Application

01967 - 2014 Roadway Expansion

02136 - Pierce Butler Route East Extension - Phase II

Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
Submitted Date:	11/26/2014 11:12 AM

Primary Contact

Name:*		Eriks	V	Ludins
	Salutation	First Name	Middle Name	Last Name
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	City	State/Province	Postal Code/Zip	
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What Grant Programs are you most interested in?	Regional Solicitation - Roadways Including Multimodal Elements			

Organization Information

Name:	ST PAUL, CITY OF

Jurisdictional Agency (if different):

Organization Type: City

Organization Website:

Address: DEPT OF PUBLIC WORKS-CITY HALL ANNEX

25 W 4TH ST #1500

*	ST PAUL	Minnesota	55101
	City	State/Province	Postal Code/Zip

County: Ramsey

Phone:* 651-266-9700 Ext.

Fax:

PeopleSoft Vendor Number 0000003222A22

Project Information

Project Name Pierce Butler Route East Extension - Phase II

Primary County where the Project is Located Ramsey

Jurisdictional Agency (If Different than the Applicant):

Brief Project Description (Limit 2,800 characters; approximately 400 words)

The total planned improvement is to extend Pierce Butler Route on a new alignment from its current terminus, west of Dale Street, easterly to connect with Phalen Boulevard at I-35E. This project extends Pierce Butler from Arundel Street (one block west of Western Avenue) to approximately Minnehaha Avenue east of Western Avenue continuing from Phase I scheduled for 2016 construction. The planned roadway includes both on street bike lanes and an off-street combined bike and ped trail. The project also includes a "cut and cover" tunnel to be constructed underneath Como and Western Avenues.

Include location, road name/functional class, type of improvement, etc.

Project Length (Miles) 0.4

Connection to Local Planning:

Reference the name of the appropriate comprehensive plan, regional/statewide plan, capital improvement program, corridor study document [studies on trunk highway must be approved by MnDOT and the Metropolitan Council], or other official plan or program of the applicant agency [includes Safe Routes to School Plans] that the project is included in and/or a transportation problem/need that the project addresses. List the applicable documents and pages.

Connection to Local Planning	Saint Paul Comprehensive Plan - Transportation Chapter.

Project Funding

Are you applying for funds from another source(s) to implement this project?	No
If yes, please identify the source(s)	
Federal Amount	$7,000,000.00
Match Amount	$5,333,050.00
Minimum of 20% of project total	
Project Total	$12,333,050.00
Match Percentage	43.24%
Minimum of 20% *Compute the match percentage by dividing the match amount by the project total*	
Source of Match Funds	Municipal State Aid, local Capital Improvement Bonds

Preferred Program Year

Select one:	2019

MnDOT State Aid Project Information: Roadway Projects

County, City, or Lead Agency	City of Saint Paul
Functional Class of Road	A-Minor; Augmentor
Road System	MSAS
TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET	
Name of Road	Pierce Butler Route
Example; 1st ST., MAIN AVE	
Zip Code where Majority of Work is Being Performed	55103
(Approximate) Begin Construction Date	04/01/2019
(Approximate) End Construction Date	12/01/2019

LOCATION

From: **(Intersection or Address)**	Arundel
Do not include legal description; *Include name of roadway if majority of facility runs adjacent to a single corridor.*	
To: **(Intersection or Address)**	Minnehaha
Type of Work	Grading, Agg Base, Bituminous Base, Bituminous Surface, Sidewalk, Bike Trail, Lighting, Bridge (tunnel).

Examples: grading, aggregate base, bituminous base, bituminous surface, sidewalk, signals, lighting, guardrail, bicycle path, ped ramps, bridge, Park & Ride, etc.)

Old Bridge/Culvert?	No
New Bridge/Culvert?	Yes
Structure is Over/Under (Bridge or culvert name):	Under Como and Western Avenues

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$550,000.00
Removals (approx. 5% of total cost)	$550,000.00
Roadway (grading, borrow, etc.)	$319,250.00
Roadway (aggregates and paving)	$2,000,000.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$450,000.00
Ponds	$0.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$135,000.00
Traffic Control	$10,000.00
Striping	$29,800.00
Signing	$3,500.00
Lighting	$235,000.00
Turf - Erosion & Landscaping	$10,000.00
Bridge	$7,800,000.00
Retaining Walls	$0.00
Noise Wall	$0.00
Traffic Signals	$0.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$0.00
Other Roadway Elements	$175,000.00
Totals	**$12,267,550.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$48,000.00
Sidewalk Construction	$0.00
On-Street Bicycle Facility Construction	$7,500.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$0.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$0.00
Pedestrian-scale Lighting	$0.00
Streetscaping	$0.00
Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$10,000.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$65,500.00**

Specific Transit and TDM Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Fixed Guideway Elements	$0.00
Stations, Stops, and Terminals	$0.00
Support Facilities	$0.00
Transit Systems (e.g. communications, signals, controls, fare collection, etc.)	$0.00
Vehicles	$0.00
Transit and TDM Contingencies	$0.00
Other Transit and TDM Elements	$0.00
Totals	**$0.00**

Transit Operating Costs

OPERATING COSTS	Cost
Transit Operating Costs	$0.00
Totals	**$0.00**

Totals

Total Cost	$12,333,050.00
Construction Cost Total	$12,333,050.00
Transit Operating Cost Total	$0.00

Requirements - All Projects

All Projects

1.The project must be consistent with the goals and policies in these adopted regional plans: Thrive MSP 2040 (2014), the 2030 Transportation Policy Plan (amended 2013), the 2030 Regional Parks Policy Plan (amended 2013), and the 2030 Water Resources Management Policy Plan (2005).

Check the box to indicate that the project meets this requirement. Yes

2.Applicants that are not cities or counties in the seven-county metro area with populations over 5,000 must contact the MnDOT Metro State Aid Office prior to submitting their application to determine if a public agency sponsor is required.

Check the box to indicate that the project meets this requirement. Yes

3.Applicants must not submit an application for the same project in more than one funding sub-category.

Check the box to indicate that the project meets this requirement. Yes

4.The requested funding amount must be more than or equal to the minimum award and less than or equal to the maximum award. The cost of preparing a project for funding authorization can be substantial. For that reason, minimum federal amounts apply. Other federal funds may be combined with the requested funds for projects exceeding the maximum award, but the source(s) must be identified in the application. Expansion, reconstruction/modernization, and bridges must be between $1,000,000 and $7,000,000. Roadway system management must be between $250,000 and $7,000,000.

Check the box to indicate that the project meets this requirement. Yes

5.The project must comply with the Americans with Disabilities Act.

Check the box to indicate that the project meets this requirement. Yes

6.The project must be accessible and open to the general public.

Check the box to indicate that the project meets this requirement. Yes

7.The owner/operator of the facility must operate and maintain the project for the useful life of the improvement.

Check the box to indicate that the project meets this requirement. Yes

8.The project must represent a permanent improvement with independent utility. The term independent utility means the project provides benefits described in the application by itself and does not depend on any construction elements of the project being funded from other sources outside the regional solicitation, excluding the required non-federal match. Projects that include traffic management or transit operating funds as part of a construction project are exempt from this policy.

Check the box to indicate that the project meets this requirement. Yes

9.The project must not be a temporary construction project. A temporary construction project is defined as work that must be replaced within five years and is ineligible for funding. The project must also not be staged construction where the project will be replaced as part of future stages. Staged construction is eligible for funding as long as future stages build on, rather than replace, previous work.

Check the box to indicate that the project meets this requirement. Yes

10.The project applicant must send written notification regarding the proposed projected to all affected communities and other levels and units of government prior to submitting the application.

Check the box to indicate that the project meets this requirement. Yes

Requirements - Roadways Including Multimodal Elements

Expansion and Reconstruction/Modernization Projects Only

1.The project must be designed to meet 10-ton load limit standards.

Check the box to indicate that the project meets this requirement. Yes

2.Federal funds are available for roadway construction and reconstruction on new alignments or within existing right-of-way, including associated construction and excavation, bridges, or installation of traffic signals, signs, utilities, bikeway or walkway components and transit components.
The project must exclude costs for right-of-way, studies, preliminary engineering, design, or construction engineering. Noise barriers, drainage projects, fences, landscaping, etc., are not eligible for funding unless included as part of a larger project, which is otherwise eligible.

Check the box to indicate that the project meets this requirement. Yes

Bridge Projects Only

3.The bridge project must be identified as a Principal Arterial (Non-Freeway facilities only) or A Minor Arterial as shown on the latest TAB approved roadway functional classification map.

Check the box to indicate that the project meets this requirement.

4.Bridges selected in previous Bridge Improvement and Replacement solicitations (1994 2011) are not eligible. A previously selected project is not eligible unless it has been withdrawn or sunset prior to the deadline for proposals in this solicitation.

Check the box to indicate that the project meets this requirement.

5.Projects requiring a grade-separated crossing of a Principal Arterial of freeway design must be limited to the federal share of those project costs identified as local (non-MnDOT) cost responsibility using MnDOTs Cost Participation for Cooperative Construction Projects and Maintenance Responsibilities manual. In the case of a federally funded trunk highway project, the policy guidelines should be read as if the funded trunk highway route is under local jurisdiction.

Check the box to indicate that the project meets this requirement.

6.The bridge must carry vehicular traffic. Bridges can carry traffic from multiple modes. However, bridges that are exclusively for bicycle or pedestrian traffic must apply under one of the Bicycle and Pedestrian Facilities sub-categories. Rail-only bridges are ineligible for funding.

Check the box to indicate that the project meets this requirement.

7.The length of the bridge must equal or exceed 20 feet.

Check the box to indicate that the project meets this requirement.

8.Project limits for bridge projects are limited from abutment to abutment.

Check the box to indicate that the project meets this requirement.

9.The project must exclude costs for studies, preliminary engineering, design, construction engineering, and right-of-way.

Check the box to indicate that the project meets this requirement.

Bridge Replacement Projects Only

10.The bridge must have a sufficienty rating less than 50. Additionally, it must also be classified as structurally deficient or functionally obsolete.

Check the box to indicate that the project meets this requirement.

Bridge Rehabilitiation Projects Only

11.The bridge must have a sufficienty rating less than 80. Additionally, it must also be classified as structurally deficient or functionally obsolete.

Check the box to indicate that the project meets this requirement.

Other Attachments

File Name	Description	File Size
2136 St Paul HSIP.pdf	Crash B/C	24 KB
2136 St Paul Synchro 1.pdf	Synchro 1	108 KB
2136 St Paul Synchro 2.pdf	Synchro 2	66 KB
City Council Resolution - Certified Copy.pdf	City Council resolution authorizing application and committing to matching funds.	26 KB
PB Phase II Map.pdf	Pierce Butler Rote East Extension - Phase II Map	14.7 MB
PB Project Map - Phases I - III.pdf	Map of Pierce Butler Route East Extension Project - Phases I-III	37.1 MB
Pierce Butler X-Sec Display.pdf	Proposed Pierce Butlter East Extension Typical Cross Section	42 KB

Reliever: Freeway Facility or

Facility being relieved

Number of hours per day volume exceeds capacity (based on the Congestion Report) 0

Reliever: Non-Freeway Facility or

Facility being relieved

Number of hours per day volume exceeds capacity (based on the table below) 0

Non-Freeway Facility Volume/Capacity Table

Hour	NB/EB Volume	SB/WB Volume	Capacity	Volume exceeds capacity
12:00am - 1:00am			0	
1:00am - 2:00am			0	
2:00am - 3:00am			0	
3:00am - 4:00am			0	
4:00am - 5:00am			0	
5:00am - 6:00am			0	
6:00am - 7:00am			0	
7:00am - 8:00am			0	

8:00am - 9:00am	0
9:00am - 10:00am	0
10:00am - 11:00am	0
11:00am - 12:00pm	0
12:00pm - 1:00pm	0
1:00pm - 2:00pm	0
2:00pm - 3:00pm	0
3:00pm - 4:00pm	0
4:00pm - 5:00pm	0
5:00pm - 6:00pm	0
6:00pm - 7:00pm	0
7:00pm - 8:00pm	0
8:00pm - 9:00pm	0
9:00pm - 10:00pm	0
10:00pm - 11:00pm	0
11:00pm - 12:00am	0

Expander/Augmentor/Non-Freeway Principal Arterial

Select one:	Augmentor
Area	0.458
Project Length	0.39
Average Distance	1.1744
Upload Map	Roadway Area Definition Map.pdf

Measure B: Current Heavy Commercial Traffic

Location	This is a new alignment. No current traffic.
Current daily heavy commercial traffic volume	0

Measure C: Project Location Relative to Jobs, Manufacturing, and Education

Select all that apply

Direct connection to or within a mile of a Job Concentration	Yes
Direct connection to or within a mile of a Manufacturing/Distribution Location	
Direct connection to or within a mile of an Educational Institution	Yes

Project provides a direct connection to or within a mile of an existing local activity center identified in an adopted county or city plan	
	Although not connected to a manufacturing or distribution center, note that the western terminus of Pierce Butler Route is in the heart of the West Midway Industrial Area and directly connected to the BNSF intermodal Hub at Pierce Butler and Snelling Ave. (see extreme west edge of attached map).
County or City Plan Reference (Limit 700 characters; approximately 100 words)	The Pierce Butler project is identified in the Transportation chapter of the Saint Paul Comprehensive Plan. Specifically; in Strategy 2- Provide Balance and Choice; Policy 2.4 Develop a strategy for investing in a broad range of infrastructure projects, including, but not limited to, street and traffic improvements to support the growth of existing employment, services, parks, and schools.
Upload Map	Regional Economy Map.pdf

Measure A: Current Daily Person Throughput

Location	This project is a new alignment. No current AADT.
Current AADT Volume	0
Existing Transit Routes on the Project	

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	0
Current Daily Person Throughput	0

Measure B: 2030 Forecast ADT

Use Metropolitan Council model to determine forecast (2030) ADT volume	
METC Staff - Forecast (2030) ADT volume	0
OR	

Approved county or city travel demand model to determine forecast (2030) ADT volume	Yes
Forecast (2030) ADT volume	13200.0

Measure A: Project Location and Impact to Disadvantaged Populations

Select one:

Project located in Racially Concentrated Area of Poverty	Yes
Project located in Concentrated Area of Poverty	
Projects census tracts are above the regional average for population in poverty or population of color	
Project located in a census tract that is below the regional average for population in poverty or populations of color or includes children, people with disabilities, or the elderly.	

Response (Limit 1,400 characters; approximately 200 words)

The low income population (which consists primarily of people of color) will benefit from the proposed roadway which serves as a link between the east side of Saint Paul and the "Job Concentration Center" of downtown Saint Paul to the West Midway Industrial Area and the manufacturing/distribution area within, including the BNSF Intermodal Facility. Expected redevelopment along the corridor will also bring jobs to the community as well as access to them.

The project will also serve pedestrians and bicyclists; included in the project is a combined off-street bike/ped trail and two on-sreet bike lanes connecting the Bruce Vento, the Gateway, and the Trout Brook Trails at the east end of the project to the Minnehaha Rec Center at the west end and Newell Park beyond.

Upload Map

Socio-Economic Conditions Map.pdf

Measure B: Affordable Housing

City/Township	Segment Length (Miles)
Saint Paul	0.4
	0

Total Project Length

Total Project Length	0.4

Affordable Housing Scoring - To Be Completed By Metropolitan Council Staff

City/Township	Segment Length (Miles)	Total Length (Miles)	Score	Segment Length/Total Length	Housing Score Multiplied by Segment percent
Saint Paul	0.4	0.4	98.0	1.0	98.0
		0	**98**	**1**	**98**

Affordable Housing Scoring - To Be Completed By Metropolitan Council Staff

Total Project Length (Miles)	0.4
Total Housing Score	98.0

Measure A: Year of Roadway Construction

Year of Original Roadway Construction or Most Recent Reconstruction	Roadway Segment Length (Miles)	Calculation	Calculation 2
0	0.4	0	0
	0	**0**	**0**

Average Construction Year

Weighted Year	0

Total Segment Length (Miles)

Total Segment Length	0.4

Measure A: Cost Effectiveness of Vehicle Delay Reduction

Total Project Cost from Cost Sheet	$12,333,050.00
Total Peak Hour Vehicle Delay Without The Project	461.0
Total Peak Hour Vehicle Delay With The Project	211.0

Total Peak Hour Vehicle Delay Reduced by Project	250.0
Cost Effectiveness	$49,332.20
Synchro or HCM Reports	Draft EAW 5-7-09 - Cover Page + Traffic.pdf

Measure B: Cost Effectiveness of Emissions Reduction

Total Project Cost from Cost Sheet	$12,333,050.00
Total Peak Hour Kilograms Reduced by Project	9.0
Cost Effectiveness	$1,370,338.89
Synchro or HCM Reports	Draft EAW 5-7-09 - Cover Page + Emissions.pdf

Measure A: Benefit/Cost of Crash Reduction

Project Benefit/Cost Ratio	880932.14
Worksheet Attachment	Crash Reduction Cost-Benefit.pdf

Measure A: Transit Connections

Existing Routes Directly Connected to the Project	3
Planned Transitways directly connected to the project (alignment and mode determined and identified in the 2030 TPP)	N/A
Upload Map	Transit Connections Map.pdf

Response

Met Council Staff Data Entry Only

Route Ridership	2838603.0
Transitway Ridership	0

Measure B: Bicycle and Pedestrian Connections

Response (Limit 1,400 characters; approximately 200 words)

The Pierce Butler Route East Extension Phase II project will include the construction of an off-road bicycle/pedestrian trail. The trail will be 12 feet wide and will be separated from the roadway by a 7 - 13 foot grass boulevard. Lantern style light fixtures will be placed in the boulevard between the street and the trail. 8 foot on-road bike lanes will also be striped in each direction (see attached cross-section).

The trail, when completed, will connect at the east end to the Bruce Vento, Gateway, and Trout Brook Regional trails and at the west end to the trail segment built as part of Phase I (scheduled for 2016). West of that the trail connects to the Minnehaha Recreation Center and from there stiped shoulders on existing Pierce Butler Route connect to Newell Park, the West Midway Industrial Area and to the Green Line at University and Transfer Road.

Both the off-road trail and the on-street bike lanes are shown on the Draft Saint Paul Bicycle Plan currently in the the adoption process. Expected final adoption of the "Bike Plan" is in January or February of 2015.

Measure C: Multimodal Facilities

Response (Limit 1,400 characters; approximately 200 words)

The Pierce Butler Route East Extension Phase II project will include the construction of an off-road bicycle/pedestrian trail. The trail will be 12 feet wide and will be separated from the roadway by a 7 - 13 foot grass boulevard. Lantern style light fixtures will be placed and trees will be planted in the boulevard between the street and the trail. 8 foot on-road bike lanes will also be striped in each direction (see attached cross-section).

The trail, when completed, will connect at the east end to the Bruce Vento, Gateway, and Trout Brook Regional trails and at the west end to the trail segment built as part of Phase I (scheduled for 2016). West of that the trail connects to the Minnehaha Recreation Center and from there striped shoulders on existing Pierce Butler Route connect to Newell Park, the West Midway Industrial Area and to the Green Line at University and Transfer Road (an extension of Pierce Butler Route).

Currently, the existing segment of Pierce Butler does not carry transit service. However, expected redevelopment may require some adjustments to local service to accomodate future transit demand.

Transit Projects Not Requiring Construction

If the applicant is completing a transit or TDM application, only Park-and-Ride and other construction projects require completion of the Risk Assessment below. Check the box below if the project does not require the Risk Assessment fields, and do not complete the remainder of the form. These projects will receive full points for the Risk Assessment.

Check Here if Your Transit Project Does Not Require Construction

Measure A: Risk Assessment

1)Project Scope (5 Percent of Points)

Meetings or contacts with stakeholders have occurred

Yes

100%

Stakeholders have been identified

40%

Stakeholders have not been identified or contacted

0%

2)Layout or Preliminary Plan (5 Percent of Points)

Layout or Preliminary Plan completed Yes

100%

Layout or Preliminary Plan started

50%

Layout or Preliminary Plan has not been started

0%

Anticipated date or date of completion

3)Environmental Documentation (10 Percent of Points)

EIS

EA Yes

PM

Document Status:

Document approved (include copy of signed cover sheet)

100%

Document submitted to State Aid for review

75%

Document in progress; environmental impacts identified Yes

50%

Document not started

0%

Anticipated date or date of completion/approval

4)Review of Section 106 Historic Resources (15 Percent of Points)

No known potential for archaeological resources, no historic resources known to be eligible for/listed on the National Register of Historic Places located in the project area, and project is not located on an identified historic bridge Yes

100%

Historic/archeological review under way; determination of no historic properties affected or no adverse effect anticipated

80%

Historic/archaeological review under way; determination of adverse effect anticipated

40%

Unknown impacts to historic/archaeological resources

0%

Anticipated date or date of completion of historic/archeological review:

Project is located on an identified historic bridge

5)Review of Section 4f/6f Resources (15 Percent of Points)

(4f is publicly owned parks, recreation areas, historic sites, wildlife or waterfowl refuges; 6f is outdoor recreation lands where Land and Water Conservation Funds were used for planning, acquisition, or development of the property)

No Section 4f/6f resources located in the project area Yes

100%

Project is an independent bikeway/walkway project covered by the bikeway/walkway Negative Declaration statement; letter of support received

100%

Section 4f resources present within the project area, but no known adverse effects

80%

Adverse effects (land conversion) to Section 4f/6f resources likely

30%

Unknown impacts to Section 4f/6f resources in the project area

0%

6)Right-of-Way (15 Percent of Points)

Right-of-way or easements not required

100%

Right-of-way or easements has/have been acquired

100%

Right-of-way or easements required, offers made

75%

Right-of-way or easements required, appraisals made

50%

Right-of-way or easements required, parcels identified Yes

25%

Right-of-way or easements required, parcels not identified

0%

Right-of-way or easements identification has not been completed

0%

Anticipated date or date of acquisition

7)Railroad Involvement (25 Percent of Points)

No railroad involvement on project Yes

100%

Railroad Right-of-Way Agreement is executed (include signature page)

100%

Railroad Right-of-Way Agreement required; Agreement has been initiated

60%

Railroad Right-of-Way Agreement required; negotiations have begun

40%

Railroad Right-of-Way Agreement required; negotiations not begun

0%

Anticipated date or date of executed Agreement

8)Construction Documents/Plan (10 Percent of Points)

Construction plans completed/approved (include signed title sheet)

100%

Construction plans submitted to State Aid for review

75%

Construction plans in progress; at least 30% completion

50%

Construction plans have not been started

Yes

0%

Anticipated date or date of completion

9)Letting

Anticipated Letting Date

04/01/2019

Pierce Butler Route East Extension Phase II
Crash Reduction Data and Calculations

Note: Appendix E does not address construction of an entirely new road alignment. It is intended for use on roadway improvement projects, not construction of an entirely new alignment. To address this question, it was assumed that the new segment of Pierce Butler Route would relieve traffic on University Avenue by an amount equal to the ADT on the existing segment of Pierce Butler Route. Therefore the number of crashes on University Avenue would be reduced by the percentage of reduced ADT. In addition, traffic on Minnehaha Avenue will be relieved by the construction of the Pierce Butler East Extension. It was assumed that the number of crashes on Minnehaha would be reduced by the reduced AADT. These numbers were taken from the project's EAW. Crash data for University Avenue and Minnehaha Avenue were determined using the Minnesota Crash Mapping Analysis Tool.

The construction of Pierce Butler Route East Extension Phase II will result in the relief of traffic volumes on University Avenue equal to the current AADT on the existing segment of Pierce Butler Route. This traffic reduction on University Avenue will reduce the crash totals on University by the percentage of traffic volume reduction.

University Avenue AADT: 23,532 Crashes on University Avenue: 57
Pierce Butler AADT: 7,800

7800/23532 = .3315

Crashes on University will decrease by 33%: 53 x 0.3315 = 17.6

A total of 18 FEWER crashes on University Avenue in three years.

There were 15 crashes on Minnehaha between Arundel and Como from 2011- 2013. It can be assumed that the crash rate on this segment can be reduced by the percentage of traffic relieved.

Current AADT: 5800
2030 Build Alt. AADT: 2200

Crash reduction: (15/5800) x 2200 = 5.68; 6 crashes on Minnehaha.

15 – 6 = 9 FEWER crashes on Minnehaha Avenue in three years.

For the Pierce Butler Extension, assume a crash rate of 3.7 (4-lane divided, conventional)

CR = Crashes x 10^6 / ADT x Length x No. Days

3.7 = 1,000,000 X / 7800 x .40 x 1095

3.7 = X / 3.42

X = 12.65 = 13 Crashes on the new segment of Pierce Butler

Total Crash Reduction = 18+9-13 = **14 fewer crashes** resulting from the construction of this project.

Cost per reduced crash: $12,333,050.00 / 14 = **$880,932.14**

Benefit/Cost: 14 / $12,333,050.00 = **0.000001135**

Revised 5/7/09

ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to preparers: This form is available at http://www.eqb.state.mn.us. *EAW Guidelines* will be available in Spring 1999 at the web site. The Environmental Assessment Worksheet provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit or its agents to determine whether an Environmental Impact Statement should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. If a complete answer does not fit in the space allotted, attach additional sheets as necessary. The complete question as well as the answer must be included if the EAW is prepared electronically.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title:** Pierce Butler Route Extension

2. **Proposer:** City of Saint Paul
   Contact person:
   Title:
   Address:

   City, State, ZIP:
   Phone:
   Fax:
   E-mail:

3. **RGU:** City of Saint Paul
   Contact person: Eriks Ludins
   Title: Project Manager
   Address: Department of Public Works
   25 West 4th Street, Suite 1500
   City, State, ZIP: Saint Paul, MN 55102
   Phone: 651-266-6204
   Fax: 651-266-6222
   E-mail: eriks.ludins@ci.stpaul.mn.us

4. **Reason for EAW preparation (check one):**

EIS scoping	Mandatory EAW	Citizen petition	RGU discretion	Proposer volunteered
☐	☐	☐	☒	☐

   If EAW or EIS is mandatory give EQB rule category subpart number _____ and subpart name _____

5. **Project location:** County: Ramsey County City/Township: Saint Paul

   Section 30, 31 Township 29 North Range 22 West

   Section 25, 26, 35, 36 Township 29 North Range 23 West

   Attach each of the following to the EAW:
   - County map showing the general location of the project. See Appendix A, Figure 1
   - U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable). See Appendix A, Figure 2
   - Site plan showing all significant project and natural features. See Appendix A, Figure 3

6. **Description:**

   a. Provide a project summary of 50 words or less to be published in the *EQB Monitor.*

   Proposal to extend Pierce Butler Route 2.0 miles from Grotto Street to a connection with Phalen Boulevard, intersecting Dale and Arundel Streets at grade, tunneling beneath Como/Western Avenues, and connecting with Empire Drive and Pennsylvania Avenue. Off-street bicycle/pedestrian trails and on-street bike lanes would be constructed through the corridor.

All construction and demolition debris and waste materials generated as a result of the roadway project will be disposed of by construction contractors at demolition or solid waste landfills, as appropriate. The recycling of demolition materials such as concrete or metal will be encouraged over landfill disposal to the degree practical. For existing structures requiring demolition, all regulated asbestos-containing materials (ACM) and other hazardous materials incidental to buildings will be identified, removed, and disposed of at appropriate facilities prior to demolition.

Other than materials incidental to building demolition (as described above), no other hazardous wastes will be generated during construction or during operation of the final project. Any solid wastes generated during construction-related activities will be disposed of at demolition or solid waste landfills, as appropriate. Potentially contaminated soil and groundwater encountered during construction will be handled in accordance with the MPCA-approved RAP/ECP document and environmental framework discussed under Section 9.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

No toxic or hazardous materials will be used during roadway construction. As with any construction project, fuel, oil and other incidental vehicle maintenance chemicals necessary for operating construction equipment will be used. All such materials will be handled and stored in an appropriate manner. In the unlikely event of a spill during construction, appropriate action to remedy the spill will be taken immediately in accordance with MPCA containment and remedial action guidelines. Potentially contaminated soil and groundwater encountered during construction will be handled in accordance with the MPCA-approved RAP/ECP document and environmental framework discussed under Section 9.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

Based on the environmental information reviewed for the project, the potential exists for encountering above ground or below ground tanks (both registered and unregistered tanks) that are associated with properties and buildings along the proposed route. Any tanks associated with buildings requiring demolition for roadway construction or encountered unexpectedly during roadway construction will be removed by licensed contractors in accordance with MPCA requirements.

Any above ground tanks used for construction-related diesel fuel storage will have provisions for secondary containment and will meet all local and state requirements for such tanks. No above or below ground tanks for storage of petroleum or other materials will be associated with the completed roadway.

21. **Traffic.**

Parking spaces added NA
Existing spaces (if project involves expansion) NA

Estimated total average daily traffic generated:

Estimated daily traffic projections for Pierce Butler existing, No-Build and Build scenarios are summarized in Table 21.1. Additional details are provided in the estimated Average Daily Traffic (ADT) maps found in Appendix C. Currently, heavy trucks account for approximately 9% of daily traffic along Pierce Butler west of Dale Street, and approximately 14%, 9%, and 10% along Minnehaha, Como, and Pennsylvania Avenues, respectively.

Table 21.1. Average Daily Traffic (ADT) Projections along Pierce Butler Route Corridor

	2006 ADT	2030 No-Build ADT	2030 Build ADT
Pierce Butler West of Victoria	8,500	9,200	13,000
Minnehaha East of Dale	6,000	6,400	2,200
Como Southeast of Minnehaha	16,000	20,600	19,000
Marion/Pennsylvania Between Como and Rice	18,000	17,700	10,400
Pennsylvania East of Rice	16,000	17,000	8,000
Empire West of Jackson	n.a.	4,800	23,500
Pennsylvania East of Jackson	15,500	18,000	20,000

NOTE: ADTs for 2006 reflect 24-hour counts taken in September, 2006. No-Build and Build ADTs for 2030 were derived from the Metropolitan Council 2030 Traffic Demand Model. See Appendix C for further discussion.

For this analysis, the limits of the corridor study area were extended to Transfer Road on the west, I-35E on the east, the BNSF rail corridor on the north, and University Avenue on the south. Peak hour turning movement counts and 48-hour tube counts were conducted at several intersections in the study area. In addition, classification counts were conducted at select locations to determine the impact of heavy vehicles in the study area.

Future traffic demands on the No-Build and Build alternatives were estimated using the Metropolitan Council's 2030 Regional Travel Demand Model. Traffic growth in the study area was projected using the population and employment growth rates defined in the 2030 Regional Model. A special generator was identified at the existing Shaw Lumber site north of Como Avenue and west of Dale Street. This site is anticipated for redevelopment as a community commercial area. The trip generation for this site was included in the demand model analysis. Additional details are provided in Appendix C.

Estimated maximum peak hour traffic generated (if known) and time of occurrence:

Projected AM and PM turning movement maps are provided in Appendix C. Peaks occur from 7:15 to 8:15 AM and 4:15 to 5:15 PM.

Provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

Key Intersection Operations

There is an overall improvement in levels of service between the 2030 Build and 2030 No-Build scenarios. Table 21.2 illustrates the Existing, 2030 No-Build, and 2030 Build levels of service as determined by the SYNCHRO operational software. SYNCHRO uses the Highway Capacity Manual (HCM) mathematical formulas to estimate traffic operations. SimTraffic graphically represents the traffic flow throughout the neighborhood.

Based on the SYNCHRO analysis:

- All intersections will operate at acceptable urban service levels (LOS D or better) with the proposed project.
- Under Existing conditions, the Marion/Como intersection operates at an unacceptable LOS E.
- Under the 2030 No Build alternative, the Marion/Como intersection will further degrade to "gridlock" LOS F, while the intersection of Minnehaha and Dale will degrade from LOS B to C.
- Under the Build alternative, service levels will improve at the following intersections: Minnehaha/Como, Pennsylvania/Rice, and Marion/Como. In addition, the intersection at Minnehaha and Dale will operate better than under No-Build conditions.
- The presently unsignalized intersection at Minnehaha and Como will need to be signalized under the 2030 No-Build and Build alternatives to generate suitable service levels.
- The intersection of Empire and Jackson will require signalization under the Build alternative.

Table 21.2. Pierce Butler Route Extension Analysis Level of Service Comparison

Intersection	2006 Existing	2030 No-Build	2030 Build
Pierce Butler and Minnehaha	A	A	--
Minnehaha and Dale	C	D	C
Pierce Butler and Dale	--	--	D
Pierce Butler and Arundel	--	--	B*
Minnehaha and Arundel	B*	B*	A*
Minnehaha and Western	B	B	B
Minnehaha and Como	D*	C	B
Pierce Butler and Minnehaha Connector	--		C*
Pierce Butler and Como Connector	--		C*
Pierce Butler and Marion/Pennsylvania	--		--
Marion and Como	E	F	D
Pennsylvania (Pierce Butler) and Rice	C	C	B
Pierce Butler and Empire	--	--	--
Pierce Butler and Pennsylvania	--	--	C
Pennsylvania and Empire	A*	A*	--
Empire (Pierce Butler) and Jackson	A*	C*	D

Note: * denotes unsignalized intersection.

Level of Service (LOS) is a measure of operational effectiveness that relates the length of delay experienced by drivers through an intersection or along a roadway segment. In general, LOS A reflects free flow conditions, while LOS F reflects gridlock conditions. Typically, LOS D is considered an acceptable level of service for a roadway or intersection.

Reduction in Local Street Traffic Volumes (Including Trucks)

The Average Daily Traffic Maps (ADT Maps) found in Appendix C compare the Existing (2006) daily traffic volumes, the projected 2030 No-Build volumes, and the projected 2030 Build volumes throughout the network. Several things become apparent:

- Thomas Avenue sees a reduction of up to 2000 vehicles per day in the 2030 Build versus the Existing and 2030 No-Build networks. The reduction is up to 4,000 vehicles per day on Minnehaha Avenue between Dale Street and Western Avenue, and approximately 9,000 vehicles per day on Minnehaha Avenue from Dale Street to the existing Pierce Butler intersection.
- Truck traffic is reduced by an estimated 700 vehicles per day on Minnehaha Avenue east of Dale Street versus the 2030 No-Build condition. In the eastern part of the corridor, truck traffic east of Rice Street is moved onto Empire Drive, one block to the north of existing Pennsylvania Avenue. As a result, an estimated 1,750 trucks are diverted as compared to the 2006 Existing network, or up to 1,900 vehicles are diverted as compared to the 2030 No-Build network.

Corridor Travel Time

The current travel path along the Pierce Butler corridor from Dale Street to I-35E is Minnehaha Avenue to Como Avenue to Marion Street to Pennsylvania Avenue eastward.

- Under the Existing network, the total travel time from a point west of Dale Street to a point west of I-35E is 7 minutes, as estimated by SYNCHRO (following the current travel path along the Pierce Butler Route from Dale Street to I-35E is Minnehaha Avenue to Como Avenue to Marion Street to Pennsylvania Avenue eastward).

- Under 2030 No Build network, that total travel time degrades to 9 minutes, using the same route and the same operation program.
- Under the Build alternative, the total travel time improves to 6 minutes from corresponding points west of Dale Street to west of I-35E following the extended Pierce Butler Route to Pennsylvania Avenue routing.

Total System Delay

One measure of effectiveness that takes into account what is happening throughout the entire corridor is Total System Delay. This measure can provide a cumulative comparison of the total length of delay that is occurring throughout a network.

- For the Existing network, the Total System Delay is 173 hours.
- For the 2030 No-Build network, the Total System Delay is 461 hours.
- For the 2030 Build network, the Total System Delay is 211 hours.

While total delay increases versus 2006 under either the No-Build or Build conditions, with traffic growth on the system, the 2030 Build alternative provides a significant improvement compared to the 2030 No-Build conditions.

Regional Impact

The Pierce Butler Route has a functional classification as a B Minor Arterial. Results of the demand and operational modeling show no substantial impact to the surrounding metropolitan region from a transportation perspective.

Mitigation Measures

Overall, the proposed Pierce Butler Extension project provides system improvements over the No-Build alternative. The implementation of the project will reduce 2030 traffic levels along Minnehaha, Thomas, and (to a lesser extent) Como Avenues. Daily and peak hour truck traffic will be reduced for residential buildings along sections of Minnehaha Avenue and along Pennsylvania Avenue. All study intersections within the project corridor and along adjacent neighborhood streets will operate at LOS D or better, and no mitigation measures are required for the proposed project.

22. **Vehicle-related air emissions.** *Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult EAW Guidelines about whether a detailed air quality analysis is needed.*

The air quality impacts of the proposed alternatives have been analyzed. In accordance with Environmental Protection Agency (EPA) Rule 93.123, a localized carbon monoxide (CO) hot-spot analysis was conducted for this project because there were intersections operating at level of service D, E, or F within 10 years after opening because of increased traffic volumes related to the project.

Carbon Monoxide Impact Analysis

The impacts from vehicle carbon monoxide (CO) emissions near roadway intersections affected by this project were evaluated using procedures approved by the Minnesota Pollution Control Agency (MPCA). The procedures require use of the U.S. EPA's pollutant dispersion models to evaluate the maximum CO concentrations from vehicle traffic near roadways. The predicted maximum worst-case impact due to the post-development traffic was added to prorated background concentrations and compared to the Minnesota and U.S. EPA ambient air quality standards for CO. These CO ambient air quality standards are listed below:

- Minnesota one-hour average: 30 parts per million (ppm).
- U.S. EPA one-hour average: 35ppm.
- Minnesota and U.S. EPA eight-hour average: 9ppm.

Revised 5/7/09

ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to preparers: This form is available at http://www.eqb.state.mn.us. *EAW Guidelines* will be available in Spring 1999 at the web site. The Environmental Assessment Worksheet provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit or its agents to determine whether an Environmental Impact Statement should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. If a complete answer does not fit in the space allotted, attach additional sheets as necessary. The complete question as well as the answer must be included if the EAW is prepared electronically.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title:** Pierce Butler Route Extension

2. **Proposer:** City of Saint Paul
   Contact person:
   Title:
   Address:

   City, State, ZIP:
   Phone:
   Fax:
   E-mail:

3. **RGU:** City of Saint Paul
   Contact person: Eriks Ludins
   Title: Project Manager
   Address: Department of Public Works
   25 West 4th Street, Suite 1500
   City, State, ZIP: Saint Paul, MN 55102
   Phone: 651-266-6204
   Fax: 651-266-6222
   E-mail: eriks.ludins@ci.stpaul.mn.us

4. **Reason for EAW preparation (check one):**

EIS scoping	Mandatory EAW	Citizen petition	RGU discretion	Proposer volunteered
☐	☐	☐	☒	☐

   If EAW or EIS is mandatory give EQB rule category subpart number _____ and subpart name _____

5. **Project location:** County: Ramsey County City/Township: Saint Paul

   Section 30, 31 Township 29 North Range 22 West

   Section 25, 26, 35, 36 Township 29 North Range 23 West

   Attach each of the following to the EAW:
   - County map showing the general location of the project. See Appendix A, Figure 1
   - U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable). See Appendix A, Figure 2
   - Site plan showing all significant project and natural features. See Appendix A, Figure 3

6. **Description:**

   a. Provide a project summary of 50 words or less to be published in the *EQB Monitor.*

   Proposal to extend Pierce Butler Route 2.0 miles from Grotto Street to a connection with Phalen Boulevard, intersecting Dale and Arundel Streets at grade, tunneling beneath Como/Western Avenues, and connecting with Empire Drive and Pennsylvania Avenue. Off-street bicycle/pedestrian trails and on-street bike lanes would be constructed through the corridor.

- Under 2030 No Build network, that total travel time degrades to 9 minutes, using the same route and the same operation program.
- Under the Build alternative, the total travel time improves to 6 minutes from corresponding points west of Dale Street to west of I-35E following the extended Pierce Butler Route to Pennsylvania Avenue routing.

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22. **Vehicle-related air emissions.** *Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult EAW Guidelines about whether a detailed air quality analysis is needed.*

The air quality impacts of the proposed alternatives have been analyzed. In accordance with Environmental Protection Agency (EPA) Rule 93.123, a localized carbon monoxide (CO) hot-spot analysis was conducted for this project because there were intersections operating at level of service D, E, or F within 10 years after opening because of increased traffic volumes related to the project.

Carbon Monoxide Impact Analysis

The impacts from vehicle carbon monoxide (CO) emissions near roadway intersections affected by this project were evaluated using procedures approved by the Minnesota Pollution Control Agency (MPCA). The procedures require use of the U.S. EPA's pollutant dispersion models to evaluate the maximum CO concentrations from vehicle traffic near roadways. The predicted maximum worst-case impact due to the post-development traffic was added to prorated background concentrations and compared to the Minnesota and U.S. EPA ambient air quality standards for CO. These CO ambient air quality standards are listed below:

- Minnesota one-hour average: 30 parts per million (ppm).
- U.S. EPA one-hour average: 35ppm.
- Minnesota and U.S. EPA eight-hour average: 9ppm.

Background CO Levels

Project build-out is expected in approximately 2030. The ambient background CO concentrations were derived from a December 13, 2002, CO monitoring report performed by Mn/DOT at the Richfield Water Treatment Plant in Richfield, Minnesota. Background monitoring was conducted within approximately 9 miles of the project site and was the closest reliable site provided by the Mn/DOT Office of Environmental Services. The maximum CO concentrations measured on that day were 3.83 ppm (1-hour average) and 1.94 ppm (8-hour average).

The 2002 background concentrations were adjusted to 2030 (Build year) using an annual growth factor of three percent and the ratio of idling emission factors between the analysis year (2030) and the year of the given data (2002). The 2030 background concentrations were calculated as follows:

2030 1-hour background = 3.83 ppm x $(1.03)^{2030-2002}$ x (11.164gm/hr / 24.575gm/hr) = 3.98 ppm.
2030 8-hour background = 1.94 ppm x $(1.03)^{2030-2002}$ x (11.164gm/hr / 24.575gm/hr) = 2.02 ppm.

The Minnesota Pollution Control Agency (MPCA) maintains an ambient air quality monitoring station 0.75 miles to the south of the Pierce-Butler Route study area at the intersection of Lexington Parkway and University Avenue (Site ID 861). This location was not deemed suitable to be used as "background" air quality information because of its proximity to high volume roadways, including duplication of volume already accounted for in the following AQ analysis method. Analysis using the CO concentration values collected here is included in order to test a "worst-case" scenario.

From data collected between January 1, 2005, and January 1, 2006, the second highest values for 1-hour average and 8-hour average CO concentration were 5.6 and 4.2 ppm, respectively. These 2005 concentrations were adjusted to 2030 (Build year) using an annual growth factor of three percent and the ratio of idling emission factors between the analysis year (2030) and the year of the given data (2005). The 2030 background concentrations were calculated as follows:

2030 1-hour background = 5.6 ppm x $(1.03)^{2030-2005}$ x (11.164gm/hr / 24.575gm/hr) = 5.32 ppm.
2030 8-hour background = 4.2 ppm x $(1.03)^{2030-2005}$ x (11.164gm/hr / 24.575gm/hr) = 3.99 ppm.

Vehicle Emissions

Motor vehicle tailpipe CO Emission Factors (EF) were estimated using the U.S. EPA Mobile6.2 model for the year 2030. Model assumptions were selected based on consultation with the MPCA. CO emission factors for moving vehicles were generated at 35 mph for through, approach and depart traffic on all roads, as all roads in the analysis were of similar characteristics.

Idle emission factors were computed using the Mobile6.2 model in accordance with U.S. EPA guidance. All Mobile6.2 emission factors were determined for ambient air temperatures ranging between 16 and 38 degrees Fahrenheit.

The resulting emission factors for year 2030 were:

Idle – 11.164 grams per hour.
35 mph – 16.152 grams per mile.

The worst intersection of each 2030 alternative based on Level-of-Service and overall volume level was analyzed for its emissions impacts. These intersections were:

- 2030 No-Build: Como Avenue/Marion Street
- 2030 Build: Jackson Avenue/Pierce-Butler Route

Site-Specific Inputs

The model outputs provide details of all required model inputs, including:

- Site and roadway geometry.
- Vehicle emission rates for characteristic speeds along modeled roadways.
- Traffic signal cycle times.
- Traffic signal red light times.
- Clearance lost time.
- Post improvement peak-hour traffic volumes for AM and PM peak hours.

Vehicle emission rates were estimated using Mobile6.2. Roadway geometry, traffic volume and signal timing information were based on results of the traffic analyses as discussed in Section 21. The signal timing for stop sign-controlled intersections was estimated using a short timing cycle and adjusting the red times to match the predicted queue lengths from the output of the CAL3QHC model.

Meteorological Inputs

Meteorological Inputs to the CAL3QHC model included the following:

- Wind Speed: 1 meter/second.
- Stability Class: D.
- Mixing Height: 1,000 meters.
- Surface Roughness Length: 108 centimeters (Single Family Residential Use).
- Wind Directions: 360, in increments of 1 degree.

Receptors

Receptors chosen for modeling were located close to the affected intersections and any sensitive location within a 1000-foot radius of the chosen intersections. Therefore, the modeled CO concentrations at these receptors indicate the worst-case impact.

Modeled Concentrations

The traffic operational modeling software, SYNCHRO, also estimates total system emissions for carbon monoxide (CO), nitrogen oxide (NOx) and volatile oxygen compounds (VOC). Total system (see Section 21 for roadway "system" used for traffic analyses) emissions estimates were used as a measure of comparative effectiveness for a Build versus No-Build 2030 analysis. Results are summarized in Table 22.1. As shown, total system emissions are lower for the proposed Build alternative than for comparable No-Build conditions.

Table 22.1. 2030 Total System Emission Comparison[1]

Scenario	Location	2030 P.M. Peak Hour Emission (in kg)		
		CO	NOx	VOC
No-Build	Como/Marion	45	9	11
Build	Jackson/Pierce Butler	39	8	9

[1]Derived from SYNCHRO operational model for each scenario.

Table 22.2 presents the predicted 1-hour and 8-hour CO concentrations at the modeled intersections for the year 2030.

Table 22.2. 2030 Predicted Maximum Carbon Monoxide Concentrations (ppm)

Scenario	Location	1-Hour Modeled	Richfield Water Treatment Plant		Lexington/University	
			1-Hour Average[1]	8-Hour Average[2]	1-Hour Average[1]	8-Hour Average[2]
No-Build	Como/Marion	0.70	4.68	2.51	6.02	4.48
Build	Jackson/Pierce-Butler	0.90	4.88	2.65	6.22	4.62

[1] One-hour averages are calculated by adding the 1-hour modeled concentration plus the adjusted 1-hour background concentration for the specific site.

[2] Eight-hour averages are calculated by multiplying the 1-hour modeled concentration by an averaging time conversion factor of 0.7 plus the adjusted 8-hour background concentration for the specific site.

All predicted impacts, either Build or No-Build, are within the Minnesota ambient air quality standards of 30 ppm and 9 ppm for 1-hour and 8-hour time averages for CO, respectively.

Analytical Tools

- EPA Model Mobile6.2 model to determine CO Emission Factors (March, 2006).
- EPA Model CAL3QHC Line Source Dispersion Model to determine ambient Co levels (Version 2.0, February 21, 1995).

Mitigation Measures

Mitigation actions that will minimize adverse effects of vehicle-related air emissions are identical to mitigation measures for traffic and are discussed at the end of Section 21.

23. **Stationary source air emissions.** *Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult EAW Guidelines for a listing) and any greenhouse gases (such as carbon dioxide, methane, nitrous oxide) and ozone-depleting chemicals (chloro-fluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.*

Not applicable.

24. **Odors, noise and dust.** *Will the project generate odors, noise or dust during construction or during operation?*
✓Yes __No
If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Noise Analysis Overview

The project is expected to result in a general improvement in noise compared to No-Build conditions. Traffic noise impacts for the project were determined using monitoring and computer modeling. Existing noise levels were determined at eight residential areas (receptors) along the project route. Receptor locations are shown in Appendix D. Monitoring was conducted to determine existing noise levels and to calibrate the model for the study locations.

City of Saint Paul

City Hall and Court House
15 West Kellogg Boulevard
Phone: 651-266-8560

Certified Copy

Resolution: RES 14-1921

File Number: RES 14-1921

Authorizing the Department of Public Works to prepare and submit project applications into the Metropolitan Council's Regional Solicitation Process for potential federal funding for projects in years 2018 and 2019, and to commit the local funding match requirement if the Department is awarded the federal funding.

WHEREAS, the Metropolitan Council has released its Regional Solicitation for project applications for potential federal funding in years 2018 and 2019, and

WHEREAS, the Department of Public Works is proposing to submit ~~six~~ seven project applications into the Metropolitan Council's Regional Solicitation process, and

WHEREAS, the ~~six~~ seven project applications being proposed are:

- Replacement of the Kellogg Boulevard/3rd Street Bridge #62080
- Trout Brook Road Extension from Prince Street to Lafayette/Kittson
- Pierce Butler East Extension Ph. II - Arundel to east of Western
- Margaret Street Bicycle Boulevard - Forest Street to McKnight Road
- Rehabilitation of Indian Mounds Park Trail - T.H. 61 to Bruce Vento Trail
- Saint Paul Downtown Traffic Signal Enhancements Program
- The Samuel H. Morgan to Bruce Vento Nature Sanctuary Bicycle and Pedestrian Bridge, and

WHEREAS, if any of the above named projects get selected to receive federal funding the City is prepared to commit to a local funding match of 20% of the total project(s) cost which is a requirement to securing the federal funds, and

WHEREAS, the Mayor, pursuant to Section 10.07.1 of the Charter of the City of Saint Paul, does certify that there will be funds made available for appropriation in future Capital Improvement Budgets if federal funds are awarded to any of the projects listed above; so

THEREFORE BE IT RESOLVED, by the Council of the City of Saint Paul to authorize the Department of Public Works to prepare and submit project applications for federal funding through the Metropolitan Council's Regional Solicitation Process as referenced in this resolution, and

BE IT FURTHER RESOLVED, by the Council of the City of Saint Paul that local funding will be made available as a match to any and all federal funds that are awarded to any of the projects referenced in this resolution. These funds will be identified and made available in future years capital improvement budgets.

I, Shari Moore, City Clerk of the City of Saint Paul, Minnesota, do hereby certify that I have compared the attached copy of RES 14-1921 as adopted by the City Council on 11/12/2014 and approved by the Mayor with the original thereof on file in my office.

Attest: Shari Moore

Shari Moore

November 20, 2014

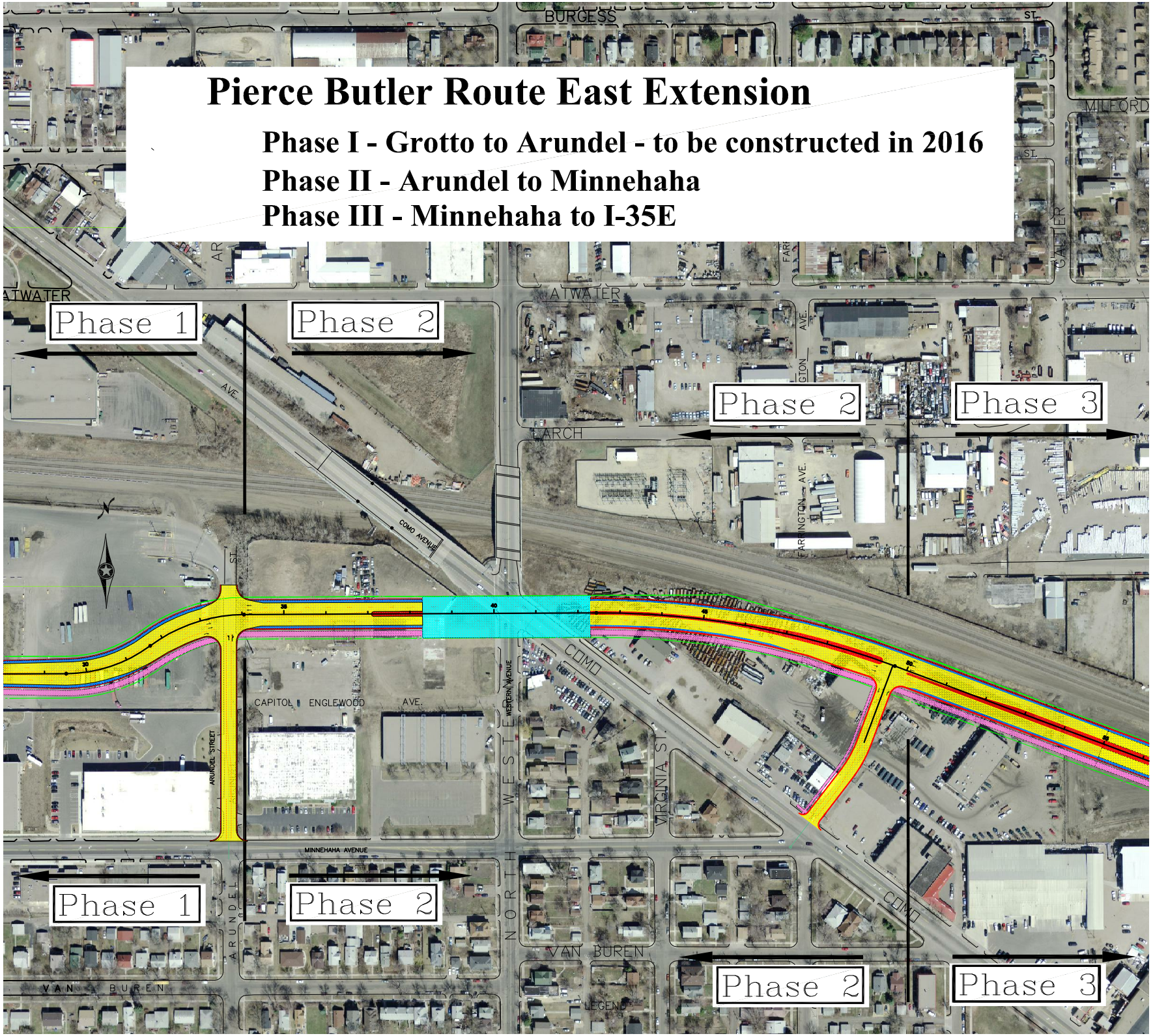
Date Certified

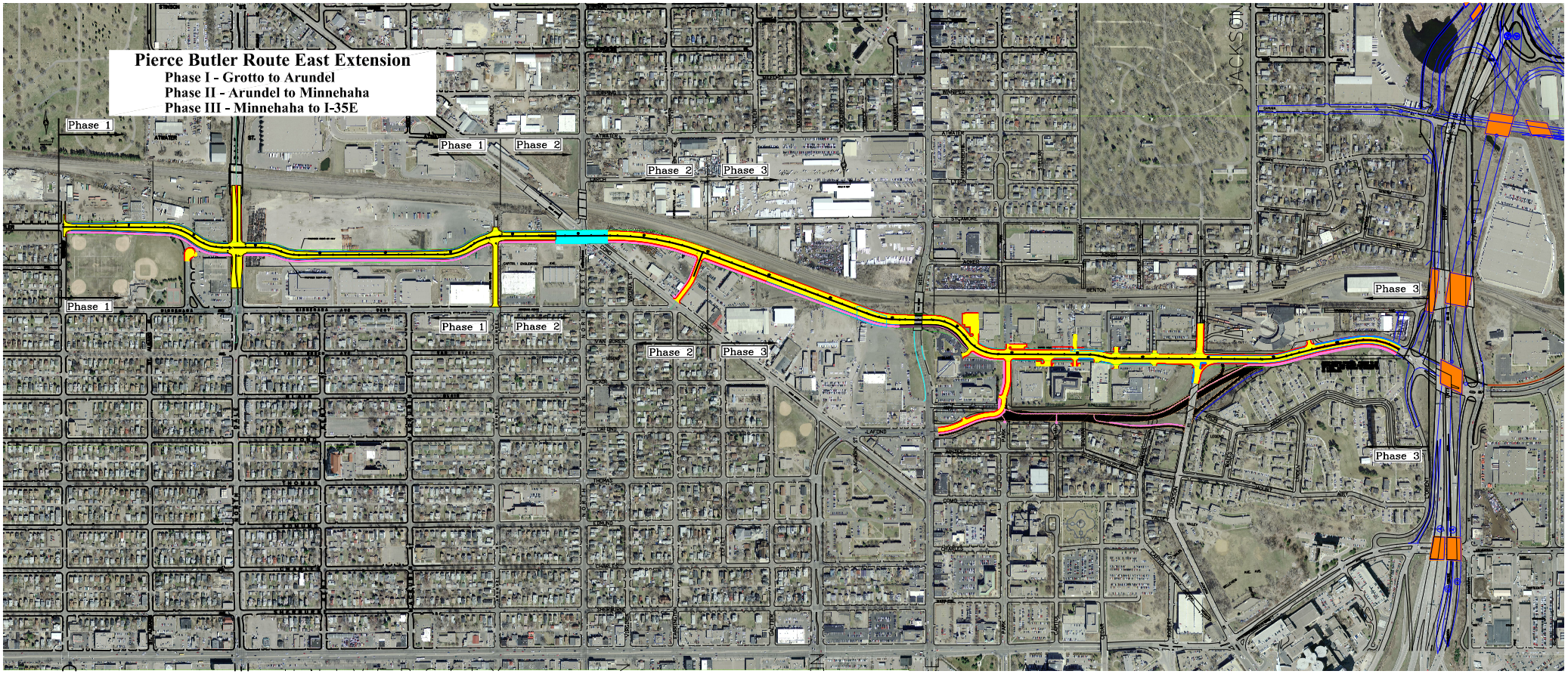
Pierce Butler Route East Extension

Phase I - Grotto to Arundel - to be constructed in 2016

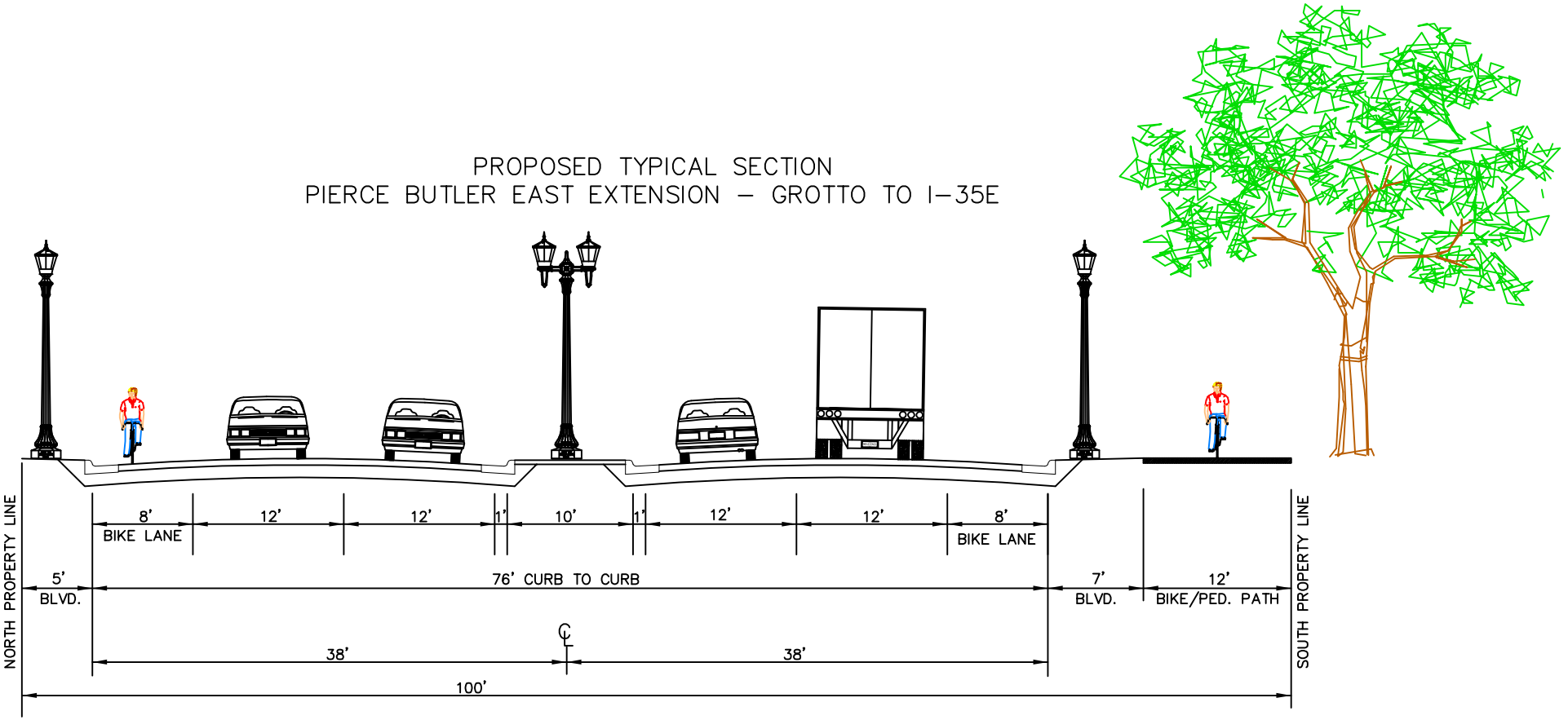
Phase II - Arundel to Minnehaha

Phase III - Minnehaha to I-35E




Pierce Butler Route East Extension
Phase I - Grotto to Arundel
Phase II - Arundel to Minnehaha
Phase III - Minnehaha to I-35E
Phase 1
Phase 1
Phase 2
Phase 2
Phase 3
Phase 1
Phase 1
Phase 2
Phase 2
Phase 3
Phase 3
Phase 3
JACKSON

PROPOSED TYPICAL SECTION
PIERCE BUTLER EAST EXTENSION – GROTTO TO I–35E



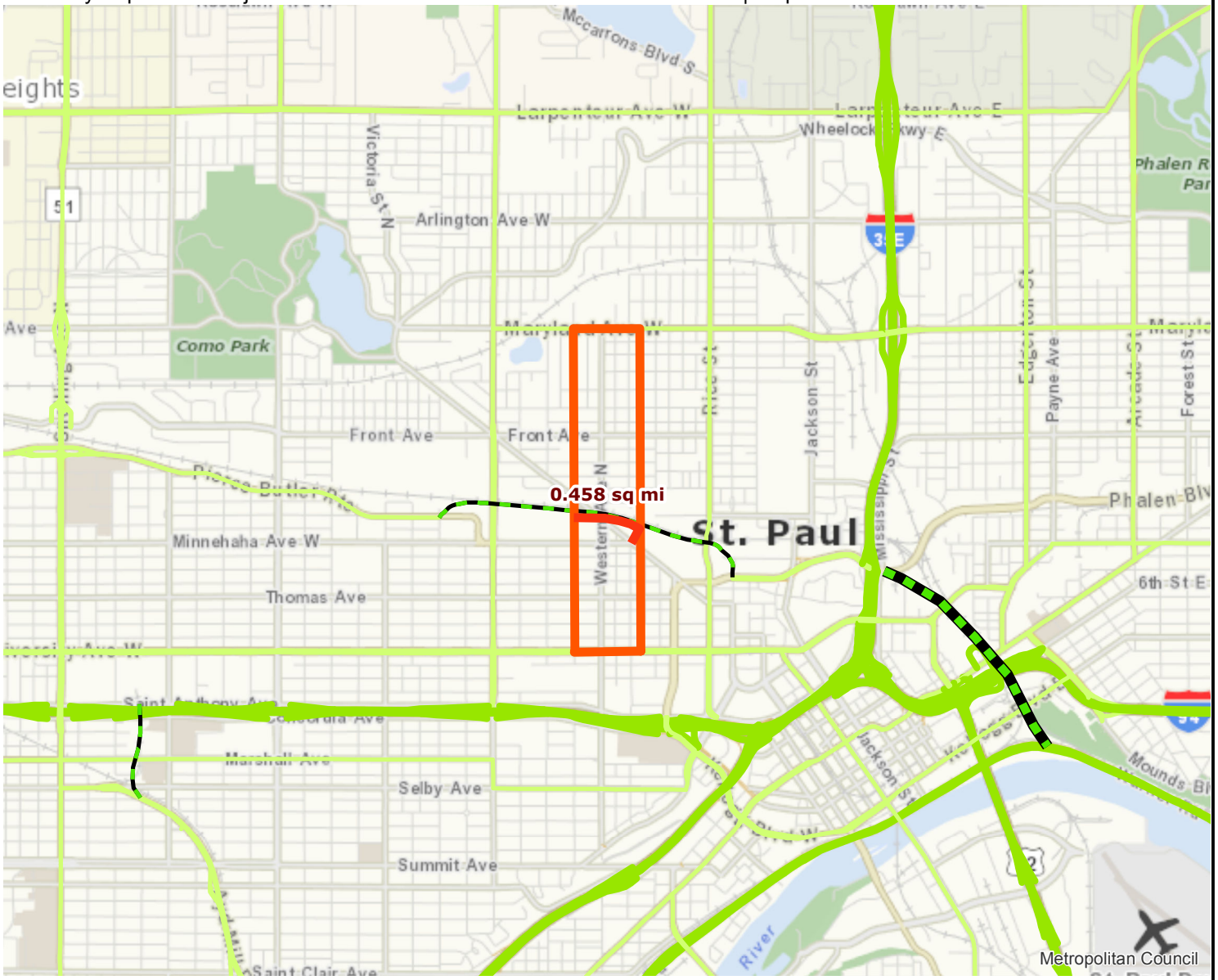
Roadway Area Definition

Roadway Expansion Project: Pierce Butler Route East Extension - Phase II | Map ID: 1416497463721

Results

Project Length: 0.39 miles

Project Area: 0.458 sq mi



Project

Project Area

Principal Arterials

A Minor Arterials

Principal Arterials Planned

A Minor Arterials Planned

0 0.45 0.9 1.8 2.7 3.6 Miles

Created: 11/20/2014

LandscapeRSA1

For complete disclaimer of accuracy, please visit http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

Regional Economy

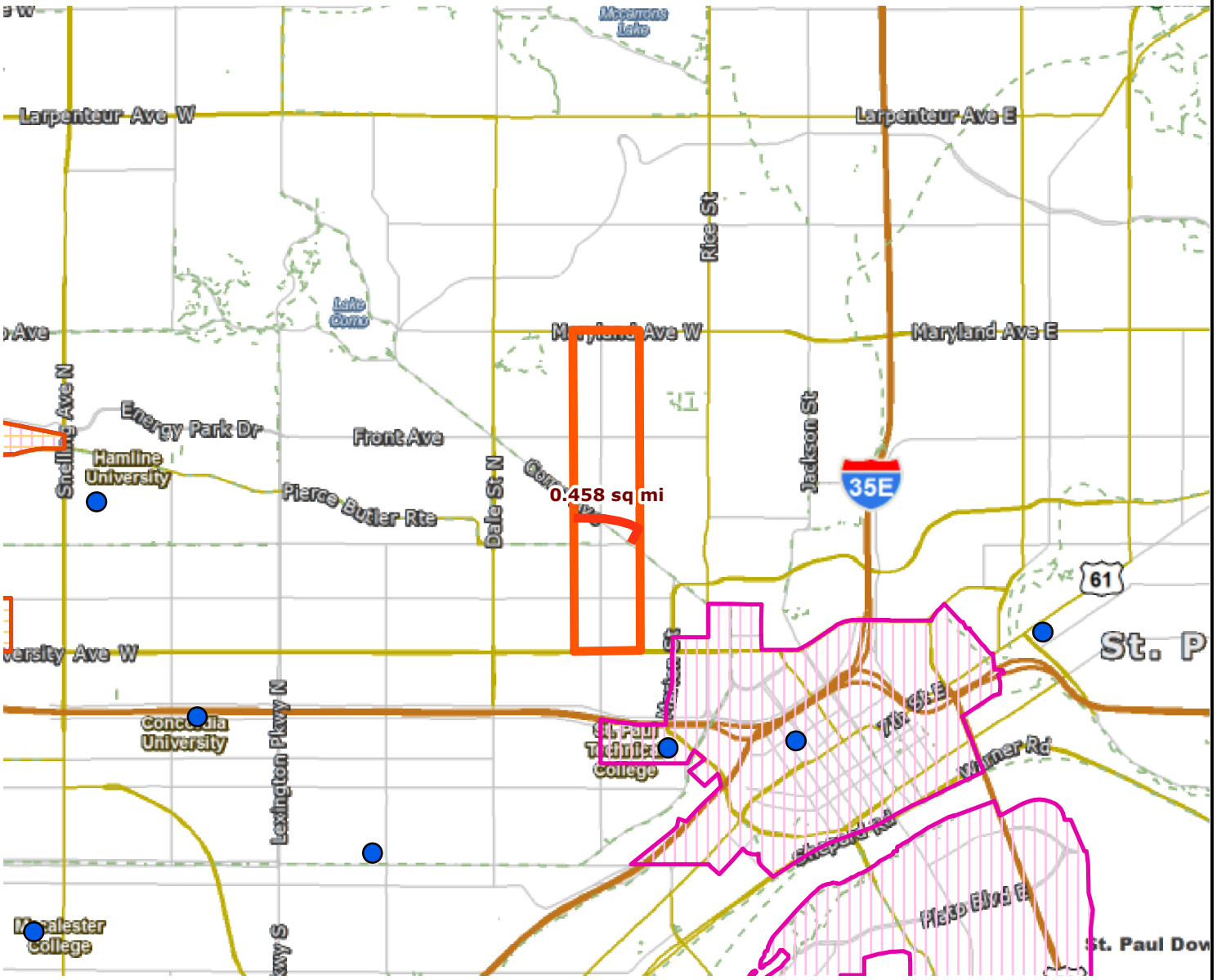
Roadway Expansion Project: Pierce Butler Route East Extension - Phase II | Map ID: 1416497463721

Results

Project **WITHIN ONE MI** of area of Job Concentration.

Project **NOT IN** to area of Manufacturing and Distribution.

Project **WITHIN ONE MI** of area of Education Institutions.



Created: 11/20/2014
LandscapeRSA5

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

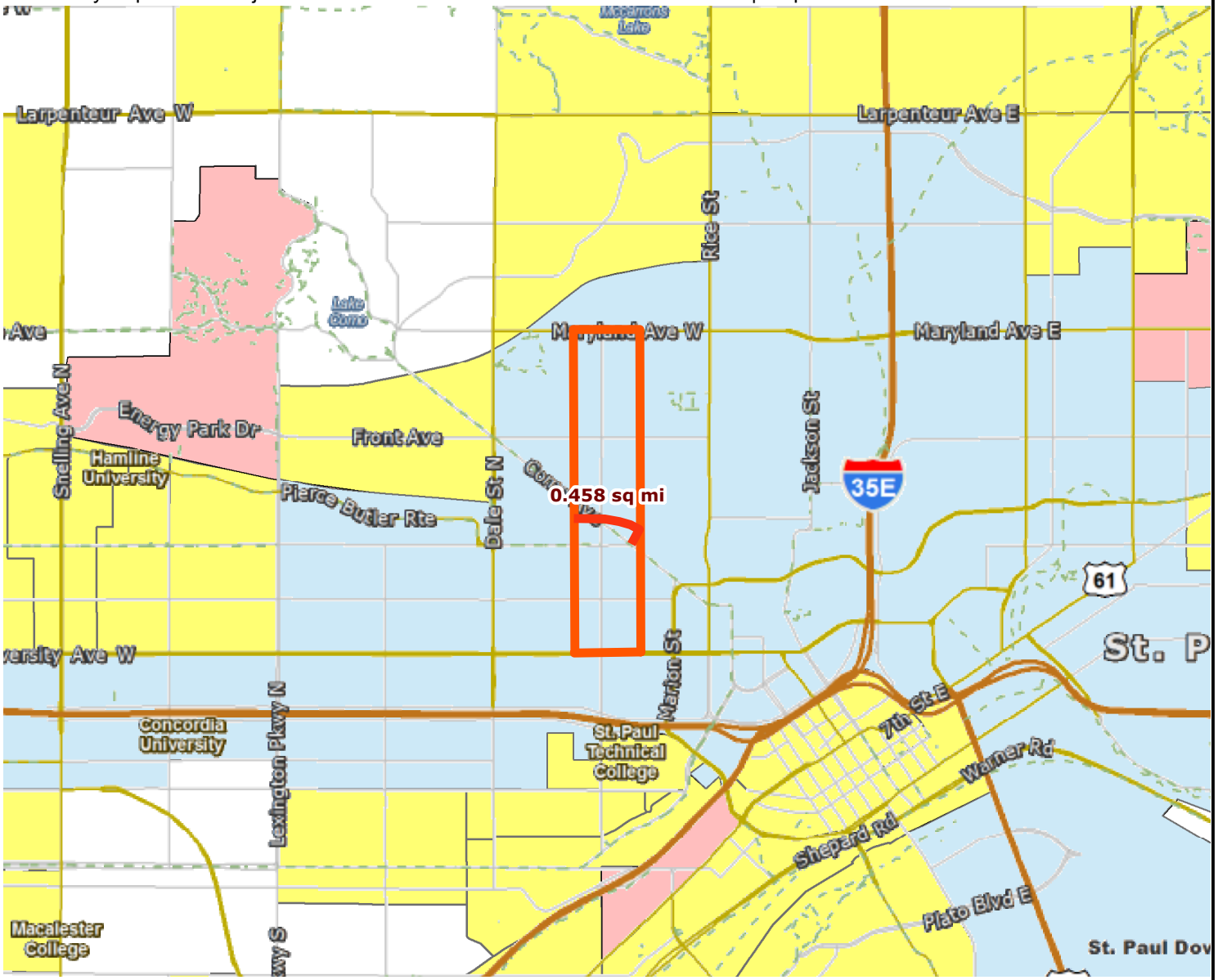
METROPOLITAN COUNCIL

Socio-Economic Conditions

Roadway Expansion Project: Pierce Butler Route East Extension - Phase II | Map ID: 1416497463721

Results

Project **IN** a racially concentrated area of poverty.



Project
Project Area
Racially concentrated area of poverty
Concentrated area of poverty
Above reg'l avg conc of race/poverty

0 0.45 0.9 1.8 2.7 3.6 Miles

Created: 11/20/2014
LandscapeRSA2

For complete disclaimer of accuracy, please visit
http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

Revised 5/7/09

ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to preparers: This form is available at http://www.eqb.state.mn.us. *EAW Guidelines* will be available in Spring 1999 at the web site. The Environmental Assessment Worksheet provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit or its agents to determine whether an Environmental Impact Statement should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. If a complete answer does not fit in the space allotted, attach additional sheets as necessary. The complete question as well as the answer must be included if the EAW is prepared electronically.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title:** Pierce Butler Route Extension

2. **Proposer:** City of Saint Paul
   Contact person:
   Title:
   Address:

   City, State, ZIP:
   Phone:
   Fax:
   E-mail:

3. **RGU:** City of Saint Paul
   Contact person: Eriks Ludins
   Title: Project Manager
   Address: Department of Public Works
   25 West 4th Street, Suite 1500
   City, State, ZIP: Saint Paul, MN 55102
   Phone: 651-266-6204
   Fax: 651-266-6222
   E-mail: eriks.ludins@ci.stpaul.mn.us

4. **Reason for EAW preparation (check one):**

EIS scoping	Mandatory EAW	Citizen petition	RGU discretion	Proposer volunteered
☐	☐	☐	☒	☐

   If EAW or EIS is mandatory give EQB rule category subpart number _____ and subpart name _____

5. **Project location:** County: Ramsey County City/Township: Saint Paul

   Section 30, 31 Township 29 North Range 22 West

   Section 25, 26, 35, 36 Township 29 North Range 23 West

   Attach each of the following to the EAW:
   - County map showing the general location of the project. See Appendix A, Figure 1
   - U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable). See Appendix A, Figure 2
   - Site plan showing all significant project and natural features. See Appendix A, Figure 3

6. **Description:**

   a. Provide a project summary of 50 words or less to be published in the *EQB Monitor.*

   Proposal to extend Pierce Butler Route 2.0 miles from Grotto Street to a connection with Phalen Boulevard, intersecting Dale and Arundel Streets at grade, tunneling beneath Como/Western Avenues, and connecting with Empire Drive and Pennsylvania Avenue. Off-street bicycle/pedestrian trails and on-street bike lanes would be constructed through the corridor.

All construction and demolition debris and waste materials generated as a result of the roadway project will be disposed of by construction contractors at demolition or solid waste landfills, as appropriate. The recycling of demolition materials such as concrete or metal will be encouraged over landfill disposal to the degree practical. For existing structures requiring demolition, all regulated asbestos-containing materials (ACM) and other hazardous materials incidental to buildings will be identified, removed, and disposed of at appropriate facilities prior to demolition.

Other than materials incidental to building demolition (as described above), no other hazardous wastes will be generated during construction or during operation of the final project. Any solid wastes generated during construction-related activities will be disposed of at demolition or solid waste landfills, as appropriate. Potentially contaminated soil and groundwater encountered during construction will be handled in accordance with the MPCA-approved RAP/ECP document and environmental framework discussed under Section 9.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

No toxic or hazardous materials will be used during roadway construction. As with any construction project, fuel, oil and other incidental vehicle maintenance chemicals necessary for operating construction equipment will be used. All such materials will be handled and stored in an appropriate manner. In the unlikely event of a spill during construction, appropriate action to remedy the spill will be taken immediately in accordance with MPCA containment and remedial action guidelines. Potentially contaminated soil and groundwater encountered during construction will be handled in accordance with the MPCA-approved RAP/ECP document and environmental framework discussed under Section 9.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

Based on the environmental information reviewed for the project, the potential exists for encountering above ground or below ground tanks (both registered and unregistered tanks) that are associated with properties and buildings along the proposed route. Any tanks associated with buildings requiring demolition for roadway construction or encountered unexpectedly during roadway construction will be removed by licensed contractors in accordance with MPCA requirements.

Any above ground tanks used for construction-related diesel fuel storage will have provisions for secondary containment and will meet all local and state requirements for such tanks. No above or below ground tanks for storage of petroleum or other materials will be associated with the completed roadway.

21. **Traffic.**

Parking spaces added NA
Existing spaces (if project involves expansion) NA

Estimated total average daily traffic generated:

Estimated daily traffic projections for Pierce Butler existing, No-Build and Build scenarios are summarized in Table 21.1. Additional details are provided in the estimated Average Daily Traffic (ADT) maps found in Appendix C. Currently, heavy trucks account for approximately 9% of daily traffic along Pierce Butler west of Dale Street, and approximately 14%, 9%, and 10% along Minnehaha, Como, and Pennsylvania Avenues, respectively.

Table 21.1. Average Daily Traffic (ADT) Projections along Pierce Butler Route Corridor

	2006 ADT	2030 No-Build ADT	2030 Build ADT
Pierce Butler West of Victoria	8,500	9,200	13,000
Minnehaha East of Dale	6,000	6,400	2,200
Como Southeast of Minnehaha	16,000	20,600	19,000
Marion/Pennsylvania Between Como and Rice	18,000	17,700	10,400
Pennsylvania East of Rice	16,000	17,000	8,000
Empire West of Jackson	n.a.	4,800	23,500
Pennsylvania East of Jackson	15,500	18,000	20,000

NOTE: ADTs for 2006 reflect 24-hour counts taken in September, 2006. No-Build and Build ADTs for 2030 were derived from the Metropolitan Council 2030 Traffic Demand Model. See Appendix C for further discussion.

For this analysis, the limits of the corridor study area were extended to Transfer Road on the west, I-35E on the east, the BNSF rail corridor on the north, and University Avenue on the south. Peak hour turning movement counts and 48-hour tube counts were conducted at several intersections in the study area. In addition, classification counts were conducted at select locations to determine the impact of heavy vehicles in the study area.

Future traffic demands on the No-Build and Build alternatives were estimated using the Metropolitan Council's 2030 Regional Travel Demand Model. Traffic growth in the study area was projected using the population and employment growth rates defined in the 2030 Regional Model. A special generator was identified at the existing Shaw Lumber site north of Como Avenue and west of Dale Street. This site is anticipated for redevelopment as a community commercial area. The trip generation for this site was included in the demand model analysis. Additional details are provided in Appendix C.

Estimated maximum peak hour traffic generated (if known) and time of occurrence:

Projected AM and PM turning movement maps are provided in Appendix C. Peaks occur from 7:15 to 8:15 AM and 4:15 to 5:15 PM.

Provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

Key Intersection Operations

There is an overall improvement in levels of service between the 2030 Build and 2030 No-Build scenarios. Table 21.2 illustrates the Existing, 2030 No-Build, and 2030 Build levels of service as determined by the SYNCHRO operational software. SYNCHRO uses the Highway Capacity Manual (HCM) mathematical formulas to estimate traffic operations. SimTraffic graphically represents the traffic flow throughout the neighborhood.

Based on the SYNCHRO analysis:

- All intersections will operate at acceptable urban service levels (LOS D or better) with the proposed project.
- Under Existing conditions, the Marion/Como intersection operates at an unacceptable LOS E.
- Under the 2030 No Build alternative, the Marion/Como intersection will further degrade to "gridlock" LOS F, while the intersection of Minnehaha and Dale will degrade from LOS B to C.
- Under the Build alternative, service levels will improve at the following intersections: Minnehaha/Como, Pennsylvania/Rice, and Marion/Como. In addition, the intersection at Minnehaha and Dale will operate better than under No-Build conditions.
- The presently unsignalized intersection at Minnehaha and Como will need to be signalized under the 2030 No-Build and Build alternatives to generate suitable service levels.
- The intersection of Empire and Jackson will require signalization under the Build alternative.

Table 21.2. Pierce Butler Route Extension Analysis Level of Service Comparison

Intersection	2006 Existing	2030 No-Build	2030 Build
Pierce Butler and Minnehaha	A	A	--
Minnehaha and Dale	C	D	C
Pierce Butler and Dale	--	--	D
Pierce Butler and Arundel	--	--	B*
Minnehaha and Arundel	B*	B*	A*
Minnehaha and Western	B	B	B
Minnehaha and Como	D*	C	B
Pierce Butler and Minnehaha Connector	--		C*
Pierce Butler and Como Connector	--		C*
Pierce Butler and Marion/Pennsylvania	--		--
Marion and Como	E	F	D
Pennsylvania (Pierce Butler) and Rice	C	C	B
Pierce Butler and Empire	--	--	--
Pierce Butler and Pennsylvania	--	--	C
Pennsylvania and Empire	A*	A*	--
Empire (Pierce Butler) and Jackson	A*	C*	D

Note: * denotes unsignalized intersection.

Level of Service (LOS) is a measure of operational effectiveness that relates the length of delay experienced by drivers through an intersection or along a roadway segment. In general, LOS A reflects free flow conditions, while LOS F reflects gridlock conditions. Typically, LOS D is considered an acceptable level of service for a roadway or intersection.

Reduction in Local Street Traffic Volumes (Including Trucks)

The Average Daily Traffic Maps (ADT Maps) found in Appendix C compare the Existing (2006) daily traffic volumes, the projected 2030 No-Build volumes, and the projected 2030 Build volumes throughout the network. Several things become apparent:

- Thomas Avenue sees a reduction of up to 2000 vehicles per day in the 2030 Build versus the Existing and 2030 No-Build networks. The reduction is up to 4,000 vehicles per day on Minnehaha Avenue between Dale Street and Western Avenue, and approximately 9,000 vehicles per day on Minnehaha Avenue from Dale Street to the existing Pierce Butler intersection.
- Truck traffic is reduced by an estimated 700 vehicles per day on Minnehaha Avenue east of Dale Street versus the 2030 No-Build condition. In the eastern part of the corridor, truck traffic east of Rice Street is moved onto Empire Drive, one block to the north of existing Pennsylvania Avenue. As a result, an estimated 1,750 trucks are diverted as compared to the 2006 Existing network, or up to 1,900 vehicles are diverted as compared to the 2030 No-Build network.

Corridor Travel Time

The current travel path along the Pierce Butler corridor from Dale Street to I-35E is Minnehaha Avenue to Como Avenue to Marion Street to Pennsylvania Avenue eastward.

- Under the Existing network, the total travel time from a point west of Dale Street to a point west of I-35E is 7 minutes, as estimated by SYNCHRO (following the current travel path along the Pierce Butler Route from Dale Street to I-35E is Minnehaha Avenue to Como Avenue to Marion Street to Pennsylvania Avenue eastward).

- Under 2030 No Build network, that total travel time degrades to 9 minutes, using the same route and the same operation program.
- Under the Build alternative, the total travel time improves to 6 minutes from corresponding points west of Dale Street to west of I-35E following the extended Pierce Butler Route to Pennsylvania Avenue routing.

Total System Delay

One measure of effectiveness that takes into account what is happening throughout the entire corridor is Total System Delay. This measure can provide a cumulative comparison of the total length of delay that is occurring throughout a network.

- For the Existing network, the Total System Delay is 173 hours.
- For the 2030 No-Build network, the Total System Delay is 461 hours.
- For the 2030 Build network, the Total System Delay is 211 hours.

While total delay increases versus 2006 under either the No-Build or Build conditions, with traffic growth on the system, the 2030 Build alternative provides a significant improvement compared to the 2030 No-Build conditions.

Regional Impact

The Pierce Butler Route has a functional classification as a B Minor Arterial. Results of the demand and operational modeling show no substantial impact to the surrounding metropolitan region from a transportation perspective.

Mitigation Measures

Overall, the proposed Pierce Butler Extension project provides system improvements over the No-Build alternative. The implementation of the project will reduce 2030 traffic levels along Minnehaha, Thomas, and (to a lesser extent) Como Avenues. Daily and peak hour truck traffic will be reduced for residential buildings along sections of Minnehaha Avenue and along Pennsylvania Avenue. All study intersections within the project corridor and along adjacent neighborhood streets will operate at LOS D or better, and no mitigation measures are required for the proposed project.

22. **Vehicle-related air emissions.** *Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult EAW Guidelines about whether a detailed air quality analysis is needed.*

The air quality impacts of the proposed alternatives have been analyzed. In accordance with Environmental Protection Agency (EPA) Rule 93.123, a localized carbon monoxide (CO) hot-spot analysis was conducted for this project because there were intersections operating at level of service D, E, or F within 10 years after opening because of increased traffic volumes related to the project.

Carbon Monoxide Impact Analysis

The impacts from vehicle carbon monoxide (CO) emissions near roadway intersections affected by this project were evaluated using procedures approved by the Minnesota Pollution Control Agency (MPCA). The procedures require use of the U.S. EPA's pollutant dispersion models to evaluate the maximum CO concentrations from vehicle traffic near roadways. The predicted maximum worst-case impact due to the post-development traffic was added to prorated background concentrations and compared to the Minnesota and U.S. EPA ambient air quality standards for CO. These CO ambient air quality standards are listed below:

- Minnesota one-hour average: 30 parts per million (ppm).
- U.S. EPA one-hour average: 35ppm.
- Minnesota and U.S. EPA eight-hour average: 9ppm.

Revised 5/7/09

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2. **Proposer:** City of Saint Paul
   Contact person:
   Title:
   Address:

   City, State, ZIP:
   Phone:
   Fax:
   E-mail:

3. **RGU:** City of Saint Paul
   Contact person: Eriks Ludins
   Title: Project Manager
   Address: Department of Public Works
   25 West 4th Street, Suite 1500
   City, State, ZIP: Saint Paul, MN 55102
   Phone: 651-266-6204
   Fax: 651-266-6222
   E-mail: eriks.ludins@ci.stpaul.mn.us

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☐	☐	☐	☒	☐

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- Under 2030 No Build network, that total travel time degrades to 9 minutes, using the same route and the same operation program.
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- Minnesota one-hour average: 30 parts per million (ppm).
- U.S. EPA one-hour average: 35ppm.
- Minnesota and U.S. EPA eight-hour average: 9ppm.

Background CO Levels

Project build-out is expected in approximately 2030. The ambient background CO concentrations were derived from a December 13, 2002, CO monitoring report performed by Mn/DOT at the Richfield Water Treatment Plant in Richfield, Minnesota. Background monitoring was conducted within approximately 9 miles of the project site and was the closest reliable site provided by the Mn/DOT Office of Environmental Services. The maximum CO concentrations measured on that day were 3.83 ppm (1-hour average) and 1.94 ppm (8-hour average).

The 2002 background concentrations were adjusted to 2030 (Build year) using an annual growth factor of three percent and the ratio of idling emission factors between the analysis year (2030) and the year of the given data (2002). The 2030 background concentrations were calculated as follows:

2030 1-hour background = 3.83 ppm x $(1.03)^{2030-2002}$ x (11.164gm/hr / 24.575gm/hr) = 3.98 ppm.
2030 8-hour background = 1.94 ppm x $(1.03)^{2030-2002}$ x (11.164gm/hr / 24.575gm/hr) = 2.02 ppm.

The Minnesota Pollution Control Agency (MPCA) maintains an ambient air quality monitoring station 0.75 miles to the south of the Pierce-Butler Route study area at the intersection of Lexington Parkway and University Avenue (Site ID 861). This location was not deemed suitable to be used as "background" air quality information because of its proximity to high volume roadways, including duplication of volume already accounted for in the following AQ analysis method. Analysis using the CO concentration values collected here is included in order to test a "worst-case" scenario.

From data collected between January 1, 2005, and January 1, 2006, the second highest values for 1-hour average and 8-hour average CO concentration were 5.6 and 4.2 ppm, respectively. These 2005 concentrations were adjusted to 2030 (Build year) using an annual growth factor of three percent and the ratio of idling emission factors between the analysis year (2030) and the year of the given data (2005). The 2030 background concentrations were calculated as follows:

2030 1-hour background = 5.6 ppm x $(1.03)^{2030-2005}$ x (11.164gm/hr / 24.575gm/hr) = 5.32 ppm.
2030 8-hour background = 4.2 ppm x $(1.03)^{2030-2005}$ x (11.164gm/hr / 24.575gm/hr) = 3.99 ppm.

Vehicle Emissions

Motor vehicle tailpipe CO Emission Factors (EF) were estimated using the U.S. EPA Mobile6.2 model for the year 2030. Model assumptions were selected based on consultation with the MPCA. CO emission factors for moving vehicles were generated at 35 mph for through, approach and depart traffic on all roads, as all roads in the analysis were of similar characteristics.

Idle emission factors were computed using the Mobile6.2 model in accordance with U.S. EPA guidance. All Mobile6.2 emission factors were determined for ambient air temperatures ranging between 16 and 38 degrees Fahrenheit.

The resulting emission factors for year 2030 were:

Idle – 11.164 grams per hour.
35 mph – 16.152 grams per mile.

The worst intersection of each 2030 alternative based on Level-of-Service and overall volume level was analyzed for its emissions impacts. These intersections were:

- 2030 No-Build: Como Avenue/Marion Street
- 2030 Build: Jackson Avenue/Pierce-Butler Route

Site-Specific Inputs

The model outputs provide details of all required model inputs, including:

- Site and roadway geometry.
- Vehicle emission rates for characteristic speeds along modeled roadways.
- Traffic signal cycle times.
- Traffic signal red light times.
- Clearance lost time.
- Post improvement peak-hour traffic volumes for AM and PM peak hours.

Vehicle emission rates were estimated using Mobile6.2. Roadway geometry, traffic volume and signal timing information were based on results of the traffic analyses as discussed in Section 21. The signal timing for stop sign-controlled intersections was estimated using a short timing cycle and adjusting the red times to match the predicted queue lengths from the output of the CAL3QHC model.

Meteorological Inputs

Meteorological Inputs to the CAL3QHC model included the following:

- Wind Speed: 1 meter/second.
- Stability Class: D.
- Mixing Height: 1,000 meters.
- Surface Roughness Length: 108 centimeters (Single Family Residential Use).
- Wind Directions: 360, in increments of 1 degree.

Receptors

Receptors chosen for modeling were located close to the affected intersections and any sensitive location within a 1000-foot radius of the chosen intersections. Therefore, the modeled CO concentrations at these receptors indicate the worst-case impact.

Modeled Concentrations

The traffic operational modeling software, SYNCHRO, also estimates total system emissions for carbon monoxide (CO), nitrogen oxide (NOx) and volatile oxygen compounds (VOC). Total system (see Section 21 for roadway "system" used for traffic analyses) emissions estimates were used as a measure of comparative effectiveness for a Build versus No-Build 2030 analysis. Results are summarized in Table 22.1. As shown, total system emissions are lower for the proposed Build alternative than for comparable No-Build conditions.

Table 22.1. 2030 Total System Emission Comparison[1]

Scenario	Location	2030 P.M. Peak Hour Emission (in kg)		
		CO	NOx	VOC
No-Build	Como/Marion	45	9	11
Build	Jackson/Pierce Butler	39	8	9

[1]Derived from SYNCHRO operational model for each scenario.

Table 22.2 presents the predicted 1-hour and 8-hour CO concentrations at the modeled intersections for the year 2030.

Table 22.2. 2030 Predicted Maximum Carbon Monoxide Concentrations (ppm)

Scenario	Location	1-Hour Modeled	Richfield Water Treatment Plant		Lexington/University	
			1-Hour Average[1]	8-Hour Average[2]	1-Hour Average[1]	8-Hour Average[2]
No-Build	Como/Marion	0.70	4.68	2.51	6.02	4.48
Build	Jackson/Pierce-Butler	0.90	4.88	2.65	6.22	4.62

[1] One-hour averages are calculated by adding the 1-hour modeled concentration plus the adjusted 1-hour background concentration for the specific site.

[2] Eight-hour averages are calculated by multiplying the 1-hour modeled concentration by an averaging time conversion factor of 0.7 plus the adjusted 8-hour background concentration for the specific site.

All predicted impacts, either Build or No-Build, are within the Minnesota ambient air quality standards of 30 ppm and 9 ppm for 1-hour and 8-hour time averages for CO, respectively.

Analytical Tools

- EPA Model Mobile6.2 model to determine CO Emission Factors (March, 2006).
- EPA Model CAL3QHC Line Source Dispersion Model to determine ambient Co levels (Version 2.0, February 21, 1995).

Mitigation Measures

Mitigation actions that will minimize adverse effects of vehicle-related air emissions are identical to mitigation measures for traffic and are discussed at the end of Section 21.

23. **Stationary source air emissions.** *Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult EAW Guidelines for a listing) and any greenhouse gases (such as carbon dioxide, methane, nitrous oxide) and ozone-depleting chemicals (chloro-fluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.*

Not applicable.

24. **Odors, noise and dust.** *Will the project generate odors, noise or dust during construction or during operation?*
✓Yes __No
If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Noise Analysis Overview

The project is expected to result in a general improvement in noise compared to No-Build conditions. Traffic noise impacts for the project were determined using monitoring and computer modeling. Existing noise levels were determined at eight residential areas (receptors) along the project route. Receptor locations are shown in Appendix D. Monitoring was conducted to determine existing noise levels and to calibrate the model for the study locations.

Pierce Butler Route East Extension Phase II
Crash Reduction Data and Calculations

Note: Appendix E does not address construction of an entirely new road alignment. It is intended for use on roadway improvement projects, not construction of an entirely new alignment. To address this question, it was assumed that the new segment of Pierce Butler Route would relieve traffic on University Avenue by an amount equal to the ADT on the existing segment of Pierce Butler Route. Therefore the number of crashes on University Avenue would be reduced by the percentage of reduced ADT. In addition, traffic on Minnehaha Avenue will be relieved by the construction of the Pierce Butler East Extension. It was assumed that the number of crashes on Minnehaha would be reduced by the reduced AADT. These numbers were taken from the project's EAW. Crash data for University Avenue and Minnehaha Avenue were determined using the Minnesota Crash Mapping Analysis Tool.

The construction of Pierce Butler Route East Extension Phase II will result in the relief of traffic volumes on University Avenue equal to the current AADT on the existing segment of Pierce Butler Route. This traffic reduction on University Avenue will reduce the crash totals on University by the percentage of traffic volume reduction.

University Avenue AADT: 23,532 Crashes on University Avenue: 57
Pierce Butler AADT: 7,800

7800/23532 = .3315

Crashes on University will decrease by 33%: 53 x 0.3315 = 17.6

A total of 18 FEWER crashes on University Avenue in three years.

There were 15 crashes on Minnehaha between Arundel and Como from 2011- 2013. It can be assumed that the crash rate on this segment can be reduced by the percentage of traffic relieved.

Current AADT: 5800
2030 Build Alt. AADT: 2200

Crash reduction: (15/5800) x 2200 = 5.68; 6 crashes on Minnehaha.

15 – 6 = 9 FEWER crashes on Minnehaha Avenue in three years.

For the Pierce Butler Extension, assume a crash rate of 3.7 (4-lane divided, conventional)

CR = Crashes x 10^6 / ADT x Length x No. Days

3.7 = 1,000,000 X / 7800 x .40 x 1095

3.7 = X / 3.42

X = 12.65 = 13 Crashes on the new segment of Pierce Butler

Total Crash Reduction = 18+9-13 = **14 fewer crashes** resulting from the construction of this project.

Cost per reduced crash: $12,333,050.00 / 14 = **$880,932.14**

Benefit/Cost: 14 / $12,333,050.00 = **0.000001135**

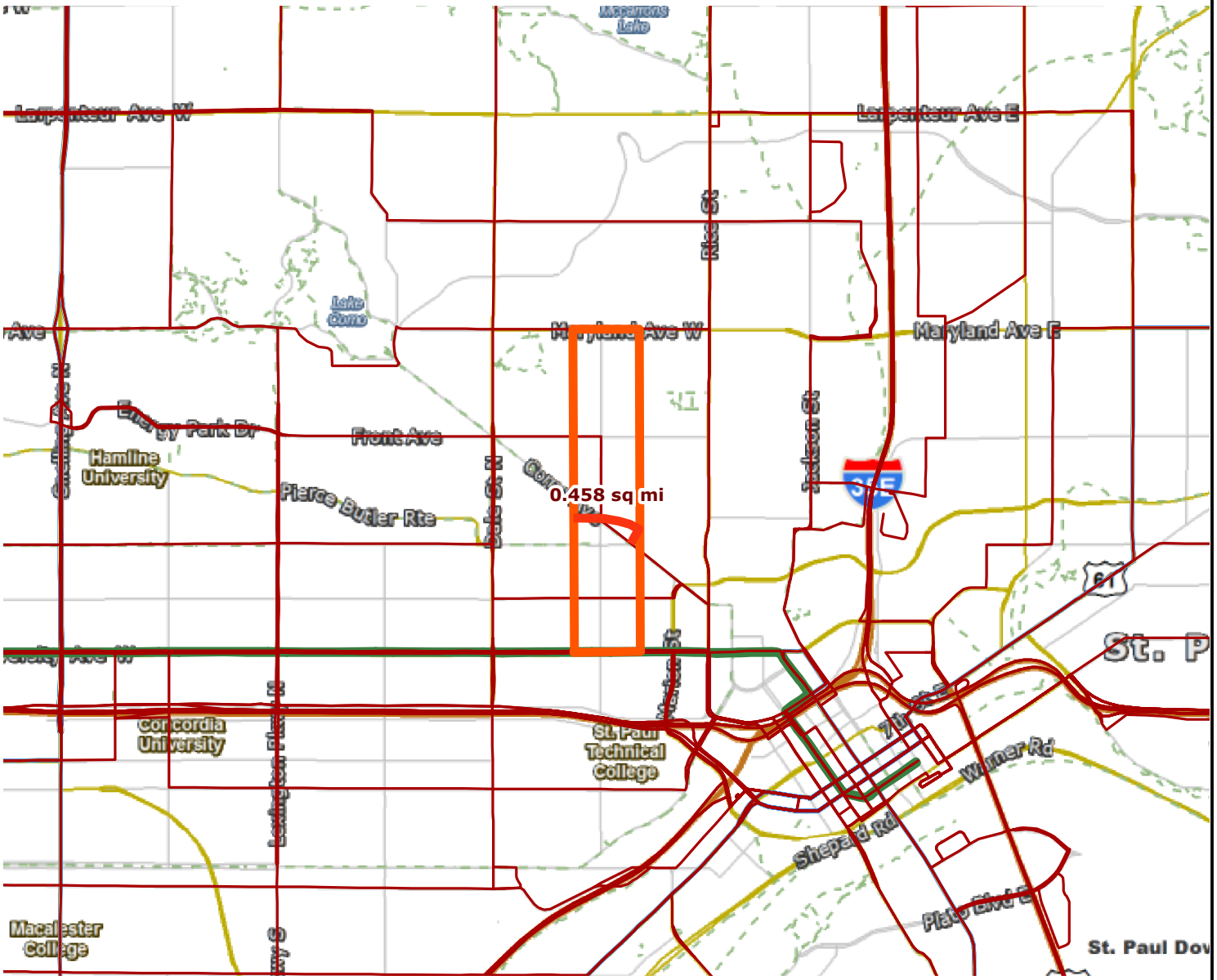
Transit Connections

Roadway Expansion Project: Pierce Butler Route East Extension - Phase II | Map ID: 1416497463721

Results

Transit with a Direct Connection to project:
3

**indicates Planned Alignments*



Project
Project Area
Transit Routes
Transitway
Green Line
Planned Alignments
Arterial BRT

0 0.45 0.9 1.8 2.7 3.6 Miles

Created: 11/20/2014
LandscapeRSA3

METROPOLITAN COUNCIL