number 7- Capital Cost Estimate.

Table 5 summarizes the total capital costs for LRT 3C and LRT 3E in 2015 dollars and defines the total increase in costs of LRT 3E compared to LRT 3C.

**Table 5: Capital Costs Estimate Comparison
(thousands 2015 dollars)**

Capital Costs SCC	Alternative LRT 3C	Alternative LRT 3E	Delta (LRT 3E-LRT 3C)
Guideway / Track	267,482	326,793	59,311
Stations	77,284	79,449	2,165
Support Facilities	64,430	64,430	0
Sitework	181,627	205,497	23,870
Systems	171,375	192,768	21,393
Subtotal Construction	762,198	\$ 868,937	106,739
ROW	62,875	\$84,000	21,125
Vehicles	154,021	\$234,000	79,979
Prof. Services	192,658	\$226,000	33,342
Subtotal	1,171,752	\$1,412,937	241,185
Unallocated cont	234,351	\$295,000	60,649
Total	\$1,406,103	\$1,707,937	\$301,834

LRT 3E is estimated to cost \$1.7 billion (2015) to construct, which is approximately \$302 million or 21 percent more than LRT 3C.

4.3.6 OPERATING AND MAINTENANCE COST (YEAR 2015)

For purposes of this analysis, an approximation of increases in costs was prepared based on the percentage of increase in system wide guideway length reported in the Technical Memorandum No. 8 *Operating Cost Estimates* prepared for the Southwest Transitway Alternatives Analysis (AA).

Memorandum No. 8 assumed an LRT system configuration of 36.7 miles of two track guideway (includes the Hiawatha, Central and Southwest lines) and an annual rail O&M cost of \$67.5 million stated in 2005 dollars for LRT 3C. LRT 3E would increase the rail miles of guideway by five percent over the reported base miles of guideway. For purposes of this analysis, it was assumed that all costs and services reported in Memorandum No. 8, the O&M costs for LRT 3E would increase proportionate to the increase in system miles or five percent. Therefore the annual 2015 O&M costs for the increased miles of guideway associated with LRT 3E would be \$3.4 million bringing the total cost to \$70.8 million (2015).

The estimated Year 2015 annual operating cost for LRT 3E is \$70.8 million (\$67.4 million for LRT 3C + \$3.4 million), which is \$3.4 million higher than for the LRT 3C.

4.3.7 INTERLINING WITH HIAWATHA LRT

LRT 3E would interline with the Hiawatha LRT line at two locations. The Southwest "A" branch would interline with Hiawatha LRT line at the Intermodal Station and provide a one-seat ride for Southwest passengers to/from the primary downtown Minneapolis stations (Warehouse, Nicollet Mall, and Government Plaza Stations). The Southwest "B" branch would interline with the Hiawatha LRT line at the Metrodome Station and provide Southwest passengers a one-seat ride to all Hiawatha stations from Metrodome east to the Mall of America. This interlining configuration would leave sufficient track time for the Central Corridor LRT trains to service the downtown without adversely affecting roadway capacity in downtown or the capacity of 5th Street for efficient LRT operations.

LRT 3E would have an advantage over LRT 3C because it would allow for the interlining with Hiawatha/Central Corridor lines, whereas LRT 3C would not. With LRT 3C, Southwest LRT passengers with a trip origin/destination along the Hiawatha Line would have to transfer from/to the Southwest LRT 4th Street Station to/from the Hiawatha Nicollet Mall Station.

4.4 CONSISTENCY WITH THE SOUTHWEST TRANSITWAY PURPOSE AND NEED

The Purpose and Need for the Southwest Transitway Project included improving mobility, providing competitive, reliable transit options for choice riders and transit dependent persons; and providing reverse commute transit service. During the AA, the Southwest Policy Advisory Committee (PAC) developed five goals the Southwest Transitway must achieve in order to fulfill the purpose and need for the project. The five goals included:

1. Improve Mobility ;
2. Provide a cost-effective, efficient travel option;
3. Protect the environment;
4. Preserve and protect the quality of life in the study area and the region;
5. Support economic development.

The goals were prioritized with any proposed alternative required to fulfill goals 1) Improve Mobility, and 2) Provide a cost-effective and efficient travel option before being evaluated on goals 3, 4, and 5. If an alternative did not demonstrate the ability to satisfy goals 1 and 2, it was dismissed from further consideration. The same process is applied to LRT 3E.

Improve Mobility

The Purpose and Need statement identifies North Loop, Harrison, Bryn Mawr and Kenwood neighborhood as in need of better transit service. These areas are currently underserved by the number of bus routes and span of hours of service. Travel times from these neighborhoods to primary destinations are extremely long via due to the circuitous nature of the roadway network that buses have to follow. Therefore, to affectively achieve the first goal for the Project this mobility issue should be addressed.

LRT 3E would not improve mobility compared to LRT 3C and would result in lower volumes of ridership than LRT 3C. From the West Lake/Dean station LRT 3E would operate in a corridor that is currently served with multiple high frequency bus transit routes that are serving existing transit markets. Constructing and operating LRT on Park Avenue and 10th Street would reduce travel lanes and would most likely reduce travel speed on these roadways, thereby adversely impacting bus travel times for routes operating on these streets. LRT 3E would not serve the North Loop, Harrison, Bryn Mawr and Kenwood neighborhoods that have been identified as underserved by transit and represent the greatest need for mobility improvements in the Study Area.

Introducing LRT onto Park Avenue and 10th Street would add a new transit mode to a transit market that is already well served. It is unlikely that LRT would attract new riders to transit from this portion of the alignment.

The reduction in travel lanes necessary to accommodate LRT along Park Avenue and 10th Street would reduce the carrying capacities of Park Avenue and 10th Street. Park Avenue would have to be converted to a two-way street, which would, in turn, require the conversion of Portland Avenue to a two-way street. This conversion and reduction in capacity could impede Park and Portland avenues from functioning as an A-minor reliever couplet for I-35. There is no alternative street within the desired ¼ mile distance from I-35 that could replace the Park/Portland couplet as a reliever.

10th Street is a primary point of access between I-35W, downtown Minneapolis, and TH 55. The reduction of this roadway from three to two lanes could adversely impact vehicle capacity.

LRT 3E would result in a decrease in service for the Hiawatha Line along 5th Street from 7.5-minute frequency to 15-minute frequency.

Provide cost-effective, efficient travel options

LRT 3E is less cost effective and less efficient than LRT 3C for the following reasons:

- It would cost approximately \$302 million more than LRT 3C to construct.
- Annually, it would cost an estimated \$3.4 million more than LRT 3C to operate.
- Total travel time to the primary point of origin/destination of Nicollet Mall would be 10.35 minutes more than LRT 3C and 11.25 minutes greater than LRT 1A.
- It would reduce Hiawatha service along 5th Street from 7.5-minute frequency to 15-minute service.
- It would introduce a competitive mode of transit service to an already well served market along Midtown, Park Avenue and 10th Street.
- It would not provide transit service to the existing underserved transit markets that would be served by LRT 1A.

Based on the determination that LRT 3E does not meet the first two goals of the Purpose and Need for the Project, it is recommended that the alternative be dropped from further consideration.

5. CONCLUSIONS

Based upon the analysis contained in this Technical Memorandum, the Southwest Project Team has determined the following conclusions based on the above mentioned evaluation criteria.

5.1 CONSISTENCY WITH LOCAL AND REGIONAL PLANNING

Based on a review of the most current local and regional planning documents, the LRT 3E alignment would be incompatible with local planning documents and policies, including the *2030 Transportation Policy Plan* and the *Access Minneapolis* plan.

5.2 SOUND ENGINEERING

The LRT 3E alternative would likely result in significant engineering challenges, changes in property access points, impacts to non-motorized transportation facilities, parking, and right-of-way.

LRT 3E would require modifications to access to and from Park Avenue at several locations. The loss of access from Park Avenue at 7th, 9th, 14th and 16th streets would be a challenge to drivers that need access to locations along these streets. Each of these streets is one-way, requiring the navigation of more circuitous routes to reach these destinations, and thus additional travel delay.

LRT running on Park Avenue would result in the displacement of the existing bike lane. The lane could be retained if the street is widened, but this would require the elimination of a parkway on one side of the street or by narrowing of the parkway on both sides. The placement of the elevated guideway on 10th Street would displace the vertical circulation elements between 2nd and 3rd avenues and between Hennepin and Hawthorne avenues.

Any disruption of the 10th Street bike lane would be inconsistent with the *Access Minneapolis* plan.

The implementation of LRT 3E would require the elimination of all on-street parking on Park Avenue between the transition zone (defined generally as being between 26th and 25th Streets) and 10th Street where the train would transition from the tunnel to the at grade alignment if existing parkways are retained. On-street parking could be retained along the route above the tunnel portion and south of I-35W on those blocks where street widening for stations or left turn bays is not required by removing existing parkways.

Based on the conceptual plans developed to assess the impacts of LRT 3E the alignment would require the acquisition of a portion of 40 parcels of land.

5.3 PERFORMANCE

Based on ridership forecasts, the LRT 3E option would result in lower overall daily ridership volumes as compared to the LRT 3C alternative, increased travel times, and lower system user benefits. Interlining Southwest and Hiawatha trains would have significant implications to both the Southwest LRT and Hiawatha service to the primary downtown stations. Service frequencies would be reduced from 1 train every 7.5 minutes to 1 train every 15 minutes. Passengers desiring to go to/from the downtown stations to any point on the Southwest Line or Hiawatha Line would have 1 train every 15 minutes for their trip compared to the 7.5-minute service currently programmed for the Hiawatha Line. This may have severe implications for the Hiawatha LRT line which is currently experiencing capacity problems operating on the 7.5-minute frequency.

Furthermore, LRT 3E is estimated to cost \$1.7 billion (in 2015 dollars) to construct, approximately \$302 million (21%) more than the LRT 3C alternative. The estimated Year 2015 annual operating cost for LRT 3E is \$70.8 million (\$67.4 million for LRT 3C + \$3.4 million), which is \$3.4 million higher than for the LRT 3C.

5.4 PURPOSE AND NEED STATEMENT

LRT 3E would not improve mobility as compared to LRT 3C, and would result in lower ridership volumes and increased travel times. Existing high frequency bus transit service is provided along all portions of the LRT 3E alignment. Constructing and operating LRT on Park Avenue and 10th Street would reduce travel lanes and would most likely reduce travel speed on these roadways, thereby adversely impacting bus travel times for routes operating on these streets. LRT 3E would not serve the North Loop, Harrison, Bryn Mawr and Kenwood neighborhoods that have been identified as underserved by transit and represent the greatest need for mobility improvements in the Study Area.

6. RECOMMENDATION

Based upon the analysis contained in this Technical Memorandum, the Southwest Project Team recommended that the LRT 3E Alternative be excluded from the Southwest Transitway DEIS because it is not consistent with the Southwest Transitway Purpose and Need Statement, it is not consistent with Regional and Local planning, it is inferior in

performance compared to LRT 3C, LRT 3A, and LRT 1A; and it presents significant engineering, traffic, and LRT operations issues.

On Thursday, January 15, 2009, the Southwest Technical Advisory Committee (TAC) voted unanimously that LRT 3E, as proposed by CIDNA, should not be included in the Southwest Transitway DEIS. It is not recommended for inclusion because it is not consistent with the Southwest Transitway Purpose and Need Statement, it is not consistent with Regional and Local planning, it is inferior in performance compared to LRT 3C, LRT 3A, and LRT 1A; and it presents significant engineering, traffic, and LRT operations issues.

On Wednesday, January 21, 2009, the Southwest Policy Advisory Committee (PAC) voted unanimously to accept the TAC recommendation and to exclude the LRT 3E alternative from further consideration in the Southwest Transitway DEIS. The PAC also voted unanimously to forward the Southwest DEIS Scoping Summary Report to the Hennepin County Regional Railroad Authority (HCRRRA).

On Tuesday, January 27, 2009, the Hennepin County Regional Railroad Authority (HCRRRA) voted unanimously to accept the Southwest DEIS Scoping Summary Report.

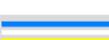
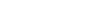
List of Appendices

- Appendix A Conceptual Alignment Plans
- Appendix B Alternatives to be Studied in the DEIS
- Appendix C Correspondence with CIDNA

Appendix A – Conceptual Alignment Plans

APPENDIX A

LEGEND

	EXISTING CURB		RETAINING WALL
	PROPOSED CURB		RETAINING WALL IN TUNNEL
	EXISTING RIGHT OF WAY		TRACKWAY IN TUNNEL
	PROPOSED RIGHT OF WAY		PROPOSED TRACK
	PROPOSED PAINT		FUTURE BOTTINEAU
	PROPOSED TRACK - TANGENT		IMPACTED PROPERTY
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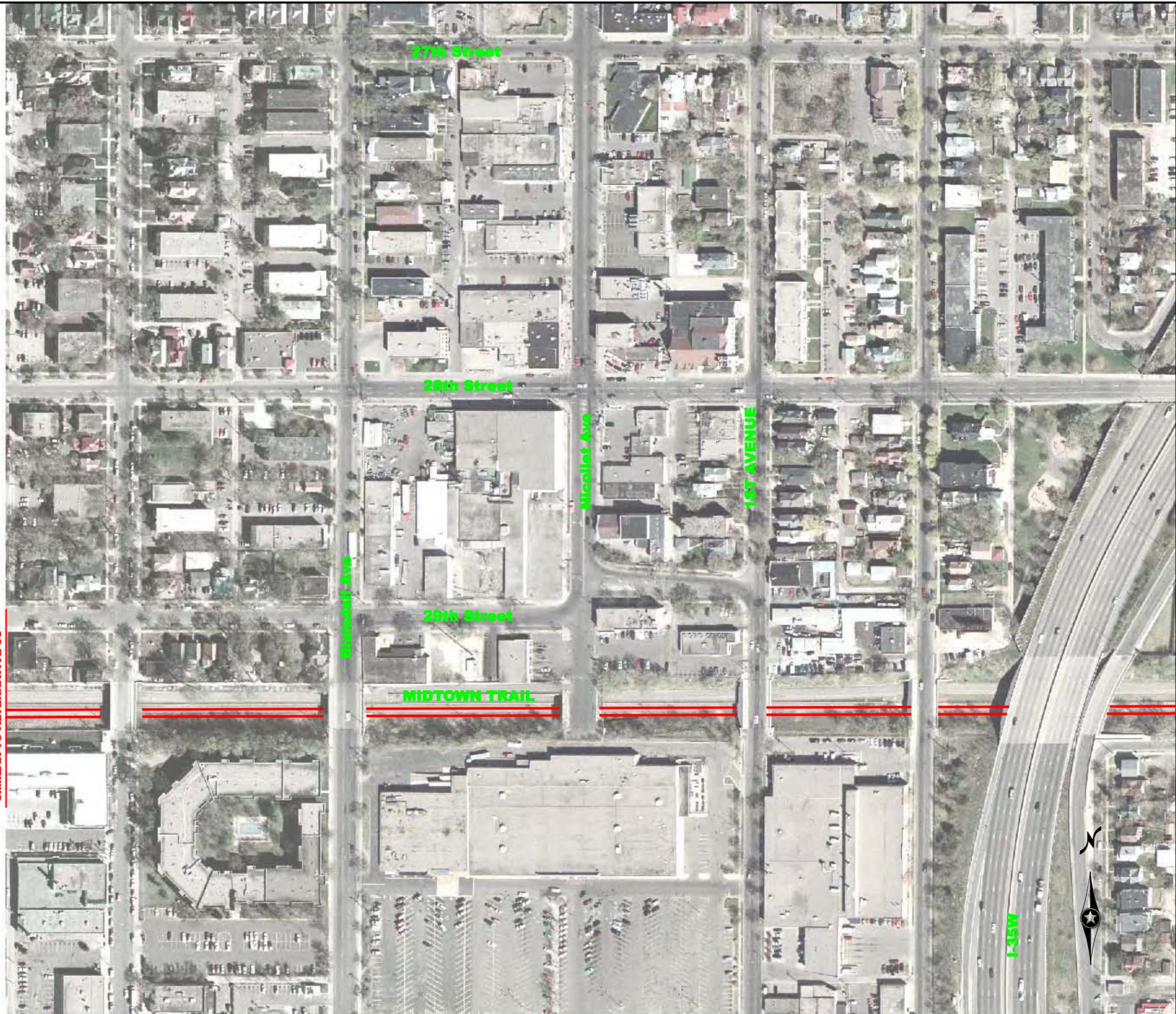


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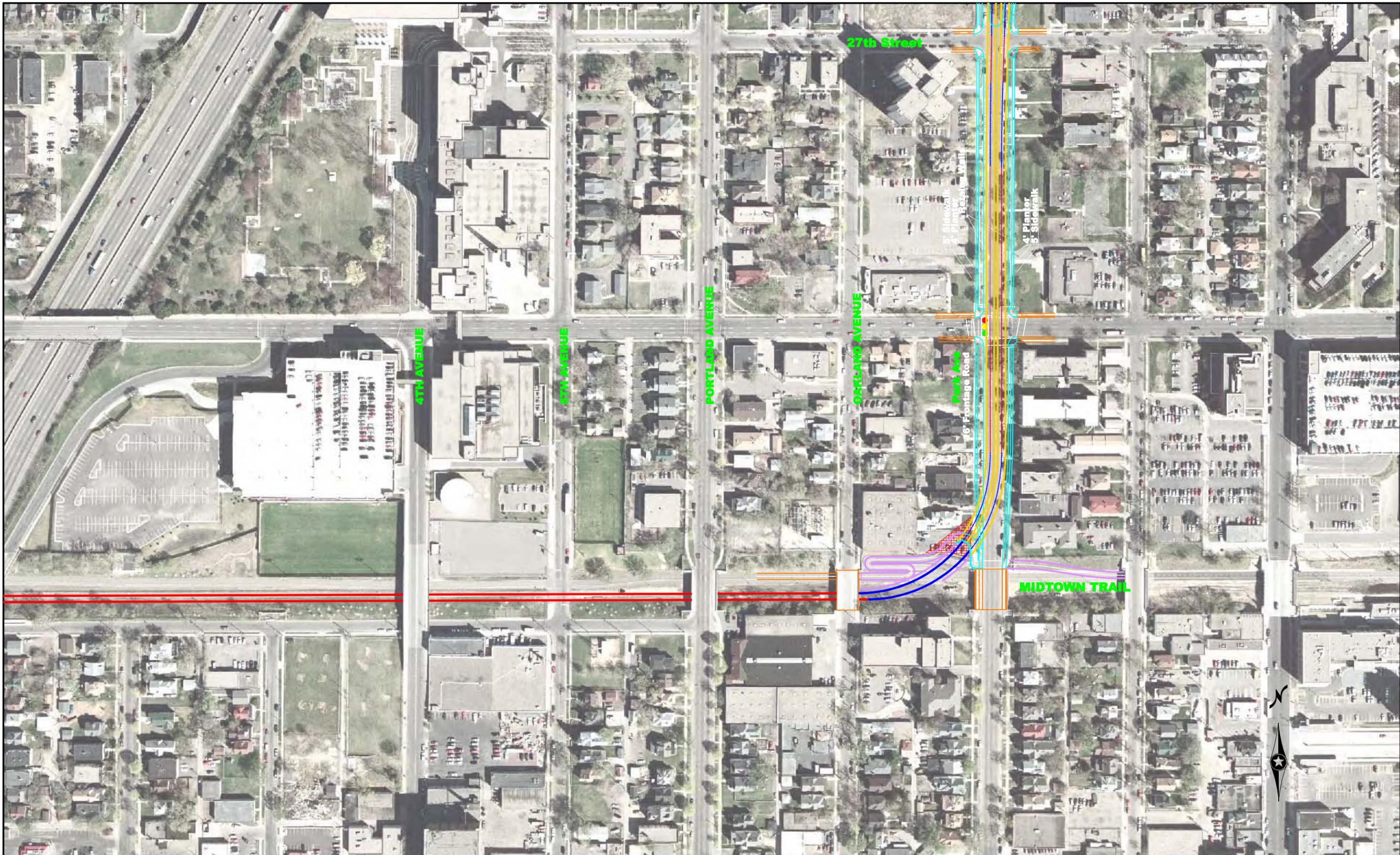


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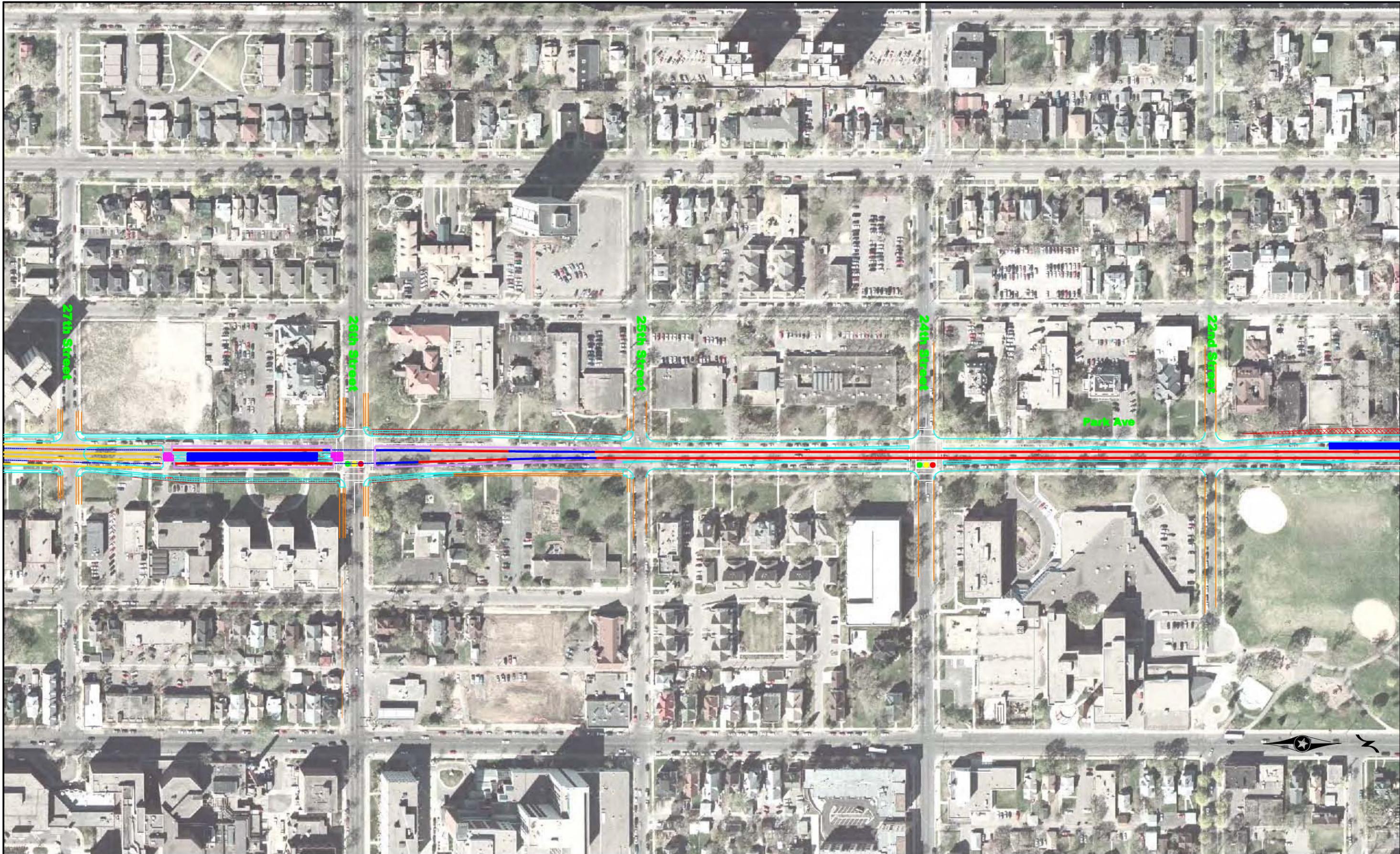


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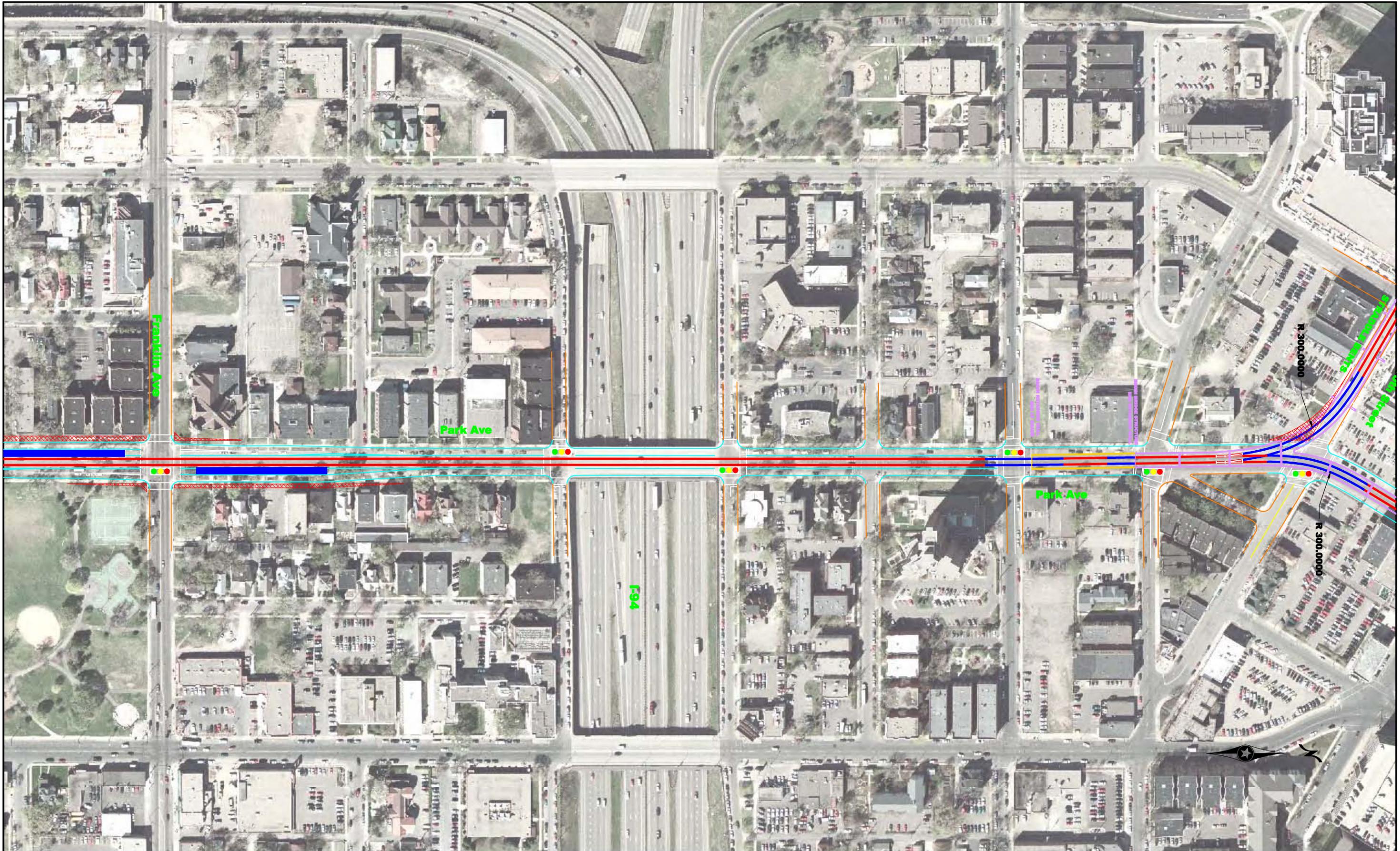


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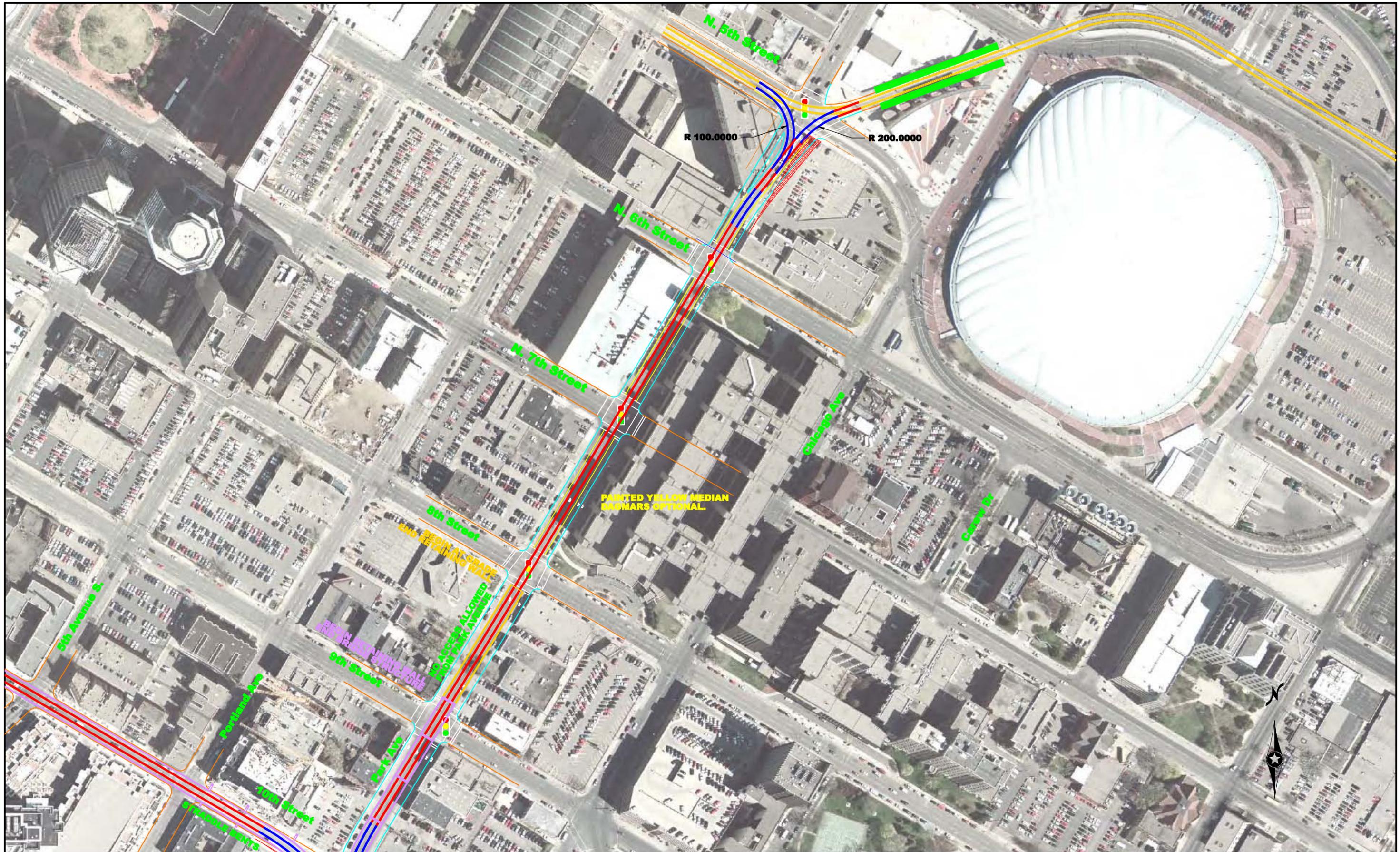


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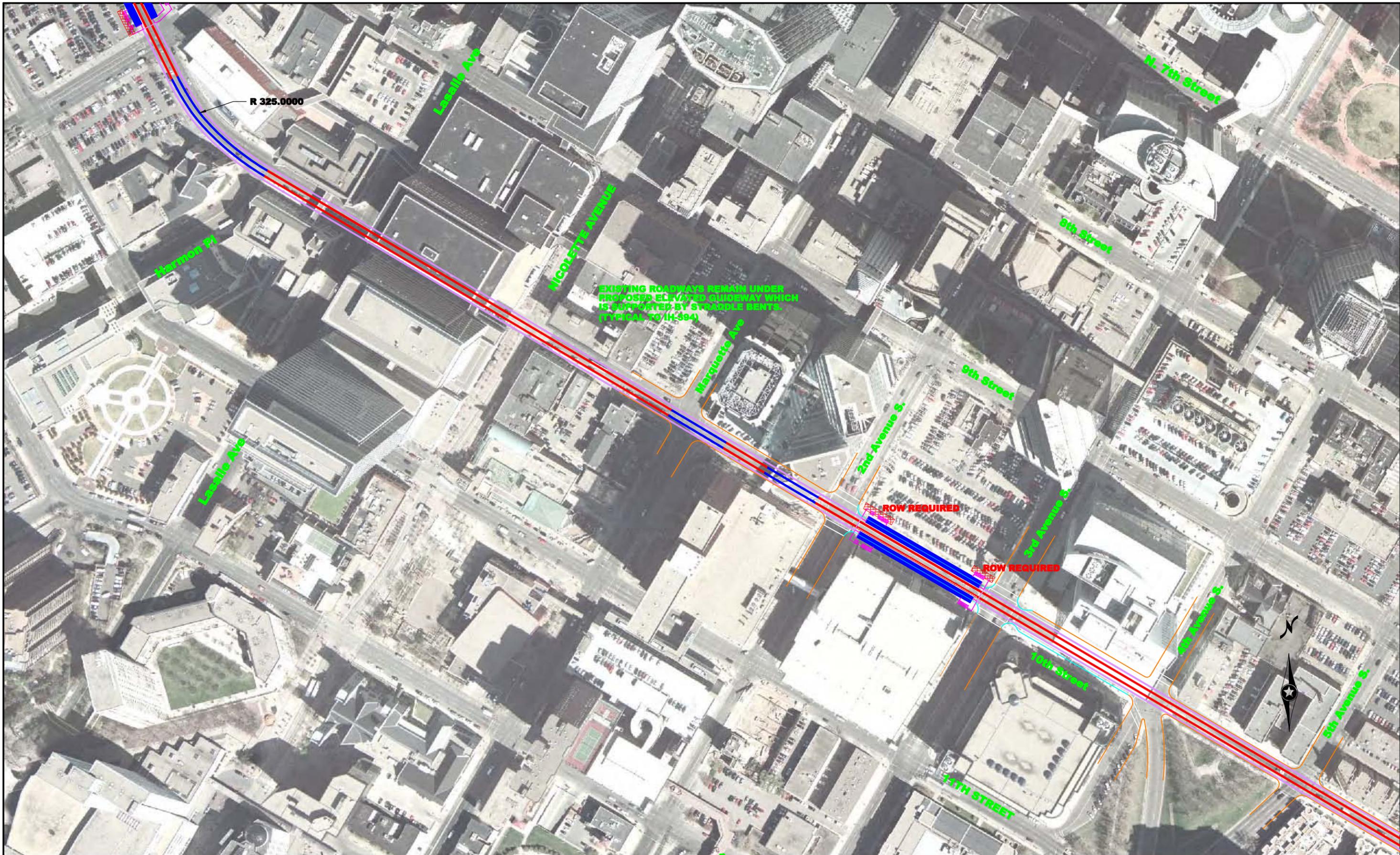


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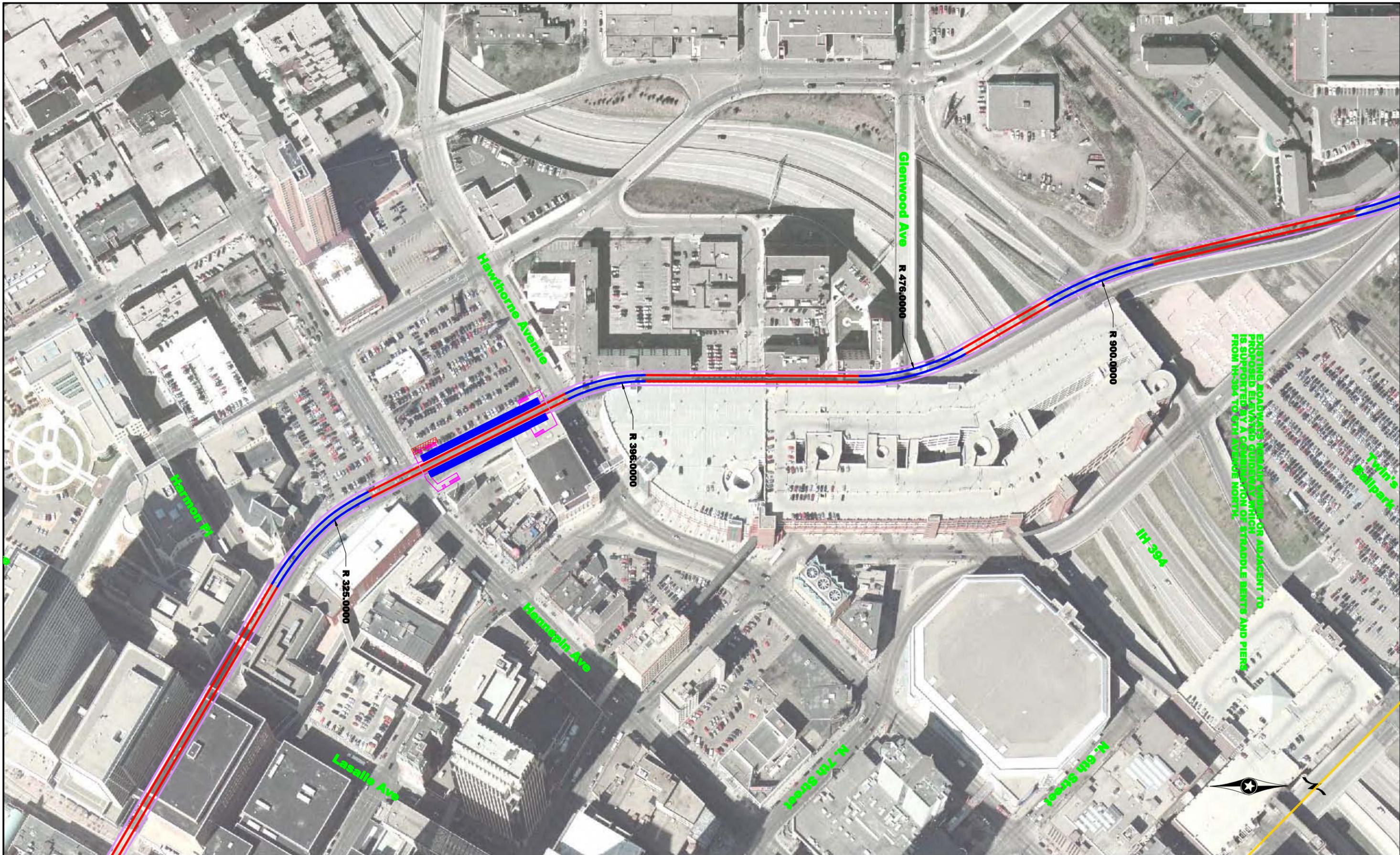


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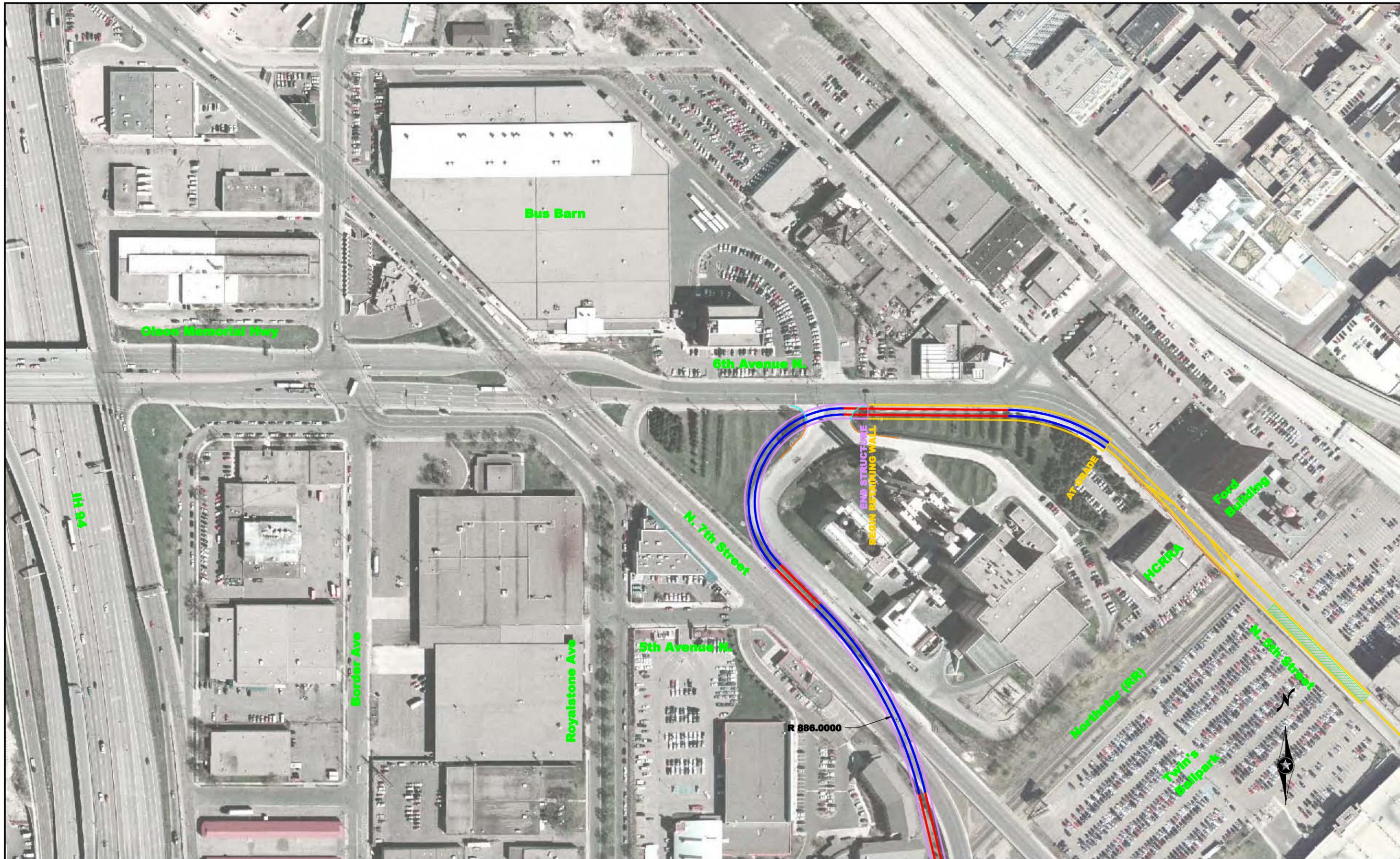
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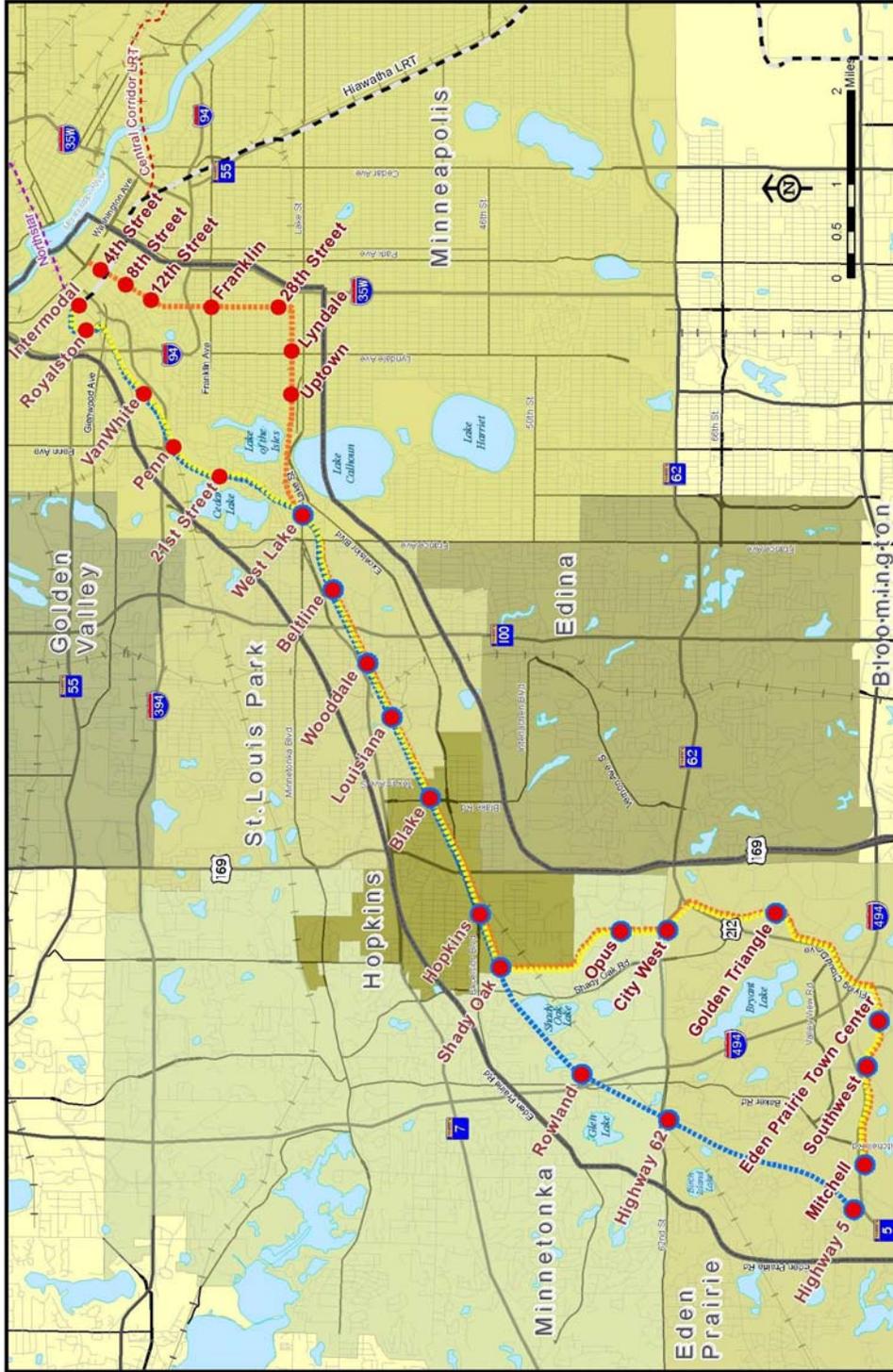
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SOUTHWEST TRANSITWAY CONCEPTUAL DESIGN
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Appendix B – Alternatives to be Studied in the DEIS

Light Rail Transit (LRT) Alternatives

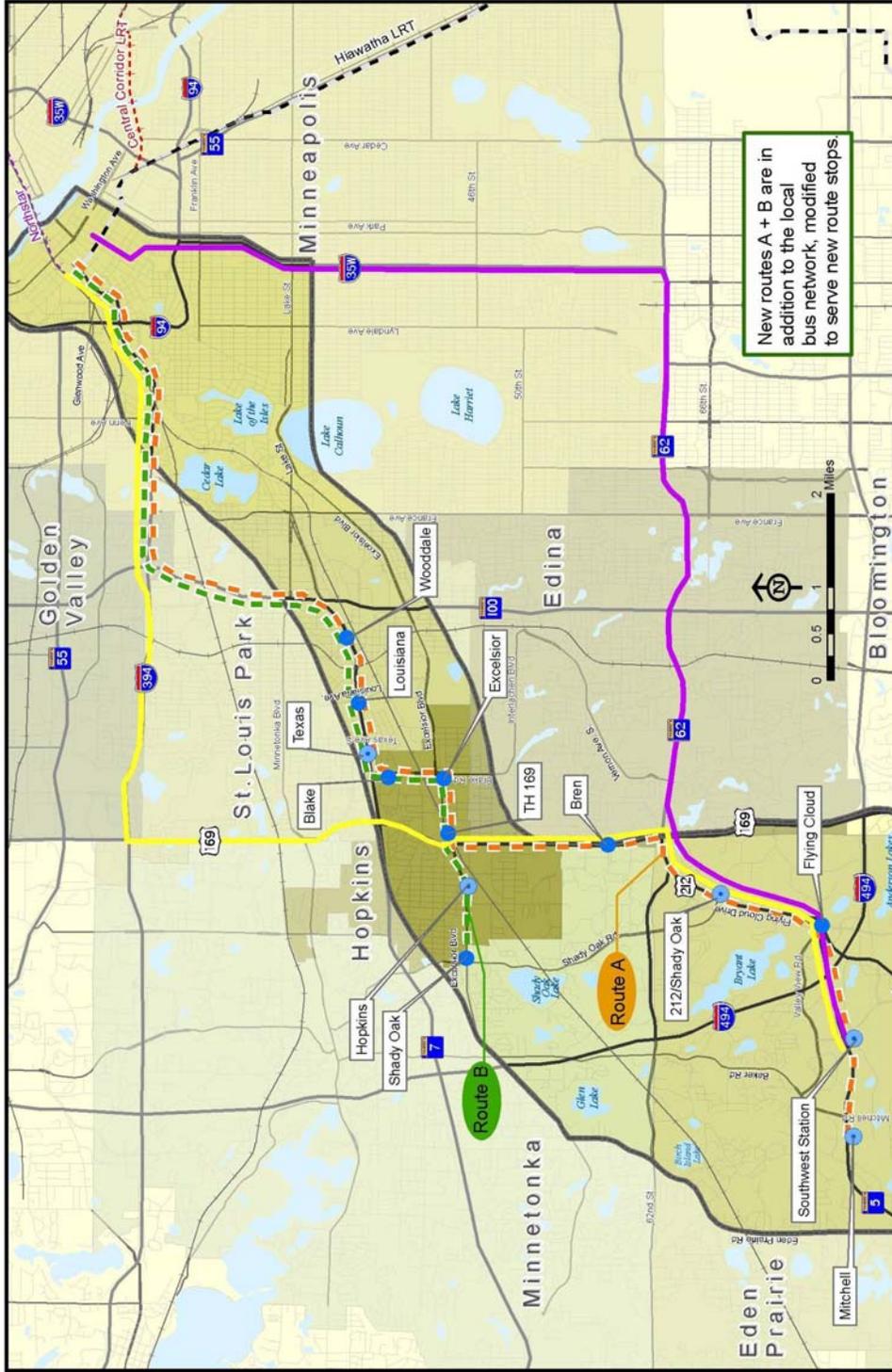


Legend

- Station (Red dot)
- Park and Ride Station (Blue circle)
- Study Area (Green outline)
- LRT Route 3A (Yellow dashed line)
- LRT Route 1A (Blue dashed line)
- LRT Route 3C (Purple dashed line)
- Hiawatha LRT (Dashed black line)
- Central Corridor LRT (Dotted red line)
- Northstar Commuter Rail (Dashed purple line)

Southwest Transitway
Draft Environmental Impact Statement

Enhanced Bus Alternative



New routes A + B are in addition to the local bus network, modified to serve new route stops.

- Legend**
- Bus Stop with Park & Ride Lot
 - Bus Stop Location
 - Study Area
 - Route A Limited Stop (New)
 - Route B Limited Stop (New)
 - SouthWest Express Bus via I-394 (Existing)
 - SouthWest Express Bus via I-35W (Existing)
 - Hiawatha LRT
 - Central Corridor LRT
 - Northstar Commuter Rail

Southwest Transitway
Draft Environmental Impact Statement

Appendix C – Correspondence with CIDNA

Elabbady, Mona N.

From: arthur higinbotham [ahiginbotham@msn.com]
Sent: Tuesday, December 09, 2008 7:01 AM
To: Katie.Walker@co.hennepin.mn.us
Cc: Gail.Dorfman@co.hennepin.mn.us; Ralph.Remington; Robert.Lilligren; Don Pflaum; Steve Hay; Gonzalez, Oscar; Elabbady, Mona N.; Phemister, Walter; Kathie Doty
Subject: Re: Option E Clarification

The five blocks of track connecting the Option E route from Park and S. 10th to the Metrodome would be rail tracks, with no station at S. 10th and Park. Trains would be scheduled to bypass downtown on this route selectively to fit commuter schedules; for example, from 7:30 a.m. to 5 p.m. some trains would go directly from SW to the University of Minnesota, Midway and St. Paul on the Central Corridor line and vice versa; others would go directly from SW to the airport and Mall of American on the Hiawatha line during heavy usage hours for the airport and the Mall; most of the trains would make the loop through downtown Minneapolis, particularly at morning and evening rush hour. For any of these routes, a station is not required at Park and S. 10th St. There is no intention that passengers would transfer to use the Park Av. shortcut. The schedule has to be set by Metro Transit, not the proponents of Option E.

A station stop between Franklin and 2nd/3rd on the Option E downtown line is not required; the Elliot Park neighborhood would be served by either of these stops. Passengers from HCMC would use the Metrodome station, presumably taking the Park Av. shortcut trains to the southwest.

The 5 block connection is designated to be on Park Av., not Chicago as HCRRA specified for the Mayor's Option D. It is clear that it is easier to make the turn onto the Hiawatha/Central line headed south from Park than from Chicago: no interference with Metrodome entrance/monuments; an easy 45 degree turn from Park to the 5th St. line.

Also, a reminder: Option E has no station stop at Royalston until the Twins would fund such a stop, since the ridership of their patrons from the Target Stadium are not included in the ridership figures.

A long answer, but one designed to prevent any misunderstandings.

Thanks.

Art

----- Original Message -----

From: Katie.Walker@co.hennepin.mn.us

To: [Art Higinbotham-CAC](#)

Cc: Gail.Dorfman@co.hennepin.mn.us ; [Ralph.Remington](#) ; [Robert.Lilligren](#) ; [Don Pflaum](#) ; [Steve Hay](#) ; [Oscar Gonzalez](#) ; [Mona N Elabbady -HDR](#) ; [Terry Phemister](#) ; [Kathie Doty](#)

Sent: Tuesday, December 09, 2008 12:34 AM

Subject: Re: Option E Clarification

Art, we are still unclear about how you envision the LRT route on Chicago Ave operating between 10th/Park and the Metrodome. Is that intended to be a shuttle between 10th/Park and the Metrodome? If that is the case a station would be required at 10th/Park for passengers to transfer between the long line LRT line and the short shuttle LRT. Or did you intend for this to be a branch of the SW LRT line with every other train going to the Metrodome via Chicago

rather than on 10th through downtown? In this case a station is not required at 10th/Park. And finally can you clarify what you mean by the LRT on Chicago Ave interlining with Hiawatha LRT? Do you mean routing SW trains via Chicago Ave down the Hiawatha line. Once these points are clarified we can move ahead with the analysis of Option E. Thanks.

Katie Walker

Transit Project Manager

612.348-2190

612.385-5655

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From: "arthur higinbotham" [ahiginbotham@msn.com]

Sent: 12/01/2008 08:19 PM CST

To: Catherine Walker

Cc: Gail Dorfman; "Ralph.Remington" <Ralph.Remington@ci.minneapolis.mn.us>; "Robert.Lilligren" <Robert.Lilligren@ci.minneapolis.mn.us>; "Donald.Pflaum" <donauld.pflaum@ci.minneapolis.mn.us>; "Steven.hay" <steven.hay@ci.minneapolis.mn.us>; "oscar gonzalez" <oscar.gonzalez@hdrinc.com>; <Mona.Elabbady@hdrinc.com>; <Terry.Phemister@hdrinc.com>; "Kathie Doty" <kdoty@umn.edu>

Subject: Re: Option E Clarification

The following are corrections to the map and written descriptions for Option E:

1. The Dean Parkway station stop would be in lieu of the W. Lake St. station stop, eliminating the latter because of access issues. It could be located as a kiss-and-ride stop over Dean Parkway itself, or north of the Calhoun Village Mall, where it could be accessed from Market Plaza through an easement negotiated with the Mall owners, Pfaff Calhoun, and where a park and ride facility could be constructed, or to the east of Dean Parkway, on land owned by Weizman on which the Lander Group had planned to construct condominiums, a project now abandoned.
2. There would be grade separation at both Humboldt and Irving on the Greenway to accommodate commuter traffic from ECCO, CARAG, Lynnhurst and Linden Hills. No grade separation should be provided at James to discourage use of E. Lake of the Isles Parkway as an auto commuter route.
3. There would be no station stop at 10th St. and Park Av.; LRT would not need to stop in that area because of anticipated low ridership. This is also true for trains using Park or Chicago to interline with the Hiawatha and Central Corridor lines at the existing Metrodome station stop. The preferred route for this express connection is Park Av., as it can make a smooth 45 degree turn into the Metrodome station stop; the Chicago route will run to close to the Metrodome to make this connection.
4. The LRT would not make the abrupt 135 degree turn north of the incinerator (or whatever name you use); the LRT would cross the parking lot north of the incinerator, turning first at a 90

degree angle from 7th St., then turning another 45 degrees before the parking lot entrance, connecting with recently completed tracks leading to the intermodal station.

5. Since ridership studies will not include Target Stadium patrons, no station stop is planned on the 7th/10th Street side of the Stadium.

Since the LRT will be running as an elevated line from southwest of Hennepin until it turns around the incinerator to avoid blocking access to the garage from 10th St., a future station stop could be built next to the Stadium as a future addition at the elevation of the tracks, adjacent to the upper deck of the Stadium, as I pointed out at the HDR discussion of the intermodal station design two weeks ago.

----- Original Message -----

From: Katie.Walker@co.hennepin.mn.us

To: ahiginbotham@msn.com

Cc: Gail.Dorfman ; Ralph.Remington ; Robert.Lilligren ; donald.pflaum@ci.minneapolis.mn.us ; Steve.Hay ; Oscar.Gonzalez ; Mona.Elabbady@hdrinc.com ; Terry.Phemister@hdrinc.com ; Kathie.Doty

Sent: Monday, December 01, 2008 3:55 PM

Subject: Option E Clarification

Art.....As we discussed last week, attached is a map and a written description of the Southwest LRT Project Team's understanding of your Option E proposal submitted for evaluation during the NEPA/MEPA Scoping Process. In order to stay on schedule, we are requesting that you review this map and the attached memo and provide any changes/clarifications/modifications to me no later than 5:00 PM on Friday, December 5, 2008. Thank you.

(See attached file: Option E_map_120108.pdf)(See attached file: OptionE_ClarificationMemo_120108.pdf)

Katie Walker, AICP
Transit Project Manager
Hennepin County
Housing, Community Works & Transit
417 North 5th Street, Suite 320
Minneapolis, MN 55401

612.385-5655
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