



**CENTRAL CORRIDOR LIGHT RAIL TRANSIT REPORT
TO THE BOARD OF REGENTS**

June 11, 2008

UNIVERSITY OF MINNESOTA
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Central Corridor Light Rail Transit Report

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1. The University of Minnesota's Commitment to Transit

The Central Corridor Light Rail Transit (CCLRT) line runs between downtown St. Paul and downtown Minneapolis, connecting some of the largest traffic generators in the Twin Cities, including the two downtowns, the Midway area, and the University of Minnesota. It will shape the regional transportation system, the campus, and the surrounding neighborhoods for the next 100 years. Transit is essential to the functioning of the University of Minnesota and its community. The University is truly a transit-oriented community, with two thirds of its commuters using bus, carpool, biking or walking options. Over the last 20 years, the University has successfully developed an integrated transportation system that serves all members of the University community, including more than 20,000 students and 2,000 faculty and staff who use the University-subsidized mass transit programs. It is estimated that the University alone will generate about 30 percent of the daily riders on the CCLRT line. Clearly, the University and the Twin Cities need a metropolitan transit system that is reliable, affordable, convenient and safe to serve the long-term transportation needs of the region.

Throughout this process, the University has worked to ensure that all options were given fair consideration and thoroughly studied. In fact, the Board of Regents 2001 resolution suggests this approach. We have been cognizant from the beginning that the placement of the light rail line will impact our mission-critical activities, the shape of the future campus, academic programming, access to the Academic Health Center hospital and clinics, and the development of the community. The University's strategy in studying multiple options simultaneously was to ensure that the University identified a workable option. We asked the tough questions and we have taken seriously our responsibility to protect the University and the neighboring communities and businesses and to represent the public interest. Whatever the route, the desired outcome is one that will result in a substantially improved transportation system for the University and the region.

The alignments we have explored in the four years we have been working on the CCLRT are:

1. A tunnel under Washington Avenue with value engineering
2. A feasibility analysis of the Northern Alignment
3. Washington Avenue at-grade with transit/pedestrian mall and mitigations

2. The University's Involvement in the Central Corridor Light Rail Transit

The University has been a constructive partner throughout the planning and design process, working closely with the cities of Minneapolis and St. Paul, Hennepin and Ramsey counties, the Minnesota Department of Transportation, and the Metropolitan Council (Met Council). The University, under the direction of Vice President Kathleen O'Brien and Director of Parking and Transportation Bob Baker, has been working on the Central Corridor project for four years. In 2005, Vice President O'Brien charged a cross-functional team to provide strategic direction and support to the University's planning efforts for Central Corridor Light Rail Transit. This team brings together the requisite skill sets and draws upon the University's extensive expertise in multiple units: University Services Office of the Vice President; Parking and Transportation Services, including the new hire of a traffic engineer; Capital Planning and Project Management; University Relations; Government and Community Relations; Office of the General Counsel; and the Office of Budget and Finance. The project team also used the expertise of key faculty in engineering, design, planning, and urban studies to help provide guidance to our efforts. We have also consulted with outside experts to augment our work, retaining the engineering firm of SRF Consulting, Inc. in 2005 and again in 2008 to assist with the analysis of the options.

2.1 University of Minnesota's Guiding Principles for the Central Corridor

The following guiding principles have guided the University's planning efforts since 2005. These principles have been reviewed and discussed in each of the annual briefings with the Board of Regents and in the more frequent briefings and policy discussions that have occurred since preliminary engineering began in August 2007. These principles have served as the framework for the University's official comments to the Met Council at various points in the process, and in all of our work to date.

- The optimal operation of the Central Corridor LRT line is vital to a strong, regional, multi-modal transportation system.
- Safety is fundamental to the success of the operation of the line.
- The Central Corridor should realize development opportunities while reducing impact to the urban environment.
- The functionality and aesthetics of the University campus must be enhanced.

2.2 History of the Central Corridor Light Rail Transit Line

- Four traffic studies in the last 20 years have demonstrated that an at-grade LRT alignment on Washington Avenue would not work if all the traffic—cars, buses, and trucks—were left on the avenue.
- July 2001: The University of Minnesota Board of Regents passes a resolution that the Northern Alignment be evaluated and that if the Central Corridor line were to operate on Washington Avenue that it be below grade.
- 2001: The Central Corridor Management Committee (CCMC) chooses not to study the Northern Alignment. The University does not elect to sponsor or pay for the study due to representation that the alignment would be in a tunnel under Washington Avenue, and an unwillingness of the other partners to provide any financial support for the study.
- 2005: The University develops the site plan for the East Gateway District and the TCF Bank Stadium. It consults with corridor staff regarding the placement of the stadium and potential conflicts with the proposed CCLRT alignment. In November corridor staff comments on the stadium draft environmental impact statement (DEIS) that moving the alignment would cost an additional \$15-\$20 million but does not object to moving the CCLRT alignment.
- June 2006: The Met Council's draft environmental impact statement (DEIS) proposes a tunnel under Washington Avenue on the East Bank of the Minneapolis campus.
- December 2006: The Central Corridor project receives approval from the Federal Transit Administration (FTA) to proceed with preliminary engineering; the proposed line submitted and approved to the FTA includes a tunnel under Washington Avenue.
- 2006 – September 2007: Recognizing the cost challenges of a tunnel, the University conducts analysis of at-grade impacts and provides multiple presentations to the CCMC, project staff, and partners regarding the University's at-grade analysis and the associated challenges and needs. The Met Council continues to include the tunnel as the locally preferred alternative.
- August 2007: Eight months after receiving approval from the FTA, the Met Council awards the engineering contract. The Met Council Central Corridor Project Office (CCPO) staff team is established.
- November 2007: President Bruininks initiates a meeting with Metropolitan Council Chair Peter Bell to review the status of the CCLRT. Anticipating a shift in the Council's position, the president sends a letter to the Met Council requesting the study of the Northern Alignment, consistent with the 2001 resolution of the University's Board of Regents. The Met Council denies the request.
- December 2007: The University, in partnership with the City of Minneapolis and Hennepin County, begins development on a mitigation plan for the at-grade Washington Avenue alternative.

- January 2008: After repeated requests, the Met Council agrees to consider a preliminary feasibility study of the Northern Alignment, provided the University pays for the study.
- February 27, 2008: Met council votes for the first time to eliminate the tunnel and to proceed with the Washington Avenue at-grade transit/pedestrian mall alternative.
- March 2008: After protracted negotiations between the University and the Met Council concerning the scope, schedule, and cost of the Northern Alignment feasibility study, the University proceeds by hiring its own consultant, SRF Consulting, Inc. The Met Council agrees that the study will yield "a credible feasibility report."
- April 11, 2008: Presentation to the Board of Regents on the Washington Avenue at-grade transit/pedestrian mall alignment and the Northern Alignment
- April 2008: The University releases the preliminary results of the Northern Alignment feasibility study.
- May 15, 2008: The cost effectiveness index (CEI) for the Northern Alignment (a critical value for the FTA that includes project cost, travel time, and ridership) becomes available.
- May 28, 2008: The Met Council adopts a resolution directing the CCPO to discontinue all work related to the Northern Alignment. They express their intent to work toward a Memorandum of Understanding to address the necessary mitigations for the Washington Avenue at-grade alignment and to work to maintain the current project schedule.

2.3 Consultation

In addition to consulting with outside experts, we have also sought the advice and input more broadly within the institution and in the neighborhoods. Within the University, we have presented and discussed the CCLRT with the following groups:

- Executive Committee, Twin Cities Deans' Council, Faculty Consultative Committee
- Key engineering, design, planning and urban studies faculty
- Faculty whose research laboratories and equipment will be impacted by the line
- Senate Committee on Finance and Planning, Civil Service Committee, CAPA
- Academic Health Center, Fairview Health Services
- Minnesota Student Association, GAPSA
- UMAA Board, University Foundation Board, Legislative Network

The neighborhood, business, and community groups we have engaged are:

- Cedar Riverside Business Association, Dinkytown Business Association, Southeast Business Association, Stadium Village Commercial Association
- Marcy Holmes Neighborhood Association, Prospect Park Neighborhood Association, West Bank Community Coalition, St. Anthony Park Community Council, Southeast Como Improvement Association
- District Council Collaborative; ISAIAH, South East Economic Development, West Bank CDC

Additionally, we have engaged federal, state, and local officials. A complete listing of those persons can be found in the May 21, 2008 briefing materials. We have conducted regular briefings for the Board of Regents and have had ongoing coordination with our project partners for four years.

Since the CCPO was established in August 2007, we have coordinated our work with them almost daily. The CCPO is charged with completing environmental documents, preliminary and final construction documents, and construction of the CCLRT. Soon after the project team was established, the University hosted them on September 14, 2007 on campus to discuss the University's concerns with the CCLRT alignment. Our work with the CCPO has been a coordinated effort to arrive at a mutually acceptable solution.

3. Federal Processes

3.1 New Starts

Funding for new, locally planned fixed guideway transit projects is supported through the federal government with a discretionary program called New Starts. It typically takes up to five years from the time a project is begun at the local level to the time final federal approval is received and construction can commence.

Total federal funding through SAFETEA-LU for fiscal years 2006, 2007, 2008, and 2009 is \$6.6 billion. This includes funding for more than 330 projects for proposed, pending, and existing Full Funding Grant Agreements (FFGA). FFGAs are multi-year contractual agreements between the FTA and project sponsors that formally define the project scope, cost and schedule. They also establish the maximum level of federal financial assistance and outline the terms and conditions of federal financial participation.

New Starts projects arise through a regional, multi-modal transportation planning process. Project development follows three phases. In Phase I, alternative analysis, project sponsors must evaluate the mode and alignment of a project.

This phase is complete when local and regional decision makers select a locally preferred alternative, and it is adopted by the metropolitan planning organization into the region's long-range transportation plan. During phase II, preliminary engineering, local project sponsors consider design options. Project costs are more closely estimated, as well as benefits and impacts. Local funding sources must be identified during this phase. In Phase III, final design, final construction plans are prepared.

New Starts projects undergo evaluation by the FTA throughout the entire project development process. Based on these evaluations, the FTA makes decisions about moving projects forward, from preliminary engineering to final design, to annual funding recommendations to Congress, and to the execution of a FFGA. The criteria under which New Starts projects are evaluated include mobility improvements, environmental benefits, operating efficiencies, cost effectiveness and transit supportive land use policies and future patterns.

3.2 Cost Effectiveness Index

One of the project criteria has been of critical importance in our local decision about an alignment—that is the cost effectiveness index (CEI). This measure is used to determine the investment worthiness of a proposed project. The calculation is the result of a complex set of variables, including capital and operating costs, ridership levels, and ride time. Currently, the CEI must not exceed \$23.99 for a project to be considered viable for federal funding from the FTA.

3.3 Environmental Impact Statement

In April 2006, the Met Council, as the responsible governmental unit, released the DEIS for the CCLRT for public review and comment. The DEIS considered the following alternatives:

1. Baseline Alternative: a combination of no-build and transportation system management
2. University Avenue LRT Alternative: a tunnel under Washington Avenue through the University and tracks on Robert Street to Columbus Street to Cedar Street and 4th Street through the State Capitol and downtown St. Paul with a termination in front of the Union Depot
3. University Avenue Busway/Bus Rapid Transit Alternative: operations in mixed traffic at the University, and following the existing Route 16 through the State Capitol and downtown St. Paul across the Robert Street Bridge.

The University participated in the public review process by providing both written and verbal statements supporting the LRT alternative with a tunnel under Washington Avenue, consistent with the Board of Regents 2001 resolution. The University also provided detailed comments regarding station location, potential impacts to research equipment, a desire to develop a multimodal transportation center at the Stadium Village station, and the underrepresentation of student census data.

Following requisite public hearings, in June 2006, the Met Council acted on the DEIS and adopted the LRT alternative as the locally preferred alternative. It was this alternative that was included in its application to proceed with preliminary engineering.

In the fall of 2007, the CCPO decided to prepare a supplemental draft environmental impact statement (SDEIS) evaluating a Washington Avenue at-grade alternative. As part of the development of the SDEIS, on February 25, 2008, the Met Council formally requested public comments as to the scope of the SDEIS. On March 24, the University submitted its comments on the scope of the SDEIS, including the request to include the Northern Alignment as a reasonable and feasible alternative to be studied. The Met Council responded, declining this request. Several other agencies and organizations commented on the scope of the SDEIS, including the EPA, Mississippi Watershed Management Organization, Fairview Health Services, Southeast Como Improvement Association, and Marcy Holmes Neighborhood Association.

The Metropolitan Council has continued to develop the SDEIS and plans to release the SDEIS for public comment this summer, following review by the FTA. The Met Council will then develop the Final Environmental Impact Statement (FEIS). The FEIS will address environmental and historical impacts identified in the DEIS and SDEIS.

4. Metropolitan Council Central Corridor Project Goals

The goals of the Central Corridor project were developed by stakeholder groups and adopted by the Met Council to guide the decision for Central Corridor staff in determining the preferred alternative and corridor alignment. The stated goals are:

- Goal 1: Economic Opportunity and Investment – The Central Corridor should support investments in infrastructure, business, and community that sustain the heart of the region. It should promote a reliable transit system that allows an efficient, effective land use development pattern in major activity centers which minimizes parking demand, facilitates the highest and best use of adjacent properties, and gives employers confidence that employees can travel to and from work.

- Goal 2: Communities and Environment – The Central Corridor should facilitate the preservation and enhancement of neighborhoods within the corridor; acknowledge the individual character and aspirations of each place served and of the region as a whole; and support regional goals for cleaner air and water, more efficient energy use, and a safer and healthier environment.
- Goal 3: Transportation and Mobility – The Central Corridor should create transportation improvements that add people carrying capacity, minimize operating costs, improve operating efficiency, provide high quality modal alternatives, and reinforce the region’s transportation system. It should expand opportunities for all users to move freely to, through, and within the Central Corridor as well as enhance the existing transportation infrastructure to serve the high number of transit dependent persons in the corridor.

The University will continue to urge the CCPO to use these goals to guide the CCLRT.

5. Washington Avenue Tunnel

By Board of Regents resolution in 2001, the University’s preferred alternatives for the Central Corridor light rail are the Northern Alignment or a tunnel under Washington Avenue. This resolution has guided our work throughout the years and we have been steadfast in our belief that these two options would best serve the University community’s needs now and in the future and we have worked to advance these two options.

As a result of the DEIS, which analyzed a tunnel under Washington Avenue, the Met Council selected that configuration as the locally preferred alternative. That same year, the University recognized the cost challenges of a tunnel. We retained SRF to analyze the tunnel and to begin analyzing the risks and challenges of an at-grade alignment, as we realized we might need to return to other options. Throughout the end of 2007, the University worked with the project office on value engineering of the Washington Avenue tunnel, to bring the cost down. Options included shortening the tunnel, using existing elevator banks for access, and eliminating the mezzanine.

The tunnel design analyzed in the DEIS included a station at the Northrop Mall in a trench section that had access from the existing pedestrian bridges. It traveled underneath Washington Avenue and curved to the north just west of Oak Street. The tunnel transversed northeasterly, became an open “boat” section just east of Oak Street, and the tracks continued under University Avenue, which bridged

over the tracks. After University Avenue, the tracks started rising and an LRT station at street level was established in the vicinity of the northeast quadrant of the University Avenue/23rd Avenue/Huron Avenue intersection. When preliminary engineering started in August 2007, the costs needed to be updated, and this alternative, determined to be \$990 million, was used as a baseline in all the cost estimates.

At the onset of preliminary engineering, the CCPO wanted to put together the best tunnel alternative possible. This tunnel alternative had a station in the vicinity of Union Street two levels below grade to accommodate a mezzanine level to allow free flowing pedestrian movements. This station had tunnel connections to the University's Gopher Way system. This tunnel alignment continued underground one and a half levels at Oak Street to avoid a major storm sewer connection in the area. It then followed Washington Avenue to Huron Avenue, where it turned north to parallel Huron and 23rd Avenues. The tunnel became an open "boat" section east of Huron and University Avenue, and the actual roadways bridged over the tracks. The station was again in the northeast quadrant of the University Avenue/23rd Avenue/Huron Avenue intersection, but still in a "boat" section. East of the station, the tracks started rising, but did not meet street level until well east of 25th Avenue, which also bridged over the tracks. This alternative was determined to be \$135 million more than the DEIS alternative.

Realizing that the best tunnel alternative was too expensive, the University worked with the project office to value-engineer a tunnel alternative. Many cost-saving measures were considered, which included using the University's existing vertical circulation systems to reach the mezzanine station, reducing mechanical and ventilation systems, etc. The mezzanine station was ultimately replaced with a station at Northrop Mall in a trench section, just west of where the tunnel started, similar to the DEIS proposal. Additional vertical circulation was required over and above what was assumed in the DEIS. Also costs for the station infrastructure were increased from the DEIS to accommodate upgraded design elements. The tunnel then was proposed to rise out of the ground just east of Oak Street along Washington Avenue. In the end, this value-engineered tunnel alternative did not reduce the costs of the tunnel enough for it to be considered as a feasible alternative. Additionally, the benefits of having a tunnel were reduced when the tunnel became shorter and there were still traffic impacts along Washington Avenue from Oak to Huron and through the very busy intersections of Huron and University Avenues. Also, the station was moved out into the earthly elements of the trench section at Northrop Mall and this was not a preferred solution.

When the CCPO was established in August 2007, we brought them to campus to discuss our concerns. Late in 2007, the University approached the CCPO about

reconsidering the Northern Alignment and the necessary mitigations for an at-grade alignment on Washington Avenue. Early in 2008, the CCPO determined that the tunnel would add \$110 - \$135 million in cost to the CCLRT. While the ridership was high and the ride time faster, we were informed that the cost alone would take the tunnel out of consideration. Even with the shortened tunnel and other savings, the CEI for this alignment ranged from \$25.62 to \$27.00, well above the \$23.99 cap established by the FTA for a project to be considered viable for federal funding. As anticipated, in February the Met Council voted to change the locally preferred alternative to an at-grade alignment on Washington Avenue, deeming the tunnel cost prohibitive and not competitive under FTA CEI guidelines. At that time, the Metropolitan Council directed the CCPO to continue preliminary engineering and prepare to submit a New Starts application to the FTA to move the project into final design with a University of Minnesota at-grade transit/pedestrian mall on Washington Avenue.

6. Northern Alignment

In November 2007, the University requested the CCPO to conduct a feasibility study of the Northern Alignment and to add the Northern Alignment to the alternatives that they would study in the SDEIS. In January, they agreed that the Northern Alignment could be studied as long as the University paid for the cost of that study. In March 2008, the Board of Regents authorized a \$400,000 contract with SRF Consulting Group, Inc. to study the feasibility of the Northern Alignment. SRF is a Minnesota engineering consulting firm with more than 45 years in planning transportation systems.

The University undertook the Northern Alignment Alternative Feasibility Study using SRF as the consultant, with agreement from the CCPO that the study would be considered valid and legitimate. We directed them to investigate the feasibility of the alignment and its potential benefits. It is not a definitive analysis of the Northern Alignment; as we have argued, that would need to be conducted during preliminary engineering. Rather, we used the study to determine whether the Northern Alignment met the stated goals of the Central Corridor project and merited further study as part of the SDEIS.

6.1 Northern Alignment Feasibility Criteria

The University established feasibility criteria with the CCPO staff and the project partners. In order to determine the feasibility of the Northern Alignment, the following four feasibility criteria and respective questions were used to evaluate the Northern Alignment's overall feasibility.

- Engineering, Safety, and Accessibility
 - Is the Northern Alignment feasible from an engineering basis?
 - Does it meet FTA standards for light rail systems?
 - Does the Northern Alignment accommodate existing and planned

roadways and trails?

Does the Northern Alignment ensure safe, inter-modal interactions by minimizing the number of potential LRT conflict points with public roads, private driveways and pedestrian crossings?

Are the three Northern Alignment stations accessible to pedestrians, bicyclists, and people with disabilities?

- CCLRT and Roadway Traffic Network Operations
Does the Northern Alignment enhance or adversely impact the overall operations of the CCLRT with regard to ridership, travel time, and equipment requirements?
Does the Northern Alignment provide reasonable and appropriate roadway circulation in and around the vicinity of the U of M that does not result in failing intersections?
- Environmental and Land Use Impacts
Do reasonable mitigation measures exist to address potential environmental impacts to make the Northern Alignment feasible?
Do compatible land uses currently exist and is there potential for future development along the Northern Alignment?
- Cost Effectiveness
Is the fully loaded capital cost for the Northern Alignment reasonable?
Does the proposed Northern Alignment have a CEI that qualifies for federal funding?

An engineering and environmental analysis was undertaken by SRF. The feasibility study was completed and submitted to the University on May 19, 2008. Based on these four criteria and the goals for the Central Corridor project, the Northern Alignment was determined to be feasible, with a capital cost of \$14.3 to \$19.9 million less than the Washington Avenue at-grade alignment.

On April 11, these preliminary results were presented to the Board of Regents and on the 30th to the CCMC. Issues were raised at that meeting by the partners, and in early May, SRF revised the plans to address some of these concerns. On May 19, 2008, results of the CEI and ridership analysis were distributed with the feasibility study. On May 28, 2008, the Metropolitan Council adopted a resolution directing the CCPO to discontinue all work related to the Northern Alignment. In the resolution, the Met Council also cited lower ridership numbers and a higher CEI for the Northern Alignment.

6.2 Cost Effectiveness Index and Ridership

The University used the CCPO's travel forecasting consultant, AECOM to test several ridership models as part of developing the CEI. The analysis produced a

range of ridership forecasts, 5,000 – 6,500 less than the Washington Avenue at-grade alternative, and CEIs between \$28.25 and \$24.58. The lowest value for the Northern Alignment of \$24.58 was determined using an “enhanced” model that calculated ridership to reflect the operation of the University’s shuttle service in providing access to the regional transit system, as well as a lower capital cost that reflects adjustments made to the route on the West Bank.

We believe that the enhanced access methodology is a reasonable application to make in this case. The University has documented more than 20,000 riders per day on our campus shuttle system, and once the LRT is operational, the University would change the campus circulator routes to feed the LRT system. Similar assumptions have been made with the Metro Transit routes on University Avenue in St. Paul. SRF concurs that this is a reasonable methodology to project ridership but they have not been able to document similar applications that have received FTA approval with other LRT projects around the country.

While we believe that our shuttle system is an important part of transit within the campus area and would effectively increase the accessibility of all areas of campus to the LRT, this system has not been submitted to or approved by the FTA to be included in the CEI formula to date. Nor has the CCPO concurred with us in accepting the reduced capital cost. Even with these two variables taken into consideration, the FTA has set the CEI at \$23.99 for a project to be considered viable. As such, the Metropolitan Council is unwilling to include the Northern Alignment in its submission to the FTA.

6.3 Northern Alignment Feasibility Study Findings

We have learned much in undertaking a thorough analysis of the Northern Alignment. What we have learned about the risks and opportunities can be applied to either alignment. Based upon this analysis, the Northern Alignment is determined to be feasible with respect to engineering, safety, accessibility, light rail operations, roadway network operation, environmental impacts, and compatibility with land uses in proximity to the corridor. Furthermore, the Northern Alignment supports the CCLRT project goals. The findings can be viewed as a set of opportunities and risks for the Northern Alignment. These are summarized below.

6.3.1 Opportunities for the Northern Alignment

The opportunities fall into three broad categories: 1) those that improve the University’s transportation system, 2) those that strengthen the neighboring communities, and 3) those that better serve the University, the Academic Health Center, and the emerging bioscience district.

1. Improved Transportation
 - Use of the existing railroad right-of-way minimizes disruptions to the integrated transportation system on and around campus
 - Adds capacity to the University's district transportation system by utilizing the rail right-of-way
 - Conflicts with pedestrians, autos, buses, and emergency vehicles are reduced
 - Construction schedule disruptions are avoided
2. Strengthen Communities
 - The campus and the Southeast Minneapolis and West Bank communities are better served by strengthening connections
 - Business revitalization and new housing development is better supported in Dinkytown and Stadium Village
 - Stadium Village businesses will see less disruption and business acquisitions
3. Better Serve the University
 - Roadway capacity is preserved and the capacity of the entire system is increased
 - Access to the AHC hospital and clinics is maintained
 - Negative impacts to two historic districts, Northrop Mall and the Historic Knoll area, are avoided

6.3.2 Risks for the Northern Alignment

While the Northern Alignment is a feasible and reasonable alternative, it is not until preliminary engineering that the details of the identified risks are more robustly explored. Other factors may become known at this time also. The risks are captured below.

1. Bridge #9
 - Built in 1923, Bridge #9 is eligible as an historic structure
 - Bridge #9 is deemed "fracture critical" and would need to be rebuilt to accommodate LRT, pedestrians, and bikes
 - Environmental permits from the Army Corps of Engineers, the National Park Service/MNRRRA, FEMA, the Coast Guard, and others would be required to use this bridge
 - The timeline for the approval process could have a potential impact on the CCLRT schedule
 - The cost for rebuilding this structure is uncertain, but we have reasonable estimates
 - The trail crossing will not be in service during construction of the new bridge, other routes will need to be used

2. Research Impacts
 - In the East Gateway area, mitigations would be required for the vibration and electromagnetic field impacts to mission-critical research, but lesser impacts are expected than on Washington Avenue because the facilities would be further away from the line
3. Railroad Conflicts
 - Potential challenges and cost of obtaining railroad right-of-way
 - Increased insurance requirements due to proximity to the freight rail line that carries fuel to the University's steam plant
 - Freight rail line separation distances do not meet Federal Railroad Administration standards
 - Future cost requirements for crash walls between transportation modes
 - Fire, life, and safety access is limited
 - Potential alignment conflict with a transroad rail yard being constructed by Minnesota Commercial Railway to replace one lost in the I35W bridge collapse
4. Soil Contamination
 - Cost of remediating contaminated soil (a state Superfund site and a state voluntary investigation and cleanup site) on the West Bank (This area has been investigated and the cleanup deemed manageable, similar to cleanup taking place on the TCF Bank Stadium site.)
 - East Gateway District areas of identified potential soil contamination have been identified and cleanup is underway
5. Other Construction and Operating Costs
 - Unknown future costs of LRT traffic signals at intersections at road connections along Granary Road
 - No traffic study has been conducted to demonstrate where the traffic will go once the train is operational; this may require future adjustments
6. West Bank Trench
 - LRT would operate in an open trench between 19th Avenue and the Law School, requiring the construction of retaining walls
 - Snow removal and maintenance access would be limited in the trench
 - Fire, life, and emergency vehicle access would be limited in the trench
7. Affordable Housing
 - Cost of replacing 4 units of affordable housing on West Bank
 - Noise and vibration impacts to the remaining units

There are some additional concerns regarding the Northern Alignment. Because it was studied as a separate project, an environmental review has not been initiated and there may be issues that would arise.

7. Washington Avenue At-Grade Alignment

As early as November 2007, the University realized that the Washington Avenue tunnel might be in jeopardy due to its cost. President Bruininks met with Chair Bell at that time and requested a study of the Northern Alignment.

Simultaneously, University project staff began addressing the issues that would need to be resolved to make an at-grade alignment on Washington Avenue work. We knew that we would need a plan, and agreement with our partners, as to what the potential problems of the at-grade alignment were and how they would be resolved in terms of responsibility and cost. In December, we began working with the City of Minneapolis and Hennepin County on these issues; this was the beginning of the mitigation plan.

It was at this time that we started asking the hard questions about what we would need to do to assure an at-grade alignment would not interfere with access to and from the campus and the Academic Health Center hospital and clinics and would preserve the integrity of the University community and the neighboring communities and businesses.

7.1 Mitigation Principles for Washington Avenue At-Grade Alignment

To guide our work on a Washington Avenue at-grade alignment, the University's CCLRT team developed these principles. They were first presented to the Board of Regents in a briefing in December 2007.

- Provide a total transportation system with increased capacity and improved access for the central city area.
- Provide safe, direct access routes to the University that can accommodate daily visitors and have the surge capacity to handle event traffic.
- Avoid negative economic impact to the University's Academic Health Center hospital and clinics.
- Create a traffic plan that is understandable and usable by those unfamiliar with campus.
- Preserve emergency and service vehicle access to the University and surrounding businesses.
- Ensure a safe environment and efficient operation of LRT through the campus.
- Retain the vibrant and aesthetically inviting streetscape that respects and enhances the University's historic character and campus environment.

- Transform Washington Avenue on the West Bank into an arterial street that unifies and connects the neighborhood and campus.
- Ensure that the total transportation system unifies neighborhoods, promotes a sense of community, and fosters economic and University-related development.
- Provide safe, functional bypass routes for non-University-destined through traffic that do not negatively impact the surrounding neighborhoods.

The University continues to work with the CCPO to understand and define the requirements to make a transit/pedestrian mall on Washington Avenue with an at-grade LRT viable. One of the questions we asked was where will the traffic go once it's removed from Washington Avenue.

Traffic studies have taken us a long way in answering this question. Our professional traffic engineering staff has contributed greatly to these detailed discussions. We understand what roadway improvements and traffic controls (signals, turn lanes) need to be made to achieve our mitigation principles.

7.2 Traffic Studies

The Central Corridor Project Office contracted with Kimley-Horn and Associates, Inc., a national technical service provider in the transportation, environmental, land use and wireless communication markets to assist them in conducting traffic studies for the area. A number of traffic studies were completed, modeling the interaction between pedestrians, vehicles, and LRT on Washington Avenue. The first traffic study modeled all modes of transportation remaining on Washington Avenue. While the analysis predicted acceptable levels of service, it assumed different means of ingress and egress into campus and reduced the sidewalk width along Washington Avenue and eliminated any reasonable opportunity for landscaping. This further strengthened our belief that if the LRT were to run on Washington Avenue at-grade, vehicular traffic would need to be removed. The University and neighboring communities recognized that traffic would be dislocated by the placement of the LRT line on Washington Avenue, and these traffic studies supported our belief. We knew we had to plan for where the traffic would go and this is why we pressed for the development of a mitigation plan.

This was our first achievement in negotiating on the at-grade alignment. When, on February 27, 2008, the Central Corridor Management Committee recommended to the Metropolitan Council that the preferred route for the CCLRT through campus be an at-grade transit/pedestrian mall on Washington Avenue, it was due to our diligent work that the failings we had predicted for Washington Avenue were avoided. As it now stands, the proposed Washington Avenue at-grade alternative will eliminate automobile traffic on Washington Avenue from Pleasant Avenue to Walnut Street.

Subsequent traffic studies modeled an at-grade alignment on Washington Avenue with a transit/pedestrian mall. The first of these looked at the resulting traffic patterns in the broader University area with Washington Avenue closed to traffic; two additional studies looked at the effect on campus streets. It is largely from these traffic studies that we were then able to develop a set of mitigation principles that would guide us in drawing up a mitigation plan.

“East Bank Traffic Study #3” analyzed a subarea around the University of Minnesota to understand the impacts at major intersections if traffic were taken off of Washington Avenue on the East Bank. The subarea is generally bounded by I-94/Riverside Avenue on the south, I-35W on the west, 4th Street/University on the north and TH 280 on the east. Key intersections along 15th Avenue up to Como Avenue on the north were also included. Forty-eight intersections in all were analyzed.

Traffic studies for major capital improvement projects require an analysis of the traffic patterns twenty years into the future, thus a 2030 analysis was completed for this project. The methodology included:

- Forecasting background traffic growth based on historical traffic growth and traffic growth predicted by the Metropolitan Council’s regional travel demand model
- Applying the growth rates to each roadway link in the existing network
- Applying the growth rates to existing turning movement counts to reflect existing traffic patterns
- Balancing the turning movement volumes at various locations to account for differences in growth rates on adjacent links or to account for a link that was not in the regional travel demand model
- Running the regional travel demand model to determine where traffic would go if Washington Avenue were closed to traffic from Church Street to Oak Street
- Conducting level-of-service analysis for the 48 intersections and comparing them if Washington Avenue were open versus closed

The results of this study indicated that some intersections in the area would fail operationally (meaning that the average delay at the intersection is worse than one minute or, if it is a signalized intersection, that it would take more than one signal cycle for vehicles to pass through) if traffic were taken off Washington Avenue. Those intersections are noted in the mitigation plan. Other intersections would have additional traffic due to taking traffic off of Washington Avenue, but they are already predicted to fail operationally, thus the project is not taking any responsibility to remedy the situation at these intersections. These intersections are referred to as “betterments.”

“East Bank Traffic Study #4” and “East Bank Traffic Study #4.1” analyzed traffic circulation within the East Bank campus area and recommended proposed improvements based on rerouting traffic from Washington Avenue to using the north-south streets through campus. Traffic was rerouted based on the regional travel demand model run for “East Bank Traffic Study #3” and engineering judgment based on existing turning movements and expected shortest path.

The recommended improvements are noted in the mitigation plan. There are additional concerns, beyond traffic, for the impacts to the University. Safeguarding our mission-critical activities, historic and environmental resources, and the neighboring communities and businesses also present challenges with an at-grade alignment, as well as opportunities.

7.3 Cost Effectiveness Index and Ridership

Using the same formula to calculate the CEI that was used for the Northern Alignment, the Washington Avenue at-grade alignment currently has a CEI of \$24.39. The CEI value exceeds the maximum set by the federal government for a project to be viable—\$23.99. In order to arrive at an acceptable CEI for the Washington Avenue at-grade alignment, the CCPO identified \$17 million in savings. Capital costs are comparable between the two options but ridership calculation is 5,000 to 6,000 higher on Washington Avenue.

7.4 Opportunities for Washington Avenue At-Grade Alignment

While the Washington Avenue at-grade alternative is not our preferred option, we can envision the campus being enhanced with a well-designed transit/pedestrian mall.

- The removal of cars from Washington Avenue will enhance the pedestrian environment and dramatically change the East Bank campus
- The transit/pedestrian mall has the potential to create a vibrant public space that integrates the East Bank rather than dividing it
- The view from the train along Washington Avenue provides a greater connection to the campus for riders
- The at-grade alternative is supported by all other project partners

7.5 Risks for Washington Avenue At-Grade Alignment

As with the Northern Alignment, all the details of the identified risks will not be known until the project moves forward from preliminary engineering. Even so, we can anticipate that adjustments will need to be made once the train is operational and we have a better understanding of the resulting traffic patterns.

1. Washington Avenue Bridge Construction
 - The cost of reinforcing the Washington Avenue Bridge is under reassessment

- Traffic disruptions will be substantial; construction of the rail line could take two or more years
2. Traffic Rerouting and Slowing
 - Permanently eliminates one of the two main arteries that serve the campus and the neighboring communities
 - Increased traffic in the historic Knoll area, on Pleasant Street, the East River Road, other campus streets and in the neighboring community and business areas
 - Potential need for traffic controls and road improvements
 - Requires a redesign of the Huron Blvd., University Avenue, and 23th Ave SE intersection to optimize traffic and train movement
 - On the West Bank, west of Cedar Avenue, traffic would need to be slowed as it approaches the station
 3. Research Impacts
 - At-grade alignment interferes with highly sophisticated research equipment in several buildings located along and near Washington Avenue in Hasslemo Hall, EE/CSCI, Kolthoff Hall, Smith Hall, Weaver-Densford Hall, 717 Delaware, along with other locations
 4. Safety
 - Creates safety conflicts between train and pedestrians
 - Reduces ease of access to hospital and clinics for the thousands of visitors who are less familiar with the roadways in and around campus
 - Creates a conflict for pedestrians and bicyclists with automobile traffic where it enters and exits on Washington Avenue on West Bank and at the start of the transit mall
 5. Business Impacts
 - Required acquisition of several Stadium Village businesses
 - There are likely to be negative impacts to the remaining Stadium Village businesses
 - On the West Bank, development opportunities will be limited due to location of roadway exit ramps
 6. Construction Impacts
 - Impact to research
 - Impact to daily operations of campus

7.5.1 Mitigations

While the University recognizes the potential for an at-grade transit/pedestrian mall on Washington Avenue, we strongly believe that there must be an agreement on an effective mitigation plan that assures a commitment from our

project partners to achieve these mitigations. We have done extensive work on a mitigation plan and have achieved agreement on many elements of the plan and we are continuing to negotiate other components.

The mitigations fall into three broad categories: 1) those that are included in the base project budget, 2) those that are needed to mitigate traffic, research, and other environmental impacts, which will be funded through the project pending FTA approval (referred to as "Mitigation Measures"), and 3) those that are not needed to ensure the functionality of the LRT line but have been agreed upon to pursue outside of the project budget (referred to as "Betterments").

We have strongly advocated for mitigations that will protect our mission-critical research along and near Washington Avenue; mitigations that will maintain access to campus, particularly the Academic Health Center hospital and clinics; mitigations that reroute traffic around campus; mitigations that protect the neighboring communities and businesses; and mitigations that address issues that might arise at the time a full and comprehensive environmental review is done. These mitigations appear below.

7.5.1.1 Base Project Budget Components

- Traffic signal improvement on Washington Avenue and other intersections
- Modify intersections at Huron Blvd., 23rd Avenue SE, 25th Avenue SE, University Avenue
- Traffic signage

7.5.1.2 Mitigation Measures

- Washington Avenue transit/pedestrian mall
- Intersections
 - Cedar Avenue South and Riverside Avenue
 - Riverside Avenue and 19th Avenue South
 - Riverside Avenue and 20th Avenue South
 - Franklin Avenue and Cromwell
 - Washington Avenue (east bound ramp) and East River Road
- East River Road improvements to accommodate traffic
- East Bank campus area street connections
 - Arlington Street and Pleasant Avenue
 - East River Road and Arlington Street
 - Pleasant Avenue and Delaware Street
 - 4th Street SE and 17th Avenue SE
 - Beacon Street extension
 - Harvard Street extension
 - Delaware Street and Harvard Street

- Union Street
- Environmental Issues
 - Mitigate electromagnetic force and vibration impacts to nuclear magnetic resonance machines
 - Mitigate noise and vibration impacts to other sensitive equipment
 - Coffman Memorial Union and Northrop Mall impacts
 - Knoll District impacts

7.5.1.3 Betterments

- Build Granary Road between I35W at 2nd Street and TH 280)
- Intersections
 - East Franklin and East River Road
 - 10th Avenue SE and 4th Street SE
 - 10th Avenue SE and University Avenue
 - Cedar Avenue and Washington Avenue/15th Avenue S
 - Washington Avenue and I35W northbound ramp
 - Washington Avenue and I35W southbound ramp
- East River Road extension to Main Street SE or 2nd Street SE

We are continuing to work through issues that need to be more fully identified for the mitigation plan. These include further analysis of traffic, vibration and electromagnetic interference testing, and historic and environmental reviews. We are also continuing to negotiate with our partners on the mitigations. We have prepared a draft agreement with the Metropolitan Council, the City of Minneapolis, and Hennepin County for the Washington Avenue at-grade alignment that addresses the mitigations listed above, as well as how these pending issues will be addressed.

7.5.2 Commitment to Addressing the Mitigation Issues

The draft agreement between the University of Minnesota, the Metropolitan Council, the City of Minneapolis, and the Hennepin County Regional Railroad Authority addresses four issues:

1. Defines what roadway improvements and traffic controls are needed
2. Commits the parties to address the impacts to sensitive research and laboratory equipment
3. Identifies impacts that are not likely eligible for FTA funding but that the partners believe need to be put in place
4. Commits to a second agreement to address design, construction, ownership, right-of-way, operational issues, and maintenance, be completed no later than Jan 31, 2009

The draft agreement will memorialize the mitigations and obtain a commitment from the project partners to the mitigation plans and future mitigations. It recognizes that traffic mitigation and other environmental impacts in and around campus due to the CCLRT are essential to the integrity of campus activities and neighboring communities. It commits up to \$34 million to address the first two categories of mitigations as outlined above and, should the project costs rise, these mitigation elements will have standard access to project contingency funds. Finally, the draft agreement commits the partners to develop a funding plan and strongly support and advocate for funding for the third category, betterments, recognized as not falling within the project budget. It is the intent of the parties to seek required approvals and execute the agreement. The Office of the General Council has reviewed the document.

8. Conclusion and Next Steps

The University has completed the thorough analysis of three options for the alignment of the CCLRT: 1) a tunnel under Washington Avenue, 2) the Northern Alignment, and 3) an at-grade alignment on Washington Avenue with a transit/pedestrian mall. Because the Central Corridor is in preliminary engineering, it is limited by only having 15 percent of the engineering completed. Given this stage of project development, the University acknowledges that the Northern Alignment and the tunnel are less competitive under current FTA CEI, and ridership models.

The University's LRT team has worked with the CCPO and other jurisdictions to develop a mitigation plan. We have received a commitment in the draft agreement on basic elements of the plan and their funding and a commitment to seek funding for the betterments and to develop a second agreement to address design, construction, ownership, right-of-way, operational issues, and maintenance.

As we move forward in the next few months, we will begin work on the second agreement and convene a work team best suited to address the issues in that agreement, including issues related to the transit mall design and bus operations. We will work toward having agreement on many of the remaining issues by the time the SDEIS is submitted to the FTA in September 2008.

At this month's Board meeting, University staff will make a presentation to the Board of Regents to review the studies of the Central Corridor options and answer your questions. President Bruininks will comment on the next steps and make his recommendation.

Appendix A

Central Corridor Light Rail Transit
University of Minnesota Project Team

University Services

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Leslie Krueger, Chief of Staff
Tim Busse, Director

Parking and Transportation Services

Bob Baker, Director and CCLRT Team Director
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Office of the General Counsel

Mark Rotenberg, General Counsel
Kenneth Larson, Associate General Counsel

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Susan Weinberg, Real Estate Office Director
Brian Swanson, Budget Officer