

MEMORANDUM

Date: November 20, 2007

To: Beth Elliott, Principal Planner
CPED-Planning Division
City of Minneapolis

From: Mike Larson, Transportation Planner

Subject: Cedar-Riverside / West Bank Central Corridor LRT Station Analysis

Overview

This memorandum provides an overview of the analysis completed with regard to location, design and access to the proposed Cedar-Riverside/West Bank Central Corridor LRT Station. The analysis took a systematic approach that addressed the following, which is also the structure of this memo:

- Ridership demand and patterns
- Transit transfers
- Neighborhood circulation context
- Development / land use context
- Station access framework
- Pedestrian and bike access alternatives
- Development of scenarios
- Conceptual engineering of station alternatives
- Station cost estimates
- Station access summary characteristics

This analysis does not present recommendations for one particular station configuration or another, but attempts to address and illuminate various considerations for that decision.

Ridership Demand and Patterns

The Cedar-Riverside neighborhood and the University of Minnesota are some of the most concentrated and transit-oriented places in Minneapolis. At over 50 people per acre, the area that includes Riverside Plaza and the Cedars has the highest residential density in Minneapolis. With 3,889 people at the time of the 2000 U.S. Census, it constitutes about half of Cedar-Riverside's total population. Average weekday boarding at the Cedar-Riverside LRT Station on the Hiawatha Line is 1,044 (with 506 heading north and 538 heading south). With a number of institutions including the University and Fairview Riverside Hospital, the neighborhood is also a major generator of employment, including an estimated 9,580 jobs in the year 2000. This is one of the highest concentrations outside of downtown¹.

¹ Transportation Analysis Zone (TAZ) 362, which includes much of the West Bank Campus as well as the Fairview Riverside Hospital complex, has the fifth largest number of jobs outside of downtown.

The Central Corridor Draft Environmental Impact Statement (DEIS) conducted year 2020 ridership forecasts, including forecasts for boarding/alighting by each station as well as mode of access (e.g., walking, transit, auto). Total boarding/alighting² was forecast to be 4,250, with 3,440 connecting by foot, 760 connecting by bus, and 50 connecting by car. This reflects the heavy concentration of transit-oriented uses in the area.

The Central Corridor LRT line will replace all of the service on Metro Transit Limited Stop Route 50 and much of Local Route 16. These heavily-traveled routes connect the downtowns of Minneapolis and St. Paul, the University of Minnesota, the State Capitol grounds, and neighborhoods along University Avenue. One LRT station will serve both the West Bank of the University of Minnesota and the Cedar-Riverside neighborhood. The location of the station should be informed by, among other things, an understanding of existing transit ridership patterns.

The West Bank Campus of the University is a highly concentrated destination of trips served by a large number of local, limited stop and express bus service. Existing Route 16 service along Washington Avenue stops in front of University buildings (Willey Hall on the north side and Blegen Hall on the south side) as well as at Cedar Avenue. Route 50 stops at the University buildings, but skips Cedar Avenue. Between these two bus routes, over four times as many people disembark at the West Bank Campus stops versus Cedar Avenue stops (1,080 daily riders versus 234)³. According to the University and Metro Transit, much of the ridership is undergraduates whose destinations are more concentrated in buildings on the river side of the West Bank Campus (e.g., Anderson and Willey Halls). These bus stops provide more or less direct connection into these buildings.

Ridership to the West Bank stops reflects travel demand from the east. This is not surprising because much of the service collects and deposits riders between downtown Minneapolis and downtown St. Paul. Sixty-two percent of riders traveling from the West Bank stop are heading east, while 70% of inbound trips are coming from the east. Differences between these numbers may be due to factors that may include use of a different bus stop for inbound vs. outbound trips, or taking a different bus route for one leg of the trip.

If one considers only ridership on Route 16, which makes a stop at Cedar Avenue, the same ridership patterns apply. Eighty-three percent of riders traveling from the Cedar Avenue stop are heading east; and 71% of riders travelling to the Cedar Avenue stop are coming from the east. This is also not surprising given the availability of other attractive options for westbound travel into downtown, including Hiawatha LRT, Routes 3 and 22, and walking or bicycling.

According to Metro Transit, ridership patterns shift depending upon the time of day and when classes are in session. Ridership activity at Cedar Avenue during non-peak times (e.g., midday

² One round trip counts as two trips: one boarding plus one alighting

³ Source: Metro Transit; average board and alighting from automated passenger counts during the period from 1/29/07 to 2/28/07. It should be acknowledged that given the faster service of the Route 50 as well as the availability of other bus routes, some riders are walking from Cedar Avenue to the West Bank bus stops. Field observations, including the presence of a cow path, confirm this.

or evening), reflects a transit-oriented population that is less likely to have traditional working and travel times. For this population, nighttime safety considerations may be especially important.

Findings:

- The Cedar-Riverside neighborhood is an important source of transit trips and a major employment destination outside of downtown.
- The University of Minnesota West Bank campus is a major attraction for student transit trips.
- Given the availability of other travel options (e.g., Hiawatha LRT, Route 3, Route 22, or walking), means that the Central Corridor station is disproportionately a means of traveling to and from the east.

Transit Transfers

The need to transfer between LRT and bus routes, and the ease of doing so, are also important considerations⁴. LRT/bus transfers for University destinations would more likely occur on the East Bank. LRT riders bound for West Bank Campus destinations will walk to their final destination after disembarking from the West Bank LRT Station. LRT riders bound for the St. Paul Campus, and in need of a transfer, will likely transfer on the East Bank. Transfer between LRT and express commuter services is unlikely since each of these routes travel the extent of Washington Avenue, eliminating the need for a transfer. Depending upon their destination, West Bank students in need of traveling to the East Bank will choose between walking, LRT and the campus circulator.

LRT/bus transfers for neighborhood origins and destinations are a greater consideration, given the role that the Central Corridor will play in connecting transit dependent populations with job locations along University Avenue as well as Riverside Avenue. Transit routes in the neighborhood include Routes 2 and 7, which travel along Riverside Avenue, and Route 22, which travels along Cedar Avenue. Bus stops for these routes are concentrated at the intersection of Cedar Avenue and 3rd Streets. It should be noted that since Route 2 also serves the East Bank, transfers can occur between LRT and Route 2 on the East Bank. However, transfers between LRT and Routes 7 and 22 must occur on Cedar or Riverside Avenues.

Transfers between Hiawatha Corridor and Central Corridor will occur for riders originating from, and bound for, locations outside of the neighborhood. Given the distance between the Central Corridor and Hiawatha LRT stations in the Cedar Riverside neighborhood (and the time and effort involved), transfers are more likely to occur at the Downtown East/Metrodome Station, where they share a platform and station.

Findings:

- Ease of transfers with LRT is more important for bus routes in the neighborhood on Cedar and Riverside Avenues than for buses that primarily serve the University along Washington.

⁴ Reliable transfer data from Metro Transit were not available, so this analysis reflects common understanding about travel patterns in the area.

- Ease of transfer between Central Corridor and Hiawatha LRT is not a primary consideration for station location and access.

Neighborhood Circulation Context

Cedar-Riverside is essentially an island surrounded by a natural barrier (the river) as well as physical barriers (I-94, I-35W), which limits access into and out of the area. The neighborhood is also bisected by another cut where Washington Avenue is below the grade of the surrounding area. The need for bridges and underpasses limits the number of through-routes. These routes are further reinforced by the vacation of local streets, which occurred as part of the creation of superblocks that make up the campuses of the University's West Bank, Augsburg College, Fairview Riverside Hospital, and Riverside Plaza, and The Cedars.

Cedar Avenue provides the only continuous north/south route through the neighborhood, traveling from its alignment with Washington Avenue in downtown Minneapolis, intersecting with Riverside Avenue, then south underneath Interstate 94 toward Franklin Avenue near the Franklin LRT station. It is the neighborhood's primary commercial corridor, including many bars, restaurants and theatres as well as specialty businesses. It is both destination and thoroughfare. High traffic volumes and a narrow right-of-way, though, present challenges to the pedestrian environment.

Other north/south roadways provide connections outside the neighborhood, but in more limited or less connected ways. Nineteenth and 20th Avenues form a disconnected pair of alignments that provide connections to the north and south: 20th Avenue connects Riverside Avenue south over Interstate 94 toward the Franklin/Cedar/Minnehaha area. 19th Avenue, just one block west, provides a northerly connection from Riverside Avenue, traveling across the Washington Avenue "cut" and over the Mississippi River (which becomes 10th Avenue SE).

Riverside Avenue bisects that portion of the neighborhood that lies east of Cedar and south of Washington Avenue, connecting with Franklin Avenue at its southern terminus. Its oblique angle provides a direct route from the institutional uses along its length to the heart of the neighborhood at Cedar/Riverside. It also provides connection with the intervening north/south routes of 19th and 20th Avenues.

Findings:

- Cedar Avenue is the neighborhood's commercial heart and a heavily traveled thoroughfare.
- Riverside Avenue provides a direct connection from points east of Cedar to the heart of the neighborhood at Cedar and Riverside, as well as the intervening north/south routes of 19th and 20th Avenues.

Development / Land Use Context

Because the neighborhood is largely developed at high densities, the most significant land use issue relates to undeveloped parcels and underutilized spaces in and around proposed station locations. These areas include parcels currently used for parking on the west side of Cedar

Avenue as well as underutilized University parcels adjacent to the cut. Issues that were explored included the visibility of the station, potential new access points into the West Bank campus, and creating pedestrian friendly urban street edges, particularly along Cedar Avenue.

Market interest in redevelopment along Cedar Avenue may be more sensitive to issues related to station access than public and institutional investment would be. Infill development in these locations, though, may be more feasible than University parcels because of better grade and access conditions. Redevelopment of surface parking areas into new mixed-use development with structured parking has the potential to improve the street edge and public realm near the station.

Infill development of underutilized University parcels along the Washington Avenue cut will likely be more challenging. Site and building plans did not anticipate expansion toward the cut; and complicating factors include grade differences and the presence of Cedar Avenue on/off ramps. A driveway from 3rd Street to a loading dock on the south side of Washington Avenue will also be difficult to reconfigure. While these are not insurmountable obstacles, the University may choose to take on these challenges only in later phases of campus expansion.

URS explored the feasibility of consolidating ramps on the west side of Cedar as part of an effort to limit the eastward “reach” of freeway-like infrastructure. A modified “folded-diamond” interchange on the west side of Cedar Avenue would improve the edge of the Washington Avenue cut adjacent to the University, but could have negative impacts to property on the west side of Cedar. While technically feasible, this scenario has not been considered as part of Mn/DOT’s long-term planning for the freeway loop around downtown Minneapolis. It would likely only occur as part of reconstruction of the mainline 35W freeway. It would also complicate maintaining a Cedar Avenue bus stop for Route 3, which uses Washington Avenue.

Findings:

- Private sector development of parcels along Cedar Avenue is more feasible, but more sensitive to surrounding infrastructure than public/institutional development.
- Consolidating on/off ramps on the west side of Cedar Avenue is technically feasible.
- Consolidating on/off ramps may improve the ability to build adjacent to the Washington Avenue cut, but this may harm the development environment on the west side of Cedar.

Station Access Framework

The Central Corridor LRT station is proposed to be built in the median of Washington Avenue with a center-boarding platform, consistent with the alignment along the rest of Washington and University Avenues. This is the safest and most cost-effective and technically feasible alternative. The LRT guideway is physically separated from parallel travel lanes; and vehicular traffic is maintained along Washington Avenue, including bus routes that board at curbside.

There are currently no at-grade pedestrian crossings of Washington Avenue. Pedestrians in the area use the West Bank Skyway, 19th Avenue and Cedar Avenue to cross over. Without an at-grade crossing, passengers accessing the platform would need to do so from above. Most

activity in the area, though, occurs at the level above: at the plaza level in the case of the campus or the street level in the case of the neighborhood. Access to the median from either a bridge (i.e., Cedar Avenue, 19th Avenue) or the West Bank Skyway would be the most direct approach from these centers of activity. Furthermore, such a scenario avoids potential conflicts between large volumes of pedestrians and automobiles.

The insular design of the West Bank Campus and the grade separation of Washington Avenue mean that the two distinct travel markets (i.e., campus and neighborhood) cannot be adequately served by a single station access point. The Cedar Avenue Bridge and the West Bank Skyway would be the most direct access for each travel market. However, Cedar Avenue alone would not be adequate to serve the significant travel demand at the University. Alternatively, a single access point at the West Bank Skyway would be isolated from the neighborhood; and transfers between LRT and neighborhood buses would be indirect and inconvenient.

An access point at the 19th Avenue Bridge is a third access option, one that could be paired with either Cedar Avenue or the West Bank Skyway should only two points of access be built. It is adjacent to the University, and it is one block from Cedar Avenue. For neighborhood destinations east of 19th Avenue, this option is closer and more direct than Cedar Avenue. This option also provides access via the planned bike lane on 19th Avenue.

Findings:

- The West Bank student population is most directly served by access via the West Bank Skyway.
- The neighborhood centers of activity are most directly served by access via the Cedar Avenue Bridge.
- Access to the station via the 19th Avenue Bridge provides more centralized access for both the campus and neighborhood destinations compared to either of the previous options by themselves.
- Given the role of the station in serving campus as well as neighborhood destinations, a single access point is likely to be insufficient.

Pedestrian and Bike Access Alternatives

URS evaluated pedestrian access from various points throughout the neighborhood and calculated approximate walking times to potential station access points⁵. Centroids were selected for each of four neighborhood districts: Seven Corners, Riverside Plaza, Co-op District, and Fairview/Augsburg. Walking routes assumed the most direct route to closest access points. Assuming that 19th Avenue is a station access point under either scenario, walking times vary by a couple of minutes due to the extra distance involved in one access point or another (e.g., Cedar vs. 19th Avenue).

URS also considered accessibility issues with regard to each station access point alternative. Since LRT stations themselves must be fully ADA compliant, this included an evaluation of the

⁵ See map entitled “Neighborhood Walk Access to Central Corridor LRT Station.”

experience from LRT station to ultimate destination. Direct access into the West Bank Skyway provides the most weather-protected access onto the West Bank Campus. It should be noted that campus planning over time did not consider a seamless experience for someone with limited mobility. Elevators have inconvenient access; and the floor plates of Willey Hall and the Law School are not integrated. In this case, wheelchair users must travel outside to go from one building to the other. If there is no direct access from the LRT platform to the West Bank Skyway, wheelchair users will have to further contend with outdoor conditions. For neighborhood destinations, URS developed a scenario with a sloping skyway/walkway as an alternative to elevator access. This is an option that could provide redundancy in the event of power failures.

URS also considered bicycle access options to the station from the neighborhood. Bicycles can travel on any city street. However, better bicycling conditions will exist on the planned bicycle lanes on 19th, 20th and Riverside Avenue, as well as on the designated bicycle route of 6th Street, which has low traffic volumes. For many riders, this will be more comfortable than using Cedar Avenue, which has more competition for right-of-way including traffic and parking.

Findings:

- Most of the neighborhood population is within a ten-minute walk of station access points at either Cedar or 19th Avenue.
- Potential considerations for persons with limited mobility include: direct access into the climate controlled West Bank Skyway via an elevator and skyway extension; a sloping ramp.
- Designated bicycle access is best served by a 19th Avenue access point option.

Development of Scenarios

In consultation with City staff, URS developed two station scenarios. A platform location underneath the 19th Avenue Bridge was ruled out as being undesirable from an aesthetic/safety standpoint. A platform West of Cedar Avenue was ruled out because of the curvature of the right-of-way, which is not conducive to station locations. A platform underneath the West Bank Skyway was confirmed to be infeasible. This location is too close to the head of the bridge in order to accommodate the additional room needed for station elements.

A first draft included the following scenarios:

- Station platform between Cedar and 19th Avenue, with access via stairs/elevators on the east side of the Cedar Avenue Bridge and the west side of the 19th Avenue Bridge.
- Station platform between 19th Avenue and the West Bank Skyway, with access via a 3-5% grade sloping walkway from the east side of the Cedar Avenue Bridge, and via stairs/elevator on the east side of the 19th Avenue Bridge and West Bank Skyway.

A second set of refined scenarios were accompanied by photo visualizations that illustrated a gateway-type entry feature at Cedar Avenue as well as enclosed walkways. These were developed including the following:

- **Scenario A:** Station platform between Cedar and 19th Avenue, with access via stairs/elevators on the east side of Cedar, plus a skyway along the median of Washington connecting the West Bank Skyway to the elevator/stairs on the east side of the 19th Avenue Bridge.
- **Scenario B:** Station platform between 19th Avenue and the West Bank Skyway, with access via a 3-5% grade sloping enclosed walkway from Cedar Avenue, and via stairs/elevator at the 19th Avenue Bridge and West Bank Skyway.

Conceptual Engineering of Station Alternatives

URS developed two station scenarios based on conceptual engineering criteria for the design of LRT stations. The LRT station will need to accommodate a three-car train, which is 270 feet in length. Platforms typically range from 265 to 300 feet, depending upon the station’s design and context. Scenarios A and B illustrate platforms that are 300 feet in length⁶. In each scenario, the width of the platform is 22 feet, which is consistent for LRT platforms that typically vary between 18 and 24 feet.

The LRT right-of-way takes up a certain amount of space in the median, more so at the station. LRT will use space that includes the existing median (10 feet) and inside travel lane (approximately 12 feet, plus 2 feet of buffer on either side). This totals 38 feet. The LRT guideway itself requires about 26 feet⁷, while the station “envelope” requires about 44 feet⁸. Existing curb-to-curb distance of existing Washington Avenue is approximately 74 to 78 feet, depending upon location. Future curb-to-curb distance at the station, including the single remaining travel lane, would be about 84 feet, including the 44 feet wide station envelope. This assumes space requirements on either side of 20 feet (2’ buffer, 12’ travel lane and 6’ shoulder).

The LRT requires a certain amount of distance to transition (or taper) from the ordinary guideway (26’ wide) to the station (44’ wide). This distance typically ranges from 250 to 325 feet in length. In the case of Scenario B, the platform is situated to accommodate tapering to and from the entrance to the Washington Avenue Bridge.

Findings:

- Platforms can be accommodated between Cedar and 19th Avenue or between 19th Avenue and the West Bank Skyway.
- Depending on final design, the station will likely require an expanded right-of-way, requiring the movement of the curb approximately three to five feet.
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⁶ Initial concepts for a station platform between Cedar and 19th Avenue illustrate a slightly smaller platform of 285 feet as a result of stairs and elevators being on the west side of 19th Avenue.

⁷ Distance from centerline of track on either side = 6.5 feet

⁸ Distance from centerline of track to outside travel lane = 6.5 feet; distance from centerline of track to edge of platform = 4.5 feet

Station Cost Estimates

URS estimated the costs of components of each scenario, which are detailed in accompanying spreadsheets. These costs include an understanding of market-rate for material and labor costs, but are provided for planning purposes only based on these conceptual designs. Providing a skyway type of enclosure in the median of Washington Avenue adds significant costs to either scenario. The sloping walkway in Scenario B is considerably less expensive than the skyway in Scenario A because it is much shorter. Should these costs for these access alternatives prove infeasible, preliminary engineering could consider these as future additions as transportation demand, funding resources, and development conditions warrant.

Cost	Scenario A	Scenario B
LRT platform foundation, pavers, windscreens, ticket machine, benches, etc.	\$750,000	\$750,000
Skyway/walkway	\$7,500,000	\$4,750,000
Mezzanine ⁹	\$840,000	\$1,680,000
Bridge structural additions (Cedar & 19 th)	\$1,720,000	\$1,720,000
Bridge railings	\$240,000	\$240,000
Cedar Avenue marquee	\$320,000	\$320,000
Elevators (2)	\$450,000	\$450,000
Stairs (2) ¹⁰	\$135,000	\$150,000
Other ¹¹	\$2.3 million	\$2.1 million
Total station cost	\$14.2 million	\$12.2 million
Total station cost (w/ 10% contingency) ¹²	\$15.6 million	\$13.4 million

Station Access Summary Characteristics

The following presents findings from the point of considering different access alternatives:

Cedar Avenue

- Most important neighborhood street / place
- Reinforces neighborhood retail, dining and entertainment destinations
- Near parcels likely to be redeveloped
- Best for bus transfers that occur on Cedar and Riverside Avenues
- Competition for right-of-way with vehicles
- Unacceptable as sole station access given the volume and destination of University trips

West Bank Skyway

- Direct link into core of transit demand

⁹ The mezzanine is the enlarged area between the sidewalk and elevator/staircase where people gather and disperse. Costs for Scenario A are less expensive as the mezzanine function is incorporated into the estimated skyway costs from the West Bank Skyway to the 19th Avenue vertical circulation.

¹⁰ Stairs for Scenario A are cheaper as one set is covered by the Skyway leading from the West Bank Skyway.

¹¹ e.g., mobilization, traffic control, cleanup, bike racks, emergency telephones, litter receptacles, signage, lighting

¹² Estimates do not include site/row acquisition, public art, or design costs/fees.

- Unacceptable as sole station access due to isolation from neighborhood destinations
- Better ADA access for University-bound trips

19th Avenue

- One block from transfer to Cedar and Riverside buses
- Lower traffic volumes than Cedar Avenue
- Served by planned arterial bike route
- Access to University via Humphrey Institute and Law School
- ADA access is less direct (via Humphrey Center and Law School) and not climate controlled

PRELIMINARY COST ESTIMATE - SCENARIO A

PROJECT: Central Corridor - Cedar Riverside/West Bank LRT Station

ITEM NO.	CONTRACT ITEM	UNIT (2)	UNIT PRICE	CONTRACT QUANTITY (1)	ESTIMATED TOTAL
1	TESTING AND INSPECTION (E.G. SOIL AND CONCRETE)	LS	\$ 20,000.00	1	\$ 20,000.00
2	MOBILIZATION , TRAFFIC CONTROL, AND CLEANUP (10%)	LS	\$ 1,283,074.00	1	\$ 1,283,074.00
3	SITE EXCAVATION AND DEMOLITION	LS	\$ 75,000.00	1	\$ 75,000.00
4	SITE UTILITY CONNECTIONS	LS	\$ 15,000.00	1	\$ 15,000.00
5	UTILITY RELOCATION	LS	\$ 20,000.00	1	\$ 20,000.00
6	CONC. SIDEWALK	SF	\$ 3.00	11800	\$ 35,400.00
8	CONC. CURB AND GUTTER	LF	\$ 30.00	900	\$ 27,000.00
9	LRT PLATFORM FOUNDATION AND CONC. FLATWORK	LS	\$ 350,000.00	1	\$ 350,000.00
10	LRT PLATFORM SURFACE: MODULAR CONCRETE PAVERS	SF	\$ 15.00	5400	\$ 81,000.00
11	LRT PLATFORM TACTILE WARNING STRIP	SF	\$ 20.00	1200	\$ 24,000.00
12	LRT PLATFORM CANOPY	SF	\$ 20.00	1800	\$ 36,000.00
13	LRT PLATFORM CANOPY STRUCTURE	SF	\$ 40.00	1800	\$ 72,000.00
14	LRT PLATFORM: WINDSCREEN	SF	\$ 35.00	540	\$ 18,900.00
15	LRT PLATFORM BENCH: 6' STAINLESS STEEL	EA	\$ 2,000.00	4	\$ 8,000.00
16	LRT PLATFORM LITTER RECEPTACLE: STAINLESS STEEL	EA	\$ 1,000.00	2	\$ 2,000.00
17	LRT PLATFORM LEANING RAIL: 6' STAINLESS STEEL	EA	\$ 1,000.00	2	\$ 2,000.00
18	LRT PLATFORM INFORMATION PANEL: STAINLESS STEEL FRAME W/ HINGED GLASS	EA	\$ 3,000.00	2	\$ 6,000.00
19	LRT PLATFORM: TICKET VENDING MACHINE	EA	\$ 75,000.00	2	\$ 150,000.00
20	LRT PLATFORM MEZZANINE: CORRUGATED PAINTED METAL ROOFING W/ METAL FACIA; GLAZED ENCLOSURE W/ PAINTED METAL STRUCTURAL	SF	\$ 700.00	1200	\$ 840,000.00
21	SKYWAY MARQUEE/ENTRANCE	SF	\$ 800.00	400	\$ 320,000.00
22	ELEVATOR, INCLUDING MECHANICAL AND ELECTRICAL	EA	\$ 225,000.00	2	\$ 450,000.00
23	STAIR W/ CANOPY	EA	\$ 75,000.00	1	\$ 75,000.00
24	SKYWAY: CORRUGATED PAINTED METAL ROOF, GLAZED ENCLOSURE W/ PAINTED METAL STRUCTURE	LF	\$ 12,500.00	600	\$ 7,500,000.00
25	SKYWAY STAIR	EA	\$ 60,000.00	1	\$ 60,000.00
26	SKYWAY LITTER RECEPTACLE: STAINLESS STEEL	EA	\$ 1,000.00	2	\$ 2,000.00
27	SKYWAY BENCH: 6' STAINLESS STEEL	EA	\$ 2,000.00	4	\$ 8,000.00
28	SITE SIGNAGE	LS	\$ 20,000.00	1	\$ 20,000.00
29	SITE LIGHTING: 20 STREETLIGHTS, INCLUDING WIRING AND SERVICE PANEL	EA	\$ 6,000.00	20	\$ 120,000.00
30	EMERGENCY TELEPHONE	EA	\$ 2,000.00	5	\$ 10,000.00
31	RAILINGS: 42" PTD. METAL	LF	\$ 150.00	1600	\$ 240,000.00
32	BIKE STORAGE: LOCKABLE ENCLOSURE	EA	\$ 1,500.00	8	\$ 12,000.00
33	BIKE RACK: STAINLESS STEEL	EA	\$ 1,000.00	12	\$ 12,000.00
34	COMMUNICATIONS: PA AND CCTV	LS	\$ 100,000.00	1	\$ 100,000.00
35	CEDAR AVE. AND 19TH STREET BRIDGES STRUCTURAL ADDITION	SF	\$ 250.00	6880	\$ 1,720,000.00
36	WASHINGTON AVE. EB AND WB RECONSTRUCTION	SF	\$ 8.00	57680	\$ 461,440.00
37	CONCRETE RUMBLE STRIP	LF	\$ 20.00	2400	\$ 48,000.00
SUBTOTAL					\$ 14,223,814.00
CONTINGENCY (10%)					\$ 1,422,381.40
SCENARIO A TOTAL					\$ 15,646,195.40

ASSUMPTIONS:

- (1) MATERIAL AND LABOR COST
- (2) LS=LUMP SUM, LF=LINEAR FEET, EA=EACH, SF=SQUARE FEET
- ESTIMATE DOES NOT INCLUDE SITE/ROW ACQUISITION
- ESTIMATE DOES NOT INCLUDE PUBLIC ART
- ESTIMATE DOES NOT INCLUDE DESIGN COSTS OR FEES

PRELIMINARY COST ESTIMATE - SCENARIO B

PROJECT: Central Corridor - Cedar Riverside/West Bank LRT Station

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3	SITE EXCAVATION AND DEMOLITION	LS	\$ 75,000.00	1	\$ 75,000.00
4	SITE UTILITY CONNECTIONS	LS	\$ 15,000.00	1	\$ 15,000.00
5	UTILITY RELOCATION	LS	\$ 20,000.00	1	\$ 20,000.00
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23	SKYWAY: CORRUGATED PAINTED METAL ROOF, GLAZED ENCLOSURE W/ PAINTED METAL STRUCTURE	LF	\$ 12,500.00	380	\$ 4,750,000.00
24	SKYWAY MARQUEE/ENTRANCE	SF	\$ 800.00	400	\$ 320,000.00
25	SKYWAY LITTER RECEPTACLE: STAINLESS STEEL	EA	\$ 1,000.00	2	\$ 2,000.00
26	SKYWAY BENCH: 6' STAINLESS STEEL	EA	\$ 2,000.00	4	\$ 8,000.00
27	SITE SIGNAGE	LS	\$ 20,000.00	1	\$ 20,000.00
28	SITE LIGHTING: 20 STREETLIGHTS, INCLUDING WIRING AND SERVICE PANEL	EA	\$ 6,000.00	20	\$ 120,000.00
29	EMERGENCY TELEPHONE	EA	\$ 2,000.00	5	\$ 10,000.00
30	RAILINGS: 42" PTD. METAL	LF	\$ 150.00	1600	\$ 240,000.00
31	BIKE STORAGE: LOCKABLE ENCLOSURE	EA	\$ 1,500.00	8	\$ 12,000.00
32	BIKE RACK: STAINLESS STEEL	EA	\$ 1,000.00	12	\$ 12,000.00
33	COMMUNICATIONS: PA AND CCTV	LS	\$ 100,000.00	1	\$ 100,000.00
34	CEDAR AVE. AND 19TH STREET BRIDGES STRUCTURAL ADDITION	SF	\$ 250.00	6880	\$ 1,720,000.00
35	WASHINGTON AVE. EB AND WB RECONSTRUCTION	SF	\$ 8.00	57680	\$ 461,440.00
36	CONCRETE RUMBLE STRIP	LF	\$ 20.00	2400	\$ 48,000.00
SUBTOTAL					\$ 12,150,314.00
CONTINGENCY (10%)					\$ 1,215,031.40
SCENARIO B TOTAL					\$ 13,365,345.40

ASSUMPTIONS:

- (1) MATERIAL AND LABOR COST
- (2) LS=LUMP SUM, LF=LINEAR FEET, EA=EACH, SF=SQUARE FEET
- ESTIMATE DOES NOT INCLUDE SITE/ROW ACQUISITION
- ESTIMATE DOES NOT INCLUDE PUBLIC ART
- ESTIMATE DOES NOT INCLUDE DESIGN COSTS OR FEES

URS Cedar-Riverside / West Bank Central Corridor LRT Station Analysis: **Station Layout Scenario A**



URS Cedar-Riverside / West Bank Central Corridor LRT Station Analysis:
Cedar Avenue Entry Scenario A



URS Cedar-Riverside / West Bank Central Corridor LRT Station Analysis: Station Layout Scenario B



URS Cedar-Riverside / West Bank Central Corridor LRT Station Analysis:
Cedar Avenue Entry Scenario B



URS Cedar-Riverside / West Bank Central Corridor LRT Station Analysis:
Cedar Avenue Entry Aerial View



URS Cedar-Riverside / West Bank Central Corridor LRT Station Analysis:
Station Skyway Access – Interior View



**NEIGHBORHOOD
WALK ACCESS
TO CENTRAL
CORRIDOR LRT
STATION**

Note:

Walking routes include links to closest access point (i.e. Cedar Avenue or West Bank Skyway)

Estimated walk times depend on access point used and is based on an average walking speed of 3 miles per hour.

-  Potential Station Access Point
-  Fairview/Augsburg District
-  Primary Walking Routes (10-11 min.)
-  7 Corners District
-  Primary Walking Routes (2-4 min.)
-  Riverside Plaza/ Cedars District
-  Primary Walking Routes (5-7 min.)
-  Coop District
-  Primary Walking Routes (6 min.)

