Application

17063 - 2022 Roadway Modernization

17576 - Highway 169/County Road 130 Interchange Reconstruction

Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
Submitted Date:	04/14/2022 10:19 AM

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What Grant Programs are you most interested in?	Regional Solicitation - Roadways Including Multimodal Elements			

Organization Information

Name:	MAPLE GROVE, CITY OF

Jurisdictional Agency (if different):	
Organization Type:	City
Organization Website:	www.maplegrovemn.gov
Address:	12800 Arbor Lakes Parkway N

*	MAPLE GROVE	Minnesota	55311-6180
	City	State/Province	Postal Code/Zip

County:	Hennepin
Phone:*	763-494-6000 Ext.
Fax:	
PeopleSoft Vendor Number	0000020964

Project Information

Project Name	Highway 169 and County Road 130 Interchange Reconstruction
Primary County where the Project is Located	Hennepin
Cities or Townships where the Project is Located:	Maple Grove, Brooklyn Park
Jurisdictional Agency (If Different than the Applicant):	Hennepin County

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

The reconstruction of the TH 169/CSAH 130 interchange will provide improved operations and safety at a vital interchange serving the Gravel Mining Area growth and developments in the City of Maple Grove. In addition, the CSAH 130/CSAH 152 corridor serves an important role as an A Minor Arterial Reliever, providing an alternative east-west route in place of the I-94 freeway facility during peak travel conditions.

The TH 169/CSAH 130 interchange is currently a diamond interchange with an on-ramp loop in the northwest quadrant. CSAH 130 is a four-lane undivided roadway with closely spaced intersections between Jefferson Highway/Kilmer Lane and Mendelssohn Avenue. Operations and safety are greatly impacted along this segment due to the absence of turn lanes at the west ramp, on-ramp loop, east ramp and Mendelssohn Avenue intersections.

The project includes the reconstruction and widening of the bridge over TH 169 to provide a diverging diamond interchange (DDI) with geometrically realigned ramps. There will be four westbound and three eastbound lanes with the multi-use trail on the CSAH 130 bridge. Existing traffic signals will also be replaced at the TH 169 east and west ramp intersections. The DDI configuration will improve the overall capacity and safety of the interchange.

The interchange project will also include accommodations for bicyclists and pedestrians to provide a safe connection over TH 169 between Maple Grove and Brooklyn Park. Currently there are no sidewalks or trails along CSAH 130 between Jefferson Highway/Kilmer Lane and Northland Drive. A 10-foot multiuse trail will be added on the south side between to connect the existing trails

along CSAH 130/CSAH 152 in Maple Grove to Brooklyn Park while closing a RBTN gap. Painted crosswalks and pedestrian signing will provide better visibility to motorists, creating a safe crossing for trail users. Pedestrian signals will be upgraded to countdown timers, and pushbuttons and ramps will meet ADA standards.

The TH 169 and CSAH 130 interchange reconstruction will:

- Provide a more efficient interchange to accommodate existing and future traffic volumes

- Provide a reliable alternate route to the I-94 freeway facility during congested periods

- Provide a safer multimodal transportation system for all modes

- Enhance pedestrian and bicycle travel along the corridor by linking the Maple Grove and Brooklyn Park trail systems

- Improve access to employment and educational opportunities in Maple Grove and Brooklyn Park

- Improve access to accommodate freight traffic to and from the Gravel Mining Area

(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.

Reconstruction of the Highway 169 and County Road 130 interchange to a DDI interchange and construction of a multiuse trail.

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)

0.5

to the nearest one-tenth of a mile

Project Funding

Are you applying for competitive funds from another source(s) to implement this project?
No

If yes, please identify the source(s)

Federal Amount
$7,000,000.00

Match Amount
$7,635,000.00

Minimum of 20% of project total

Project Total
$14,635,000.00

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

Match Percentage
52.17%

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

Source of Match Funds
Municipal State Aid Construction funds and the City of Maple Grove's Trunk Transportation Fund

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:
2027

Select 2024 or 2025 for TDM and Unique projects only. For all other applications, select 2026 or 2027.

Additional Program Years:

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

Project Information-Roadways

County, City, or Lead Agency
City of Maple Grove

Functional Class of Road
A Minor Arterial Reliever

Road System
CSAH

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

Road/Route No.
130

i.e., 53 for CSAH 53

Name of Road
77th Avenue (Maple Grove), Brooklyn Boulevard (Brooklyn Park)

Example; 1st ST., MAIN AVE

Zip Code where Majority of Work is Being Performed
55369

(Approximate) Begin Construction Date
04/01/2027

(Approximate) End Construction Date
11/01/2029

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

From:
(Intersection or Address)

To:
(Intersection or Address)

DO NOT INCLUDE LEGAL DESCRIPTION

Or At	TH 169 and CSAH 130
Miles of Sidewalk (nearest 0.1 miles)	0
Miles of Trail (nearest 0.1 miles)	0.5
Miles of Trail on the Regional Bicycle Transportation Network (nearest 0.1 miles)	0.5
Primary Types of Work	GRADE, AGG BASE, BIT BASE, BIT SURF, CURB AND GUTTER, GUARDRAIL, BRIDGE, PED RAMPS, SIGNALS, TRAIL, LIGHTING

Examples: GRADE, AGG BASE, BIT BASE, BIT SURF, SIDEWALK, CURB AND GUTTER,STORM SEWER, SIGNALS, LIGHTING, GUARDRAIL, BIKE PATH, PED RAMPS, BRIDGE, PARK AND RIDE, ETC.

BRIDGE/CULVERT PROJECTS (IF APPLICABLE)

Old Bridge/Culvert No.:	27630
New Bridge/Culvert No.:	
Structure is Over/Under (Bridge or culvert name):	TH 169

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:

Goal B: Strategies B1 and B6; Page 2.5 and 2.8

Goal C: Strategies C1, C4, C7, C9, C11, C12, and C15; Pages 2.10-2.22

Goal D: Strategies D1, D2, and D3; Page 2.26 and 2.27

Goal E: Strategies E3, E6, and E7; Pages 2.31-2.34

Goal F: Strategies F2, F4, F5, F6, F7, and F8; Pages 2.36-2.39

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.

Hennepin County 2040 Comprehensive Plan - Page: 2-55

Hennepin County 2020-2024 CIP Transportation Provisional Project: Page I-8

Maple Grove 2040 Transportation Plan - Pages: 14, 16, 25, 49,

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 2022 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 the 2022 Regional Solicitation funding cycle, this requirement may include that the plan is updated within the past five years.

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.

(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:

Link to plan:

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.	Yes
Date self-evaluation completed:	02/12/2020
Link to plan:	https://www.maplegrovemn.gov/294/ADA-transition-plan
Upload plan or self-evaluation if there is no link	1649679982104_Public ROW_Self Evaluation_Feb2020.pdf

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, per FHWA direction established 8/27/2008 and updated 6/27/2017. 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 and bridge 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.

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 MnDOTs Cost Participation for Cooperative Construction Projects and Maintenance Responsibilities manual. In the case of a federally funded trunk highway project, the policy guidelines should be read as if the funded trunk highway route is under local jurisdiction.

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

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.

Bridge Rehabilitation/Replacement projects only:

5.The length of the bridge clear span must exceed 20 feet.

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

6. The bridge must have a National Bridge Inventory Rating of 6 or less for rehabilitation projects and 4 or less for replacement projects.

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 Michael Corbett at MnDOT (Michael.J.Corbett@state.mn.us or 651-234-7793) 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. Yes

Requirements - Roadways Including Multimodal Elements

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$600,000.00
Removals (approx. 5% of total cost)	$600,000.00
Roadway (grading, borrow, etc.)	$600,000.00
Roadway (aggregates and paving)	$1,800,000.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$900,000.00
Ponds	$125,000.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$500,000.00
Traffic Control	$500,000.00
Striping	$250,000.00
Signing	$600,000.00
Lighting	$400,000.00
Turf - Erosion & Landscaping	$200,000.00
Bridge	$3,700,000.00
Retaining Walls	$100,000.00
Noise Wall (not calculated in cost effectiveness measure)	$0.00
Traffic Signals	$700,000.00
Wetland Mitigation	$140,000.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00
Roadway Contingencies	$2,000,000.00
Other Roadway Elements	$500,000.00
Totals	**$14,215,000.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$100,000.00

Sidewalk Construction	$200,000.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$50,000.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$0.00
Pedestrian-scale Lighting	$0.00
Streetscaping	$50,000.00
Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$20,000.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$420,000.00**

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

Totals

Total Cost	$14,635,000.00

Construction Cost Total	$14,635,000.00
Transit Operating Cost Total	$0.00

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

Existing Employment within 1 Mile:	16295
Existing Manufacturing/Distribution-Related Employment within 1 Mile:	6500
Existing Post-Secondary Students within 1 Mile:	4094
Upload Map	1649680149455_Regional Economy.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:

Miles: 0.5

(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: Yes

None of the tiers:

Measure A: Current Daily Person Throughput

Location	West of TH 169
Current AADT Volume	19900
Existing Transit Routes on the Project	721

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

Upload Transit Connections Map	1649680532597_Transit Connections.pdf

Please upload attachment in PDF form.

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	0
Current Daily Person Throughput	25870.0

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	Maple Grove 2040 Transportation Plan
Forecast (2040) ADT volume	28000

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:

Response:

The City acknowledges the importance of community engagement specific to BIPOC populations, low-income populations, people with disabilities, youth, older adults, and residents of affordable housing. Their current focus is on the planning efforts and project needs identification before the project development process begins.

Planning efforts began in 1998 with MnDOT's TH 169 Corridor Study that identified the need to reconstruct the interchange. Engagement efforts occurred during the City's 2040 Comprehensive Plan process, with community engagement during the Plan development between August 2016 and April 2018. Community Open Houses were held on April 26 and May 5, 2017. Meeting notices were published on the City's website and the Osseo Maple Grove Press newspaper.

In March 2022, the City conducted a website survey to solicit general feedback on the interchange reconstruction project. In a two-week period, the City received 279 responses. Key highlights include:

- Approximately 70% said the quality of roadway is poor.

- Approximately 50% experience long wait times to make a turn

- Approximately 45% said it takes long to get through the area

- Approximately 80% were either somewhat or very supportive of the DDI

- Almost 25% were 55 years or older

- There were more than 130 additional comments

provided on the interchange project

These results will be used to prepare a focused engagement plan for the upcoming project development process. The project outreach will involve the specific populations in census tracts within ½ mile of the project, as shown in the Equity Populations and Destinations map:

- Arbor Lake Commons (subsidized units for low-income, seniors and persons with special needs)

- Bottineau Ridge Apartments (low-income housing tax credit units)

- Compass Pointe (low-income housing tax credit units)

- Arbor Lakes Senior Living, Applewood Pointe of Maple Grove, The Willows of Arbor Lakes, SilverCreek on Main and Mirabel (seniors)

- Variety of Schools, Educational Center and Health Services (youth and people with disabilities)

With 25 percent of the respondents over 55, focused outreach to seniors in the area is important. The project will include a new 10-foot trail extending beyond the roadway limits, easterly to the Hennepin Technical College (HTC) entrance. HTC has a BIPOC enrollment of 48 percent, mostly Black and Asian. In addition, 62 percent are identified as underrepresented students. Specific outreach to HTC will engage in these populations to identify their transportation needs and how the project can address them.

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

Measure B: Equity Population Benefits and Impacts

Describe the projects benefits to Black, Indigenous, and People of Color populations, low-income populations, children, people with disabilities, youth, and older adults. Benefits could relate to:
This is not an exhaustive list. A full response will support the benefits claimed, identify benefits specific to Equity populations residing or engaged in activities near the project area, identify benefits addressing a transportation issue affecting Equity populations 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.

Response:

The interchange project is in an area above the regional average for population in poverty or people of color. It will provide direct benefits to equity populations residing or engaging in activities near the project (see Equity Populations and Destinations map).

Multimodal Safety: The project includes safety improvements for equity populations relying on transit, bicycling and/or walking as their mode of transportation. In 2021, a bicyclist was hit by a motorist near the southbound on-ramp resulting in non-incapacitating injuries. The project provides multimodal benefits by adding a 10-foot trail that is protected from vehicular traffic. The improvements include ADA ramps, crossings and pedestrian refuge islands to improve mobility for people with disabilities.

Travel Time: Fifty percent of the survey respondents experience delays while traveling through the interchange area. The project will improve operations for those traveling across or connecting to TH 169 more efficiently. Equity populations such as seniors connecting to TH 169 or BIPOC students attending Hennepin Technical College (HTC) will benefit from these improved travel times.

Access: Improved access is important for the 7,000 students attending nearby HTC. The project will provide a more efficient route for students traveling by car and using the TH 169 interchange. For those relying on transit, Route 721 connects to HTC from downtown Minneapolis and Brooklyn Center. Those students using transit may also work in nearby retail areas. The new 10-foot trail provides improved connections between school and work.

Community Connectivity: TH 169 creates a barrier

between the Maple Grove and Brooklyn Park communities. The DDI interchange will improve community connectivity by providing a more efficient and safe interchange area to travel through by walking, biking or driving.

Public Health: Trail corridors provide an important transportation mode while promoting exercise and family development. The proposed multi-use trail along the south side of CSAH 130 encourages biking and walking as a recreational activity which improves the public health for all underserved communities.

As with most interchange projects, there will be temporary construction impacts on the traveling public, nearby residents and businesses such as noise, dust, vibration, traffic congestion, and general inconvenience to roadway access and mobility. Roadway users who rely on CSAH 130 to access TH 169 will be directed to other alternate routes, as needed. The project construction will incorporate proper noise, dust, and traffic mitigation and will not negatively impact equity populations present in the project area by maintaining access to businesses, housing, and minimizing construction nuisances.

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

Measure C: Affordable Housing Access

Describe any affordable housing developmentsexisting, under construction, or plannedwithin 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 projects benefits to current and future affordable housing residents within ½ mile of the project. Benefits must relate to affordable housing residents. Examples may include:

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:

As shown on the Socio-Economic Conditions map, there are 547 publicly subsidized rental housing units in census tracts with ½ mile of the project. The attached Affordable Housing and Destinations map shows how the project connects the affordable housing residents to destinations, including:

- Arbor Lake Commons (subsidized units for low-income, seniors and persons with special needs)

- Bottineau Ridge Apartments (low-income housing tax credit units)

- Compass Pointe (low-income housing tax credit units)

As shown on the Affordable Housing and Destinations map, two of the low-incoming housing apartments are located west of the TH 169 and CSAH 130 interchange. Residents of Arbor Lakes Commons and Bottineau Ridge Apartments will benefit from the direct access improvements provided by the reconstructed DDI interchange. The interchange will better accommodate truck traffic and access to jobs and north and south on TH 169.

Travel time improvements will be provided to these low-income populations and older adults traveling across or connecting to TH 169. Recent survey results indicate heavy congestion and delays due to the lack of turn lanes and slow-moving truck traffic. The DDI interchange design will provide improved east-west travel flow along the project segment of CSAH 130 crossing over and connecting to TH 169.

The TH 169 and CSAH 130 interchange

reconstruction will provide community connection improvements as TH 169 is a barrier between the Cities of Maple Grove and Brooklyn Park. If the overall flow of vehicular traffic is improved, it provides a safer connection for all modes of transportation between the two cities. With the inclusion of trail improvements on the south side of CSAH 130, the project will improve access for those residents living in Brooklyn Park, Brooklyn Center and Minneapolis with limited access to a car to travel to work or retail areas in Maple Grove by use of CSAH 130. With a transit stop located on CSAH 130 and Northland Drive, transit users from these communities will have a new trail connection to Maple Grove.

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

Measure D: BONUS POINTS

Project is located in an Area of Concentrated Poverty:	
Projects 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.	1649680927538_Socio-Economic Conditions.pdf

Measure A: Year of Roadway Construction

Year of Original Roadway Construction or Most Recent Reconstruction	Segment Length	Calculation	Calculation 2
1984	0.5	992.0	1984.0
	1	**992**	**1984**

Total Project Length

Total Project Length (as entered in "Project Information" form)	0.5

Average Construction Year

Weighted Year	1984

Total Segment Length (Miles)

Total Segment Length	0.5

Measure B: Geometric, Structural, or Infrastructure Improvements

Improved roadway to better accommodate freight movements: Yes

Response:

Currently, the heavy truck traffic and lack of turn lanes create congestion and operations issues within the TH 169/CSAH 130 interchange. The DDI configuration will improve lane distribution to better accommodate trucks and improve access to TH 169 (the most heavily used non-interstate freight corridor in Hennepin County). The project will also improve operational efficiency of freight-reliant businesses along CSAH 130 through upgraded ramp geometrics to better accommodate trucks. CSAH 130 is a heavily traversed freight corridor through the Gravel Mining Area and serves as an alternate route to I-94. Heavy commercial traffic may use CSAH 130 when congestion arises to meet shipping deadlines.

(Limit 700 characters; approximately 100 words)

Improved clear zones or sight lines: Yes

Response:

Existing ramps will be realigned to allow for unique phase combinations and better sight distances at turn locations; effectively spreading out conflict points throughout the interchange and reducing accident prone areas. The DDI improvements will also reduce queuing onto the TH 169 mainline as well as improve clearances from the mainline to the existing bridge abutment. Specifically, the project will realign all TH 169 to CSAH 130 on and off-ramps which will have ancillary affects with improved clear zones and sight lines on TH 169.

(Limit 700 characters; approximately 100 words)

Improved roadway geometrics:

Yes

Response:

The DDI will provide geometric improvements that significantly improve safety by reducing conflict points from 26 for a conventional intersection to 14 for a DDI. The new off ramps will be realigned to allow better sight distance at turns, effectively spreading out conflict points throughout the interchange. The improved design allows for free left and right turns from all directions and increases left-turn lane capacity and lane queueing capacity between ramp terminals. This is a significant improvement since the existing interchange lacks turn lanes at both ramp intersections. Only two signal phases are needed, allowing for shorter cycle lengths and improved network synchronization.

(Limit 700 characters; approximately 100 words)

Access management enhancements:

Yes

Response:

Currently, there are five closely-spaced intersections along the project segment of CSAH 130 that are not consistent with Hennepin County's access spacing guidelines. The new DDI interchange will eliminate two of the five access points, resulting in a more efficient interchange. The existing on-ramp loop in the northwest quadrant will be removed and the Mendelssohn Avenue intersection will be closed. The City of Maple Grove, City of Brooklyn Park and Hennepin County will work together to implement these access changes and optimize ongoing access management along the corridor.

(Limit 700 characters; approximately 100 words)

Vertical/horizontal alignment improvements:

Yes

Response:

The DDI includes replacement of the existing bridge with two separate bridges over TH 169, allowing for improved vertical and horizontal clearances.

(Limit 700 characters; approximately 100 words)

Improved stormwater mitigation:

Yes

Response:

The new bridge, ramps and roadways will minimize stormwater runoff to the surrounding wetlands. The City has adopted erosion and sediment control policies, which will help alleviate impacts from construction on the wetlands and hydric soils. When the project is designed, all efforts will be taken to ensure that minimal impacts to the wetlands occur. Proper mitigation techniques will be used when construction takes place and best management practices will be employed. Additional right of way is not needed, construction time is reduced, and less right of way is required for a DDI than a typical cloverleaf.

(Limit 700 characters; approximately 100 words)

Signals/lighting upgrades:

Yes

Response:

With the reconstructed DDI interchange, left-turn movements and phasing are eliminated from the signalized intersections. The two-phase traffic signal operates more efficiently and will reduce the overall vehicular delay by accommodating high turning volumes.

(Limit 700 characters; approximately 100 words)

Other Improvements

No

Response:

(Limit 700 characters; approximately 100 words)

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 Reduced by the Project:	Total Peak Hour Delay Reduced by the Project:	EXPLANATION of methodology used to calculate railroad crossing delay, if applicable.	Synchro or HCM Reports
27.0	27.0	0	1232	1232	0	0	N/A	1649681805347_Maple Grove Traffic.pdf
14.0	0	14.0	1532	0	21448.0	0	N/A	1649681852747_Maple Grove Traffic.pdf
0	2.0	-2	0	486	0	-972	N/A	1649681884738_Maple Grove Traffic.pdf
19.0	0	19.0	1667	0	31673.0	0	N/A	1649681912230_Maple Grove Traffic.pdf
0	11.0	-11	0	935	0	-10285	N/A	1649681946141_Maple Grove Traffic.pdf

0	8.0	-8	0	963	0	-7704	N/A	1649681987222_Maple Grove Traffic.pdf
0	0	0	0	1130	0	0	N/A	1649684592363_Maple Grove Traffic.pdf
						-18961		

Vehicle Delay Reduced

Total Peak Hour Delay Reduced	53121.0
Total Peak Hour Delay Reduced	-18961

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):
6.33	3.57	2.76
6	**4**	**3**

Total

Total Emissions Reduced:	2.76
Upload Synchro Report	1649684637799_Maple Grove Traffic.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: Roadway Projects that do not Include Railroad Grade-Separation Elements

Crash Modification Factor Used: *(Limit 700 Characters; approximately 100 words)*	The CMF used was to convert an interchange to a Diverging Diamond interchange.
Rationale for Crash Modification Selected: *(Limit 1400 Characters; approximately 200 words)*	This CMF directly relates to the proposed changes, as the interchange is planning to be rebuilt into a DDI. We utilized the most applicable CMF for specific crash types when available. This provided the most accurate reduction calculations.
Project Benefit ($) from B/C Ratio	$5,168,813.00
Total Fatal (K) Crashes:	0
Total Serious Injury (A) Crashes:	0
Total Non-Motorized Fatal and Serious Injury Crashes:	0
Total Crashes:	31
Total Fatal (K) Crashes Reduced by Project:	0
Total Serious Injury (A) Crashes Reduced by Project:	0
Total Non-Motorized Fatal and Serious Injury Crashes Reduced by Project:	0
Total Crashes Reduced by Project:	14
Worksheet Attachment *Please upload attachment in PDF form.*	1649682575802_Maple Grove Safety Analysis.pdf

Roadway projects that include railroad grade-separation elements:

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

Measure A: 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 doesnt 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 roadways 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.

Currently, there are no bicycle or pedestrian facilities (sidewalk or trail) on either side of CSAH 130 between Jefferson Highway/Kilmer Lane and Northland Drive. In 2021, a bicyclist was hit by a motorist near the southbound on-ramp resulting in non-incapacitating injuries. There currently is limited space on the south side of CSAH 130 to travel by bike. While traveling from the west project limits, a field visit revealed varying segments of dirt paths, deteriorated sidewalk only at the TH 169 ramps, and worn-down footpaths on the south side. Many of the dirt areas and footpaths behind the curb had no set back and were very close to vehicular traffic. There are faded marked crosswalks across the ramp intersections that only connect to short pieces of sidewalks that quickly terminate.

Response:

The project will address the safety needs of pedestrians and bicyclists crossing the west and east ramp signalized intersections with a new 10-foot trail on the south side of CSAH 130 between Jefferson Highway/Kilmer Lane and Northland Drive. This improvement is consistent with the FHWA Proven Safety Countermeasures document that indicates the importance for integrated pedestrian walkways into the transportation system to provide safer travel conditions for pedestrians. FHWA and ITE also recommend a minimum of five feet for a sidewalk or walkway. The DDI interchange design with a 10-foot trail will provide a high-level pedestrian and bicycle facility for safe travels

At these intersections, pedestrian improvements will include safety strategies identified in MnDOT's Best Practices for Pedestrians/Bicycle Safety, such as ADA compliant crosswalks, crosswalk lighting, traffic signals, and curb ramps. These improvements are important in supporting safe,

reliable and affordable connections for all pedestrian users of all abilities to places of employment, shopping, healthcare, and other essential services and activities.

According to the pedestrian safety resource PEDSAFE, countermeasures to improve the safety of those walking along a roadway is crossing islands. As shown on the concept layout, the DDI interchange design will provide safe walking distances across raised medians at both ramp intersections. This median will provide a refuge area to help protect pedestrians at these signalized intersections. These improvements at the TH 169 and CSAH 130 ramp intersections will provide additional safety for all pedestrian traffic.

(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:

Yes, the distance between the signalized intersections will increase slightly. However, current conditions include closely spaced signalized intersections along CSAH 130 at Jefferson Highway/Kilmer Lane and the west ramps. The DDI interchange configuration will relocate the west ramp signalized intersection further away Jefferson Highway/Kilmer Lane intersection, which will allow the three signalized intersections to operate more safely and efficiently.

(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 doesnt require much elevation change instead of pedestrian bridge with numerous switchbacks).

Response:

(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:

(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:

For the existing TH 169 and CSAH 130 interchange, survey respondents commented that travel through the area is slow and congested with the lack of turn lanes and truck traffic The DDI interchange project may indirectly affect through traffic speeds with the reduction of peak hour congestion. However, the DDI roadway alignment for east-west traffic will require a slight maneuver to the right while travel through the interchange area. The project design and roadway alignment will manage overall motorist speed through the interchange area.

For turning movements being made at the interchange ramps, right-turn movements from the TH 169 ramps can be free flowing. However, during the design process the option for signalized right-turns with no right turns on red will be considered.

(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:	The posted speed limit is 40 mph. All speeds are expected to remain consistent with existing conditions.

(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	19900

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. If service was temporarily reduced for the pandemic but is expected to return to 2019 levels, consider 2019 service for this item.)	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. If service frequency was temporarily reduced for the pandemic but is expected to return to 2019 levels, consider 2019 frequency for this item.)	
Existing road is within 500 of 1+ shopping, dining, or entertainment destinations (e.g., grocery store, restaurant)	
If checked, please describe:	

(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:

A known pedestrian generator within 500 feet of the project is Hennepin Technical College with a current enrollment of 7,000 students. HTC has a BIPOC enrollment of 48 percent, mostly Black and Asian. In addition, 62 percent are identified as underrepresented students. A majority of these college students may rely on public transit or walking as a mode of transportation to and from school. Those driving to and from school will greatly benefit from the DDI interchange improvements.

(Limit 1,400 characters; approximately 200 words)

Measure A: Multimodal Elements and Existing Connections

Response:

The project will improve multimodal safety for all transportation modes - pedestrians, bicyclists and transit users since are no bicycle or pedestrian facilities within the project limits. In 2021, a bicyclist was hit by a motorist near the southbound on-ramp resulting in non-incapacitating injuries. There currently is limited space on the south side of CSAH 130 to travel by bike. Improvements include a new 10-foot trail over TH 169 from Jefferson Highway/Kilmer Lane to Northland Drive. The trail removes a Tier 3 Regional Bicycle Barrier with respect to the tiered Regional Bicycle Barrier Crossing Improvement Areas defined in the Regional Bicycle Barriers Study.

The new trail also closes a gap in a RBTN Tier 1 Corridor connecting Maple Grove and Brooklyn Park, providing a safer facility for pedestrians and bicyclists along CSAH 130. The trail on the west end will connect to an existing trail (RBTN Tier 1 Alignment) extending into the developed Gravel Mining Area. The trail on the east end will connect to an existing trail (RBTN Tier 1 Corridor Centerlines) extending into Brooklyn Park.

Route 721 has a direct connection to the project and serves Hennepin Technical College with a transit stop at Northland Drive and CSAH 130. Route 721 extends southerly with a connection to downtown Minneapolis. With the proposed trail, pedestrian and bicycle connections with transit will be improved for area users, including those working in the retail areas in Maple Grove who rely on walking and transit as their mode of transportation.

The project will provide upgraded signals with countdown timers, crosswalks, and curb ramps to meet ADA standards, greatly improving pedestrian and bicycle safety. Vehicle/pedestrian conflicts will

be reduced through the DDI as pedestrians only cross vehicular traffic in one direction as they travel through the interchange area. Lastly, new lighting fixtures along the bridge segment will enhance multimodal by lighting the pathway for evening and early morning use.

The multi-use trail on the south side of CSAH 130 to West Broadway Avenue will expand transportation options by connecting to the future METRO Blue Line extension station. Although route options for the Blue Line extension are being evaluated, the Draft Route Modification Report Summary (December 2021) indicates the former route and stations along West Broadway in Brooklyn Park remain the same. Maple Grove Transit Route 784 is a planned local fixed route that will make connections from northwest Maple Grove to major trip generators in Brooklyn Park. This will improve transit access for Maple Grove and Brooklyn Park communities.

(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.

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%

Yes

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:

Meeting with partner agencies:

- City of Brooklyn Park - 8/31/2017

- Hennepin Technical College - 8/31/2017

- Monthly PMT meetings (Maple Grove, Brooklyn Park, Hennepin Co., MnDOT) ended July 2017

City's website survey - March 2022:

- Solicited general feedback on the interchange reconstruction project.

- In a two-week period, the City received 279 responses. There were more than 130 additional comments provided on the interchange project.

(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 projects 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%

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. Yes

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 1649683050704_Figure 2_DDI Concept.pdf

Please upload attachment in PDF form.

Additional Attachments

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 Yes

100%

There are historical/archeological properties present but determination of no historic properties affected is anticipated.

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 Yes

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

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):	$14,635,000.00
Enter Amount of the Noise Walls:	$0.00
Total Project Cost subtract the amount of the noise walls:	$14,635,000.00
Enter amount of any outside, competitive funding:	$0.00
Attach documentation of award:	
Points Awarded in Previous Criteria	
Cost Effectiveness	$0.00

Other Attachments

File Name	Description	File Size
Brooklyn Park_Ltr of Support.pdf	Brooklyn Park Support	48 KB
Figure 2_DDI Concept.pdf	Concept	217 KB
Hennepin Co_Ltr of Support.pdf	Hennepin County Support	111 KB
Level of Congestion.pdf	Congestion	4.8 MB
Maple Grove Safety Analysis.pdf	Safety	610 KB
Maple Grove Traffic.pdf	Traffic Analysis	215 KB
MapleGroveAffordable_03302022.pdf	Affordable Housing	2.2 MB
MapleGroveEquity_03302022.pdf	Equity	2.1 MB
MG Resol No 22-056_TH 169-CSAH 130 Interchange Reconstruction Support.pdf	Resolution	116 KB
MnDOT_Ltr of Support.pdf	MnDOT Letter of Support	117 KB
Photos.pdf	Photos	3.4 MB
Project Summary.pdf	Project Summary	268 KB
Public ROW_Self Evaluation_Feb2020.pdf	Self Evaluation	189 KB
Regional Economy.pdf	Regional Economy	1.7 MB
Socio-Economic Conditions.pdf	Socio Eco	1.7 MB
Transit Connections.pdf	Transit	1.6 MB

Public Rights-of-Way

Public rights-of-way in the City of Maple Grove include roadways and their adjacent facilities that serve a transportation purpose. This includes sidewalks, curb ramps, signals, and trails that provide a transportation route. Public rights-of-way do not include buildings, publicly accessible technology, recreational trails and facilities, and private property. These are covered outside of Title II of ADA or other City of Maple Grove Documents.

Self-Evaluation

Overview

The public ROW self-evaluation examines the condition of the City's PAR/PCR and identifies potential need for PAR/PCR infrastructure improvements. This includes sidewalks, curb ramps, bicycle/pedestrian trails, traffic control signals that are located within the City ROW. Any barriers to accessibility in the PAR/PCR identified during the self-evaluation are included in this Plan.

Summary

Beginning in 2016, the City of Maple Grove inventoried their pedestrian curb ramps within the ROW and sidewalks. The complete PAR/PCR inventory includes:

- City of Maple Grove Facilities
    - 2,998 City owned curb ramps.
    - Approximately 145 miles of concrete sidewalks. (2,114 Sidewalk points)

The City also owns 21 signalized intersections, 12 with APS features. The signalized intersections with APS features may be turned on by the City upon request. Please see Appendix F to submit a Grievance Form.

The City will inspect the 12 signals with APS features in the future.

A detailed evaluation on how these facilities relate to ADA standards is found in Appendix B and will be updated periodically.

Field Guide for Data Collection

Two field guides were used to serve as a tool for the public ROW data collection process. The City developed an Inventory and Inspection Field Guide for ADA Ramps while Hennepin County's Sidewalk Field Inspection Guidelines was used as a tool for sidewalk data collection. The two guides include all the materials used to conduct the field review of public ROW for the City's future reference. The two guides are included in Appendix C.

Policies and Practices

Previous Practices

The City of Maple Grove has strived to provide accessible pedestrian features as part of the City's CIP and new development projects. The City will continue to improve procedures to accommodate required methods of providing accessible pedestrian features.

Policy

The City's objective is to continue incorporating accessible pedestrian design features with development and CIP projects. The City has adopted ADA design standards and procedures as listed in Appendix C. These standards and procedures will be updated periodically in accordance with ADA best management practices.

The City will respond to all accessibility inquiries and improvement requests appropriately. These requests and inquiries will be evaluated internally, and an appropriate response will be communicated to the requestor. This may include comment and/or consideration for implementation with related CIP projects. The City will coordinate with external agencies to ensure that all new or altered pedestrian facilities within City jurisdiction are ADA compliant to the maximum extent feasible.

Maintenance of pedestrian facilities within the public ROW will continue to follow the policies set forth by the City.

Requests for accessibility improvements can be submitted to the City's ADA Coordinator. Contact information for ADA Coordinator is located in Appendix A.

Additionally, the City of Maple Grove coordinates with other jurisdictions for maintenance and improvements of facilities. These are outlined in the following section.

Improvement Schedule

Types of Improvements

The following are typical improvements to public ROW that can be made to correct deficiencies in accessibility:

- Intersection corner ADA improvement retrofits (a stand-alone ADA improvement project).
- Intersection corner ADA improvement as part of an adjacent capital project.
- Sidewalk/Trail ADA improvement retrofit (to include at grade crossings and sidewalk ramps).
- Sidewalk/Trail ADA improvement as part of an adjacent capital project (to include at grade crossings and sidewalk ramps).

- Traffic control signal Accessible Pedestrian Signal (APS) upgrade as part of a stand-alone ADA project.
- Traffic control signal APS upgrade as part of full traffic control signal installation.

Cost estimates of these improvements are included in Appendix D.

Priority Areas

The City will work with the public during the public comment period to determine priority areas for ADA improvements. These areas will be selected due to their proximity to specific land uses such as schools, commercial areas, public buildings, and from the receipt of public comments. Factors that determine this include, but are not limited to:

- severity of non-compliance,
- barriers to access a public program or service,
- feasibility of remedies,
- safety concerns, and
- whether a location receives high public use.

Priority will also be given to locations that would most likely not be updated by other City programs. Further, priority will be given to any location where an improvement project or alteration was constructed after January 26, 1991 (marking the formalization of ADA requirements), and accessibility features were omitted. Resident requests and location are also considerations for prioritizing improvements. To best use public resources, the priority areas for planned improvements projects were identified in the completion of this plan. A preliminary list of priority areas identified during the inventory process within the City can be found in Appendix D.

Schedule

Maple Grove has set the following schedule goals for improving the accessibility of its pedestrian facilities within the City's jurisdiction:

- Baseline of the City's total existing PAR/PCR condition: 5% compliant.
- After 10 years, 50% of accessibility features that were constructed after January 26, 1991, would be reasonably ADA compliant.
- After 10 years, 50% of accessibility features within the priority areas identified by Maple Grove staff would be reasonably ADA compliant.
- After 20 years, 75% of accessibility features within the jurisdiction of the City would be reasonably ADA compliant.
- After 30 years, 90% of accessibility features within the jurisdiction of the City (as identified in this plan) would be reasonably ADA compliant and fall within with City's

monitoring program (100% compliance is not feasible given Minnesota's annual freeze-thaw cycles and pavement deterioration).

The 30-year time frame to achieve 90 percent accessibility and the required commitment of funding is framed as a policy goal. The availability of funding and future development trends in the City of Maple Grove may affect how these projects are prioritized, and the timing of public ROW improvements may affect progress toward the compliance goal.

Methodology

ADA compliance will be achieved utilizing the following two methods:

1) Scheduled improvements to utilities and ROW

This type of project would include scheduled road reconstructions and/or new development projects.

2) ADA-Specific Improvement Projects.

This type of project would include standalone ADA improvement projects such as reconstruction of a pedestrian curb ramp and/or replacement of the APS system at a signalized intersection, separate from a road construction project.

These projects will be determined by the City's CIP, or on a case by case basis determined by the ADA Coordinator and the City's grievance procedure. The City's 2018-2022 CIP is available for review at City Hall.

Appendix A – Contact Information

City of Maple Grove

ADA Coordinator

Name: John Hagen, Transportation Operations Engineer/ADA Coordinator
Address: 12800 Arbor Lakes Parkway, Maple Grove, MN 55369
Phone: 763-494-6364
E-mail: jhagen@maplegrovemn.gov

Hennepin County

ADA Coordinator

Name: Caron Battle
Address: 300 South Sixth Street A040 Government Center Minneapolis, MN 55487
Phone: 612-348-7741
E-Mail: caron.battle@hennepin.us

Minnesota Department of Transportation

ADA Contact

Name: Kristie Billiar
Phone: 651-366-3174
E-Mail: Kristie.billiar@state.mn.us

Appendix B – Self-Evaluation Results

At the time of the public buildings, transit facilities and ROW inventories, the City was following general ADA design guidance and procedures. This included a commitment to providing access to all users but does not have a formal policy or procedure to assign priority regarding ADA accessibility issues within the City. Implementing a method to assign priority will be a part of this Plan effort.

Public Right-of-Way

Data Collection for the PAR/PCR (City) self-evaluation was completed in 2016. The self-evaluation was performed by City staff. The detailed inventory is found in B-6.

This initial self-evaluation of PAR/PCR yielded the following results:

Figure 5. **Self-Evaluation Results for Public Right-of-Way** ***(including the City's Curb Ramp Inventory)***

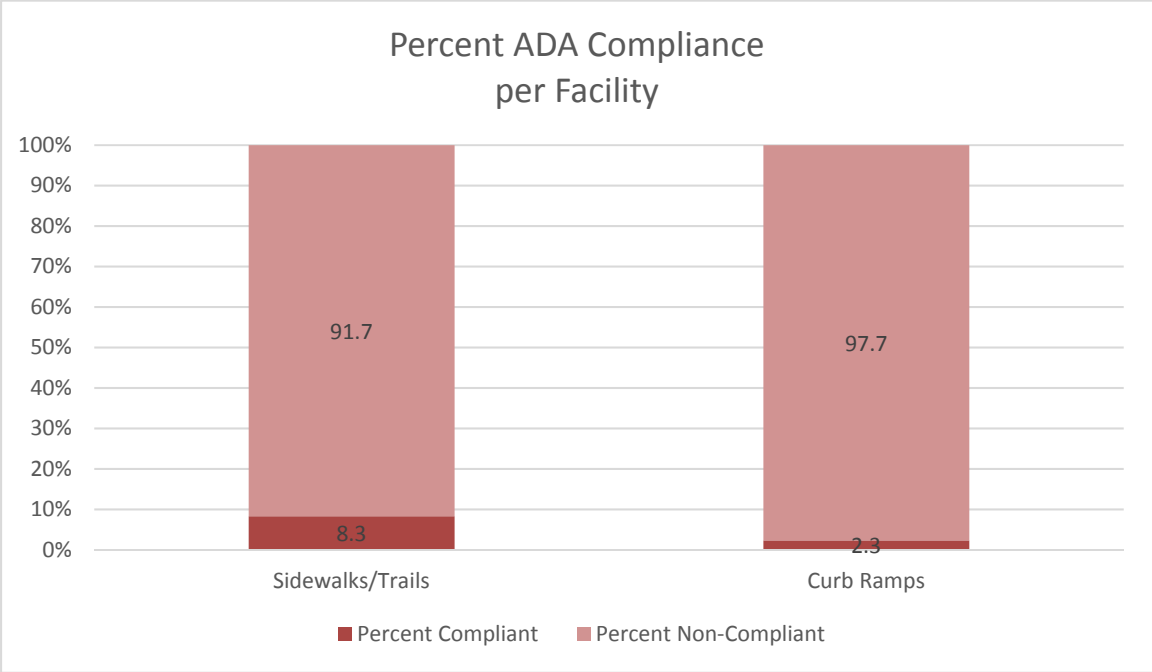


Chart Description: About eight percent of sidewalks/trails were ADA compliant. About three percent of curb ramps were compliant.

The City will inspect the 12 signals with APS features out of the 21 city-owned signals in the future. The signalized intersections with APS features may be turned on by the City upon request. Please see Appendix F to submit a Grievance Form.

Appendix C – Agency ADA Design Standards and Procedures

Design Procedures

Intersection Corners

Curb ramps or blended transitions will attempt to be constructed or upgraded to achieve compliance within all capital improvement projects. There may be limitations which make it technically infeasible for an intersection corner to achieve full accessibility within the scope of any project. Those limitations will be noted, and those intersection corners will remain on the transition plan. As future projects or opportunities arise, those intersection corners shall continue to be incorporated into future work. Regardless of whether full compliance can be achieved, each intersection corner shall be made as compliant as possible in accordance with the judgment of the City.

Sidewalks / Trails

Sidewalks and trails will attempt to be constructed or upgraded to achieve compliance within all capital improvement projects. There may be limitations which make it technically infeasible for segments of sidewalks or trails to achieve full accessibility within the scope of any project. Those limitations will be noted, and those segments will remain on the transition plan. As future projects or opportunities arise, those segments shall continue to be incorporated into future work. Regardless on if full compliance can be achieved or not, every sidewalk or trail shall be made as compliant as possible in accordance with the judgment of the City.

Traffic Control Signals

Traffic control signals will attempt to be constructed or upgraded to achieve compliance within all capital improvement projects. There may be limitations which make it technically infeasible for individual traffic control signal locations to achieve full accessibility within the scope of any project. Those limitations will be noted, and those locations will remain on the transition plan. As future projects or opportunities arise, those locations shall continue to be incorporated into future work. Regardless on if full compliance can be achieved or not, each traffic signal control location shall be made as compliant as possible in accordance with the judgment of the City.

Bus Stops

Bus stops within the City are provided by Metro Transit, a division of the Metropolitan Council. The Metropolitan Council maintains an ADA Transition Plan, which can be viewed here:

https://metrocouncil.org/Council-Meetings/Committees/Transportation-Accessibility-Advisory-Committee/2017/TAAC-Meeting-10-04-17/Met-Council-Transition-Plan.aspx.

If there is a specific bus stop of concern, a grievance may be filed with the Metropolitan Council. The City will attempt to coordinate replacement and new bus stops be constructed or upgraded to achieve compliance in the future. There may be limitations which make it technically infeasible for individual bus stop locations to achieve full accessibility within the scope of any project. Those limitations will be noted, and those locations will remain on the transition plan. As future projects or opportunities arise, those locations shall continue to be incorporated into future work. Regardless on if full compliance can be achieved or not, each bus stop location shall be made as compliant as possible in accordance with the judgment of City staff.

Other policies, practices and programs

Policies, practices and programs not identified in this document will follow the applicable ADA standards.

Design Standards

A copy of the Public Buildings and Facilities ADA checklist, created by the Institute for Human Centered Design (member of the ADA National Network), is provided in C-1.

For public ROW facilities, the City of Maple Grove has PROWAG, as adopted by the Minnesota Department of Transportation (MnDOT), as its design standard. A copy of this document is included in C-3.

Regional Economy

Roadway Reconstruction/Modernization Project: Highway 169 and County Road 130 Interchange Reconstruction | Ma

Results

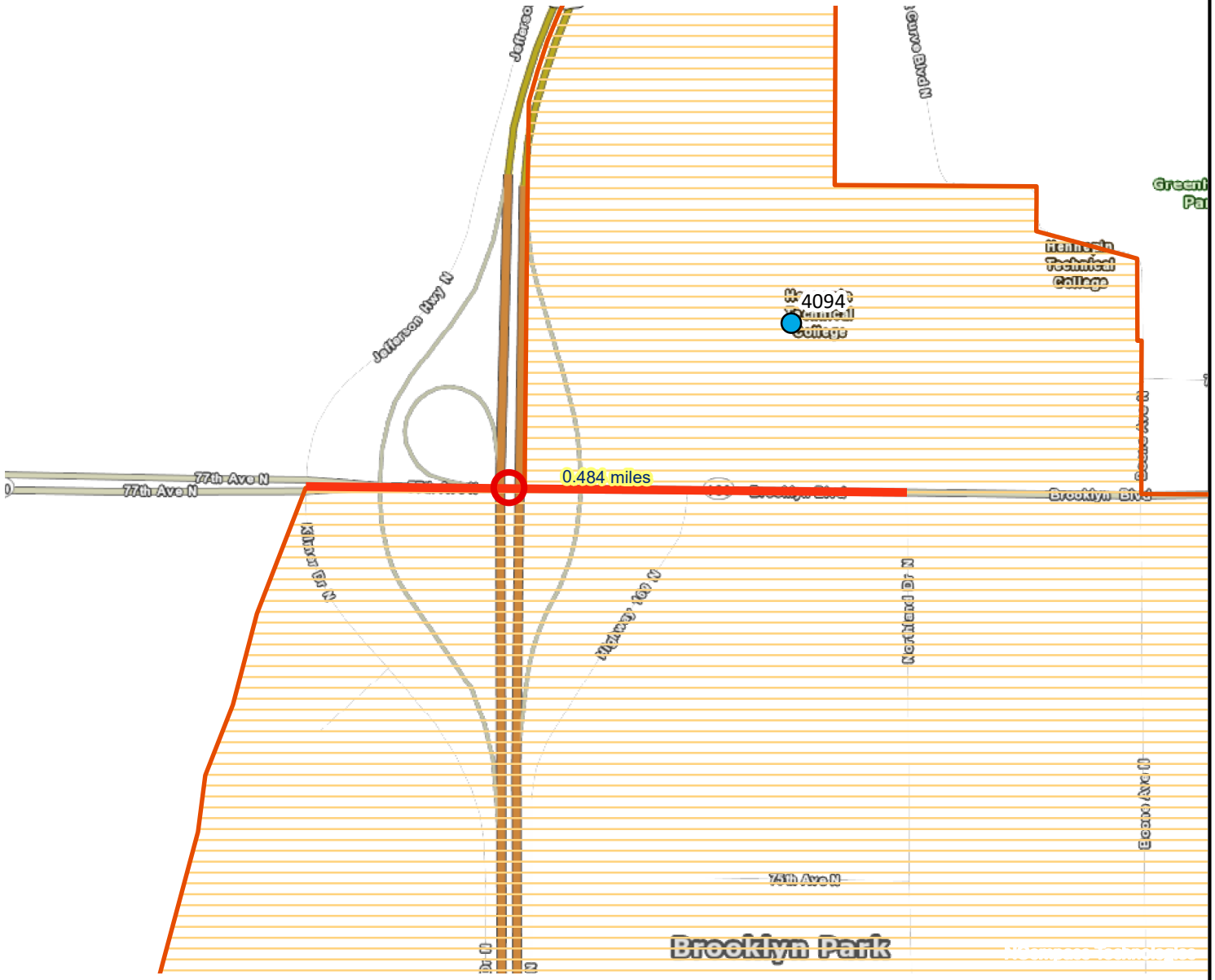
WITHIN ONE MI of project:
Postsecondary Students: 4094

Totals by City:

Brooklyn Park
Population: 3056
Employment: 9453
Mfg and Dist Employment: 4196

Maple Grove
Population: 4171
Employment: 6274
Mfg and Dist Employment: 2295

Osseo
Population: 2052
Employment: 568
Mfg and Dist Employment: 9



Project Points
Postsecondary Education Centers
Job Concentration Centers
Project
Manfacturing/Distribution Centers

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 3/9/2022
LandscapeRSA5

METROPOLITAN COUNCIL

Transit Connections

Roadway Reconstruction/Modernization Project: Highway 169 and County Road 130 Interchange Reconstruction | M

Results

Transit with a Direct Connection to project: 721

**indicates Planned Alignments*

Transit Market areas: 3

Project Points	Commuter Rail	Commuter Rail	Arterial Bus Rapid Transit	Undetermined	Light Rail
Project	Dedicated Bus Rapid Transit	Dedicated Bus Rapid Transit	Dedicated Bus Rapid Transit	Arterial Bus Rapid Transit	Modern Streetcar
Project Area	Highway Bus Rapid Transit	Highway Bus Rapid Transit	Highway Bus Rapid Transit	Commuter Rail	Undetermined
Active Stop	Light Rail	Light Rail	Light Rail	Dedicated Bus Rapid Transit	
Arterial Bus Rapid Transit	Arterial Bus Rapid Transit	Transit Routes	Modern Streetcar	Highway Bus Rapid Transit	

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 3/9/2022
LandscapeRSA3

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

METROPOLITAN COUNCIL

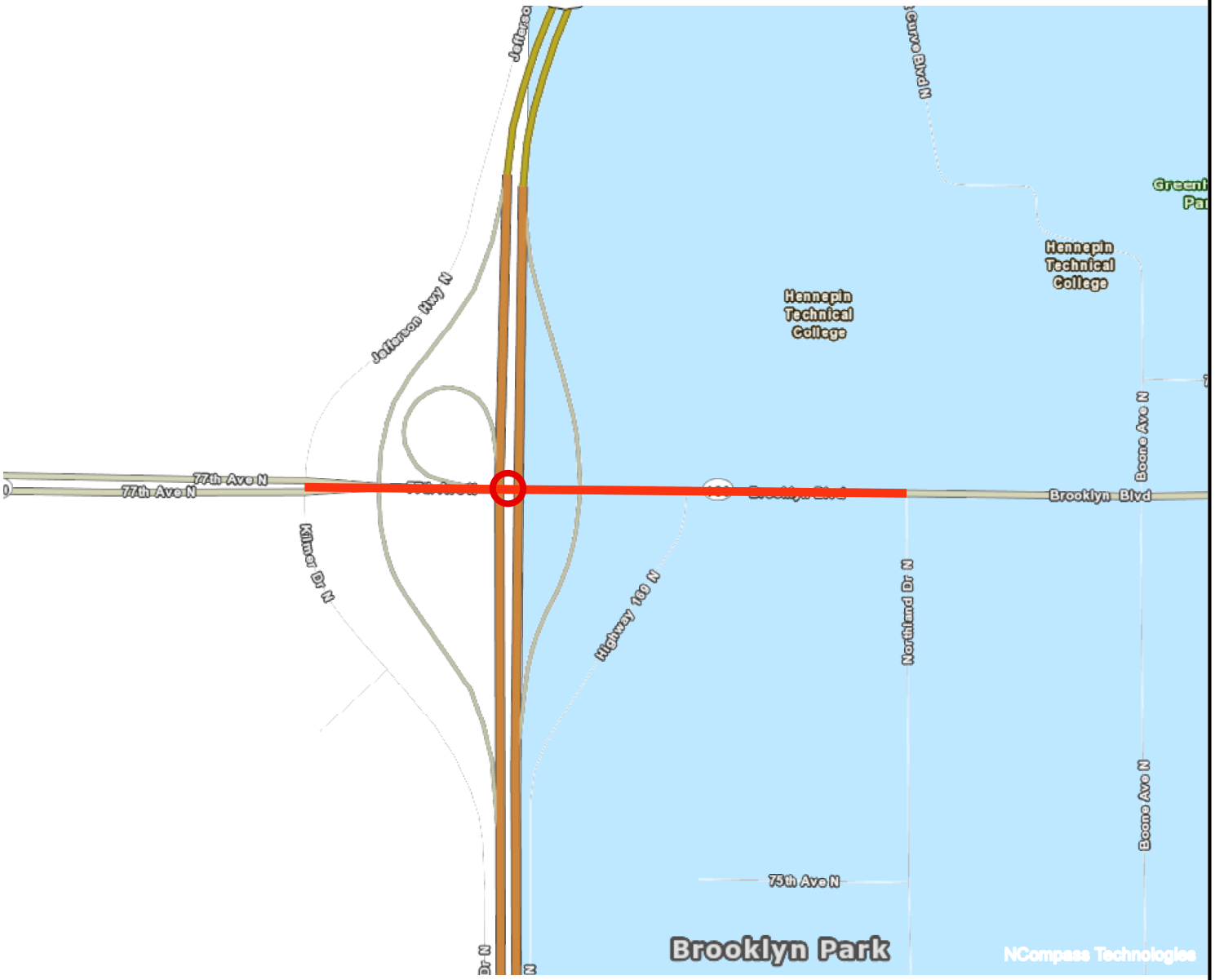
Socio-Economic Conditions

Roadway Reconstruction/Modernization Project: Highway 169 and County Road 130 Interchange Reconstruction | Map ID: 164

Results

Total of publicly subsidized rental housing units in census tracts within 1/2 mile: 547

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 0.075 0.15 0.3 0.45 0.6 Miles

Created: 3/9/2022
LandscapeRSA2

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METROPOLITAN COUNCIL

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

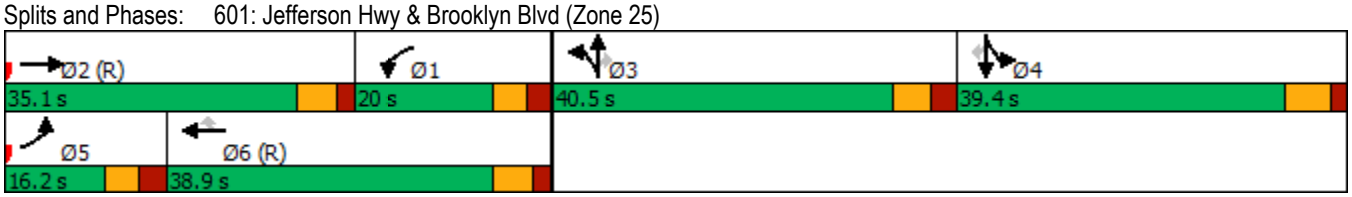
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

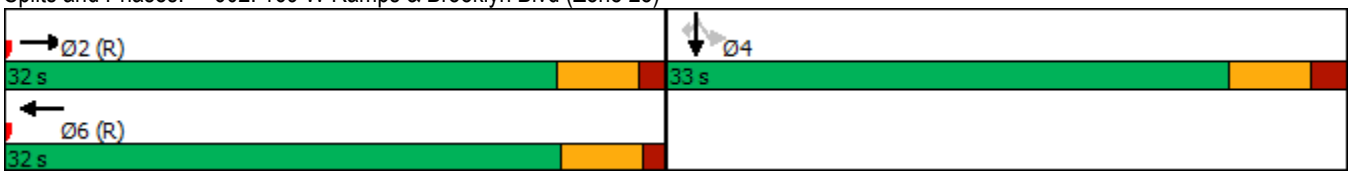
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

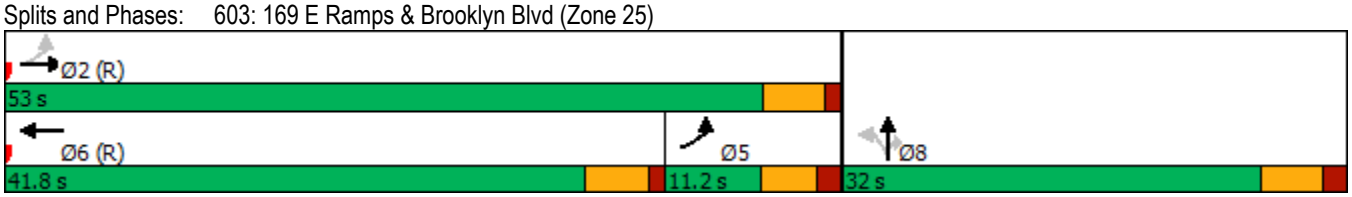
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

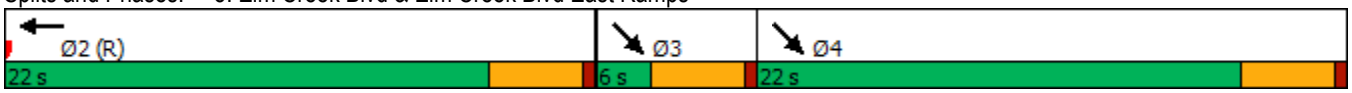
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

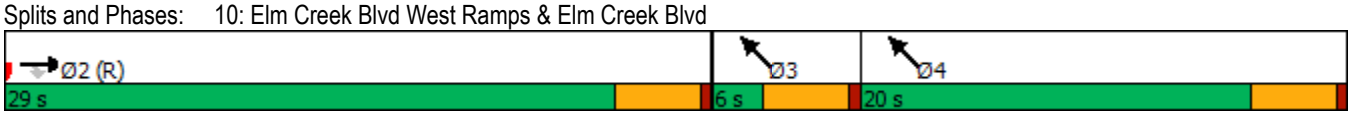
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

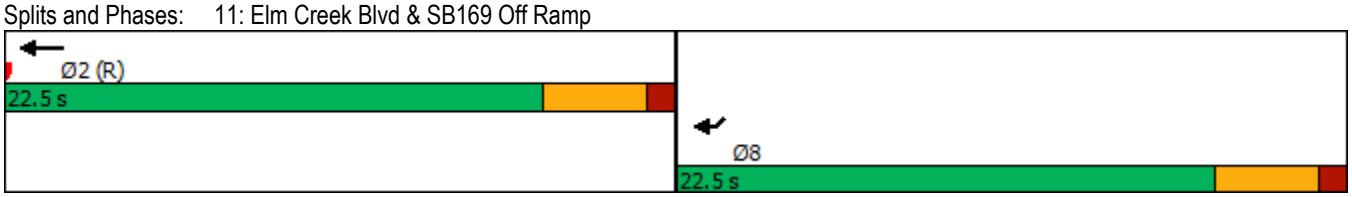
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

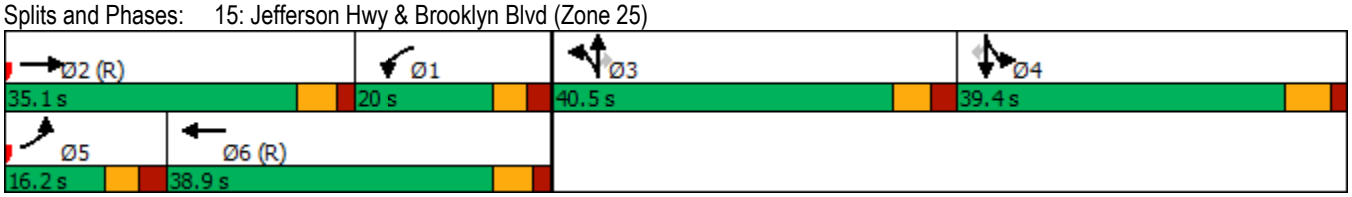
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

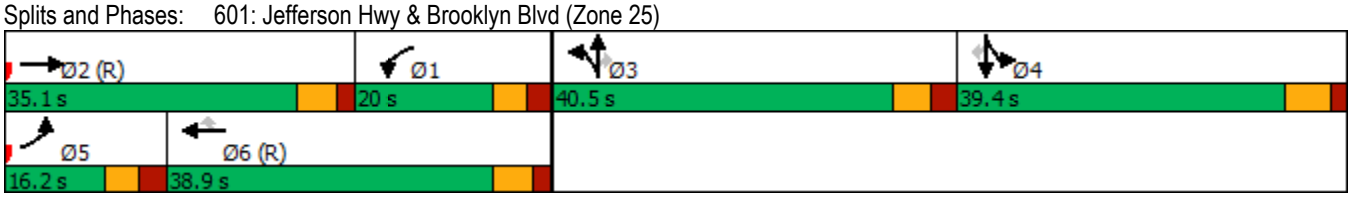
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

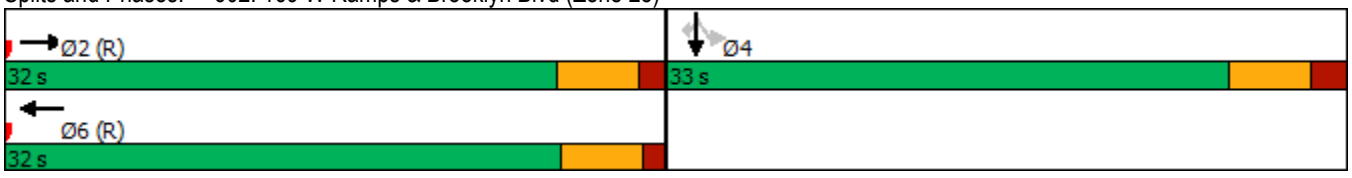
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

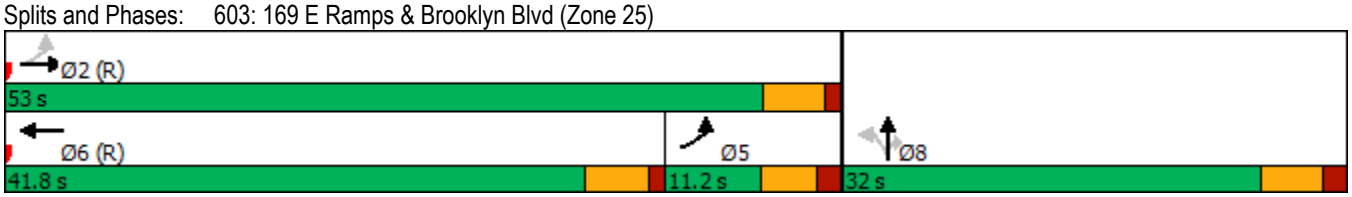
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

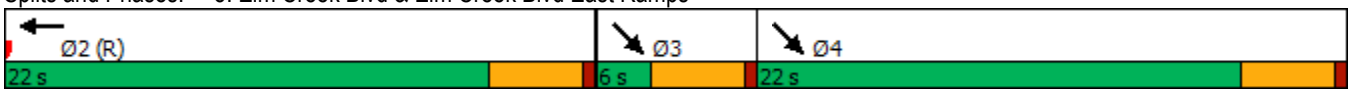
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

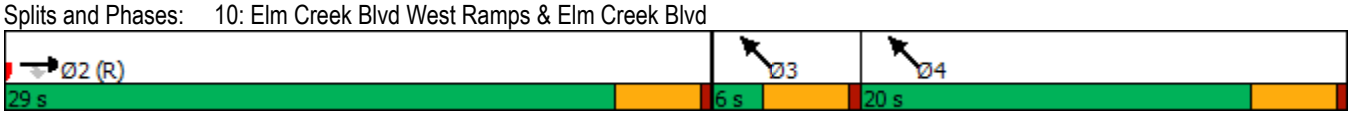
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

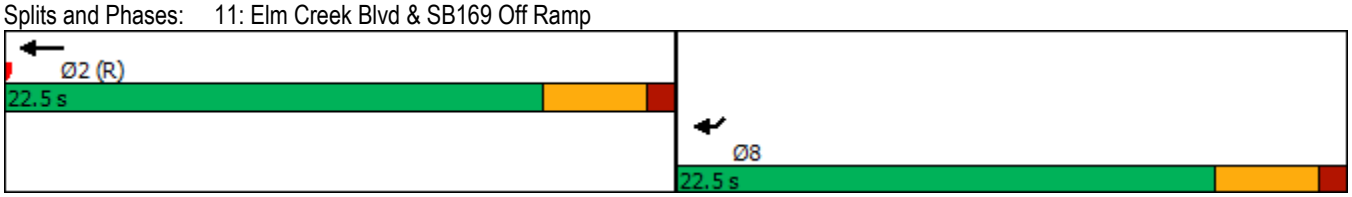
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

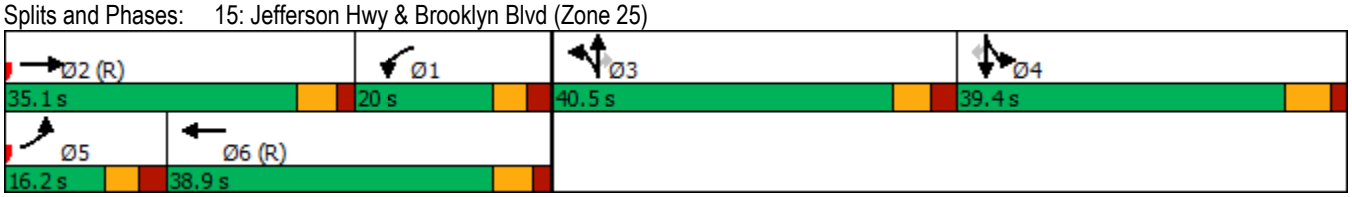
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

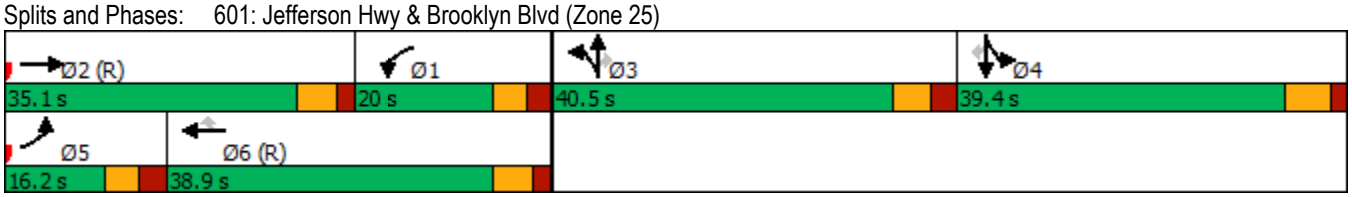
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

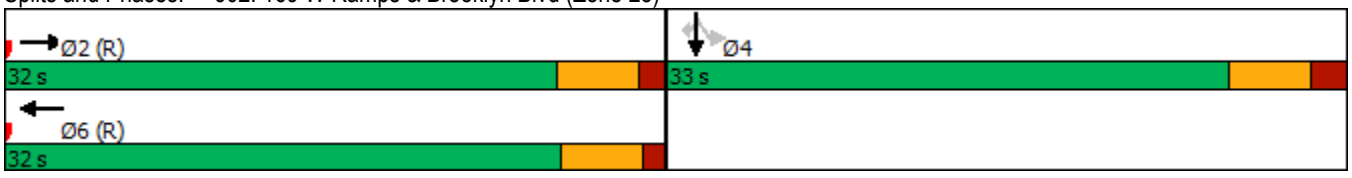
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

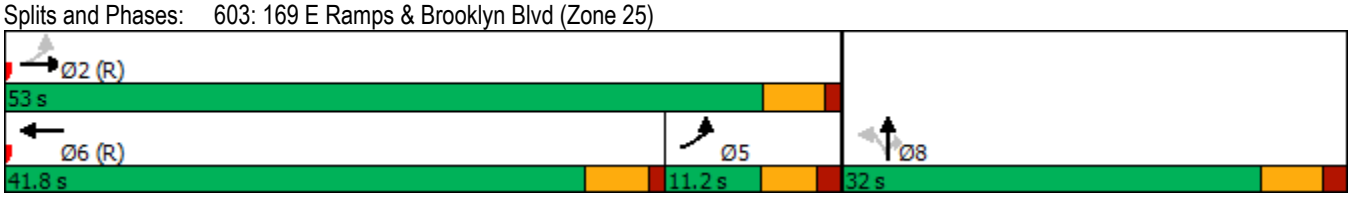
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

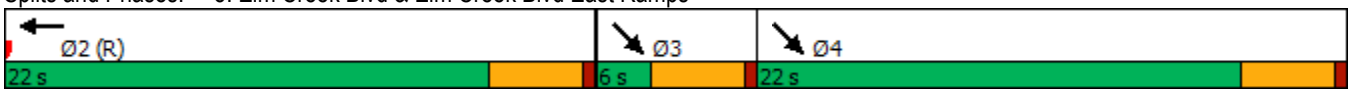
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

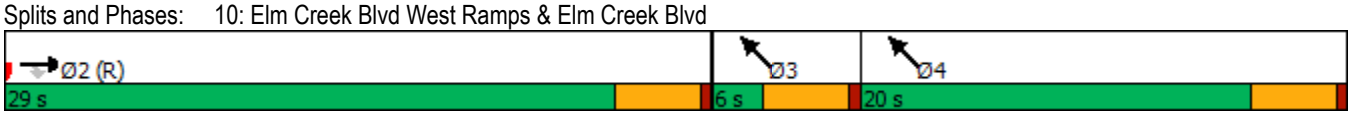
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

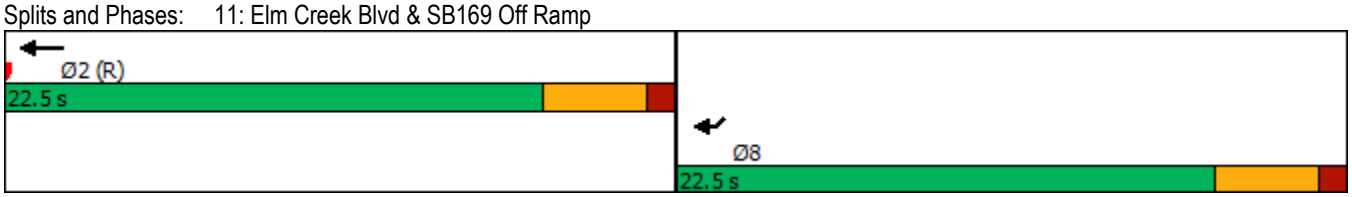
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

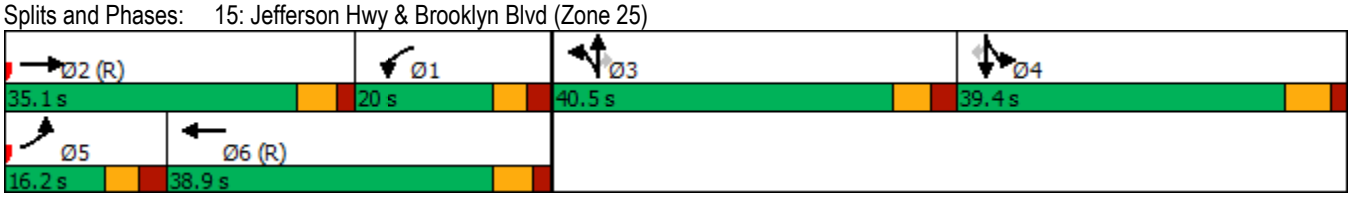
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

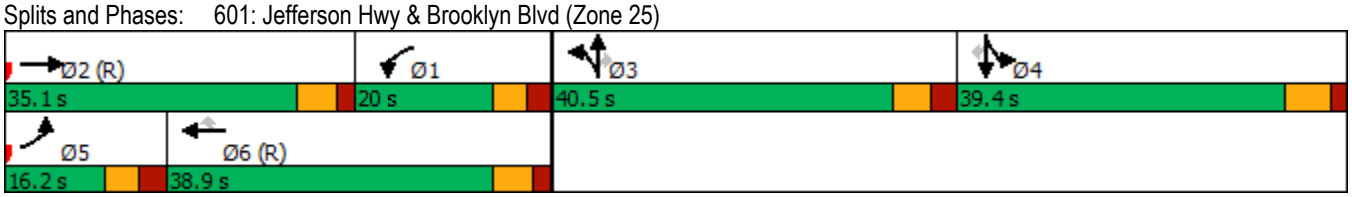
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

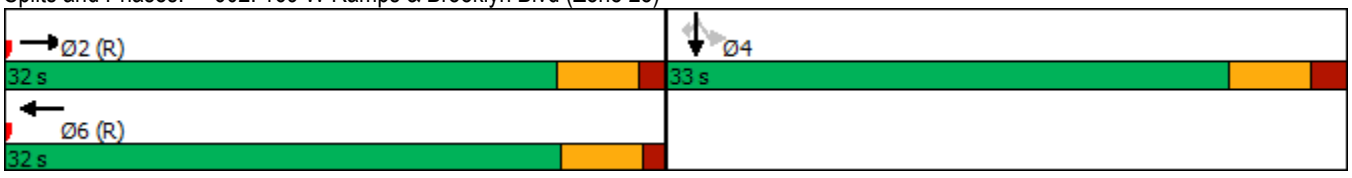
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

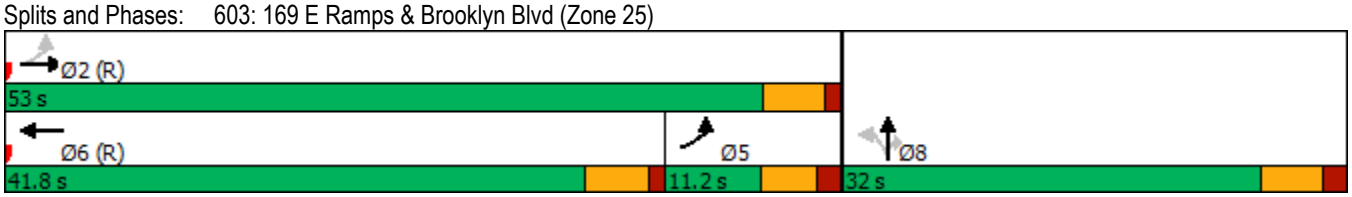
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

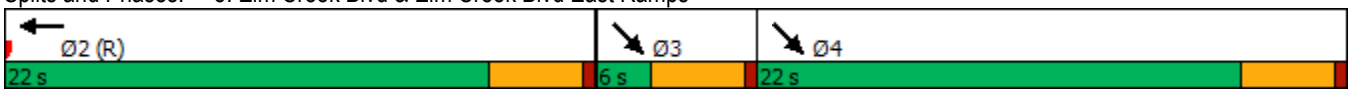
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

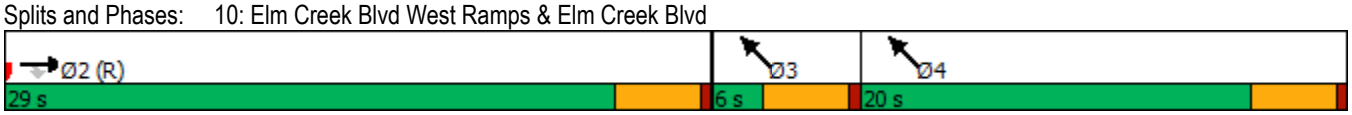
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

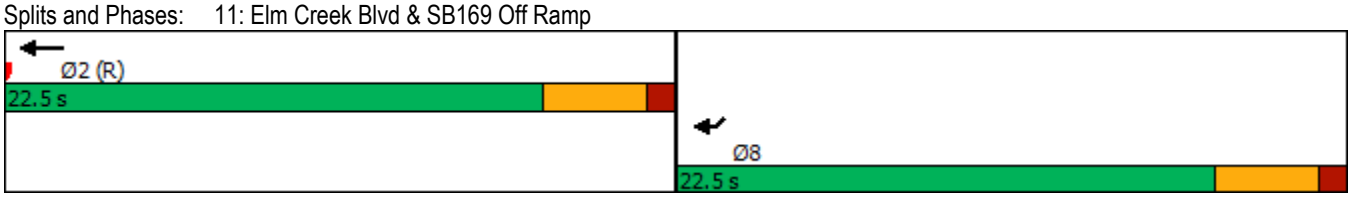
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

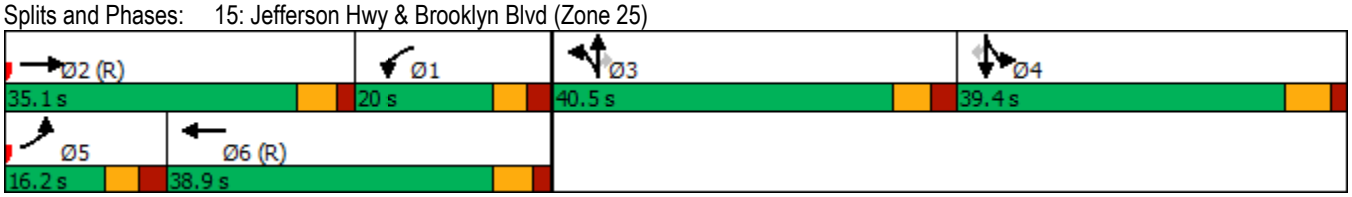
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

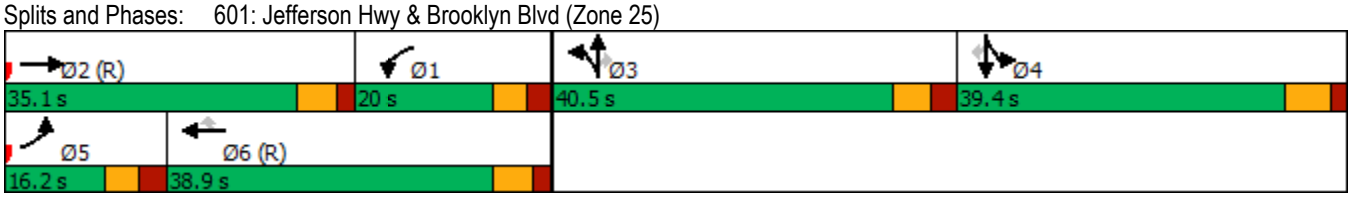
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

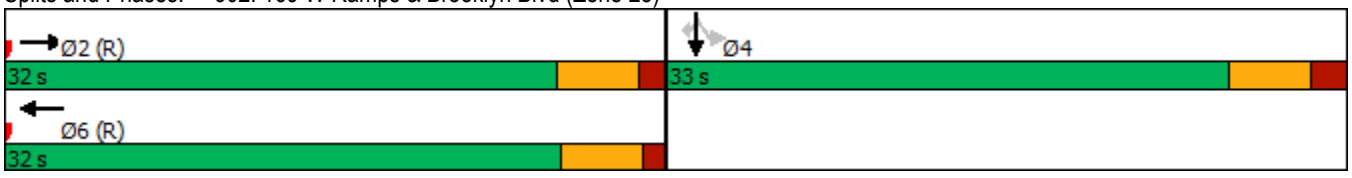
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

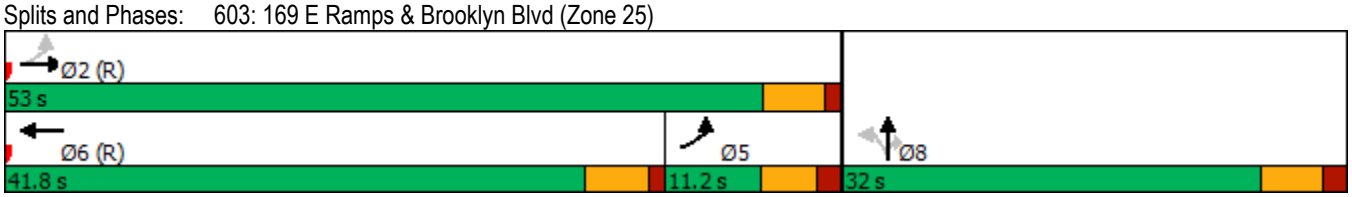
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

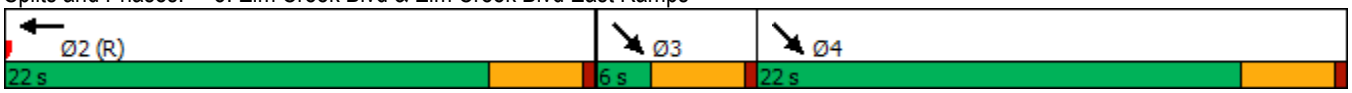
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

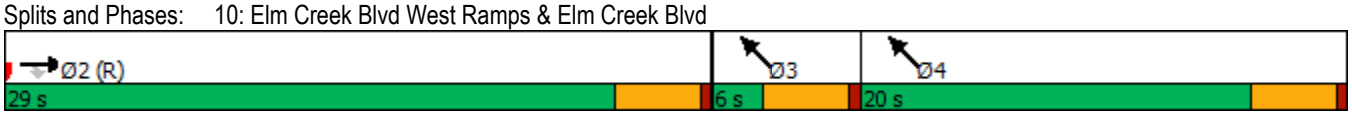
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

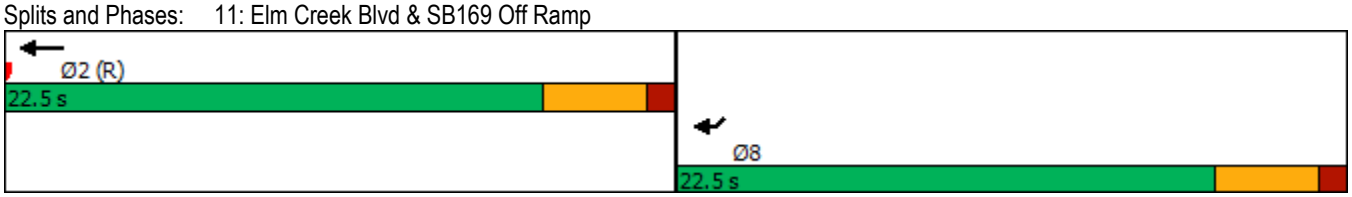
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

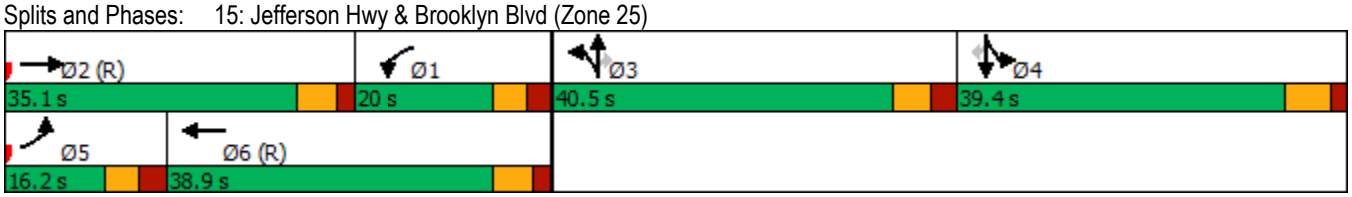
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

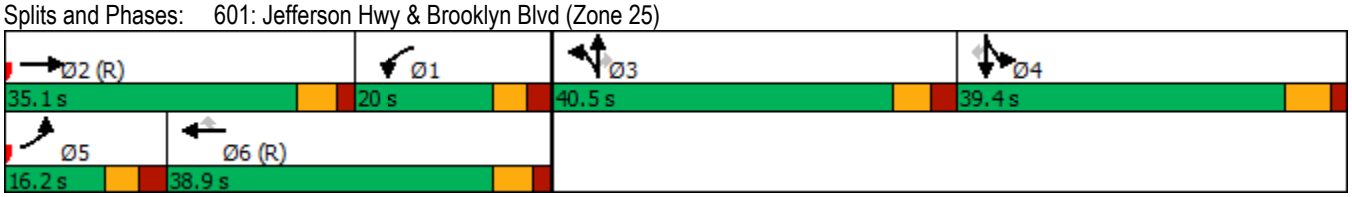
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

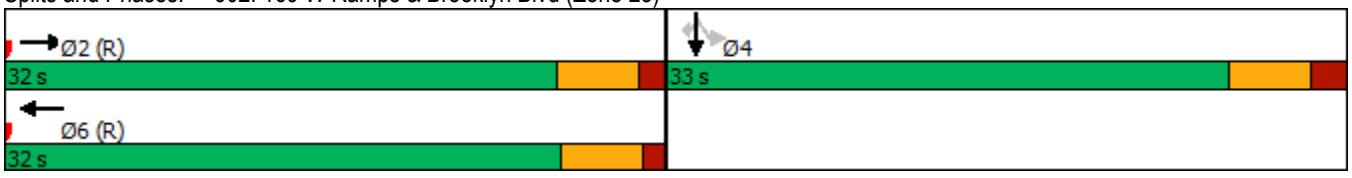
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

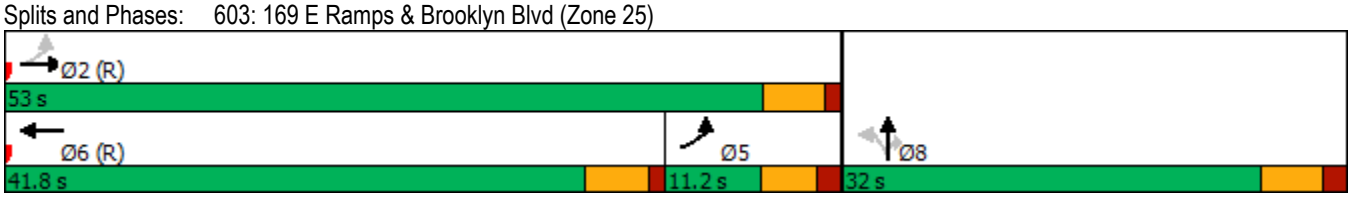
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

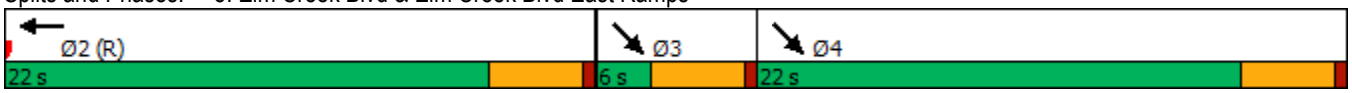
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

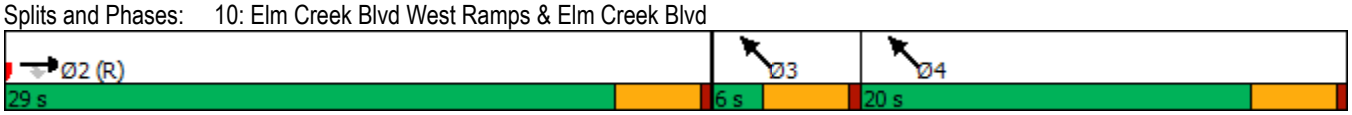
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

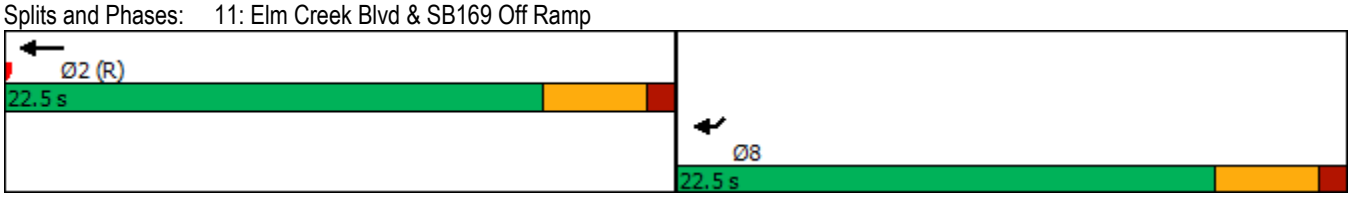
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

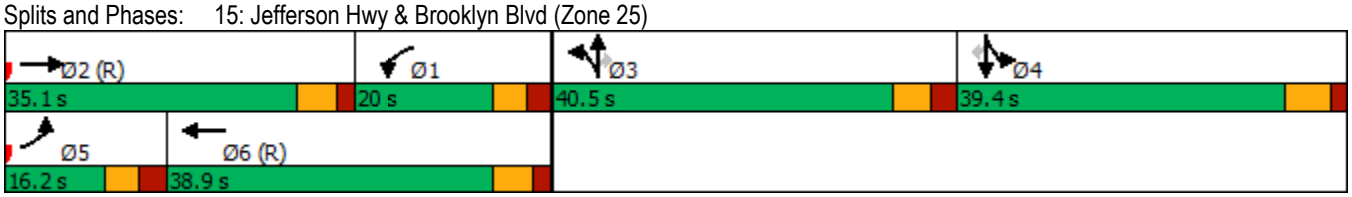
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

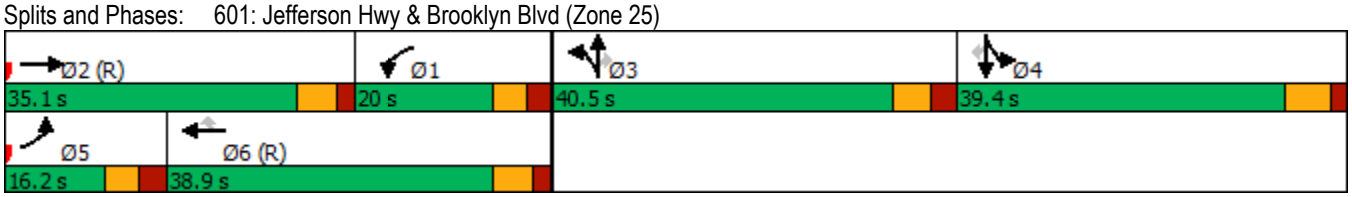
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

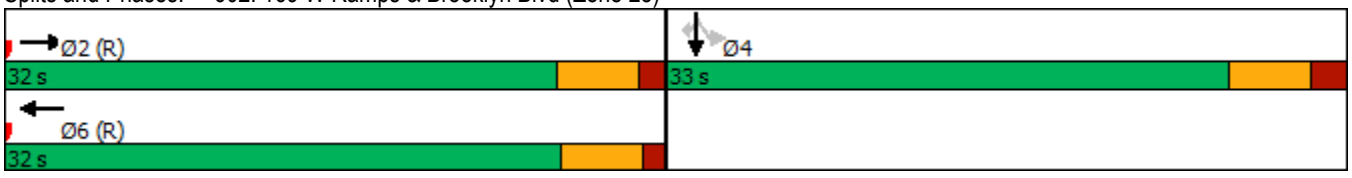
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

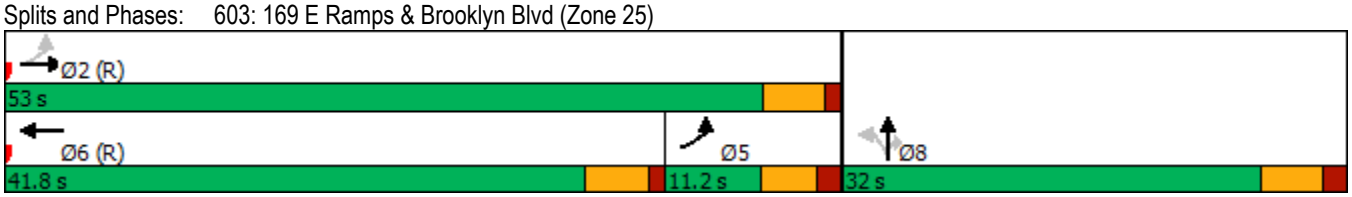
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

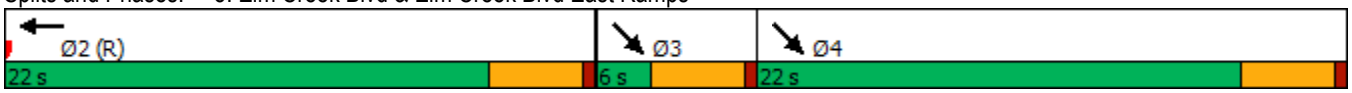
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

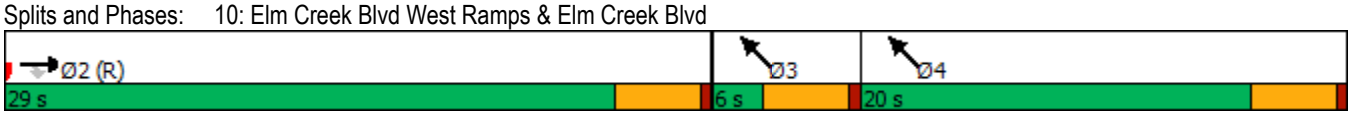
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

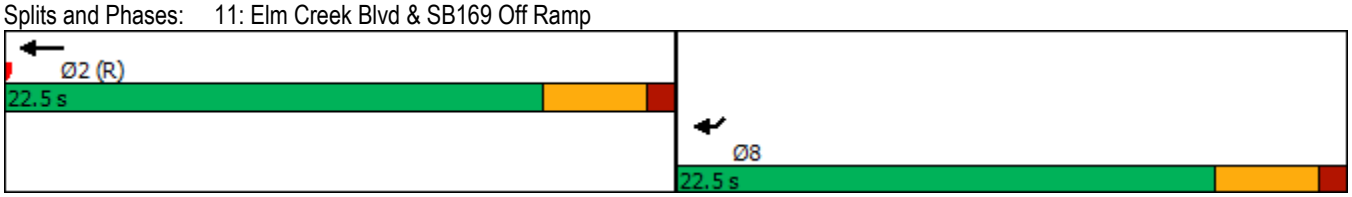
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

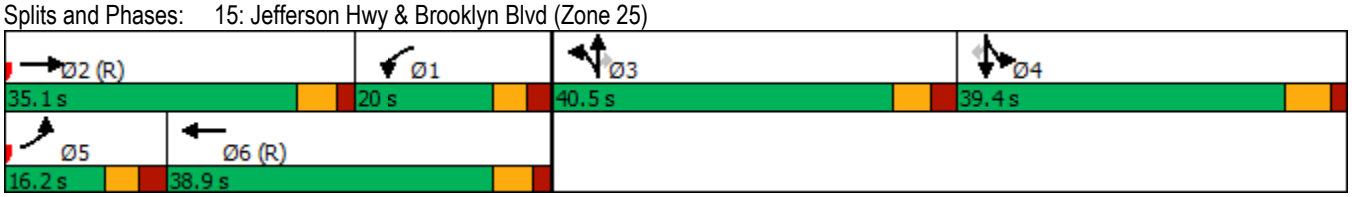
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

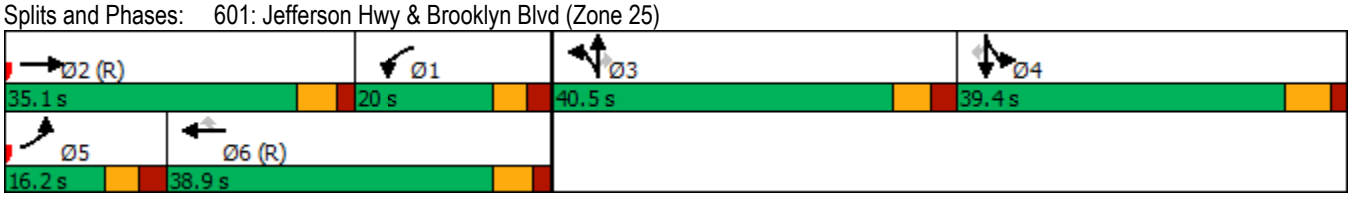
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

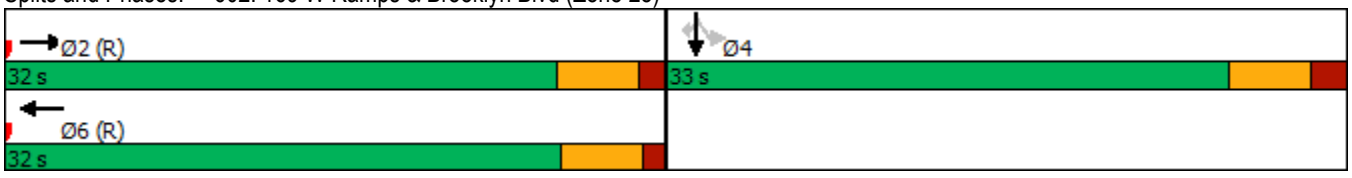
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

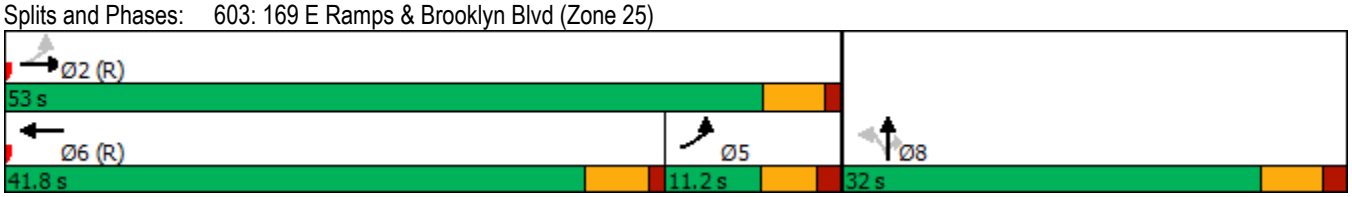
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

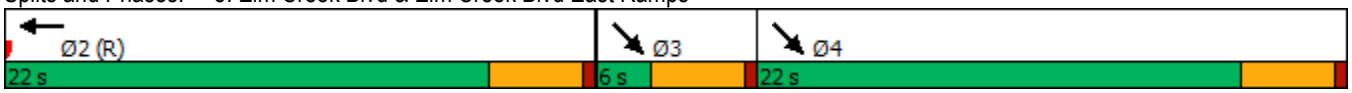
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

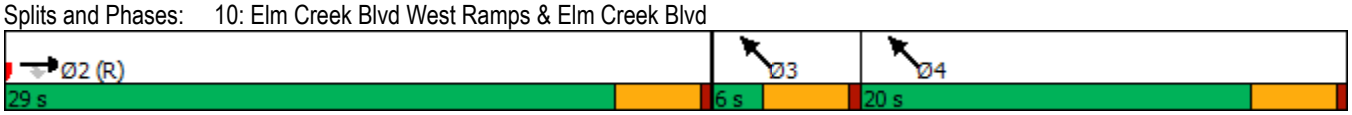
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

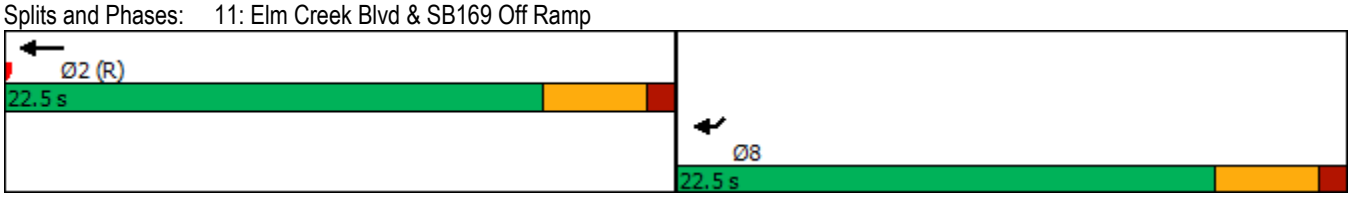
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

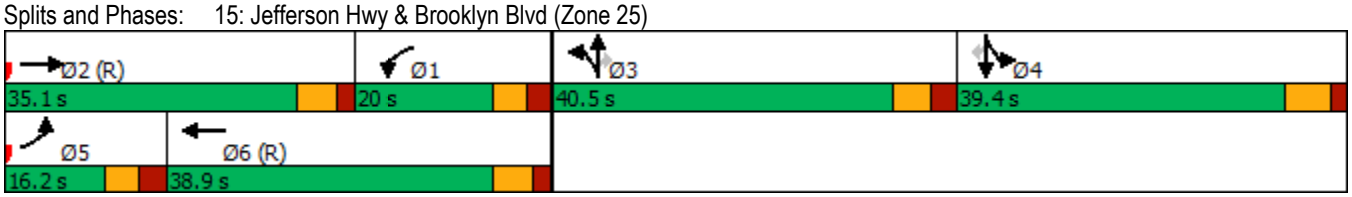
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	Elm Creek Boulevard	**District**		**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	Elm Creek Boulevard and US 169 Interchange				

B. Project Description

Proposed Work	Convert interchange to a Diverging Diamond Interchange		
Project Cost*	$14,635,000	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

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

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

Begin Date	1/1/2019	**End Date**	12/31/2021	3 years
Data Source	MnDOT			

Crash Severity	**Angle**	**Rear End**
K crashes		
A crashes		
B crashes		1
C crashes		2
PDO crashes	8	6

F. Benefit-Cost Calculation

$2,301,917	**Benefit (present value)**	**B/C Ratio = 0.16**
$14,635,000	**Cost**	

Proposed project expected to reduce 3 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,500,000
A crashes	$750,000
B crashes	$230,000
C crashes	$120,000
PDO crashes	$13,000

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

Real Discount Rate	0.7%
Traffic Growth Rate	2.0%
Project Service Life	20 years

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	0.45	0.15	$34,500
C crashes	0.90	0.30	$36,000
PDO crashes	7.18	2.39	$31,113
			$101,613

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$101,613	$101,613
2026	$103,646	$102,925
2027	$105,719	$104,254
2028	$107,833	$105,600
2029	$109,990	$106,963
2030	$112,189	$108,344
2031	$114,433	$109,743
2032	$116,722	$111,159
2033	$119,056	$112,594
2034	$121,437	$114,048
2035	$123,866	$115,520
2036	$126,343	$117,011
2037	$128,870	$118,522
2038	$131,448	$120,052
2039	$134,077	$121,602
2040	$136,758	$123,172
2041	$139,493	$124,762
2042	$142,283	$126,373
2043	$145,129	$128,004
2044	$148,031	$129,656
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 = $2,301,917

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	Elm Creek Boulevard	**District**		**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	Elm Creek Boulevard and US 169 Interchange				

B. Project Description

Proposed Work	Convert interchange to a Diverging Diamond Interchange		
Project Cost*	$14,635,000	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

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

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

Begin Date	1/1/2019	**End Date**	12/31/2021	3 years
Data Source	MnDOT			

Crash Severity	**Sideswipe**	**All**
K crashes		
A crashes		
B crashes		2
C crashes		1
PDO crashes	5	6

F. Benefit-Cost Calculation

$3,260,320	**Benefit (present value)**	**B/C Ratio = 0.23**
$14,635,000	**Cost**	

Proposed project expected to reduce 2 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,500,000
A crashes	$750,000
B crashes	$230,000
C crashes	$120,000
PDO crashes	$13,000

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

Real Discount Rate	0.7%
Traffic Growth Rate	2.0%
Project Service Life	20 years

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	1.34	0.45	$102,733
C crashes	0.67	0.22	$26,800
PDO crashes	3.32	1.11	$14,387
			$143,920

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$143,920	$143,920
2026	$146,798	$145,778
2027	$149,734	$147,660
2028	$152,729	$149,566
2029	$155,784	$151,497
2030	$158,899	$153,453
2031	$162,077	$155,434
2032	$165,319	$157,440
2033	$168,625	$159,473
2034	$171,998	$161,532
2035	$175,438	$163,617
2036	$178,946	$165,729
2037	$182,525	$167,869
2038	$186,176	$170,036
2039	$189,899	$172,231
2040	$193,697	$174,454
2041	$197,571	$176,706
2042	$201,523	$178,988
2043	$205,553	$181,298
2044	$209,664	$183,639
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 = $3,260,320

CRASH MODIFICATION FACTORS CLEARINGHOUSE

SEARCH RESULTS

There were 112 CMFs returned for your search on "**DDI**". [MODIFY YOUR SEARCH].

Having trouble deciding between similar CMFs? Use our **COMPARISON TOOL** or **CHECK OUT OUR FAQS**.

Overwhelmed by too many results? See our **SEARCH TIPS**.

STAR QUALITY RATING

- [ ] 1 (9)
- [ ] 2 (46)
- [ ] 3 (27)
- [ ] 4 (17)
- [ ] 5 (8)

COUNTRY

- [ ] U.S. & Canada (110)
- [ ] International (2)

CRASH TYPE

CRASH SEVERITY

ROADWAY TYPE

AREA TYPE

INTERSECTION TYPE

INTERSECTION GEOMETRY

TRAFFIC CONTROL

IN HSM

Filter Results

Results Control: COLLAPSE ALL | EXPAND ALL

Click on the links below to expand individual categories.

EXPORT ALL RESULTS TO EXCEL

Category: Bicyclists (6)

Category: Interchange design (69)

Subcategory: None (69)

Countermeasure: Convert at-grade intersections to Diverging Diamond Interchanges

Countermeasure: Convert diamond interchange to Diverging Diamond Interchange (DDI) or Double Crossover Diamond (DCD)

Compare	CMF	CRF(%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comme
☐	0.858	14.2	★★★★☆	All	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.558	44.2	★★★★☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.92	8	★★★★☆	All	O (property damage only)	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.887	11.3	★★★★☆	Rear end	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.448	55.2	★★★★☆	Angle,Left turn	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.845	15.5	★★★★☆	Single vehicle	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.67	33	★★★☆☆	All	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MO
☐	0.59	41	★★★☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MO
☐	0.45	55	★★★☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Urban	CLAROS ET AL., 2017	This CMF app the ... [READ M
☐	0.686	31.4	★★★☆☆	All	O (property	Urban	CLAROS	This CMF app

					damage only)		ET AL., 2017	the ... [READ M
☐	0.625	37.5	★★★☆☆	All	All	Urban	CLAROS ET AL., 2017	This CMF app the ... [READ M
☐	0.633	36.7	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.821	17.9	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.577	42.3	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.328	67.2	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.512	48.8	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.441	55.9	★★★☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.549	45.1	★★★☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	1.139	-13.9	★★★☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.461	53.9	★★★☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.695	30.5	★★★☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.648	35.2	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.638	36.2	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	1.241	-24.1	★★★☆☆	Sideswipe	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MC
☐	0.643	35.7	★★★☆☆	Head on	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MC
☐	1.762	-76.2	★★★☆☆	Other	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	This CMF is fc Motorized ... MORE
☐	0.33	67	★★☆☆☆	Angle	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	0.64	36	★★☆☆☆	Rear end	All	Urban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	1.27	-27	★★☆☆☆	Sideswipe	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	0.76	24	★★☆☆☆	Single vehicle	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	0.374	62.6	★★☆☆☆	All	K (fatal),A	Urban	CLAROS	This CMF app

					(serious injury),B (minor injury),C (possible injury)		ET AL., 2015	the ... [READ M
☐	0.649	35.1	★★☆☆☆	All	O (property damage only)	Urban	CLAROS ET AL., 2015	This CMF app the ... [READ M
☐	0.592	40.8	★★☆☆☆	All	All	Urban	CLAROS ET AL., 2015	This CMF app the ... [READ M
☐	1.039	-3.9	★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.572	42.8	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	1.44	-44	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.339	66.1	★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.587	41.3	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	0.655	34.5	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.153		★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.257	74.3	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	1.138	-13.8	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.11	89	★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.576	42.4	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	0.714	28.6	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.582		★★☆☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.888		★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.502	49.8	★★☆☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.6	40	★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.232	76.8	★★☆☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.36	64	★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.312	68.8	★★☆☆☆	All	K (fatal),A (serious injury),B	Not specified	NYE ET AL., 2019	

					(minor injury),C (possible injury)			
☐	0.626	37.4	★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.919	8.1	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.626	37.4	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.557	44.3	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.647	35.3	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.425	57.5	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.53	47	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.514	48.6	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.5	50	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.54	46	★☆☆☆☆	All	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.28	72	★☆☆☆☆	All	B (minor injury)	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.63	37	★☆☆☆☆	All	O (property damage only)	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.71	29	★☆☆☆☆	Rear end	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0	100	★☆☆☆☆	Left turn	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.81	19	★☆☆☆☆	Not specified	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]

Compare* Reset Compare

NOTE: You can compare CMFs across countermeasures, subcategories, and categories.

Category: Intersection geometry (6)

Subcategory: Turn lanes (6)

Category: Intersection traffic control (12)

Subcategory: Traffic control visibility (11)

Subcategory: Traffic control type (1)

Category: Roadway (19)

EXPORT ALL RESULTS TO EXCEL

TH 169 and Elm Creek Blvd East Ramps

INCIDENTID	RTESYSCOD	RTENUMBE	MEASURE	COUNTY_S	CITY_NAM	TOWNSHIP	MNDOT_DI	STATE_PAT	TRIBAL_GC	LOCALID	ACCIDENT_	CRASH_MC
742243	4	130	4.297	27	Brooklyn Park		M	25		19038231	1.92E+08	8
727062	4	130	4.339	27	Brooklyn Park		M	25		19026120	1.92E+08	6
849283	4	130	4.286	27	Brooklyn Park		M	25		20043767	2.03E+08	10
837106	4	130	4.314	27	Brooklyn Park		M	25		20035331	2.02E+08	8
797874	22	2380	0.208	27	Brooklyn Park		M	25		207475	2E+08	2
846511	22	2380	0.207	27	Brooklyn Park		M	25		2013440	2.03E+08	10
972801	4	130	4.296	27	2393429			25		21-039831	2.13E+08	11
892895	4	130	4.318	27	2393429			25		21-006502	2.11E+08	2
899840	22	2327	0.001	27	Brooklyn Park		M	25		21011630	2.11E+08	4
976045	22	2327	0.01	27	2393429			25		21015894	2.13E+08	11
968359	22	2380	0.206	27	Brooklyn Park		M	25		21037162	2.13E+08	10

TH 169 and Elm Creek Blvd West Ramps

INCIDENTID	RTESYSCOD	RTENUMBE	MEASURE	COUNTY_S	CITY_NAM	TOWNSHIP	MNDOT_DI	STATE_PAT	TRIBAL_GC	LOCALID	ACCIDENT_	CRASH_MC
744270	4	130	4.142	27	Maple Grove		M	25		19013518	1.92E+08	9
745621	4	130	4.144	27	Maple Grove		M	25		19013827	1.92E+08	9
739420	4	130	4.146	27	Maple Grove		M	25		MG190121	1.92E+08	8
768255	4	130	4.154	27	Maple Grove		M	25		19016074	1.93E+08	12
773334	4	130	4.198	27	Maple Grove		M	25		MG190193	1.94E+08	12
701620	22	3627	0.035	27	Maple Grove		M	25		19504676	1.91E+08	4
756606	22	5366	0.269	27	Maple Grove		M	25		19512787	1.93E+08	10
740394	22	5366	0.276	27	Maple Grove		M	25		19036548	1.92E+08	8
868177	4	130	4.143	27	2395838			25		20-16212	2.03E+08	12
803510	22	3627	0.001	27	Maple Grove		M	25		20011474	2.01E+08	3
870911	22	5366	0.276	27	Maple Grove		M	25		MG200167	2.04E+08	12
966581	4	130	4.146	27	Maple Grove		M	25		MG210146	2.13E+08	10
933526	4	130	4.147	27	Maple Grove		M	25		21-011586	2.12E+08	8
915341	4	130	4.154	27	Maple Grove		M	25		21-9079	2.12E+08	6
887782	22	3627	0.002	27	Maple Grove		M	25		21001155	2.1E+08	2

Elm Creek Blvd Bridge

847538	4	130	4.221	27	Maple Grove		M	25		20-043101	2.03E+08	10

865078	4	130	4.262	27	Brooklyn Park	M	25	20-047989	2.03E+08	11
933170	2	169	136.066	27	2395838		25	21-027438	2.12E+08	8
977307	4	130	4.225	27	2395838		25	21-042654	2.13E+08	12
937504	4	130	4.265	27	Brooklyn Park	M	25	21030048	2.12E+08	8

CRASH_DA	CRASH_YE	CRASH_DA	CRASH_HO	DIVIDEDRD	CRASHSEVI	NUMBERKI	NUMBERO	MANNERO	FIRSTHARM	RELATIONT	LIGHTCONI	WEATHERP
22	2019	Thu	18	W	5	0	2	5	10	3	1	1
15	2019	Sat	13	E	4	0	2	12	10	2	1	1
25	2020	Sun	18	98	4	0	3	12	10	29	4	4
25	2020	Tue	12	W	5	0	2	12	10	3	1	1
14	2020	Fri	18	N	5	0	2	5	10	3	4	1
15	2020	Thu	8	N	5	0	2	12	10	10	1	1
10	2021	Wed	20	E	5	0	2	12	10	10	4	3
24	2021	Wed	16	W	5	0	2	12	10	99	1	1
8	2021	Thu	22	W	5	0	2	13	10	3	4	1
27	2021	Sat	20		5	0	2	10	10	27	4	1
21	2021	Thu	17	98	5	0	2	5	10	3	1	1

CRASH_DA	CRASH_YE	CRASH_DA	CRASH_HO	DIVIDEDRD	CRASHSEVI	NUMBERKI	NUMBERO	MANNERO	FIRSTHARM	RELATIONT	LIGHTCONI	WEATHERP
1	2019	Sun	11	E	4	0	2	12	10	3	1	2
6	2019	Fri	12		5	0	2	10	10	3	1	1
10	2019	Sat	13	S	5	0	2	5	10	3	1	3
5	2019	Thu	7		5	0	2		25	10	1	1
19	2019	Thu	19	98	5	0	2	12	10	2	4	1
2	2019	Tue	13	S	5	0	2	10	10	3	1	1
23	2019	Wed	8	S	5	0	2	10	10	26	1	2
13	2019	Tue	12	W	3	0	2	12	10	10	1	1
13	2020	Sun	17	E	3	0	3	90	10	3	3	4
11	2020	Wed	12	E	5	0	2	5	10	3	1	1
27	2020	Sun	11	S	5	0	2	14	10	27	1	4
12	2021	Tue	13		5	0	2	5	10	3	1	2
11	2021	Wed	8		5	0	2	5	10	3	1	1
29	2021	Tue	15	E	5	0	2	10	10	2	1	1
2	2021	Tue	23	E	3	0	1		9	25	4	1
20	2020	Tue	12	W	5	0	1		47	2	1	4

24	2020	Tue	11	W		5	0	2	5	10	10	90	2
9	2021	Mon	14		98	5	0	2	12	10	25	1	1
3	2021	Fri	19		98	5	0	2		11	2	4	1
30	2021	Mon	11			5	0	1	90	10	2	1	1

WEATHERS	RDWYSURF	WORKZON	ROADWAY	INTERSECT	ROUTE_ID	BASIC_TYP	UNITTYPEU	VEHICLETY	DIRECTION	PRECRASHI	AGEU1	SEXU1
	1	98	77TH AVE		040000659	10	2	2	4	21	56	M
	1	98	BROOKLYN	BLVD	040000659	7	2	2	3	21	18	F
	5	98	77TH AVE		040000659	7	2	4	3	34	31	F
	1	98	BROOKLYN	BLVD	040000659	7	2	2	4	34	18	F
	1	98	RAMP380		220000659	10	2	4	1	24	81	F
	1	98	RAMP380		220000659	7	2	49	1	34	39	M
	2	98	77TH AVE	BROOKLYN	040000659	7	2	2	3	34	41	F
	1	98	BROOKLYN	BLVD	040000659	7	2	2	4	34	43	F
	1	98	RAMP327		220000659	8	2	4	4	21	50	F
	1	98	RAMP327		220000659	5	2	4	1	24	62	F
	1	98	RAMP380	BROOKLYN	220000659	9	2	2	4	21	28	M

WEATHERS	RDWYSURF	WORKZON	ROADWAY	INTERSECT	ROUTE_ID	BASIC_TYP	UNITTYPEU	VEHICLETY	DIRECTION	PRECRASHI	AGEU1	SEXU1
3	2	98	77TH AVE		040000659	7	2	3	3	21	56	F
	1	98	77TH AVE		040000659	5	2	2	3	23	33	M
	2	98	77TH AVE		040000659	10	2	2	4	21	16	M
	2	98	77TH AVE	RAMP366	040000659	90	2	2	2	21	67	F
	4	98	77TH AVE		040000659	7	2	2	3	34	47	M
	1	98	RAMP627		220000659	5	2	49	2	24	56	M
	1	98	RAMP366		220000659	5	2	2	2	21	40	F
	1	98	RAMP366		220000659	7	2	2	4	26	49	M
	5	98	77TH AVE		040000659	90	2	5	3	34	42	F
	1	98	RAMP627	77TH AVE	220000659	10	2	2	2	24	71	F
	3	98	RAMP366		220000659	90	2	2	2	34	43	F
	1	98	77TH AVE		040000659	10	2	2	4	21	36	F
	1	98	77TH AVE		040000659	10	2	2	4	21	85	F
	1	98	77TH AVE		040000659	5	2	2	3	21	38	F
	1	98	RAMP627		220000659	2	2	2	3	21	17	M
	3	98	77TH AVE		040000659	3	2	4	4	21	17	M

2	98	77TH AVE	USTH 169	040000659	9	2	2	4	21	18	F
1	98	USTH 169		020000000	7	2	4	3	24	18	F
1	98	77TH AVE		040000659	90	2	2	3	21	28	M
1	98	77TH AVE		040000659	4	2	2	3	21	36	M

PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU1	UNITTYPEL	VEHICLETY	DIRECTION
5	1				14	20	45	11	21	2	2	3
5	74				12	20	40	11	21	2	3	3
5	1				12	20	40	11	21	2	2	3
5	1				12	20	45	11	21	1	2	4
5	1				11	20	30	11	23	2	4	1
5	1				11	20	60	11	23	2	2	1
5	1				12	20	30	11	21	2	2	3
5	1				14	20	45	11	21	2	2	4
5	99				12	20	40	11	21	2	2	3
5	1				11	20		11	21	2	49	1
5	1				12	20	45	11	23	2	2	3

PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU1	UNITTYPEL	VEHICLETY	DIRECTION
5	1				15	20	40	11	21	2	4	3
5	1				12	20	45	11	21	2	49	3
5	74				12	20	40	11	21	2	2	2
5	1				14	20	40	11	21	2	4	4
5	1				12	9	50	11	21	2	4	3
5	68				90	20	40	11	21	2	5	2
5	65	66			90	20	60	11	21	2	3	2
5	70	4			12	20	45	11	21	2	2	4
5	99				14	20	50	12	21	2	4	3
5	1				12	20	40	11	21	2	48	3
5	1				11	20	30	11	21	2	49	2
5	63				14	20	40	11	21	2	2	2
5	63				12	20	45	11	21	2	49	2
5	1				15	20	40	11	21	2	2	3
5	99				12	20	40	11	21	6		
5	72				12	9	45	11	21			

5	99	12	20		11	23	2	4	3
5	10	12	20	30	11	21	1		3
5	1	12	9		11	21	3	2	3
5	99	12	9	45	11	21			

PRECRASHI	AGEU2	SEXU2	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU2
21	66	F	5	1				12	20	45	11	21
34	56	M	5	1				12	20	40	11	21
21	26	F	5	1				12	20	40	11	21
21	73	M	5	99				12	20	45	11	21
21	38	F	5	1				11	20	30	11	23
26	30	M	5	4				11	20	60	11	23
21	19	M	5	75				12	20	30	11	21
21	50	M	5	74				14	20	45	11	21
99	16	M	5	99				12	20	40	11	21
24	49	M	5	1				11	20		11	21
24	33	F	5	2				12	20	45	11	24

PRECRASHI	AGEU2	SEXU2	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU2
34	53	M	5	1				15	20	40	11	21
21	21	M	5	1				12	20	45	11	21
21	62	F	5	1				12	20	40	11	21
21	67	F	5	63				12	20	40	11	21
21	16	M	5	72				12	9	50	11	21
24	77	M	5	1				90	20	40	11	21
21	35	M	5	1				90	20	60	11	21
26	44	M	5	1				12	20	45	11	21
34	32	M	5	1				14	20	50	12	21
21	27	M	5	63				12	20	40	11	21
33	23	M	5	99				11	20	30	11	21
24	64	F	5	1				11	20	60	11	21
24	27	M	5	1				12	20	45	11	21
21	17	F	5	2	10			15	20	40	11	21
	34	M	5	26		32	99					

24	80	F		5	10			12	20	40	11	23
								12	20	30	11	21
34	49	F		5	1			12	9		11	21

UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU3	SEXU3	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO
2	2	3	21	33	F	5	1				12	20

UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU3	SEXU3	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO
2	4	3	21	29	F	5	99				14	20

SPEEDLIMI	ALIGNMEN	GRADEU3	UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU4	SEXU4	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC
40	11	21										

SPEEDLIMI	ALIGNMEN	GRADEU3	UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU4	SEXU4	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC
50	12	21										

NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU4	UTMX	UTMY	LATITUDE	LONGITUDI	CRASH_DA	STATUS	STATUS_N
						468417.7	4993534	45.09457	-93.4014	########	Accepted	Reportable
						468486.3	4993533	45.09457	-93.4005	########	Accepted	Reportable
						468400.6	4993534	45.09458	-93.4016	########	Accepted	Reportable
						468446	4993534	45.09457	-93.401	########	Accepted	Reportable
						468427.2	4993529	45.09453	-93.4013	########	Accepted	Reportable
						468427.2	4993529	45.09453	-93.4013	########	Accepted	Reportable
						468416.2	4993533	45.09456	-93.4014	########	Accepted	Reportable
						468452.3	4993522	45.09446	-93.4009	########	Accepted	Reportable
						468427.5	4993536	45.09459	-93.4013	########	Accepted	Reportable
						468420.9	4993550	45.09471	-93.4013	########	Accepted	Reportable
						468427.1	4993526	45.09451	-93.4013	########	Accepted	Reportable

NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU4	UTMX	UTMY	LATITUDE	LONGITUDI	CRASH_DA	STATUS	STATUS_N
						468169.6	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468171.7	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468175.6	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468188.7	4993534	45.09456	-93.4043	########	Accepted	Reportable
						468259	4993534	45.09457	-93.4034	########	Accepted	Reportable
						468176.4	4993477	45.09405	-93.4044	########	Accepted	Reportable
						468175.5	4993549	45.0947	-93.4045	########	Accepted	Reportable
						468174.8	4993537	45.09459	-93.4045	########	Accepted	Reportable
						468170.6	4993532	45.09454	-93.4045	########	Accepted	Reportable
						468174.6	4993531	45.09454	-93.4045	########	Accepted	Reportable
						468174.8	4993538	45.0946	-93.4045	########	Accepted	Reportable
						468174.7	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468176.9	4993534	45.09456	-93.4044	########	Accepted	Reportable
						468188.4	4993534	45.09456	-93.4043	########	Accepted	Reportable
						468174.6	4993530	45.09453	-93.4045	########	Accepted	Reportable
						468295.7	4993535	45.09458	-93.4029	44124.53	Accepted	Reportable

468361.8	4993535	45.09458	-93.4021	44159.46	Accepted	Reportable
468353.9	4993537	45.09459	-93.4022	44417.59	Accepted	Reportable
468302.8	4993531	45.09453	-93.4028	44533.79	Accepted	Reportable
468366.5	4993534	45.09458	-93.402	44438.49	Accepted	Reportable

AGENCY_O	AGENCY_O	NARRATIVE
MN027030	Police	Red Minni cooper mentioned was heading westbound on Brooklyn Blvd when it was struck by the gray Subaru that was trying
MN027030	Police	See police report.
MN027030	Police	Unit 1was stopped at the traffic light. Unit 2 was coming to the intersection and was slowing as the light changed. Unit 2 slid o
MN027030	Police	Unit one
MN027030	Police	Vehicle 2 bearing MN 966RZZ was traveling north bound on the exit ramp from Highway 169 towards Brooklyn Blvd. As vehicle
MN027270	Police	The cement mixer was stopped on the ramp waiting for the light. Driver 2 said that he was being impatient and was too close
MN027030	Police	Unit one was travelling eastbound on Brooklyn Blvd attempting to go northbound on highway 169. When unit one was about t
MN027030	Police	Unit 2 was traveling westbound on Brooklyn Boulevard and highway 169 and stopped for the red light. Unit 2 thought the light
MN027030	Police	Unit 1 was traveling west bound on Brooklyn Blvd and approached the intersection of Hwy 169 exit ramps. Unit 1 indicated th
MN027270	Police	On
MN027030	Police	unit one

AGENCY_O	AGENCY_O	NARRATIVE
MN027270	Police	DISPATCH
MN027270	Police	On 9/7/19
MN027270	Police	UNIT 1 WAS WB ON 77TH AVE AND WAS DISTRACTED BY HIS MOUNTED GPS. HE DID NOT SEE HIS LIGHT TURN RED AT THE HV
MN027000	Sheriff	On
MN027270	Police	On 12-19-
MNMHP04	State Patro	BOTH VEHICLES WERE ON ELM CREEL BLVD AND WAITING AT A RED LIGHT AT THE CROSS STREET OF 77TH AVE IN BROOKLYN I
MNMHP04	State Patro	USTH 169
MN027030	Police	Unit 1
MN027270	Police	VEH 3 SLID ON ICY ROADWAY, HITTING VEH 2 & 1. VEH 1 & 2 WERE STOPPED AT RED LIGHT, BOTH STATED VEH 3 SLID INTO VE
MN027030	Police	On
MN027270	Police	UNIT 1
MN027270	Police	On
MN027270	Police	UNIT 1 WAS TRAVELING WESTBOUND ON 77TH AVE N AT THE SOUTBOUND HWY 169 OFF-RAMP INTERSECTION. UNIT 2 WAS
MN027270	Police	Accident
MN027000	Sheriff	Vehicle 1 was traveling eastbound on Elm Creek Boulevard when the driver struck the bicyclist near the southbound Highway 1

MN027030	Police	On October 20, 2020 at 1237 hours, I, Officer Nielsen, responded to a 1 car rollover on Brooklyn Blvd WB at the exit to SB 169.

MN027030	Police	Driver 1 advised they were traveling on Brooklyn Blvd headed westbound and the light was green. They were in the right hand
MN027030	Police	Driver #1 said she had been traveling eastbound on Brooklyn Blvd approaching the left turn to get onto the on ramp to northbo
MN027030	Police	On December 3rd, 2021 at approximately 1900 hours, I Officer Moshe Davis Badge 288, was dispatched to a property damage a
MN027030	Police	Unit 1 was travelling Northbound on highway 169. Unit1 exited from highway 169 to Brooklyn Boulevard. Unit 1 turned right o

to go north onto Highway 169 while in the turn lane facing eastbound. Both partied stated they had a green light. Vehicles collided at an angle in the i

n ice and was unable to control the vehicle. Unit 2 sideswiped Unit 1, and unit 3 hit the ice and crashed into both vehicles.

e 2 was approaching the intersection, she began to make a lane change into the right hand right turn lane. Vehicle 1 bearing MN 521WVW was traveli
to the truck, and his foot slipped off the brake pedal and he hit the truck. No injuries. D2 arranged own tow.
to turn at the intersection, Unit two crashed into them from behind.
t was green and proceeded driving and rear ended unit 1. Unit 2 said that Unit 1 was on their phone not paying attention. Unit 2 admitted to not payi
at she had a green light and began to travel through the intersection when she was struck by unit 2 front to front. Unit 2 was traveling east bound on

NY 169 OFF RAMP UNTIL UNIT 2 WAS ALREADY MOVING SB FROM THE RAMP. UNIT 1 SLAMMED ON HIS BRAKES BUT WAS NOT ABLE TO STOP IN TIM

PARK. THERE ARE TWO LANES THAT ARE FOR TURNING LEFT AT THE INTERSECTION. V1 WAS IN THE RIGHT SIDE LANE TO TURN LEFT AND V2 WAS IN

EH 2 FIRST, THEN INTO VEH 1. VEH 2 DRIVER COMPLAINED OF BACKPAIN- NOT TRANSPORTED. VEH 3 UNLIC DRIVER, CITED.

FACING SOUTH ON THE SOUTHBOUND HWY 169 OFF-RAMP AT THE INTERSECTION WITH 77TH AVE N. UNIT 2 WAS ATTEMPTING TO TURN LEFT TO G

169 ramp. The impact broke the passenger side mirror on vehicle 1 and left some scuff marks on the rear passenger side door. The bicyclist stated he

Dispatch reported no one was injured.The weather was cloudy with snow and the streets were snow coveredThe driver Davies said he had just left sch

lane when the car turned in front of them. They advised they did not have time to stop.Driver 2 advised she was looking to turn onto Northbound 169
ɔund HWY 169.Driver #1 said that she had a green arrow to turn left, but was in the right-most lane when she attempted to make the turn. She said tha
accident on Brooklyn Boulevard over Highway 169 in Brooklyn Park.The driver of Unit #2 was stopped in the eastbound lanes of Brooklyn Blvd and had
ɔn Brooklyn Blvd. Unit 1 swerved to avoid a vehicle travelling in the same direction. Unit 1 drove onto the curb and ran into a sign.

intersection. No parties were injured.

ng north bound on the exit ramp from Highway 169 towards Brooklyn Blvd. As vehicle 1 was making the lane change and began to turn right onto east

ng attention and checking their phone.
Brooklyn Blvd and approached the intersection of Hwy 169 exit ramps. Unit 2 indicated that as he approached the intersection, he had the green arr

IE WITH THE WET PAVEMENT AND HIS RUNNING THE LIGHT. WITNESS OBSERVED THAT UNIT 2 HAD A GREEN LIGHT WHEN SHE STARTED INTO THE IN

THE LEFT SIDE LANE TO TURN LEFT. WHEN THEIR LIGHT TURNED GREEN BOTH VEHICLES BEGAN TO TURN LEFT ONTO 77TH. DRIVER OF V1 STATED HI

GO EASTBOUND ON 77TH AVE N WHEN IT STRUCK UNIT 1, WHICH WAS COMING THROUGH THE INTERSECTION. PER THE WITNESS, UNIT 1 PROCEEDE

had some head and neck pain and was transported to North Memorial Hospital for evaluation.

hool at Maranatha. He was travelling West on Brooklyn Blvd. As he got on the bridge over Hwy 169 and lost control. His car started to spin and he atter

from eastbound Brooklyn Blvd. She was in the turn lane and the light went green. She observed a vehicle in the left hand lane across from her headin
at the other vehicle involved in this crash was in the left lane and was continuing to travel eastbound on Brooklyn Blvd. Driver #1 said that as she made
her hazard lights on due to her defective/dead car battery. The vehicle was in the right lane. The driver of Unit #1 rear ended the vehicle while travelli

t bound Brooklyn Blvd, vehicle 1 was struck on the front passenger side door by vehicle 2. Vehicle 1 sustained damage to the front passenger door. Ve

ow light to travel north bound on Hwy 169 ramp. As unit 2 began to travel through the intersection, he was struck by unit 1. There was no third part

NTERSECTION.

E WAS ATTEMPTING TO SWING WIDE AS HE WAS DRIVING A LARGE SEMI TRUCK. AS BOTH VEHICLES WERE TURNING LEFT V1 SIDESWIPED V2 AND HI

D THROUGH THE INTERSECTION ON A RED LIGHT AND UNIT 2 WAS PROCEEDING INTO THE INTERSECTION ON A GREEN LIGHT.

npted to recover from the spin. His car slid into the curb on the north side of the road and rolled on his side. His car hit a highway sign and then a light

g in the direction westbound on Brooklyn Blvd. She looked up again and didn't notice a turn arrow. That vehicle was not moving for approximately a m
e the left turn, the rear, passenger side part of her bumper collided with the front passenger side of the other vehicle. Driver #1 could only describe th
ing eastbound on Brooklyn Blvd over Highway 169. He stated that her lights must have been too dim.Neither driver sustained injury. Both drivers provi

ehicle 2 sustained damage to the front driver side corner of the vehicle. No injuries resulted.

y witnesses.

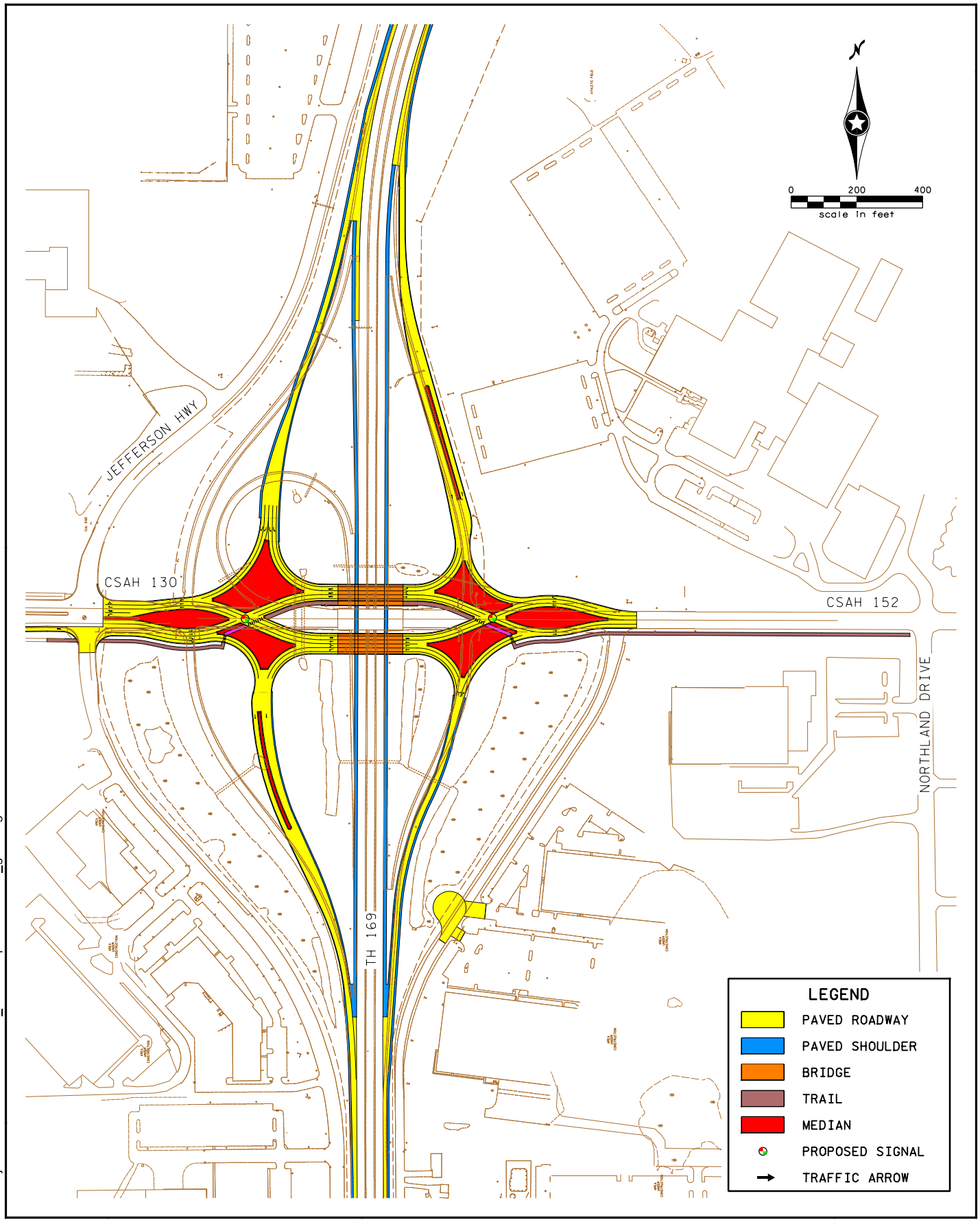
T THE PASSENGER'S SIDE OF V2. NO INJURIES WERE REPORTED. NO TOWS NEEDED.

pole. Davies said he and his passenger, Sykes were not hurt.

inute. Driver 2 thought the driver might be being nice and letting her turn. There was no car in the right hand lane. Driver 2 started to turn onto Hwy 1
e other vehicle as a red-colored mid-size SUV. No description of the driver of that other vehicle was noted.Driver #1 and officers met at the Mills Fleet
ded their insurance information. The driver of Unit #1 left the scene in the vehicle involved while the driver of Unit #2 had to request a private tow. Ca

169 and tried to see if there was any car coming in the right hand lane. She advised the car came very fast and she tried to drive faster to avoid the hit
Farm gas station located at 8400 Lakeland Ave N in Brooklyn Park to make this report.No injuries were reported.
dets took evidentiary pictures. Both drivers were provided cards with case numbers.

but was hit in the passenger side of the vehicle.Vehicle 1 had to be towed from scene due to front end damage. Vehicle 2 appeared drivable and



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SRF Consulting Group, Inc.

Job #10829
8/22/2017

Diverging Diamond Interchange

TH 169 & Elm Creek Blvd Interchange Reconstruction

City of Maple Grove, Minnesota

Figure 2

City of Brooklyn Park
City Hall
5200 85th Ave. N.
Brooklyn Park, MN 55443
763-424-8000
www.brooklynpark.org

April 1, 2022

Ken Ashfeld, P.E.
Director of Public Works/City Engineer
City of Maple Grove
12800 Arbor Lakes Parkway
Maple Grove, Minnesota 55369

Re: Letter of Support for Maple Grove's Regional Solicitation Application and Project
TH 169 / Elm Creek Boulevard (CSAH 130) Interchange Reconstruction

Dear Mr. Ashfeld,

The City of Brooklyn Park supports Maple Grove's federal funding application through the 2022 Regional Solicitation for the proposed TH 169 / Elm Creek Boulevard (CSAH 130) Interchange Reconstruction project, which would include the following improvements:

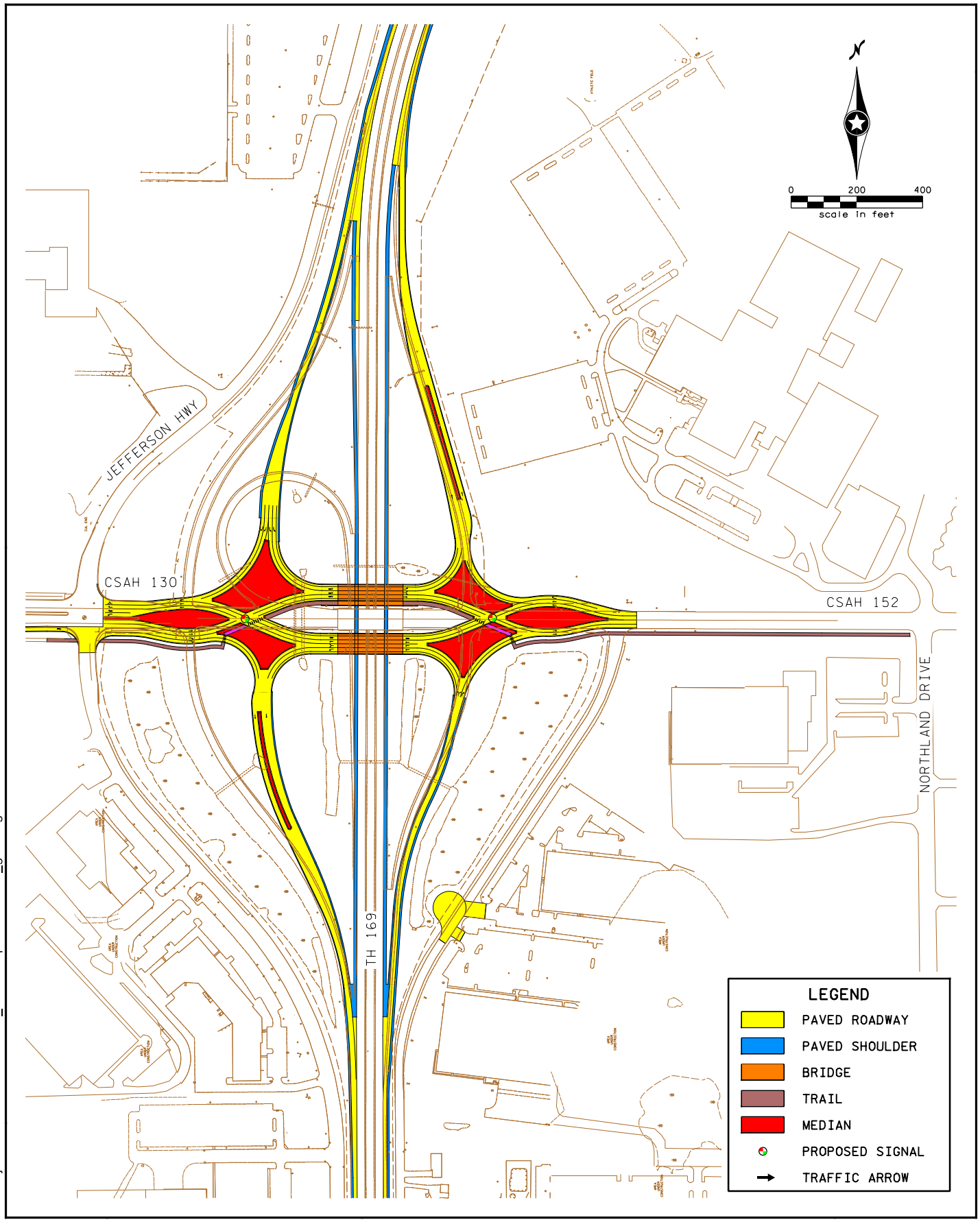
- Redesign of the existing roadway configuration to improve mobility through the interchange
- Replace/upgrade existing temporary span-wire signals to permanent traffic signal systems
- Introduction of off-road facilities to accommodate people biking and walking through the area

The city supports Maple Grove in its efforts to improve this interchange by providing additional capacity and safety for multiple traffic modes. Improvements at this interchange will enhance the safety and mobility of people biking, driving, and walking along CSAH 130 corridor (Elm Creek Boulevard / Brooklyn Boulevard).

Thank you for making us aware of this application effort and the opportunity to provide support. The city looks forward to working with the City of Maple Grove, MnDOT, and Hennepin County on this project.

Sincerely,

Jesse Struve, P.E.
City Engineer



H:\Projects\10000\10829\CAD_BIM\Graphics\10829_gr02.dgn

SRF Consulting Group, Inc.

Job #10829
8/22/2017

Diverging Diamond Interchange

TH 169 & Elm Creek Blvd Interchange Reconstruction

City of Maple Grove, Minnesota

Figure 2

HENNEPIN COUNTY
MINNESOTA

March 25, 2022

Elaine Koutsoukos - TAB Coordinator
Metropolitan Council
390 North Robert Street
St. Paul, MN 55101

Re: Support for 2022 Regional Solicitation Application
CSAH 130 (Elm Creek Boulevard) Reconstruction Project at TH 169

Dear Ms. Koutsoukos,

Hennepin County has been notified that the City of Maple Grove is submitting an application for funding as part of the 2022 Regional Solicitation through the Metropolitan Council. The proposed project is the reconstruction of the existing interchange along CSAH 130 (Elm Creek Boulevard) at TH 169 which is anticipated to include the following improvements:

- Redesign of the existing interchange configuration to improve mobility and safety through the area
- Upgrading of the existing span-wire traffic signals to permanent traffic signal systems
- Introduction of off-road facilities to accommodate people walking and biking through the area

Hennepin County supports this funding application and agrees to operate and maintain the roadway facilities along CSAH 130 (Elm Creek Boulevard) for the useful life of improvements. At this time, Hennepin County has no funding programmed for this project in its 2022-2026 Transportation Capital Improvement Program (CIP). Therefore, county staff is currently unable to commit county cost participation in this project. Additionally, we kindly request that the City of Maple Grove includes county staff in the project development process to ensure project success. We look forward to working together to improve the safety and mobility of people walking, biking, and driving along CSAH 130 (Elm Creek Boulevard).

Sincerely,

Carla Stueve

Carla Stueve, P.E.
Transportation Project Delivery Director and County Engineer

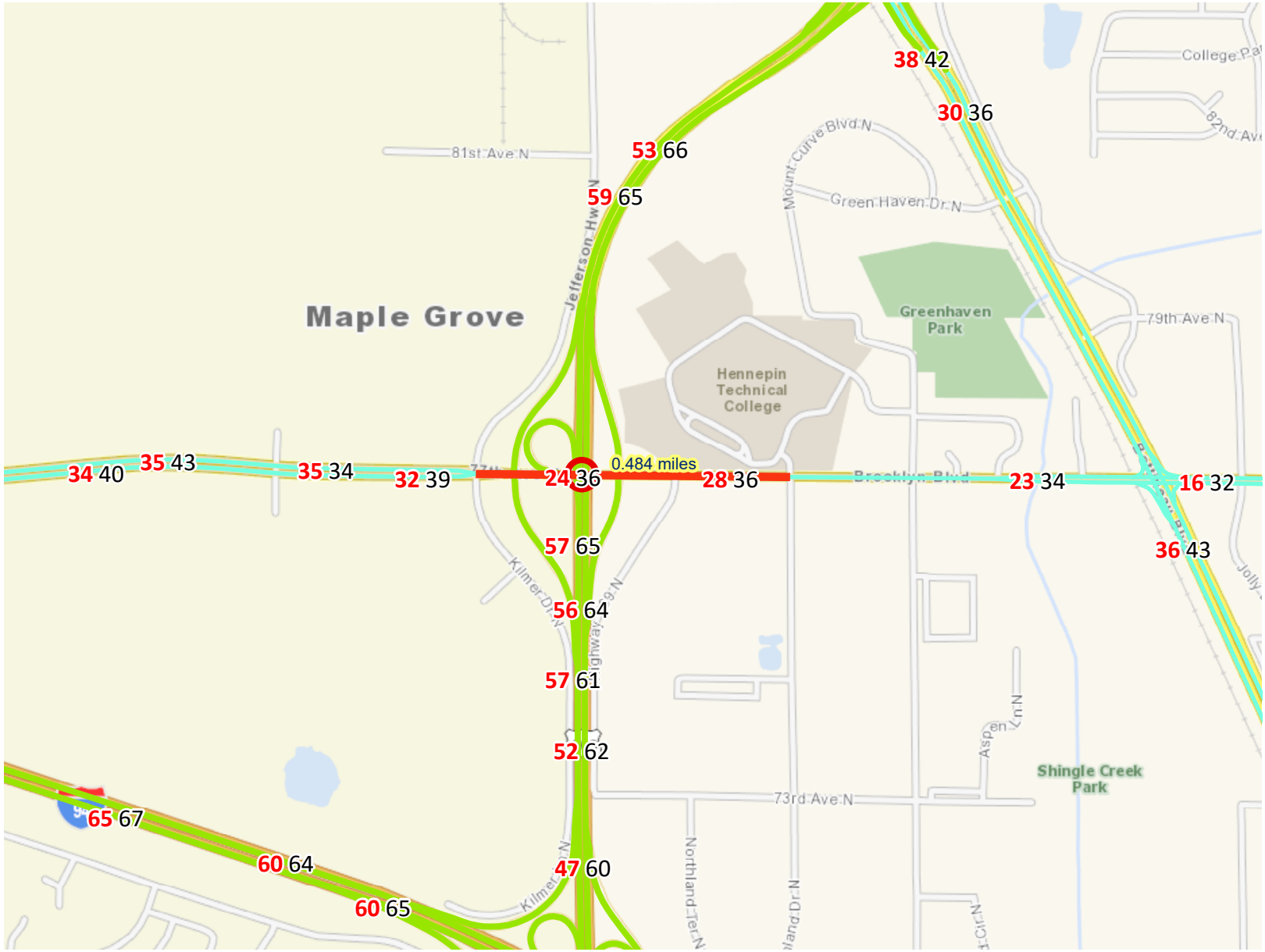
cc: Jason Pieper, P.E. – Capital Program Manager

Hennepin County Public Works
1600 Prairie Drive | Medina, MN
612-596-0356 | hennepin.us

Hennepin

Level of Congestion

Roadway Reconstruction/Modernization Project: Highway 169 and County Road 130 Interchange Reconstruction | Map ID: 164686322522



Created: 3/9/2022
LandscapeRSA1

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

METROPOLITAN COUNCIL

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	Elm Creek Boulevard	**District**		**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	Elm Creek Boulevard and US 169 Interchange				

B. Project Description

Proposed Work	Convert interchange to a Diverging Diamond Interchange		
Project Cost*	$14,635,000	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

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

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

Begin Date	1/1/2019	**End Date**	12/31/2021	3 years
Data Source	MnDOT			

Crash Severity	**Angle**	**Rear End**
K crashes		
A crashes		
B crashes		1
C crashes		2
PDO crashes	8	6

F. Benefit-Cost Calculation

$2,301,917	**Benefit (present value)**	**B/C Ratio = 0.16**
$14,635,000	**Cost**	

Proposed project expected to reduce 3 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,500,000
A crashes	$750,000
B crashes	$230,000
C crashes	$120,000
PDO crashes	$13,000

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

Real Discount Rate	0.7%
Traffic Growth Rate	2.0%
Project Service Life	20 years

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	0.45	0.15	$34,500
C crashes	0.90	0.30	$36,000
PDO crashes	7.18	2.39	$31,113
			$101,613

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$101,613	$101,613
2026	$103,646	$102,925
2027	$105,719	$104,254
2028	$107,833	$105,600
2029	$109,990	$106,963
2030	$112,189	$108,344
2031	$114,433	$109,743
2032	$116,722	$111,159
2033	$119,056	$112,594
2034	$121,437	$114,048
2035	$123,866	$115,520
2036	$126,343	$117,011
2037	$128,870	$118,522
2038	$131,448	$120,052
2039	$134,077	$121,602
2040	$136,758	$123,172
2041	$139,493	$124,762
2042	$142,283	$126,373
2043	$145,129	$128,004
2044	$148,031	$129,656
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 = $2,301,917

Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project

DEPARTMENT OF TRANSPORTATION

A. Roadway Description

Route	Elm Creek Boulevard	**District**		**County**	Hennepin
Begin RP		**End RP**		**Miles**	
Location	Elm Creek Boulevard and US 169 Interchange				

B. Project Description

Proposed Work	Convert interchange to a Diverging Diamond Interchange		
Project Cost*	$14,635,000	**Installation Year**	2025
Project Service Life	20 years	**Traffic Growth Factor**	2.0%

** exclude Right of Way from Project Cost*

C. Crash Modification Factor

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

D. Crash Modification Factor (optional second CMF)

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

E. Crash Data

Begin Date	1/1/2019	**End Date**	12/31/2021	3 years
Data Source	MnDOT			

Crash Severity	**Sideswipe**	**All**
K crashes		
A crashes		
B crashes		2
C crashes		1
PDO crashes	5	6

F. Benefit-Cost Calculation

$3,260,320	**Benefit (present value)**	**B/C Ratio = 0.23**
$14,635,000	**Cost**	

Proposed project expected to reduce 2 crashes annually, 0 of which involving fatality or serious injury.

F. Analysis Assumptions

Crash Severity	Crash Cost
K crashes	$1,500,000
A crashes	$750,000
B crashes	$230,000
C crashes	$120,000
PDO crashes	$13,000

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

Real Discount Rate	0.7%
Traffic Growth Rate	2.0%
Project Service Life	20 years

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	1.34	0.45	$102,733
C crashes	0.67	0.22	$26,800
PDO crashes	3.32	1.11	$14,387
			$143,920

H. Amortized Benefit

Year	Crash Benefits	Present Value
2025	$143,920	$143,920
2026	$146,798	$145,778
2027	$149,734	$147,660
2028	$152,729	$149,566
2029	$155,784	$151,497
2030	$158,899	$153,453
2031	$162,077	$155,434
2032	$165,319	$157,440
2033	$168,625	$159,473
2034	$171,998	$161,532
2035	$175,438	$163,617
2036	$178,946	$165,729
2037	$182,525	$167,869
2038	$186,176	$170,036
2039	$189,899	$172,231
2040	$193,697	$174,454
2041	$197,571	$176,706
2042	$201,523	$178,988
2043	$205,553	$181,298
2044	$209,664	$183,639
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 = $3,260,320

CRASH MODIFICATION FACTORS CLEARINGHOUSE

SEARCH RESULTS

There were 112 CMFs returned for your search on "**DDI**". [MODIFY YOUR SEARCH].

Having trouble deciding between similar CMFs? Use our **COMPARISON TOOL** or **CHECK OUT OUR FAQS**.

Overwhelmed by too many results? See our **SEARCH TIPS**.

STAR QUALITY RATING

- [ ] 1 (9)
- [ ] 2 (46)
- [ ] 3 (27)
- [ ] 4 (17)
- [ ] 5 (8)

COUNTRY

- [ ] U.S. & Canada (110)
- [ ] International (2)

CRASH TYPE

CRASH SEVERITY

ROADWAY TYPE

AREA TYPE

INTERSECTION TYPE

INTERSECTION GEOMETRY

TRAFFIC CONTROL

IN HSM

Filter Results

Results Control: COLLAPSE ALL | EXPAND ALL

Click on the links below to expand individual categories.

EXPORT ALL RESULTS TO EXCEL

Category: Bicyclists (6)

Category: Interchange design (69)

Subcategory: None (69)

Countermeasure: Convert at-grade intersections to Diverging Diamond Interchanges

Countermeasure: Convert diamond interchange to Diverging Diamond Interchange (DDI) or Double Crossover Diamond (DCD)

Compare	CMF	CRF(%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comme
☐	0.858	14.2	★★★★☆	All	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.558	44.2	★★★★☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.92	8	★★★★☆	All	O (property damage only)	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.887	11.3	★★★★☆	Rear end	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.448	55.2	★★★★☆	Angle,Left turn	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.845	15.5	★★★★☆	Single vehicle	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MO
☐	0.67	33	★★★☆☆	All	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MO
☐	0.59	41	★★★☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MO
☐	0.45	55	★★★☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Urban	CLAROS ET AL., 2017	This CMF app the ... [READ M
☐	0.686	31.4	★★★☆☆	All	O (property	Urban	CLAROS	This CMF app

					damage only)		ET AL., 2017	the ... [READ M
☐	0.625	37.5	★★★☆☆	All	All	Urban	CLAROS ET AL., 2017	This CMF app the ... [READ M
☐	0.633	36.7	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.821	17.9	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.577	42.3	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.328	67.2	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.512	48.8	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.441	55.9	★★★☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.549	45.1	★★★☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	1.139	-13.9	★★★☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.461	53.9	★★★☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.695	30.5	★★★☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.648	35.2	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.638	36.2	★★★☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	1.241	-24.1	★★★☆☆	Sideswipe	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MC
☐	0.643	35.7	★★★☆☆	Head on	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	The AADT v mentioned [READ MC
☐	1.762	-76.2	★★★☆☆	Other	All	Urban and suburban	ABDELRAHMAN ET AL., 2021	This CMF is fc Motorized ... MORE
☐	0.33	67	★★☆☆☆	Angle	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	0.64	36	★★☆☆☆	Rear end	All	Urban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	1.27	-27	★★☆☆☆	Sideswipe	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	0.76	24	★★☆☆☆	Single vehicle	All	Suburban	HUMMER ET AL., 2016	The volume her ... [READ MC
☐	0.374	62.6	★★☆☆☆	All	K (fatal),A	Urban	CLAROS	This CMF app

					(serious injury),B (minor injury),C (possible injury)		ET AL., 2015	the ... [READ M
☐	0.649	35.1	★★☆☆☆	All	O (property damage only)	Urban	CLAROS ET AL., 2015	This CMF app the ... [READ M
☐	0.592	40.8	★★☆☆☆	All	All	Urban	CLAROS ET AL., 2015	This CMF app the ... [READ M
☐	1.039	-3.9	★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.572	42.8	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	1.44	-44	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.339	66.1	★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.587	41.3	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	0.655	34.5	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.153		★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.257	74.3	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	1.138	-13.8	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.11	89	★★☆☆☆	Angle	All	Not specified	NYE ET AL., 2019	
☐	0.576	42.4	★★☆☆☆	Rear end	All	Not specified	NYE ET AL., 2019	
☐	0.714	28.6	★★☆☆☆	Sideswipe	All	Not specified	NYE ET AL., 2019	
☐	0.582		★★☆☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.888		★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.502	49.8	★★☆☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.6	40	★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.232	76.8	★★☆☆☆	All	K (fatal),A (serious injury),B (minor injury),C (possible injury)	Not specified	NYE ET AL., 2019	
☐	0.36	64	★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.312	68.8	★★☆☆☆	All	K (fatal),A (serious injury),B	Not specified	NYE ET AL., 2019	

					(minor injury),C (possible injury)			
☐	0.626	37.4	★★☆☆☆	All	O (property damage only)	Not specified	NYE ET AL., 2019	
☐	0.919	8.1	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.626	37.4	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.557	44.3	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.647	35.3	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.425	57.5	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.53	47	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.514	48.6	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.5	50	★★☆☆☆	All	All	Not specified	NYE ET AL., 2019	
☐	0.54	46	★☆☆☆☆	All	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.28	72	★☆☆☆☆	All	B (minor injury)	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.63	37	★☆☆☆☆	All	O (property damage only)	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.71	29	★☆☆☆☆	Rear end	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0	100	★☆☆☆☆	Left turn	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]
☐	0.81	19	★☆☆☆☆	Not specified	All	Urban	CHILUKURI ET AL., 2011	The authors cor the CMF ... [R MORE]

Compare* Reset Compare

NOTE: You can compare CMFs across countermeasures, subcategories, and categories.

Category: Intersection geometry (6)

Subcategory: Turn lanes (6)

Category: Intersection traffic control (12)

Subcategory: Traffic control visibility (11)

Subcategory: Traffic control type (1)

Category: Roadway (19)

EXPORT ALL RESULTS TO EXCEL

TH 169 and Elm Creek Blvd East Ramps

INCIDENTID	RTESYSCOD	RTENUMBE	MEASURE	COUNTY_S	CITY_NAM	TOWNSHIP	MNDOT_DI	STATE_PAT	TRIBAL_GC	LOCALID	ACCIDENT_	CRASH_MC
742243	4	130	4.297	27	Brooklyn Park		M	25		19038231	1.92E+08	8
727062	4	130	4.339	27	Brooklyn Park		M	25		19026120	1.92E+08	6
849283	4	130	4.286	27	Brooklyn Park		M	25		20043767	2.03E+08	10
837106	4	130	4.314	27	Brooklyn Park		M	25		20035331	2.02E+08	8
797874	22	2380	0.208	27	Brooklyn Park		M	25		207475	2E+08	2
846511	22	2380	0.207	27	Brooklyn Park		M	25		2013440	2.03E+08	10
972801	4	130	4.296	27	2393429			25		21-039831	2.13E+08	11
892895	4	130	4.318	27	2393429			25		21-006502	2.11E+08	2
899840	22	2327	0.001	27	Brooklyn Park		M	25		21011630	2.11E+08	4
976045	22	2327	0.01	27	2393429			25		21015894	2.13E+08	11
968359	22	2380	0.206	27	Brooklyn Park		M	25		21037162	2.13E+08	10

TH 169 and Elm Creek Blvd West Ramps

INCIDENTID	RTESYSCOD	RTENUMBE	MEASURE	COUNTY_S	CITY_NAM	TOWNSHIP	MNDOT_DI	STATE_PAT	TRIBAL_GC	LOCALID	ACCIDENT_	CRASH_MC
744270	4	130	4.142	27	Maple Grove		M	25		19013518	1.92E+08	9
745621	4	130	4.144	27	Maple Grove		M	25		19013827	1.92E+08	9
739420	4	130	4.146	27	Maple Grove		M	25		MG190121	1.92E+08	8
768255	4	130	4.154	27	Maple Grove		M	25		19016074	1.93E+08	12
773334	4	130	4.198	27	Maple Grove		M	25		MG190193	1.94E+08	12
701620	22	3627	0.035	27	Maple Grove		M	25		19504676	1.91E+08	4
756606	22	5366	0.269	27	Maple Grove		M	25		19512787	1.93E+08	10
740394	22	5366	0.276	27	Maple Grove		M	25		19036548	1.92E+08	8
868177	4	130	4.143	27	2395838			25		20-16212	2.03E+08	12
803510	22	3627	0.001	27	Maple Grove		M	25		20011474	2.01E+08	3
870911	22	5366	0.276	27	Maple Grove		M	25		MG200167	2.04E+08	12
966581	4	130	4.146	27	Maple Grove		M	25		MG210146	2.13E+08	10
933526	4	130	4.147	27	Maple Grove		M	25		21-011586	2.12E+08	8
915341	4	130	4.154	27	Maple Grove		M	25		21-9079	2.12E+08	6
887782	22	3627	0.002	27	Maple Grove		M	25		21001155	2.1E+08	2

Elm Creek Blvd Bridge

847538	4	130	4.221	27	Maple Grove		M	25		20-043101	2.03E+08	10

865078	4	130	4.262	27	Brooklyn Park	M	25	20-047989	2.03E+08	11
933170	2	169	136.066	27	2395838		25	21-027438	2.12E+08	8
977307	4	130	4.225	27	2395838		25	21-042654	2.13E+08	12
937504	4	130	4.265	27	Brooklyn Park	M	25	21030048	2.12E+08	8

CRASH_DA	CRASH_YE	CRASH_DA	CRASH_HO	DIVIDEDRD	CRASHSEVI	NUMBERKI	NUMBERO	MANNERO	FIRSTHARM	RELATIONT	LIGHTCONI	WEATHERP
22	2019	Thu	18	W	5	0	2	5	10	3	1	1
15	2019	Sat	13	E	4	0	2	12	10	2	1	1
25	2020	Sun	18	98	4	0	3	12	10	29	4	4
25	2020	Tue	12	W	5	0	2	12	10	3	1	1
14	2020	Fri	18	N	5	0	2	5	10	3	4	1
15	2020	Thu	8	N	5	0	2	12	10	10	1	1
10	2021	Wed	20	E	5	0	2	12	10	10	4	3
24	2021	Wed	16	W	5	0	2	12	10	99	1	1
8	2021	Thu	22	W	5	0	2	13	10	3	4	1
27	2021	Sat	20		5	0	2	10	10	27	4	1
21	2021	Thu	17	98	5	0	2	5	10	3	1	1

CRASH_DA	CRASH_YE	CRASH_DA	CRASH_HO	DIVIDEDRD	CRASHSEVI	NUMBERKI	NUMBERO	MANNERO	FIRSTHARM	RELATIONT	LIGHTCONI	WEATHERP
1	2019	Sun	11	E	4	0	2	12	10	3	1	2
6	2019	Fri	12		5	0	2	10	10	3	1	1
10	2019	Sat	13	S	5	0	2	5	10	3	1	3
5	2019	Thu	7		5	0	2		25	10	1	1
19	2019	Thu	19	98	5	0	2	12	10	2	4	1
2	2019	Tue	13	S	5	0	2	10	10	3	1	1
23	2019	Wed	8	S	5	0	2	10	10	26	1	2
13	2019	Tue	12	W	3	0	2	12	10	10	1	1
13	2020	Sun	17	E	3	0	3	90	10	3	3	4
11	2020	Wed	12	E	5	0	2	5	10	3	1	1
27	2020	Sun	11	S	5	0	2	14	10	27	1	4
12	2021	Tue	13		5	0	2	5	10	3	1	2
11	2021	Wed	8		5	0	2	5	10	3	1	1
29	2021	Tue	15	E	5	0	2	10	10	2	1	1
2	2021	Tue	23	E	3	0	1		9	25	4	1
20	2020	Tue	12	W	5	0	1		47	2	1	4

24	2020	Tue	11	W		5	0	2	5	10	10	90	2
9	2021	Mon	14		98	5	0	2	12	10	25	1	1
3	2021	Fri	19		98	5	0	2		11	2	4	1
30	2021	Mon	11			5	0	1	90	10	2	1	1

WEATHERS	RDWYSURF	WORKZON	ROADWAY	INTERSECT	ROUTE_ID	BASIC_TYP	UNITTYPEU	VEHICLETY	DIRECTION	PRECRASHI	AGEU1	SEXU1
	1	98	77TH AVE		040000659	10	2	2	4	21	56	M
	1	98	BROOKLYN	BLVD	040000659	7	2	2	3	21	18	F
	5	98	77TH AVE		040000659	7	2	4	3	34	31	F
	1	98	BROOKLYN	BLVD	040000659	7	2	2	4	34	18	F
	1	98	RAMP380		220000659	10	2	4	1	24	81	F
	1	98	RAMP380		220000659	7	2	49	1	34	39	M
	2	98	77TH AVE	BROOKLYN	040000659	7	2	2	3	34	41	F
	1	98	BROOKLYN	BLVD	040000659	7	2	2	4	34	43	F
	1	98	RAMP327		220000659	8	2	4	4	21	50	F
	1	98	RAMP327		220000659	5	2	4	1	24	62	F
	1	98	RAMP380	BROOKLYN	220000659	9	2	2	4	21	28	M

WEATHERS	RDWYSURF	WORKZON	ROADWAY	INTERSECT	ROUTE_ID	BASIC_TYP	UNITTYPEU	VEHICLETY	DIRECTION	PRECRASHI	AGEU1	SEXU1
3	2	98	77TH AVE		040000659	7	2	3	3	21	56	F
	1	98	77TH AVE		040000659	5	2	2	3	23	33	M
	2	98	77TH AVE		040000659	10	2	2	4	21	16	M
	2	98	77TH AVE	RAMP366	040000659	90	2	2	2	21	67	F
	4	98	77TH AVE		040000659	7	2	2	3	34	47	M
	1	98	RAMP627		220000659	5	2	49	2	24	56	M
	1	98	RAMP366		220000659	5	2	2	2	21	40	F
	1	98	RAMP366		220000659	7	2	2	4	26	49	M
	5	98	77TH AVE		040000659	90	2	5	3	34	42	F
	1	98	RAMP627	77TH AVE	220000659	10	2	2	2	24	71	F
	3	98	RAMP366		220000659	90	2	2	2	34	43	F
	1	98	77TH AVE		040000659	10	2	2	4	21	36	F
	1	98	77TH AVE		040000659	10	2	2	4	21	85	F
	1	98	77TH AVE		040000659	5	2	2	3	21	38	F
	1	98	RAMP627		220000659	2	2	2	3	21	17	M
	3	98	77TH AVE		040000659	3	2	4	4	21	17	M

2	98	77TH AVE	USTH 169	040000659	9	2	2	4	21	18	F
1	98	USTH 169		020000000	7	2	4	3	24	18	F
1	98	77TH AVE		040000659	90	2	2	3	21	28	M
1	98	77TH AVE		040000659	4	2	2	3	21	36	M

PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU1	UNITTYPEL	VEHICLETY	DIRECTION
5	1				14	20	45	11	21	2	2	3
5	74				12	20	40	11	21	2	3	3
5	1				12	20	40	11	21	2	2	3
5	1				12	20	45	11	21	1	2	4
5	1				11	20	30	11	23	2	4	1
5	1				11	20	60	11	23	2	2	1
5	1				12	20	30	11	21	2	2	3
5	1				14	20	45	11	21	2	2	4
5	99				12	20	40	11	21	2	2	3
5	1				11	20		11	21	2	49	1
5	1				12	20	45	11	23	2	2	3

PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU1	UNITTYPEL	VEHICLETY	DIRECTION
5	1				15	20	40	11	21	2	4	3
5	1				12	20	45	11	21	2	49	3
5	74				12	20	40	11	21	2	2	2
5	1				14	20	40	11	21	2	4	4
5	1				12	9	50	11	21	2	4	3
5	68				90	20	40	11	21	2	5	2
5	65	66			90	20	60	11	21	2	3	2
5	70	4			12	20	45	11	21	2	2	4
5	99				14	20	50	12	21	2	4	3
5	1				12	20	40	11	21	2	48	3
5	1				11	20	30	11	21	2	49	2
5	63				14	20	40	11	21	2	2	2
5	63				12	20	45	11	21	2	49	2
5	1				15	20	40	11	21	2	2	3
5	99				12	20	40	11	21	6		
5	72				12	9	45	11	21			

5	99	12	20		11	23	2	4	3
5	10	12	20	30	11	21	1		3
5	1	12	9		11	21	3	2	3
5	99	12	9	45	11	21			

PRECRASHI	AGEU2	SEXU2	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU2
21	66	F	5	1				12	20	45	11	21
34	56	M	5	1				12	20	40	11	21
21	26	F	5	1				12	20	40	11	21
21	73	M	5	99				12	20	45	11	21
21	38	F	5	1				11	20	30	11	23
26	30	M	5	4				11	20	60	11	23
21	19	M	5	75				12	20	30	11	21
21	50	M	5	74				14	20	45	11	21
99	16	M	5	99				12	20	40	11	21
24	49	M	5	1				11	20		11	21
24	33	F	5	2				12	20	45	11	24

PRECRASHI	AGEU2	SEXU2	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU2
34	53	M	5	1				15	20	40	11	21
21	21	M	5	1				12	20	45	11	21
21	62	F	5	1				12	20	40	11	21
21	67	F	5	63				12	20	40	11	21
21	16	M	5	72				12	9	50	11	21
24	77	M	5	1				90	20	40	11	21
21	35	M	5	1				90	20	60	11	21
26	44	M	5	1				12	20	45	11	21
34	32	M	5	1				14	20	50	12	21
21	27	M	5	63				12	20	40	11	21
33	23	M	5	99				11	20	30	11	21
24	64	F	5	1				11	20	60	11	21
24	27	M	5	1				12	20	45	11	21
21	17	F	5	2	10			15	20	40	11	21
	34	M	5	26		32	99					

24	80	F		5	10			12	20	40	11	23
								12	20	30	11	21
34	49	F		5	1			12	9		11	21

UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU3	SEXU3	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO
2	2	3	21	33	F	5	1				12	20

UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU3	SEXU3	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC	NONMOTC	RDWYDESI	TRAFFICCO
2	4	3	21	29	F	5	99				14	20

SPEEDLIMI	ALIGNMEN	GRADEU3	UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU4	SEXU4	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC
40	11	21										

SPEEDLIMI	ALIGNMEN	GRADEU3	UNITTYPEL	VEHICLETY	DIRECTION	PRECRASHI	AGEU4	SEXU4	PHYSICALC	CONTRIBFA	CONTRIBFA	NONMOTC
50	12	21										

NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU4	UTMX	UTMY	LATITUDE	LONGITUDI	CRASH_DA	STATUS	STATUS_N
						468417.7	4993534	45.09457	-93.4014	########	Accepted	Reportable
						468486.3	4993533	45.09457	-93.4005	########	Accepted	Reportable
						468400.6	4993534	45.09458	-93.4016	########	Accepted	Reportable
						468446	4993534	45.09457	-93.401	########	Accepted	Reportable
						468427.2	4993529	45.09453	-93.4013	########	Accepted	Reportable
						468427.2	4993529	45.09453	-93.4013	########	Accepted	Reportable
						468416.2	4993533	45.09456	-93.4014	########	Accepted	Reportable
						468452.3	4993522	45.09446	-93.4009	########	Accepted	Reportable
						468427.5	4993536	45.09459	-93.4013	########	Accepted	Reportable
						468420.9	4993550	45.09471	-93.4013	########	Accepted	Reportable
						468427.1	4993526	45.09451	-93.4013	########	Accepted	Reportable

NONMOTC	RDWYDESI	TRAFFICCO	SPEEDLIMI	ALIGNMEN	GRADEU4	UTMX	UTMY	LATITUDE	LONGITUDI	CRASH_DA	STATUS	STATUS_N
						468169.6	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468171.7	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468175.6	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468188.7	4993534	45.09456	-93.4043	########	Accepted	Reportable
						468259	4993534	45.09457	-93.4034	########	Accepted	Reportable
						468176.4	4993477	45.09405	-93.4044	########	Accepted	Reportable
						468175.5	4993549	45.0947	-93.4045	########	Accepted	Reportable
						468174.8	4993537	45.09459	-93.4045	########	Accepted	Reportable
						468170.6	4993532	45.09454	-93.4045	########	Accepted	Reportable
						468174.6	4993531	45.09454	-93.4045	########	Accepted	Reportable
						468174.8	4993538	45.0946	-93.4045	########	Accepted	Reportable
						468174.7	4993534	45.09456	-93.4045	########	Accepted	Reportable
						468176.9	4993534	45.09456	-93.4044	########	Accepted	Reportable
						468188.4	4993534	45.09456	-93.4043	########	Accepted	Reportable
						468174.6	4993530	45.09453	-93.4045	########	Accepted	Reportable
						468295.7	4993535	45.09458	-93.4029	44124.53	Accepted	Reportable

468361.8	4993535	45.09458	-93.4021	44159.46	Accepted	Reportable
468353.9	4993537	45.09459	-93.4022	44417.59	Accepted	Reportable
468302.8	4993531	45.09453	-93.4028	44533.79	Accepted	Reportable
468366.5	4993534	45.09458	-93.402	44438.49	Accepted	Reportable

AGENCY_O	AGENCY_O	NARRATIVE
MN027030	Police	Red Minni cooper mentioned was heading westbound on Brooklyn Blvd when it was struck by the gray Subaru that was trying
MN027030	Police	See police report.
MN027030	Police	Unit 1was stopped at the traffic light. Unit 2 was coming to the intersection and was slowing as the light changed. Unit 2 slid o
MN027030	Police	Unit one
MN027030	Police	Vehicle 2 bearing MN 966RZZ was traveling north bound on the exit ramp from Highway 169 towards Brooklyn Blvd. As vehicle
MN027270	Police	The cement mixer was stopped on the ramp waiting for the light. Driver 2 said that he was being impatient and was too close
MN027030	Police	Unit one was travelling eastbound on Brooklyn Blvd attempting to go northbound on highway 169. When unit one was about t
MN027030	Police	Unit 2 was traveling westbound on Brooklyn Boulevard and highway 169 and stopped for the red light. Unit 2 thought the light
MN027030	Police	Unit 1 was traveling west bound on Brooklyn Blvd and approached the intersection of Hwy 169 exit ramps. Unit 1 indicated th
MN027270	Police	On
MN027030	Police	unit one

AGENCY_O	AGENCY_O	NARRATIVE
MN027270	Police	DISPATCH
MN027270	Police	On 9/7/19
MN027270	Police	UNIT 1 WAS WB ON 77TH AVE AND WAS DISTRACTED BY HIS MOUNTED GPS. HE DID NOT SEE HIS LIGHT TURN RED AT THE HV
MN027000	Sheriff	On
MN027270	Police	On 12-19-
MNMHP04	State Patro	BOTH VEHICLES WERE ON ELM CREEL BLVD AND WAITING AT A RED LIGHT AT THE CROSS STREET OF 77TH AVE IN BROOKLYN I
MNMHP04	State Patro	USTH 169
MN027030	Police	Unit 1
MN027270	Police	VEH 3 SLID ON ICY ROADWAY, HITTING VEH 2 & 1. VEH 1 & 2 WERE STOPPED AT RED LIGHT, BOTH STATED VEH 3 SLID INTO VE
MN027030	Police	On
MN027270	Police	UNIT 1
MN027270	Police	On
MN027270	Police	UNIT 1 WAS TRAVELING WESTBOUND ON 77TH AVE N AT THE SOUTBOUND HWY 169 OFF-RAMP INTERSECTION. UNIT 2 WAS
MN027270	Police	Accident
MN027000	Sheriff	Vehicle 1 was traveling eastbound on Elm Creek Boulevard when the driver struck the bicyclist near the southbound Highway 1

MN027030	Police	On October 20, 2020 at 1237 hours, I, Officer Nielsen, responded to a 1 car rollover on Brooklyn Blvd WB at the exit to SB 169.

MN027030	Police	Driver 1 advised they were traveling on Brooklyn Blvd headed westbound and the light was green. They were in the right hand
MN027030	Police	Driver #1 said she had been traveling eastbound on Brooklyn Blvd approaching the left turn to get onto the on ramp to northbo
MN027030	Police	On December 3rd, 2021 at approximately 1900 hours, I Officer Moshe Davis Badge 288, was dispatched to a property damage a
MN027030	Police	Unit 1 was travelling Northbound on highway 169. Unit1 exited from highway 169 to Brooklyn Boulevard. Unit 1 turned right o

to go north onto Highway 169 while in the turn lane facing eastbound. Both partied stated they had a green light. Vehicles collided at an angle in the i

n ice and was unable to control the vehicle. Unit 2 sideswiped Unit 1, and unit 3 hit the ice and crashed into both vehicles.

e 2 was approaching the intersection, she began to make a lane change into the right hand right turn lane. Vehicle 1 bearing MN 521WVW was traveli
to the truck, and his foot slipped off the brake pedal and he hit the truck. No injuries. D2 arranged own tow.
to turn at the intersection, Unit two crashed into them from behind.
t was green and proceeded driving and rear ended unit 1. Unit 2 said that Unit 1 was on their phone not paying attention. Unit 2 admitted to not payi
at she had a green light and began to travel through the intersection when she was struck by unit 2 front to front. Unit 2 was traveling east bound on

NY 169 OFF RAMP UNTIL UNIT 2 WAS ALREADY MOVING SB FROM THE RAMP. UNIT 1 SLAMMED ON HIS BRAKES BUT WAS NOT ABLE TO STOP IN TIM

PARK. THERE ARE TWO LANES THAT ARE FOR TURNING LEFT AT THE INTERSECTION. V1 WAS IN THE RIGHT SIDE LANE TO TURN LEFT AND V2 WAS IN

EH 2 FIRST, THEN INTO VEH 1. VEH 2 DRIVER COMPLAINED OF BACKPAIN- NOT TRANSPORTED. VEH 3 UNLIC DRIVER, CITED.

FACING SOUTH ON THE SOUTHBOUND HWY 169 OFF-RAMP AT THE INTERSECTION WITH 77TH AVE N. UNIT 2 WAS ATTEMPTING TO TURN LEFT TO G

169 ramp. The impact broke the passenger side mirror on vehicle 1 and left some scuff marks on the rear passenger side door. The bicyclist stated he

Dispatch reported no one was injured.The weather was cloudy with snow and the streets were snow coveredThe driver Davies said he had just left sch

lane when the car turned in front of them. They advised they did not have time to stop.Driver 2 advised she was looking to turn onto Northbound 169
ɔund HWY 169.Driver #1 said that she had a green arrow to turn left, but was in the right-most lane when she attempted to make the turn. She said tha
accident on Brooklyn Boulevard over Highway 169 in Brooklyn Park.The driver of Unit #2 was stopped in the eastbound lanes of Brooklyn Blvd and had
ɔn Brooklyn Blvd. Unit 1 swerved to avoid a vehicle travelling in the same direction. Unit 1 drove onto the curb and ran into a sign.

intersection. No parties were injured.

ng north bound on the exit ramp from Highway 169 towards Brooklyn Blvd. As vehicle 1 was making the lane change and began to turn right onto east

ng attention and checking their phone.
Brooklyn Blvd and approached the intersection of Hwy 169 exit ramps. Unit 2 indicated that as he approached the intersection, he had the green arr

IE WITH THE WET PAVEMENT AND HIS RUNNING THE LIGHT. WITNESS OBSERVED THAT UNIT 2 HAD A GREEN LIGHT WHEN SHE STARTED INTO THE IN

THE LEFT SIDE LANE TO TURN LEFT. WHEN THEIR LIGHT TURNED GREEN BOTH VEHICLES BEGAN TO TURN LEFT ONTO 77TH. DRIVER OF V1 STATED HI

GO EASTBOUND ON 77TH AVE N WHEN IT STRUCK UNIT 1, WHICH WAS COMING THROUGH THE INTERSECTION. PER THE WITNESS, UNIT 1 PROCEEDE

had some head and neck pain and was transported to North Memorial Hospital for evaluation.

hool at Maranatha. He was travelling West on Brooklyn Blvd. As he got on the bridge over Hwy 169 and lost control. His car started to spin and he atter

from eastbound Brooklyn Blvd. She was in the turn lane and the light went green. She observed a vehicle in the left hand lane across from her headin
at the other vehicle involved in this crash was in the left lane and was continuing to travel eastbound on Brooklyn Blvd. Driver #1 said that as she made
her hazard lights on due to her defective/dead car battery. The vehicle was in the right lane. The driver of Unit #1 rear ended the vehicle while travelli

t bound Brooklyn Blvd, vehicle 1 was struck on the front passenger side door by vehicle 2. Vehicle 1 sustained damage to the front passenger door. Ve

ow light to travel north bound on Hwy 169 ramp. As unit 2 began to travel through the intersection, he was struck by unit 1. There was no third part

NTERSECTION.

E WAS ATTEMPTING TO SWING WIDE AS HE WAS DRIVING A LARGE SEMI TRUCK. AS BOTH VEHICLES WERE TURNING LEFT V1 SIDESWIPED V2 AND HI

D THROUGH THE INTERSECTION ON A RED LIGHT AND UNIT 2 WAS PROCEEDING INTO THE INTERSECTION ON A GREEN LIGHT.

npted to recover from the spin. His car slid into the curb on the north side of the road and rolled on his side. His car hit a highway sign and then a light

g in the direction westbound on Brooklyn Blvd. She looked up again and didn't notice a turn arrow. That vehicle was not moving for approximately a m
e the left turn, the rear, passenger side part of her bumper collided with the front passenger side of the other vehicle. Driver #1 could only describe th
ing eastbound on Brooklyn Blvd over Highway 169. He stated that her lights must have been too dim.Neither driver sustained injury. Both drivers provi

ehicle 2 sustained damage to the front driver side corner of the vehicle. No injuries resulted.

y witnesses.

T THE PASSENGER'S SIDE OF V2. NO INJURIES WERE REPORTED. NO TOWS NEEDED.

pole. Davies said he and his passenger, Sykes were not hurt.

inute. Driver 2 thought the driver might be being nice and letting her turn. There was no car in the right hand lane. Driver 2 started to turn onto Hwy 1
e other vehicle as a red-colored mid-size SUV. No description of the driver of that other vehicle was noted.Driver #1 and officers met at the Mills Fleet
ded their insurance information. The driver of Unit #1 left the scene in the vehicle involved while the driver of Unit #2 had to request a private tow. Ca

169 and tried to see if there was any car coming in the right hand lane. She advised the car came very fast and she tried to drive faster to avoid the hit
Farm gas station located at 8400 Lakeland Ave N in Brooklyn Park to make this report.No injuries were reported.
dets took evidentiary pictures. Both drivers were provided cards with case numbers.

but was hit in the passenger side of the vehicle.Vehicle 1 had to be towed from scene due to front end damage. Vehicle 2 appeared drivable and

Maple Grove Application

1	Jefferson Hwy		
	Existing Volume	1232	vehicles
	Existing Delay	27	sec/veh
	Existing Total Delay	33264	seconds
	Future Volume	1232	vehicles
	Future Delay	27	sec/veh
	Future Total Delay	33264	seconds
	Total Delay Reduction	0	seconds

2	W West Ramps		
	Existing Volume	1532	vehicles
	Existing Delay	14	sec/veh
	Existing Total Delay	21448	seconds
	Future Volume	486	vehicles
	Future Delay	2	sec/veh
	Future Total Delay	972	seconds
	Total Delay Reduction	20476	seconds

3	East Ramps		
	Existing Volume	1667	vehicles
	Existing Delay	19	sec/veh
	Existing Total Delay	31673	seconds
	Future Volume	935	vehicles
	Future Delay	11	sec/veh
	Future Total Delay	10285	seconds
	Total Delay Reduction	21388	seconds

4	Elm Creek West Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	963	vehicles
	Future Delay	8	sec/veh
	Future Total Delay	7704	seconds
	Total Delay Reduction	-7704	seconds

5	Elm Creek East Intersection		
	Existing Volume	0	vehicles
	Existing Delay	0	sec/veh
	Existing Total Delay	0	seconds
	Future Volume	1130	vehicles
	Future Delay	0	sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

6			
	Existing Volume		vehicles
	Existing Delay		sec/veh
	Existing Total Delay	0	seconds
	Future Volume		vehicles
	Future Delay		sec/veh
	Future Total Delay	0	seconds
	Total Delay Reduction	0	seconds

Total Network Delay Reduction	**34160**	**seconds**

Emissions

Existing	1	2	3	4	5	6	7	8	9	10	Total
CO	1.28	1.44	1.72								4.44
NOx	0.25	0.28	0.33								0.86
VOC	0.3	0.33	0.4								1.03
									Total Existing		6.33

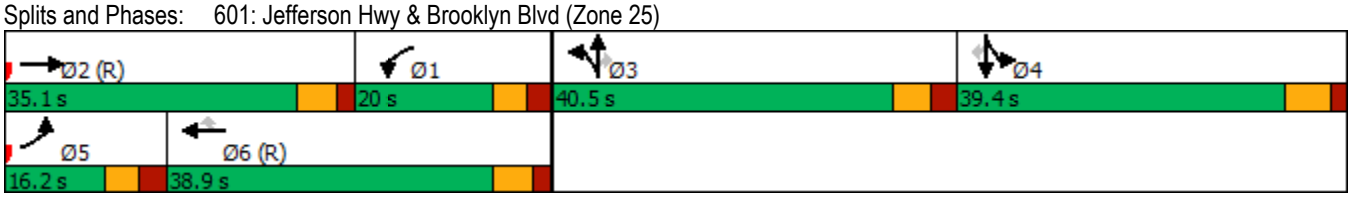
Build	1	2	3	4	5	6	7	8	9	10	Total
CO	1.37	0.1	0.48	0.41	0.14						2.5
NOx	0.27	0.02	0.09	0.08	0.03						0.49
VOC	0.32	0.02	0.11	0.1	0.03						0.58
									Total Build		3.57

Total Reduction	**2.76**

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	27	396	70	317	99	6	92	169	5	43
Future Volume (vph)	27	396	70	317	99	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6		3		4	4	
Permitted Phases					6		3			4
Detector Phase	5	2	1	6	6	3	3	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	12.0	10.0	12.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.0	2.5	2.5	1.9	1.9	1.9
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)	6.2	5.7	6.1	6.0	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.18	0.13	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	14.0	2.5	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	14.5	2.5	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	A	E	A	E	E	A
Approach Delay		21.0		22.7		11.3			54.9	
Approach LOS		C		C		B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

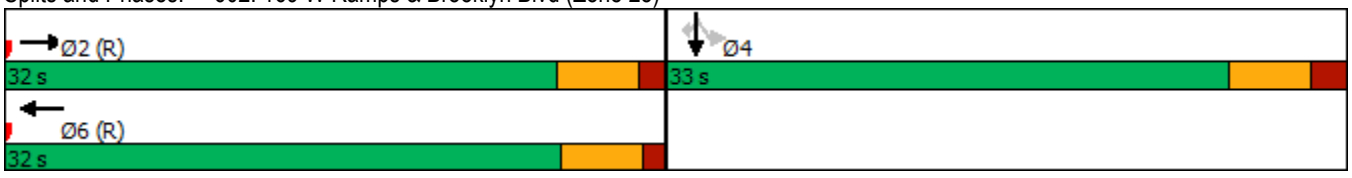
Splits and Phases: 601: Jefferson Hwy & Brooklyn Blvd (Zone 25)



Lane Group	EBT	WBT	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	432	306	25	180
Future Volume (vph)	432	306	25	180
Turn Type	NA	NA	NA	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	25.0	25.0	8.0	8.0
Minimum Split (s)	30.3	30.1	30.8	30.8
Total Split (s)	32.0	32.0	33.0	33.0
Total Split (%)	49.2%	49.2%	50.8%	50.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.3	1.1	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.1	5.8	5.8
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	30.0	30.2	23.9	23.9
Actuated g/C Ratio	0.46	0.46	0.37	0.37
v/c Ratio	0.52	0.25	0.71	0.30
Control Delay	11.6	12.1	23.6	3.3
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	11.9	12.1	23.6	3.3
LOS	B	B	C	A
Approach Delay	11.9	12.1	17.1	
Approach LOS	B	B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

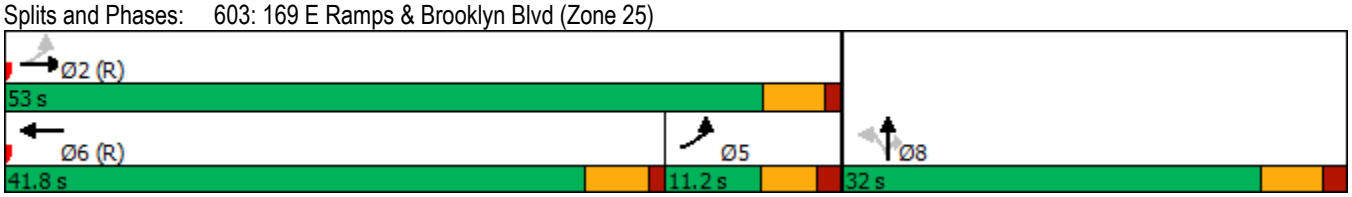
Splits and Phases: 602: 169 W Ramps & Brooklyn Blvd (Zone 25)



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Configurations					
Traffic Volume (vph)	67	729	206	0	401
Future Volume (vph)	67	729	206	0	401
Turn Type	pm+pt	NA	NA	NA	Perm
Protected Phases	5	2	6	8	
Permitted Phases	2				8
Detector Phase	2 5	2 5	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	12.0	12.0	20.0	20.0
Minimum Split (s)	11.2	40.1	40.1	30.6	30.6
Total Split (s)	11.2	53.0	41.8	32.0	32.0
Total Split (%)	13.2%	62.4%	49.2%	37.6%	37.6%
Yellow Time (s)	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.7	1.1	1.1	1.6	1.6
Lost Time Adjust (s)		0.0	0.0	0.0	0.0
Total Lost Time (s)		5.1	5.1	5.6	5.6
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effct Green (s)		47.9	36.7	26.4	26.4
Actuated g/C Ratio		0.56	0.43	0.31	0.31
v/c Ratio		0.53	0.21	0.53	0.81
Control Delay		13.0	12.5	29.4	31.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		13.0	12.5	29.4	31.2
LOS		B	B	C	C
Approach Delay		13.0	12.5	30.6	
Approach LOS		B	B	C	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of 1st Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 603: 169 E Ramps & Brooklyn Blvd (Zone 25)



601: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

602: 169 W Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1532
Total Delay / Veh (s/v)	14
CO Emissions (kg)	1.44
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.33

603: 169 E Ramps & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1667
Total Delay / Veh (s/v)	19
CO Emissions (kg)	1.72
NOx Emissions (kg)	0.33
VOC Emissions (kg)	0.40

3602: Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1202
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.22
NOx Emissions (kg)	0.04
VOC Emissions (kg)	0.05

Lane Group	EBT	SEL
Lane Configurations		
Traffic Volume (vph)	401	729
Future Volume (vph)	401	729
Turn Type	NA	Prot
Protected Phases	2!	Free!
Permitted Phases		
Detector Phase	2	3
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	22.5	
Total Split (s)	40.0	
Total Split (%)	100.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	
Act Effct Green (s)	40.0	40.0
Actuated g/C Ratio	1.00	1.00
v/c Ratio	0.12	0.23
Control Delay	0.1	0.2
Queue Delay	0.0	0.0
Total Delay	0.1	0.2
LOS	A	A
Approach Delay	0.1	0.2
Approach LOS	A	A

Intersection Summary	
Cycle Length: 40	
Actuated Cycle Length: 40	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 0.1	Intersection LOS: A
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

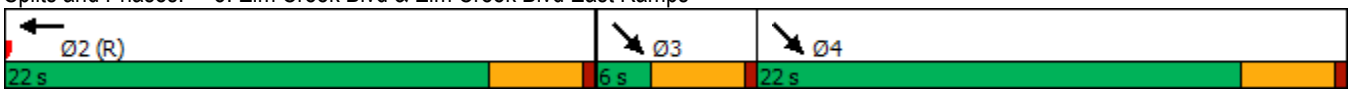
! Phase conflict between lane groups.

Splits and Phases: 4: NB 169 Off Ramp & Elm Creek Blvd

Lane Group	WBT	SET	Ø3	Ø4
Lane Configurations				
Traffic Volume (vph)	206	729		
Future Volume (vph)	206	729		
Turn Type	NA	NA		
Protected Phases	2	4 3	3	4
Permitted Phases				
Detector Phase	2	4 3		
Switch Phase				
Minimum Initial (s)	4.0		2.0	4.0
Minimum Split (s)	20.0		6.0	20.0
Total Split (s)	22.0		6.0	22.0
Total Split (%)	44.0%		12%	44%
Yellow Time (s)	3.5		3.5	3.5
All-Red Time (s)	0.5		0.5	0.5
Lost Time Adjust (s)	0.0			
Total Lost Time (s)	4.0			
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
Recall Mode	C-Min		Min	None
Act Effct Green (s)	19.9	22.1		
Actuated g/C Ratio	0.40	0.44		
v/c Ratio	0.16	0.51		
Control Delay	10.4	11.2		
Queue Delay	0.0	0.0		
Total Delay	10.4	11.2		
LOS	B	B		
Approach Delay	10.4	11.2		
Approach LOS	B	B		

Intersection Summary	
Cycle Length: 50	
Actuated Cycle Length: 50	
Offset: 0 (0%), Referenced to phase 2:WBT, Start of Green, Master Intersection	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

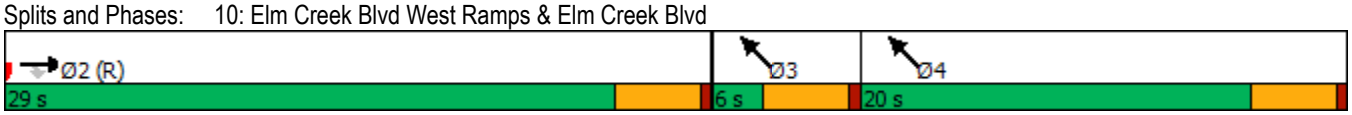
Splits and Phases: 5: Elm Creek Blvd & Elm Creek Blvd East Ramps



Lane Group	EBT	EBR2	NWT	Ø3	Ø4
Lane Configurations					
Traffic Volume (vph)	432	225	306		
Future Volume (vph)	432	225	306		
Turn Type	NA	Perm	NA		
Protected Phases	2		4 3	3	4
Permitted Phases		2			
Detector Phase	2	2	4 3		
Switch Phase					
Minimum Initial (s)	4.0	4.0		2.0	4.0
Minimum Split (s)	25.5	25.5		6.0	20.0
Total Split (s)	29.0	29.0		6.0	20.0
Total Split (%)	52.7%	52.7%		11%	36%
Yellow Time (s)	3.5	3.5		3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5
Lost Time Adjust (s)	0.0	0.0			
Total Lost Time (s)	4.0	4.0			
Lead/Lag				Lead	Lag
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min		None	None
Act Effct Green (s)	29.5	29.5	17.5		
Actuated g/C Ratio	0.54	0.54	0.32		
v/c Ratio	0.25	0.15	0.21		
Control Delay	7.4	1.4	13.9		
Queue Delay	0.0	0.0	0.0		
Total Delay	7.4	1.4	13.9		
LOS	A	A	B		
Approach Delay	5.3		13.9		
Approach LOS	A		B		

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 8.1	Intersection LOS: A
Intersection Capacity Utilization Err%	ICU Level of Service H
Analysis Period (min) 15	

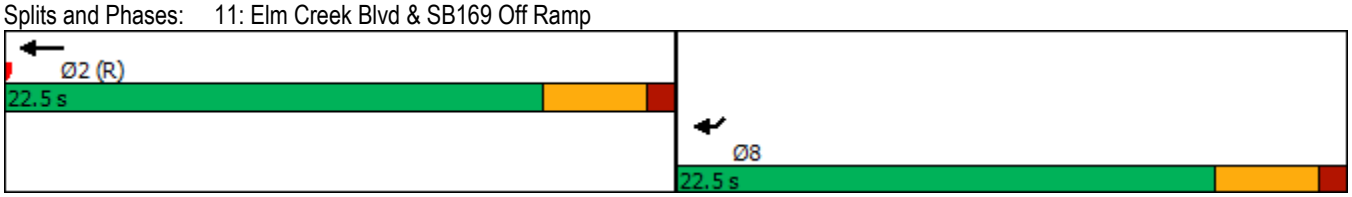
Splits and Phases: 10: Elm Creek Blvd West Ramps & Elm Creek Blvd



Lane Group	WBT	SWR
Lane Configurations		
Traffic Volume (vph)	306	180
Future Volume (vph)	306	180
Turn Type	NA	Prot
Protected Phases	2	8
Permitted Phases		
Detector Phase	2	8
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	22.5
Total Split (s)	22.5	22.5
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	33.4	5.5
Actuated g/C Ratio	0.74	0.12
v/c Ratio	0.13	0.21
Control Delay	2.5	0.5
Queue Delay	0.5	0.0
Total Delay	3.0	0.5
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	

Intersection Summary	
Cycle Length: 45	
Actuated Cycle Length: 45	
Offset: 0 (0%), Referenced to phase 2:WBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.21	
Intersection Signal Delay: 2.1	Intersection LOS: A
Intersection Capacity Utilization 22.3%	ICU Level of Service A
Analysis Period (min) 15	

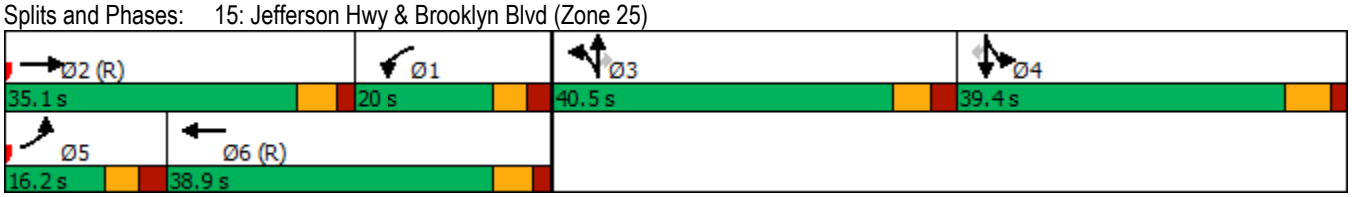
Splits and Phases: 11: Elm Creek Blvd & SB169 Off Ramp



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	27	396	70	317	6	92	169	5	43
Future Volume (vph)	27	396	70	317	6	92	169	5	43
Turn Type	Prot	NA	Prot	NA	NA	Perm	Split	NA	Perm
Protected Phases	5	2	1	6	3		4	4	
Permitted Phases						3			4
Detector Phase	5	2	1	6	3	3	4	4	4
Switch Phase									
Minimum Initial (s)	10.0	12.0	10.0	12.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	16.2	34.7	16.1	36.3	40.5	40.5	39.4	39.4	39.4
Total Split (s)	16.2	35.1	20.0	38.9	40.5	40.5	39.4	39.4	39.4
Total Split (%)	12.0%	26.0%	14.8%	28.8%	30.0%	30.0%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	4.0	3.5	4.0	4.0	4.0	4.5	4.5	4.5
All-Red Time (s)	2.7	1.7	2.6	2.0	2.5	2.5	1.9	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	5.7	6.1	6.0	6.5	6.5	6.4	6.4	6.4
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?									
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	10.4	71.6	13.9	81.2	10.0	10.0	14.8	14.8	14.8
Actuated g/C Ratio	0.08	0.53	0.10	0.60	0.07	0.07	0.11	0.11	0.11
v/c Ratio	0.25	0.26	0.70	0.17	0.05	0.49	0.56	0.57	0.16
Control Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	18.2	88.8	12.2	59.2	8.2	67.9	68.4	1.0
LOS	E	B	F	B	E	A	E	E	A
Approach Delay		21.0		23.2	11.3			54.9	
Approach LOS		C		C	B			D	

Intersection Summary	
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green	
Natural Cycle: 135	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 27.0	Intersection LOS: C
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Jefferson Hwy & Brooklyn Blvd (Zone 25)



1:

Direction	All
Future Volume (vph)	325
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

2: Elm Creek Blvd West Ramps

Direction	All
Future Volume (vph)	796
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

3:

Direction	All
Future Volume (vph)	1143
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.11
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.03

4: NB 169 Off Ramp & Elm Creek Blvd

Direction	All
Future Volume (vph)	1130
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.14
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

5: Elm Creek Blvd & Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	935
Total Delay / Veh (s/v)	11
CO Emissions (kg)	0.48
NOx Emissions (kg)	0.09
VOC Emissions (kg)	0.11

8: SB169 Off Ramp

Direction	All
Future Volume (vph)	544
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.30
NOx Emissions (kg)	0.06
VOC Emissions (kg)	0.07

10: Elm Creek Blvd West Ramps & Elm Creek Blvd

Direction	All
Future Volume (vph)	963
Total Delay / Veh (s/v)	8
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

11: Elm Creek Blvd & SB169 Off Ramp

Direction	All
Future Volume (vph)	486
Total Delay / Veh (s/v)	2
CO Emissions (kg)	0.10
NOx Emissions (kg)	0.02
VOC Emissions (kg)	0.02

12: Elm Creek Blvd East Ramps

Direction	All
Future Volume (vph)	270
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

13:

Direction	All
Future Volume (vph)	1400
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.35
NOx Emissions (kg)	0.07
VOC Emissions (kg)	0.08

14:

Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.06
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

15: Jefferson Hwy & Brooklyn Blvd (Zone 25)

Direction	All
Future Volume (vph)	1232
Total Delay / Veh (s/v)	27
CO Emissions (kg)	1.37
NOx Emissions (kg)	0.27
VOC Emissions (kg)	0.32

16:

Direction	All
Future Volume (vph)	795
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.15
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

17:

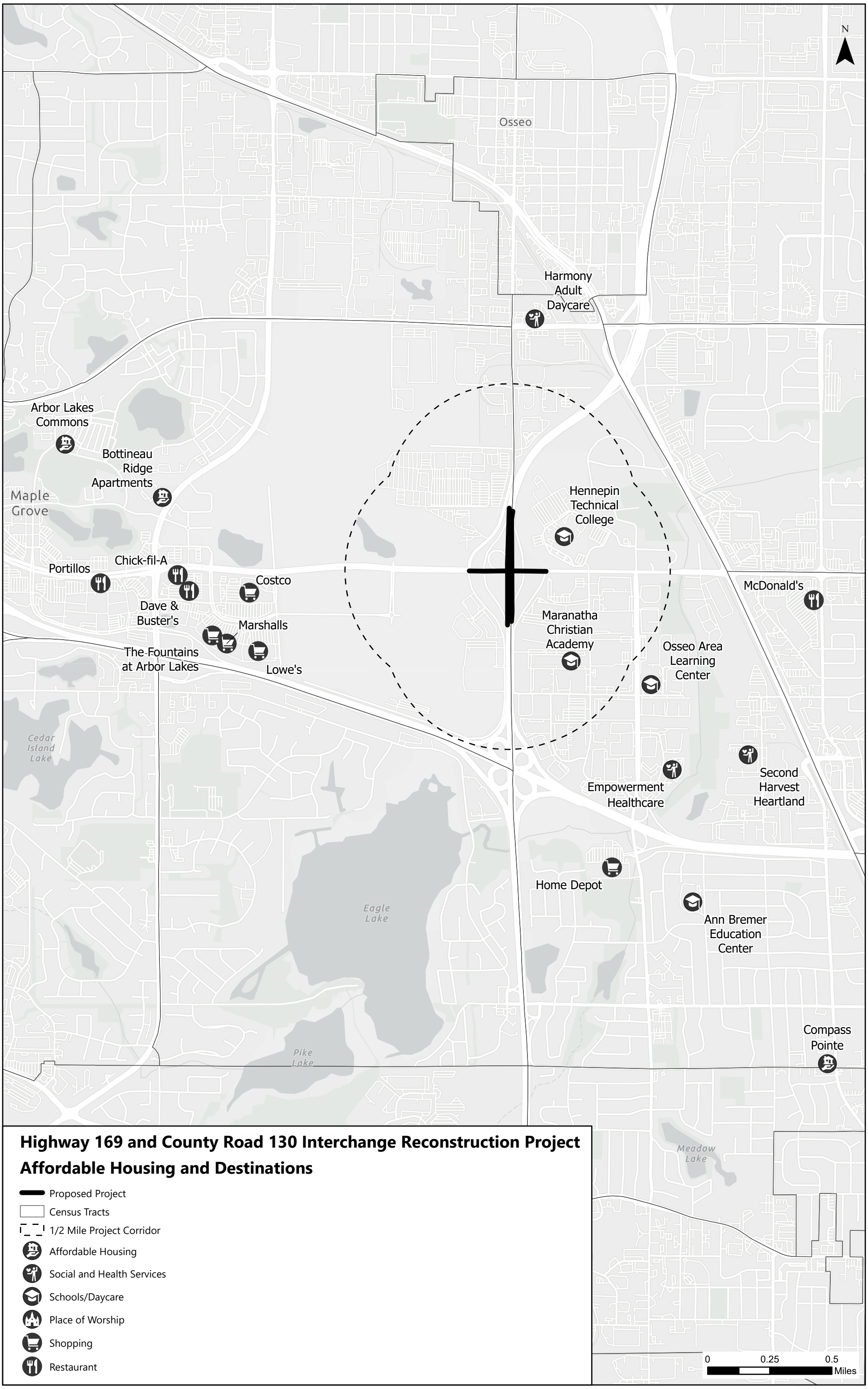
Direction	All
Future Volume (vph)	406
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.05
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01

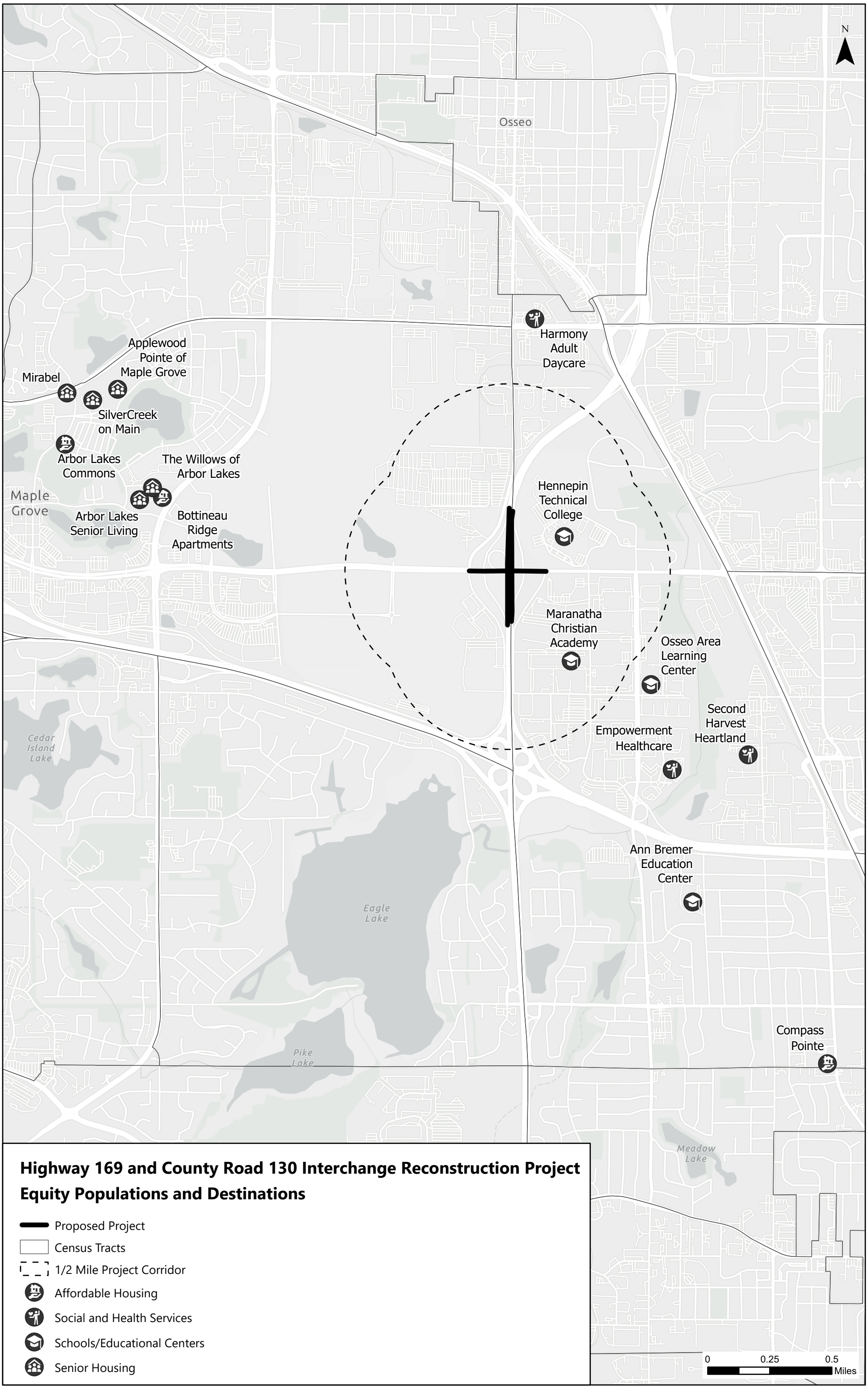
18: NB 169 Off Ramp

Direction	All
Future Volume (vph)	601
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.13
NOx Emissions (kg)	0.03
VOC Emissions (kg)	0.03

601:

Direction	All
Future Volume (vph)	131
Total Delay / Veh (s/v)	0
CO Emissions (kg)	0.03
NOx Emissions (kg)	0.01
VOC Emissions (kg)	0.01


N
Osseo
Harmony Adult Daycare
Arbor Lakes Commons
Bottineau Ridge Apartments
Maple Grove
Hennepin Technical College
Portillos
Chick-fil-A
Costco
Dave & Buster's
Marshalls
The Fountains at Arbor Lakes
Lowe's
McDonald's
Maranatha Christian Academy
Osseo Area Learning Center
Cedar Island Lake
Empowerment Healthcare
Second Harvest Heartland
Home Depot
Eagle Lake
Ann Bremer Education Center
Compass Pointe
Pike Lake
Meadow Lake
Highway 169 and County Road 130 Interchange Reconstruction Project
Affordable Housing and Destinations
Proposed Project
Census Tracts
1/2 Mile Project Corridor
Affordable Housing
Social and Health Services
Schools/Daycare
Place of Worship
Shopping
Restaurant
0
0.25
0.5
Miles


N
Osseo
Harmony Adult Daycare
Applewood Pointe of Maple Grove
Mirabel
SilverCreek on Main
Arbor Lakes Commons
The Willows of Arbor Lakes
Maple Grove
Arbor Lakes Senior Living
Bottineau Ridge Apartments
Hennepin Technical College
Maranatha Christian Academy
Osseo Area Learning Center
Second Harvest Heartland
Empowerment Healthcare
Ann Bremer Education Center
Compass Pointe
Cedar Island Lake
Eagle Lake
Pike Lake
Meadow Lake
Highway 169 and County Road 130 Interchange Reconstruction Project
Equity Populations and Destinations
Proposed Project
Census Tracts
1/2 Mile Project Corridor
Affordable Housing
Social and Health Services
Schools/Educational Centers
Senior Housing
0
0.25
0.5
Miles

STATE OF MINNESOTA)
COUNTY OF HENNEPIN) SS.
CITY OF MAPLE GROVE)

I, the undersigned, being the duly qualified and acting City Clerk of the City of Maple Grove, Hennepin County, Minnesota, hereby certify that I have carefully compared the attached resolution with the original thereof on file and of record in my office, and the same is a full, true, and correct copy of Resolution No. 22-056.

WITNESS, my hand and seal this 22nd day of March, 2022.

Kimberly Grewinger
Deputy City Clerk

RESOLUTION NO. 22-056

RESOLUTION OF SUPPORT FOR THE TH 169/ELM CREEK BOULEVARD (CSAH 130) PROJECT

WHEREAS, the Metropolitan Council is currently accepting grant applications for federal transportation funding of locally-initiated projects that meet regional transportation needs through the 2022 Regional Solicitation; and

WHEREAS, the improvement of the TH 169/Elm Creek Boulevard (CSAH 130) interchange will improve its overall traffic operations and safety, including safer accommodations for bicyclists and pedestrians connecting between the Cities of Maple Grove and Brooklyn Park; and

WHEREAS, the interchange improvements are vital to the success of current and future freight operations within the City of Maple Grove and along adjacent TH 169, which is the most heavily used non-interstate highway freight corridor in Hennepin County; and

WHEREAS, MnDOT, the Cities of Maple Grove, Brooklyn Park, Hennepin County and the Minnesota Department of Transportation are collaborating on the development and design of the TH 169/Elm Creek Boulevard (CSAH 130) interchange improvements; and

WHEREAS, the TH 169/Elm Creek Boulevard (CSAH 130) project is consistent with local and regional plans; and

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Maple Grove, Minnesota:

1. The City of Maple Grove does hereby declare their unified support for the TH 169/Elm Creek Boulevard (CSAH 130) interchange modification project.

2. The City of Maple Grove further supports the application for the 2022 Regional Solicitation funds and along with local partners (City of Brooklyn Park, Hennepin County and the Minnesota Department of Transportation) are committed to the required local match identified in the application.

3. If the City of Maple Grove is awarded a grant by the Metropolitan Council, the city agrees to accept the award and may enter into an agreement with the Metropolitan Council for the above referenced project and will comply with all applicable laws, requirements and regulations as stated in the grant agreement.

Adopted by the City Council on this 21st day of March, 2022.

The motion for the adoption of the foregoing resolution was made by Councilmember Hanson, seconded by Councilmember Jaeger and upon vote being duly taken thereon, the following voted in favor thereof Mayor Steffenson and Councilmembers Jaeger, Hanson and Barnett

and the following voted against the same: None

and the following were absent: Councilmember Leith

whereupon said resolution was declared duly passed and adopted.

STATE OF MINNESOTA)
COUNTY OF HENNEPIN) SS.
CITY OF MAPLE GROVE)

I, the undersigned, being the duly qualified and acting Clerk of the City of Maple Grove, Hennepin County, Minnesota, a Minnesota municipal corporation, hereby certify that the above and foregoing Resolution No. 22-056 is a true and correct copy of the Resolution as adopted by the City Council on the 21st day of March, 2022.

Amy Dietl

Amy Dietl, City Clerk

DEPARTMENT OF TRANSPORTATION

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

April 12, 2022

John Hagen, PE
Transportation Operations Engineer
City of Maple Grove

Re: MnDOT Letter for City of Maple Grove 's Metropolitan Council/Transportation Advisory Board 2022 Regional Solicitation Funding Request for a reconstruction project at US Hwy 169 and CSAH 130

Jesse Struve,

This letter documents MnDOT Metro District's recognition for City of Maple Grove to pursue funding for the Metropolitan Council/Transportation Advisory Board's (TAB) 2022 Regional Solicitation for a reconstruction project at US Hwy 169 and CSAH 130.

As proposed, this project impacts MnDOT right-of-way on US 169. As the agency with jurisdiction over US 169, MnDOT will allow the City to seek improvements proposed in the application. Details of any future maintenance agreement will need to be determined during project development to define how the improvements will be maintained for the project's useful life if the project receives funding.

There is no funding from MnDOT currently planned or programmed for this improvement. If your project receives funding, continue to work with MnDOT Area staff to coordinate needs and opportunities for cooperation.

MnDOT Metro District looks forward to continued cooperation with Maple Grove 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 West Area Manager April Crockett at April.Crockett@state.mn.us.

Sincerely,

Michael Barnes

Digitally signed by Michael Barnes
Date: 2022.04.12 09:40:10 -05'00'

Michael Barnes, PE
Metro District Engineer

CC: April Crockett, Metro District Area Manager; Dan Erickson, Metro State Aid Engineer; Molly McCartney, Metro Program Director

Highway 169/County Road 130 Interchange Reconstruction Photos

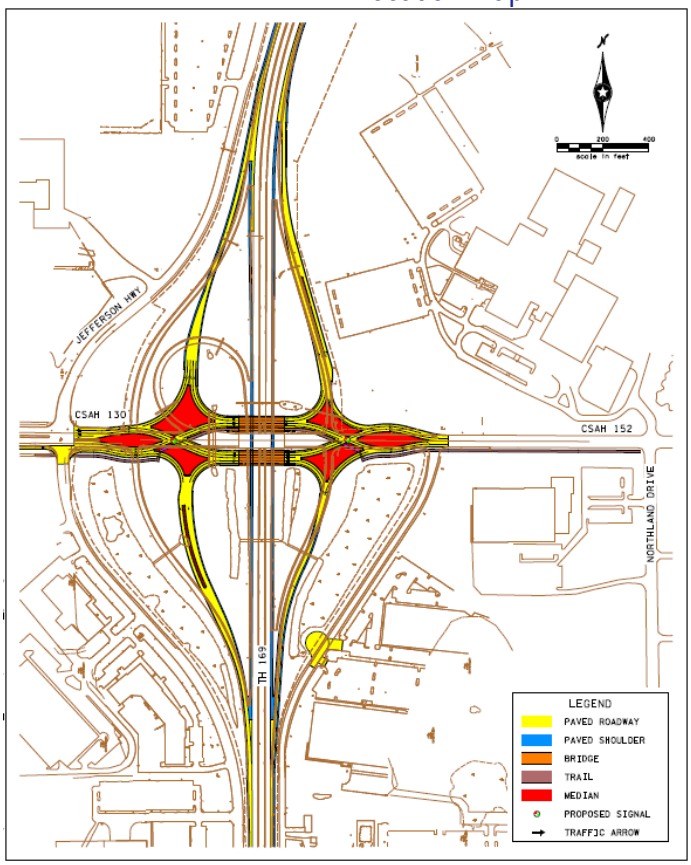
Looking Westbound County Road 130 and Lack of Pedestrian Facilities

Southbound On-Ramp to TH 169

Existing Interchange

2022 Metropolitan Council Regional Solicitation Highway 169 and County Road 130 Interchange Reconstruction - Project Summary

Location Map:



Project Name: Highway 169 and County Road 130 Interchange Reconstruction

Applicant: City of Maple Grove
Contact: John Hagen, PE, PTOE, Transportation Operations Engineer
Email/Phone: jhagen@maplegrovemn.gov
(763) 494-6364

Project Details:

- Total Project Cost = $13,795,000
- Requested Award Amount = $7,000,000
- Construction Dates: Begin by June 2025
- Consistent with local & regional plans
- Preliminary plans completed
- No Right of way acquisition required

Project Description:

The proposed interchange improvements include the reconstruction and widening of the bridge over TH 169 to provide a diverging diamond interchange (DDI) with geometrically realigned ramps. There will be four westbound lanes and three eastbound lanes with the multi-use trail on the CSAH 130 bridge. Existing traffic signals will also be replaced at the TH 169 east and west ramp intersections. The DDI configuration will improve the overall capacity and safety of the interchange.

The interchange project will also include accommodations for bicyclists and pedestrians to provide a safe connection over TH 169 between Maple Grove and Brooklyn Park. A 10-foot multiuse trail will be added on the south side between Northland Drive and Jefferson Highway/Kilmer Lane. The proposed trail will connect the existing trails along CSAH 130 in Maple Grove to Brooklyn Park while closing a RBTN gap. Painted crosswalks and pedestrian signing will provide better visibility to motorists, creating a safe crossing for trail users. Pedestrian signals will be upgraded to countdown timers, and pushbuttons and ramps will meet ADA standards.

Project Benefits:

- Provide a more efficient interchange to accommodate existing and future traffic volumes
- Provide a reliable alternate route to the I-94 freeway facility during congested periods
- Provide a safer multimodal transportation system for all modes
- Enhance pedestrian and bicycle travel by linking the Maple Grove and Brooklyn Park trail systems
- Improve access to employment opportunities in Maple Grove and Brooklyn Park
- Improve access to accommodate freight traffic to and from the Gravel Mining Area

Public Rights-of-Way

Public rights-of-way in the City of Maple Grove include roadways and their adjacent facilities that serve a transportation purpose. This includes sidewalks, curb ramps, signals, and trails that provide a transportation route. Public rights-of-way do not include buildings, publicly accessible technology, recreational trails and facilities, and private property. These are covered outside of Title II of ADA or other City of Maple Grove Documents.

Self-Evaluation

Overview

The public ROW self-evaluation examines the condition of the City's PAR/PCR and identifies potential need for PAR/PCR infrastructure improvements. This includes sidewalks, curb ramps, bicycle/pedestrian trails, traffic control signals that are located within the City ROW. Any barriers to accessibility in the PAR/PCR identified during the self-evaluation are included in this Plan.

Summary

Beginning in 2016, the City of Maple Grove inventoried their pedestrian curb ramps within the ROW and sidewalks. The complete PAR/PCR inventory includes:

- City of Maple Grove Facilities
    - 2,998 City owned curb ramps.
    - Approximately 145 miles of concrete sidewalks. (2,114 Sidewalk points)

The City also owns 21 signalized intersections, 12 with APS features. The signalized intersections with APS features may be turned on by the City upon request. Please see Appendix F to submit a Grievance Form.

The City will inspect the 12 signals with APS features in the future.

A detailed evaluation on how these facilities relate to ADA standards is found in Appendix B and will be updated periodically.

Field Guide for Data Collection

Two field guides were used to serve as a tool for the public ROW data collection process. The City developed an Inventory and Inspection Field Guide for ADA Ramps while Hennepin County's Sidewalk Field Inspection Guidelines was used as a tool for sidewalk data collection. The two guides include all the materials used to conduct the field review of public ROW for the City's future reference. The two guides are included in Appendix C.

Policies and Practices

Previous Practices

The City of Maple Grove has strived to provide accessible pedestrian features as part of the City's CIP and new development projects. The City will continue to improve procedures to accommodate required methods of providing accessible pedestrian features.

Policy

The City's objective is to continue incorporating accessible pedestrian design features with development and CIP projects. The City has adopted ADA design standards and procedures as listed in Appendix C. These standards and procedures will be updated periodically in accordance with ADA best management practices.

The City will respond to all accessibility inquiries and improvement requests appropriately. These requests and inquiries will be evaluated internally, and an appropriate response will be communicated to the requestor. This may include comment and/or consideration for implementation with related CIP projects. The City will coordinate with external agencies to ensure that all new or altered pedestrian facilities within City jurisdiction are ADA compliant to the maximum extent feasible.

Maintenance of pedestrian facilities within the public ROW will continue to follow the policies set forth by the City.

Requests for accessibility improvements can be submitted to the City's ADA Coordinator. Contact information for ADA Coordinator is located in Appendix A.

Additionally, the City of Maple Grove coordinates with other jurisdictions for maintenance and improvements of facilities. These are outlined in the following section.

Improvement Schedule

Types of Improvements

The following are typical improvements to public ROW that can be made to correct deficiencies in accessibility:

- Intersection corner ADA improvement retrofits (a stand-alone ADA improvement project).
- Intersection corner ADA improvement as part of an adjacent capital project.
- Sidewalk/Trail ADA improvement retrofit (to include at grade crossings and sidewalk ramps).
- Sidewalk/Trail ADA improvement as part of an adjacent capital project (to include at grade crossings and sidewalk ramps).

- Traffic control signal Accessible Pedestrian Signal (APS) upgrade as part of a stand-alone ADA project.
- Traffic control signal APS upgrade as part of full traffic control signal installation.

Cost estimates of these improvements are included in Appendix D.

Priority Areas

The City will work with the public during the public comment period to determine priority areas for ADA improvements. These areas will be selected due to their proximity to specific land uses such as schools, commercial areas, public buildings, and from the receipt of public comments. Factors that determine this include, but are not limited to:

- severity of non-compliance,
- barriers to access a public program or service,
- feasibility of remedies,
- safety concerns, and
- whether a location receives high public use.

Priority will also be given to locations that would most likely not be updated by other City programs. Further, priority will be given to any location where an improvement project or alteration was constructed after January 26, 1991 (marking the formalization of ADA requirements), and accessibility features were omitted. Resident requests and location are also considerations for prioritizing improvements. To best use public resources, the priority areas for planned improvements projects were identified in the completion of this plan. A preliminary list of priority areas identified during the inventory process within the City can be found in Appendix D.

Schedule

Maple Grove has set the following schedule goals for improving the accessibility of its pedestrian facilities within the City's jurisdiction:

- Baseline of the City's total existing PAR/PCR condition: 5% compliant.
- After 10 years, 50% of accessibility features that were constructed after January 26, 1991, would be reasonably ADA compliant.
- After 10 years, 50% of accessibility features within the priority areas identified by Maple Grove staff would be reasonably ADA compliant.
- After 20 years, 75% of accessibility features within the jurisdiction of the City would be reasonably ADA compliant.
- After 30 years, 90% of accessibility features within the jurisdiction of the City (as identified in this plan) would be reasonably ADA compliant and fall within with City's

monitoring program (100% compliance is not feasible given Minnesota's annual freeze-thaw cycles and pavement deterioration).

The 30-year time frame to achieve 90 percent accessibility and the required commitment of funding is framed as a policy goal. The availability of funding and future development trends in the City of Maple Grove may affect how these projects are prioritized, and the timing of public ROW improvements may affect progress toward the compliance goal.

Methodology

ADA compliance will be achieved utilizing the following two methods:

1) Scheduled improvements to utilities and ROW

This type of project would include scheduled road reconstructions and/or new development projects.

2) ADA-Specific Improvement Projects.

This type of project would include standalone ADA improvement projects such as reconstruction of a pedestrian curb ramp and/or replacement of the APS system at a signalized intersection, separate from a road construction project.

These projects will be determined by the City's CIP, or on a case by case basis determined by the ADA Coordinator and the City's grievance procedure. The City's 2018-2022 CIP is available for review at City Hall.

Appendix A – Contact Information

City of Maple Grove

ADA Coordinator

Name: John Hagen, Transportation Operations Engineer/ADA Coordinator
Address: 12800 Arbor Lakes Parkway, Maple Grove, MN 55369
Phone: 763-494-6364
E-mail: jhagen@maplegrovemn.gov

Hennepin County

ADA Coordinator

Name: Caron Battle
Address: 300 South Sixth Street A040 Government Center Minneapolis, MN 55487
Phone: 612-348-7741
E-Mail: caron.battle@hennepin.us

Minnesota Department of Transportation

ADA Contact

Name: Kristie Billiar
Phone: 651-366-3174
E-Mail: Kristie.billiar@state.mn.us

Appendix B – Self-Evaluation Results

At the time of the public buildings, transit facilities and ROW inventories, the City was following general ADA design guidance and procedures. This included a commitment to providing access to all users but does not have a formal policy or procedure to assign priority regarding ADA accessibility issues within the City. Implementing a method to assign priority will be a part of this Plan effort.

Public Right-of-Way

Data Collection for the PAR/PCR (City) self-evaluation was completed in 2016. The self-evaluation was performed by City staff. The detailed inventory is found in B-6.

This initial self-evaluation of PAR/PCR yielded the following results:

Figure 5. **Self-Evaluation Results for Public Right-of-Way** ***(including the City's Curb Ramp Inventory)***

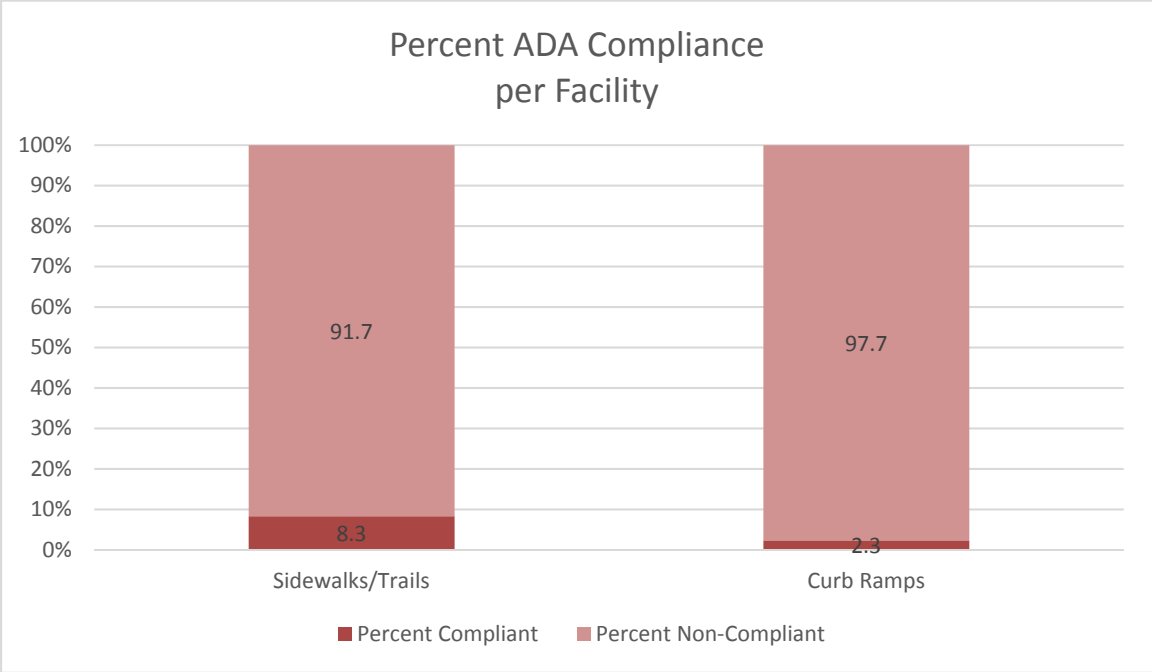


Chart Description: About eight percent of sidewalks/trails were ADA compliant. About three percent of curb ramps were compliant.

The City will inspect the 12 signals with APS features out of the 21 city-owned signals in the future. The signalized intersections with APS features may be turned on by the City upon request. Please see Appendix F to submit a Grievance Form.

Appendix C – Agency ADA Design Standards and Procedures

Design Procedures

Intersection Corners

Curb ramps or blended transitions will attempt to be constructed or upgraded to achieve compliance within all capital improvement projects. There may be limitations which make it technically infeasible for an intersection corner to achieve full accessibility within the scope of any project. Those limitations will be noted, and those intersection corners will remain on the transition plan. As future projects or opportunities arise, those intersection corners shall continue to be incorporated into future work. Regardless of whether full compliance can be achieved, each intersection corner shall be made as compliant as possible in accordance with the judgment of the City.

Sidewalks / Trails

Sidewalks and trails will attempt to be constructed or upgraded to achieve compliance within all capital improvement projects. There may be limitations which make it technically infeasible for segments of sidewalks or trails to achieve full accessibility within the scope of any project. Those limitations will be noted, and those segments will remain on the transition plan. As future projects or opportunities arise, those segments shall continue to be incorporated into future work. Regardless on if full compliance can be achieved or not, every sidewalk or trail shall be made as compliant as possible in accordance with the judgment of the City.

Traffic Control Signals

Traffic control signals will attempt to be constructed or upgraded to achieve compliance within all capital improvement projects. There may be limitations which make it technically infeasible for individual traffic control signal locations to achieve full accessibility within the scope of any project. Those limitations will be noted, and those locations will remain on the transition plan. As future projects or opportunities arise, those locations shall continue to be incorporated into future work. Regardless on if full compliance can be achieved or not, each traffic signal control location shall be made as compliant as possible in accordance with the judgment of the City.

Bus Stops

Bus stops within the City are provided by Metro Transit, a division of the Metropolitan Council. The Metropolitan Council maintains an ADA Transition Plan, which can be viewed here:

https://metrocouncil.org/Council-Meetings/Committees/Transportation-Accessibility-Advisory-Committee/2017/TAAC-Meeting-10-04-17/Met-Council-Transition-Plan.aspx.

If there is a specific bus stop of concern, a grievance may be filed with the Metropolitan Council. The City will attempt to coordinate replacement and new bus stops be constructed or upgraded to achieve compliance in the future. There may be limitations which make it technically infeasible for individual bus stop locations to achieve full accessibility within the scope of any project. Those limitations will be noted, and those locations will remain on the transition plan. As future projects or opportunities arise, those locations shall continue to be incorporated into future work. Regardless on if full compliance can be achieved or not, each bus stop location shall be made as compliant as possible in accordance with the judgment of City staff.

Other policies, practices and programs

Policies, practices and programs not identified in this document will follow the applicable ADA standards.

Design Standards

A copy of the Public Buildings and Facilities ADA checklist, created by the Institute for Human Centered Design (member of the ADA National Network), is provided in C-1.

For public ROW facilities, the City of Maple Grove has PROWAG, as adopted by the Minnesota Department of Transportation (MnDOT), as its design standard. A copy of this document is included in C-3.

Regional Economy

Roadway Reconstruction/Modernization Project: Highway 169 and County Road 130 Interchange Reconstruction | Ma

Results

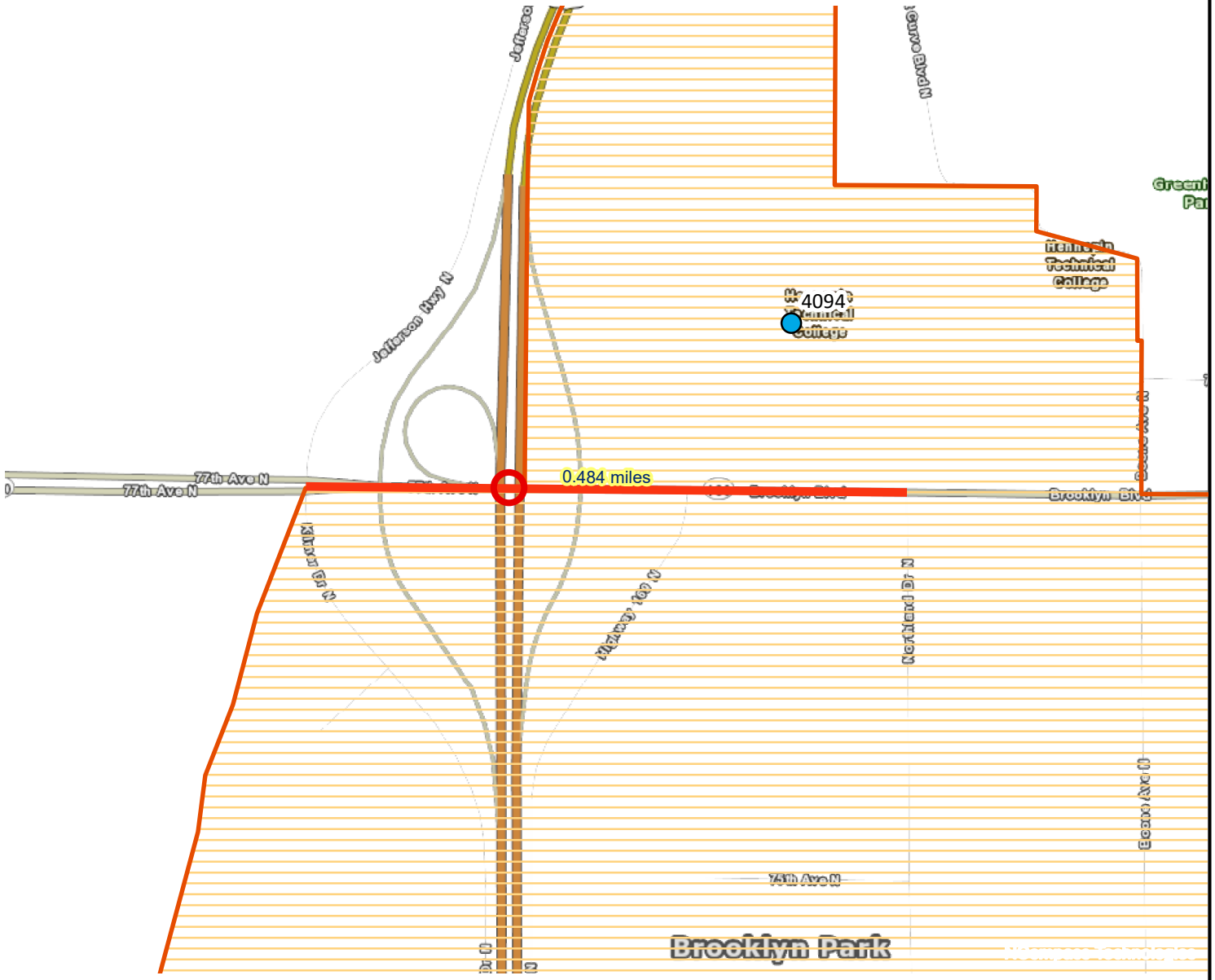
WITHIN ONE MI of project:
Postsecondary Students: 4094

Totals by City:

Brooklyn Park
Population: 3056
Employment: 9453
Mfg and Dist Employment: 4196

Maple Grove
Population: 4171
Employment: 6274
Mfg and Dist Employment: 2295

Osseo
Population: 2052
Employment: 568
Mfg and Dist Employment: 9



Project Points
Postsecondary Education Centers
Job Concentration Centers
Project
Manfacturing/Distribution Centers

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 3/9/2022
LandscapeRSA5

METROPOLITAN COUNCIL

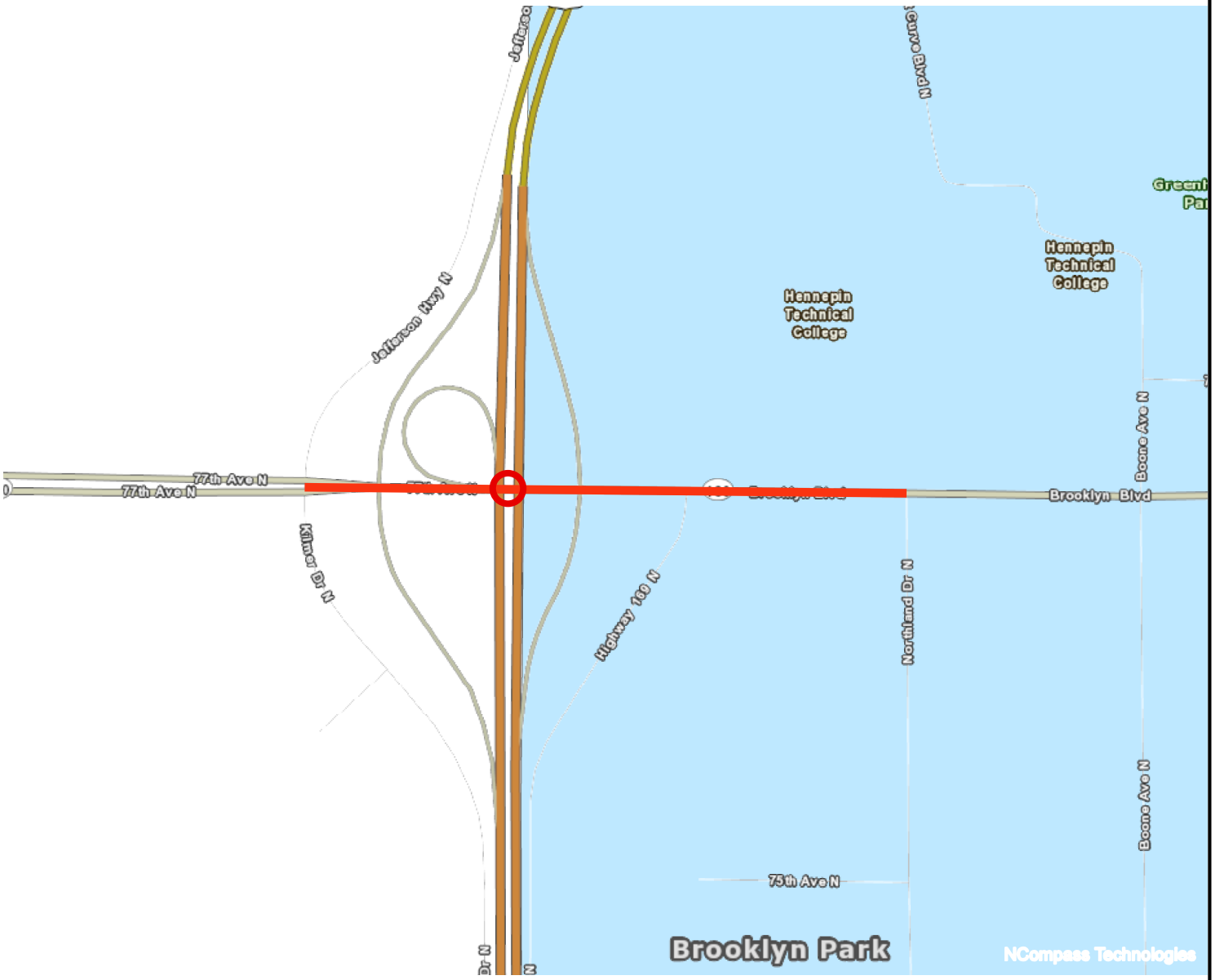
Socio-Economic Conditions

Roadway Reconstruction/Modernization Project: Highway 169 and County Road 130 Interchange Reconstruction | Map ID: 164

Results

Total of publicly subsidized rental housing units in census tracts within 1/2 mile: 547

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 0.075 0.15 0.3 0.45 0.6 Miles

Created: 3/9/2022
LandscapeRSA2

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

METROPOLITAN COUNCIL

Transit Connections

Roadway Reconstruction/Modernization Project: Highway 169 and County Road 130 Interchange Reconstruction | M

Results

Transit with a Direct Connection to project: 721

**indicates Planned Alignments*

Transit Market areas: 3

Project Points	Commuter Rail	Commuter Rail	Arterial Bus Rapid Transit	Undetermined	Light Rail
Project	Dedicated Bus Rapid Transit	Dedicated Bus Rapid Transit	Dedicated Bus Rapid Transit	Arterial Bus Rapid Transit	Modern Streetcar
Project Area	Highway Bus Rapid Transit	Highway Bus Rapid Transit	Highway Bus Rapid Transit	Commuter Rail	Undetermined
Active Stop	Light Rail	Light Rail	Light Rail	Dedicated Bus Rapid Transit	
Arterial Bus Rapid Transit	Arterial Bus Rapid Transit	Transit Routes	Modern Streetcar	Highway Bus Rapid Transit	

0 0.075 0.15 0.3 0.45 0.6 Miles

Created: 3/9/2022
LandscapeRSA3

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METROPOLITAN COUNCIL