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East Stadium Boulevard Bridges Replacement and Improvement Project

TIGER II Discretionary Grant Application

August 23, 2010

TIGER II Discretionary Grant Application - August 23, 2010

East Stadium Boulevard Bridges Replacement and Improvement Project

Project Type: Replacement of two bridges on a major City of Ann Arbor arterial roadway
Location: State of Michigan
Washtenaw County
City of Ann Arbor
15th Congressional District
Urbanized Area: Ann Arbor
Funds requested: \$13,900,000 of TIGER II funds requested
Total Project Cost: \$23,000,000
Federal Funding ratio of 60.4%

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Executive Summary

In the City of Ann Arbor, Michigan, two bridges desperately need reconstruction to maintain a key east-west regional corridor near the University of Michigan, major public facilities, and in-town business centers. These bridges, located on East Stadium Boulevard, carry over 28,000 vehicles per day and span Ann Arbor's rail trunk line and a major north-south corridor, S. State Street.

The inability to replace the bridge over S. State Street will create:

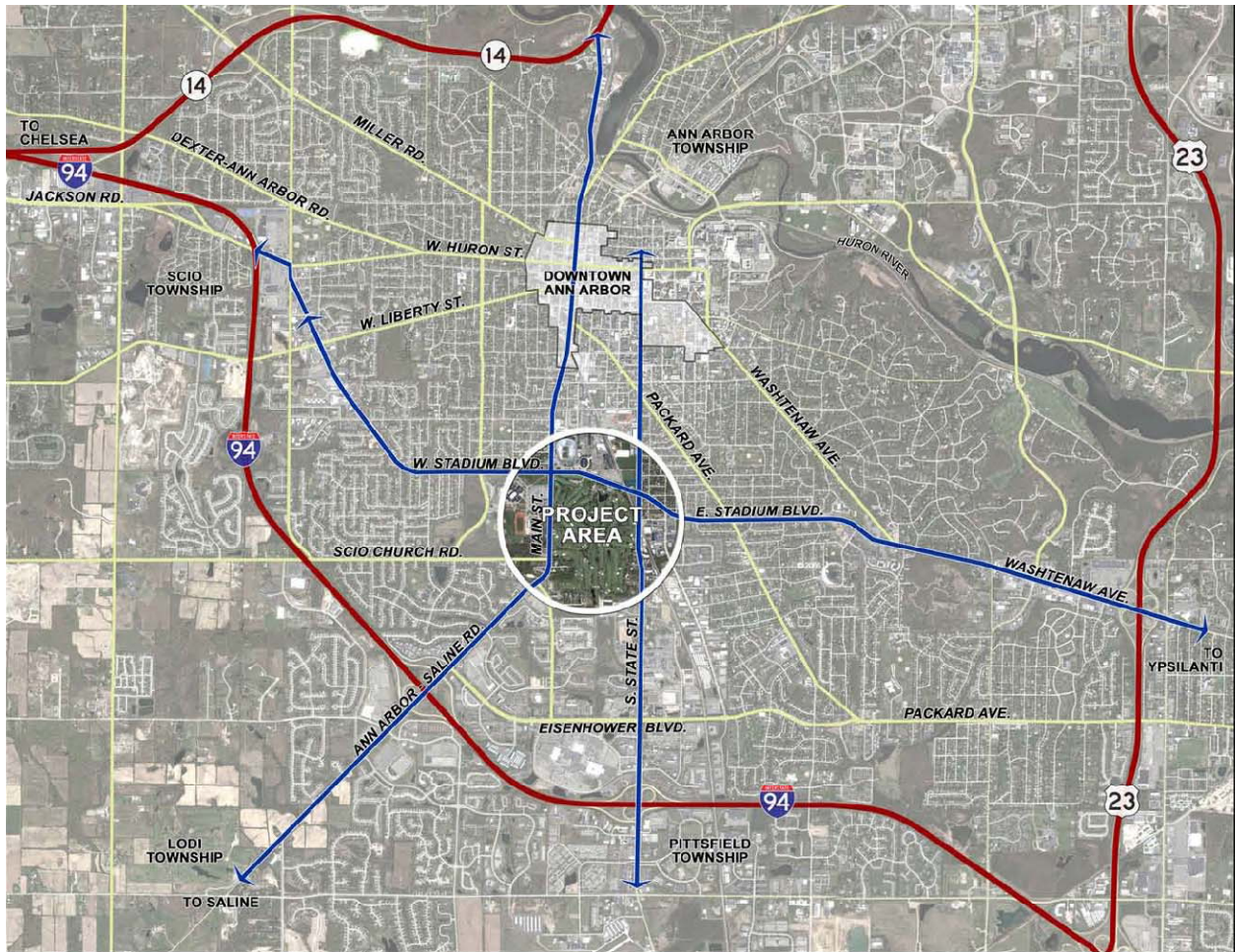
- Significant increases in daily congestion resulting in:
 - Increased travel times of 941,000 person-hours total or \$13,409,000 annually
 - Increased VMT of 14,334,000 (both personal and commercial miles) and 507,900 tons in CO₂ emissions annually
 - Decreased safety: 34 additional crashes each year totaling an estimated \$597,000 in loss of life, injury, and property damage
 - Severe delay of truck/commercial traffic resulting in a \$11,873,000 annual loss
 - Gridlock during the economically significant events within the region: University of Michigan football games, commencements, and national conferences
 - Compromise in activity by significant Anchor Institution
- Loss of east-west regional connectivity in the City of Ann Arbor and Washtenaw County
 - Loss of connection between residential neighborhoods, campus facilities, in-town grocers, and major job centers
 - Severe increases in traffic loads on the two remaining east-west corridors and nearby residential streets

In less than one year, the \$23 million total cost of the project would be repaid with the savings from delay, VMT, and crash costs alone. The inability to replace the existing bridges would be devastating to the City of Ann Arbor.

However, reconstructing the bridges provides further opportunities to:

- Minimize life-cycle costs
- Complete multimodal networks near the University, public facilities, and job centers including:
 - Addition of on-street bike lane networks near the city's largest public high school, the University of Michigan Football Stadium, and urban shopping/residential areas
 - Add new and widened sidewalks to accommodate disabled users and complete non-motorized access to the high school, football stadium, campus and residential areas
 - Provide fully ADA-compliant facilities between S. State Street, E. Stadium Boulevard, and the U of M Athletic facilities
 - Eliminate recent, severe weight restrictions on the E. Stadium Bridges
 - Create safe and proper clearances for freight trains and truck traffic
 - Preserve existing short-line, rail-freight system
- Upgrade city systems to be more efficient and environmentally sustainable:
 - Upgrade existing raw water transmission main that provides about 10% of the City of Ann Arbor's drinking water supply
 - Expansion and improvement of existing storm water system through the addition of in-line filtration devices
 - Replacement of incandescent street lights with energy-efficient LED light fixtures
- Improving aesthetics and neighborhood facilities:
 - Better access and improvements at the neighborhood park
 - Streetscaping that increases the quality of life for non-motorized users, local residents and out-of-town visitors
 - Improved way-finding devices aiding mobility to downtown, transportation facilities, and parking

New bridge facilities will provide a key link in Ann Arbor's growing multi-modal network, maintain access throughout Washtenaw County to major job centers and avoid about 3,760 person-hours per day of new congestion, and sustain the University of Michigan, a major Anchor Institution.



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I. Project Description

Project Location:

Ann Arbor, Michigan is the county seat of Washtenaw County. It is the Michigan’s seventh largest city with a population of 114,024 (Census 2000). Slightly over 30% of the population comprises university or college students.

The East Stadium Boulevard bridges experience some of Ann Arbor’s heaviest non-expressway traffic with about 28,000 vehicles crossing each day; an additional 20,000 vehicles cross under E. Stadium as well. E. Stadium Boulevard (Stadium Boulevard) is a vital artery bringing people from Ann Arbor’s (and nearby townships) west side residential areas and regional shopping center through to the area’s largest high school with over 2,300 students, University of Michigan facilities, and the nation’s largest football stadium with a regularly-filled capacity of 109,901 seats. Continuing east, Stadium Boulevard connects student residential areas, two urban grocery stores, dozens of local retail establishments, restaurants, medical offices, social services, and the largest church in the city before merging with another arterial connecting downtown Ann Arbor and Ypsilanti. Stadium Boulevard is an essential east-west corridor in the city of Ann Arbor—these bridges lie at the boulevard’s heart. The closest anchor institutions, Michigan Stadium and Pioneer High School will experience untold hardship with the closure of the bridges and will be unable to function efficiently.

Project Overview:

Two bridges on East Stadium Boulevard in the city of Ann Arbor are in desperate need of replacement. Most importantly, the bridge crossing S. State Street has deteriorated to the point that city engineers have removed several beams and reduced weight limits on the bridge. Before the removal of the beams, the Federal Sufficiency of the bridge measured 2.0. Removal of the beams reduced the four-lane bridge to two lanes with strict weight limits and a Federal Sufficiency rating of 20.2. City Engineers expect that the bridge over S. State Street will continue to deteriorate despite decreasing weight limits. It is expected that the bridge will provide about five years of safe travel. The neighboring East Stadium bridge which spans the Ann Arbor Railroad tracks is in better repair, but is structurally deficient, and has a sufficiency rating of 61.5. However, given the proximity of the two bridges it is not feasible to replace one bridge without the other. Please reference Figure 1.

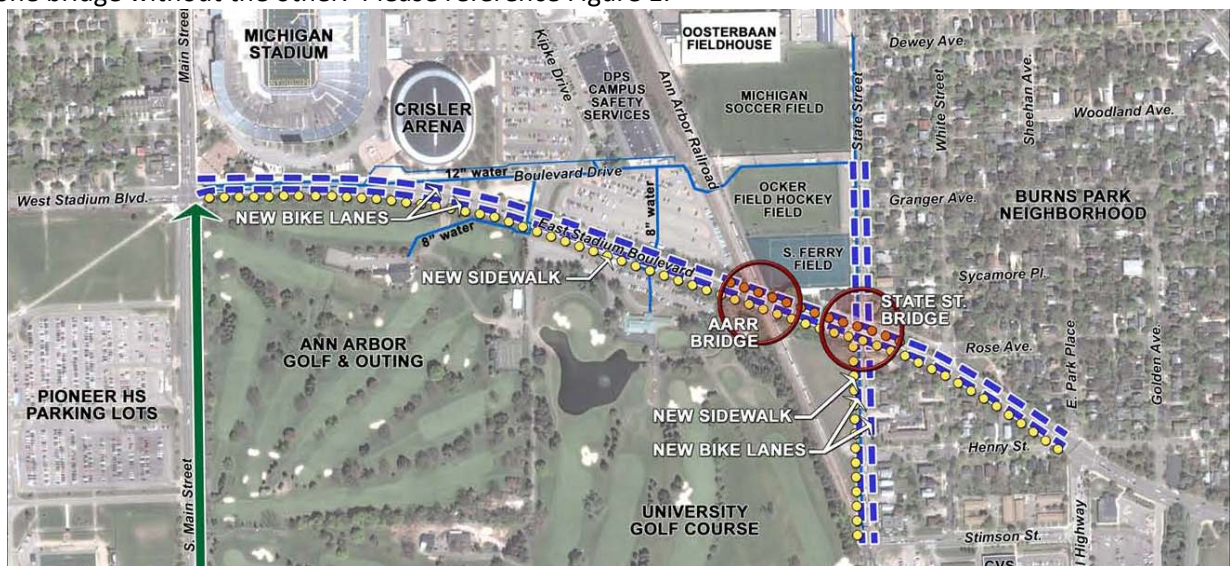


Figure 1: Proposed Improvements on Stadium Boulevard

Importance of Stadium Boulevard:

Stadium Boulevard carries vehicular and pedestrian traffic in an east-west direction providing one of the few arterial links between the east and west sides of Ann Arbor. Stadium Boulevard is one of the most traveled corridors in Ann Arbor and Washtenaw County, Michigan, and along with S. State Street, is designated as a major arterial in the Roadway National Functional Classification. Stadium Boulevard provides connectivity with US-23 to the east and functions as a major east-west economic and transportation corridor in Ann Arbor. One of the bridges goes over S. State Street, a key economic and transportation corridor in the community, providing connectivity with I-94 to the south of the bridge and with downtown to the north of the bridge. Both corridors are vital elements in the City’s transportation network as they provide access to the downtown business district and the University of Michigan campus, and function as essential roadways for daily commuters and special event traffic. Finally, the project will also facilitate the operations of the Ann Arbor Railroad, a privately held, short-line, freight-rail company.

Using the Washtenaw Area Study Committee’s County-wide model, a Select Link Analysis was performed to help determine the origins and destinations of traffic using the Stadium Bridges. Figure 2 represents these origins and destinations. Note, each line represents 10 trips. As you can see, this link is vital in both the City’s and Washtenaw County’s transportation system!

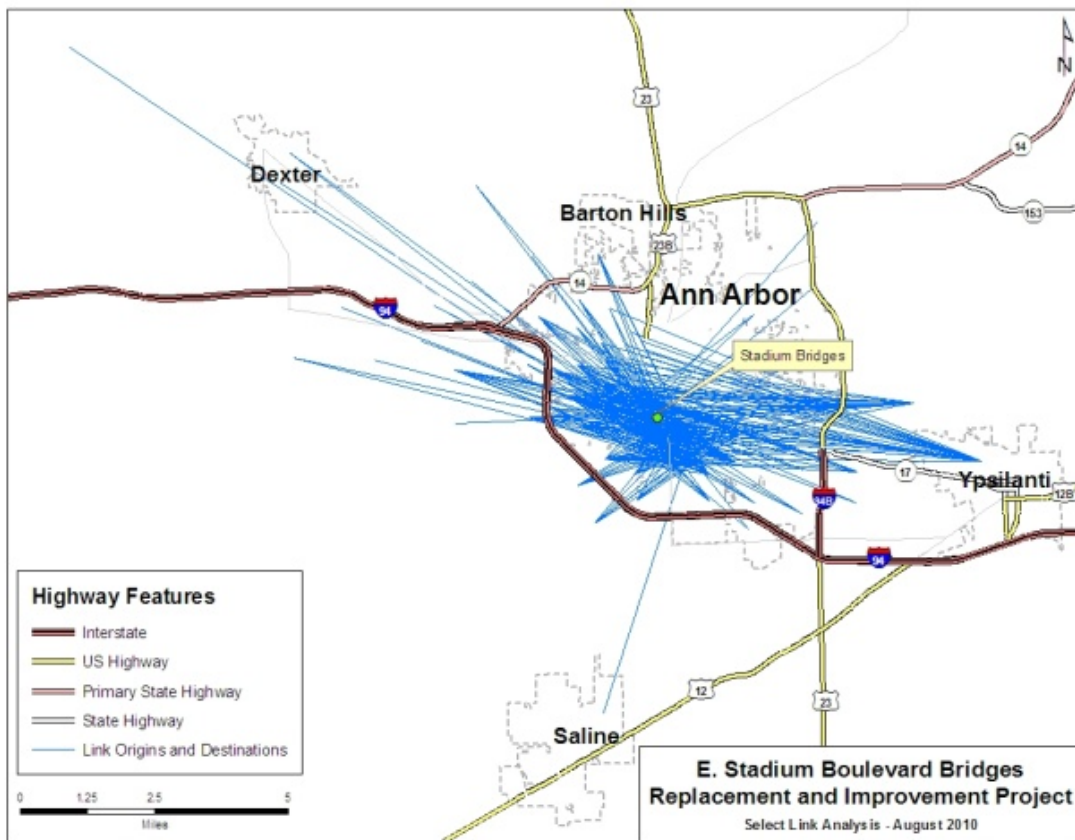


Figure 2: Select Link Analysis and area contributing to the Stadium Boulevard Corridor

Stadium Boulevard is located just south of, as well as adjacent to, the University of Michigan’s South Campus, an Anchor Institution, which houses the athletic facilities for the University, including the 109,901-seat football stadium, the 15,000-seat Crisler Arena, Yost Ice Arena, Field Hockey fields, Soccer

fields, and more. The University of Michigan’s Facility Operations Department is located immediately north of Stadium Boulevard, and this department is responsible for the operation and maintenance of all University of Michigan facilities. In addition, there are 1,700 University of Michigan permit parking spaces in the area between West Hoover Avenue, Main Street, Stadium Boulevard, and the Ann Arbor Railroad. The bridge project is necessary in order to sustain access to the football stadium, Crisler Arena, and the other sports facilities for the foreseeable future. The University’s facilities, especially those located directly adjacent to the project, are of the utmost importance to the City of Ann Arbor and the State of Michigan. Access to these areas must be maintained.

Stadium Boulevard is a designated truck route from US-23 in the east through Ann Arbor to North Maple Road and I-94 in the west. S. State Street is a truck route from I-94 in the south to E. Stadium. See Figure 3 for the City of Ann Arbor truck routes. Stadium Boulevard functions as the major east-west truck route through the city and connects to the north-south truck routes in the community.

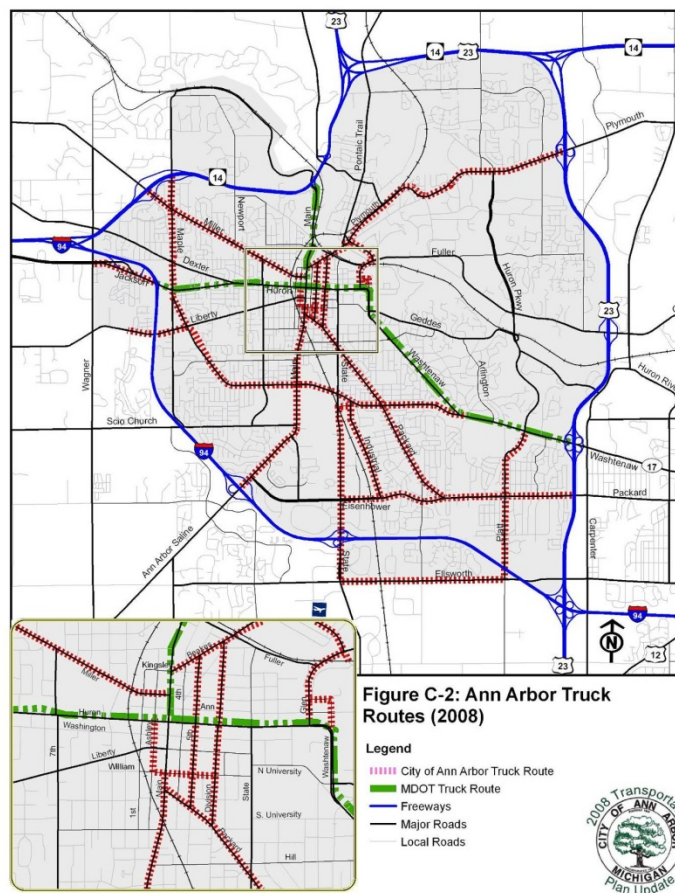


Figure 3 City of Ann Arbor Truck Routes

There are two bus systems in the City of Ann Arbor; the University of Michigan and the Ann Arbor Transportation Authority (AATA). The AATA buses utilize both Stadium Boulevard and S. State Street, operating at 15 minute intervals in the peak hours from a Park and Ride Lot on S. State Street south of the Stadium Bridges that carry approximately 2,000 passengers on an average day. Thousands of daily bus riders will be affected with compromised accessibility to downtown and other areas if the bridges are not replaced.

A High School and several Middle Schools are located on, or near, Stadium Boulevard. Providing bus service and safe routes to school are important to the affected neighborhoods. From an emergency services standpoint there are three police department offices and two fire stations located within two miles of the Stadium Boulevard Bridges. The emergency services of police, fire, and ambulance utilize the bridges for a safe and efficient travel way that must be maintained. Emergency service requirements and student safety are justifiable reasons, in and of themselves, to support the need to replace these two bridges.

Stadium Boulevard's proximity to northbound and southbound arterial roadways and to the downtown business district makes the roadway essential to thousands of commuters. With the inevitable closure of the bridges, Stadium will lose a significant functionality as an east-west connector, forcing thousands of travelers onto other routes through downtown Ann Arbor, surrounding neighborhood streets, or onto the most congested sections of the expressways. None of the areas has the extra capacity to take on the extra burden of 28,000 cars—congestion is certain to increase, resulting in an estimated 34 additional accidents each year that traffic is detoured. The planned detour route must circumnavigate large tracts of land dedicated to university golf and athletic facilities, forcing cars on a 3.71 mile long detour through already congested and over-capacity intersections. While reducing vehicle travel is not in itself a bad thing, the increased travel times and gridlocked streets will make the city of Ann Arbor a far less attractive place to live, work, shop, or invest. The hundreds of local, in-town businesses will suffer greatly from decreased connectivity of Stadium Boulevard and subsequent rise in congestion.

The City of Ann Arbor, the University of Michigan, and Washtenaw County need this key corridor to return to normal functionality as soon as possible. The inevitable closure of the bridge will create an estimated \$253 million dollars of additional costs over the next 15 years (length of analysis period of cost benefit analysis.) Under normal economic conditions, the Michigan Department of Transportation would participate in the funding of this project. MDOT approved \$766,000 for the project in 2006, but in 2007 withdrew funding when the City could not obligate the other funds needed to complete the bridges replacement. Since that date, MDOT has not been able to furnish the capital funds to restore the East Stadium bridges. The City of Ann Arbor is in a hard position. Without state or federal funds, the city most probably will have to significantly reduce all other road, bicycle, and pedestrian projects for about eight years in order to save enough funds to pay for the project itself. Federal stimulus money has helped restore some of Ann Arbor's degraded roads, but a significant reduction in its planned number of projects will put the city impossibly behind on maintaining a state of good repair of its road network.

The East Stadium Bridge project proposes reconstruction of both of the four-lane Stadium Boulevard bridges including retaining walls, all related roadway approach work, including on-street bike lanes and sidewalks. Bridge reconstruction allows the city to construct the structures to accommodate mandated modern clearances, both vertical and horizontal. In addition, the city will upgrade a existing raw water transmission main that provides about 10% of the City of Ann Arbor's drinking water supply, expand and improve the existing storm water system through addition of in-line filtration devices, replace incandescent street lights with energy-efficient LED light fixtures, improve access to a neighborhood park, and enhance the streetscape. This project will ensure a state of good repair for the bridges and avoid innumerable costs on the road network. Well-functioning bridges ensure that the City of Ann Arbor maintains efficient systems and quality of life for the residents, employees, and students that rely on the bridges every day.

II. Project Parties

City of Ann Arbor, Project Lead, Primary Funding partner

The City of Ann Arbor is committed to providing excellent municipal services that enhance the quality of life for residents and visitors. The Project Management Services Unit within the City of Ann Arbor will oversee the E. Stadium Boulevard Bridges Replacement and Improvement Project. This unit is responsible for designing and constructing utility, roadway, bridges, non-motorized transportation, and sidewalk projects; coordinating and inspecting the utility and public roadway work of private developers; and optimizing traffic flow through the City.

Other partners:

University of Michigan, Strategic Partner, Technical/Planning Assistance, Land Donation
Washtenaw Area Transportation Study (WATS), Strategic Partner, Technical Assistance
Washtenaw County, Strategic Partner, Government Assistance
Michigan Department of Transportation, Strategic Partner, Government Assistance

Additional elected officials and entities supporting the project include:

United States Senators Debbie Stabenow and Carl Levin
United States Congressman John D. Dingell
University of Michigan, Vice President of Government Relations, Cynthia H. Wilbanks
Washtenaw County Road Commission (WCRC)
Southeast Michigan Councils of Government (SEMCOG)
Ann Arbor Railroad
Ann Arbor Transportation Authority (AATA)
Ann Arbor Area Chamber of Commerce

Plans that list and endorse the East Stadium Boulevard Bridges Project:

City of Ann Arbor Transportation Plan

The City of Ann Arbor recently completed an update to its Transportation Plan in April 2009. This plan establishes transportation policies and sets goals for future transportation improvements within the City of Ann Arbor.

http://www.a2gov.org/government/publicservices/systems_planning/Transportation/Documents/2009_A2_Transportation_Plan_Update_Report.pdf

City of Ann Arbor FY2008-2013 Capital Improvement Plan

The E. Stadium Bridges project is listed as a top transportation priority in the City of Ann Arbor's CIP.

www.a2gov.org/government/publicservices/systems_planning/capitalimprovements/documents/CIP_2008-2013.pdf

Washtenaw County 2035 Transportation Plan

The 2035 Transportation Plan can be accessed on the home page, through the following link:

<http://www.miwats.org/>

Regional Transportation Plan for Southeast Michigan

<http://www.semco.org/Long-RangeTransportationPlan.aspx>

Letters of Support:

http://www.a2gov.org/government/publicservices/project_management/Documents/LettersOfSupport-100820.PDF

Project Updates:

www.a2gov.org/government/publicservices/project_management/pages/EastStadiumBridges.aspx.

III. Grant Funds and Sources/Uses of Project Funds

Grant Funding Requested:

The City of Ann Arbor, the University of Michigan, and the State of Michigan need this key corridor to regain normal functionality as soon as possible. The inevitable closure of the bridge will create an estimated \$252 million of additional costs over the next 15 years (length of cost benefit analysis period.) See Section VIII for the Cost-Benefit Analysis summary.

The cost of the rebuilding the bridges, \$23 million dollars, breaks down as follows:

Table 1: Stadium Bridges Project Cost

Type of Cost	Cost
Design Engineering, ROW, Easements	\$ 2,626,000
Construction	\$16,296,000
Construction Engineering	\$ 4,078,000
Total Cost:	\$23,000,000

The City of Ann Arbor anticipates that if USDOT/HUD/EPA awards TIGER II funds, MDOT will contribute \$4.5 million in local bridge and transportation enhancement funds. In the case that MDOT will not fund the E. Stadium Bridges, **the City of Ann Arbor commits to providing the funds that would have come from MDOT sources.** TIGER II funding is essential to keep the City of Ann Arbor’s transportation budget solvent— bridge reconstruction will sap these funds for approximately 8 years, creating many more problems on other deteriorating roads.

This federal grant will help close this gap in state and local funding. Funding and other resources from the City of Ann Arbor and the University of Michigan are already committed to the project. Assuming the City of Ann Arbor succeeds in this project application and obtains TIGER II funding, the breakdown of funding is as follows:

Table 2 Anticipated Project Funding Strategy

Agency	Funding Committed	% Share
City of Ann Arbor	\$ 4,600,000	20%
University of Michigan	In Kind Land Donation	-
MDOT – Local Bridge Program*	\$ 3,000,000	13%
MDOT – Transportation Enhancement*	\$ 1,500,000	6.5%
Total State/Local Funding:	\$ 9,100,000	39.6%
Total TIGER II Funding Requested:	\$ 13,900,000	60.4%

* These funding sources are not yet fully committed. If they are not available, **the City of Ann Arbor has committed to provide these resources.**

Not including local land donation, the total cost of the project will be covered 39.6% by local and state funds. The City of Ann Arbor is fully invested in rebuilding the E. Stadium Bridges, but needs the support of federal funds to ensure that the transportation network, public facilities and schools, job centers, and residential neighborhoods survive these challenging economic times.

IV. Selection Criteria

Primary Selection Criteria

The Primary Selection Criteria are intended to capture the primary objective of the TIGER II provisions of the FY 2010 Appropriations Act, which is to invest in infrastructure projects that will have a significant impact on the Nation, a metropolitan area, or a region. The E. Stadium Boulevard Bridges Replacement and Improvement Project will precisely accomplish this objective as described below.

A. Long-term outcomes

i. State of Good Repair

State of Deterioration:

The Stadium Boulevard Bridge over S. State Street is functionally obsolete and structurally deficient. Its load carrying capacity has been reduced several times over recent years and twice in the last two years. The bridge has inadequate vertical clearances and has been struck by trucks many times. The abutments that support the bridge structure are too close to the roadway and present a hazard to the travelling public.

The Stadium Boulevard Bridge over the Ann Arbor Railroad tracks is also functionally obsolete and structurally deficient. The bridge's abutments are located too close to the railroad tracks and do not meet current American Association of Railroad Engineers Association Standards. The bridge's superstructure does not provide adequate vertical clearance for railroad traffic.

Due to the current configuration of Stadium Boulevard, with bridges over both S. State Street and the Ann Arbor Railroad, no intersections within the project area are critical crash locations. If these bridges were not rebuilt, however, non-motorized and motorized vehicle safety would be in jeopardy. Although the Federal Railroad Administration Office of Safety Analysis states that the number of total accidents/incidents at grade-level crossings has been declining, separation of rail and vehicular traffic is ideal in this location. The Ann Arbor Railroad has stated that they will object to, and appeal with MDOT, the creation of an at-grade crossing in this location.

Thus, from an operational, safety, community, societal, and cost impact, rebuilding the bridge is necessary to protect the community and is the necessary course of action. The proposed reconstruction of the East Stadium Boulevard bridges will restore the bridges to their full function, relieve the transportation network of unnecessary delay, provide multi-modal transportation opportunities and fully ADA-compliant facilities, and ensure a State of Good repair for the long-term. Reconstruction will restore the ability for people and commerce to once again fully utilize the Stadium Boulevard Corridor by eliminating the weight restrictions upon the bridges, providing proper horizontal and vertical clearances, and eliminating unnecessary user costs associated with delays caused by detours.

Improvements:

The current project design includes several improvements that will update the bridges to comply with policies of the USDOT and the City of Ann Arbor, create opportunity for non-motorized use of the corridor, improve user safety, increase energy efficiency, protect private, short-line, rail operations, and promote sustainable development. Further, the currently proposed, and almost completed design, minimizes life-cycle costs by utilizing pre-stressed concrete box beams that do not require painting and virtually no maintenance, concrete pavement, concrete sidewalks, LED streetlights, and other low maintenance elements.

The design of the new bridges allows the city to complete the final segment of the non-motorized network along Stadium Boulevard by adding bicycle lanes and adding new and widened sidewalks. The existing bridges are too narrow to accommodate needed on-street bike lanes, sidewalks, and existing traffic volumes; reconstruction will widen the corridor and provide access to/from the high school, stadium, residential areas, and neighborhood retail. The project will also provide for the installation of a much-needed, wider sidewalk (proposed 11 feet) along the north side of the roadway and the installation of a new 8-foot wide sidewalk along the south side of E. Stadium Boulevard. These sidewalks will allow the City of Ann Arbor to accommodate larger event-related crowds, meet the needs of the active community, and continue to work towards goals in the city's Non-motorized Transportation Plan. Accessibility and safety will be greatly enhanced by the inclusion of pedestrian connections (staircases) between E. Stadium Boulevard and S. State Street, design that meets all current and relevant AASHTO Standards, and the installation of fully-compliant ADA accessible facilities.

The project will minimize operation and maintenance costs through the inclusion of such items as:

- Concrete pavement that ensures the lowest life-cycle cost
- Innovative technology on staircases that will warm the concrete and eliminate the need for snow removal on them during winter months
- Pre-stressed concrete beams that do not require painting or other routine maintenance
- Recessed pavement markings that will not be removed by snow plowing equipment
- Energy-efficient LED Streetlights
- Inclusion of low-maintenance landscaping materials

Another important improvement associated with this project is the inclusion of storm water quality improvement devices known as "swirl concentrators" or "hydro-dynamic separators." These devices will provide cleaner storm water discharges to the surrounding waterways. This in turn will have environmental benefits such as reduced pollution and cleaner surface water. The project also includes replacement of existing incandescent street lights with energy efficient LED street lights. We currently expect that about 6,600 kilowatt-hours of electricity will be saved annually. This will result in the savings of \$1,800 and the reduction 3.1 tons of CO₂ equivalent of greenhouse gas emissions each year.

ii. Economic Competitiveness

Michigan has been economically depressed for years and has the highest unemployment rate in the nation. Ann Arbor's economic vitality is essential to the state: Ann Arbor houses one of the most prestigious public universities, the University of Michigan, in the country and this corridor is important to the vitality of the University, city, neighboring communities, and region.

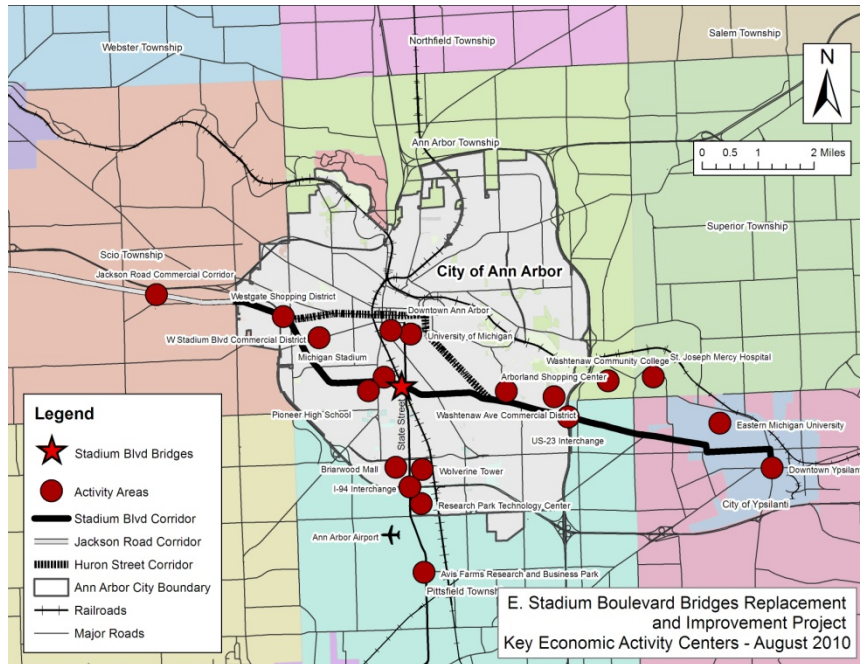


Figure 4: Key Economic Activity Centers along E. Stadium Boulevard and in the Region

Economic costs of bridge closure:

Stadium Boulevard is essential to Ann Arbor, the University of Michigan, and Washtenaw County’s transportation network. Allowing the East Stadium bridges to deteriorate and fail will eliminate a major artery that links Ann Arbor’s (and nearby townships) west side residential areas and regional shopping center through to the area’s largest high school with over 2,300 students, University of Michigan facilities, and the nation’s largest football stadium with a regularly-filled capacity of 109,901 seats, student residential areas, two urban grocery stores, dozens of local retail establishments, restaurants, medical offices, social services, and the largest church in the city. It merges with another arterial that further connects it to the city of Ypsilanti—a community that has many of its residents working within Ann Arbor. Engineering analysis performed for this project reveals that there will be about 1,028,000 hours of additional vehicle-hours travelled, 14,334,100 additional vehicle-miles travelled, costing about \$32.6 million per year in delay and vehicle operation costs. We have also estimated that there will be about \$597,000 in accidents, and about 507,900 additional tons of carbon emitted each year. Ann Arbor Public Schools estimate that that over 40 of their school bus routes will be affected, resulting in delays for hundreds of school children and employees each day (estimated annual cost of delays to Ann Arbor Public Schools is expected to be about \$ 117,000). A majority of high school students who live in the South and East sides of the city rely on the Stadium Bridges to get to school every day.

The University of Michigan is highly dependent on the Stadium Bridge area, the majority of athletic facilities (football, basketball, public golf course) and operations facilities are located directly adjacent to the bridges. While there will be several detours of university buses, students, staff, faculty, and facilities operators, the additional costs of congestion created by traffic moving onto near-university streets will be very costly to the University and affect the efficiency of local logistics. More clearly, during large events, visitors to the area will have to deal with significant delays. Football at Michigan Stadium brings in millions of dollars into Washtenaw County every year. Football traffic is already close to unmanageable—the bridge closure will force additional cars onto the expressways, other arterials, and local streets, making it much harder for local residents to manage their travel and make it more and

more inconvenient for football attendees to get to/from the stadium, hotels, and local restaurants. An estimated 132,000 out-of-state fans visit the stadium each year. Anderson Economic Group estimated that these out of town visitors spend well over \$250 on lodging, food, tickets, and incidentals when visiting for a football game that would not have been spent otherwise. That equates to roughly \$33 million annually. Even a small decrease in visitor spending will have a huge impact on local retail that depends on football games to make it through the fiscal year.

In addition, the loss of connectivity between Ann Arbor's east and west sides will have incalculable negative impacts on the economy near the bridges and near sites of excessive congestion.

Historically, temporary bridge closures in the City of Ann Arbor result in a decline of 25% of local business revenues (Broadway Bridge interviews). Sustained over a number of years, the Stadium Bridge closures will likely result in the closure of local retail, groceries, and services along the corridor. As with many cities around the country, Ann Arbor has struggled to maintain vibrant local retail in the face of suburbanization. One of the few remaining urban neighborhood retail centers, including a grocery and several small businesses, lies just to the east of the Stadium bridges. Though essential to many students, lower-income residents, and employees who work in the area, without through traffic over the bridges, this local retail will be forced to move to more accessible areas outside of the city. This would be a significant loss to city tax revenues, the transit-dependent, and the health of the urban center.

This project is essential for the continued economic health of the region, if the bridges were to close, the delay, safety, and congestion costs would total about \$32.6 million per year. The initial cost of the project, \$23 million, would be easily repaid in less than one year. See Section VIII, Cost-Benefit Analysis for additional information.

iii. Livability

The reconstruction of the E. Stadium Bridges enables the City of Ann Arbor to build in features that encourage active mobility and increased accessibility to non-motorized facilities. The Stadium Bridges provide an integrated network that contributes to a safer operational environment by separating pedestrians, bicyclists, motorized vehicles, and buses from rail below. By providing safer non-motorized and transit flow, the project improves services for disadvantaged populations, non-drivers, and senior citizens. When the city has installed similar projects, cycling has grown by 67%, with high numbers of university students, high school students, and commuters taking advantage of new transportation options. A recent cycling census shows that at a nearby intersection over 3,400 pedestrians and 561 cyclists pass near this area. Opening Stadium bridges to traffic east and west of campus will further connect these neighborhoods. The subject project will foster a livable community through place-based policies and investments that increase transportation choices and access to transportation services for the citizens of Ann Arbor and Washtenaw County.

Locally, the redesigned bridges will be much nicer neighbors: residents of the Stadium/State neighborhoods will benefit from the enlargement and enhancement of Rose-White Park, more walking/cycling networks, and aesthetic enhancements of the transportation facilities. Local businesses will be better connected to all transportation modes and benefit from increased non-motorized traffic.

If the bridges must be closed, there will be significant impact on the neighborhoods as commuters will use the residential neighborhoods as alternative routes. The direct route provided by the bridges is a significant livability benefit to the community. It improves safety and operational efficiency for

emergency and bus services as well as regional transit. Most importantly, reconstruction of the deteriorating bridges avoids years of added congestion delays, vehicle-miles traveled, and lower ambient air quality, improving the quality of life of residents, the University of Michigan employees and staff, truck drivers, commuters, emergency services, and students (K-12 and university).

iv. Environmental Sustainability

The City of Ann Arbor is diligently working to reduce CO₂ and green house gas emissions in all of the citywide planning and implementation projects. Replacing the bridges coincides with the City plans and activities to achieve their goal of reducing CO₂ levels to 2005 levels by 2030. With the E. Stadium Boulevard Bridge over S. State Street bridge reduced to one lane in each direction, the peak hours of the day currently experience reduced speeds, which causes congestion and queuing between the signalized intersections, thus causing the segment level of service to fall. When the bridges close due to deterioration, there will five peak hours of traffic each day as about 44.7% of the traffic will be travelling during these times, and vehicle-hours travelled will increase by 1,028,000 annually. In addition, decreased average speeds will cause a rise in greenhouse gas emissions. These values have been estimated on an annual basis at 830,000 additional pounds of volatile organic compounds (VOC), 6,082,000 additional pounds of carbon monoxide (CO), 8,932,000 additional pounds of nitrogen oxides (NOx), and 470,000 additional pounds of particulate matter (PM₁₀) using 2005 estimates of fuel efficiency in congestion. While rising CAFÉ standards will likely reduce the amount of greenhouse gas emissions, the unnecessary congestion, time, and fuel wasted add up to a significant reduction in efficient use of existing resources. Find a summary of the effects of bridge closure in the tables below:

Table 3: Annual Benefit (Reductions): Elimination of Driving Detour Routes

	Personal	Commercial/Truck	Total
Avoided Delays (VHT)	941,000 hours	87,700 hours	1,028,000 hours
Avoided additional VMT	12,967,000 miles	1,367,100 miles	14,334,100 miles
Avoided CO ₂ Emissions (tons)	5,200	502,700	507,900
Avoided VOC (lbs)			830,000
Avoided CO (lbs)			6,082,000
Avoided NOx (lbs)			8,932,000
Avoided PM10 (lbs)			470,000

As you can see, the E. Stadium Boulevard Bridges Replacement and Improvement Project will reduce dependence on oil, reduce greenhouse gas emissions, and benefit the environment.

Cycling and Walking:

If the Stadium Bridges are not rebuilt, a vital link in the regional traffic network that allows east-west non-motorized traffic flow through central Washtenaw County and the City of Ann Arbor will be missing. Traffic that would normally have used Stadium Boulevard would either have to travel approximately one mile north or south of the existing Stadium Boulevard to make an east-west trip and stay on an arterial street. Traffic that would have normally used the current Stadium Boulevard bridges may utilize the nearby residential streets. These local residential streets have parking, pedestrians and bicyclists, and children playing on them. They are not designed to operate with higher traffic volumes and at a higher roadway functional class. The additional traffic will diminish the quality of life and jeopardize the safety of the local residents.

This project supports goals of the City's Non-motorized Transportation Plan and the Parks and Recreation Master Plans, as well as the Washtenaw County Non-motorized Plan. This project is also in conformance with the USDOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations. With respect to non-motorized transportation, the reconstruction of the Stadium Bridges will allow development of on-street bike lanes and improved pedestrian sidewalks including the Allen Creek Greenway Trail. In support of the City's Parks and Recreation Master Plan, the project will focus on "connecting" existing linear parklands to create a more cohesive park area. Rose-White Park, located just north of Stadium Boulevard and east of S. State Street, will be enlarged with the closure of White Street at Stadium Boulevard. As a result, White Street will no longer connect to Stadium Boulevard, but will be directly tied to Rose Avenue. The former southern leg of the E. Stadium/White Street intersection will become a part of Rose-White Park. Rose-White Park will be increased by approximately 0.13 acres and be designated as parkland with the rebuilding of Stadium Bridges.

Transit options such as commuter rail, bus-rapid transit, and light rail are being reviewed to improve mobility and sustainability in the City of Ann Arbor and Southeast Michigan. There is future transit planned within the City of Ann Arbor in the vicinity of the project, the Washtenaw and Livingston Line (WALLY), which utilizes the Ann Arbor Railroad tracks. The rebuilding of the Stadium Bridges improves the current, sub-standard bridge, and will improve the safety of this future WALLY commuter rail line by 2012.

Rebuilding the Stadium Bridges provides an overall benefit to the community for the long-term by improving safety, improving operations, reducing overall societal costs (potential from crashes and economic), providing more park land, improving air quality, and reducing VMT.

Reduced adverse impacts of transportation on the natural environment:

Another important improvement associated with this project is the inclusion of storm water quality improvement devices known as "swirl concentrators" or "hydro-dynamic separators." These devices will provide cleaner storm water discharges to the surrounding waterways. This in turn will have environmental benefits such as reduced pollution and cleaner surface water.

The City of Ann Arbor is committed to promoting sustainable development opportunities and alternative transportation options for residents. This project is in conformance with the USDOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations, the City's Non-motorized Transportation Plan, and the City's Parks and Recreation Master Plans for the inclusion of Non-motorized facilities. With respect to non-motorized transportation, the reconstruction of the Stadium Bridges will allow on-street bike lanes and improved pedestrian sidewalks to be installed. Currently, there is only a 5' wide sidewalk on the north side of Stadium Boulevard. The proposed project will provide a 11'-wide sidewalk on the north side of the roadway, an 8'-wide sidewalk on the south side of Stadium Boulevard, on-street bike lanes, and pedestrian connections between S. State Street and Stadium Boulevard which will work to create a more "walkable" and bicycle-friendly community. See link for the project plan details:

www.a2gov.org/government/publicservices/project_management/upcomingprojects/pages/conceptual_plans.aspx

Ensuring Rail Safety:

Ensuring the bridges are raised and widened to allow safer train travel underneath the bridges enables access to future freight and passenger rail being planned within the City of Ann Arbor. The proposed north-south commuter rail line (WALLY-The Washtenaw and Livingston Line) is moving forward and will

utilize the Ann Arbor Railroad tracks crossing under Stadium Boulevard. The commuter service is working to open in 2011, with 60 mile per hour speeds and initial ridership estimates of approximately 1,300 passengers per day. Improved non-motorized networks in the Stadium area is a key to the success of a rail station near campus. Reconstructing the bridges to include all modes helps the City of Ann Arbor and Southeastern Michigan improve transit and mobility.

See Figure 5 below for the proposed rail project:

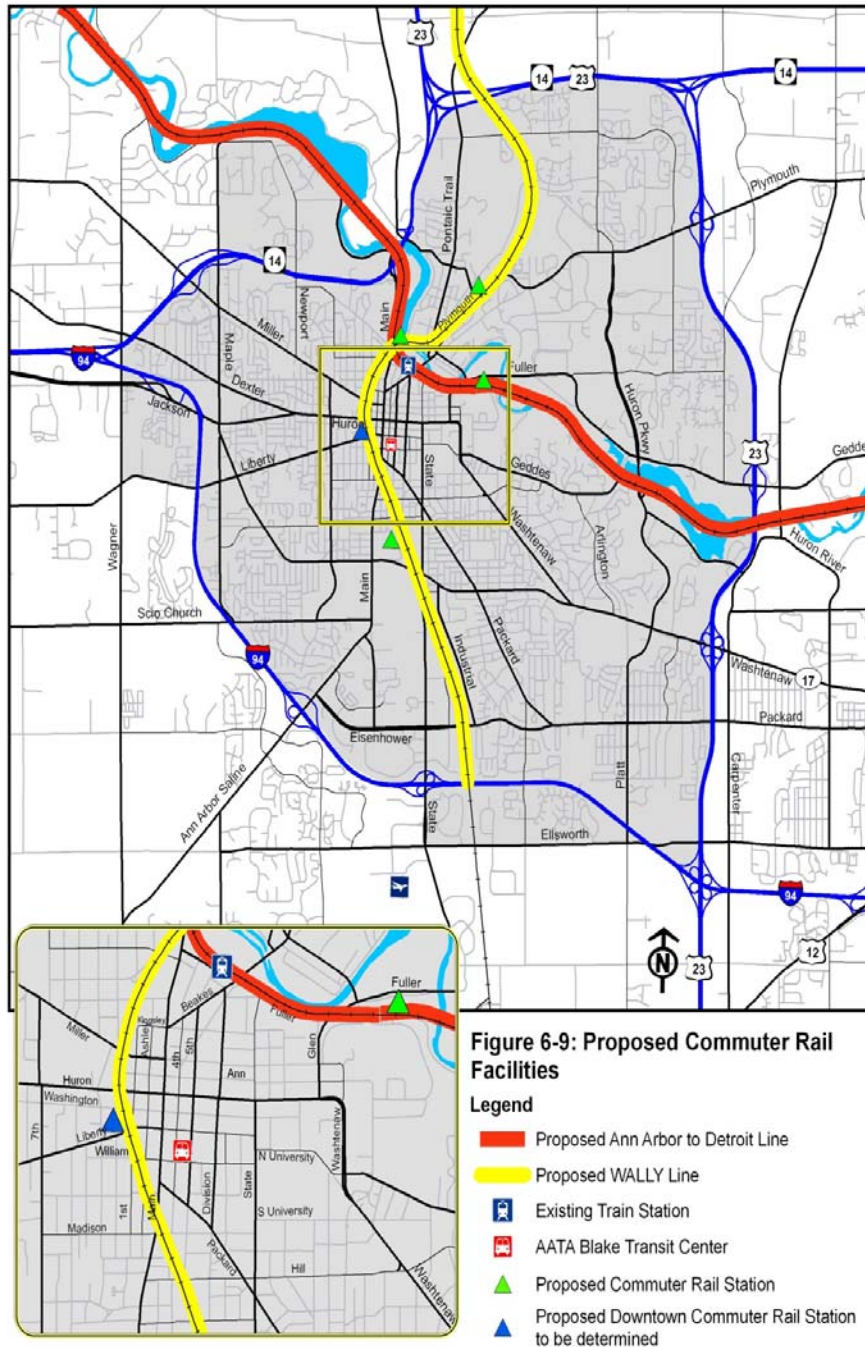


Figure 5: Future Commuter Rail Facilities in Ann Arbor

v. Safety

Emergency Response:

Two fire stations are located within two miles of the E. Stadium Boulevard Bridges. University of Michigan Hospitals 1.5 miles to the north and St. Joseph Hospital 4.5 miles to the east use the E. Stadium for Emergency Ambulance service to access Ann Arbor's southwestern neighborhoods. Delays in emergency response due to bridge closures and subsequent congestion delays are incalculably dangerous.

Crashes:

The Stadium Boulevard bridges improve the safety of the transportation facilities and systems by having a grade-separated roadway and grade-separated vehicular/rail crossing. Significant safety and operational difficulties are expected without replacement of the bridges. Based on SEMCOG (Southeast Michigan Council of Governments) Crash Prediction statistics, there will be about 34 more crashes per year along the detour route because of the increased VMT that will be experienced if the bridges are not in service. Our calculations indicate that there will be an increase of 14,334,100 vehicles-miles each year that traffic is detoured (please see the cost benefit analysis for the detailed calculations supporting these figures.) Of these 34 crashes, there are expected to be two Type B (Non-Incapacitating Injury), five Type C (Possible Injury), and 27 being a Property Damage Only (PDO). The annual cost associated with these crashes is estimated to be about \$597,000. These values are based upon published SEMCOG values.

If we cannot replace the Stadium Boulevard bridges, then the at-grade crossing of the Ann Arbor Railroad tracks could also provide a much higher opportunity for crashes. Engineering analysis has been performed previously using three different crash prediction models. They were; Peabody-Dimmick; NCHRP 50; and the New Hampshire Index. The three provided varying results from eight (8) crashes in a five-year period (Peabody-Dimick) to 13 crashes per year with automatic gates and 106 crashes per year with less protective devices (NCHRP 50). These models and their results raise the awareness of the societal cost and safety concerns that push the need to reconstruct these bridges further to the forefront. One serious injury crash per year at an at-grade intersection could add an additional \$487,475 per year and a fatality accident at the railroad tracks could add \$6,945,000 to the amounts shown. While we are not presuming that motor vehicle-train accidents will be common-place where E. Stadium Boulevard intersects the Ann Arbor Railroad tracks, it is obvious, however, that should the bridges not be replaced and a motor vehicle-train accident occurs it most probably will be severe and will have significant societal costs and any crash costs further drive the need to replace the bridges as soon as possible.

The E. Stadium Boulevard Bridges Replacement and Improvement Project will improve the safety of the City of Ann Arbor and Washtenaw County's transportation system.

vi. Job Creation and Economic Stimulus

An analysis was conducted to evaluate the success of the Stadium Boulevard Bridges project regarding the measurement of short- and long- term performance with respect to the economic recovery measures and long-term outcomes. The Stadium Boulevard Bridges project is expected to create significant near-term economic benefits for the Washtenaw County area, the State of Michigan, in

addition to other regions of the United States. Michigan’s rich economic benefits from the project would be driven by an increase in construction spending in the region undertaken by the City, University of Michigan, as well as private sector developers. These project expenditures would generate a short term increase in demand for engineering and technical services, as well as construction-related labor and materials.

Based on the estimated project cost of \$23,000,000 and using the simple rule for estimating job-years as contained in the “Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009 - dated May 2009” we have estimated the following job-years will be generated by the project. We have also estimated the number of direct and indirect job-years associated with the project; direct and indirect job-years were estimated using the specified multipliers.

Table 4: Estimated Job-years by Quarter

	Q1 July 2011	Q2 Oct. 2011	Q3 Jan. 2012	Q4 April 2012	Q5 July 2012	Q6 Oct. 2012
Est. Expenditure	\$5.75M	\$8.63M	\$3.26M	\$3.00M	\$1.37M	\$1.00M
Job-years	62.5	93.75	35.43	32.61	14.84	10.87
Direct Job (years) (at 64% of spending)	40	60	22.68	20.87	9.50	6.96
Induced Job (years) (at 36% of spending)	22.5	33.75	12.75	11.74	5.34	3.91

Beginning in 2011, the East Stadium Bridges construction is expected to generate significant economic benefits for the region. An estimated 250 job-years will be created by the project, including approximately 160 direct job-years and 90 indirect job-years. Note, these numbers are not included in the Cost Benefit Analysis as both scenarios (build now, build 2024) will create jobs. However, the City of Ann Arbor strongly believes that job creation is of the utmost importance in the State of Michigan and that rebuilding the E. Stadium bridges at this crucial time is imperative.

B. Innovation

The City has always been committed to long-term operations, safety, and maintenance. Local agencies are working hard to promote non-motorized transportation options, improved bus transit, passenger rail, and regional connections. Bridge reconstruction, though primarily a road project, will help keep Ann Arbor connected by road, bike, walking, and rail. Partnering with the University of Michigan for easements and necessary right-of-way will allow the City to enlarge the Rose-White Park and provide for safer non-motorized movements.

Though not finalized, the city is currently talking with the Ann Arbor Public Schools and the public transit authority (AATA) to strategize the consolidation of maintenance lots to be used for public transportation needs across agencies to minimize the impacts of potential congestion and road closure. It is likely that even when the bridges are reconstructed, these public entities will collaborate to minimize wasted lots and inefficiencies in duplicated spaces.

C. Partnership

The City of Ann Arbor has always shown a strong collaborative effort with the University of Michigan (over 150 years), with the Michigan Department of Transportation, the Washtenaw Area Transportation Study (WATS), and with SEMCOG. The City of Ann Arbor actively engaged the University of Michigan, AATA (local transit provider), and the Ann Arbor Public Schools on all planning and design efforts associated with this project. We fully expect to continue this collaborative effort on the construction activities associated with this project as well.

As described above, the City is working with the public schools and AATA to create an opportunity for the consolidation of maintenance lots to be used for public transportation needs across agencies to minimize the impacts of potential congestion and road closure.

In addition, partnering with the University of Michigan for easements and necessary right-of-way will allow the City to enlarge the Rose-White Park, provide for safer non-motorized movements, and prepare a project design that best-fits the needs of the community.

City of Ann Arbor, Project Lead, Primary Funding partner

The City of Ann Arbor is committed to providing excellent municipal services that enhance the quality of life for residents and visitors. The Project Management Services Unit within the City of Ann Arbor will oversee the Stadium Boulevard Bridges Replacement Project. This unit is responsible for designing and constructing utility, roadway, bridges, non-motorized transportation, and sidewalk projects; coordinating and inspecting the utility and public roadway work of private developers; and optimizing traffic flow through the City.

Other partners:

University of Michigan, Strategic Partner, Technical/Planning Assistance, Land Donation
Washtenaw Area Transportation Study (WATS), Strategic Partner, Technical Assistance
Washtenaw County, Strategic Partner, Government Assistance
Michigan Department of Transportation, Strategic Partner, Government Assistance

Additional elected officials and entities supporting the project include:

United States Senator Debbie Stabenow and Carl Levin
United States Congressman John D. Dingell – 15th District
University of Michigan, Vice President of Government Relations, Cynthia H. Wilbanks
Washtenaw County Road Commission (WCRC)
Southeast Michigan Councils of Government (SEMCOG)
Ann Arbor Railroad
Ann Arbor Transportation Authority (AATA)
Ann Arbor Area Chamber of Commerce

V. Project Readiness and NEPA

Preliminary planning, engineering, and public participation for the East Stadium Bridges project is complete. Preliminary engineering documents are available at http://www.a2gov.org/government/publicservices/project_management/pages/EastStadiumBridges.aspx

This project will qualify for a Categorical Exclusion (with checkbox clearance).

This project **does not** contain any areas that are considered to be Prime or Unique Farmland; Section 4(f) Parklands, Recreation Areas, Refuges & Historic Properties; Section 106 Historic and Culturally Significant Properties; Clean Water Act Wetlands and Water areas; Executive Orders Wetlands, Floodplains, or Environmental Justice areas; this project is located within an Clean Air Act Air Quality attainment area; Endangered Species Act Threatened and Endangered Biological Resources; Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat; and, Bald and Golden Eagle Protection Act areas.

All work will be performed with the appropriate and needed state and local permits. The project will obtain a state Environmental Protection Agency (EPA) stormwater construction permit.

The City of Ann Arbor Project Management Services Unit Staff have been in contact with the appropriate staff at the Michigan Department of Transportation and have discussed and agreed that a Categorical Exclusion will be issued for the project pending receipt of the appropriate clearance letters being obtained from the needed federal and state agencies. To date, all clearance letters have been obtained except for clearance from the United States Department of Fish and Wildlife Services (USFWS). Given the project's location within a highly urbanized area that has been disturbed on many occasions, we are extremely confident that this clearance will be provided as well, especially given the fact that the Michigan Department of Natural Resources has already provided the needed clearance letter for this project. On May 28, 2010, we (the City of Ann Arbor) submitted a written request for environmental clearance to Mr. Craig Zarnecki, Field Supervisor, of the E. Lansing Michigan Field Office (USFWS Office responsible for this area.) On July 27, 2010 we received an e-mail response from Ms. Tameka Dandridge of the same USFWS Office directing us to complete the needed clearance information via electronic means. We are currently in the process of preparing and submitting the requested information to USFWS. It is our expectation that we will receive the needed clearance documents from the USFWS in about 30 to 60 days.

Copies of all clearance letters and related correspondence can be found at the following link: http://www.a2gov.org/government/publicservices/project_management/Documents/EnvironmentalClearanceDocumentation-100820.PDF

Upon receiving notification of receipt of TIGER II funding, the City of Ann Arbor will begin the bidding process through the Michigan Department of Transportation such that the project can begin construction in mid-2011.

The following is the current project schedule:

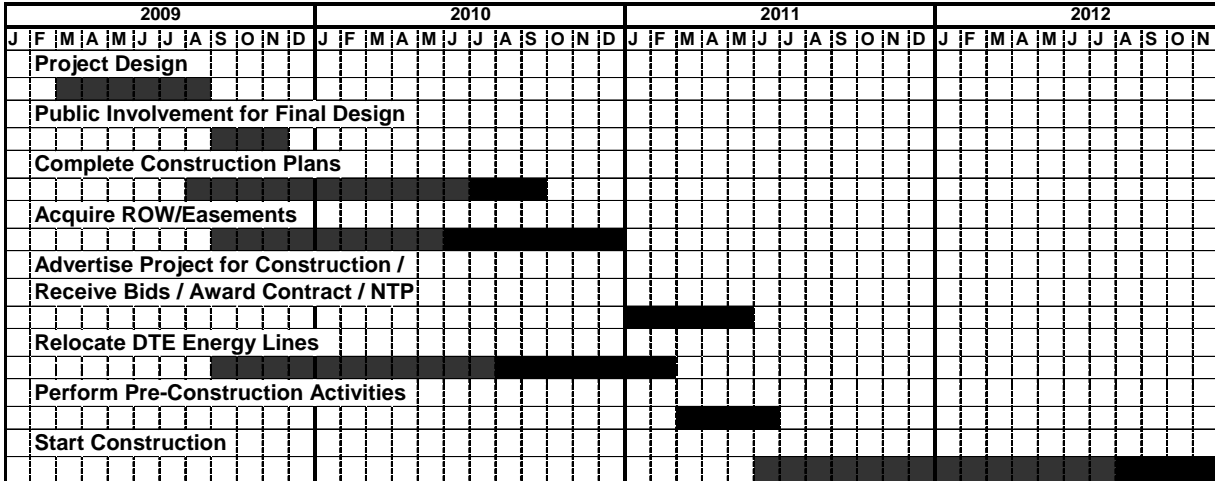


Figure 5: Stadium Boulevard Bridges Project Schedule

Please note that this project is on schedule and we expect the construction plan preparation to be completed in September, 2010 as indicated above.

VI. Federal Wage Rate Certification

Attached at the following link, please find our written certification that the City of Ann Arbor will comply with the requirements of subchapter IV of Chapter 31 of Title 40, United States Code (Federal wage rate requirements), as required by the FY 2010 Appropriations Act.

http://www.a2gov.org/government/publicservices/project_management/Documents/PrevailingWageCertification-100820.PDF

Note, the City of Ann Arbor is an equal opportunity employer. Also, the standard practices of both the City and the Michigan Department of Transportation (entity that will hold the construction contract with the Contractor selected for this project) fully implements best practices, consistent with our Nation's Civil Rights and Equal Opportunity Employment laws ensuring that all individuals, regardless of race, gender, age, disability, and national origin will benefit from TIGER II Grant Funding.

VII. Changes to Pre-application

There are no changes to the pre-application.

VIII. Cost Benefit Analysis

A Cost Benefit Analysis has been prepared for this project and the funding application. The entire spreadsheet with calculations and supporting data can be found at the following link:

http://www.a2gov.org/government/publicservices/project_management/Documents/esb

As previously described, E. Stadium Boulevard due to its location within the City of Ann Arbor and Washtenaw County, provides one of three east-west arterial links in the transportation network. E. Stadium Boulevard is also a truck route and serves traffic that uses US-23 and I-94. It is one of the most travelled corridors in Ann Arbor and Washtenaw County, thus it is of primary importance to our economy. Consequently, this is primarily a State-of-Good-Repair Project.

Letting the bridges deteriorate will create a huge traffic burden on the City of Ann Arbor and surrounding region resulting in significant congestion, safety, and delay costs. Replacing the bridges in a timely manner will result in a savings of significant delay, crash, and operations and maintenance costs. The Cost-Benefit Analysis performed for this project shows that reconstruction of the bridge in 2011 will save the City of Ann Arbor, the University of Michigan, public facilities, and the surrounding region about **\$253 million** (Net Present Value, 2010 dollars). This includes the reduction of about \$33.2 million each year of delay, vehicle operation, and crash costs associated with traveling the detour.

Most significantly, replacing the bridges will eliminate the need for people to circumnavigate the detour route when the bridges can no longer carry vehicular traffic. The rise in detour traffic and subsequent rise in crashes, VMT, and VHT can be avoided with prompt reconstruction. See the table below for costs that will be avoided with bridge reconstruction:

Table 5: Estimated Construction Cost Summary

Project Element	Service Life	Cost (\$2010)	Remaining Value (\$2010) After 14 years	Remaining Value (\$2010) After 1 year
Bridges	75	\$6,100,000	\$4,961,333	\$6,018,667
Retaining Walls	75	\$4,400,000	\$3,578,667	\$4,341,333
Roadway/Drainage/Lighting/Utilities	40	\$5,800,000	\$3,770,000	\$5,655,000
Prop. Right-of-Way & Easements	∞	\$1,000,000	\$1,000,000	\$1,000,000
Design Engineering	0	\$1,600,000	\$0	\$0
Construction Engineering	0	\$4,100,000	\$0	\$0
Totals		\$23,000,000	\$13,310,000	\$17,020,000

The reductions in VHT, VMT, and Crash Costs have significant annual reductions in expenditures associated with these values. They are as follows:

Table 6: Monetized Annual Benefit (Cost Savings): Elimination of Driving Detour Routes (\$ 2010)

	Personal	Commercial/Truck	Total
Avoided Cost of Delays	\$13,409,000	\$2,133,000	\$15,542,000
Avoided additional VMT	\$7,287,000	\$9,740,000	\$17,027,000
Crash Costs	n/a	n/a	\$597,000
Total Annual Cost savings			\$33,166,000

While the estimated cost of the project is \$23,000,000, the calculated, net, accrued, monetized benefits to reconstruction have a Net Present Value (in 2010 dollars) of \$253,280,000: **a cost-benefit ratio of 11.01.**

Table 7: Cost-Benefit Summary

Total Project Cost	\$ 23,000,000
Total State/Local Contribution	\$ 9,100,000
Total Federal Contribution	\$ 13,900,000
Federal Share	60.4%
Total Benefit - NPV(\$2010)	\$ 253,280,000
CBA ratio	11.01

Non-monetized savings:

Other non-monetized savings as mentioned in sections above include items such as: reduction in fuel consumption, vehicle emissions, increased maintenance of surrounding roadways, and other related costs. In addition, the project will allow the corridor and all of its users, including commercial freight traffic, to return to “normal” operation. The return to normal operation will include realized indirect benefits such as:

Non-Monetized Costs of not rebuilding the Bridge:

- Congestion and disconnected road networks will lead to:
 - Loss of business in the developed, urbanized area of the County
 - Diverted Patrons
 - Loss of Jobs at area Businesses
 - Long term: Doing business Ann Arbor becomes unattractive
 - Disinvestment in Area/City
 - Decreased property values of homes/businesses
 - Increased maintenance costs on detour/cut-through streets
- Congestion and detours create additional emissions resulting in:
 - Less sustainable use of transportation network
 - Decreased air quality leading to higher asthma rates and health visits

Non-Monetized Benefits of not rebuilding the Bridge: There is a small benefit to letting the bridge deteriorate: without a major transportation facility, the local neighborhoods will experience less noise/traffic in neighborhoods. While this is bad for businesses, homeowners and residents may appreciate the absence of the bridge.

Non-monetized Benefits of Building the Bridge:

- Safety improvements
 - Widened facilities and marked bike lanes allow all transportation modes to use the bridges as safely as possible
 - more bike/pedestrian traffic
- Increased access
 - ADA-accessible and stair facilities allowing users to easily access sidewalks along S. State Street and E. Stadium Boulevard
 - Improved Public Park Areas
 - Promotes bicycle/pedestrian mobility
 - Higher visibility and foot traffic to nearby businesses
 - Protect operations of privately-held, short-line, freight rail company

- Aesthetic Improvements
 - More attractive business environment
 - Increase way-finding abilities
- Federal funding will prevent the City from delaying other crucial road projects
 - Avoided costs of crashes

IX. Confidential Information

There is no confidential information submitted with this application.