Application

19839 - 2024 Roadway Expansion
20480 - Highway 13 Improvements at Washburn-Chowen-Lynn in Burnsville/Scott County/Savage
Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
Submitted Date:	12/15/2023 11:57 AM

Primary Contact

Feel free to edit your profile any time your information changes. Create your own personal alerts using My Alerts.

Name:*	He/him/his Pronouns	Logan First Name	 Middle Name	Vlasaty Last Name
Title:	City Engineer			
Department:				
Email:	logan.vlasaty@burnsvillemn.gov			
Address:	100 Civic Center Parkway			
*	Burnsville City	Minnesota State/Province	55337 Postal Code/Zip	
Phone:*	952-895-4457 Phone		Ext.	
Fax:				
What Grant Programs are you most interested in?	Regional Solicitation - Roadways Including Multimodal Elements			

Organization Information

Name:	BURNSVILLE, CITY OF		
Jurisdictional Agency (if different):			
Organization Type:	City		
Organization Website:			
Address:	100 CIVIC CTR PKY		
*	BURNSVILLE City	Minnesota State/Province	55337 Postal Code/Zip
County:	Dakota		
Phone:*	952-895-4400 Ext.		
Fax:			
PeopleSoft Vendor Number	0000020927A1		

Project Information

Project Name	Highway 13 Lynn to Washburn Safety & Mobility Project
Primary County where the Project is Located	Dakota, Scott
Cities or Townships where the Project is Located:	City of Burnsville, City of Savage
Jurisdictional Agency (If Different than the Applicant):	MnDOT

Brief Project Description (Include location, road name/functional class, type of improvement, etc.)

The Proposed Highway 13 Lynn to Washburn Safety and Mobility Project includes the reconstruction of 1.4 miles of Trunk Highway 13 (TH13), an important principal arterial in the metropolitan region. The project will construct a combination of grade separated interchanges and overpasses at the Lynn, Chowen, and Washburn Ave intersections to eliminate highway and local cross street traffic interactions. The project includes reconstruction of frontage roads for grade separation tie ins, accompanying access ramps, and a multimodal trail and sidewalk expansion. These improvements will replace at-grade signalized intersections at Lynn Ave and Washburn Ave and a full access side street stop intersection at Chowen Ave.

Today the local system interactions with TH 13 are plagued with high numbers of traffic crashes, high levels of traffic congestion (including for transit and freight vehicles accessing regional hubs), long waits for crossing traffic, and stressful and dangerous (or nonexistent) crossings for non-motorized users. Metropolitan Council?s 2017 Regional Trunk Highway Corridor Study identified this segment of TH 13 as the second most congested highway in the Twin Cities.

TH 13 is a significant non-freeway principal arterial roadway that runs parallel to the Minnesota River and connects to major river crossings at both I-35W and US Hwy 169. Within the project area, Lynn, Chowen, and Washburn Aves provide access to residential neighborhoods, regional outdoor recreational destinations, and over 7,000 jobs within a one-mile buffer. TH 13 is a gateway to both the Cities of Savage and Burnsville, their downtown districts, and the majority of their industrial and commercial business districts. TH 13 serves as a critical freight corridor as it provides sole access to the Ports of Savage, a nationally prominent port for the shipment of grain and other commodities to the rest of the world. Since 2000, the Ports have moved as much as five million tons of products per year. Operators have indicated that they are operating at under fifty percent capacity, with congestion and delay on TH 13 contributing as a significant factor in limiting the level of commodities moving into and out of the Ports.

This project is part of a greater suite of mobility and safety improvements along TH 13 between the cities of Savage and Burnsville identified in MnDOT's 2021 Highway 13 Corridor Study. These improvements will provide a corridor that safely and efficiently accommodates high demand from a variety of users including transit, pedestrians, bicyclists, and freight and commuter traffic.

(Limit 2,800 characters; approximately 400 words)

TRANSPORTATION IMPROVEMENT PROGRAM (TIP) DESCRIPTION - will be used in TIP if the project is selected for funding. See MnDOT's TIP description guidance.

MN 13, BURNSVILLE & SAVAGE, GRADE SEPARATION OF LYNN, CHOWEN, AND WASHBURN INTERSECTIONS.

Include both the CSAH/MSAS/TH references and their corresponding street names in the TIP Description (see Resources link on Regional Solicitation webpage for examples).

Project Length (Miles)

1.4

to the nearest one-tenth of a mile

Project Funding

Are you applying for competitive funds from another source(s) to implement this project?

Yes

If yes, please identify the source(s)

USDOT Multimodal Project Discretionary Grant Program. MNHFP

Federal Amount

$10,000,000.00

Match Amount

$2,500,000.00

Minimum of 20% of project total

Project Total

$12,500,000.00

For transit projects, the total cost for the application is total cost minus fare revenues.

Match Percentage

20.0%

Minimum of 20%
Compute the match percentage by dividing the match amount by the project total

Source of Match Funds

Corridors of Commerce award, local contributions from the Cities of Burnsville and Savage and Scott County

A minimum of 20% of the total project cost must come from non-federal sources; additional match funds over the 20% minimum can come from other federal sources

Preferred Program Year

Select one: 2028, 2029

Select 2026 or 2027 for TDM and Unique projects only. For all other applications, select 2028 or 2029.

Additional Program Years: 2026, 2027

Select all years that are feasible if funding in an earlier year becomes available.

Project Information-Roadways

NOTE: If your project has already been assigned a State Aid Project # (SAP or SP), please Indicate SAP# here

SAP#: n/a

County, City, or Lead Agency City of Burnsville

Functional Class of Road Principal Arterial

Road System TH

TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET

Road/Route No. 13

i.e., 53 for CSAH 53

Name of Road Trunk Highway 13

Example; 1st ST., MAIN AVE

TERMINI:(Termini listed must be within 0.3 miles of any work)

From:
Road System 500 ft West of Lynn Ave and TH13 Intersection

Road/Route No. 13

i.e., 53 for CSAH 53

Name of Road Lynn Avenue

Example; 1st ST., MAIN AVE

To:
Road System 2,000 feet east of Washburn Ave/ TH13 intersection

DO NOT INCLUDE LEGAL DESCRIPTION

Road/Route No. 13

i.e., 53 for CSAH 53

Name of Road Washburn Avenue

Example; 1st ST., MAIN AVE

In the City/Cities of: Burnsville and Savage

(List all cities within project limits)

OR:

At:
Road System

(TH, CSAH, MSAS, CO. RD., TWP. RD., City Street)

Road/Route No.

i.e., 53 for CSAH 53

Name of Road

Example; 1st ST., MAIN AVE

In the City/Cities of:

(List all cities within project limits)

PROJECT LENGTH

Miles 1.4

(nearest 0.1 miles)

Primary Types of Work (check all the apply)

New Construction

Reconstruction Yes

Resurfacing Yes

Bituminous Pavement

Concrete Pavement

Roundabout Yes

New Bridge Yes

Bridge Replacement

Bridge Rehab

New Signal

Signal Replacement/Revision

Bike Trail	Yes
Other (do not include incidental items)	
BRIDGE/CULVERT PROJECTS (IF APPLICABLE)	
Old Bridge/Culvert No.:	
New Bridge/Culvert No.:	
Structure is Over/Under (Bridge or culvert name):	
OTHER INFORMATION:	
Zip Code where Majority of Work is Being Performed	55337
Approximate Begin Construction Date	05/01/2027
Approximate End Construction Date	10/31/2028
Miles of Trail (nearest 0.1 miles)	0.3
Miles of Sidewalk (nearest 0.1 miles)	0.6
Miles of trail on the Regional Bicycle Transportation Network (nearest 0.1 miles):	0.1
Is this a new trail?	Yes

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 2040 Transportation Policy Plan (2018), the 2040 Regional Parks Policy Plan (2018), and the 2040 Water Resources Policy Plan (2015).

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

2. The project must be consistent with the 2040 Transportation Policy Plan. Reference the 2040 Transportation Plan goals, objectives, and strategies that relate to the project.

Briefly list the goals, objectives, strategies, and associated pages:

Safety and Security

Objective A -(page 2.5).

B1 (page 2.5)

B3 (page 2.6)

B6 (page 2.8)

Access to Destinations

Objective A -(page 2.10)

Objective B -(page 2.10)

Objective D -(page 2.10)

Objective E -(page 2.10)

C1 (page 2.10)

C2 (page 2.11)

C4 (page 2.14)

C7 (page 2.16)

C8 (page 2.16)

C9 (page 2.17)

C10 (page 2.18)

C11 (page 2.20)

C15 (page 2.22)

C16 (page 2.23)

C17 (page 2.24)

Competitive Economy

Objective A - (page 2.26)

Objective B - (page 2.26)

Objective C - (page 2.26)

D1 (page 2.26)

D3 (page 2.27)

D4 (page 2.28)

Healthy Environment

Objective A -(page 2.30)

Objective C -(page 2.30)

Objective D -(page 2.30)

E2 (page 2.31)

E3 (page 2.31)

E5 (page 2.33)

Leveraging Transportation Investments to Guide Land Use

Objective A -(page 2.35)

Objective C -(page 2.35)

Limit 2,800 characters, approximately 400 words

3. The project or the transportation problem/need that the project addresses must be in a local planning or programming document. 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 the Minnesota Department of Transportation 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: Unique projects are exempt from this qualifying requirement because of their innovative nature.

MnDOT Corridor Study Report Highway 13: Savage to Burnsville (2021)

Identified preferred design for the Lynn, Washburn, and Chowen intersections with TH13. The preferred design would grade sperate intersections, install teardrop roundabouts, and multimodal frontage roads on the North side of the Highway. (p. 23)

Burnsville 2040 Comprehensive Plan (2019)

Frontage road and trail connection between Lynn Avenue and Chowen Avenue on the north side of TH 13. (p. 7-353)

Consolidation of the Chowen/Washburn intersection and plan for an interchange (p. 7-353)

Savage 2040 Comprehensive Plan (2019)

Lynn Avenue bridge identified as a city planning priority (p. 5-19)

Identifies the possibility of grade separating Lynn, Chowen, and Washburn Ave Intersections (p.5- 47)

City of Burnsville Multi-Modal Plan (2021)

Identifies the grade separated crossing improvements at the Chowen and Washburn Intersections as part of the Long Term Multimodal Network (p. 54)

Limit 2,800 characters, approximately 400 words

4. The project must exclude costs for studies, preliminary engineering, design, or construction engineering. Right-of-way costs are only eligible as part of transit stations/stops, transit terminals, park-and-ride facilities, or pool-and-ride lots. Noise barriers, drainage projects, fences, landscaping, etc., are not eligible for funding as a standalone project, but can be included as part of the larger submitted project, which is otherwise eligible. Unique project costs are limited to those that are federally eligible.

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

5. Applicant is a public agency (e.g., county, city, tribal government, transit provider, etc.) or non-profit organization (TDM and Unique Projects applicants only). Applicants that are not State Aid 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

6. Applicants must not submit an application for the same project elements in more than one funding application category.

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

7. 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. Funding amounts by application category are listed below in Table 1. For unique projects, the minimum award is $500,000 and the maximum award is the total amount available each funding cycle (approximately $4,000,000 for the 2024 funding cycle).

Strategic Capacity (Roadway Expansion): *$1,000,000 to $10,000,000*
Roadway Reconstruction/Modernization: *$1,000,000 to $7,000,000*
Traffic Management Technologies (Roadway System Management): *$500,000 to $3,500,000*
Spot Mobility and Safety: *$1,000,000 to $3,500,000*
Bridges Rehabilitation/Replacement: *$1,000,000 to $7,000,000*

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

8. The project must comply with the Americans with Disabilities Act (ADA).

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

9. In order for a selected project to be included in the Transportation Improvement Program (TIP) and approved by USDOT, the public agency sponsor must either have a current Americans with Disabilities Act (ADA) self-evaluation or transition plan that covers the public right of way/transportation, as required under Title II of the ADA. The plan must be completed by the local agency before the Regional Solicitation application deadline. For future Regional Solicitation funding cycles, this requirement may include that the plan has undergone a recent update, e.g., within five years prior to application.

The applicant is a public agency that employs 50 or more people and has a completed ADA transition plan that covers the public right of way/transportation. Yes

(TDM and Unique Project Applicants Only) The applicant is not a public agency subject to the self-evaluation requirements in Title II of the ADA.

Date plan completed: 03/01/2020

Link to plan: https://burnsvillemn.gov/DocumentCenter/View/11330/Burnsville-ADA-Transition-Plan?bidId=

The applicant is a public agency that employs fewer than 50 people and has a completed ADA self-evaluation that covers the public right of way/transportation.

Date self-evaluation completed:

Link to plan:

Upload plan or self-evaluation if there is no link

Upload as PDF

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

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

11. The owner/operator of the facility must operate and maintain the project year-round for the useful life of the improvement. This includes assurance of year-round use of bicycle, pedestrian, and transit facilities, per FHWA direction established 8/27/2008 and updated 4/15/2019. Unique projects are exempt from this qualifying requirement.

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

12. 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

13. 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

14. The project applicant must send written notification regarding the proposed project to all affected state and local units of government prior to submitting the application.

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

Roadways Including Multimodal Elements

1. All roadway projects 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. Bridge Rehabilitation/Replacement projects must be located on a minor collector and above functionally classified roadway in the urban areas or a major collector and above in the rural areas.

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

Roadway Strategic Capacity and Reconstruction/Modernization and Spot Mobility projects only:

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

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

Bridge Rehabilitation/Replacement and Strategic Capacity projects only:

3. Projects requiring a grade-separated crossing of a principal arterial freeway must be limited to the federal share of those project costs identified as local (non-MnDOT) cost responsibility using MnDOT?s ?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. Yes

4. 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 application categories. Rail-only bridges are ineligible for funding.

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

Bridge Rehabilitation/Replacement projects only:

5. The length of the in-place structure is 20 feet or longer.

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

6. The bridge must have a Local Planning Index (LPI) of less than 60 OR a National Bridge Inventory (NBI) Rating of 3 or less for either Deck Geometry, Approach Roadway, or Waterway Adequacy as reported on the most recent Minnesota Structure Inventory Report.

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

Roadway Expansion, Reconstruction/Modernization, and Bridge Rehabilitation/Replacement projects only:

7. All roadway projects that involve the construction of a new/expanded interchange or new interchange ramps must have approval by the Metropolitan Council/MnDOT Interchange Planning Review Committee prior to application submittal. Please contact David Elvin at MnDOT (David.Elvin@state.mn.us or 651-234-7795) to determine whether your project needs to go through this process as described in Appendix F of the 2040 Transportation Policy Plan.

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

Requirements - Roadways Including Multimodal Elements

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$2,969,600.00
Removals (approx. 5% of total cost)	$1,648,000.00
Roadway (grading, borrow, etc.)	$3,819,900.00
Roadway (aggregates and paving)	$13,854,600.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$3,890,000.00
Ponds	$0.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$1,252,200.00
Traffic Control	$3,419,600.00
Striping	$890,900.00
Signing	$890,900.00
Lighting	$180,000.00
Turf - Erosion & Landscaping	$4,454,400.00
Bridge	$10,862,700.00
Retaining Walls	$24,545,700.00
Noise Wall (not calculated in cost effectiveness measure)	$0.00
Traffic Signals	$0.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$8,897,300.00
Other Roadway Elements	$0.00
Totals	**$81,575,800.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$37,900.00
Sidewalk Construction	$34,900.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$4,000.00
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	$11,500.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$88,300.00**

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
Contingencies	$0.00
Right-of-Way	$0.00
Other Transit and TDM Elements	$0.00

Totals	**$0.00**

Transit Operating Costs

Number of Platform hours	0
Cost Per Platform hour (full loaded Cost)	$0.00
Subtotal	$0.00
Other Costs - Administration, Overhead,etc.	$0.00

PROTECT Funds Eligibility

One of the new federal funding sources is Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT). Please describe which specific elements of your project and associated costs out of the Total TAB-Eligible Costs are eligible to receive PROTECT funds. Examples of potential eligible items may include: storm sewer, ponding, erosion control/landscaping, retaining walls, new bridges over floodplains, and road realignments out of floodplains.

INFORMATION: Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program Implementation Guidance (dot.gov).

Response:

The project area is particularly vulnerable in terms of flood risk. According to the EPA?s EJScreen Tool, surrounding communities fall into the 81st statewide percentile for flood risk. The economically critical Ports of Savage fall into the 97th statewide percentile for flooding risk. The existing roadways in the project area maintain minimal stormwater management practices. Highway 13 parallels the Minnesota River, which is an impaired water way that features seasonal flooding. Seasonal flooding can, at times, threaten Highway 13. The new facilities will be constructed to improve flood resistance of the Project Corridor. Project implementation will follow the Minnesota Pollution Controls Agency?s (MPCA) plan to reduce sediment loadings on the Lower Minnesota and Upper Mississippi River system, all stormwater upgrades will contribute to improved water quality on the Minnesota & Mississippi Rivers. The project will comply with MnDOT and the Lower Minnesota River Watershed District Standards and the City of Burnsville and City of Savage?s MS4 stormwater requirements. Project improvements will include replacement of stormwater infrastructure and retaining walls to expand capacity to resolve flooding along the corridor. Drainage and stormwater facilities will be upgraded to meet current infiltration and rate control standards within the project area. A floodplain assessment was conducted as part of the environmental analysis that resulted in a no-rise certification. Project elements are in line with the goals and objectives of the PROTECT program and are eligible for funding. Projects that improve existing eligible surface transportation facilities eligible under 23 U.S.C are eligible for PROTECT funding. Additionally, projects that strengthen systems that remove rainwater from surface transportation facilities are eligible for PROTECT formula funding. PROTECT eligible elements include but are not limited to storm sewer, erosion/landscaping control, and retaining walls with an estimated cost of $32,890,100.

Totals

Total Cost	$81,664,100.00
Construction Cost Total	$81,664,100.00
Transit Operating Cost Total	$0.00

Congestion within Project Area:

The measure will analyze the level of congestion within the project area. Council staff will provide travel speed data on the "Level of Congestion" map. The analysis will compare the peak hour travel speed within the project area to fee-flow conditions.

Free-Flow Travel Speed:	56
The Free-Flow Travel Speed is the black number.	
Peak Hour Travel Speed:	36
The Peak Hour Travel Speed is the red number.	
Percentage Decrease in Travel Speed in Peak Hour compared to Free-Flow:	35.71%
Upload Level of Congestion map:	1702500026507_Level of Congestion Map.pdf

Congestion on adjacent Parallel Routes:

Adjacent Parallel Corridor	Interstate 494
Adjacent Parallel Corridor Start and End Points:	
Start Point:	Bush Lake Road
End Point:	1,200 ft east of Normandale Boulevard
Free-Flow Travel Speed:	63

The Free-Flow Travel Speed is the black number.

Peak Hour Travel Speed: 17

The Peak Hour Travel Speed is the red number.

Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow: 73.02%

Upload Level of Congestion Map: 1702500026507_Level of Congestion Map.pdf

Principal Arterial Intersection Conversion Study:

Proposed interchange or at-grade project that reduces delay at a High Priority Intersection: Yes

(80 Points)

Proposed at-grade project that reduces delay at a Medium Priority Intersection:

(60 Points)

Proposed at-grade project that reduces delay at a Low Priority Intersection:

(50 Points)

Proposed interchange project that reduces delay at a Medium Priority Intersection:

(40 Points)

Proposed interchange project that reduces delay at a Low Priority Intersection:

(0 Points)

Not listed as a priority in the study:

(0 Points)

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

Existing Employment within 1 Mile: 7124

Existing Manufacturing/Distribution-Related Employment within 1 Mile: 2591

Existing Post-Secondary Students within 1 Mile: 0

Upload Map 1702500082765_Regional Economic Map.pdf

Please upload attachment in PDF form

Measure C: Current Heavy Commercial Traffic

RESPONSE: Select one for your project, based on the updated 2021 Regional Truck Corridor Study:

Along Tier 1: Yes

Miles: 1.4

(to the nearest 0.1 miles)

Along Tier 2:

Miles: 0

(to the nearest 0.1 miles)

Along Tier 3:

Miles: 0

(to the nearest 0.1 miles)

The project provides a direct and immediate connection (i.e., intersects) with either a Tier 1, Tier 2, or Tier 3 corridor:

None of the tiers:

Measure A: Current Daily Person Throughput

Location Trunk Highway 13 from Lynn Ave to Wahburn Ave

Current AADT Volume 54000

Existing Transit Routes on the Project 495

For New Roadways only, list transit routes that will likely be diverted to the new proposed roadway (if applicable).

Upload Transit Connections Map

Please upload attachment in PDF form

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership 0

Current Daily Person Throughput 70200.0

Measure B: 2040 Forecast ADT

Use Metropolitan Council model to determine forecast (2040) ADT volume	No
If checked, METC Staff will provide Forecast (2040) ADT volume	
OR	
Identify the approved county or city travel demand model to determine forecast (2040) ADT volume	Scott County Travel Demand Model
Forecast (2040) ADT volume	62000

Measure A: Engagement

i. Describe any Black, Indigenous, and People of Color populations, low-income populations, disabled populations, youth, or older adults within a ½ mile of the proposed project. Describe how these populations relate to regional context. Location of affordable housing will be addressed in Measure C.

ii. Describe how Black, Indigenous, and People of Color populations, low-income populations, persons with disabilities, youth, older adults, and residents in affordable housing were engaged, whether through community planning efforts, project needs identification, or during the project development process.

iii. Describe the progression of engagement activities in this project. A full response should answer these questions:

1. *What engagement methods and tools were used?*
2. *How did you engage specific communities and populations likely to be directly impacted by the project?*
3. *What techniques did you use to reach populations traditionally not involved in community engagement related to transportation projects?*
4. *How were the project?s purpose and need identified?*
5. *How was the community engaged as the project was developed and designed?*
6. *How did you provide multiple opportunities for of Black, Indigenous, and People of Color populations, low-income populations, persons with disabilities, youth, older adults, and residents in affordable housing to engage at different points of project development?*
7. *How did engagement influence the project plans or recommendations? How did you share back findings with community and re-engage to assess responsiveness of these changes?*
8. *If applicable, how will NEPA or Title VI regulations will guide engagement activities?*

Response:

There are 16,650 residents within one mile of the project area. In 2021 MnDOT completed a Hybrid Environmental Assessment (EA) which contributed to local acceptance. The EA effort identified vulnerable populations within a .5-mile of the project.

There are many minority owned businesses, or those that provide services to minority populations. A potential indicator of environmental justice populations includes multi-unit or rental housing, such as those found on 124th Street, McColl Dr, Williams Dr, Greenwood Dr, and West Travelers Trail.

43% of residents are people of color, versus 21% in Dakota County. 36% of residents are low-income, compared to 17% in Dakota/Scott. The per capita income for nearby residents is 35.9% lower than the 7-county metro average.

The Cities of Burnsville and Savage, as part of MnDOT's Highway 13 Corridor Study, participated in a multi-phase engagement effort beginning in February 2020. This campaign used surveys, open houses, pop-up information tables, and engaged with business advisory groups, environmental justice populations, community organizations, and other key stakeholders to identify operational issues along the corridor and determine locally preferred alternatives. Engagement efforts were advertised through press releases, an email campaign to over 1,500 people, physical mailers distributed to over 1,700 households, and a social media campaign on Twitter and Facebook. Environmental justice communities were contacted through multi-lingual flyers at community hubs such as grocery stores, places of worship, multi-family housing, and community centers. Events were made hybrid when feasible to extend outreach to the largest possible population. Feedback was tracked by the project team and influenced the final design selection.

Highway 13 is a barrier for all road users, with a high level of delay, a crash rate nearly double the expected critical crash rate for similar intersections, and a design that exposes pedestrians and cyclists to a high degree of risk. An online and print survey was issued to determine how people used the corridor and which improvements they valued most. Respondents ranked better drive times, fewer congestion delays, and better vehicle access to/from Highway 13 and side streets as 'highly important.'

The EA examined 17 access scenarios and recommended advancement of three alternatives for the project area. A Half Diamond intersection at Lynn Ave, full access interchange at Chowen Ave, and an overpass at Washburn was favored by project partners and the public. Future engagement will include a Public Noise Meeting (2024), a Public Hearing for Municipal Consent by City (2024), a Public Open House (24), Public Comment period on the EA/EAW update (2025), and a Public Notice of FONSI (2025).

(Limit 2,800 characters; approximately 400 words):

Measure B: Disadvantaged Communities Benefits and Impacts

Describe the project?s benefits to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Benefits could relate to:

- *? pedestrian and bicycle safety improvements;*
- *? public health benefits;*
- *? direct access improvements for residents or improved access to destinations such as jobs, school, health care, or other;*
- *? travel time improvements;*
- *? gap closures;*
- *? new transportation services or modal options;*
- *? leveraging of other beneficial projects and investments;*
- *? and/or community connection and cohesion improvements.*

This is not an exhaustive list. A full response will support the benefits claimed, identify benefits specific to Disadvantaged communities residing or engaged in activities near the project area, identify benefits addressing a transportation issue affecting Disadvantaged communities specifically identified through engagement, and substantiate benefits with data.

Acknowledge and describe any negative project impacts to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Describe measures to mitigate these impacts. Unidentified or unmitigated negative impacts may result in a reduction in points.

Below is a list of potential negative impacts. This is not an exhaustive list.

- *? Decreased pedestrian access through sidewalk removal / narrowing, placement of barriers along the walking path, increase in auto-oriented curb cuts, etc.*
- *? Increased speed and/or ?cut-through? traffic.*
- *? Removed or diminished safe bicycle access.*
- *? Inclusion of some other barrier to access to jobs and other destinations.*

Response:

The project area is above the regional average for a concentration of race or poverty. 7,000 jobs are within one mile of the TH 13 corridor between 35W and US 169 alone. Engagement feedback confirmed that better drive times, fewer congestion delays, and better vehicle access to/from Highway 13 and side streets as 'highly important and the project area is a significant barrier to pedestrian access.

435 crashes occurred in the last 10 years, 4 were fatal (2 including pedestrians) and 5 (1 involved a pedestrian) were life-changing injuries. All fatalities within the last 10 years occurred at intersections. These crashes will be directly addressed by the proposed grade-separation intersection improvements.

There are limited bike/ped connections parallel or across TH 13. The Met Council identified the area as a tier 2 Expressway Barrier. Burnsville's ADA self-evaluation identified barriers at Lynn, Chowen, and Washburn intersections. With the project, adjacent communities will be connected to safe ADA compliant bike/ped crossings of TH 13 at each proposed interchange or overpass that will connect into the existing system and to a planned Greenway along the Minnesota River in Scott & Dakota Counties.

During development of the Hybrid Environmental Assessment, close attention was paid to how the Minnesota Valley Transit Authority could serve Downtown Savage with increased efficiency. Shakopee Mdewakanton Sioux Community use TH 13 for access of their employees and customers using both MVTA and tribal-run Transit.

Delay on TH 13 and side streets will be reduced, increasing trip reliability for the commuting workforce and transit users. The Build Alternative saves each driver four minutes and forty seconds daily (during peak periods) in 2040. As a result, air quality improvements by 2040 are expected reduce; CO2 emissions by 7500 metric tons, NOx emissions by 13 metric tons, SO2 emissions by 0.03 metric tons, and PM2.5 emissions by 0.05 metric tons.

The project will eliminate heavy freight vehicles making at-grade turns on and off the corridor, contributing to improved safety and trip reliability. Nearly 4200 trucks (8% of traffic) traverse the corridor daily, many destined to the Ports of Savage. Additionally, the project will upgrade and fill gaps in the frontage road system for improved local system connectivity and access to TH 13.

Overall, the project improves community connectivity to destinations including minority-owned businesses and jobs, provides transportation choice, and reduces the cost of transportation. No long-term impacts to disadvantaged populations are expected. Construction impacts will be mitigated to the extent possible through proactive communication (with translation services) and clear signage to local businesses.

(Limit 2,800 characters; approximately 400 words):

Measure C: Affordable Housing Access

Describe any affordable housing developments?existing, under construction, or planned?within ½ mile of the proposed project. The applicant should note the number of existing subsidized units, which will be provided on the Socio-Economic Conditions map. Applicants can also describe other types of affordable housing (e.g., naturally-occurring affordable housing, manufactured housing) and under construction or planned affordable housing that is within a half mile of the project. If applicable, the applicant can provide self-generated PDF maps to support these additions. Applicants are encouraged to provide a self-generated PDF map describing how a project connects affordable housing residents to destinations (e.g., childcare, grocery stores, schools, places of worship).

Describe the project?s benefits to current and future affordable housing residents within ½ mile of the project. Benefits must relate to affordable housing residents. Examples may include:

- *? specific direct access improvements for residents*
- *? improved access to destinations such as jobs, school, health care or other;*
- *? new transportation services or modal options;*
- *? and/or community connection and cohesion improvements.*

This is not an exhaustive list. Since residents of affordable housing are more likely not to own a private vehicle, higher points will be provided to roadway projects that include other multimodal access improvements. A full response will support the benefits claimed, identify benefits specific to residents of affordable housing, identify benefits addressing a transportation issue affecting residents of affordable housing specifically identified through engagement, and substantiate benefits with data.

Response:

The ½ mile surrounding the project area features a diverse mix of land uses. North of the Highway primarily consists of heavy and medium industrial uses. South of Highway 13 features residential mixed with commercial uses and parks. The attached Socio-Economic Condition map identifies 94 subsidized rental units within ½ a mile of the project. The Project will increase transportation options, decrease transportation costs, and improve access to amenities, services, and employment centers for these residents.

½ mile southeast of the project area, Leah's Apartments provides 17 subsidized housing units below 50% AMI and specializes in supporting disabled residents. An additional 7 subsidized units under 60% AMI are located on Highway 5 just south of the project corridor. The Chowen Bend Townhomes are the most prominent affordable housing development the project will serve. It provides 32 family units that are fixed below 50% AMI. This development directly relies on the Chowen Ave intersection for connection to the region. This community will see direct access benefits from the grade separation and pedestrian improvements planned for the Chowen Ave interchange. By connecting and grade-separating the multimodal sidewalk network, the Project will make it easier for these residents to choose to walk, bike, roll, or take transit for trips to and from home to work, shopping, dining, entertainment, and other regional destinations.

The Highway 13 Corridor plays a critical role for connecting residents in affordable housing to economic opportunity. Using Census OnTheMap.gov, can highlight how many employees are utilizing the Highway 13 Corridor to travel to and from work. The great majority of residents leave the area to work. Within ½ mile of the project corridor, there are 2,225 people employed residents; however only 57 work in the ½ mile area. An additional 2,168 flow into the project area for work daily. The project will more efficiently connect affordable housing populations to employment with robust transportation choice. The attached Regional Economic Maps estimates 7,124 jobs are near the project corridor.

MVTA Route 495 uses the project corridor and will benefit from mobility improvements, bus only shoulders, and surmountable curbs. Connecting downtown Shakopee, Savage and the Mall of America, Route 495 provides regional transit connections. As such, affordable housing served by this route but outside the direct ½ mile area should be considered. At the western edge of the project area, downtown Savage supports a number of Scott County's more affordable housing units, including a senior housing complex and an Intensive Residential Mental Health Treatment Facility. See attached map for all locations.

(Limit 2,800 characters; approximately 400 words):

Measure D: BONUS POINTS

Project is located in an Area of Concentrated Poverty:	
Project?s census tracts are above the regional average for population in poverty or population of color (Regional Environmental Justice Area):	Yes
Project located in a census tract that is below the regional average for population in poverty or populations of color (Regional Environmental Justice Area):	
Upload the ?Socio-Economic Conditions? map used for this measure.	1702501350303_Socio-Economic Conditions Map.pdf

Measure A: Infrastructure Age

Year of Original Roadway Construction or Most Recent Reconstruction	Segment Length	Calculation	Calculation 2
1966.0	1.4	2752.4	1966.0
	1	**2752**	**1966**

Average Construction Year

Weighted Year	1966.0

Total Segment Length (Miles)

Total Segment Length	1.4

Measure A: Congestion Reduction/Air Quality

Total Peak Hour Delay Per Vehicle Without The Project (Seconds/Vehicle)	Total Peak Hour Delay Per Vehicle With The Project (Seconds/Vehicle)	Total Peak Hour Delay Per Vehicle Reduced by Project (Seconds/Vehicle)	Volume without the Project (Vehicles per hour)	Volume with the Project (Vehicles Per Hour):	Total Peak Hour Delay without the Project:	Total Peak Hour Delay by the Project:	Total Peak hour Delay Reduced by project	EXPLANATION of methodology used to calculate railroad crossing delay, if applicable.	Synchro or HCM Reports
132.0	39.9	92.1	4941	4941	652212.0	197145.9	455066.1	not applicable	1702570618942_Build Existing Conditons_TH 13.pdf
						197146			

Vehicle Delay Reduced

Total Peak Hour Delay Reduced	Total Peak Hour Delay Reduced	Delay Reduced Total

Measure B: Roadway projects that do not include new roadway segments or railroad grade-separation elements

Total (CO, NOX, and VOC) Peak Hour Emissions without the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions with the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):
51.1	29.6	21.5
51	**30**	**22**

Total

Total Emissions Reduced:	21.5
Upload Synchro Report	1702572582105_Build Existing Conditons_TH 13.pdf

Please upload attachment in PDF form (Save Form, then click 'Edit' in top right to upload file.)

Measure B: Roadway projects that are constructing new roadway segments, but do not include railroad grade-separation elements (for Roadway Expansion applications only):

Total (CO, NOX, and VOC) Peak Hour Emissions without the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions with the Project (Kilograms):	Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):
0	0	0

Total Parallel Roadway

Emissions Reduced on Parallel Roadways	0
Upload Synchro Report	

Please upload attachment in PDF form (Save Form, then click 'Edit' in top right to upload file.)

New Roadway Portion:

Cruise speed in miles per hour with the project:	0
Vehicle miles traveled with the project:	0
Total delay in hours with the project:	0
Total stops in vehicles per hour with the project:	0
Fuel consumption in gallons:	0
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced or Produced on New Roadway (Kilograms):	0
EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)	
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):	0.0

Measure B: Roadway projects that include railroad grade-separation elements

Cruise speed in miles per hour without the project:	0
Vehicle miles traveled without the project:	0
Total delay in hours without the project:	0
Total stops in vehicles per hour without the project:	0
Cruise speed in miles per hour with the project:	0
Vehicle miles traveled with the project:	0
Total delay in hours with the project:	0
Total stops in vehicles per hour with the project:	0
Fuel consumption in gallons (F1)	0
Fuel consumption in gallons (F2)	0
Fuel consumption in gallons (F3)	0
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):	0
EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)	

Measure A: Benefit of Crash Reduction

Crash Modification Factor Used:

CMF ID 460 - Convert at-grade intersection into grade-separated interchange

 Applies to serious injury, minor injury, and possible injury crashes of all crash type

CMF ID 459 - Convert at-grade intersection into grade-separated interchange

 Applies to all crash types and severities

CMF ID 5509 - Increase paved outside shoulder width from 10 ft to 12 ft

 Applies to all crash types and severities

CMF ID 206 - Conversion of stop-controlled intersection into a single lane roundabout

 Applies to all crash types and severities

(Limit 700 Characters; approximately 100 words)

Rationale for Crash Modification Selected:

o CMF ID 460 and 459 was selected as the project will grade separate the intersection of TH 13 of Lynn Ave, Washburn Ave, and Chowen Ave. CMF ID 5509 was selected as the paved shoulder width is proposed to be widened from 10 to 12 feet. CMF ID 460, 459, and 5509 were applied to the crashes along TH 13 in the project area.

o CMF ID 206 was selected as teardrop roundabouts are recommended at the Washburn Ave and Chowen Ave at the Frontage Rd and TH 13 accesses. CMF ID 206 was applied to all crashes at the Washburn Ave and Chowen Ave intersections with the North and South Frontage Roads.

(Limit 1400 Characters; approximately 200 words)

Project Benefit ($) from B/C Ratio:	$57,412,617.00
Total Fatal (K) Crashes:	1
Total Serious Injury (A) Crashes:	5
Total Non-Motorized Fatal and Serious Injury Crashes:	1
Total Crashes:	166
Total Fatal (K) Crashes Reduced by Project:	1
Total Serious Injury (A) Crashes Reduced by Project:	3
Total Non-Motorized Fatal and Serious Injury Crashes Reduced by Project:	1
Total Crashes Reduced by Project:	100
Worksheet Attachment	1702589308852_TH13 - Combined Safety Attachments.pdf

Please upload attachment in PDF form

Roadway projects that include railroad grade-separation elements:

Current AADT volume:	0
Average daily trains:	0
Crash Risk Exposure eliminated:	0

Measure B: Pedestrian Safety

Determine if these measures do not apply to your project. *Does the project match either of the following descriptions?*

If either of the items are checked yes, then ***score for entire pedestrian safety measure is zero****. Applicant does not need to respond to the sub-measures and can proceed to the next section.*

Project is primarily a freeway (or transitioning to a freeway) and does not provide safe and comfortable pedestrian facilities and crossings.	No
Existing location lacks any pedestrian facilities (e.g., sidewalks, marked crossings, wide shoulders in rural contexts) and project does not add pedestrian elements (e.g., reconstruction of a roadway without sidewalks, that doesn?t also add pedestrian crossings and sidewalk or sidepath on one or both sides).	No

SUB-MEASURE 1: Project-Based Pedestrian Safety Enhancements and Risk Elements

To receive maximum points in this category, pedestrian safety countermeasures selected for implementation in projects should be, to the greatest extent feasible, consistent with the countermeasure recommendations in the Regional Pedestrian Safety Action Plan and state and national best practices. Links to resources are provided on the Regional Solicitation Resources web page.

Please answer the following two questions with as much detail as possible based on the known attributes of the proposed design. If any aspect referenced in this section is not yet determined, describe the range of options being considered, to the greatest extent available. If there are project elements that may increase pedestrian risk, describe how these risks are being mitigated.

1. Describe how this project will address the safety needs of people crossing the street at signalized intersections, unsignalized intersections, midblock locations, and roundabouts.

Treatments and countermeasures should be well-matched to the roadway?s context (e.g., appropriate for the speed, volume, crossing distance, and other location attributes). Refer to the Regional Solicitation Resources web page for guidance links.

Response:

The proposed project will include a package of elements to increase pedestrian safety and ease crossing the trunk highway barrier. The redesign will entirely remove the need to cross TH 13 at grade by providing grade-separated pedestrian facilities at each new interchange or overpass at the Lynn Ave, Chowen Ave, and Washburn Ave intersections. Currently, the intersections of TH 13 and Lynn Ave, Chowen Ave, and Washburn Ave have several features consistent with high levels of pedestrian stress: high traffic volumes, speeds exceeding 50 miles per hour, crossing distances over 6 lanes and greater than 110 feet, and all existing pedestrian infrastructure is non-ADA compliant. Two fatal crashes at Washburn Ave involved pedestrians crossing TH 13, and an A-injury pedestrian related crash west of Washburn.

The current pedestrian environment is not appropriate for non-motorized travel along or across a principal arterial route. Especially along a route that divides a downtown district in both the City?s of Savage and Burnsville. Removing the traffic signals and grade separating the Lynn Ave, Chowen Ave, and Washburn Ave intersections will allow pedestrians to cross TH 13 utilizing a multiuse trail along the local route underpass/overpass where the trails will be protected by boulevard space and curb. Signage and lighting will increase driver awareness of pedestrians.

Single-lane roundabout intersections will connect the new interchanges and overpass to the frontage roads on each side and further to local systems. The roundabouts will feature marked crosswalks, median pedestrian islands, and enhanced lighting. Roundabouts greatly reduce the number of pedestrian conflict points, and have been shown to reduce the rate of fatal and injury crashes by as much as 78%.

A 10' wide share-used trail will route along the north frontage road and tie into the existing frontage road. This route will provide adequate pedestrian mobility between TH 13 crossing points. This trail will be separated from the roadway by a shoulder and curb. The city recently expanded the sidewalk network between Lynn and Chowen on the south frontage road extension. This project will tie into these previous improvements. These improvements, in tandem with project improvements, will shorten the distance between crossing locations and improve mobility between safe crossing locations.

(Limit 2,800 characters; approximately 400 words)

Is the distance in between signalized intersections increasing (e.g., removing a signal)?

Select one: Yes

If yes, describe what measures are being used to fill the gap between protected crossing opportunities for pedestrians (e.g., adding High-Intensity Activated Crosswalk beacons to help motorists yield and help pedestrians find a suitable gap for crossing, turning signal into a roundabout to slow motorist speed, etc.).

Response:

The project will eliminate the signalized intersections at Lynn Ave and Washburn Ave and side street stop controlled full access intersection at Chowen Ave. Despite removing the signalized intersections, the project will increase pedestrian access with grade separated crossings along the local route of each interchange and overpass at Lynn Ave, Chowen Ave, and Washburn Ave. Specifically the pedestrian underpass at Chowen Avenue will provide a new protected crossing of TH 13. This will reduce the space between designated pedestrian crossings by half compared to existing conditions. Currently, there is a .9-mile gap between the controlled signalized pedestrian crossings at Lynn Ave and Washburn Ave and the corridor between has an inconsistent multimodal network.

Currently, the only pedestrian infrastructure connecting these intersections runs along the southern frontage road. The project will add a dedicated connection along the north side of the TH 13 for the first time.

Pedestrians travelling between controlled crossing locations will be able to use a wide multiuse trail protected by a boulevard and curb. Currently Lynn Ave, Chowen Ave, and Washburn Ave intersections with the frontage road in the project area are stop controlled. These will be replaced with single-lane roundabouts that will calm and slow traffic and reduce pedestrian conflict points.

(Limit 1,400 characters; approximately 200 words)

Will your design increase the crossing distance or crossing time across any leg of an intersection? (e.g., by adding turn or through lanes, widening lanes, using a multi-phase crossing, prohibiting crossing on any leg of an intersection, pedestrian bridge requiring length detour, etc.). This does not include any increases to crossing distances solely due to the addition of bike lanes (i.e., no other through or turn lanes being added or widened).

Select one:

No

If yes,
? How many intersections will likely be affected?

Response:

? Describe what measures are being used to reduce exposure and delay for pedestrians (e.g., median crossing islands, curb bulb-outs, etc.)

Response:

(Limit 1,400 characters; approximately 200 words)

? If grade separated pedestrian crossings are being added and increasing crossing time, describe any features that are included that will reduce the detour required of pedestrians and make the separated crossing a more appealing option (e.g., shallow tunnel that doesn?t require much elevation change instead of pedestrian bridge with numerous switchbacks).

Response:

The project will reduce pedestrian delays and provide more direct, and ADA accessible, routes for pedestrians travelling north and south across TH 13 in the project area. The environment today along TH 13 in the project area results in a high level of stress for pedestrians and mostly discourages people from walking or biking. Pedestrians who previously had to cross 6-lanes of busy highway traffic, will no longer need to interact with high-speed/high volume TH 13 traffic.

The grade separated crossings will replace the locations of the current at grade crossings and remain at half mile spacings from each other. Currently the origin-destinations for pedestrian travel are centered around the locations of the existing intersections. In the project area there is limited opportunity to cross TH 13 from south to north. Except for at Washburn Ave where commercial destinations are within walking distance of the location of the current intersection and proposed new interchange.

Frontage road crossing points will feature pedestrian islands and enhanced lighting. Roundabout crossings will only require pedestrians to assess gaps in traffic from one direction. This will ease crossing for children or seniors who may have poor gap assessment skills. The frontage road trail and sidewalk enhancements will effectively circulate pedestrians between the nearby controlled crossing locations.

(Limit 1,400 characters; approximately 200 words)

If mid-block crossings are restricted or blocked, explain why this is necessary and how pedestrian crossing needs and safety are supported in other ways (e.g., nearest protected or enhanced crossing opportunity).

Response:

not applicable

(Limit 1,400 characters; approximately 200 words)

2. Describe how motorist speed will be managed in the project design, both for through traffic and turning movements. *Describe any project-related factors that may affect speed directly or indirectly, even if speed is not the intended outcome (e.g., wider lanes and turning radii to facilitate freight movements, adding turn lanes to alleviate peak hour congestion, etc.). Note any strategies or treatments being considered that are intended to help motorists drive slower (e.g., visual narrowing, narrow lanes, truck aprons to mitigate wide turning radii, etc.) or protect pedestrians if increasing motorist speed (e.g., buffers or other separation from moving vehicles, crossing treatments appropriate for higher speed roadways, etc.).*

Response:

Improvements proposed on the arterial corridor will safely carry high speed traffic for longer distances. The reconstruction of TH13 from west of Lynn Ave to approximately 2,200 feet east of Washburn Ave is designed to enhance safety and improve the traffic flow. Motorists, who frequently see long delays at the current signalized intersections, will no longer be allowed to make fast and risky turning movements that threaten the safety of both pedestrians and motorists. Lacking action, by 2040 network delays are expected to dramatically increase from 155 seconds to 361 seconds. This steep degradation of service will influence driver behavior and cause increasingly dangerous driving conditions as motorists experience lowered gap acceptance. Construction of raised concrete median (width varies from two feet to 22 feet) along TH 13 will minimize risk for cross-over head-on collisions. Finally, 12-foot shoulders will be constructed for bus only travel to improve the efficiency and reliability of transit.

Traffic calming measures are planned for the intersections with the frontage road to force speed reductions at pedestrian crossing locations and for traffic exiting the high-speed highway, while also benefiting turning movements and reduced conflicts for freight trucks entering and exiting the corridor to access the Ports of Savage. Single-lane roundabout intersections at all new connections with the frontage road will reduce the likelihood of fatal and injury crashes while maintaining an acceptable level of service along the principal arterial route. This will improve the safety of vehicles entering and exiting TH 13. Existing intersections result in quick turning movements on and off the highway to make insufficient gaps and the large intersections have wide turning movements that allow high speeds.

The Chowen & Washburn Ave intersections will be improved by enhancing the highway side street approaches to the roundabout formations. This will calm traffic as it approaches the highway and is channeled through new on-ramps and a grade separated overpass. The roundabout will include a truck apron and turning speeds into and out of the roundabout will be managed via splitter islands that double as pedestrian crossing refuges. The proposed design would include medians along all the approaches to the roundabout. Design that reduces vehicle speed paired with proven countermeasures will create a far safer environment for walking and biking.

Safety improvements for pedestrians and cyclists will be realized by reducing crossing distances and providing facilities totally separate from highway traffic. Building a continuous trail system along the frontage roads on both sides of TH 13 will increase awareness of pedestrians in the area contributing to slower traffic.

(Limit 2,800 characters; approximately 400 words)

If known, what are the existing and proposed design, operation, and posted speeds? Is this an increase or decrease from existing conditions?

Response:

Highway 13 has a posted speed limit of 55 MPH and will continue to be posted at 55 MPH after construction is substantially completed.

The frontage roads have posted speed limits of 35 MPH and will remain at 35 MPH after construction is substantially completed. The roundabout will reduce speeds to 25 MPH or lower when going through the roundabout. The local route grade separated crossings of TH 13 are designed and will be posted for speeds of 35 mph consistent with the frontage roads and approaching the roundabout intersection controls.

(Limit 1,400 characters; approximately 200 words)

SUB-MEASURE 2: Existing Location-Based Pedestrian Safety Risk Factors

These factors are based on based on trends and patterns observed in pedestrian crash analysis done for the Regional Pedestrian Safety Action Plan. Check off how many of the following factors are present. Applicants receive more points if more risk factors are present.

Existing road configuration is a One-way, 3+ through lanes	
or	
Existing road configuration is a Two-way, 4+ through lanes	Yes
Existing road has a design speed, posted speed limit, or speed study/data showing 85th percentile travel speeds in excess of 30 MPH or more	Yes
Existing road has AADT of greater than 15,000 vehicles per day	Yes
List the AADT	54000

SUB-MEASURE 3: Existing Location-Based Pedestrian Safety Exposure Factors

These factors are based on based on trends and patterns observed in pedestrian crash analysis done for the Regional Pedestrian Safety Action Plan. Check off how many of the following existing location exposure factors are present. Applicants receive more points if more risk factors are present.

Existing road has transit running on or across it with 1+ transit stops in the project area (If flag-stop route with no fixed stops, then 1+ locations in the project area where roadside stops are allowed. Do not count portions of transit routes with no stops, such as non-stop freeway sections of express or limited-stop routes.)	Yes
Existing road has high-frequency transit running on or across it and 1+ high-frequency stops in the project area (high-frequency defined as service at least every 15 minutes from 6am to 7pm weekdays and 9am to 6pm Saturdays.)	
Existing road is within 500? of 1+ shopping, dining, or entertainment destinations (e.g., grocery store, restaurant)	Yes

If checked, please describe:

The project area contains many pedestrian generators. Strong pedestrian demand is demonstrated via the Priority Areas for Walking (PAWS) score. MnDOT's PAWS tool was developed to determine priority areas for pedestrian investment statewide. With a PAWS score of 13, the project is a tier 1 priority for pedestrian infrastructure investment.

Additionally, downtown Savage has multiple places to eat and shop. Other destinations include a child care center, an adult daycare center, and nutrition health services. There is more than one minority grocery store in the area including the Asian Direct Oriental Market and Supermercado Lomabonita. Several of the businesses in downtown Savage are minority owned or provide services or goods to minorities. There are a few multi-tenant buildings increasing the density of destinations.

Finally, there are several park and outdoor recreation areas within a half mile including the Minnesota River natural corridor and the Savage Fen and Scientific and Natural Area (SNA).

(Limit 1,400 characters; approximately 200 words)

Existing road is within 500? of other known pedestrian generators (e.g., school, civic/community center, senior housing, multifamily housing, regulatorily-designated affordable housing)	Yes

If checked, please describe:

The Chowen Bend Townhomes (32 units under 50% AMI) are located 500' south of the Chowen Ave Intersection and will generate pedestrian traffic reliant on project improvements. Downtown Savage contains abundant multifamily housing. This area consists of medium and high-density housing mixed with commercial uses which generate significant pedestrian traffic. There are notable senior housing developments, The Hamilton Building and Glendale Place Apartments, within a few hundred feet of the Lynn Ave Intersection.

There are three schools located within ½ mile of the project area including the Isd 191 School for Adults, St John the Baptist Catholic School, and the Marion West Savage Elementary School.

(Limit 1,400 characters; approximately 200 words)

Measure A: Multimodal Elements and Existing Connections

Response:

This project was developed from public feedback about the highly stressful nature of the project area, with a specific focus on improving conditions for transit users and those who bike, walk, or roll to MVTA stops near Lynn Ave.

The project area is within MVTA's 492 and 495 transit service routes. Both routes are express connections from the Burnsville Cedar Grove Transit Station and either downtown Minneapolis or the Mall of America. TH 13 currently has bus shoulders that will be extended with the project to provide continuous 12 ft wide shoulders throughout. Land to Air Express, an inter-city bus transit provider serving the US 169 Corridor, also tends to utilize TH 13 as a backup route for access to downtown Minneapolis when I-494 is congested. Dial-a-ride service is also available to all residents in Burnsville and Savage. The service will pickup and drop-off users at their homes and to their destination and is impacted by congestion on this main thorough route through the two cities.

The exiting multimodal network in the project area is lacking in terms of connectivity, accessibility, and safety. Which this project will address. Pedestrians experience significant wait times to cross TH 13 and side streets. Today Lynn Ave provides access to the only two MVTA bus stops in the project area and it is operating at a D Pedestrian Level of Service.

TH 13 experiences many crashes and is a deadly transportation barrier. The project corridor has experienced 11 of the crashes involving a pedestrian or bicyclist, 3 of which occurred at the Washburn Intersection.

This project will construct a Tier 2 RBTN Alignment at Chowen Ave and extend a continuous east-west system that connects the Chowen Ave Tier 2 RBTN Alignment to the junction of Hwy 169 and TH 13. Additionally, the east-west non-motorized system this project will contribute to is centrally located between two Tier 2 Corridors, one along the Minnesota River from Hwy 169 to I494 and the second a mile south intended to link the Cities of Shakopee and Savage.

The project will improve access and safety for bicyclists along 3 MRBBC barriers, an expressway barriers, a Tier 2 barrier, and 2 Tier 3 barriers. The proposed project will provide a multimodal corridor that safely and efficiently accommodates all user demands including commuters, transit, pedestrians and bicyclists, and freight. This will be achieved with grade separating the local system access points to TH 13 in a way that is appropriate for principal arterial expressway. Further the project will provide dedicated facilities for all users prioritizing transit with bus only shoulders, peds/bikes with a protected and continuous system, and freight access with significant reduction in mainline delays.

(Limit 2,800 characters; approximately 400 words)

Transit Projects Not Requiring Construction

If the applicant is completing a transit application that is operations only, check the box and do not complete the remainder of the form. These projects will receive full points for the Risk Assessment.

Park-and-Ride and other transit construction projects require completion of the Risk Assessment below.

Check Here if Your Transit Project Does Not Require Construction

Measure A: Risk Assessment - Construction Projects

1. Public Involvement (20 Percent of Points)

Projects that have been through a public process with residents and other interested public entities are more likely than others to be successful. The project applicant must indicate that events and/or targeted outreach (e.g., surveys and other web-based input) were held to help identify the transportation problem, how the potential solution was selected instead of other options, and the public involvement completed to date on the project. The focus of this section is on the opportunity for public input as opposed to the quality of input. NOTE: A written response is required and failure to respond will result in zero points.

Multiple types of targeted outreach efforts (such as meetings or online/mail outreach) specific to this project with the general public and partner agencies have been used to help identify the project need. Yes

100%

At least one meeting specific to this project with the general public has been used to help identify the project need.

50%

At least online/mail outreach effort specific to this project with the general public has been used to help identify the project need.

50%

No meeting or outreach specific to this project was conducted, but the project was identified through meetings and/or outreach related to a larger planning effort.

25%

No outreach has led to the selection of this project.

0%

Describe the type(s) of outreach selected for this project (i.e., online or in-person meetings, surveys, demonstration projects), the method(s) used to announce outreach opportunities, and how many people participated. Include any public website links to outreach opportunities.

Response:

Public engagement for the Highway 13 Project began in February 2020 and will periodically continue as the project is developed. This process was successful in engaging hundreds of residents through online surveys, open houses, pop-up tables, and business advisory meetings. The project team worked to target outreach to nearby environmental justice populations.

Public engagement began with a survey which was available online and in hard copy form. This effort solicited 31 responses. Most of these responses came from residents of Savage. The responses were predominantly concerned for high levels of congestion that limit local access and the lacking and unsafe pedestrian environment.

The survey was followed by an open house at the McColl Pond Environmental Learning Center in Savage. This event was announced through local media outlets, emails, and a corridor-wide mailing. Display boards and aerial maps were used to collect feedback from the 70 attendees.

Throughout March the Project Team utilized pop-up informational tables to engage people who would not typically take part in the engagement process. Pop-up tables were used to help identify residents top priorities for changes along Highway 13. Discussions were had with over 200 residents at the Savage Kids & Home Expo, 35 residents at the Savage Public Library & Senior Center, and another 12 at Jojos Rise & Wine Café in Burnsville.

MnDOT held business advisory meetings for business located in Savage, Burnsville, and the Ports of Savage. The project team reached out to over 400 nearby businesses with postcards, emails, and direct calls. 16 different businesses were represented at the meetings. Project staff identified more than 40 organizations and businesses with an environmental justice focus and made specific efforts to engage them. Staff worked diligently to ensure they were informed on engagement events and provided language specific fliers.

This process was forced into virtual spaces by the onset of the COVID-19 pandemic. In October 2020, an online survey successfully received 25 responses and an updated project website was rolled out. A second open house was held in October 2020 that was promoted through email and boosted social media posts; 31 people attended this event. Three additional business advisory meetings were held virtually between July and October 2020. These meetings successfully engaged 14 businesses.

(Limit 2,800 characters; approximately 400 words)

2. Layout (25 Percent of Points)

Layout includes proposed geometrics and existing and proposed right-of-way boundaries. A basic layout should include a base map (north arrow, scale; legend; city and/or county limits; existing ROW, labeled; existing signals;* and bridge numbers*) and design data (proposed alignments; bike and/or roadway lane widths; shoulder width;* proposed signals;* and proposed ROW). An aerial photograph with a line showing the project?s termini does not suffice and will be awarded zero points. *If applicable*

Layout approved by the applicant and all impacted jurisdictions (i.e., cities/counties/MnDOT. If a MnDOT trunk highway is impacted, approval by MnDOT must have occurred to receive full points. A PDF of the layout must be attached along with letters from each jurisdiction to receive points. *100%*	Yes
A layout does not apply (signal replacement/signal timing, stand-alone streetscaping, minor intersection improvements). Applicants that are not certain whether a layout is required should contact Colleen Brown at MnDOT Metro State Aid ? colleen.brown@state.mn.us. *100%*	
For projects where MnDOT trunk highways are impacted and a MnDOT Staff Approved layout is required. Layout approved by the applicant and all impacted local jurisdictions (i.e., cities/counties), and layout review and approval by MnDOT is pending. A PDF of the layout must be attached along with letters from each jurisdiction to receive points. *75%*	
Layout completed but not approved by all jurisdictions. A PDF of the layout must be attached to receive points. *50%*	
Layout has been started but is not complete. A PDF of the layout must be attached to receive points. *25%*	
Layout has not been started *0%*	
Attach Layout *Please upload attachment in PDF form*	1702644450754__Layout_Option_Reg Sol-Default.pdf

Additional Attachments	1702657258822_TH13 - Agency Support.pdf
Please upload attachment in PDF form	
3. Review of Section 106 Historic Resources (15 Percent of Points)	
No known historic properties eligible for or listed in the National Register of Historic Places are located in the project area, and project is not located on an identified historic bridge	
100%	
There are historical/archeological properties present but determination of ?no historic properties affected? is anticipated.	Yes
100%	
Historic/archeological property impacted; determination of ?no adverse effect? anticipated	
80%	
Historic/archeological property impacted; determination of ?adverse effect? anticipated	
40%	
Unsure if there are any historic/archaeological properties in the project area.	
0%	
Project is located on an identified historic bridge	
4. Right-of-Way (25 Percent of Points)	
Right-of-way, permanent or temporary easements, and MnDOT agreement/limited-use permit either not required or all have been acquired	
100%	
Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - plat, legal descriptions, or official map complete	
50%	
Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels identified	Yes
25%	
Right-of-way, permanent or temporary easements, and/or MnDOT agreement/limited-use permit required - parcels not all identified	
0%	
5. Railroad Involvement (15 Percent of Points)	
No railroad involvement on project or railroad Right-of-Way agreement is executed (include signature page, if applicable)	Yes
100%	
Signature Page	
Please upload attachment in PDF form	
Railroad Right-of-Way Agreement required; negotiations have begun	
50%	
Railroad Right-of-Way Agreement required; negotiations have not begun.	
0%	

Measure A: Cost Effectiveness

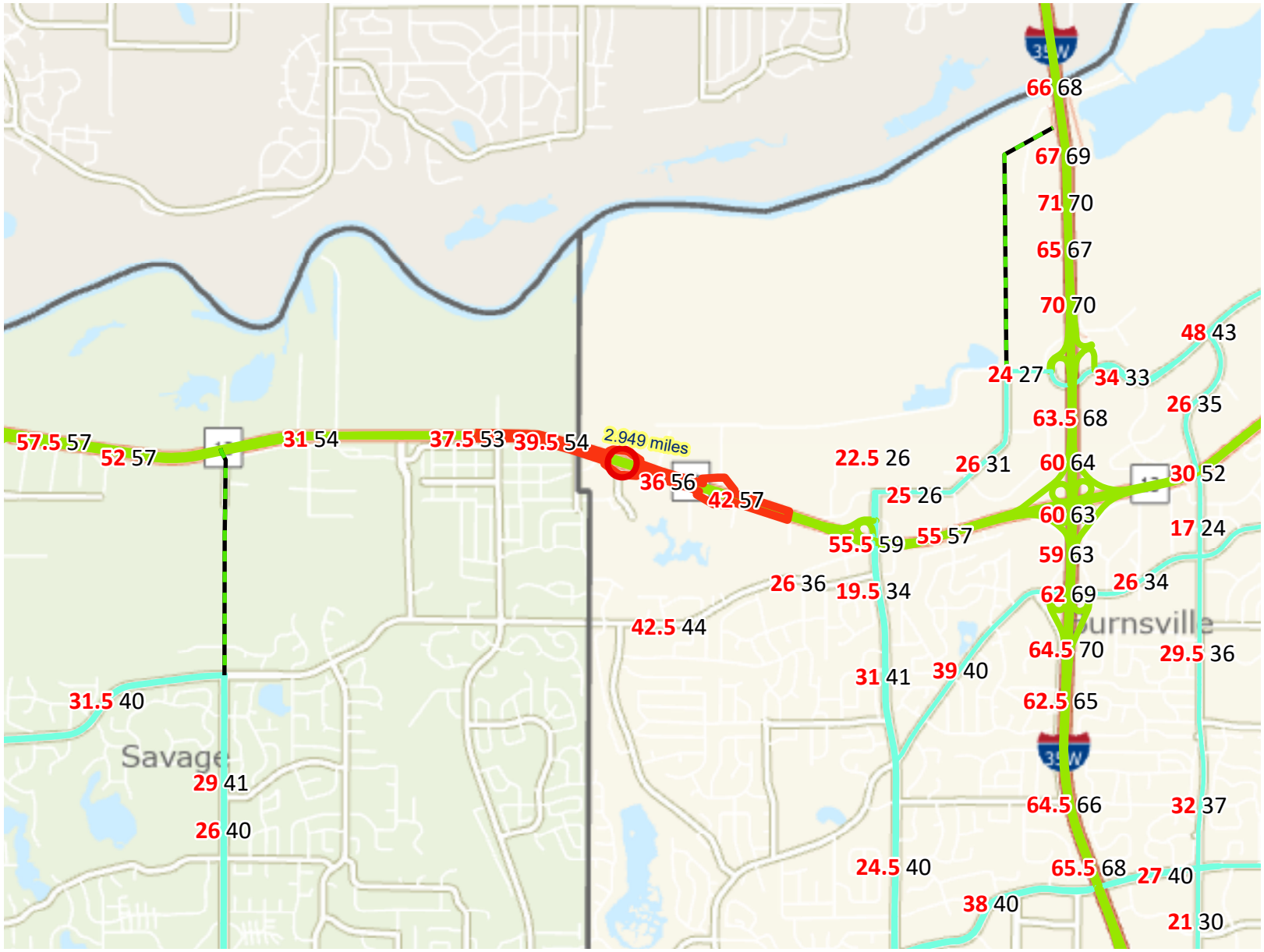
Total Project Cost (entered in Project Cost Form):	$81,664,100.00
Enter Amount of the Noise Walls:	$0.00
Total Project Cost subtract the amount of the noise walls:	$81,664,100.00
Enter amount of any outside, competitive funding:	$71,000,000.00
Attach documentation of award:	1702584959060_CoC Award Email.pdf
Points Awarded in Previous Criteria	
Cost Effectiveness	$0.00

Other Attachments

File Name	Description	File Size
CoC Award Email.pdf	Documentation of Corridors of Commerce funding award	218 KB
Existing Conditions Photos.pdf	required existing conditions photos	3.2 MB
TH13 - Affordable Housing Map.pdf	Affordable housing map	2.0 MB
TH13 - All RS Generated Maps.pdf	All 4 maps generated by the RS mapping app.	5.4 MB
TH13 - Burnsville - Onepager.pdf	Required one page project summary	1.1 MB
TH13 - Letters & Resolutions - Burnsville.pdf	Letters and Resolution supporting the project	719 KB
TH13 Burnsville Project Layout.pdf	Required project layout	8.9 MB

Level of Congestion

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206



Project Points — Principal Arterials — Principal Arterials Planned

Project — A Minor Arterials — A Minor Arterials Planned

0 0.375 0.75 1.5 2.25 3 Miles

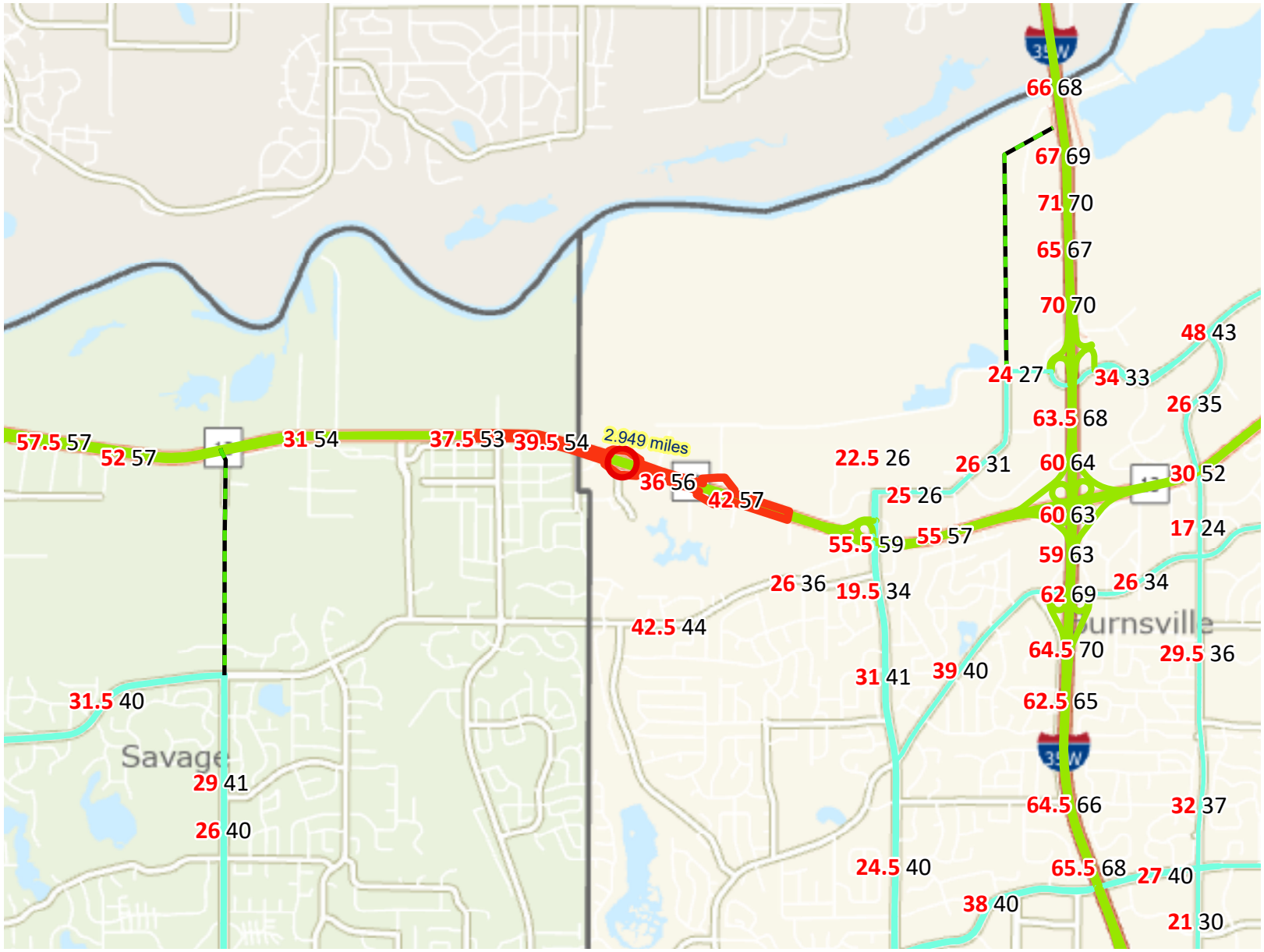
Created: 11/16/2023
LandscapeRSA1

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

METROPOLITAN COUNCIL

Level of Congestion

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206



Project Points — Principal Arterials — Principal Arterials Planned

Project — A Minor Arterials — A Minor Arterials Planned

0 0.375 0.75 1.5 2.25 3 Miles

Created: 11/16/2023
LandscapeRSA1

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

METROPOLITAN COUNCIL

Regional Economy

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206

Results

WITHIN ONE MI of project:
Postsecondary Students: 0

Totals by City:

Bloomington
Population: 2866
Employment: 739
Mfg and Dist Employment: 11

Burnsville
Population: 6617
Employment: 3556
Mfg and Dist Employment: 1695

Savage
Population: 7167
Employment: 2829
Mfg and Dist Employment: 885

Project Points
Project
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 11/16/2023
LandscapeRSA5

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

METROPOLITAN COUNCIL

Socio-Economic Conditions

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206

Results

Total of publicly subsidized rental housing units in census tracts within 1/2 mile: 94

Project located in census tract(s) that are ABOVE the regional average for population in poverty or population of color.

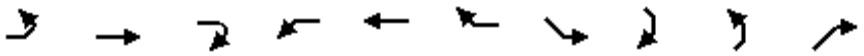
Points
Lines
Area of Concentrated Poverty
Regional Environmental Justice Area

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 11/16/2023
LandscapeRSA2

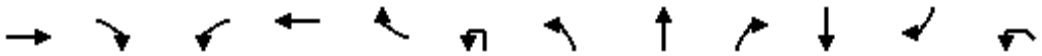
For complete disclaimer of accuracy, please visit http://giswebsite.metc.state.mn.us/gissite/notice.aspx

METROPOLITAN COUNCIL



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SER	NEL	NER
Lane Configurations		↑↑			↑↑	↱				↱
Traffic Volume (vph)	0	2072	0	0	2300	236	0	0	0	303
Future Volume (vph)	0	2072	0	0	2300	236	0	0	0	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frt						0.850				0.865
Flt Protected										
Satd. Flow (prot)	0	3539	0	0	3539	1583	0	0	0	1611
Flt Permitted										
Satd. Flow (perm)	0	3539	0	0	3539	1583	0	0	0	1611
Link Speed (mph)		55			55		30		30	
Link Distance (ft)		3558			1121		1136		1136	
Travel Time (s)		44.1			13.9		25.8		25.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2252	0	0	2500	257	0	0	0	329
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	2252	0	0	2500	257	0	0	0	329
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		24			24		0		0	
Link Offset(ft)		0			0		0		0	
Crosswalk Width(ft)		16			16		16		16	
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	9	15	9
Sign Control		Free			Free		Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.7%		ICU Level of Service E	
Analysis Period (min) 15			



Lane Group	EBT	EBR2	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBT	SBR	NWL2
Lane Configurations												
Traffic Volume (vph)	0	80	94	123	62	157	54	51	130	85	53	126
Future Volume (vph)	0	80	94	123	62	157	54	51	130	85	53	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865			0.970				0.955		0.948		
Flt Protected				0.983				0.974				
Satd. Flow (prot)	1611	0	0	1776	0	0	0	1733	0	1766	0	0
Flt Permitted				0.983				0.974				
Satd. Flow (perm)	1611	0	0	1776	0	0	0	1733	0	1766	0	0
Link Speed (mph)	30			30				30		30		
Link Distance (ft)	2141			528				467		490		
Travel Time (s)	48.7			12.0				10.6		11.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	87	102	134	67	171	59	55	141	92	58	137
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	0	0	303	0	0	0	426	0	150	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left	Right	Left
Median Width(ft)	0			0				0		0		
Link Offset(ft)	0			0				0		0		
Crosswalk Width(ft)	16			16				16		16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		9	9	15		9		9	15
Sign Control	Yield			Yield				Yield		Yield		

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	NWL	NWR	NWR2
Lane Configurations			
Traffic Volume (vph)	14	37	59
Future Volume (vph)	14	37	59
Ideal Flow (vphpl)	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00
Frt	0.945		
Flt Protected	0.971		
Satd. Flow (prot)	1709	0	0
Flt Permitted	0.971		
Satd. Flow (perm)	1709	0	0
Link Speed (mph)	30		
Link Distance (ft)	1136		
Travel Time (s)	25.8		
Peak Hour Factor	0.92	0.92	0.92
Adj. Flow (vph)	15	40	64
Shared Lane Traffic (%)			
Lane Group Flow (vph)	256	0	0
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Right	Right
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15	9	9
Sign Control	Yield		

Intersection Summary

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

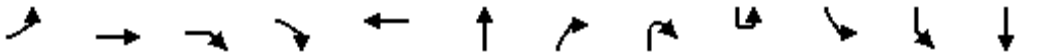
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	87	303	426	150
Demand Flow Rate, veh/h	89	309	434	153
Vehicles Circulating, veh/h	512	486	0	630
Vehicles Exiting, veh/h	271	209	601	165
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.6	8.7	5.5	7.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	TR
Assumed Moves	LTR	LTR	LTR	TR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	89	309	434	153
Cap Entry Lane, veh/h	819	841	1380	726
Entry HV Adj Factor	0.978	0.982	0.980	0.981
Flow Entry, veh/h	87	303	425	150
Cap Entry, veh/h	800	825	1353	712
V/C Ratio	0.109	0.368	0.315	0.211
Control Delay, s/veh	5.6	8.7	5.5	7.5
LOS	A	A	A	A
95th %tile Queue, veh	0	2	1	1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Approach	NW
Entry Lanes	1
Conflicting Circle Lanes	1
Adj Approach Flow, veh/h	256
Demand Flow Rate, veh/h	261
Vehicles Circulating, veh/h	434
Vehicles Exiting, veh/h	0
Ped Vol Crossing Leg, #/h	0
Ped Cap Adj	1.000
Approach Delay, s/veh	7.3
Approach LOS	A

Lane	Left
Designated Moves	LR
Assumed Moves	LR
RT Channelized	
Lane Util	1.000
Follow-Up Headway, s	2.609
Critical Headway, s	4.976
Entry Flow, veh/h	261
Cap Entry Lane, veh/h	886
Entry HV Adj Factor	0.982
Flow Entry, veh/h	256
Cap Entry, veh/h	870
V/C Ratio	0.294
Control Delay, s/veh	7.3
LOS	A
95th %tile Queue, veh	1



Lane Group	EBL	EBT	EBR	EBR2	WBT	NBT	NBR	NBR2	SBU	SBL2	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	117	134	221	24	0	25	14	7	80	120	49	19
Future Volume (vph)	117	134	221	24	0	25	14	7	80	120	49	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.933				0.938						0.929
Flt Protected		0.988										0.979
Satd. Flow (prot)	0	1717	0	0	1863	1747	0	0	0	0	0	1694
Flt Permitted		0.988										0.979
Satd. Flow (perm)	0	1717	0	0	1863	1747	0	0	0	0	0	1694
Link Speed (mph)		30			30	30						30
Link Distance (ft)		2132			1136	387						467
Travel Time (s)		48.5			25.8	8.8						10.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	146	240	26	0	27	15	8	87	130	53	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	539	0	0	0	50	0	0	0	0	0	617
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	R NA	Left	Left	Left
Median Width(ft)		0			0	0						0
Link Offset(ft)		0			0	0						0
Crosswalk Width(ft)		16			16	16						16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9	15	15	
Sign Control		Yield			Yield	Yield						Yield

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 90.5%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	SBR	NWL	NWR	NWR2
Lane Configurations				
Traffic Volume (vph)	300	0	161	35
Future Volume (vph)	300	0	161	35
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt		0.865		
Flt Protected				
Satd. Flow (prot)	0	1611	0	0
Flt Permitted				
Satd. Flow (perm)	0	1611	0	0
Link Speed (mph)		30		
Link Distance (ft)		559		
Travel Time (s)		12.7		
Peak Hour Factor	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	0	175	38
Shared Lane Traffic (%)				
Lane Group Flow (vph)	0	213	0	0
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Right	Left	Right	Right
Median Width(ft)		12		
Link Offset(ft)		0		
Crosswalk Width(ft)		16		
Two way Left Turn Lane				
Headway Factor	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15	9	9
Sign Control		Yield		

Intersection Summary

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

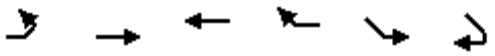
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	539	0	50	617
Demand Flow Rate, veh/h	551	0	51	630
Vehicles Circulating, veh/h	297	425	800	0
Vehicles Exiting, veh/h	333	336	48	425
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.5	0.0	6.9	7.2
Approach LOS	B	-	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	551	0	51	630
Cap Entry Lane, veh/h	1019	895	610	1380
Entry HV Adj Factor	0.978	1.000	0.989	0.980
Flow Entry, veh/h	539	0	50	617
Cap Entry, veh/h	997	895	604	1352
V/C Ratio	0.541	0.000	0.084	0.457
Control Delay, s/veh	10.5	4.0	6.9	7.2
LOS	B	A	A	A
95th %tile Queue, veh	3	0	0	2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Approach	NW
Entry Lanes	1
Conflicting Circle Lanes	1
Adj Approach Flow, veh/h	213
Demand Flow Rate, veh/h	217
Vehicles Circulating, veh/h	544
Vehicles Exiting, veh/h	307
Ped Vol Crossing Leg, #/h	0
Ped Cap Adj	1.000
Approach Delay, s/veh	7.7
Approach LOS	A

Lane	Left
Designated Moves	LR
Assumed Moves	LR
RT Channelized	
Lane Util	1.000
Follow-Up Headway, s	2.609
Critical Headway, s	4.976
Entry Flow, veh/h	217
Cap Entry Lane, veh/h	792
Entry HV Adj Factor	0.982
Flow Entry, veh/h	213
Cap Entry, veh/h	778
V/C Ratio	0.274
Control Delay, s/veh	7.7
LOS	A
95th %tile Queue, veh	1



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2072	2154	146	0	0
Future Volume (vph)	0	2072	2154	146	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.990			
Flt Protected						
Satd. Flow (prot)	0	3539	3504	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	3504	0	0	0
Link Speed (mph)		55	55		30	
Link Distance (ft)		576	3558		1103	
Travel Time (s)		7.1	44.1		25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2252	2341	159	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2252	2500	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

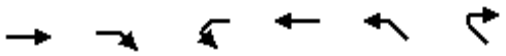
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	230	0	14	0	175	0	116	30
Future Volume (vph)	0	0	0	0	230	0	14	0	175	0	116	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.875			0.972	
Flt Protected								0.996				
Satd. Flow (prot)	0	0	0	0	1863	0	0	1623	0	0	1811	0
Flt Permitted								0.996				
Satd. Flow (perm)	0	0	0	0	1863	0	0	1623	0	0	1811	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		750			1408			1205			1103	
Travel Time (s)		17.0			32.0			27.4			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	250	0	15	0	190	0	126	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	250	0	0	205	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	4.7
Intersection LOS	A

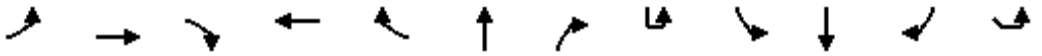
Approach	EB	WB	SE	NW
Entry Lanes	0	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	0	250	205	159
Demand Flow Rate, veh/h	0	255	209	163
Vehicles Circulating, veh/h	15	129	255	15
Vehicles Exiting, veh/h	449	49	129	0
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	4.9	5.3	3.7
Approach LOS	-	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LR	LTR
Assumed Moves	TR	LR	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	255	209	163
Cap Entry Lane, veh/h	1210	1064	1359
Entry HV Adj Factor	0.980	0.981	0.978
Flow Entry, veh/h	250	205	159
Cap Entry, veh/h	1186	1043	1329
V/C Ratio	0.211	0.196	0.120
Control Delay, s/veh	4.9	5.3	3.7
LOS	A	A	A
95th %tile Queue, veh	1	1	0



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	2072	281	0	2154	0	0
Future Volume (vph)	2072	281	0	2154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.982					
Flt Protected						
Satd. Flow (prot)	4994	0	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	4994	0	0	3539	0	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	720			576	920	
Travel Time (s)	8.9			7.1	20.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2252	305	0	2341	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2557	0	0	2341	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBT	WBR2	NBT	NBR	SBU	SBL	SBT	SBR	SEL2
Lane Configurations												
Traffic Volume (vph)	2	303	15	0	284	24	78	13	12	129	189	48
Future Volume (vph)	2	303	15	0	284	24	78	13	12	129	189	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994		0.865		0.897				0.926		
Flt Protected										0.996		
Satd. Flow (prot)	0	1852	0	1611	0	1671	0	0	0	1718	0	0
Flt Permitted										0.996		
Satd. Flow (perm)	0	1852	0	1611	0	1671	0	0	0	1718	0	0
Link Speed (mph)		30		30		30				30		
Link Distance (ft)		537		2132		367				380		
Travel Time (s)		12.2		48.5		8.3				8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	329	16	0	309	26	85	14	13	140	205	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	347	0	309	0	111	0	0	0	372	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)		0		0		0				0		
Link Offset(ft)		0		0		0				0		
Crosswalk Width(ft)		16		16		16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9		9	9	15		9	15
Sign Control		Yield		Yield		Yield				Yield		

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	119	11	104
Future Volume (vph)	119	11	104
Ideal Flow (vphpl)	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00
Frt	0.945		
Flt Protected	0.971		
Satd. Flow (prot)	1709	0	0
Flt Permitted	0.971		
Satd. Flow (perm)	1709	0	0
Link Speed (mph)	30		
Link Distance (ft)	920		
Travel Time (s)	20.9		
Peak Hour Factor	0.92	0.92	0.92
Adj. Flow (vph)	129	12	113
Shared Lane Traffic (%)			
Lane Group Flow (vph)	306	0	0
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Right	Right
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15	9	9
Sign Control	Yield		

Intersection Summary

Intersection	
Intersection Delay, s/veh	6.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	347	309	111	372
Demand Flow Rate, veh/h	354	315	114	379
Vehicles Circulating, veh/h	367	96	550	0
Vehicles Exiting, veh/h	324	568	171	411
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.0	5.2	6.2	5.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	TR	LTR
Assumed Moves	LTR	LTR	TR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	354	315	114	379
Cap Entry Lane, veh/h	949	1251	787	1380
Entry HV Adj Factor	0.981	0.981	0.978	0.981
Flow Entry, veh/h	347	309	111	372
Cap Entry, veh/h	931	1227	770	1354
V/C Ratio	0.373	0.252	0.145	0.275
Control Delay, s/veh	8.0	5.2	6.2	5.0
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	1

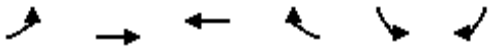
Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Approach	SE
Entry Lanes	1
Conflicting Circle Lanes	1
Adj Approach Flow, veh/h	306
Demand Flow Rate, veh/h	312
Vehicles Circulating, veh/h	379
Vehicles Exiting, veh/h	0
Ped Vol Crossing Leg, #/h	0
Ped Cap Adj	1.000
Approach Delay, s/veh	7.5
Approach LOS	A

Lane	Left
Designated Moves	LR
Assumed Moves	LR
RT Channelized	
Lane Util	1.000
Follow-Up Headway, s	2.609
Critical Headway, s	4.976
Entry Flow, veh/h	312
Cap Entry Lane, veh/h	937
Entry HV Adj Factor	0.981
Flow Entry, veh/h	306
Cap Entry, veh/h	919
V/C Ratio	0.333
Control Delay, s/veh	7.5
LOS	A
95th %tile Queue, veh	1

Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Traffic Volume (vph)	2206	0	0	2154	0	147
Future Volume (vph)	2206	0	0	2154	0	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3539	0	0	3539	0	1611
Flt Permitted						
Satd. Flow (perm)	3539	0	0	3539	0	1611
Link Speed (mph)	55			55	30	
Link Distance (ft)	503			720	432	
Travel Time (s)	6.2			8.9	9.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2398	0	0	2341	0	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2398	0	0	2341	0	160
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 91.3%		ICU Level of Service F	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (vph)	0	2206	2154	0	0	405
Future Volume (vph)	0	2206	2154	0	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	0	0	1611
Link Speed (mph)		55	55		30	
Link Distance (ft)		2649	503		750	
Travel Time (s)		32.8	6.2		17.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2398	2341	0	0	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2398	2341	0	0	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 91.3%		ICU Level of Service F	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	0	44	5	210	294	20	57
Future Volume (vph)	0	44	5	210	294	20	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					0.979	
Flt Protected				0.999		0.959	
Satd. Flow (prot)	1611	0	0	1861	0	1749	0
Flt Permitted				0.999		0.959	
Satd. Flow (perm)	1611	0	0	1861	0	1749	0
Link Speed (mph)	30			30		30	
Link Distance (ft)	1408			2141		380	
Travel Time (s)	32.0			48.7		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	48	5	228	320	22	62
Shared Lane Traffic (%)							
Lane Group Flow (vph)	48	0	0	233	0	404	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	0			0		12	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		9	15	9
Sign Control	Yield			Yield		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	5.5
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	48	233	404
Demand Flow Rate, veh/h	49	238	411
Vehicles Circulating, veh/h	331	348	0
Vehicles Exiting, veh/h	255	63	380
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.2	6.3	5.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	49	238	411
Cap Entry Lane, veh/h	985	968	1380
Entry HV Adj Factor	0.980	0.981	0.982
Flow Entry, veh/h	48	233	404
Cap Entry, veh/h	964	949	1355
V/C Ratio	0.050	0.246	0.298
Control Delay, s/veh	4.2	6.3	5.3
LOS	A	A	A
95th %tile Queue, veh	0	1	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	29	23	109	7	1	160
Future Volume (vph)	29	23	109	7	1	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941				0.866	
Flt Protected				0.955		
Satd. Flow (prot)	1753	0	0	1779	1613	0
Flt Permitted				0.955		
Satd. Flow (perm)	1753	0	0	1779	1613	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	241			1205	713	
Travel Time (s)	5.5			27.4	16.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	25	118	8	1	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	0	126	175	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	23	109	7	1	160
Future Vol, veh/h	29	23	109	7	1	160
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	25	118	8	1	174
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.5	8.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	1%	0%	94%
Vol Thru, %	0%	56%	6%
Vol Right, %	99%	44%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	161	52	116
LT Vol	1	0	109
Through Vol	0	29	7
RT Vol	160	23	0
Lane Flow Rate	175	57	126
Geometry Grp	1	1	1
Degree of Util (X)	0.183	0.064	0.157
Departure Headway (Hd)	3.762	4.076	4.475
Convergence, Y/N	Yes	Yes	Yes
Cap	959	864	794
Service Time	1.762	2.171	2.542
HCM Lane V/C Ratio	0.182	0.066	0.159
HCM Control Delay	7.6	7.5	8.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.2	0.6

Network Totals

Number of Intersections	11
Control Delay / Veh (s/v)	0
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	0
Total Delay (hr)	1
Stops / Veh	0.19
Stops (#)	5284
Average Speed (mph)	49
Total Travel Time (hr)	158
Distance Traveled (mi)	7735
Fuel Consumed (gal)	297
Fuel Economy (mpg)	26.0
CO Emissions (kg)	20.76
NOx Emissions (kg)	4.04
VOC Emissions (kg)	4.81
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	15.4

3: EB Entrance Ramp & TH 13 & WB Exit Ramp

Direction	EB	WB	NE	All
Future Volume (vph)	2072	2536	303	4911
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	30	54
Total Travel Time (hr)	25	20	2	47
Distance Traveled (mi)	1396	1085	65	2546
Fuel Consumed (gal)	47	36	3	86
Fuel Economy (mpg)	29.9	29.9	24.3	29.7
CO Emissions (kg)	3.26	2.54	0.19	5.99
NOx Emissions (kg)	0.64	0.49	0.04	1.17
VOC Emissions (kg)	0.76	0.59	0.04	1.39
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

4: Washburn Ave & WB Exit Ramp & N Frontage Rd

Direction	EB	WB	NB	SB	NW	All
Future Volume (vph)	80	279	392	138	236	1125
Control Delay / Veh (s/v)	0	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00	1.00	1.00
Stops (#)	80	279	392	138	236	1125
Average Speed (mph)	30	30	30	30	30	30
Total Travel Time (hr)	1	1	1	0	2	5
Distance Traveled (mi)	32	28	35	13	51	159
Fuel Consumed (gal)	2	3	4	1	3	13
Fuel Economy (mpg)	18.2	10.4	9.6	9.9	15.0	12.4
CO Emissions (kg)	0.12	0.19	0.25	0.09	0.24	0.89
NOx Emissions (kg)	0.02	0.04	0.05	0.02	0.05	0.17
VOC Emissions (kg)	0.03	0.04	0.06	0.02	0.06	0.21
Unserved Vehicles (#)	0	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0	0

5: Washburn Ave & S Frontage Rd & EB Entrance Ramp

Direction	EB	NB	SB	NW	All
Future Volume (vph)	496	46	568	196	1306
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00	1.00
Stops (#)	496	46	568	196	1306
Average Speed (mph)	30	30	30	30	30
Total Travel Time (hr)	7	0	2	1	9
Distance Traveled (mi)	200	3	50	21	275
Fuel Consumed (gal)	11	0	5	2	19
Fuel Economy (mpg)	18.2	NA	9.6	10.7	14.8
CO Emissions (kg)	0.77	0.03	0.36	0.14	1.30
NOx Emissions (kg)	0.15	0.01	0.07	0.03	0.25
VOC Emissions (kg)	0.18	0.01	0.08	0.03	0.30
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

7: TH 13 & WB Exit Ramp

Direction	EB	WB	All
Future Volume (vph)	2072	2300	4372
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	55	55	55
Total Travel Time (hr)	4	28	32
Distance Traveled (mi)	226	1550	1776
Fuel Consumed (gal)	8	52	59
Fuel Economy (mpg)	29.9	29.9	29.9
CO Emissions (kg)	0.53	3.62	4.15
NOx Emissions (kg)	0.10	0.71	0.81
VOC Emissions (kg)	0.12	0.84	0.96
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0

8: WB Exit Ramp & WB Entrance Ramp & N Frontage Rd

Direction	WB	SE	NW	All
Future Volume (vph)	230	189	146	565
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00
Stops (#)	230	189	146	565
Average Speed (mph)	30	30	30	30
Total Travel Time (hr)	2	1	1	5
Distance Traveled (mi)	61	43	30	135
Fuel Consumed (gal)	4	3	2	9
Fuel Economy (mpg)	16.2	15.3	14.8	15.5
CO Emissions (kg)	0.27	0.20	0.14	0.61
NOx Emissions (kg)	0.05	0.04	0.03	0.12
VOC Emissions (kg)	0.06	0.05	0.03	0.14
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

9: EB Exit Ramp & TH 13

Direction	EB	WB	All
Future Volume (vph)	2352	2154	4506
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	55	55	55
Total Travel Time (hr)	6	4	10
Distance Traveled (mi)	321	235	556
Fuel Consumed (gal)	11	8	19
Fuel Economy (mpg)	29.9	29.9	29.9
CO Emissions (kg)	0.75	0.55	1.30
NOx Emissions (kg)	0.15	0.11	0.25
VOC Emissions (kg)	0.17	0.13	0.30
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0

10: Chowen Ave & S Frontage Rd & EB Exit Ramp

Direction	EB	WB	NB	SB	SE	All
Future Volume (vph)	319	284	102	342	282	1329
Control Delay / Veh (s/v)	0	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00	1.00	1.00
Stops (#)	319	284	102	342	282	1329
Average Speed (mph)	30	30	30	30	30	30
Total Travel Time (hr)	1	4	0	1	2	8
Distance Traveled (mi)	32	115	7	25	49	228
Fuel Consumed (gal)	3	6	1	3	4	17
Fuel Economy (mpg)	10.5	18.2	NA	8.5	13.7	13.6
CO Emissions (kg)	0.22	0.44	0.06	0.20	0.25	1.17
NOx Emissions (kg)	0.04	0.09	0.01	0.04	0.05	0.23
VOC Emissions (kg)	0.05	0.10	0.01	0.05	0.06	0.27
Unserved Vehicles (#)	0	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0	0

11: EB Entrance Ramp & TH 13

Direction	EB	WB	NE	All
Future Volume (vph)	2206	2154	147	4507
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	30	54
Total Travel Time (hr)	4	5	0	10
Distance Traveled (mi)	210	294	12	516
Fuel Consumed (gal)	7	10	0	17
Fuel Economy (mpg)	29.9	29.9	NA	29.7
CO Emissions (kg)	0.49	0.69	0.03	1.21
NOx Emissions (kg)	0.10	0.13	0.01	0.24
VOC Emissions (kg)	0.11	0.16	0.01	0.28
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

13: TH 13 & WB Entrance Ramp

Direction	EB	WB	SB	All
Future Volume (vph)	2206	2154	405	4765
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	30	53
Total Travel Time (hr)	20	4	2	26
Distance Traveled (mi)	1107	205	58	1369
Fuel Consumed (gal)	37	7	2	46
Fuel Economy (mpg)	29.9	29.9	24.3	29.6
CO Emissions (kg)	2.59	0.48	0.17	3.23
NOx Emissions (kg)	0.50	0.09	0.03	0.63
VOC Emissions (kg)	0.60	0.11	0.04	0.75
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

14: Chowen Ave & N Frontage Rd

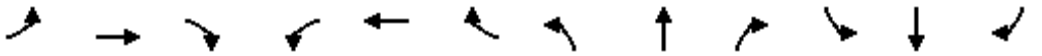
Direction	EB	WB	NB	All
Future Volume (vph)	44	214	372	630
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00
Stops (#)	44	214	372	630
Average Speed (mph)	30	30	30	30
Total Travel Time (hr)	0	3	1	4
Distance Traveled (mi)	12	87	27	125
Fuel Consumed (gal)	1	5	3	9
Fuel Economy (mpg)	NA	18.2	8.5	14.5
CO Emissions (kg)	0.05	0.33	0.22	0.60
NOx Emissions (kg)	0.01	0.06	0.04	0.12
VOC Emissions (kg)	0.01	0.08	0.05	0.14
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

16: Lynn Ave & N Frontage Rd

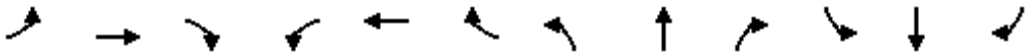
Direction	EB	WB	NB	All
Future Volume (vph)	52	116	161	329
Control Delay / Veh (s/v)	7	8	8	8
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	7	8	8	8
Total Delay (hr)	0	0	0	1
Stops / Veh	1.00	1.00	1.00	1.00
Stops (#)	52	116	161	329
Average Speed (mph)	13	23	20	21
Total Travel Time (hr)	0	1	1	2
Distance Traveled (mi)	2	26	22	51
Fuel Consumed (gal)	0	2	2	4
Fuel Economy (mpg)	NA	13.7	10.7	11.4
CO Emissions (kg)	0.03	0.13	0.14	0.31
NOx Emissions (kg)	0.01	0.03	0.03	0.06
VOC Emissions (kg)	0.01	0.03	0.03	0.07
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

Network Totals

Number of Intersections	11
Control Delay / Veh (s/v)	0
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	0
Total Delay (hr)	1
Stops / Veh	0.19
Stops (#)	5284
Average Speed (mph)	49
Total Travel Time (hr)	158
Distance Traveled (mi)	7735
Fuel Consumed (gal)	297
Fuel Economy (mpg)	26.0
CO Emissions (kg)	20.76
NOx Emissions (kg)	4.04
VOC Emissions (kg)	4.81
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	15.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	2136	19	126	2330	110	46	29	124	115	56	128
Future Volume (vph)	86	2136	19	126	2330	110	46	29	124	115	56	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	475		450	450		250	0		0	0		0
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt			0.850			0.850		0.879			0.938	0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1637	0	3433	1660	1504
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1637	0	3433	1660	1504
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			76		88			19	93
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2112			3373			180			271	
Travel Time (s)		26.2			41.8			4.1			6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	2322	21	137	2533	120	50	32	135	125	61	139
Shared Lane Traffic (%)												31%
Lane Group Flow (vph)	93	2322	21	137	2533	120	50	167	0	125	104	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		52			52			24			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	12.6	100.6	100.6	16.5	104.5	104.5	9.7	22.5		10.4	23.2	23.2
Total Split (%)	8.4%	67.1%	67.1%	11.0%	69.7%	69.7%	6.5%	15.0%		6.9%	15.5%	15.5%
Maximum Green (s)	8.1	96.1	96.1	12.0	100.0	100.0	5.2	18.0		5.9	18.7	18.7
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effct Green (s)	11.7	98.0	98.0	15.3	101.7	101.7	5.2	12.7		5.9	13.4	13.4
Actuated g/C Ratio	0.08	0.65	0.65	0.10	0.68	0.68	0.03	0.08		0.04	0.09	0.09
v/c Ratio	0.68	1.00	0.02	0.76	1.06	0.11	0.82	0.76		0.93	0.63	0.44
Control Delay	79.0	25.8	0.0	90.4	59.9	3.8	141.4	52.8		129.9	69.4	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	79.0	25.8	0.0	90.4	59.9	3.8	141.4	52.8		129.9	69.4	18.3
LOS	E	C	A	F	E	A	F	D		F	E	B
Approach Delay		27.6			59.0			73.2			77.6	
Approach LOS		C			E			E			E	
90th %ile Green (s)	8.1	96.1	96.1	12.0	100.0	100.0	5.2	18.0		5.9	18.7	18.7
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Coord	Max	Max		Max	Max	Max
70th %ile Green (s)	10.0	96.1	96.1	13.9	100.0	100.0	5.2	16.1		5.9	16.8	16.8
70th %ile Term Code	Max	Coord	Coord	Max	Coord	Coord	Max	Gap		Max	Hold	Hold
50th %ile Green (s)	13.1	96.1	96.1	17.0	100.0	100.0	5.2	13.0		5.9	13.7	13.7
50th %ile Term Code	Max	Coord	Coord	Max	Coord	Coord	Max	Gap		Max	Hold	Hold
30th %ile Green (s)	14.5	97.9	97.9	18.2	101.6	101.6	5.2	10.0		5.9	10.7	10.7
30th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Coord	Max	Hold		Max	Gap	Gap
10th %ile Green (s)	12.6	103.9	103.9	15.6	106.9	106.9	5.2	6.6		5.9	7.3	7.3
10th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Coord	Max	Hold		Max	Gap	Gap
Stops (vph)	75	841	0	109	1958	16	39	73		100	75	17
Fuel Used(gal)	4	55	0	7	115	3	2	2		4	2	1
CO Emissions (g/hr)	275	3874	18	492	8009	191	112	159		268	138	43
NOx Emissions (g/hr)	53	754	3	96	1558	37	22	31		52	27	8
VOC Emissions (g/hr)	64	898	4	114	1856	44	26	37		62	32	10
Dilemma Vehicles (#)	0	89	0	0	72	0	0	0		0	0	0
Queue Length 50th (ft)	97	~1254	0	131	~1444	14	50	76		63	85	3
Queue Length 95th (ft)	m#114	m#1330	m0	#278	#1564	37	#133	156		#132	149	62
Internal Link Dist (ft)		2032			3293			100			191	
Turn Bay Length (ft)	475		450	450		250						
Base Capacity (vph)	137	2312	1060	181	2399	1097	61	273		135	223	268
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	1.00	0.02	0.76	1.06	0.11	0.82	0.61		0.93	0.47	0.36

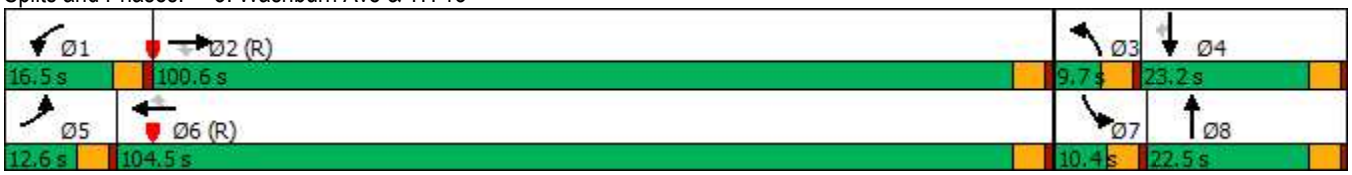
Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 39.5 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 47.3		Intersection LOS: D	
Intersection Capacity Utilization 97.5%		ICU Level of Service F	
Analysis Period (min) 15			

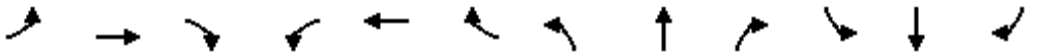
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Washburn Ave & TH 13





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	2170	37	28	2493	2	2	1	60	1	1	85
Future Volume (vph)	44	2170	37	28	2493	2	2	1	60	1	1	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		275	425		275	0		0	0		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2789			2112			221			200	
Travel Time (s)		34.6			26.2			5.0			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	2359	40	30	2710	2	2	1	65	1	1	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	2359	40	30	2710	2	2	1	65	1	1	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		52			52			12			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.5%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	2170	37	28	2493	2	2	1	60	1	1	85
Future Vol, veh/h	44	2170	37	28	2493	2	2	1	60	1	1	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	275	425	-	275	0	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	2359	40	30	2710	2	2	1	65	1	1	92

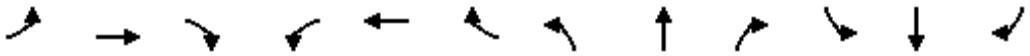
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2712	0	0	2399	0	0	3871	5227	1180	4046	5265	1355
Stage 1	-	-	-	-	-	-	2455	2455	-	2770	2770	-
Stage 2	-	-	-	-	-	-	1416	2772	-	1276	2495	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	148	-	-	197	-	-	~ 1	0	183	~ 1	0	139
Stage 1	-	-	-	-	-	-	31	60	-	19	41	-
Stage 2	-	-	-	-	-	-	144	41	-	176	57	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	148	-	-	197	-	-	0	0	183	0	0	139
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-	0	0	-
Stage 1	-	-	-	-	-	-	21	41	-	13	35	-
Stage 2	-	-	-	-	-	-	40	35	-	75	39	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	-	183	148	-	-	197	-	-	-	-	139
HCM Lane V/C Ratio	-	-	0.356	0.323	-	-	0.154	-	-	-	-	0.665
HCM Control Delay (s)	-	-	35.2	40.5	-	-	26.6	-	-	-	-	71.4
HCM Lane LOS	-	-	E	E	-	-	D	-	-	-	-	F
HCM 95th %tile Q(veh)	-	-	1.5	1.3	-	-	0.5	-	-	-	-	3.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2091	91	109	2473	7	160	1	131	16	7	15
Future Volume (vph)	4	2091	91	109	2473	7	160	1	131	16	7	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	525		575	300		375	0		130	0		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.851			0.900	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1585	0	1770	1676	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1585	0	1770	1676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142			109		98			16	
Link Speed (mph)		50			50			30			30	
Link Distance (ft)		2051			2789			594			706	
Travel Time (s)		28.0			38.0			13.5			16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	2273	99	118	2688	8	174	1	142	17	8	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	2273	99	118	2688	8	174	143	0	17	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	9.5	96.0	96.0	14.5	101.0	101.0	17.0	29.3		10.2	22.5	
Total Split (%)	6.3%	64.0%	64.0%	9.7%	67.3%	67.3%	11.3%	19.5%		6.8%	15.0%	
Maximum Green (s)	5.0	91.5	91.5	10.0	96.5	96.5	12.5	24.8		5.7	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	6.0	99.1	99.1	17.3	118.7	118.7	12.5	15.9		5.7	7.0	
Actuated g/C Ratio	0.04	0.66	0.66	0.12	0.79	0.79	0.08	0.11		0.04	0.05	
v/c Ratio	0.06	0.97	0.09	0.58	0.96	0.01	1.18	0.56		0.26	0.26	
Control Delay	70.5	38.1	0.6	70.6	30.9	0.0	188.2	30.9		79.8	42.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	70.5	38.1	0.6	70.6	30.9	0.0	188.2	30.9		79.8	42.7	
LOS	E	D	A	E	C	A	F	C		E	D	
Approach Delay		36.6			32.4			117.2			58.1	
Approach LOS		D			C			F			E	
90th %ile Green (s)	6.9	91.5	91.5	17.4	102.0	102.0	12.5	17.4		5.7	10.6	
90th %ile Term Code	Gap	Coord	Coord	Max	Coord	Coord	Max	Gap		Max	Hold	
70th %ile Green (s)	0.0	93.2	93.2	19.0	116.7	116.7	12.5	14.1		5.7	7.3	
70th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Max	Gap	
50th %ile Green (s)	0.0	95.4	95.4	17.9	117.8	117.8	12.5	23.2		0.0	6.2	
50th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Skip	Gap	
30th %ile Green (s)	0.0	107.0	107.0	17.0	128.5	128.5	12.5	12.5		0.0	0.0	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Skip	Skip	
10th %ile Green (s)	0.0	108.6	108.6	15.4	128.5	128.5	12.5	12.5		0.0	0.0	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Skip	Skip	
Stops (vph)	6	1642	1	99	2329	0	127	46		16	12	
Fuel Used(gal)	0	69	1	5	95	0	8	2		0	0	
CO Emissions (g/hr)	14	4797	85	351	6643	9	529	119		30	26	
NOx Emissions (g/hr)	3	933	16	68	1292	2	103	23		6	5	
VOC Emissions (g/hr)	3	1112	20	81	1540	2	123	27		7	6	
Dilemma Vehicles (#)	0	66	0	0	13	0	0	0		0	0	
Queue Length 50th (ft)	4	~1161	0	105	1466	0	~203	39		16	8	
Queue Length 95th (ft)	17	#1400	7	m106	m#1499	m0	#362	114		44	39	
Internal Link Dist (ft)		1971			2709			514			626	
Turn Bay Length (ft)	525		575	300		375						
Base Capacity (vph)	70	2338	1094	204	2800	1275	147	343		67	215	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.97	0.09	0.58	0.96	0.01	1.18	0.42		0.25	0.11	

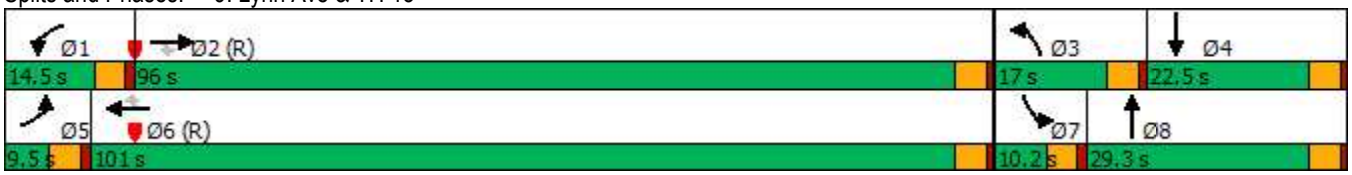
Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 39.3		Intersection LOS: D	
Intersection Capacity Utilization 99.3%		ICU Level of Service F	
Analysis Period (min) 15			

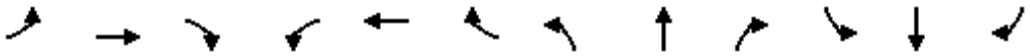
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Lynn Ave & TH 13





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	41	48	164	53	62	23	63	99	27	101	10
Future Volume (vph)	12	41	48	164	53	62	23	63	99	27	101	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Frt		0.936			0.970			0.919			0.990	
Flt Protected		0.994			0.971			0.994			0.990	
Satd. Flow (prot)	0	1733	0	0	1754	0	0	3233	0	0	1826	0
Flt Permitted		0.994			0.971			0.994			0.990	
Satd. Flow (perm)	0	1733	0	0	1754	0	0	3233	0	0	1826	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		2118			1874			271			458	
Travel Time (s)		41.3			36.5			6.2			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	45	52	178	58	67	25	68	108	29	110	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	303	0	0	201	0	0	150	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

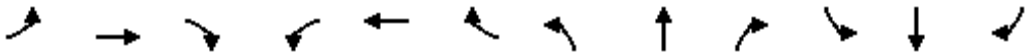
Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	41	48	164	53	62	23	63	99	27	101	10
Future Vol, veh/h	12	41	48	164	53	62	23	63	99	27	101	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	45	52	178	58	67	25	68	108	29	110	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	287	400	116	394	351	88	121	0	0	176	0	0
Stage 1	174	174	-	172	172	-	-	-	-	-	-	-
Stage 2	113	226	-	222	179	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	654	538	936	553	573	953	1465	-	-	1399	-	-
Stage 1	827	754	-	814	756	-	-	-	-	-	-	-
Stage 2	880	716	-	780	751	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	542	516	936	473	550	953	1465	-	-	1399	-	-
Mov Cap-2 Maneuver	542	516	-	473	550	-	-	-	-	-	-	-
Stage 1	811	737	-	799	742	-	-	-	-	-	-	-
Stage 2	740	702	-	677	734	-	-	-	-	-	-	-

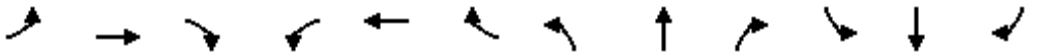
Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	19.3	0.9	1.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1465	-	-	661	549	1399	-	-
HCM Lane V/C Ratio	0.017	-	-	0.166	0.552	0.021	-	-
HCM Control Delay (s)	7.5	0	-	11.5	19.3	7.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	3.3	0.1	-	-



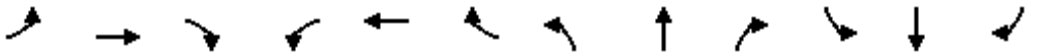
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	13	9	76	1	1	1	0	53	1	0	0
Future Volume (vph)	0	13	9	76	1	1	1	0	53	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.944			0.998				0.850			
Flt Protected					0.953			0.950			0.950	
Satd. Flow (prot)	0	1758	0	0	1772	0	0	1770	1583	0	1770	0
Flt Permitted					0.953			0.950			0.950	
Satd. Flow (perm)	0	1758	0	0	1772	0	0	1770	1583	0	1770	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1420			2118			200			391	
Travel Time (s)		27.7			41.3			4.5			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	14	10	83	1	1	1	0	58	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	85	0	0	1	58	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.0%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	221	24	5	135	56	17	22	7	54	15	130
Future Volume (vph)	115	221	24	5	135	56	17	22	7	54	15	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70		0	0		265	0		0	0		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985				0.850		0.978			0.865	
Flt Protected	0.950				0.998			0.982		0.950		
Satd. Flow (prot)	1770	1835	0	0	1859	1583	0	1789	0	1770	1611	0
Flt Permitted	0.950				0.998			0.982		0.950		
Satd. Flow (perm)	1770	1835	0	0	1859	1583	0	1789	0	1770	1611	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		2103			2069			270			180	
Travel Time (s)		41.0			40.3			6.1			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	240	26	5	147	61	18	24	8	59	16	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	266	0	0	152	61	0	50	0	59	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			24	
Link Offset(ft)		0			0			0			12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	267	15	117	154	4	23	23	56	25	20	23
Future Volume (vph)	38	267	15	117	154	4	23	23	56	25	20	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.998			0.926				0.850
Flt Protected		0.994			0.979			0.989			0.973	
Satd. Flow (prot)	0	1840	0	0	1820	0	0	1706	0	0	1812	1583
Flt Permitted		0.994			0.979			0.989			0.973	
Satd. Flow (perm)	0	1840	0	0	1820	0	0	1706	0	0	1812	1583
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1464			2103			381			221	
Travel Time (s)		28.5			41.0			8.7			5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	290	16	127	167	4	25	25	61	27	22	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	347	0	0	298	0	0	111	0	0	49	25
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			

Network Totals

Number of Intersections	7
Control Delay / Veh (s/v)	29
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	29
Total Delay (hr)	144
Stops / Veh	0.60
Stops (#)	10617
Average Speed (mph)	26
Total Travel Time (hr)	295
Distance Traveled (mi)	7654
Fuel Consumed (gal)	513
Fuel Economy (mpg)	14.9
CO Emissions (kg)	35.85
NOx Emissions (kg)	6.98
VOC Emissions (kg)	8.31
Unserved Vehicles (#)	155
Vehicles in dilemma zone (#)	240
Performance Index	173.3

3: Washburn Ave & TH 13

Direction	EB	WB	NB	SB	All
Future Volume (vph)	2241	2566	200	299	5306
Control Delay / Veh (s/v)	28	59	73	78	47
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	28	59	73	78	47
Total Delay (hr)	17	42	4	6	70
Stops / Veh	0.41	0.81	0.56	0.64	0.62
Stops (#)	916	2083	112	192	3303
Average Speed (mph)	27	23	2	2	22
Total Travel Time (hr)	33	72	4	7	117
Distance Traveled (mi)	896	1639	7	15	2558
Fuel Consumed (gal)	60	124	4	6	194
Fuel Economy (mpg)	15.0	13.2	1.8	2.4	13.2
CO Emissions (kg)	4.17	8.69	0.27	0.45	13.58
NOx Emissions (kg)	0.81	1.69	0.05	0.09	2.64
VOC Emissions (kg)	0.97	2.01	0.06	0.10	3.15
Unserved Vehicles (#)	8	123	0	0	132
Vehicles in dilemma zone (#)	89	72	0	0	161

6: Chowen Ave & TH 13

Direction	EB	WB	NB	SB	All
Future Volume (vph)	2251	2523	63	87	4924
Control Delay / Veh (s/v)	1	0	510	78	8
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	1	0	510	78	8
Total Delay (hr)	0	0	9	2	12
Stops / Veh	0.16	0.06	1.00	1.00	0.13
Stops (#)	358	149	63	87	657
Average Speed (mph)	54	54	0	2	43
Total Travel Time (hr)	22	19	9	2	52
Distance Traveled (mi)	1189	1009	3	3	2204
Fuel Consumed (gal)	47	37	7	2	92
Fuel Economy (mpg)	25.4	27.5	0.4	1.6	23.8
CO Emissions (kg)	3.27	2.56	0.49	0.14	6.46
NOx Emissions (kg)	0.64	0.50	0.10	0.03	1.26
VOC Emissions (kg)	0.76	0.59	0.11	0.03	1.50
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

9: Lynn Ave & TH 13

Direction	EB	WB	NB	SB	All
Future Volume (vph)	2186	2589	292	38	5105
Control Delay / Veh (s/v)	37	32	117	58	39
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	37	32	117	58	39
Total Delay (hr)	22	23	9	1	56
Stops / Veh	0.75	0.94	0.59	0.74	0.84
Stops (#)	1649	2428	173	28	4278
Average Speed (mph)	22	27	3	6	22
Total Travel Time (hr)	39	51	11	1	101
Distance Traveled (mi)	849	1368	33	5	2255
Fuel Consumed (gal)	70	100	9	1	180
Fuel Economy (mpg)	12.1	13.7	3.5	NA	12.5
CO Emissions (kg)	4.90	7.00	0.65	0.06	12.60
NOx Emissions (kg)	0.95	1.36	0.13	0.01	2.45
VOC Emissions (kg)	1.13	1.62	0.15	0.01	2.92
Unserved Vehicles (#)	0	0	24	0	24
Vehicles in dilemma zone (#)	66	13	0	0	79

12: Washburn Ave & N Frontage Rd

Direction	EB	WB	NB	SB	All
Future Volume (vph)	101	279	185	138	703
Control Delay / Veh (s/v)	12	21	1	1	10
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	12	21	1	1	10
Total Delay (hr)	0	2	0	0	2
Stops / Veh	1.00	1.00	0.11	0.27	0.62
Stops (#)	101	279	21	37	438
Average Speed (mph)	27	22	27	27	24
Total Travel Time (hr)	1	4	0	0	7
Distance Traveled (mi)	41	99	9	12	161
Fuel Consumed (gal)	3	7	1	1	11
Fuel Economy (mpg)	15.9	14.0	NA	NA	14.8
CO Emissions (kg)	0.18	0.49	0.04	0.05	0.76
NOx Emissions (kg)	0.03	0.10	0.01	0.01	0.15
VOC Emissions (kg)	0.04	0.11	0.01	0.01	0.18
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

13: Chowen Ave & N Frontage Rd

Direction	EB	WB	NB	SB	All
Future Volume (vph)	22	78	54	1	155
Control Delay / Veh (s/v)	7	8	6	8	7
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	7	8	6	8	7
Total Delay (hr)	0	0	0	0	0
Stops / Veh	1.00	1.00	1.22	1.00	1.08
Stops (#)	22	78	66	1	167
Average Speed (mph)	28	29	13	16	27
Total Travel Time (hr)	0	1	0	0	1
Distance Traveled (mi)	6	31	2	0	39
Fuel Consumed (gal)	0	2	1	0	3
Fuel Economy (mpg)	NA	16.4	NA	NA	13.8
CO Emissions (kg)	0.03	0.13	0.04	0.00	0.20
NOx Emissions (kg)	0.01	0.03	0.01	0.00	0.04
VOC Emissions (kg)	0.01	0.03	0.01	0.00	0.05
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

16: Washburn Ave & S Frontage Rd

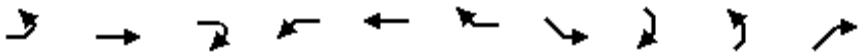
Direction	EB	WB	NB	SB	All
Future Volume (vph)	360	196	46	198	800
Control Delay / Veh (s/v)	11	9	10	9	10
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	11	9	10	9	10
Total Delay (hr)	1	0	0	0	2
Stops / Veh	1.00	1.00	1.00	1.82	1.20
Stops (#)	360	196	46	360	962
Average Speed (mph)	28	29	11	9	26
Total Travel Time (hr)	5	3	0	1	9
Distance Traveled (mi)	143	77	2	7	229
Fuel Consumed (gal)	9	5	0	3	17
Fuel Economy (mpg)	16.0	16.1	NA	2.6	13.7
CO Emissions (kg)	0.63	0.33	0.03	0.18	1.17
NOx Emissions (kg)	0.12	0.06	0.01	0.04	0.23
VOC Emissions (kg)	0.14	0.08	0.01	0.04	0.27
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

17: S Frontage Rd & Chowen Ave

Direction	EB	WB	NB	SB	All
Future Volume (vph)	319	274	102	68	763
Control Delay / Veh (s/v)	12	12	10	9	11
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	12	12	10	9	11
Total Delay (hr)	1	1	0	0	2
Stops / Veh	1.00	1.00	1.00	1.72	1.06
Stops (#)	319	274	102	117	812
Average Speed (mph)	25	27	14	11	25
Total Travel Time (hr)	4	4	1	0	8
Distance Traveled (mi)	88	109	7	3	208
Fuel Consumed (gal)	7	7	1	1	15
Fuel Economy (mpg)	13.5	15.9	6.9	NA	13.5
CO Emissions (kg)	0.46	0.48	0.07	0.06	1.07
NOx Emissions (kg)	0.09	0.09	0.01	0.01	0.21
VOC Emissions (kg)	0.11	0.11	0.02	0.01	0.25
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

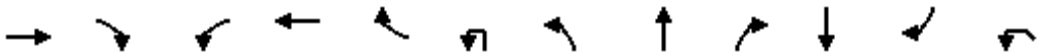
Network Totals

Number of Intersections	7
Control Delay / Veh (s/v)	29
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	29
Total Delay (hr)	144
Stops / Veh	0.60
Stops (#)	10617
Average Speed (mph)	26
Total Travel Time (hr)	295
Distance Traveled (mi)	7654
Fuel Consumed (gal)	513
Fuel Economy (mpg)	14.9
CO Emissions (kg)	35.85
NOx Emissions (kg)	6.98
VOC Emissions (kg)	8.31
Unserved Vehicles (#)	155
Vehicles in dilemma zone (#)	240
Performance Index	173.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SER	NEL	NER
Lane Configurations		↑↑			↑↑	↱				↱
Traffic Volume (vph)	0	2072	0	0	2300	236	0	0	0	303
Future Volume (vph)	0	2072	0	0	2300	236	0	0	0	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Frt						0.850				0.865
Flt Protected										
Satd. Flow (prot)	0	3539	0	0	3539	1583	0	0	0	1611
Flt Permitted										
Satd. Flow (perm)	0	3539	0	0	3539	1583	0	0	0	1611
Link Speed (mph)		55			55		30		30	
Link Distance (ft)		3558			1121		1136		1136	
Travel Time (s)		44.1			13.9		25.8		25.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2252	0	0	2500	257	0	0	0	329
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	2252	0	0	2500	257	0	0	0	329
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right
Median Width(ft)		24			24		0		0	
Link Offset(ft)		0			0		0		0	
Crosswalk Width(ft)		16			16		16		16	
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15	9	15	9
Sign Control		Free			Free		Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.7%		ICU Level of Service E	
Analysis Period (min) 15			



Lane Group	EBT	EBR2	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBT	SBR	NWL2
Lane Configurations												
Traffic Volume (vph)	0	80	94	123	62	157	54	51	130	85	53	126
Future Volume (vph)	0	80	94	123	62	157	54	51	130	85	53	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865			0.970				0.955		0.948		
Flt Protected				0.983				0.974				
Satd. Flow (prot)	1611	0	0	1776	0	0	0	1733	0	1766	0	0
Flt Permitted				0.983				0.974				
Satd. Flow (perm)	1611	0	0	1776	0	0	0	1733	0	1766	0	0
Link Speed (mph)	30			30				30		30		
Link Distance (ft)	2141			528				467		490		
Travel Time (s)	48.7			12.0				10.6		11.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	87	102	134	67	171	59	55	141	92	58	137
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	0	0	303	0	0	0	426	0	150	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	R NA	Left	Left	Right	Left	Right	Left
Median Width(ft)	0			0				0		0		
Link Offset(ft)	0			0				0		0		
Crosswalk Width(ft)	16			16				16		16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		9	9	15		9		9	15
Sign Control	Yield			Yield				Yield		Yield		

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	NWL	NWR	NWR2
Lane Configurations			
Traffic Volume (vph)	14	37	59
Future Volume (vph)	14	37	59
Ideal Flow (vphpl)	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00
Frt	0.945		
Flt Protected	0.971		
Satd. Flow (prot)	1709	0	0
Flt Permitted	0.971		
Satd. Flow (perm)	1709	0	0
Link Speed (mph)	30		
Link Distance (ft)	1136		
Travel Time (s)	25.8		
Peak Hour Factor	0.92	0.92	0.92
Adj. Flow (vph)	15	40	64
Shared Lane Traffic (%)			
Lane Group Flow (vph)	256	0	0
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Right	Right
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15	9	9
Sign Control	Yield		

Intersection Summary

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

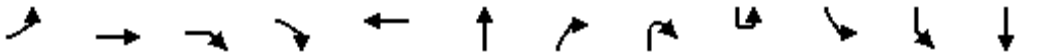
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	87	303	426	150
Demand Flow Rate, veh/h	89	309	434	153
Vehicles Circulating, veh/h	512	486	0	630
Vehicles Exiting, veh/h	271	209	601	165
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.6	8.7	5.5	7.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	TR
Assumed Moves	LTR	LTR	LTR	TR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	89	309	434	153
Cap Entry Lane, veh/h	819	841	1380	726
Entry HV Adj Factor	0.978	0.982	0.980	0.981
Flow Entry, veh/h	87	303	425	150
Cap Entry, veh/h	800	825	1353	712
V/C Ratio	0.109	0.368	0.315	0.211
Control Delay, s/veh	5.6	8.7	5.5	7.5
LOS	A	A	A	A
95th %tile Queue, veh	0	2	1	1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Approach	NW
Entry Lanes	1
Conflicting Circle Lanes	1
Adj Approach Flow, veh/h	256
Demand Flow Rate, veh/h	261
Vehicles Circulating, veh/h	434
Vehicles Exiting, veh/h	0
Ped Vol Crossing Leg, #/h	0
Ped Cap Adj	1.000
Approach Delay, s/veh	7.3
Approach LOS	A

Lane	Left
Designated Moves	LR
Assumed Moves	LR
RT Channelized	
Lane Util	1.000
Follow-Up Headway, s	2.609
Critical Headway, s	4.976
Entry Flow, veh/h	261
Cap Entry Lane, veh/h	886
Entry HV Adj Factor	0.982
Flow Entry, veh/h	256
Cap Entry, veh/h	870
V/C Ratio	0.294
Control Delay, s/veh	7.3
LOS	A
95th %tile Queue, veh	1



Lane Group	EBL	EBT	EBR	EBR2	WBT	NBT	NBR	NBR2	SBU	SBL2	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	117	134	221	24	0	25	14	7	80	120	49	19
Future Volume (vph)	117	134	221	24	0	25	14	7	80	120	49	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.933				0.938						0.929
Flt Protected		0.988										0.979
Satd. Flow (prot)	0	1717	0	0	1863	1747	0	0	0	0	0	1694
Flt Permitted		0.988										0.979
Satd. Flow (perm)	0	1717	0	0	1863	1747	0	0	0	0	0	1694
Link Speed (mph)		30			30	30						30
Link Distance (ft)		2132			1136	387						467
Travel Time (s)		48.5			25.8	8.8						10.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	146	240	26	0	27	15	8	87	130	53	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	539	0	0	0	50	0	0	0	0	0	617
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Right	Right	R NA	Left	Left	Left
Median Width(ft)		0			0	0						0
Link Offset(ft)		0			0	0						0
Crosswalk Width(ft)		16			16	16						16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9			9	9	9	15	15	
Sign Control		Yield			Yield	Yield						Yield

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 90.5%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	SBR	NWL	NWR	NWR2
Lane Configurations				
Traffic Volume (vph)	300	0	161	35
Future Volume (vph)	300	0	161	35
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt		0.865		
Flt Protected				
Satd. Flow (prot)	0	1611	0	0
Flt Permitted				
Satd. Flow (perm)	0	1611	0	0
Link Speed (mph)		30		
Link Distance (ft)		559		
Travel Time (s)		12.7		
Peak Hour Factor	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	0	175	38
Shared Lane Traffic (%)				
Lane Group Flow (vph)	0	213	0	0
Enter Blocked Intersection	No	No	No	No
Lane Alignment	Right	Left	Right	Right
Median Width(ft)		12		
Link Offset(ft)		0		
Crosswalk Width(ft)		16		
Two way Left Turn Lane				
Headway Factor	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15	9	9
Sign Control		Yield		

Intersection Summary

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

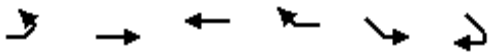
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	539	0	50	617
Demand Flow Rate, veh/h	551	0	51	630
Vehicles Circulating, veh/h	297	425	800	0
Vehicles Exiting, veh/h	333	336	48	425
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.5	0.0	6.9	7.2
Approach LOS	B	-	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	551	0	51	630
Cap Entry Lane, veh/h	1019	895	610	1380
Entry HV Adj Factor	0.978	1.000	0.989	0.980
Flow Entry, veh/h	539	0	50	617
Cap Entry, veh/h	997	895	604	1352
V/C Ratio	0.541	0.000	0.084	0.457
Control Delay, s/veh	10.5	4.0	6.9	7.2
LOS	B	A	A	A
95th %tile Queue, veh	3	0	0	2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Approach	NW
Entry Lanes	1
Conflicting Circle Lanes	1
Adj Approach Flow, veh/h	213
Demand Flow Rate, veh/h	217
Vehicles Circulating, veh/h	544
Vehicles Exiting, veh/h	307
Ped Vol Crossing Leg, #/h	0
Ped Cap Adj	1.000
Approach Delay, s/veh	7.7
Approach LOS	A

Lane	Left
Designated Moves	LR
Assumed Moves	LR
RT Channelized	
Lane Util	1.000
Follow-Up Headway, s	2.609
Critical Headway, s	4.976
Entry Flow, veh/h	217
Cap Entry Lane, veh/h	792
Entry HV Adj Factor	0.982
Flow Entry, veh/h	213
Cap Entry, veh/h	778
V/C Ratio	0.274
Control Delay, s/veh	7.7
LOS	A
95th %tile Queue, veh	1



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	2072	2154	146	0	0
Future Volume (vph)	0	2072	2154	146	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.990			
Flt Protected						
Satd. Flow (prot)	0	3539	3504	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	3504	0	0	0
Link Speed (mph)		55	55		30	
Link Distance (ft)		576	3558		1103	
Travel Time (s)		7.1	44.1		25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2252	2341	159	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2252	2500	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

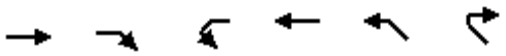
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	230	0	14	0	175	0	116	30
Future Volume (vph)	0	0	0	0	230	0	14	0	175	0	116	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.875			0.972	
Flt Protected								0.996				
Satd. Flow (prot)	0	0	0	0	1863	0	0	1623	0	0	1811	0
Flt Permitted								0.996				
Satd. Flow (perm)	0	0	0	0	1863	0	0	1623	0	0	1811	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		750			1408			1205			1103	
Travel Time (s)		17.0			32.0			27.4			25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	250	0	15	0	190	0	126	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	250	0	0	205	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	4.7
Intersection LOS	A

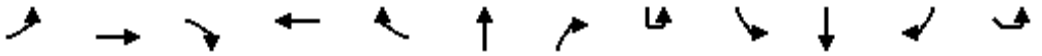
Approach	EB	WB	SE	NW
Entry Lanes	0	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	0	250	205	159
Demand Flow Rate, veh/h	0	255	209	163
Vehicles Circulating, veh/h	15	129	255	15
Vehicles Exiting, veh/h	449	49	129	0
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	4.9	5.3	3.7
Approach LOS	-	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LR	LTR
Assumed Moves	TR	LR	LTR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	255	209	163
Cap Entry Lane, veh/h	1210	1064	1359
Entry HV Adj Factor	0.980	0.981	0.978
Flow Entry, veh/h	250	205	159
Cap Entry, veh/h	1186	1043	1329
V/C Ratio	0.211	0.196	0.120
Control Delay, s/veh	4.9	5.3	3.7
LOS	A	A	A
95th %tile Queue, veh	1	1	0



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (vph)	2072	281	0	2154	0	0
Future Volume (vph)	2072	281	0	2154	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	1.00	0.95	1.00	1.00
Frt	0.982					
Flt Protected						
Satd. Flow (prot)	4994	0	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	4994	0	0	3539	0	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	720			576	920	
Travel Time (s)	8.9			7.1	20.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2252	305	0	2341	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2557	0	0	2341	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBT	WBR2	NBT	NBR	SBU	SBL	SBT	SBR	SEL2
Lane Configurations												
Traffic Volume (vph)	2	303	15	0	284	24	78	13	12	129	189	48
Future Volume (vph)	2	303	15	0	284	24	78	13	12	129	189	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994		0.865		0.897				0.926		
Flt Protected										0.996		
Satd. Flow (prot)	0	1852	0	1611	0	1671	0	0	0	1718	0	0
Flt Permitted										0.996		
Satd. Flow (perm)	0	1852	0	1611	0	1671	0	0	0	1718	0	0
Link Speed (mph)		30		30		30				30		
Link Distance (ft)		537		2132		367				380		
Travel Time (s)		12.2		48.5		8.3				8.6		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	329	16	0	309	26	85	14	13	140	205	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	347	0	309	0	111	0	0	0	372	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Right	R NA	Left	Left	Right	Left
Median Width(ft)		0		0		0				0		
Link Offset(ft)		0		0		0				0		
Crosswalk Width(ft)		16		16		16				16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9		9		9	9	15		9	15
Sign Control		Yield		Yield		Yield				Yield		

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	SEL	SER	SER2
Lane Configurations			
Traffic Volume (vph)	119	11	104
Future Volume (vph)	119	11	104
Ideal Flow (vphpl)	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00
Frt	0.945		
Flt Protected	0.971		
Satd. Flow (prot)	1709	0	0
Flt Permitted	0.971		
Satd. Flow (perm)	1709	0	0
Link Speed (mph)	30		
Link Distance (ft)	920		
Travel Time (s)	20.9		
Peak Hour Factor	0.92	0.92	0.92
Adj. Flow (vph)	129	12	113
Shared Lane Traffic (%)			
Lane Group Flow (vph)	306	0	0
Enter Blocked Intersection	No	No	No
Lane Alignment	Left	Right	Right
Median Width(ft)	12		
Link Offset(ft)	0		
Crosswalk Width(ft)	16		
Two way Left Turn Lane			
Headway Factor	1.00	1.00	1.00
Turning Speed (mph)	15	9	9
Sign Control	Yield		

Intersection Summary

Intersection	
Intersection Delay, s/veh	6.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	347	309	111	372
Demand Flow Rate, veh/h	354	315	114	379
Vehicles Circulating, veh/h	367	96	550	0
Vehicles Exiting, veh/h	324	568	171	411
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.0	5.2	6.2	5.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	TR	LTR
Assumed Moves	LTR	LTR	TR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	354	315	114	379
Cap Entry Lane, veh/h	949	1251	787	1380
Entry HV Adj Factor	0.981	0.981	0.978	0.981
Flow Entry, veh/h	347	309	111	372
Cap Entry, veh/h	931	1227	770	1354
V/C Ratio	0.373	0.252	0.145	0.275
Control Delay, s/veh	8.0	5.2	6.2	5.0
LOS	A	A	A	A
95th %tile Queue, veh	2	1	1	1

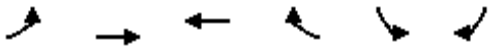
Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Approach	SE
Entry Lanes	1
Conflicting Circle Lanes	1
Adj Approach Flow, veh/h	306
Demand Flow Rate, veh/h	312
Vehicles Circulating, veh/h	379
Vehicles Exiting, veh/h	0
Ped Vol Crossing Leg, #/h	0
Ped Cap Adj	1.000
Approach Delay, s/veh	7.5
Approach LOS	A

Lane	Left
Designated Moves	LR
Assumed Moves	LR
RT Channelized	
Lane Util	1.000
Follow-Up Headway, s	2.609
Critical Headway, s	4.976
Entry Flow, veh/h	312
Cap Entry Lane, veh/h	937
Entry HV Adj Factor	0.981
Flow Entry, veh/h	306
Cap Entry, veh/h	919
V/C Ratio	0.333
Control Delay, s/veh	7.5
LOS	A
95th %tile Queue, veh	1

Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Traffic Volume (vph)	2206	0	0	2154	0	147
Future Volume (vph)	2206	0	0	2154	0	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3539	0	0	3539	0	1611
Flt Permitted						
Satd. Flow (perm)	3539	0	0	3539	0	1611
Link Speed (mph)	55			55	30	
Link Distance (ft)	503			720	432	
Travel Time (s)	6.2			8.9	9.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2398	0	0	2341	0	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2398	0	0	2341	0	160
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 91.3%		ICU Level of Service F	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↱
Traffic Volume (vph)	0	2206	2154	0	0	405
Future Volume (vph)	0	2206	2154	0	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	0	3539	3539	0	0	1611
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	0	0	1611
Link Speed (mph)		55	55		30	
Link Distance (ft)		2649	503		750	
Travel Time (s)		32.8	6.2		17.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2398	2341	0	0	440
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2398	2341	0	0	440
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 91.3%		ICU Level of Service F	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Volume (vph)	0	44	5	210	294	20	57
Future Volume (vph)	0	44	5	210	294	20	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					0.979	
Flt Protected				0.999		0.959	
Satd. Flow (prot)	1611	0	0	1861	0	1749	0
Flt Permitted				0.999		0.959	
Satd. Flow (perm)	1611	0	0	1861	0	1749	0
Link Speed (mph)	30			30		30	
Link Distance (ft)	1408			2141		380	
Travel Time (s)	32.0			48.7		8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	48	5	228	320	22	62
Shared Lane Traffic (%)							
Lane Group Flow (vph)	48	0	0	233	0	404	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	R NA	Left	Right
Median Width(ft)	0			0		12	
Link Offset(ft)	0			0		0	
Crosswalk Width(ft)	16			16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		9	15	9
Sign Control	Yield			Yield		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	5.5
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	48	233	404
Demand Flow Rate, veh/h	49	238	411
Vehicles Circulating, veh/h	331	348	0
Vehicles Exiting, veh/h	255	63	380
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.2	6.3	5.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	49	238	411
Cap Entry Lane, veh/h	985	968	1380
Entry HV Adj Factor	0.980	0.981	0.982
Flow Entry, veh/h	48	233	404
Cap Entry, veh/h	964	949	1355
V/C Ratio	0.050	0.246	0.298
Control Delay, s/veh	4.2	6.3	5.3
LOS	A	A	A
95th %tile Queue, veh	0	1	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	29	23	109	7	1	160
Future Volume (vph)	29	23	109	7	1	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941				0.866	
Flt Protected				0.955		
Satd. Flow (prot)	1753	0	0	1779	1613	0
Flt Permitted				0.955		
Satd. Flow (perm)	1753	0	0	1779	1613	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	241			1205	713	
Travel Time (s)	5.5			27.4	16.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	25	118	8	1	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	0	0	126	175	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	23	109	7	1	160
Future Vol, veh/h	29	23	109	7	1	160
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	25	118	8	1	174
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.5	8.4	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	1%	0%	94%
Vol Thru, %	0%	56%	6%
Vol Right, %	99%	44%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	161	52	116
LT Vol	1	0	109
Through Vol	0	29	7
RT Vol	160	23	0
Lane Flow Rate	175	57	126
Geometry Grp	1	1	1
Degree of Util (X)	0.183	0.064	0.157
Departure Headway (Hd)	3.762	4.076	4.475
Convergence, Y/N	Yes	Yes	Yes
Cap	959	864	794
Service Time	1.762	2.171	2.542
HCM Lane V/C Ratio	0.182	0.066	0.159
HCM Control Delay	7.6	7.5	8.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.2	0.6

Network Totals

Number of Intersections	11
Control Delay / Veh (s/v)	0
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	0
Total Delay (hr)	1
Stops / Veh	0.19
Stops (#)	5284
Average Speed (mph)	49
Total Travel Time (hr)	158
Distance Traveled (mi)	7735
Fuel Consumed (gal)	297
Fuel Economy (mpg)	26.0
CO Emissions (kg)	20.76
NOx Emissions (kg)	4.04
VOC Emissions (kg)	4.81
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	15.4

3: EB Entrance Ramp & TH 13 & WB Exit Ramp

Direction	EB	WB	NE	All
Future Volume (vph)	2072	2536	303	4911
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	30	54
Total Travel Time (hr)	25	20	2	47
Distance Traveled (mi)	1396	1085	65	2546
Fuel Consumed (gal)	47	36	3	86
Fuel Economy (mpg)	29.9	29.9	24.3	29.7
CO Emissions (kg)	3.26	2.54	0.19	5.99
NOx Emissions (kg)	0.64	0.49	0.04	1.17
VOC Emissions (kg)	0.76	0.59	0.04	1.39
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

4: Washburn Ave & WB Exit Ramp & N Frontage Rd

Direction	EB	WB	NB	SB	NW	All
Future Volume (vph)	80	279	392	138	236	1125
Control Delay / Veh (s/v)	0	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00	1.00	1.00
Stops (#)	80	279	392	138	236	1125
Average Speed (mph)	30	30	30	30	30	30
Total Travel Time (hr)	1	1	1	0	2	5
Distance Traveled (mi)	32	28	35	13	51	159
Fuel Consumed (gal)	2	3	4	1	3	13
Fuel Economy (mpg)	18.2	10.4	9.6	9.9	15.0	12.4
CO Emissions (kg)	0.12	0.19	0.25	0.09	0.24	0.89
NOx Emissions (kg)	0.02	0.04	0.05	0.02	0.05	0.17
VOC Emissions (kg)	0.03	0.04	0.06	0.02	0.06	0.21
Unserved Vehicles (#)	0	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0	0

5: Washburn Ave & S Frontage Rd & EB Entrance Ramp

Direction	EB	NB	SB	NW	All
Future Volume (vph)	496	46	568	196	1306
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00	1.00
Stops (#)	496	46	568	196	1306
Average Speed (mph)	30	30	30	30	30
Total Travel Time (hr)	7	0	2	1	9
Distance Traveled (mi)	200	3	50	21	275
Fuel Consumed (gal)	11	0	5	2	19
Fuel Economy (mpg)	18.2	NA	9.6	10.7	14.8
CO Emissions (kg)	0.77	0.03	0.36	0.14	1.30
NOx Emissions (kg)	0.15	0.01	0.07	0.03	0.25
VOC Emissions (kg)	0.18	0.01	0.08	0.03	0.30
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

7: TH 13 & WB Exit Ramp

Direction	EB	WB	All
Future Volume (vph)	2072	2300	4372
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	55	55	55
Total Travel Time (hr)	4	28	32
Distance Traveled (mi)	226	1550	1776
Fuel Consumed (gal)	8	52	59
Fuel Economy (mpg)	29.9	29.9	29.9
CO Emissions (kg)	0.53	3.62	4.15
NOx Emissions (kg)	0.10	0.71	0.81
VOC Emissions (kg)	0.12	0.84	0.96
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0

8: WB Exit Ramp & WB Entrance Ramp & N Frontage Rd

Direction	WB	SE	NW	All
Future Volume (vph)	230	189	146	565
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00
Stops (#)	230	189	146	565
Average Speed (mph)	30	30	30	30
Total Travel Time (hr)	2	1	1	5
Distance Traveled (mi)	61	43	30	135
Fuel Consumed (gal)	4	3	2	9
Fuel Economy (mpg)	16.2	15.3	14.8	15.5
CO Emissions (kg)	0.27	0.20	0.14	0.61
NOx Emissions (kg)	0.05	0.04	0.03	0.12
VOC Emissions (kg)	0.06	0.05	0.03	0.14
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

9: EB Exit Ramp & TH 13

Direction	EB	WB	All
Future Volume (vph)	2352	2154	4506
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	55	55	55
Total Travel Time (hr)	6	4	10
Distance Traveled (mi)	321	235	556
Fuel Consumed (gal)	11	8	19
Fuel Economy (mpg)	29.9	29.9	29.9
CO Emissions (kg)	0.75	0.55	1.30
NOx Emissions (kg)	0.15	0.11	0.25
VOC Emissions (kg)	0.17	0.13	0.30
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0

10: Chowen Ave & S Frontage Rd & EB Exit Ramp

Direction	EB	WB	NB	SB	SE	All
Future Volume (vph)	319	284	102	342	282	1329
Control Delay / Veh (s/v)	0	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00	1.00	1.00
Stops (#)	319	284	102	342	282	1329
Average Speed (mph)	30	30	30	30	30	30
Total Travel Time (hr)	1	4	0	1	2	8
Distance Traveled (mi)	32	115	7	25	49	228
Fuel Consumed (gal)	3	6	1	3	4	17
Fuel Economy (mpg)	10.5	18.2	NA	8.5	13.7	13.6
CO Emissions (kg)	0.22	0.44	0.06	0.20	0.25	1.17
NOx Emissions (kg)	0.04	0.09	0.01	0.04	0.05	0.23
VOC Emissions (kg)	0.05	0.10	0.01	0.05	0.06	0.27
Unserved Vehicles (#)	0	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0	0

11: EB Entrance Ramp & TH 13

Direction	EB	WB	NE	All
Future Volume (vph)	2206	2154	147	4507
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	30	54
Total Travel Time (hr)	4	5	0	10
Distance Traveled (mi)	210	294	12	516
Fuel Consumed (gal)	7	10	0	17
Fuel Economy (mpg)	29.9	29.9	NA	29.7
CO Emissions (kg)	0.49	0.69	0.03	1.21
NOx Emissions (kg)	0.10	0.13	0.01	0.24
VOC Emissions (kg)	0.11	0.16	0.01	0.28
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

13: TH 13 & WB Entrance Ramp

Direction	EB	WB	SB	All
Future Volume (vph)	2206	2154	405	4765
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	30	53
Total Travel Time (hr)	20	4	2	26
Distance Traveled (mi)	1107	205	58	1369
Fuel Consumed (gal)	37	7	2	46
Fuel Economy (mpg)	29.9	29.9	24.3	29.6
CO Emissions (kg)	2.59	0.48	0.17	3.23
NOx Emissions (kg)	0.50	0.09	0.03	0.63
VOC Emissions (kg)	0.60	0.11	0.04	0.75
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

14: Chowen Ave & N Frontage Rd

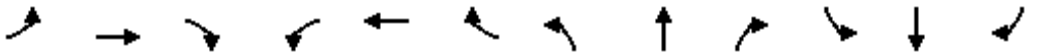
Direction	EB	WB	NB	All
Future Volume (vph)	44	214	372	630
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	1.00	1.00	1.00	1.00
Stops (#)	44	214	372	630
Average Speed (mph)	30	30	30	30
Total Travel Time (hr)	0	3	1	4
Distance Traveled (mi)	12	87	27	125
Fuel Consumed (gal)	1	5	3	9
Fuel Economy (mpg)	NA	18.2	8.5	14.5
CO Emissions (kg)	0.05	0.33	0.22	0.60
NOx Emissions (kg)	0.01	0.06	0.04	0.12
VOC Emissions (kg)	0.01	0.08	0.05	0.14
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

16: Lynn Ave & N Frontage Rd

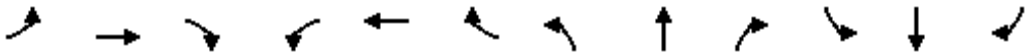
Direction	EB	WB	NB	All
Future Volume (vph)	52	116	161	329
Control Delay / Veh (s/v)	7	8	8	8
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	7	8	8	8
Total Delay (hr)	0	0	0	1
Stops / Veh	1.00	1.00	1.00	1.00
Stops (#)	52	116	161	329
Average Speed (mph)	13	23	20	21
Total Travel Time (hr)	0	1	1	2
Distance Traveled (mi)	2	26	22	51
Fuel Consumed (gal)	0	2	2	4
Fuel Economy (mpg)	NA	13.7	10.7	11.4
CO Emissions (kg)	0.03	0.13	0.14	0.31
NOx Emissions (kg)	0.01	0.03	0.03	0.06
VOC Emissions (kg)	0.01	0.03	0.03	0.07
Unserved Vehicles (#)	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0

Network Totals

Number of Intersections	11
Control Delay / Veh (s/v)	0
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	0
Total Delay (hr)	1
Stops / Veh	0.19
Stops (#)	5284
Average Speed (mph)	49
Total Travel Time (hr)	158
Distance Traveled (mi)	7735
Fuel Consumed (gal)	297
Fuel Economy (mpg)	26.0
CO Emissions (kg)	20.76
NOx Emissions (kg)	4.04
VOC Emissions (kg)	4.81
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	15.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	2136	19	126	2330	110	46	29	124	115	56	128
Future Volume (vph)	86	2136	19	126	2330	110	46	29	124	115	56	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	475		450	450		250	0		0	0		0
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	0.95	0.95
Frt			0.850			0.850		0.879			0.938	0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1637	0	3433	1660	1504
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1637	0	3433	1660	1504
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			76			76		88			19	93
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2112			3373			180			271	
Travel Time (s)		26.2			41.8			4.1			6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	2322	21	137	2533	120	50	32	135	125	61	139
Shared Lane Traffic (%)												31%
Lane Group Flow (vph)	93	2322	21	137	2533	120	50	167	0	125	104	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		52			52			24			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5		9.5	22.5	22.5
Total Split (s)	12.6	100.6	100.6	16.5	104.5	104.5	9.7	22.5		10.4	23.2	23.2
Total Split (%)	8.4%	67.1%	67.1%	11.0%	69.7%	69.7%	6.5%	15.0%		6.9%	15.5%	15.5%
Maximum Green (s)	8.1	96.1	96.1	12.0	100.0	100.0	5.2	18.0		5.9	18.7	18.7
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effct Green (s)	11.7	98.0	98.0	15.3	101.7	101.7	5.2	12.7		5.9	13.4	13.4
Actuated g/C Ratio	0.08	0.65	0.65	0.10	0.68	0.68	0.03	0.08		0.04	0.09	0.09
v/c Ratio	0.68	1.00	0.02	0.76	1.06	0.11	0.82	0.76		0.93	0.63	0.44
Control Delay	79.0	25.8	0.0	90.4	59.9	3.8	141.4	52.8		129.9	69.4	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	79.0	25.8	0.0	90.4	59.9	3.8	141.4	52.8		129.9	69.4	18.3
LOS	E	C	A	F	E	A	F	D		F	E	B
Approach Delay		27.6			59.0			73.2			77.6	
Approach LOS		C			E			E			E	
90th %ile Green (s)	8.1	96.1	96.1	12.0	100.0	100.0	5.2	18.0		5.9	18.7	18.7
90th %ile Term Code	Max	Coord	Coord	Max	Coord	Coord	Max	Max		Max	Max	Max
70th %ile Green (s)	10.0	96.1	96.1	13.9	100.0	100.0	5.2	16.1		5.9	16.8	16.8
70th %ile Term Code	Max	Coord	Coord	Max	Coord	Coord	Max	Gap		Max	Hold	Hold
50th %ile Green (s)	13.1	96.1	96.1	17.0	100.0	100.0	5.2	13.0		5.9	13.7	13.7
50th %ile Term Code	Max	Coord	Coord	Max	Coord	Coord	Max	Gap		Max	Hold	Hold
30th %ile Green (s)	14.5	97.9	97.9	18.2	101.6	101.6	5.2	10.0		5.9	10.7	10.7
30th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Coord	Max	Hold		Max	Gap	Gap
10th %ile Green (s)	12.6	103.9	103.9	15.6	106.9	106.9	5.2	6.6		5.9	7.3	7.3
10th %ile Term Code	Gap	Coord	Coord	Gap	Coord	Coord	Max	Hold		Max	Gap	Gap
Stops (vph)	75	841	0	109	1958	16	39	73		100	75	17
Fuel Used(gal)	4	55	0	7	115	3	2	2		4	2	1
CO Emissions (g/hr)	275	3874	18	492	8009	191	112	159		268	138	43
NOx Emissions (g/hr)	53	754	3	96	1558	37	22	31		52	27	8
VOC Emissions (g/hr)	64	898	4	114	1856	44	26	37		62	32	10
Dilemma Vehicles (#)	0	89	0	0	72	0	0	0		0	0	0
Queue Length 50th (ft)	97	~1254	0	131	~1444	14	50	76		63	85	3
Queue Length 95th (ft)	m#114	m#1330	m0	#278	#1564	37	#133	156		#132	149	62
Internal Link Dist (ft)		2032			3293			100			191	
Turn Bay Length (ft)	475		450	450		250						
Base Capacity (vph)	137	2312	1060	181	2399	1097	61	273		135	223	268
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	1.00	0.02	0.76	1.06	0.11	0.82	0.61		0.93	0.47	0.36

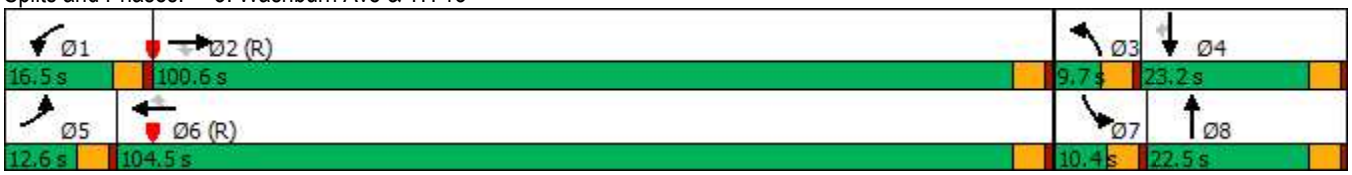
Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 39.5 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 47.3		Intersection LOS: D	
Intersection Capacity Utilization 97.5%		ICU Level of Service F	
Analysis Period (min) 15			

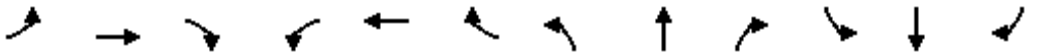
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Washburn Ave & TH 13





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	2170	37	28	2493	2	2	1	60	1	1	85
Future Volume (vph)	44	2170	37	28	2493	2	2	1	60	1	1	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		275	425		275	0		0	0		0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Link Speed (mph)		55			55			30			30	
Link Distance (ft)		2789			2112			221			200	
Travel Time (s)		34.6			26.2			5.0			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	2359	40	30	2710	2	2	1	65	1	1	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	2359	40	30	2710	2	2	1	65	1	1	92
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		52			52			12			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.5%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	2170	37	28	2493	2	2	1	60	1	1	85
Future Vol, veh/h	44	2170	37	28	2493	2	2	1	60	1	1	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	275	425	-	275	0	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	2359	40	30	2710	2	2	1	65	1	1	92

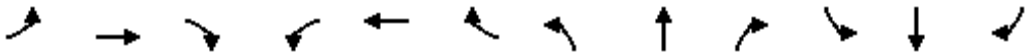
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2712	0	0	2399	0	0	3871	5227	1180	4046	5265	1355
Stage 1	-	-	-	-	-	-	2455	2455	-	2770	2770	-
Stage 2	-	-	-	-	-	-	1416	2772	-	1276	2495	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	148	-	-	197	-	-	~ 1	0	183	~ 1	0	139
Stage 1	-	-	-	-	-	-	31	60	-	19	41	-
Stage 2	-	-	-	-	-	-	144	41	-	176	57	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	148	-	-	197	-	-	0	0	183	0	0	139
Mov Cap-2 Maneuver	-	-	-	-	-	-	0	0	-	0	0	-
Stage 1	-	-	-	-	-	-	21	41	-	13	35	-
Stage 2	-	-	-	-	-	-	40	35	-	75	39	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	-	183	148	-	-	197	-	-	-	-	139
HCM Lane V/C Ratio	-	-	0.356	0.323	-	-	0.154	-	-	-	-	0.665
HCM Control Delay (s)	-	-	35.2	40.5	-	-	26.6	-	-	-	-	71.4
HCM Lane LOS	-	-	E	E	-	-	D	-	-	-	-	F
HCM 95th %tile Q(veh)	-	-	1.5	1.3	-	-	0.5	-	-	-	-	3.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2091	91	109	2473	7	160	1	131	16	7	15
Future Volume (vph)	4	2091	91	109	2473	7	160	1	131	16	7	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	525		575	300		375	0		130	0		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.851			0.900	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1585	0	1770	1676	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1585	0	1770	1676	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142			109		98			16	
Link Speed (mph)		50			50			30			30	
Link Distance (ft)		2051			2789			594			706	
Travel Time (s)		28.0			38.0			13.5			16.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	2273	99	118	2688	8	174	1	142	17	8	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	2273	99	118	2688	8	174	143	0	17	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			22			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5		9.5	22.5	
Total Split (s)	9.5	96.0	96.0	14.5	101.0	101.0	17.0	29.3		10.2	22.5	
Total Split (%)	6.3%	64.0%	64.0%	9.7%	67.3%	67.3%	11.3%	19.5%		6.8%	15.0%	
Maximum Green (s)	5.0	91.5	91.5	10.0	96.5	96.5	12.5	24.8		5.7	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	6.0	99.1	99.1	17.3	118.7	118.7	12.5	15.9		5.7	7.0	
Actuated g/C Ratio	0.04	0.66	0.66	0.12	0.79	0.79	0.08	0.11		0.04	0.05	
v/c Ratio	0.06	0.97	0.09	0.58	0.96	0.01	1.18	0.56		0.26	0.26	
Control Delay	70.5	38.1	0.6	70.6	30.9	0.0	188.2	30.9		79.8	42.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	70.5	38.1	0.6	70.6	30.9	0.0	188.2	30.9		79.8	42.7	
LOS	E	D	A	E	C	A	F	C		E	D	
Approach Delay		36.6			32.4			117.2			58.1	
Approach LOS		D			C			F			E	
90th %ile Green (s)	6.9	91.5	91.5	17.4	102.0	102.0	12.5	17.4		5.7	10.6	
90th %ile Term Code	Gap	Coord	Coord	Max	Coord	Coord	Max	Gap		Max	Hold	
70th %ile Green (s)	0.0	93.2	93.2	19.0	116.7	116.7	12.5	14.1		5.7	7.3	
70th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Max	Gap	
50th %ile Green (s)	0.0	95.4	95.4	17.9	117.8	117.8	12.5	23.2		0.0	6.2	
50th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Skip	Gap	
30th %ile Green (s)	0.0	107.0	107.0	17.0	128.5	128.5	12.5	12.5		0.0	0.0	
30th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Skip	Skip	
10th %ile Green (s)	0.0	108.6	108.6	15.4	128.5	128.5	12.5	12.5		0.0	0.0	
10th %ile Term Code	Skip	Coord	Coord	Gap	Coord	Coord	Max	Hold		Skip	Skip	
Stops (vph)	6	1642	1	99	2329	0	127	46		16	12	
Fuel Used(gal)	0	69	1	5	95	0	8	2		0	0	
CO Emissions (g/hr)	14	4797	85	351	6643	9	529	119		30	26	
NOx Emissions (g/hr)	3	933	16	68	1292	2	103	23		6	5	
VOC Emissions (g/hr)	3	1112	20	81	1540	2	123	27		7	6	
Dilemma Vehicles (#)	0	66	0	0	13	0	0	0		0	0	
Queue Length 50th (ft)	4	~1161	0	105	1466	0	~203	39		16	8	
Queue Length 95th (ft)	17	#1400	7	m106	m#1499	m0	#362	114		44	39	
Internal Link Dist (ft)		1971			2709			514			626	
Turn Bay Length (ft)	525		575	300		375						
Base Capacity (vph)	70	2338	1094	204	2800	1275	147	343		67	215	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.06	0.97	0.09	0.58	0.96	0.01	1.18	0.42		0.25	0.11	

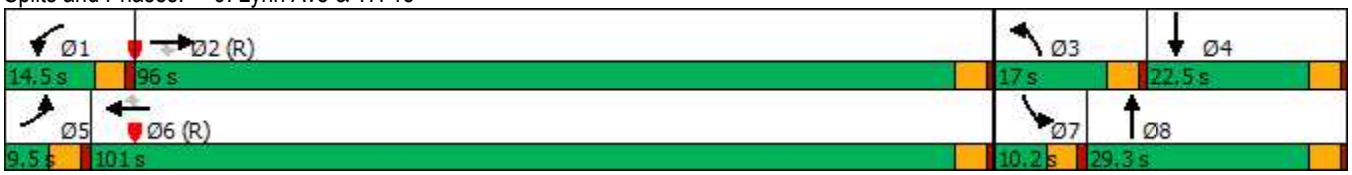
Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 39.3		Intersection LOS: D	
Intersection Capacity Utilization 99.3%		ICU Level of Service F	
Analysis Period (min) 15			

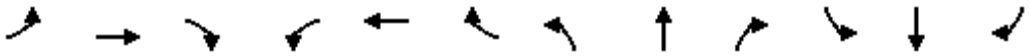
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Lynn Ave & TH 13





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	41	48	164	53	62	23	63	99	27	101	10
Future Volume (vph)	12	41	48	164	53	62	23	63	99	27	101	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Frt		0.936			0.970			0.919			0.990	
Flt Protected		0.994			0.971			0.994			0.990	
Satd. Flow (prot)	0	1733	0	0	1754	0	0	3233	0	0	1826	0
Flt Permitted		0.994			0.971			0.994			0.990	
Satd. Flow (perm)	0	1733	0	0	1754	0	0	3233	0	0	1826	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		2118			1874			271			458	
Travel Time (s)		41.3			36.5			6.2			10.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	45	52	178	58	67	25	68	108	29	110	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	303	0	0	201	0	0	150	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

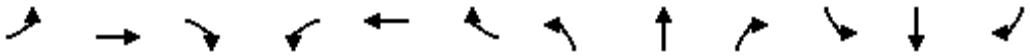
Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	41	48	164	53	62	23	63	99	27	101	10
Future Vol, veh/h	12	41	48	164	53	62	23	63	99	27	101	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	45	52	178	58	67	25	68	108	29	110	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	287	400	116	394	351	88	121	0	0	176	0	0
Stage 1	174	174	-	172	172	-	-	-	-	-	-	-
Stage 2	113	226	-	222	179	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	654	538	936	553	573	953	1465	-	-	1399	-	-
Stage 1	827	754	-	814	756	-	-	-	-	-	-	-
Stage 2	880	716	-	780	751	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	542	516	936	473	550	953	1465	-	-	1399	-	-
Mov Cap-2 Maneuver	542	516	-	473	550	-	-	-	-	-	-	-
Stage 1	811	737	-	799	742	-	-	-	-	-	-	-
Stage 2	740	702	-	677	734	-	-	-	-	-	-	-

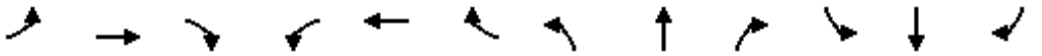
Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	19.3	0.9	1.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1465	-	-	661	549	1399	-	-
HCM Lane V/C Ratio	0.017	-	-	0.166	0.552	0.021	-	-
HCM Control Delay (s)	7.5	0	-	11.5	19.3	7.6	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	3.3	0.1	-	-



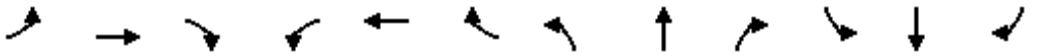
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	13	9	76	1	1	1	0	53	1	0	0
Future Volume (vph)	0	13	9	76	1	1	1	0	53	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.944			0.998				0.850			
Flt Protected					0.953			0.950			0.950	
Satd. Flow (prot)	0	1758	0	0	1772	0	0	1770	1583	0	1770	0
Flt Permitted					0.953			0.950			0.950	
Satd. Flow (perm)	0	1758	0	0	1772	0	0	1770	1583	0	1770	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1420			2118			200			391	
Travel Time (s)		27.7			41.3			4.5			8.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	14	10	83	1	1	1	0	58	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	24	0	0	85	0	0	1	58	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.0%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	221	24	5	135	56	17	22	7	54	15	130
Future Volume (vph)	115	221	24	5	135	56	17	22	7	54	15	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70		0	0		265	0		0	0		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985				0.850		0.978			0.865	
Flt Protected	0.950				0.998			0.982		0.950		
Satd. Flow (prot)	1770	1835	0	0	1859	1583	0	1789	0	1770	1611	0
Flt Permitted	0.950				0.998			0.982		0.950		
Satd. Flow (perm)	1770	1835	0	0	1859	1583	0	1789	0	1770	1611	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		2103			2069			270			180	
Travel Time (s)		41.0			40.3			6.1			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	240	26	5	147	61	18	24	8	59	16	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	266	0	0	152	61	0	50	0	59	157	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			24	
Link Offset(ft)		0			0			0			12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	267	15	117	154	4	23	23	56	25	20	23
Future Volume (vph)	38	267	15	117	154	4	23	23	56	25	20	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.998			0.926				0.850
Flt Protected		0.994			0.979			0.989			0.973	
Satd. Flow (prot)	0	1840	0	0	1820	0	0	1706	0	0	1812	1583
Flt Permitted		0.994			0.979			0.989			0.973	
Satd. Flow (perm)	0	1840	0	0	1820	0	0	1706	0	0	1812	1583
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1464			2103			381			221	
Travel Time (s)		28.5			41.0			8.7			5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	290	16	127	167	4	25	25	61	27	22	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	347	0	0	298	0	0	111	0	0	49	25
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			

Network Totals

Number of Intersections	7
Control Delay / Veh (s/v)	29
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	29
Total Delay (hr)	144
Stops / Veh	0.60
Stops (#)	10617
Average Speed (mph)	26
Total Travel Time (hr)	295
Distance Traveled (mi)	7654
Fuel Consumed (gal)	513
Fuel Economy (mpg)	14.9
CO Emissions (kg)	35.85
NOx Emissions (kg)	6.98
VOC Emissions (kg)	8.31
Unserved Vehicles (#)	155
Vehicles in dilemma zone (#)	240
Performance Index	173.3

3: Washburn Ave & TH 13

Direction	EB	WB	NB	SB	All
Future Volume (vph)	2241	2566	200	299	5306
Control Delay / Veh (s/v)	28	59	73	78	47
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	28	59	73	78	47
Total Delay (hr)	17	42	4	6	70
Stops / Veh	0.41	0.81	0.56	0.64	0.62
Stops (#)	916	2083	112	192	3303
Average Speed (mph)	27	23	2	2	22
Total Travel Time (hr)	33	72	4	7	117
Distance Traveled (mi)	896	1639	7	15	2558
Fuel Consumed (gal)	60	124	4	6	194
Fuel Economy (mpg)	15.0	13.2	1.8	2.4	13.2
CO Emissions (kg)	4.17	8.69	0.27	0.45	13.58
NOx Emissions (kg)	0.81	1.69	0.05	0.09	2.64
VOC Emissions (kg)	0.97	2.01	0.06	0.10	3.15
Unserved Vehicles (#)	8	123	0	0	132
Vehicles in dilemma zone (#)	89	72	0	0	161

6: Chowen Ave & TH 13

Direction	EB	WB	NB	SB	All
Future Volume (vph)	2251	2523	63	87	4924
Control Delay / Veh (s/v)	1	0	510	78	8
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	1	0	510	78	8
Total Delay (hr)	0	0	9	2	12
Stops / Veh	0.16	0.06	1.00	1.00	0.13
Stops (#)	358	149	63	87	657
Average Speed (mph)	54	54	0	2	43
Total Travel Time (hr)	22	19	9	2	52
Distance Traveled (mi)	1189	1009	3	3	2204
Fuel Consumed (gal)	47	37	7	2	92
Fuel Economy (mpg)	25.4	27.5	0.4	1.6	23.8
CO Emissions (kg)	3.27	2.56	0.49	0.14	6.46
NOx Emissions (kg)	0.64	0.50	0.10	0.03	1.26
VOC Emissions (kg)	0.76	0.59	0.11	0.03	1.50
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

9: Lynn Ave & TH 13

Direction	EB	WB	NB	SB	All
Future Volume (vph)	2186	2589	292	38	5105
Control Delay / Veh (s/v)	37	32	117	58	39
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	37	32	117	58	39
Total Delay (hr)	22	23	9	1	56
Stops / Veh	0.75	0.94	0.59	0.74	0.84
Stops (#)	1649	2428	173	28	4278
Average Speed (mph)	22	27	3	6	22
Total Travel Time (hr)	39	51	11	1	101
Distance Traveled (mi)	849	1368	33	5	2255
Fuel Consumed (gal)	70	100	9	1	180
Fuel Economy (mpg)	12.1	13.7	3.5	NA	12.5
CO Emissions (kg)	4.90	7.00	0.65	0.06	12.60
NOx Emissions (kg)	0.95	1.36	0.13	0.01	2.45
VOC Emissions (kg)	1.13	1.62	0.15	0.01	2.92
Unserved Vehicles (#)	0	0	24	0	24
Vehicles in dilemma zone (#)	66	13	0	0	79

12: Washburn Ave & N Frontage Rd

Direction	EB	WB	NB	SB	All
Future Volume (vph)	101	279	185	138	703
Control Delay / Veh (s/v)	12	21	1	1	10
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	12	21	1	1	10
Total Delay (hr)	0	2	0	0	2
Stops / Veh	1.00	1.00	0.11	0.27	0.62
Stops (#)	101	279	21	37	438
Average Speed (mph)	27	22	27	27	24
Total Travel Time (hr)	1	4	0	0	7
Distance Traveled (mi)	41	99	9	12	161
Fuel Consumed (gal)	3	7	1	1	11
Fuel Economy (mpg)	15.9	14.0	NA	NA	14.8
CO Emissions (kg)	0.18	0.49	0.04	0.05	0.76
NOx Emissions (kg)	0.03	0.10	0.01	0.01	0.15
VOC Emissions (kg)	0.04	0.11	0.01	0.01	0.18
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

13: Chowen Ave & N Frontage Rd

Direction	EB	WB	NB	SB	All
Future Volume (vph)	22	78	54	1	155
Control Delay / Veh (s/v)	7	8	6	8	7
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	7	8	6	8	7
Total Delay (hr)	0	0	0	0	0
Stops / Veh	1.00	1.00	1.22	1.00	1.08
Stops (#)	22	78	66	1	167
Average Speed (mph)	28	29	13	16	27
Total Travel Time (hr)	0	1	0	0	1
Distance Traveled (mi)	6	31	2	0	39
Fuel Consumed (gal)	0	2	1	0	3
Fuel Economy (mpg)	NA	16.4	NA	NA	13.8
CO Emissions (kg)	0.03	0.13	0.04	0.00	0.20
NOx Emissions (kg)	0.01	0.03	0.01	0.00	0.04
VOC Emissions (kg)	0.01	0.03	0.01	0.00	0.05
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

16: Washburn Ave & S Frontage Rd

Direction	EB	WB	NB	SB	All
Future Volume (vph)	360	196	46	198	800
Control Delay / Veh (s/v)	11	9	10	9	10
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	11	9	10	9	10
Total Delay (hr)	1	0	0	0	2
Stops / Veh	1.00	1.00	1.00	1.82	1.20
Stops (#)	360	196	46	360	962
Average Speed (mph)	28	29	11	9	26
Total Travel Time (hr)	5	3	0	1	9
Distance Traveled (mi)	143	77	2	7	229
Fuel Consumed (gal)	9	5	0	3	17
Fuel Economy (mpg)	16.0	16.1	NA	2.6	13.7
CO Emissions (kg)	0.63	0.33	0.03	0.18	1.17
NOx Emissions (kg)	0.12	0.06	0.01	0.04	0.23
VOC Emissions (kg)	0.14	0.08	0.01	0.04	0.27
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

17: S Frontage Rd & Chowen Ave

Direction	EB	WB	NB	SB	All
Future Volume (vph)	319	274	102	68	763
Control Delay / Veh (s/v)	12	12	10	9	11
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	12	12	10	9	11
Total Delay (hr)	1	1	0	0	2
Stops / Veh	1.00	1.00	1.00	1.72	1.06
Stops (#)	319	274	102	117	812
Average Speed (mph)	25	27	14	11	25
Total Travel Time (hr)	4	4	1	0	8
Distance Traveled (mi)	88	109	7	3	208
Fuel Consumed (gal)	7	7	1	1	15
Fuel Economy (mpg)	13.5	15.9	6.9	NA	13.5
CO Emissions (kg)	0.46	0.48	0.07	0.06	1.07
NOx Emissions (kg)	0.09	0.09	0.01	0.01	0.21
VOC Emissions (kg)	0.11	0.11	0.02	0.01	0.25
Unserved Vehicles (#)	0	0	0	0	0
Vehicles in dilemma zone (#)	0	0	0	0	0

Network Totals

Number of Intersections	7
Control Delay / Veh (s/v)	29
Queue Delay / Veh (s/v)	0
Total Delay / Veh (s/v)	29
Total Delay (hr)	144
Stops / Veh	0.60
Stops (#)	10617
Average Speed (mph)	26
Total Travel Time (hr)	295
Distance Traveled (mi)	7654
Fuel Consumed (gal)	513
Fuel Economy (mpg)	14.9
CO Emissions (kg)	35.85
NOx Emissions (kg)	6.98
VOC Emissions (kg)	8.31
Unserved Vehicles (#)	155
Vehicles in dilemma zone (#)	240
Performance Index	173.3

2020-2022 Crashes from MnCMAT2

North Frontage Road at Washburn Ave

CMF Applied: Install Roundabout

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
808388	201180082	4-Apr	27	2020	02-Mon	16	Property Damage Only	Daylight	Clear	Dry	WASHBURN AVE		Single Vehicle Run Off Road
914849	211790013	6-Jun	28	2021	02-Mon	09	Property Damage Only	Daylight	Clear	Dry	WASHBURN AVE		Angle
899449	210960067	4-Apr	06	2021	03-Tues	17	Property Damage Only	Daylight	Rain	Wet	WASHBURN AVE	N FRONTAGE RD	Sideswipe Opposing
1004784	220390015	2-Feb	08	2022	03-Tues	07	Possible Injury	Daylight	Cloudy	Dry	WASHBURN AVE	FRONTAGE ROAD	Angle
1027216	221520194	6-Jun	01	2022	04-Wed	13	Property Damage Only	Daylight	Clear	Dry	WASHBURN AVE		Sideswipe Opposing
1069189	223570256	12-Dec	23	2022	06-Fri	16	Property Damage Only	Daylight	Clear	Ice/Frost	WASHBURN AVE	STATE HIGHWAY 13	Head On
817558	201840040	7-Jul	02	2020	05-Thu	11	Property Damage Only	Daylight	Clear	Dry	N FRONTAGE RD	WASHBURN AVE	Angle
943472	212710088	9-Sep	28	2021	03-Tues	16	Possible Injury	Daylight	Clear	Dry	N FRONTAGE RD	WASHBURN AVE	Angle

South Frontage Road at Washburn Ave

CMF Applied: Install Roundabout

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
941174	212600050	9-Sep	17	2021	06-Fri	13	Minor Injury	Daylight	Clear	Dry	WASHBURN AVE	13 FRONTAGE RD. S	Angle
943491	212710109	9-Sep	28	2021	03-Tues	17	Property Damage Only	Daylight	Clear	Dry	WASHBURN AVE	S FRONTAGE RD	Angle
806580	201010017	4-Apr	10	2020	06-Fri	11	Property Damage Only	Daylight	Clear	Wet	S FRONTAGE RD		Angle
785245	200340057	2-Feb	03	2020	02-Mon	14	Property Damage Only	Daylight	Cloudy	Dry	S FRONTAGE RD		Angle
804236	200760090	3-Mar	16	2020	02-Mon	17	Property Damage Only	Daylight	Cloudy	Dry	S FRONTAGE RD		Angle
1022060	221310092	5-May	11	2022	04-Wed	20	Property Damage Only	Dark (Str Lights On)	Rain	r (Standing or M	S FRONTAGE RD		Single Vehicle Run Off Road

South Frontage Road at Chowen Ave

CMF Applied: Install Roundabout

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
945996	212830075	10-Oct	10	2021	01-Sun	17	Property Damage Only	Sunset	Clear	Dry	CHOWEN AVE	S FRONTAGE RD	Angle
940841	212580159	9-Sep	15	2021	04-Wed	16	Property Damage Only	Daylight	Clear	Dry	S FRONTAGE RD		Sideswipe Same Direction
940772	212580096	9-Sep	15	2021	04-Wed	15	Minor Injury	Daylight	Clear	Dry	S FRONTAGE RD		Angle
816546	201780062	6-Jun	26	2020	06-Fri	14	Property Damage Only	Daylight	Clear	Dry	S FRONTAGE RD		Angle
938114	212450092	9-Sep	02	2021	05-Thu	18	Property Damage Only	Daylight	Rain	Wet	S FRONTAGE RD	CHOWEN AVE	Sideswipe Opposing
976267	213330034	11-Nov	29	2021	02-Mon	14	Property Damage Only	Daylight	Clear	Dry	S FRONTAGE RD		Angle
976821	213340207	11-Nov	30	2021	03-Tues	17	Property Damage Only	Dark (Str Lights On)	Clear	Dry	S FRONTAGE RD	CHOWEN AVE	Angle
888200	210350247	2-Feb	04	2021	05-Thu	16	Possible Injury	Sunset	Clear	Slush	S FRONTAGE RD		Rear End

TH 13 east of Washburn Ave

CMF Applied: Grade Separation: Paved Shoulder 10 to 12 ft

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
915792	211830034	7-Jul	02	2021	06-Fri	12	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
839151	202490047	9-Sep	05	2020	07-Sat	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
933047	211950272	7-Jul	14	2021	04-Wed	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
967724	212910147	10-Oct	18	2021	02-Mon	16	Possible Injury	Daylight	Clear	Dry	MNTH 13		Rear End
890482	210400362	2-Feb	09	2021	03-Tues	07	Property Damage Only	Daylight	Clear	Ice/Frost	MNTH 13		Sideswipe Same Direction
967692	212910123	10-Oct	18	2021	02-Mon	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
968354	212940109	10-Oct	21	2021	05-Thu	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1070923	223570786	12-Dec	23	2022	06-Fri	14	Property Damage Only	Daylight	Clear	Ice/Frost	MNTH 13		Rear End
914611	211590254	6-Jun	08	2021	03-Tues	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
945714	212810150	10-Oct	08	2021	06-Fri	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
978335	213410264	12-Dec	07	2021	03-Tues	10	Property Damage Only	Daylight	Snow	Snow	MNTH 13	5	Sideswipe Same Direction
849751	203010097	10-Oct	27	2020	03-Tues	16	Possible Injury	Daylight	Clear	Dry	MNTH 13 @ CR 5		Rear End
873049	203570205	12-Dec	22	2020	03-Tues	17	Property Damage Only	Dark (Str Lights On)	Clear	Dry	MNTH 13		Rear End
942505	212660142	9-Sep	23	2021	05-Thu	17	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
909415	211530100	6-Jun	02	2021	04-Wed	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
862480	203150260	11-Nov	10	2020	03-Tues	16	Property Damage Only	Daylight	Snow	Snow	RAMP53		Angle
956437	212820143	10-Oct	09	2021	07-Sat	18	Serious Injury	ıark (Unknown Ligh	Clear	Dry	RAMP53		Angle

TH 13 at Washburn Ave

CMF Applied: Grade Separation: Paved Shoulder 10 to 12 ft

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
810117	201330120	5-May	12	2020	03-Tues	19	Minor Injury	Daylight	Clear	Dry	MNTH 13		Angle
1050776	222810164	10-Oct	08	2022	07-Sat	21	Minor Injury	Dark (Str Lights On)	Clear	Dry	ITH 13 AT WASHBURN AVE		Angle
808440	201180101	4-Apr	27	2020	02-Mon	10	Minor Injury	Daylight	Clear	Dry	MNTH 13		Rear End

1049149	222740134	10-Oct	01	2022	07-Sat	15	Minor Injury	Daylight	Cloudy	Dry	D MNTH 13 @ WASHBURNE AVE		Angle
887779	210290195	1-Jan	29	2021	06-Fri	22	Minor Injury	Dark (Str Lights On)	Clear	Dry	MNTH 13		Rear End
846219	202760237	10-Oct	02	2020	06-Fri	23	Minor Injury	Dark (Str Lights On)	Clear	Dry	MNTH 13		Angle
816768	201710240	6-Jun	19	2020	06-Fri	17	Possible Injury	Daylight	Clear	Dry	MNTH 13		Rear End
974126	213210008	11-Nov	17	2021	04-Wed	08	Possible Injury	Daylight	Clear	Dry	MNTH 13	WASHBURN AVE	Rear End
798906	200490259	2-Feb	18	2020	03-Tues	12	Possible Injury	Daylight	Clear	Dry	MNTH 13		Rear End
1015093	220870120	3-Mar	28	2022	02-Mon	15	Possible Injury	Daylight	Cloudy	Dry	WASHBURN AVE	MNTH 13	Rear End
860432	203040164	10-Oct	30	2020	06-Fri	13	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
847408	202880177	10-Oct	14	2020	04-Wed	06	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
975906	213170464	11-Nov	13	2021	07-Sat	15	Property Damage Only	Daylight	Cloudy	Wet	MNTH 13		Rear End
841585	202630033	9-Sep	19	2020	07-Sat	11	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1020367	221220045	5-May	02	2022	02-Mon	11	Property Damage Only	Daylight	Cloudy	Dry	MNTH 13		Sideswipe Same Direction
817709	201850030	7-Jul	03	2020	06-Fri	10	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Angle
902877	211160139	4-Apr	26	2021	02-Mon	05	Property Damage Only	Sunrise	Rain	Wet	MNTH 13		Angle
805830	200910070	3-Mar	31	2020	03-Tues	17	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Angle
1041145	222240214	8-Aug	12	2022	06-Fri	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13	SHBURN AVE AND HWY	Sideswipe Same Direction
817682	201820186	6-Jun	30	2020	03-Tues	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1069632	223580189	12-Dec	24	2022	07-Sat	15	Property Damage Only	Daylight	Clear	Ice/Frost	MNTH 13		Rear End
1003708	220320146	2-Feb	01	2022	03-Tues	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	WASHBURN AVE	Rear End
1044926	222380259	8-Aug	26	2022	06-Fri	19	Property Damage Only	Daylight	Clear	Dry	MNTH 13	WASHBURN DR	Sideswipe Same Direction
1064631	223440106	12-Dec	10	2022	07-Sat	15	Property Damage Only	Daylight	Clear	Wet	TH 13 @ WASHBURN AVE		Other
1006762	220460154	2-Feb	15	2022	03-Tues	14	Property Damage Only	Daylight	Cloudy	Dry	MNTH 13	WASHBURN	Sideswipe Same Direction
913999	211650247	6-Jun	14	2021	02-Mon	16	Property Damage Only	Daylight	Clear	Dry	H 13 AT WASHBURN AVE		Rear End
866414	203340084	11-Nov	29	2020	01-Sun	21	Property Damage Only	Dark (Str Lights On)	Clear	Dry	MNTH 13		Left Turn
1019767	221180046	4-Apr	28	2022	05-Thu	16	Property Damage Only	Daylight	Cloudy	Dry	MNTH 13		Rear End
1047887	222670164	9-Sep	24	2022	07-Sat	11	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1032652	221880083	7-Jul	07	2022	05-Thu	17	Property Damage Only	Daylight	Cloudy	Dry	MNTH 13		Rear End
1059771	223230036	11-Nov	19	2022	07-Sat	10	Property Damage Only	Daylight	Cloudy	Dry	MNTH 13		Rear End
874092	210110137	1-Jan	11	2021	02-Mon	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
935977	212350049	8-Aug	23	2021	02-Mon	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1040942	222160259	8-Aug	04	2022	05-Thu	09	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
890693	210460055	2-Feb	15	2021	02-Mon	12	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Angle
842262	202370208	8-Aug	24	2020	02-Mon	18	Property Damage Only	Daylight	Clear	Dry	WASHBURN AVE		Rear End
944934	212780030	10-Oct	05	2021	03-Tues	11	Property Damage Only	Daylight	Clear	Dry	WASHBURN AVE	MNTH 13	Sideswipe Same Direction
1070922	223570784	12-Dec	23	2022	06-Fri	11	Property Damage Only	Daylight	Clear	Ice/Frost	WASHBURN AVE		Single Vehicle Run Off Road
1034692	221650239	6-Jun	14	2022	03-Tues	18	Property Damage Only	Daylight	Clear	Dry	WASHBURN AVE		Single Vehicle Run Off Road
1062230	223310118	11-Nov	27	2022	01-Sun	16	Property Damage Only	Sunset	Clear	Dry	WASHBURN AVE		Other
1015092	220880142	3-Mar	29	2022	03-Tues	17	Property Damage Only	Daylight	Cloudy	Dry	WASHBURN AVE	MNTH 13	Rear End
1011105	220620136	3-Mar	03	2022	05-Thu	11	Serious Injury	Daylight	Cloudy	Dry	MNTH 13	WASHBURN	Angle
1000137	220060591	1-Jan	06	2022	05-Thu	23	Serious Injury	Dark (Str Lights On)	Clear	Ice/Frost	MNTH 13		Angle

TH 13 between Chowen Ave and Washburn Ave

CMF Applied	Grade Separation	Paved Shoulder 10 to 12 ft

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
896959	210510209	2-Feb	20	2021	07-Sat	22	Property Damage Only	Dark (Str Lights On)	Clear	Dry	MNTH 13		Angle
1035991	221820280	7-Jul	01	2022	06-Fri	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1039870	222270093	8-Aug	15	2022	02-Mon	18	Property Damage Only	Daylight	Clear	Dry	MNTH 13	VY 13 AND CHOWEN AV	Rear End
1012717	220590203	2-Feb	28	2022	02-Mon	15	Property Damage Only	Daylight	Clear	Dry	INTH 13 AT CHOWEN AVE		Rear End
844050	202750168	10-Oct	01	2020	05-Thu	08	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
1011729	220680078	3-Mar	09	2022	04-Wed	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Angle
816574	201780086	6-Jun	26	2020	06-Fri	16	Possible Injury	Daylight	Clear	Dry	MNTH 13		Rear End
801730	200610104	3-Mar	01	2020	01-Sun	18	Serious Injury	Dark (Str Lights On)	Clear	Dry	MNTH 13		Pedestrian
904234	211260131	5-May	06	2021	05-Thu	17	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
938703	212440212	9-Sep	01	2021	04-Wed	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1062751	223360145	12-Dec	02	2022	06-Fri	19	Possible Injury	Dark (Str Lights On)	Snow	Snow	MNTH 13	WY 13 AND WASHBURN	Rear End

TH 13 at Chowen Ave

CMF Applied	Grade Separation	Paved Shoulder 10 to 12 ft

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
916716	211810250	6-Jun	30	2021	04-Wed	08	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
983145	213570177	12-Dec	23	2021	05-Thu	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13	CHOWEN	Sideswipe Same Direction
979635	213450035	12-Dec	11	2021	07-Sat	06	Property Damage Only	Dark (Str Lights On)	Cloudy	Snow	MNTH 13	CHOWEN	Single Vehicle Run Off Road
868815	203530105	12-Dec	18	2020	06-Fri	16	Property Damage Only	Dark (No Str Lights)	Cloudy	Dry	MNTH 13		Angle
797093	200410267	2-Feb	10	2020	02-Mon	06	Property Damage Only	Sunrise	Clear	Ice/Frost	TH 13 AT CHOWEN AVE		Angle
945573	212780182	10-Oct	05	2021	03-Tues	08	Fatal	Daylight	Clear	Dry	MNTH 13	CHOWEN AVE. S.	Angle
1022770	221340126	5-May	14	2022	07-Sat	12	Property Damage Only	Daylight	Clear	Dry	MNTH 13	CHOWEN	Angle

895389	210710034	3-Mar	12	2021	06-Fri	13	Property Damage Only	Daylight	Clear	Dry	MNTH 13	CHOWEN AVE	Rear End
1063473	223400064	12-Dec	06	2022	03-Tues	14	Possible Injury	Daylight	Clear	Dry	MNTH 13	CHOWEN	Rear End
844775	202800069	10-Oct	06	2020	03-Tues	14	Property Damage Only	Daylight	Clear	Dry	CHOWEN AVE		Single Vehicle Run Off Road
1021275	221270013	5-May	07	2022	07-Sat	10	Property Damage Only	Daylight	Clear	Dry	CHOWEN AVE	MNTH 13	Rear End
810103	201290159	5-May	08	2020	06-Fri	17	Property Damage Only	Daylight	Cloudy	Dry	CHOWEN AVE		Rear End
1045723	222550228	9-Sep	12	2022	02-Mon	15	Possible Injury	Daylight	Clear	Dry	CHOWEN AVE		Angle
1061041	223300038	11-Nov	26	2022	07-Sat	14	Property Damage Only	Daylight	Clear	Dry	CHOWEN AVE	MNTH 13	Sideswipe Same Direction
1012284	220720055	3-Mar	13	2022	01-Sun	14	Property Damage Only	Daylight	Clear	Dry	CHOWEN AVE		Single Vehicle Run Off Road

TH 13 between Lynn Ave and Chowen Ave

CMF Applied	Grade Separation	Paved Shoulder 10 to 12 ft

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
1009103	220560033	2-Feb	25	2022	06-Fri	07	Property Damage Only	Daylight	Clear	Ice/Frost	MNTH 13		Single Vehicle Run Off Road
1026318	221540041	6-Jun	03	2022	06-Fri	08	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
974681	213230118	11-Nov	19	2021	06-Fri	19	Minor Injury	Dark (Str Lights On)	Clear	Dry	MNTH 13	LYNN AVENUE	Single Vehicle Run Off Road
782865	200190344	1-Jan	19	2020	01-Sun	06	Possible Injury	Dark (Str Lights On)	Cloudy	Snow	HWY 13 JEO LYNN AVE		Head On
1048237	222700105	9-Sep	27	2022	03-Tues	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13 @ LYNN AVE		Sideswipe Same Direction
909416	211530102	6-Jun	02	2021	04-Wed	16	Minor Injury	Daylight	Clear	Dry	MNTH 13		Rear End
1004806	220390027	2-Feb	08	2022	03-Tues	05	Property Damage Only	Dark (Str Lights On)	Clear	Dry	MNTH 13	LS LYNN AVE	Sideswipe Same Direction
890376	210440114	2-Feb	13	2021	07-Sat	19	Property Damage Only	Dark (No Str Lights)	Clear	Dry	MNTH 13		Single Vehicle Run Off Road
1009825	220540493	2-Feb	23	2022	04-Wed	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
932127	212160011	8-Aug	04	2021	04-Wed	06	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
861564	203060173	11-Nov	01	2020	01-Sun	17	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Left Turn
1066902	223510262	12-Dec	17	2022	07-Sat	14	Property Damage Only	Daylight	Cloudy	Snow	MNTH 13		Rear End
913728	211720181	6-Jun	21	2021	02-Mon	17	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1033500	221930087	7-Jul	12	2022	03-Tues	17	Property Damage Only	Daylight	Clear	Dry	MNTH 13	VY 13 AND CHOWEN AV	Angle
930256	211960261	7-Jul	15	2021	05-Thu	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13	WASHBURN	Sideswipe Same Direction
886055	210220122	1-Jan	22	2021	06-Fri	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End

TH 13 at Lynn Ave

CMF Applied	Grade Separation	Paved Shoulder 10 to 12 ft

INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
913491	211660284	6-Jun	15	2021	03-Tues	17	Minor Injury	Daylight	Clear	Dry	MNTH 13		Rear End
863859	203200111	11-Nov	15	2020	01-Sun	19	Minor Injury	Dark (Str Lights On)	Clear	Dry	MNTH 13		Other
898141	210880019	3-Mar	29	2021	02-Mon	09	Possible Injury	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
1038144	222170109	8-Aug	05	2022	06-Fri	18	Possible Injury	Daylight	Clear	Dry	MNTH 13	LYNN AVE S	Rear End
841289	202580175	9-Sep	14	2020	02-Mon	16	Possible Injury	Daylight	Clear	Dry	B HWY 13 / LYNN AVE		Rear End
1027890	221610196	6-Jun	10	2022	06-Fri	18	Possible Injury	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
898128	210880010	3-Mar	29	2021	02-Mon	07	Possible Injury	Sunrise	Clear	Dry	MNTH 13		Rear End
1024164	221410121	5-May	21	2022	07-Sat	09	Possible Injury	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
1023113	221360144	5-May	16	2022	02-Mon	09	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Sideswipe Same Direction
1027485	221600092	6-Jun	09	2022	05-Thu	17	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE S	Rear End
967562	212910016	10-Oct	18	2021	02-Mon	08	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
930367	212060109	7-Jul	25	2021	01-Sun	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
1062278	223090169	11-Nov	05	2022	07-Sat	15	Property Damage Only	Daylight	Cloudy	Wet	MNTH 13		Sideswipe Same Direction
1016231	220960124	4-Apr	06	2022	04-Wed	15	Property Damage Only	Daylight	Cloudy	Dry	MNTH 13		Rear End
987179	220070252	1-Jan	07	2022	06-Fri	17	Property Damage Only	Dark (Str Lights On)	Clear	Dry	MNTH 13	LYNN AVE	Sideswipe Same Direction
1066654	223520008	12-Dec	18	2022	01-Sun	03	Property Damage Only	Dark (Str Lights On)	Snow	Snow	MNTH 13		Single Vehicle Other
840655	202580008	9-Sep	14	2020	02-Mon	02	Property Damage Only	Dark (Str Lights On)	Fog/Smog/Smoke	Wet	MNTH 13		Sideswipe Same Direction
908897	211510018	5-May	31	2021	02-Mon	12	Property Damage Only	Daylight	Cloudy	Dry	MNTH 13		Rear End
1029924	221610288	6-Jun	10	2022	06-Fri	13	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN	Rear End
810264	201360010	5-May	15	2020	06-Fri	13	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
1047288	222650133	9-Sep	22	2022	05-Thu	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
1031192	221790142	6-Jun	28	2022	03-Tues	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
1058249	223160186	11-Nov	12	2022	07-Sat	17	Property Damage Only	Dark (Str Lights On)	Cloudy	Dry	MNTH 13 AND LYNN AVE		Rear End
1027889	221600192	6-Jun	09	2022	05-Thu	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN	Rear End
869814	203580239	12-Dec	23	2020	04-Wed	18	Property Damage Only	Dark (Str Lights On)	Snow	Snow	MNTH 13		Angle
945435	212800095	10-Oct	07	2021	05-Thu	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN AVE	Rear End
820045	201880188	7-Jul	06	2020	02-Mon	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1071702	223530595	12-Dec	19	2022	02-Mon	16	Property Damage Only	Dark (Str Lights On)	Snow	Ice/Frost	MNTH 13		Rear End
1030800	221470275	5-May	27	2022	06-Fri	15	Property Damage Only	Daylight	Clear	Dry	MNTH 13	LYNN	Rear End
906742	211400034	5-May	20	2021	05-Thu	12	Property Damage Only	Daylight	Clear	Dry	LYNN AVE	MNTH 13	Sideswipe Same Direction
1027431	221600044	6-Jun	09	2022	05-Thu	13	Property Damage Only	Daylight	Clear	Dry	LYNN AVE	MNTH 13	Rear End
835571	202260165	8-Aug	13	2020	05-Thu	13	Property Damage Only	Daylight	Clear	Dry	LYNN AVE		Rear End
1062993	223380017	12-Dec	04	2022	01-Sun	02	Serious Injury	Dark (Str Lights On)	Clear	Dry	MNTH 13		Single Vehicle Other

TH 13 west of Lynn Ave

					CMF Applied	Grade Separation	Paved Shoulder 10 to 12 ft						
INCIDENTID	ACCIDENT_NUMBER	CRASH_MONTH	CRASH_DAY	CRASH_YEAR	CRASH_DAYOFWEEK	CRASH_HOUR	CRASHSEVERITY	LIGHTCONDITION	WEATHERPRIMARY	RDWYSURFACE	ROADWAY_NAME	INTERSECTION_NAME	BASIC_TYPE
1007127	220480094	2-Feb	17	2022	05-Thu	16	Property Damage Only	Daylight	Clear	Dry	MNTH 13	QUENTIN AVE	Rear End
843614	202720175	9-Sep	28	2020	02-Mon	12	Possible Injury	Daylight	Clear	Dry	MNTH 13		Rear End
1023176	221370051	5-May	17	2022	03-Tues	09	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
1029364	221330313	5-May	13	2022	06-Fri	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Sideswipe Same Direction
1026561	221440212	5-May	24	2022	03-Tues	16	Possible Injury	Daylight	Clear	Dry	MNTH 13		Rear End
778479	200100149	1-Jan	10	2020	06-Fri	15	Possible Injury	Daylight	Clear	Dry	MNTH 13		Rear End
780249	200160222	1-Jan	16	2020	05-Thu	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
802874	200670075	3-Mar	07	2020	07-Sat	14	Property Damage Only	Daylight	Clear	Dry	MNTH 13		Rear End
1060090	222800241	10-Oct	07	2022	06-Fri	06	Property Damage Only	Dark (Str Lights On)	Clear	Dry	MNTH 13		Rear End

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	TH 13	**District**	Metro	**County**	Dakota and Scott
Begin RP	Lynn Ave	**End RP**	Washburn Ave	**Miles**	1.450
Location	Washburn and Chowen at the North and South Frontage Roads				

B. Project Description

Proposed Work	Install roundabouts at Chowen/Washburn and the N/S Frontage Rd		
Project Cost*		**Installation Year**	2027
Project Service Life	20 years	**Traffic Growth Factor**	0.7%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.28	**Fatal (K) Crashes**	**Reference**	CMF ID: 206
0.28	**Serious Injury (A) Crashes**		
0.28	**Moderate Injury (B) Crashes**	**Crash Type**	All
0.28	**Possible Injury (C) Crashes**		
0.28	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	
	Possible Injury (C) Crashes		
	Property Damage Only Crashes		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2020	**End Date**	12/31/2022	3 years
Data Source				

Crash Severity	All	< optional 2nd CMF >
K crashes		
A crashes		
B crashes	2	
C crashes	3	
PDO crashes	17	

F. Benefit-Cost Calculation

$5,444,510	**Benefit (present value)**	**B/C Ratio = N/A**
$0	**Cost**	

Proposed project expected to reduce 6 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,600,000
A crashes	$800,000
B crashes	$250,000
C crashes	$130,000
PDO crashes	$15,000

Link: mndot.gov/planning/program/appendix_a.html

Real Discount Rate:	0.8%	Default
Traffic Growth Rate:	0.7%	**Revised**
Project Service Life:	20 years	**Revised**

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.00	0.00	$0
A crashes	0.00	0.00	$0
B crashes	1.44	0.48	$120,000
C crashes	2.16	0.72	$93,600
PDO crashes	12.24	4.08	$61,200
			$274,800

H. Amortized Benefit

Year	Crash Benefits	Present Value
2027	$274,800	$274,800
2028	$276,724	$274,527
2029	$278,661	$274,255
2030	$280,611	$273,983
2031	$282,576	$273,711
2032	$284,554	$273,440
2033	$286,545	$273,168
2034	$288,551	$272,897
2035	$290,571	$272,627
2036	$292,605	$272,356
2037	$294,653	$272,086
2038	$296,716	$271,816
2039	$298,793	$271,546
2040	$300,885	$271,277
2041	$302,991	$271,008
2042	$305,112	$270,739
2043	$307,247	$270,470
2044	$309,398	$270,202
2045	$311,564	$269,934
2046	$313,745	$269,666
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Total = $5,444,510

NOTE:
This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	TH 13	**District**	Metro	**County**	Dakota and Scott
Begin RP	Lynn Ave	**End RP**	Washburn Ave	**Miles**	1.450
Location	West of Lynn Ave to East of Washburn Ave				

B. Project Description

Proposed Work	Grade separation of TH 13 at Lynn, Chowen, and Washburn, increased paved shoulder width		
Project Cost*		**Installation Year**	2027
Project Service Life	20 years	**Traffic Growth Factor**	0.7%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

0.45	**Fatal (K) Crashes**	**Reference**	CMF ID: 460, 459, and 5509
0.33	**Serious Injury (A) Crashes**		
0.33	**Moderate Injury (B) Crashes**	**Crash Type**	CMF ID 460 applies to injury crashes,
0.33	**Possible Injury (C) Crashes**		CMF IDs 459 and 5509 apply to all crashes
0.45	**Property Damage Only Crashes**		www.CMFclearinghouse.org

D. Crash Modification Factor (optional second CMF)

	Fatal (K) Crashes	**Reference**	
	Serious Injury (A) Crashes		
	Moderate Injury (B) Crashes	**Crash Type**	
	Possible Injury (C) Crashes		
	Property Damage Only Crashes		www.CMFclearinghouse.org

E. Crash Data

Begin Date	1/1/2020	**End Date**	12/31/2022	3 years
Data Source	MNCMAT2			

Crash Severity	CMF ID 460 applies to injury crashes,	< optional 2nd CMF >
K crashes	1	
A crashes	5	
B crashes	10	
C crashes	20	
PDO crashes	108	

F. Benefit-Cost Calculation

$51,968,107	**Benefit (present value)**	**B/C Ratio = N/A**
$0	**Cost**	

Proposed project expected to reduce 28 crashes annually, 2 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,600,000
A crashes	$800,000
B crashes	$250,000
C crashes	$130,000
PDO crashes	$15,000

Link: mndot.gov/planning/program/appendix_a.html

Real Discount Rate:	0.8%	Default
Traffic Growth Rate:	0.7%	**Revised**
Project Service Life:	20 years	**Revised**

G. Annual Benefit

Crash Severity	Crash Reduction	Annual Reduction	Annual Benefit
K crashes	0.55	0.18	$295,147
A crashes	3.34	1.11	$891,867
B crashes	6.69	2.23	$557,417
C crashes	13.38	4.46	$579,713
PDO crashes	59.77	19.92	$298,836
			$2,622,979

H. Amortized Benefit

Year	Crash Benefits	Present Value
2027	$2,622,979	$2,622,979
2028	$2,641,340	$2,620,377
2029	$2,659,830	$2,617,778
2030	$2,678,448	$2,615,181
2031	$2,697,198	$2,612,586
2032	$2,716,078	$2,609,994
2033	$2,735,090	$2,607,405
2034	$2,754,236	$2,604,818
2035	$2,773,516	$2,602,234
2036	$2,792,930	$2,599,653
2037	$2,812,481	$2,597,074
2038	$2,832,168	$2,594,497
2039	$2,851,993	$2,591,923
2040	$2,871,957	$2,589,352
2041	$2,892,061	$2,586,783
2042	$2,912,305	$2,584,217
2043	$2,932,692	$2,581,653
2044	$2,953,220	$2,579,092
2045	$2,973,893	$2,576,533
2046	$2,994,710	$2,573,977
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0
0	$0	$0

Total = $51,968,107

NOTE:
This calculation relies on the real discount rate, which accounts for inflation. No further discounting is necessary.

CRASH MODIFICATION FACTORS CLEARINGHOUSE

CMF / CRF Details

CMF ID: 459

CMF Name: Convert at-grade intersection into grade-separated interchange

Description:

Prior Condition: No Prior Condition(s)

Category: Interchange design

Study ID: *Revision of the Hand Book of Road Safety Measures*, Elvik, R. and Erke, A. 2007

Star Quality Rating	
Star Quality Rating:	1 Star

Crash Modification Factor (CMF)	
Value:	0.58
Adjusted Standard Error:	0.1
Unadjusted Standard Error:	0.06

Crash Reduction Factor	
Value:	42
Adjusted Standard Error:	10
Unadjusted Standard Error:	6

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Not Specified
Minimum Number of Lanes:	
Maximum Number of Lanes:	
Number of Lanes Direction:	
Number of Lanes Comment:	
Road Division Type:	
Minimum Speed Limit:	
Maximum Speed Limit:	
Speed Unit:	
Speed Limit Comment:	
Area Type:	Not Specified
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	
If countermeasure is intersection-based.	
Intersection Type:	Roadway/roadway (interchange ramp terminal)
Intersection Geometry:	4-leg
Traffic Control:	Not specified
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Average Major Road Volume:	
Average Minor Road Volume:	

Development Details

Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Regression cross-section

Other Details

Included in HSM:	Yes. HSM lists this CMF in bold font to indicate that it has the highest
Date Added to Clearinghouse:	Dec 01, 2009
Comments:	

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CRASH MODIFICATION FACTORS CLEARINGHOUSE

CMF / CRF Details

CMF ID: 460

CMF Name: Convert at-grade intersection into grade-separated interchange

Description:

Prior Condition: No Prior Condition(s)

Category: Interchange design

Study ID: *Revision of the Hand Book of Road Safety Measures*, Elvik, R. and Erke, A. 2007

Star Quality Rating	
Star Quality Rating:	1 Star

Crash Modification Factor (CMF)	
Value:	0.43
Adjusted Standard Error:	0.05
Unadjusted Standard Error:	0.03

Crash Reduction Factor	
Value:	57
Adjusted Standard Error:	5
Unadjusted Standard Error:	3

Applicability	
Crash Type:	All
Crash Severity:	A (serious injury),B (minor injury),C (possible injury)
Roadway Types:	Not Specified
Minimum Number of Lanes:	
Maximum Number of Lanes:	
Number of Lanes Direction:	
Number of Lanes Comment:	
Road Division Type:	
Minimum Speed Limit:	
Maximum Speed Limit:	
Speed Unit:	
Speed Limit Comment:	
Area Type:	Not Specified
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	
If countermeasure is intersection-based.	
Intersection Type:	Roadway/roadway (interchange ramp terminal)
Intersection Geometry:	4-leg
Traffic Control:	Not specified
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Average Major Road Volume:	
Average Minor Road Volume:	

Development Details

Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Regression cross-section

Other Details

Included in HSM:	Yes. HSM lists this CMF in bold font to indicate that it has the highest
Date Added to Clearinghouse:	Dec 01, 2009
Comments:	

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CRASH MODIFICATION FACTORS CLEARINGHOUSE

CMF / CRF Details

CMF ID: 5509

CMF Name: Increase paved outside shoulder width from 10ft to 12ft

Description: Increase paved outside shoulder width from 10ft to 12ft

Prior Condition: 10 ft paved outside shoulder width

Category: Shoulder treatments

Study ID: *Using multivariate adaptive regression splines (MARS) to develop crash modification factors for urban freeway interchange influence areas*, Haleem et al. 2013

Star Quality Rating	
Star Quality Rating:	4 Stars

Crash Modification Factor (CMF)	
Value:	0.774
Adjusted Standard Error:	
Unadjusted Standard Error:	0.095

Crash Reduction Factor	
Value:	22.6
Adjusted Standard Error:	
Unadjusted Standard Error:	9.5

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Principal Arterial Other Freeways and Expressways
Minimum Number of Lanes:	4
Maximum Number of Lanes:	
Number of Lanes Direction:	
Number of Lanes Comment:	4 - 6+ Lanes
Road Division Type:	Divided by Median
Minimum Speed Limit:	
Maximum Speed Limit:	
Speed Unit:	
Speed Limit Comment:	
Area Type:	Urban
Traffic Volume:	Minimum of 5700 to Maximum of 309000 Annual Average Daily Traffic (AADT)
Average Traffic Volume:	
Time of Day:	All
If countermeasure is intersection-based.	
Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Average Major Road Volume:	
Average Minor Road Volume:	

Development Details

Date Range of Data Used:	2007 to 2010
Municipality:	
State:	FL
Country:	USA
Type of Methodology Used:	Regression cross-section
Sample Size (crashes):	40008 crashes

Other Details

Included in HSM:	No
Date Added to Clearinghouse:	Apr 30, 2014
Comments:	CMF for urban freeway interchange areas

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CRASH MODIFICATION FACTORS CLEARINGHOUSE

CMF / CRF Details

CMF ID: 206

CMF Name: Conversion of stop-controlled intersection into single-lane roundab

Description:

Prior Condition: No Prior Condition(s)

Category: Intersection geometry

Study ID: *Observational Before-After Study of the Safety Effect of U.S. Roundabout Conversions Using the Empirical Bayes Method*, Persaud et al. 2001

Star Quality Rating	
Star Quality Rating:	4 Stars

Crash Modification Factor (CMF)	
Value:	0.28
Adjusted Standard Error:	0.11
Unadjusted Standard Error:	0.06

Crash Reduction Factor	
Value:	72
Adjusted Standard Error:	11
Unadjusted Standard Error:	6

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Minimum Number of Lanes:	
Maximum Number of Lanes:	
Number of Lanes Direction:	
Number of Lanes Comment:	
Road Division Type:	
Minimum Speed Limit:	
Maximum Speed Limit:	
Speed Unit:	
Speed Limit Comment:	
Area Type:	Urban
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	
If countermeasure is intersection-based.	
Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	Not specified
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Average Major Road Volume:	
Average Minor Road Volume:	

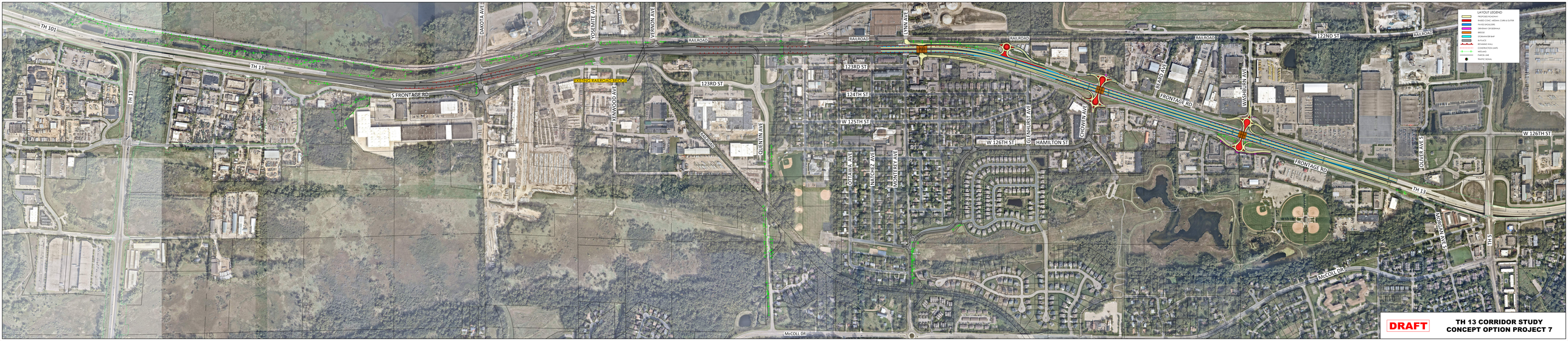
Development Details

Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes

Other Details

Included in HSM:	No
Date Added to Clearinghouse:	Dec 01, 2009
Comments:	

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center


LAYOUT LEGEND
PROPOSED ROADWAY
PAVED CONC. MEDIAN, CURB & GUTTER
PAVED SHOULDERS
DRIVEWAY OR SIDEWALK
BRIDGE
STORMWATER BMP
RETAINING WALL
CONSTRUCTION LIMITS
WETLAND
TRAIL
WAYNE DEAN
TH 101
TH 13
S FRONTAGE RD
DAKOTA AVE
YOSEMITE AVE
VERNON AVE
RAILROAD
123RD ST
124TH ST
W 125TH ST
W 126TH ST
HAMILTON ST
QUENTIN AVE
KENWOOD AVE
OTTAWA AVE
NATCHEZ AVE
MONTREAL AVE
GLENHURST AVE
CROWN AVE
LENA AVE
BEARD AVE
WASHBURN AVE
FRONTAGE RD
122ND ST
OLIVER AVE S
MORGAN AVE S
TH 5
McCOLL DR
DRAFT
TH 13 CORRIDOR STUDY
CONCEPT OPTION PROJECT 7

RESOLUTION NO. 23-7018

CITY OF BURNSVILLE, MINNESOTA

RESOLUTION AUTHORIZING THE PURSUIT OF 2024 LOCAL REGIONAL SOLICITATION FUNDING FOR THE HIGHWAY 13 LYNN TO WASHBURN INTERCHANGES IMPROVEMENT PROJECT

WHEREAS, the Regional Solicitation Program provides federal transportation funding for projects as part of the Metropolitan Council's federally-required continuing, comprehensive, and cooperative transportation planning process for the 7-County Twin Cities Metropolitan Area; and

WHEREAS, the Metropolitan Council is accepting candidate projects for the Fiscal Years (FY) 2028-2029 and providing up to 80 percent of the project construction cost for transportation projects; and

WHEREAS, the City of Burnsville is seeking Regional Solicitation funds to construct the Highway 13 Chowen and Washburn Interchange Improvement Project which will upgrade the existing Chowen Ave Interchange to a grade separated, tight diamond interchange and convert the Washburn Ave interchange to an overpass; and

WHEREAS, in the 2017 Principal Arterial Intersection Conversion Study the Metropolitan Council concluded that Highway 13 traffic volume is sufficient to support the grade separation of Chowen and Washburn Avenues; and

WHEREAS, both the Chowen Ave and Washburn Ave intersections feature unacceptable levels of delay and critical crash rates; and

WHEREAS, construction of this strategic capacity project will accommodate greater traffic volume to mitigate congestion, reduce crashes, and improve pedestrian mobility across the highway; and

WHEREAS, the proposed year for project construction is 2027.

NOW, THEREFORE BE IT RESOLVED by the City of Council of the City of Burnsville that:

1. the City is in support of the Highway 13 improvements as proposed at Lynn Ave, Chowen Ave, and Washburn Ave.

2. the City is authorized to submit a 2028-2029 Regional Solicitation application and commits to maintaining the project following construction.

3. Upon approval of its application by USDOT, the City of Burnsville may enter into an agreement for the above referenced project and will comply with all applicable laws and regulations as stated in all contract agreements.

4. The city is committed to working with Scott County and other project partners to provide the 20% local cost share required by regional solicitation funds.

Passed and duly adopted by the Council of the City of Burnsville this 5th day of December, 2023.

DocuSigned by:
87F692077A7D426...
Elizabeth B. Kautz, Mayor

ATTEST:

DocuSigned by:
1810DB3C25F04EF...
Macheal Collins, City Clerk

BOARD OF COUNTY COMMISSIONERS
SCOTT COUNTY, MINNESOTA

Date: December 7, 2023
Resolution No.: 2023-295
Motion by Commissioner: None
Seconded by Commissioner: None

RESOLUTION NO. 2024-295; AUTHORIZING SUBMITTAL OF TRANSPORTATION PROJECTS TO THE TRANSPORTATION ADVISORY BOARD FOR CONSIDERATION IN THE 2024 REGIONAL SOLICITATION

WHEREAS, the Transportation Advisory Board (TAB) is requesting project submittals for federal funding under the Surface Transportation Program (STP) and the Congestions Mitigation and Air Quality Program (CMAQ); and

WHEREAS, funding is available in the 2028-2029 federal fiscal years; and

WHEREAS, funding provides funding for project construction costs; and

WHEREAS, federal funding of projects reduces the burden on local taxpayers for regional improvements; and

WHEREAS, Scott County has identified projects that improve the safety and transportation system of the region; and

WHEREAS, the projects are also consistent with the Scott County Transportation Plan and Scott County Parks Plan; and

WHEREAS, the City of Savage and the City of Burnsville have requested support for their Regional Solicitation applications for improvements on the programmed Trunk Highway (TH) 13 Corridor; and

WHEREAS, the Scott County Board of Commissioners desires to submit and support these projects:

1. Louisville Segment of the Merriam Junction Trail in Lousiville Township and City of Shakopee
2. County Road 23 and County Road 68 Roundabout
3. County Road 8 and County Road 23 Roundabout
4. City of Savage TH 13 and Quentin Intersection Application
5. City of Burnsville TH 13 Lynn Avenue, Chowen Avenue and Washburn Avenue Intersection Application

NOW, THEREFORE BE IT RESOLVED that the Scott County Board of Commissioners hereby supports and authorizes the submittals of the above-named projects to the Transportation Advisory Board for consideration in the 2024 Regional Solicitation Process.

VOTE RESULTS:
Yes: None
No: None
Absent:
Abstain: None

State of Minnesota)
County of Scott)

I, Lezlie A. Vermillion, duly appointed qualified County Administrator for the County of Scott, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Scott County, Minnesota, at their session held on _____ now on file in my office, and have found the same to be a true and correct copy thereof. Witness my hand and official seal at Shakopee, Minnesota, on _____.

_____ County Administrator

_____ Administrator's Designee

RESOLUTION NO. R-23-331

RESOLUTION OF SUPPORT FOR LOCAL REGIONAL SOLICITATION FUNDING FOR LYNN AVENUE, CHOWEN AVENUE, AND WASHBURN AVENUE INTERSECTION IMPROVEMENTS ON HIGHWAY 13, CITY PROJECT 23-26

WHEREAS, the Regional Solicitation Program provides federal transportation funding for projects as part of the Metropolitan Council's federally required continuing, comprehensive, and cooperative transportation planning process for the 7-County Twin Cities Metropolitan Area; and

WHEREAS, the Metropolitan Council is accepting candidate projects for the Fiscal Years (FY) 2028-2029 and providing up to 80 percent of the project construction cost for transportation projects; and

WHEREAS, the City of Burnsville is seeking Regional Solicitation funds towards the Highway 13 Lynn Avenue, Chowen Avenue, and Washburn Avenue Intersection Improvement Project which will upgrade the existing Chowen Ave Interchange to a grade separated tight diamond interchange and convert the Washburn Ave interchange to an overpass; and

WHEREAS, in the 2017 Principal Arterial Intersection Conversion Study the Metropolitan Council concluded that Highway 13 traffic volume is sufficient to support the grade separation of Chowen and Washburn Avenues; and

WHEREAS, the Lynn Ave, Chowen Ave, and Washburn Ave intersections feature unacceptable levels of delay and critical crash rates; and

WHEREAS, construction of this strategic capacity project will accommodate greater traffic volume to mitigate congestion, reduce crashes, and improve pedestrian mobility across the highway; and

WHEREAS, the proposed year for project construction is 2027.

NOW THEREFORE, BE IT RESOLVED by the Mayor and Council of the City of Savage:

1. The recitals set forth above are incorporated herein.

2. The City is in support of the Highway 13 improvements as proposed at Lynn Avenue, Chowen Avenue, and Washburn Avenue.

3. The City of Savage supports the City of Burnsville's application for a 2028-2029 Regional Solicitation Award.

PASSED AND DULY ADOPTED by the City Council of the City of Savage, Minnesota, this 20th day of November, 2023.

Janet Williams, Mayor

Attest:

Brad Larson, City Administrator

MnDOT Metro District
1500 West County Road B-2
Roseville, MN 55113

11/29/2023

Logan Vlasaty, P.E.
City Engineer
100 Civic Center Parkway
Burnsville, MN 55337

Re: MnDOT Letter for the City of Burnsville
Metropolitan Council/Transportation Advisory Board 2024 Regional Solicitation Funding Request for Highway 13 Lynn to Washburn Interchanges Improvements Project.

Dear Logan Vlasaty,

This letter documents MnDOT Metro District's recognition for the City of Burnsville to pursue funding for the Metropolitan Council/Transportation Advisory Board's (TAB) 2024 Regional Solicitation for the Highway 13 Lynn to Washburn Interchanges Improvements Project.

The proposed project will separate the existing Lynn Avenue intersection and eliminate a full access side-street stop-controlled intersection at Chowen Ave and Highway 13. This intersection will be replaced with a grade separated roundabout that will carry Chowen Avenue over Highway 13. The Washburn Avenue intersection will be grade separated and have direct access to Highway 13 removed. The proposed project will also include dedicated bike and pedestrian facilities.

As the agency with jurisdiction over TH 13 MnDOT will allow the City of Burnsville to seek improvements proposed in the application. If funded, details of how the project is delivered and any future maintenance agreement with the City will need to be determined during the project's development to define how the improvements will be maintained for the project's useful life.

This project was recently awarded $96,000,000 through the Corridors of Commerce Program. MnDOT does not anticipate partnering on local projects beyond current agreements. If your project receives funding, continue to work with MnDOT Area staff to coordinate and review needs and opportunities for cooperation.

MnDOT Metro District looks forward to continued cooperation with the City of Burnsville as this project moves forward and as we work together to improve safety and travel options within the Metro Area.

If you have questions or require additional information at this time, please reach out to your Area Manager at Bryant.Ficek@state.mn.us or 651-443-2564.

Sincerely,

Sheila Kauppi

Digitally signed by Sheila Kauppi
Date: 2023.11.29 13:48:12 -06'00'

Sheila Kauppi, PE
Metro District Engineer

CC:
Bryant Ficek, South Area Manager
Aaron Tag, Metro Program Director
Dan Erickson, Metro State Aid Engineer

From: Governor Walz Press Office <walz.press@state.mn.us>
Sent: Tuesday, July 11, 2023 2:02 PM
To: Governor Walz Press Office <walz.press@state.mn.us>
Subject: RELEASE: Governor Walz Announces $380 Million in State Grants for Transportation Projects

Office of Governor Tim Walz & Lt. Governor Peggy Flanagan

FOR IMMEDIATE RELEASE:
July 11, 2023
Contact: Claire Lancaster
claire.lancaster@state.mn.us
651-219-2975

Governor Walz Announces $380 Million in State Grants for Transportation Projects

[ST. PAUL, MN] – Governor Tim Walz today announced that the Minnesota Department of Transportation (MnDOT) will allocate $380 million to fund eight new infrastructure projects through the state's Corridors of Commerce program.

"We're making historic investments in our state's transportation system to improve the safety and connectivity of communities across the state," said Governor Walz. **"We depend on our roads and highways to safely get us to our jobs, education, child care, and businesses. These projects help grow our economy and support our goal of making Minnesota the best state to live, work, and grow up in – no matter where you live."**

The projects receiving funding in 2023 include:

- TH 13 (Savage/Burnsville) – Grade separations from Quentin to Nicollet Aves: $96,000,000
- I-94 (Albertville to Monticello) – Lane expansion: $78,000,000
- TH 14/CSAH 44 (Byron) – Construct a grade separation: $60,000,000
- TH 371/TH 210 (Baxter) – Construct a grade separation: $58,000,000
- TH 23/MN 9 (New London) – Construct a grade separation: $33,000,000
- TH 65 (Blaine) – Grade separations from 103rd to 117th Aves: $30,000,000
- TH 53 (Eveleth to Virginia) – Roadway improvements: $18,000,000
- TH 10 (Coon Rapids) – Lane expansion from CSAH 78 to CSAH 9: $8,000,000

"We appreciate the work of our many local partners who submitted Corridors of Commerce funding proposals," said MnDOT Commissioner Nancy Daubenberger. **"While transportation funding needs are significant in communities across our state, MnDOT is grateful to the legislature for making historic infrastructure investments this session and we'll continue partnering with proposers to explore other funding options for projects that did not receive funding in this round of the Corridors of Commerce program."**

This is the fourth round of Corridors of Commerce funding provided by the Minnesota Legislature and includes a total of $403 million, including $250 million authorized by the Legislature in 2021 and $153 million provided in 2023. $22 million will be reserved for project readiness activities for potential future Corridors of Commerce candidate projects.

The Corridors of Commerce program was created by the Minnesota Legislature in 2013 with a goal of focusing transportation investments on state highway projects that directly and indirectly foster economic growth for the state of Minnesota. The program is outside of MnDOT's regular State Road Construction program and Corridors of Commerce funding is dependent on legislative appropriation. The authorizing statute (161.088) also includes specific requirements for project eligibility and scoring.

In addition to this year's Corridors of Commerce funding, the omnibus transportation bill included $6 billion for transportation and will allow MnDOT and its partners at the Metropolitan Council and local and tribal governments to make investments in our state's multimodal transportation system. Combined with federal resources coming to Minnesota from the Infrastructure Investment and Jobs Act, legislation enacted during the 2023 legislative session will result in transformational improvements that maximize the health of people, the environment, and our economy.

More information about the Corridors of Commerce program – including past awards and recent applicants – can be found on MnDOT's website.

###

From: Governor Walz Press Office <walz.press@state.mn.us>
Sent: Tuesday, July 11, 2023 2:02 PM
To: Governor Walz Press Office <walz.press@state.mn.us>
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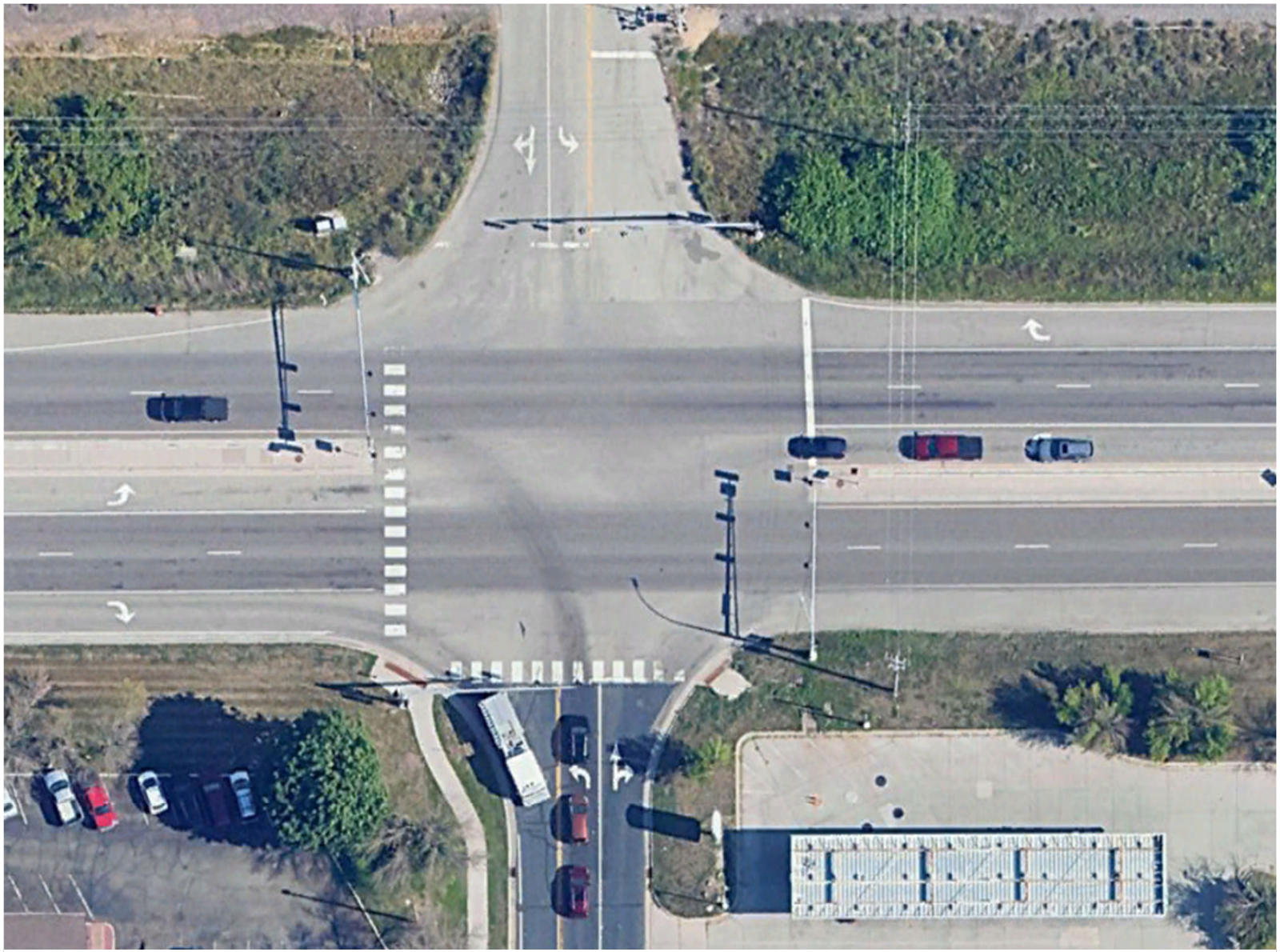
###

Highway 13 – Lynn to Washburn Interchanges Improvement Project

Existing Conditions Photos

Burnsville



Aerial view of the existing of Lynn & Highway 13 Intersection

Burnsville

View facing north at the Lynn Ave & Highway 13 Intersection

Aerial view of the existing of Chowen & Highway 13 Intersection

Burnsville

View facing north at the Chowen Ave & Highway 13 Southern Frontage Road Intersection

Burnsville

Aerial view of the existing of Washburn & Highway 13 Intersection

Burnsville

View facing north at the Washburn Ave & Highway 13 Intersection

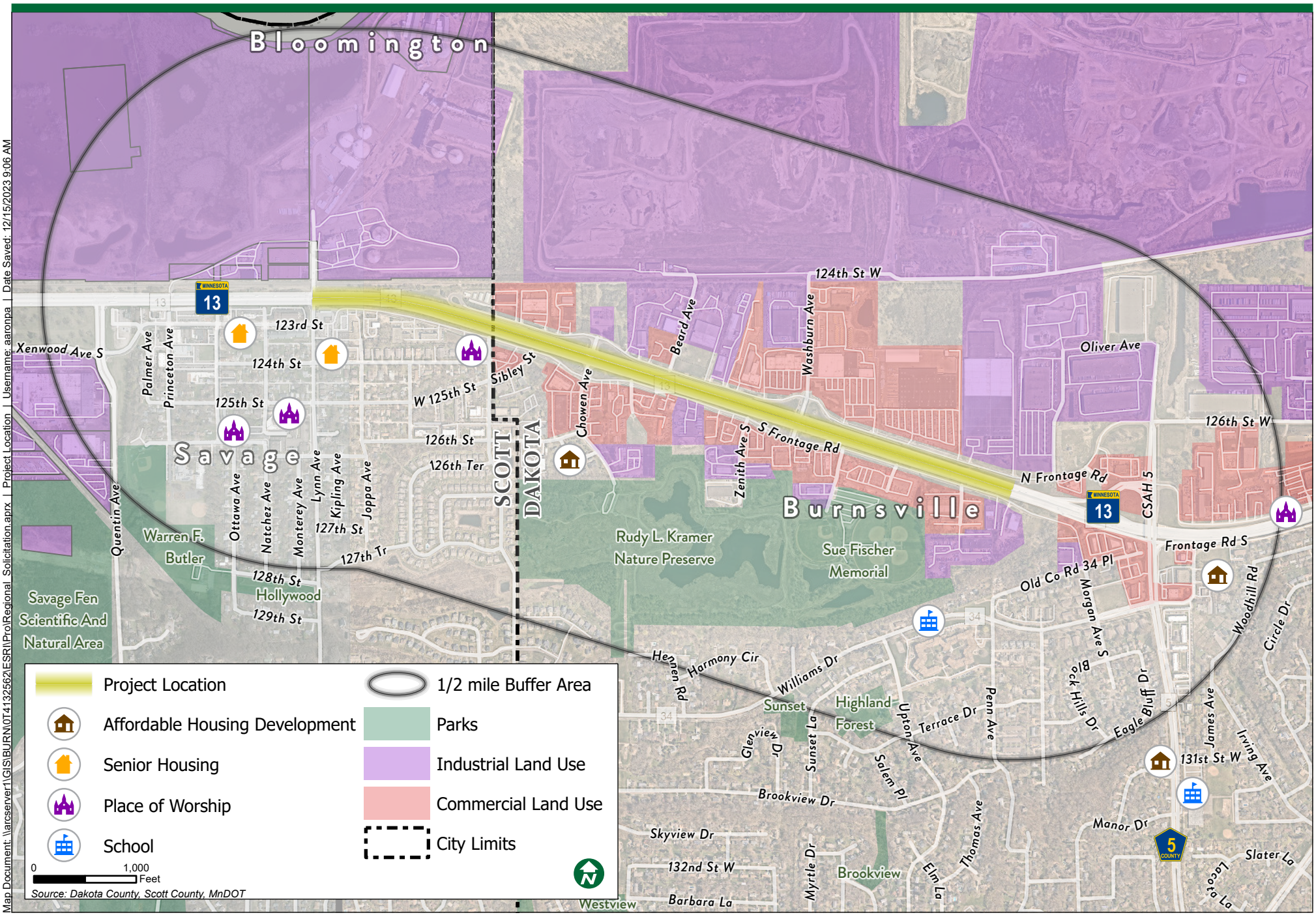
Burnsville

Burnsville Regional Solicitation

City of Burnsville, Minnesota

Project Location

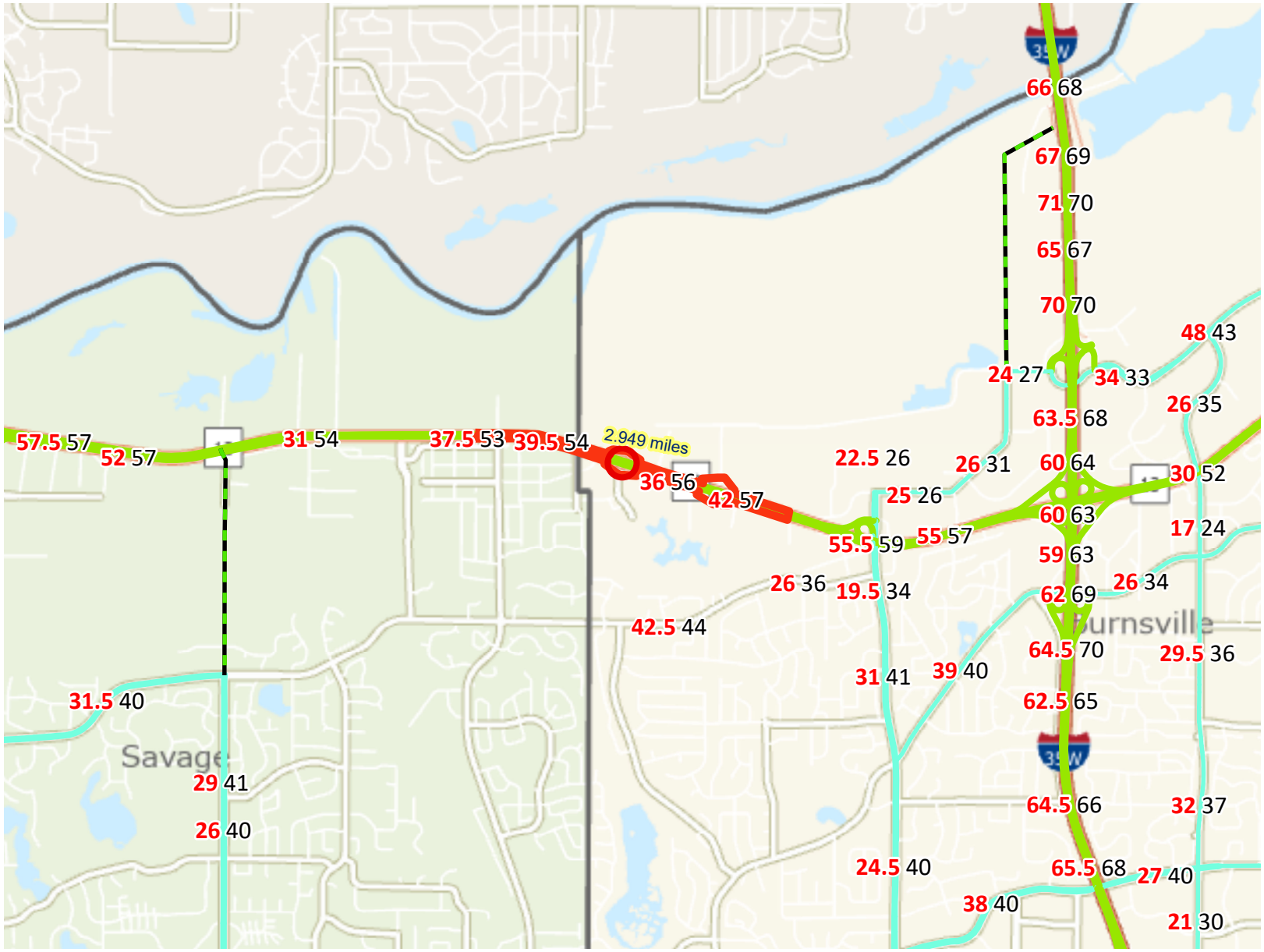
December 2023



Map Document: \\arcserver1\GIS\BURN\0T4132562\ESRI\Pro\Regional_Solicitation.aprx | Project Location | Username: aaronpa | Date Saved: 12/15/2023 9:06 AM

Level of Congestion

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206



Project Points — Principal Arterials — Principal Arterials Planned

Project — A Minor Arterials — A Minor Arterials Planned

0 0.375 0.75 1.5 2.25 3 Miles

Created: 11/16/2023
LandscapeRSA1

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

METROPOLITAN COUNCIL

Regional Economy

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206

Results

WITHIN ONE MI of project:
Postsecondary Students: 0

Totals by City:

Bloomington
Population: 2866
Employment: 739
Mfg and Dist Employment: 11

Burnsville
Population: 6617
Employment: 3556
Mfg and Dist Employment: 1695

Savage
Population: 7167
Employment: 2829
Mfg and Dist Employment: 885

Project Points
Project
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 11/16/2023
LandscapeRSA5

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

METROPOLITAN COUNCIL

Socio-Economic Conditions

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206

Results

Total of publicly subsidized rental housing units in census tracts within 1/2 mile: 94

Project located in census tract(s) that are ABOVE the regional average for population in poverty or population of color.

Points
Lines
Area of Concentrated Poverty
Regional Environmental Justice Area

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 11/16/2023
LandscapeRSA2

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

METROPOLITAN COUNCIL

Transit Connections

Strategic Capacity Project: TH13 - Lynn to Chowen | Map ID: 1700169972206

Results

Transit with a Direct Connection to project: 495

**indicates Planned Alignments*

Transit Market areas: 3

Project Points
Project
Project Area
Active Stop
Arterial Bus Rapid Transit

Commuter Rail
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit
Light Rail
Arterial Bus Rapid Transit

Commuter Rail
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit
Light Rail
Transit Routes

Arterial Bus Rapid Transit
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit
Light Rail
Modern Streetcar

Undetermined
Arterial Bus Rapid Transit
Commuter Rail
Dedicated Bus Rapid Transit
Highway Bus Rapid Transit

Light Rail
Modern Streetcar
Undetermined

0 0.2 0.4 0.8 1.2 1.6 Miles

Created: 11/16/2023
LandscapeRSA3

METROPOLITAN COUNCIL

Highway 13 - Lynn to Washburn Interchanges Improvement Project

Project Name: Highway 13 Lynn to Washburn Safety & Mobility Project

Applicant: City of Burnsville

Route: Trunk Highway 13

Location: Cities of Burnsville and Savage - 500 feet West of Lynn Ave and TH13 Intersection to 2,000 feet east of Washburn Ave/ TH13 intersection

Application Category: Strategic Capacity

Funding Information:

Requested Award Amount: $10M
Local Match: $2M
Construction Total: $81M

Additional Funding Sources:

- Corridors of Commerce - $71M
- Local Partner Funds - $10M

Primary Contact:

Logan Vlasaty - Interim City Engineer
100 Civic Center Parkway
Burnsville, MN 55337
952-895-4000
logan.vlasaty@burnsvillemn.gov

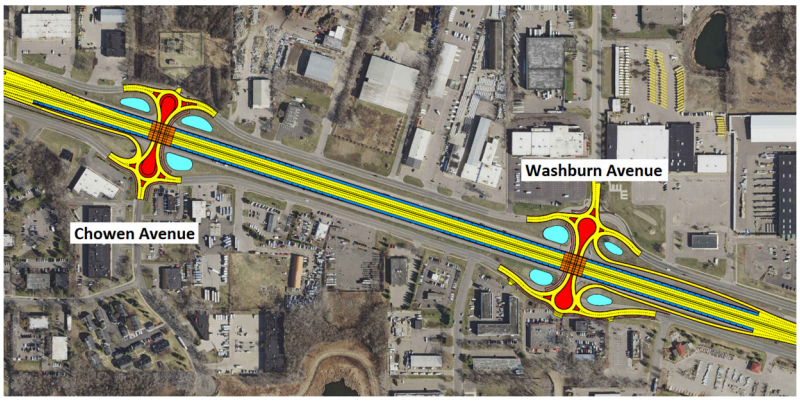
Project Need

Today the project area is plagued with high numbers of traffic crashes, high levels of traffic congestion (including for transit and freight vehicles accessing regional hubs), long waits for crossing traffic, and stressful and dangerous (or nonexistent) crossings for non-motorized users. Metropolitan Council's 2017 Regional Trunk Highway Corridor Study identified TH 13 as the second most congested highway in the metro.

The TH 13 Corridor between Burnsville is regionally significant for the movements of goods and people. It is a critical corridor connecting residential to economic opportunity. Over 7,000 jobs are within 1 mile of the project area. The Ports of Savage, a nationally significant intermodal freight facility, are located just north of the project area. Project improvements will serve these facilities with more efficient freight movement.

Project Description

Reconstruction of 1.4 miles of TH13, a vital principal arterial. A combination of grade separated interchanges and overpasses at the Lynn, Chowen, and Washburn to eliminate highway and local cross street traffic interactions. The project includes reconstruction of frontage roads for grade separation tie ins, accompanying access ramps, and a multimodal trail and sidewalk expansion. These improvements will replace at-grade signalized intersections at Lynn Ave and Washburn Ave and a full access side street stop intersection at Chowen Ave.



Project Website:

www.dot.state.mn.us/metro/projects/hwy13savageburnsville/index.html

2023	2023-2025	2026-2027
Award	*Design*	*Construction*

RESOLUTION NO. 23-7018

CITY OF BURNSVILLE, MINNESOTA

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3. Upon approval of its application by USDOT, the City of Burnsville may enter into an agreement for the above referenced project and will comply with all applicable laws and regulations as stated in all contract agreements.

4. The city is committed to working with Scott County and other project partners to provide the 20% local cost share required by regional solicitation funds.

Passed and duly adopted by the Council of the City of Burnsville this 5th day of December, 2023.

DocuSigned by:
87F692077A7D426...
Elizabeth B. Kautz, Mayor

ATTEST:

DocuSigned by:
1810DB3C25F04EF...
Macheal Collins, City Clerk

BOARD OF COUNTY COMMISSIONERS
SCOTT COUNTY, MINNESOTA

Date: December 7, 2023
Resolution No.: 2023-295
Motion by Commissioner: None
Seconded by Commissioner: None

RESOLUTION NO. 2024-295; AUTHORIZING SUBMITTAL OF TRANSPORTATION PROJECTS TO THE TRANSPORTATION ADVISORY BOARD FOR CONSIDERATION IN THE 2024 REGIONAL SOLICITATION

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VOTE RESULTS:
Yes: None
No: None
Absent:
Abstain: None

State of Minnesota)
County of Scott)

I, Lezlie A. Vermillion, duly appointed qualified County Administrator for the County of Scott, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Scott County, Minnesota, at their session held on _____ now on file in my office, and have found the same to be a true and correct copy thereof. Witness my hand and official seal at Shakopee, Minnesota, on _____.

_____ County Administrator

_____ Administrator's Designee

RESOLUTION NO. R-23-331

RESOLUTION OF SUPPORT FOR LOCAL REGIONAL SOLICITATION FUNDING FOR LYNN AVENUE, CHOWEN AVENUE, AND WASHBURN AVENUE INTERSECTION IMPROVEMENTS ON HIGHWAY 13, CITY PROJECT 23-26

WHEREAS, the Regional Solicitation Program provides federal transportation funding for projects as part of the Metropolitan Council's federally required continuing, comprehensive, and cooperative transportation planning process for the 7-County Twin Cities Metropolitan Area; and

WHEREAS, the Metropolitan Council is accepting candidate projects for the Fiscal Years (FY) 2028-2029 and providing up to 80 percent of the project construction cost for transportation projects; and

WHEREAS, the City of Burnsville is seeking Regional Solicitation funds towards the Highway 13 Lynn Avenue, Chowen Avenue, and Washburn Avenue Intersection Improvement Project which will upgrade the existing Chowen Ave Interchange to a grade separated tight diamond interchange and convert the Washburn Ave interchange to an overpass; and

WHEREAS, in the 2017 Principal Arterial Intersection Conversion Study the Metropolitan Council concluded that Highway 13 traffic volume is sufficient to support the grade separation of Chowen and Washburn Avenues; and

WHEREAS, the Lynn Ave, Chowen Ave, and Washburn Ave intersections feature unacceptable levels of delay and critical crash rates; and

WHEREAS, construction of this strategic capacity project will accommodate greater traffic volume to mitigate congestion, reduce crashes, and improve pedestrian mobility across the highway; and

WHEREAS, the proposed year for project construction is 2027.

NOW THEREFORE, BE IT RESOLVED by the Mayor and Council of the City of Savage:

1. The recitals set forth above are incorporated herein.

2. The City is in support of the Highway 13 improvements as proposed at Lynn Avenue, Chowen Avenue, and Washburn Avenue.

3. The City of Savage supports the City of Burnsville's application for a 2028-2029 Regional Solicitation Award.

PASSED AND DULY ADOPTED by the City Council of the City of Savage, Minnesota, this 20th day of November, 2023.

Janet Williams, Mayor

Attest:

Brad Larson, City Administrator

www.35Wsolutions.com

Bloomington Burnsville Dakota County Elko New Market Hennepin County Lakeville
Minneapolis Richfield Savage Scott County

March 1, 2023

Commissioner Nancy Daubenberger
Minnesota Department of Transportation
John Ireland Blvd
Saint Paul, MN 55155

Sent via email (pat.weidemann@state.mn.us) Patrick Weidemann, Director of Capital Planning and Programming, Minnesota Department of Transportation

Dear Commissioner Daubenberger,

Thank you and the Department for the opportunity to provide the I-35W Solutions Alliance's support on several Corridors of Commerce applications currently under review. We urge strong consideration of the following projects. These projects are supported by the I-35W Solutions Alliance, a joint powers board of seven cities and three counties listed above.

The Alliance supports funding, building, operating and maintaining a robust multimodal transportation system along the I-35W corridor between Elko New Market and downtown Minneapolis that reduces congestion, improves safety, and enables the metropolitan area and the state to better compete economically with other areas of the United States and the world.

Project applications we support for the current Corridors of Commerce program, which continues to list its goals as providing additional highway capacity, improve movement for freight and reduce barriers of commerce, include:

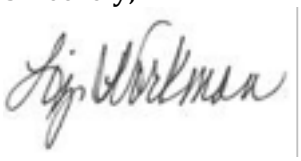
- I-494 between 35W and TH 77 (I-494 Corridor Coalition)
- I-494 and 35W in Bloomington and Richfield, Minnesota (City of Bloomington)

- TH 13 Corridor from Quentin Avenue in Savage to Nicollet Avenue in Burnsville (Scott County)
- Interstate 35 between CSAH 46 and CSAH 70 and CSAH 50 between 172nd Street and I35 south ramps in Lakeville Mn (Dakota County)
- In the City of Apple Valley on TH 77 (Cedar Ave.), from 138th St. north to 35E (City of Apple Valley)

All of the proposed projects above would improve our interconnected transportation system in the south metro and address several long-standing transportation challenges in our region.

Thank you again for this opportunity and your work to help deliver transportation solutions in Minnesota.

Sincerely,



Liz Workman
Chair, I-35W Solutions Alliance
liz.workman@co.dakota.mn.us

cc: I-35W Solutions Alliance Members

From: Governor Walz Press Office <walz.press@state.mn.us>
Sent: Tuesday, July 11, 2023 2:02 PM
To: Governor Walz Press Office <walz.press@state.mn.us>
Subject: RELEASE: Governor Walz Announces $380 Million in State Grants for Transportation Projects

Office of Governor Tim Walz & Lt. Governor Peggy Flanagan

FOR IMMEDIATE RELEASE:
July 11, 2023
Contact: Claire Lancaster
claire.lancaster@state.mn.us
651-219-2975

Governor Walz Announces $380 Million in State Grants for Transportation Projects

[ST. PAUL, MN] – Governor Tim Walz today announced that the Minnesota Department of Transportation (MnDOT) will allocate $380 million to fund eight new infrastructure projects through the state's Corridors of Commerce program.

"We're making historic investments in our state's transportation system to improve the safety and connectivity of communities across the state," said Governor Walz. **"We depend on our roads and highways to safely get us to our jobs, education, child care, and businesses. These projects help grow our economy and support our goal of making Minnesota the best state to live, work, and grow up in – no matter where you live."**

The projects receiving funding in 2023 include:

- TH 13 (Savage/Burnsville) – Grade separations from Quentin to Nicollet Aves: $96,000,000
- I-94 (Albertville to Monticello) – Lane expansion: $78,000,000
- TH 14/CSAH 44 (Byron) – Construct a grade separation: $60,000,000
- TH 371/TH 210 (Baxter) – Construct a grade separation: $58,000,000
- TH 23/MN 9 (New London) – Construct a grade separation: $33,000,000
- TH 65 (Blaine) – Grade separations from 103rd to 117th Aves: $30,000,000
- TH 53 (Eveleth to Virginia) – Roadway improvements: $18,000,000
- TH 10 (Coon Rapids) – Lane expansion from CSAH 78 to CSAH 9: $8,000,000

"We appreciate the work of our many local partners who submitted Corridors of Commerce funding proposals," said MnDOT Commissioner Nancy Daubenberger. **"While transportation funding needs are significant in communities across our state, MnDOT is grateful to the legislature for making historic infrastructure investments this session and we'll continue partnering with proposers to explore other funding options for projects that did not receive funding in this round of the Corridors of Commerce program."**

This is the fourth round of Corridors of Commerce funding provided by the Minnesota Legislature and includes a total of $403 million, including $250 million authorized by the Legislature in 2021 and $153 million provided in 2023. $22 million will be reserved for project readiness activities for potential future Corridors of Commerce candidate projects.

The Corridors of Commerce program was created by the Minnesota Legislature in 2013 with a goal of focusing transportation investments on state highway projects that directly and indirectly foster economic growth for the state of Minnesota. The program is outside of MnDOT's regular State Road Construction program and Corridors of Commerce funding is dependent on legislative appropriation. The authorizing statute (161.088) also includes specific requirements for project eligibility and scoring.

In addition to this year's Corridors of Commerce funding, the omnibus transportation bill included $6 billion for transportation and will allow MnDOT and its partners at the Metropolitan Council and local and tribal governments to make investments in our state's multimodal transportation system. Combined with federal resources coming to Minnesota from the Infrastructure Investment and Jobs Act, legislation enacted during the 2023 legislative session will result in transformational improvements that maximize the health of people, the environment, and our economy.

More information about the Corridors of Commerce program – including past awards and recent applicants – can be found on MnDOT's website.

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MnDOT Metro District
1500 West County Road B-2
Roseville, MN 55113

11/29/2023

Logan Vlasaty, P.E.
City Engineer
100 Civic Center Parkway
Burnsville, MN 55337

Re: MnDOT Letter for the City of Burnsville
Metropolitan Council/Transportation Advisory Board 2024 Regional Solicitation Funding Request for Highway 13 Lynn to Washburn Interchanges Improvements Project.

Dear Logan Vlasaty,

This letter documents MnDOT Metro District's recognition for the City of Burnsville to pursue funding for the Metropolitan Council/Transportation Advisory Board's (TAB) 2024 Regional Solicitation for the Highway 13 Lynn to Washburn Interchanges Improvements Project.

The proposed project will separate the existing Lynn Avenue intersection and eliminate a full access side-street stop-controlled intersection at Chowen Ave and Highway 13. This intersection will be replaced with a grade separated roundabout that will carry Chowen Avenue over Highway 13. The Washburn Avenue intersection will be grade separated and have direct access to Highway 13 removed. The proposed project will also include dedicated bike and pedestrian facilities.

As the agency with jurisdiction over TH 13 MnDOT will allow the City of Burnsville to seek improvements proposed in the application. If funded, details of how the project is delivered and any future maintenance agreement with the City will need to be determined during the project's development to define how the improvements will be maintained for the project's useful life.

This project was recently awarded $96,000,000 through the Corridors of Commerce Program. MnDOT does not anticipate partnering on local projects beyond current agreements. If your project receives funding, continue to work with MnDOT Area staff to coordinate and review needs and opportunities for cooperation.

MnDOT Metro District looks forward to continued cooperation with the City of Burnsville as this project moves forward and as we work together to improve safety and travel options within the Metro Area.

If you have questions or require additional information at this time, please reach out to your Area Manager at Bryant.Ficek@state.mn.us or 651-443-2564.

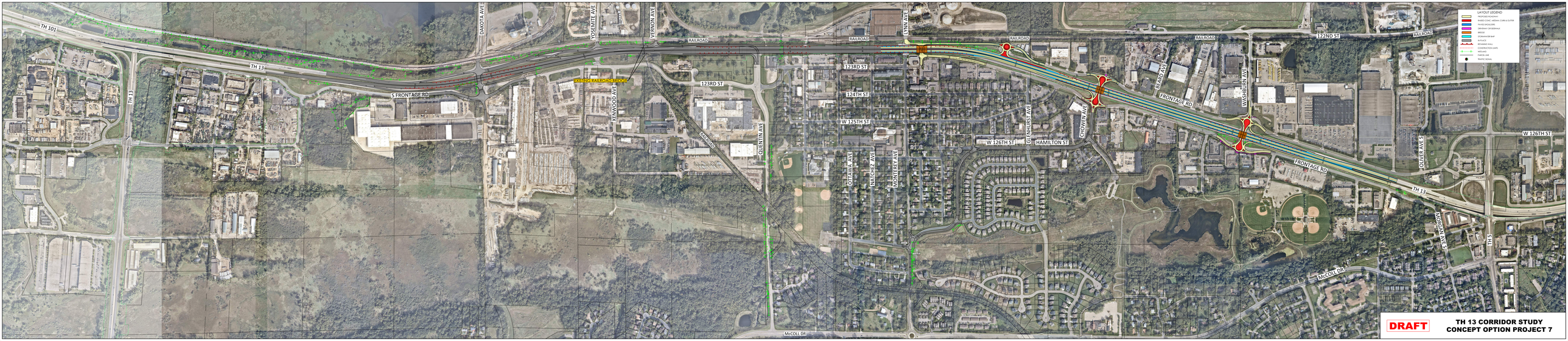
Sincerely,

Sheila Kauppi

Digitally signed by Sheila Kauppi
Date: 2023.11.29 13:48:12 -06'00'

Sheila Kauppi, PE
Metro District Engineer

CC:
Bryant Ficek, South Area Manager
Aaron Tag, Metro Program Director
Dan Erickson, Metro State Aid Engineer


LAYOUT LEGEND
PROPOSED ROADWAY
PAVED CONC. MEDIAN, CURB & GUTTER
PAVED SHOULDERS
DRIVEWAY OR SIDEWALK
BRIDGE
STORMWATER BMP
RETAINING WALL
CONSTRUCTION LIMITS
WETLAND
TRAIL
WAYNE DEAN
TH 101
TH 13
S FRONTAGE RD
DAKOTA AVE
YOSEMITE AVE
VERNON AVE
RAILROAD
123RD ST
124TH ST
W 125TH ST
W 126TH ST
HAMILTON ST
QUENTIN AVE
KENWOOD AVE
OTTAWA AVE
NATCHEZ AVE
MONTREAL AVE
GLENHURST AVE
CROWN AVE
LENA AVE
BEARD AVE
WASHBURN AVE
FRONTAGE RD
122ND ST
OLIVER AVE S
MORGAN AVE S
TH 5
McCOLL DR
DRAFT
TH 13 CORRIDOR STUDY
CONCEPT OPTION PROJECT 7