Application

10353 - 2018 Roadway Expansion

10919 - CSAH 70 Expansion

Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
Submitted Date:	07/13/2018 11:16 AM

Primary Contact

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	City	State/Province	Postal Code/Zip	
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	Phone		Ext.	
Fax:				
What Grant Programs are you most interested in?	Regional Solicitation - Roadways Including Multimodal Elements			

Organization Information

Name:	DAKOTA COUNTY

Jurisdictional Agency (if different):	
Organization Type:	County Government
Organization Website:	
Address:	TRANSPORTATION DEPT 14955 GALAXIE AVE
*	APPLE VALLEY (City) / Minnesota (State/Province) / 55124 (Postal Code/Zip)
County:	Dakota
Phone:*	952-891-7100 Ext.
Fax:	
PeopleSoft Vendor Number	0000002621A15

Project Information

Project Name	CSAH 70 Expansion
Primary County where the Project is Located	Dakota
Cities or Townships where the Project is Located:	Lakeville
Jurisdictional Agency (If Different than the Applicant):	
Brief Project Description (Include location, road name/functional class, type of improvement, etc.) *(Limit 2,800 characters; approximately 400 words)*	Expansion of CSAH 70 to a 4-lane highway from Kenrick Ave./Kensington Blvd. to CSAH 23 (Cedar Ave.) in Lakeville
TIP Description Guidance (will be used in TIP if the project is selected for funding)	Reconstruct CSAH 70 to 4-lane highway from Kenrick Ave./Kensington Blvd. to CSAH 23 in Lakeville
Project Length (Miles) *to the nearest one-tenth of a mile*	3.7

Project Funding

Are you applying for competitive funds from another source(s) to implement this project?	Yes
If yes, please identify the source(s)	Minnesota Highway Freight Program
Federal Amount	$7,000,000.00
Match Amount *Minimum of 20% of project total*	$10,487,000.00

Project Total	$17,487,000.00
Match Percentage	59.97%

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

Source of Match Funds	Local dollars

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:	2022

Select 2020 or 2021 for TDM projects only. For all other applications, select 2022 or 2023.

Additional Program Years:	2021

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

Project Information: Roadway Projects

County, City, or Lead Agency	Dakota County
Functional Class of Road	A-Minor Expander
Road System	CSAH

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

Road/Route No.	70

i.e., 53 for CSAH 53

Name of Road	215th ST.

Example; 1st ST., MAIN AVE

Zip Code where Majority of Work is Being Performed	55044
(Approximate) Begin Construction Date	06/01/2020
(Approximate) End Construction Date	10/29/2021

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

From: **(Intersection or Address)**	Kenrick Ave./Kensington Blvd.
To: **(Intersection or Address)**	CSAH 23 (Cedar Ave.)

DO NOT INCLUDE LEGAL DESCRIPTION

Or At

Primary Types of Work	Grade, agg base, bit surf, curb and gutter, storm sewer, signals, bike path

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.:

New Bridge/Culvert No.:

Structure is Over/Under (Bridge or culvert name):

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 (2015), the 2040 Regional Parks Policy Plan (2015), 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.

List the goals, objectives, strategies, and associated pages:

Safety and Security - Reduce crashes and improve

safety and security for all modes of passenger travel and freight - B1. Regional transportation partners will incorporate safety and security considerations for all modes and users throughout the processes of planning, funding, construction,

operation; B4. Regional transportation partners will support the state?s vision of moving toward zero traffic fatalities and serious injuries, which includes supporting educational and enforcement programs to increase awareness

of regional safety issues, shared responsibility,

and safe behavior (page 2.7)

Competitive Economy - Support the region?s economic competitiveness through the efficient

movement of freight - D2. The Council will coordinate with other agencies planning and pursuing transportation investments that strengthen connections to other regions in Minnesota and the Upper Midwest, the nation, and world including intercity bus and passenger rail, highway corridors, air service, and freight infrastructure (page 2.11)

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:

Dakota County 2018-2022 Capital Improvements Program (https://www.co.dakota.mn.us/Government/BudgetFinance/2018Budget/Documents/2018-2022CIPFinal.pdf) (Page "Sales Tax 7" or Sheet 111 of 277)

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.

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

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

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

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.
***Roadway Expansion:** $1,000,000 to $7,000,000*
***Roadway Reconstruction/ Modernization Modernization and Spot Mobility:** $1,000,000 to $7,000,000*
***Traffic Management Technologies (Roadway System Management):** $250,000 to $7,000,000*
***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, or be substantially working towards, completing 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 applicant is a public agency that employs 50 or more people and has an adopted ADA transition plan that covers the public right of way/transportation.		Date plan adopted by governing body	
The applicant is a public agency that employs 50 or more people and is currently working towards completing an ADA transition plan that covers the public rights of way/transportation.	Yes	01/01/2016 Date process started	12/31/2019 Date of anticipated plan completion/adoption
The applicant is a public agency that employs fewer than 50 people and has a completed ADA self-evaluation that covers the public rights of way/transportation.		Date self-evaluation completed	
The applicant is a public agency that employs fewer than 50 people and is working towards completing an ADA self-evaluation that covers the public rights of way/transportation.		Date process started	Date of anticipated plan completion/adoption
(TDM Applicants Only) The applicant is not a public agency subject to the self-evaluation requirements in Title II of the ADA.			

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.

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 Expansion 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 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.

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

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

6. The bridge must have a sufficiency rating less than 80 for rehabilitation projects and less than 50 for replacement projects. Additionally, the bridge must also be classified as structurally deficient or functionally obsolete.

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

Roadway Expansion, Reconstruction/Modernization and Spot Mobility, 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.

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

Requirements - Roadways Including Multimodal Elements

Specific Roadway Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Mobilization (approx. 5% of total cost)	$780,000.00
Removals (approx. 5% of total cost)	$780,000.00
Roadway (grading, borrow, etc.)	$5,644,000.00
Roadway (aggregates and paving)	$6,157,000.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$1,162,000.00
Ponds	$0.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$1,086,000.00
Traffic Control	$0.00
Striping	$172,000.00
Signing	$0.00
Lighting	$100,000.00
Turf - Erosion & Landscaping	$150,000.00
Bridge	$0.00
Retaining Walls	$0.00
Noise Wall (not calculated in cost effectiveness measure)	$0.00
Traffic Signals	$750,000.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$500,000.00
Roadway Contingencies	$0.00
Other Roadway Elements	$0.00
Totals	**$17,281,000.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$206,000.00

Sidewalk Construction	$0.00
On-Street Bicycle Facility Construction	$0.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$0.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$0.00
Pedestrian-scale Lighting	$0.00
Streetscaping	$0.00
Wayfinding	$0.00
Bicycle and Pedestrian Contingencies	$0.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$206,000.00**

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	$17,487,000.00

Construction Cost Total	$17,487,000.00
Transit Operating Cost Total	$0.00

Congestion on adjacent Parallel Routes:

Adjacent Parallel Corridor	CSAH 50
Adjacent Parallel Corridor Start and End Points:	
Start Point:	192nd Street
End Point:	Cedar Avenue
Free-Flow Travel Speed:	40
The Free-Flow Travel Speed is black number.	
Peak Hour Travel Speed:	31
The Peak Hour Travel Speed is red number.	
Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow:	22.5%
Upload Level of Congestion Map:	1530299410468_CSAH 70 - Congestion.pdf

Principal Arterial Intersection Conversion Study:

Proposed interchange or at-grade project that reduces delay at a High Priority Intersection:	
(80 Points)	
Proposed at-grade project that reduces delay at a Medium Priority Intersection:	
(60 Points)	
Proposed at-grade project that reduces delay at a Low Priority Intersection:	
(50 Points)	
Proposed interchange project that reduces delay at a Medium Priority Intersection:	
(40 Points)	
Proposed interchange project that reduces delay at a Low Priority Intersection:	
(0 Points)	
Not listed as a priority in the study:	Yes
(0 Points)	

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

Existing Employment within 1 Mile:	7546

Existing Manufacturing/Distribution-Related Employment within 1 Mile:	3024
Existing Post-Secondary Students within 1 Mile:	0
Upload Map	1530299868155_CSAH 70 - RegionEcon.pdf

Please upload attachment in PDF form.

Measure C: Current Heavy Commercial Traffic

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

Along Tier 1:	Yes
Along Tier 2:	
Along Tier 3:	
The project provides a direct and immediate connection (i.e., intersects) with either a Tier 1, Tier 2, or Tier 3 corridor:	
None of the tiers:	

Measure A: Current Daily Person Throughput

Location	CSAH 70 from Kensington Blvd. to Cedar Ave.
Current AADT Volume	11200
Existing Transit Routes on the Project	N/A

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

Upload Transit Connections Map	1530298804764_CSAH 70 - Transit.pdf

Please upload attachment in PDF form.

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	0
Current Daily Person Throughput	14560.0

Measure B: 2040 Forecast ADT

Use Metropolitan Council model to determine forecast (2040) ADT volume	Yes
If checked, METC Staff will provide Forecast (2040) ADT volume	17100

OR

Identify the approved county or city travel demand model to determine forecast (2040) ADT volume	
Forecast (2040) ADT volume	

Measure A: Connection to disadvantaged populations and projects benefits, impacts, and mitigation

Select one:

Project located in Area of Concentrated Poverty with 50% or more of residents are people of color (ACP50):

(up to 100% of maximum score)

Project located in Area of Concentrated Poverty:

(up to 80% of maximum score)

Projects census tracts are above the regional average for population in poverty or population of color:

(up to 60% of maximum score)

Project located in a census tract that is below the regional average for population in poverty or populations of color or includes children, people with disabilities, or the elderly: Yes

(up to 40% of maximum score)

1.(0 to 3 points) A successful project is one that has actively engaged low-income populations, people of color, children, persons with disabilities, and the elderly during the project's development with the intent to limit negative impacts on them and, at the same time, provide the most benefits.
Describe how the project has encouraged or will engage the full cross-section of community in decision-making. Identify the communities to be engaged and where in the project development process engagement has occurred or will occur. Elements of quality engagement include: outreach to specific communities and populations that are likely to be directly impacted by the project; techniques to reach out to populations traditionally not involved in the community engagement related to transportation projects; residents or users identifying potential positive and negative elements of the project; and surveys, study recommendations, or plans that provide feedback from populations that may be impacted by the proposed project. If relevant, describe how NEPA or Title VI regulations will guide engagement activities.

Response:

The project will involve public engagement of multiple groups of people, including residents along the corridor, businesses along the corridor and in the downtown area of Lakeville, schools, an airport, a hockey association, and other entities. Engagement methods will include open houses, an online forum that allows for comments in written or graphic form, and individual meetings. In addition, an EA will be required as part of the NEPA process, which allows for additional opportunities to comment on the project.

(Limit 1,400 characters; approximately 200 words)

2.(0 to 7 points) Describe the projects benefits to low-income populations, people of color, children, people with disabilities, and the elderly. Benefits could relate to safety; public health; access to destinations; travel time; gap closure; leveraging of other beneficial projects and investments; and/or community cohesion. Note that this is not an exhaustive list.

Response:

CSAH 70 is a major truck route that serves many industries and businesses, in addition to several residential parcels along the corridor. This expansion project will improve traffic operations along the corridor. The project will also include the construction of a multipurpose trail along the corridor, which will allow for non-motorized access to the businesses along the corridor.

(Limit 2,800 characters; approximately 400 words)

3.(-3 to 0 points) Describe any negative externalities created by the project along with measures that will be taken to mitigate them. Negative externalities can result in a reduction in points, but mitigation of externalities can offset reductions.
Below is a list of negative impacts. Note that this is not an exhaustive list.
Increased difficulty in street crossing caused by increased roadway width, increased traffic speed, wider turning radii, or other elements that negatively impact pedestrian access.
Increased noise.
Decreased pedestrian access through sidewalk removal / narrowing, placement of barriers along the walking path, increase in auto-oriented curb cuts, etc.
Project elements that are detrimental to location-based air quality by increasing stop/start activity at intersections, creating vehicle idling areas, directing an increased number of vehicles to a particular point, etc.
Increased speed and/or cut-through traffic.
Removed or diminished safe bicycle access.
Inclusion of some other barrier to access to jobs and other destinations.
Displacement of residents and businesses.
Construction/implementation impacts such as dust; noise; reduced access for travelers and to businesses; disruption of utilities; and eliminated street crossings. These tend to be temporary.
Other

Response:

(Limit 2,800 characters; approximately 400 words)

Upload Map 1530299720030_CSAH 70 - SocioEcon.pdf

Measure B: Affordable Housing

City	Segment Length (For stand-alone projects, enter population from Regional Economy map) within each City/Township	Segment Length/Total Project Length	Score	Housing Score Multiplied by Segment percent
Lakeville	9155.0	1.0	80.0	80.0

Total Project Length

Total Project Length (as entered in the "Project Information" form) 3.7

Affordable Housing Scoring

Total Project Length (Miles) or Population	9155.0
Total Housing Score	80.0

Affordable Housing Scoring

Measure A: Infrastructure Age

Year of Original Roadway Construction or Most Recent Reconstruction	Segment Length	Calculation	Calculation 2
1976.0	3.7	7311.2	1976.0
	4	**7311**	**1976**

Average Construction Year

Weighted Year	1976.0

Total Segment Length (Miles)

Total Segment Length	3.7

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 (Vehicles per hour)	Total Peak Hour Delay Reduced by the Project:	EXPLANATION of methodology used to calculate railroad crossing delay, if applicable.	Synchro or HCM Reports
23.0	15.0	8.0	1349	10792.0		1531256499638_Synchro.pdf
14.0	11.0	3.0	1405	4215.0		1531256401388_Synchro.pdf

24.0	16.0	8.0	1773	14184.0	1531256417342_Synchro.pdf
4.0	3.0	1.0	884	884.0	1531256432826_Synchro.pdf
18.0	11.0	7.0	1394	9758.0	1531256449513_Synchro.pdf
19.0	0	19.0	1086	20634.0	1531256464810_Synchro.pdf

Vehicle Delay Reduced

Total Peak Hour Delay Reduced 60467.0

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):
3.52	3.24	0.28
6.03	5.78	0.25
6.46	6.03	0.43
1.11	1.03	0.08
1.11	1.03	0.08
3.76	3.56	0.2
3.51	3.09	0.42
26	**24**	**2**

Total

Total Emissions Reduced: 1.74

Upload Synchro Report 1531257369248_Synchro.pdf

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

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

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

Total Parallel Roadway

Emissions Reduced on Parallel Roadways	0

Upload Synchro Report

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

New Roadway Portion:

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

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

Cruise speed in miles per hour without the project:	0
Vehicle miles traveled without the project:	0
Total delay in hours without the project:	0
Total stops in vehicles per hour without the project:	0
Cruise speed in miles per hour with the project:	0
Vehicle miles traveled with the project:	0
Total delay in hours with the project:	0
Total stops in vehicles per hour with the project:	0

Fuel consumption in gallons (F1)	0
Fuel consumption in gallons (F2)	0
Fuel consumption in gallons (F3)	0
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):	0
EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)	

Measure A: Benefit of Crash Reduction

Crash Modification Factor Used:	CMF 7566
(Limit 700 Characters; approximately 100 words)	
Rationale for Crash Modification Selected:	CMF 7566 involves converting a 2-lane roadway to a 4-lane divided roadway. The full segment of CSAH 70 will be converted to a 4-lane highway and will involve modifications to access. These modifications will increase gaps in traffic, and can reduce access and conflict points, which in turn, improves safety. This modification factor applies to all types of crashes along the corridor.
(Limit 1400 Characters; approximately 200 words)	
Project Benefit ($) from B/C Ratio:	1.0485735E7
Worksheet Attachment	1531336631453_CSAH 70-B-C Worksheet.pdf
Please upload attachment in PDF form.	

Roadway projects that include railroad grade-separation elements:

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

Measure A: Multimodal Elements and Existing Connections

Response:

Currently, no pedestrian facilities exist within the corridor. A multipurpose trail is proposed to be constructed on the north side of CSAH 70 as part of the project. The trail will connect to various City trails and allow for non-motorized travel along CSAH 70, which provides access to various businesses and places of employment.

(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)Layout (30 Percent of Points)

Layout should include proposed geometrics and existing and proposed right-of-way boundaries.

Layout approved by the applicant and all impacted jurisdictions (i.e., cities/counties that the project goes through or agencies that maintain the roadway(s)). A PDF of the layout must be attached along with letters from each jurisdiction to receive points.

100%

Attach Layout

Please upload attachment in PDF form.

Layout completed but not approved by all jurisdictions. A PDF of the layout must be attached to receive points. Yes

50%

Attach Layout 1531493174125_CSAH 70 Concept Layout.pdf

Please upload attachment in PDF form.

Layout has not been started

0%

Anticipated date or date of completion 01/04/2019

2)Review of Section 106 Historic Resources (20 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

3)Right-of-Way (30 Percent of Points)

Right-of-way, permanent or temporary easements either not required or all have been acquired

100%

Right-of-way, permanent or temporary easements required, plat, legal descriptions, or official map complete

50%

Right-of-way, permanent or temporary easements required, parcels identified

25%

Right-of-way, permanent or temporary easements required, parcels not all identified	Yes

0%

Anticipated date or date of acquisition	02/21/2020

4)Railroad Involvement (20 Percent of Points)

No railroad involvement on project or railroad Right-of-Way agreement is executed (include signature page, if applicable)

100%

Signature Page

Please upload attachment in PDF form.

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

50%

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

0%

Anticipated date or date of executed Agreement

Measure A: Cost Effectiveness

Total Project Cost (entered in Project Cost Form):	$17,487,000.00

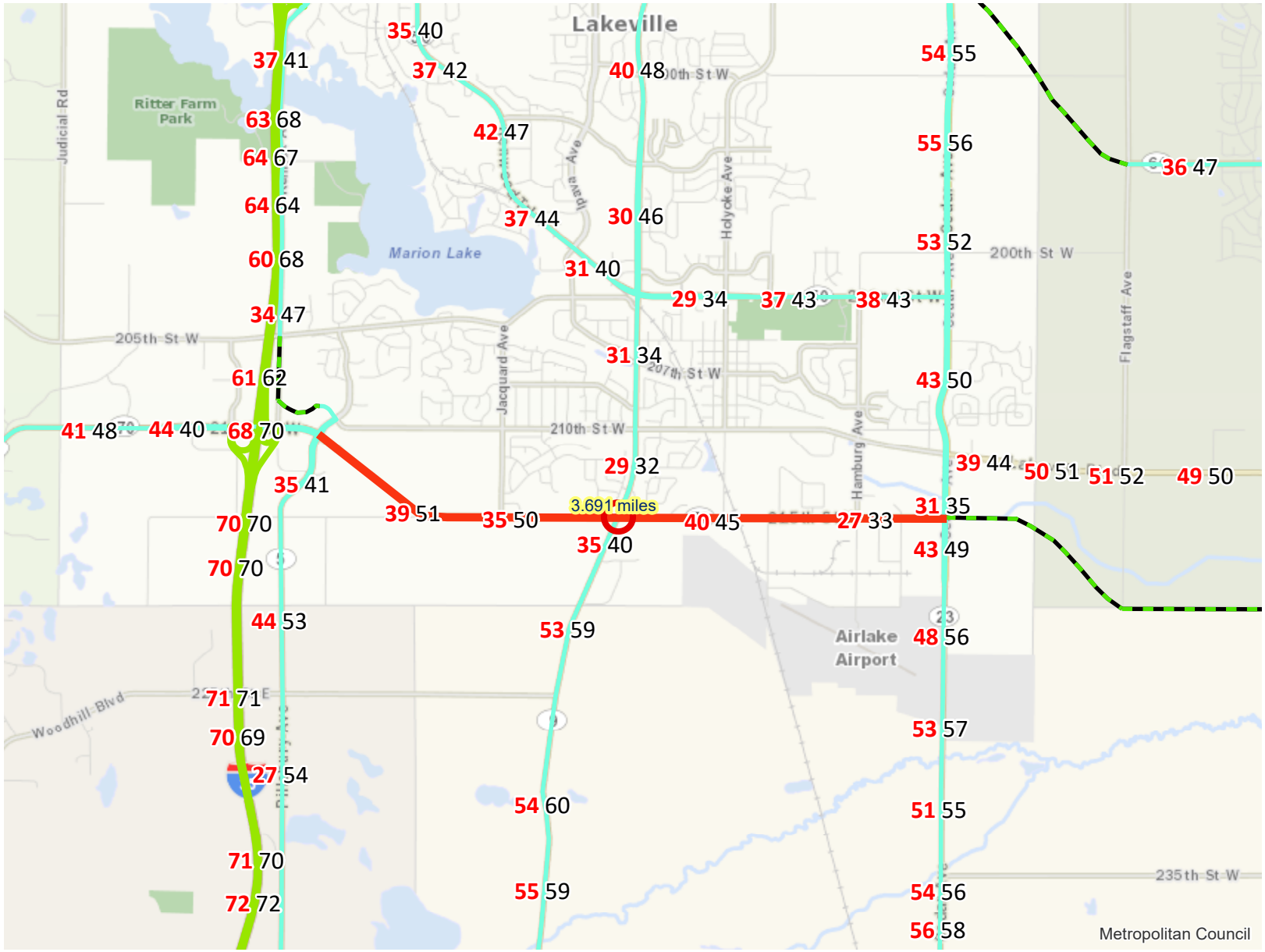
Enter Amount of the Noise Walls:	$0.00
Total Project Cost subtract the amount of the noise walls:	$17,487,000.00
Points Awarded in Previous Criteria	
Cost Effectiveness	$0.00

Other Attachments

File Name	Description	File Size
Concept Map.pdf	CSAH 70 Concept Map	1.6 MB
CP 70-23 Project Summary.pdf	CSAH 70 Project Summary	1.8 MB
CSAH 70 - Existing Conditions.pdf	Existing Conditions Photo	3.1 MB
Issues Map.pdf	CSAH 70 Project Map	38.1 MB
MnDOT Traffic Volumes.pdf	MnDOT Traffic Volume Map	1.1 MB
STrevor18071309330.pdf	Lakeville Letter of Support	50 KB

Level of Congestion

Roadway Expansion Project: CSAH 70 Expansion | Map ID: 1530298019450



Project Points
Project
Principal Arterials
A Minor Arterials
Principal Arterials Planned
A Minor Arterials Planned

0 0.5 1 2 3 4 Miles

Created: 6/29/2018
LandscapeRSA1

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http://giswebsite.metc.state.mn.us/gissitenew/notice.aspx

METROPOLITAN COUNCIL

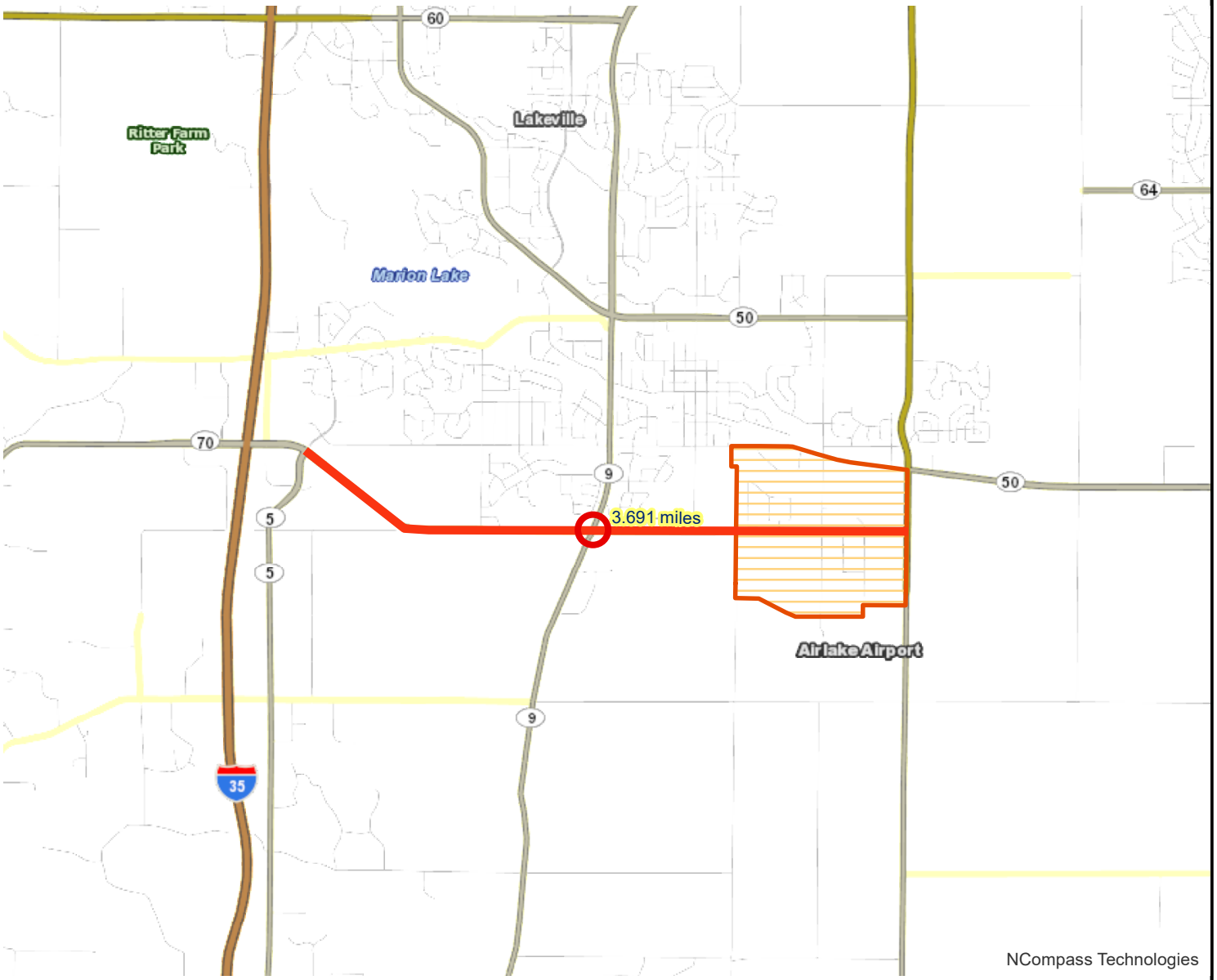
Regional Economy

Roadway Expansion Project: CSAH 70 Expansion | Map ID: 1530298019450

Results

WITHIN ONE MI of project:
Postsecondary Students: 0

Totals by City:
Eureka Twp.
Population: 443
Employment: 140
Mfg and Dist Employment: 1
Lakeville
Population: 8712
Employment: 7406
Mfg and Dist Employment: 3023



Project Points
Project
Manfacturing/Distribution Centers
Job Concentration Centers

0 0.5 1 2 3 4 Miles

Created: 6/29/2018
LandscapeRSA5

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

METROPOLITAN COUNCIL

Transit Connections

Roadway Expansion Project: CSAH 70 Expansion | Map ID: 1530298019450

Results

Transit with a Direct Connection to project:
*Red Line - Phase 2

**indicates Planned Alignments*

Project Points — Transit Routes **Planned Transitway Alignments**

Project — Red Line - Phase 2

0 0.75 1.5 3 4.5 6 Miles

Created: 6/29/2018
LandscapeRSA3

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

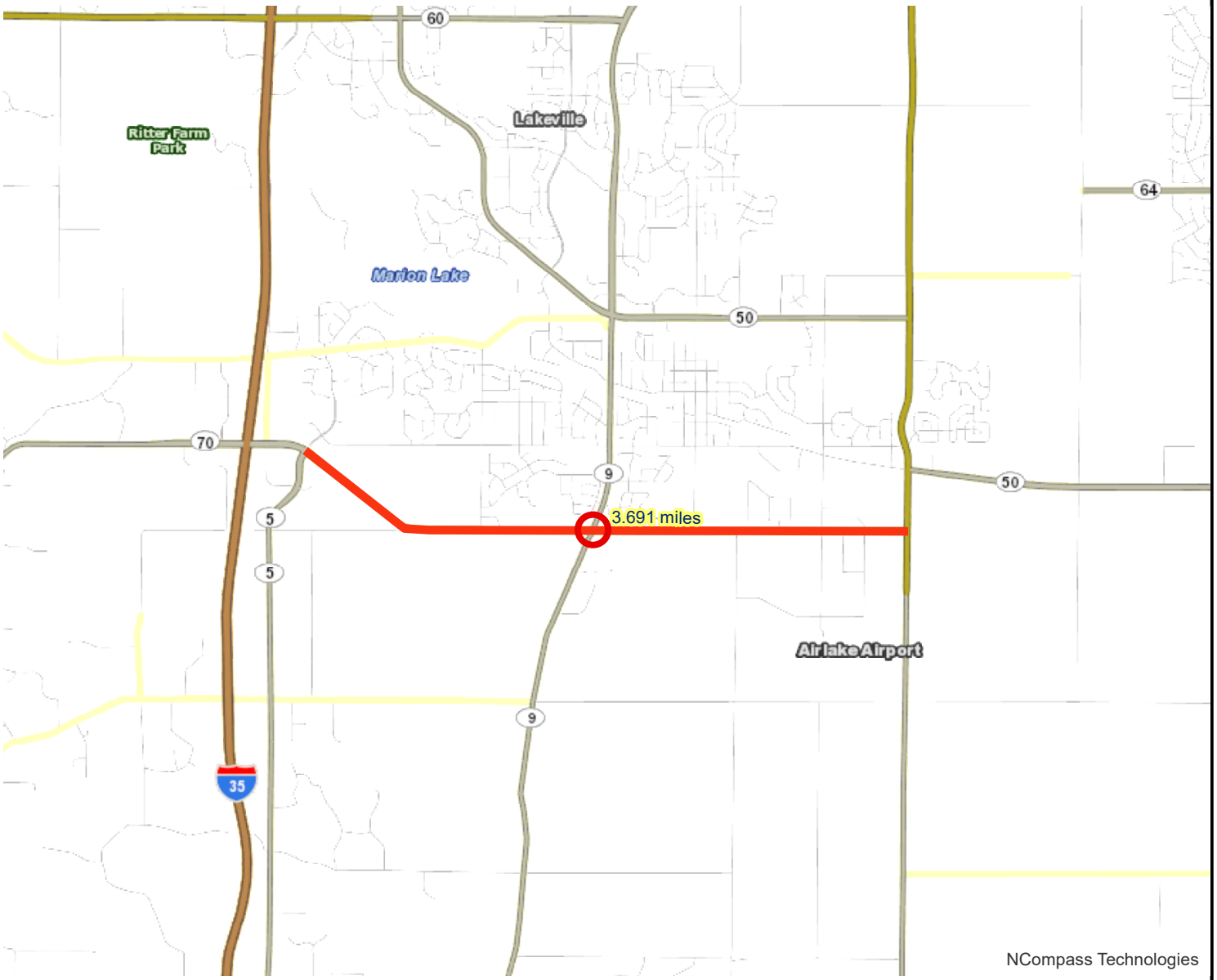
METROPOLITAN COUNCIL

Socio-Economic Conditions

Roadway Expansion Project: CSAH 70 Expansion | Map ID: 1530298019450

Results

Project located in
a census tract that is below
the regional average for
population in poverty
or populations of color,
or includes children,
people with disabilities,
or the elderly:
(0 to 12 Points)



Project Points

Project

Area of Concentrated Povertry > 50% residents of color

Area of Concentrated Poverty

Above reg'l avg conc of race/poverty

0 0.5 1 2 3 4 Miles

Created: 6/29/2018
LandscapeRSA2

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

METROPOLITAN COUNCIL

5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	23
CO Emissions (kg)	2.47
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	14
CO Emissions (kg)	2.78
NOx Emissions (kg)	0.54
VOC Emissions (kg)	0.64

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	24
CO Emissions (kg)	4.53
NOx Emissions (kg)	0.88
VOC Emissions (kg)	1.05

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.78
NOx Emissions (kg)	0.15
VOC Emissions (kg)	0.18

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.64
NOx Emissions (kg)	0.51
VOC Emissions (kg)	0.61

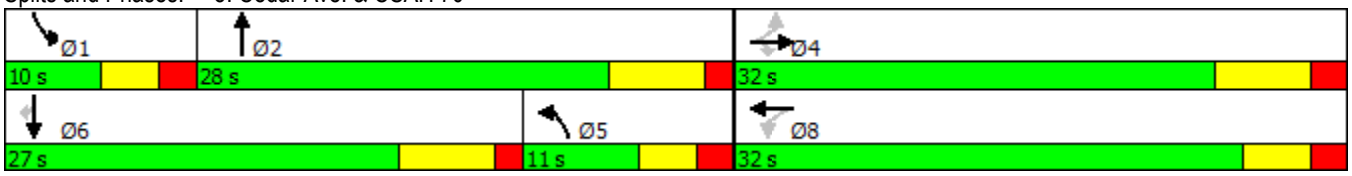
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	19
CO Emissions (kg)	2.46
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		23.5	23.5	5.8	26.4	20.3	20.3		
Actuated g/C Ratio		0.37	0.37	0.09	0.42	0.32	0.32		
v/c Ratio		0.88	0.10	0.33	0.20	0.33	0.32		
Control Delay		42.0	0.3	35.3	12.3	19.1	4.9		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		42.0	0.3	35.3	12.3	19.1	4.9		
LOS		D	A	D	B	B	A		
Approach Delay		36.4			15.8	14.0			
Approach LOS		D			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 63.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

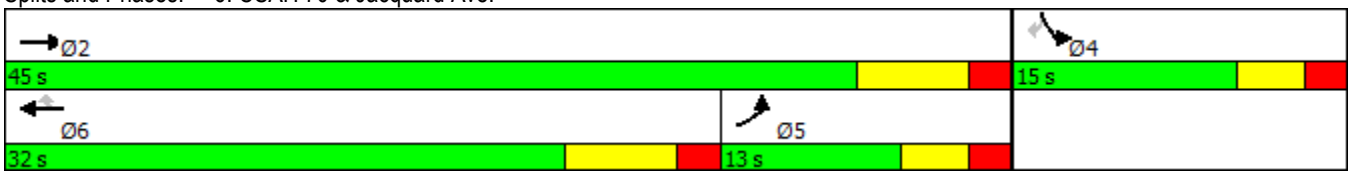
Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	13.0	45.0	32.0	32.0	15.0	15.0
Total Split (%)	21.7%	75.0%	53.3%	53.3%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	7.3	37.5	27.7	27.7	10.2	10.2
Actuated g/C Ratio	0.13	0.69	0.51	0.51	0.19	0.19
v/c Ratio	0.60	0.45	0.59	0.05	0.13	0.38
Control Delay	36.1	7.0	17.4	4.4	21.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	17.4	4.4	21.8	7.6
LOS	D	A	B	A	C	A
Approach Delay		12.8	16.6		10.6	
Approach LOS		B	B		B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

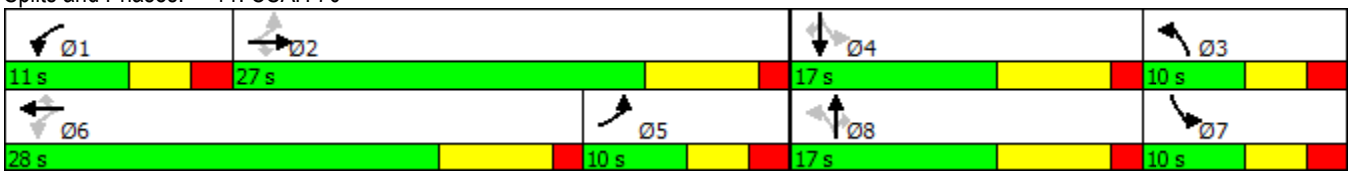
Splits and Phases: 6: CSAH 70 & Jacquard Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	11.0	28.0	28.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (%)	15.4%	41.5%	41.5%	16.9%	43.1%	43.1%	15.4%	26.2%	26.2%	15.4%	26.2%	26.2%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	22.2	20.2	20.2	25.3	23.3	23.3	18.1	11.9	11.9	16.0	10.1	10.1
Actuated g/C Ratio	0.36	0.33	0.33	0.42	0.38	0.38	0.30	0.20	0.20	0.26	0.17	0.17
v/c Ratio	0.29	0.67	0.07	0.61	0.82	0.07	0.15	0.30	0.16	0.06	0.60	0.12
Control Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
Queue Delay	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 Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
LOS	B	C	A	C	C	A	B	C	A	B	D	A
Approach Delay		22.3			29.0			14.3			25.1	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.27
NOx Emissions (kg)	0.44
VOC Emissions (kg)	0.53

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.82
NOx Emissions (kg)	0.55
VOC Emissions (kg)	0.65

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	16
CO Emissions (kg)	4.23
NOx Emissions (kg)	0.82
VOC Emissions (kg)	0.98

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	3
CO Emissions (kg)	0.72
NOx Emissions (kg)	0.14
VOC Emissions (kg)	0.17

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.49
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

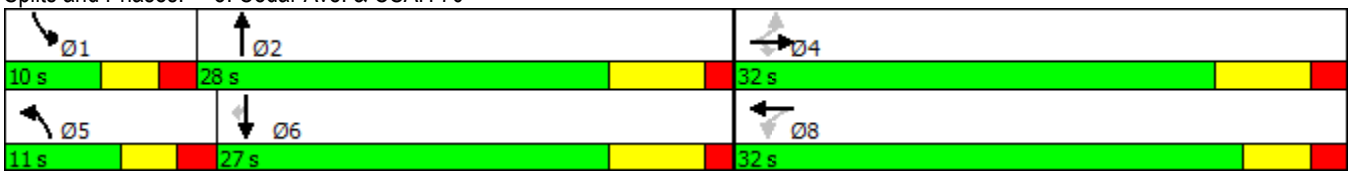
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.17
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		16.3	16.3	5.9	26.5	20.7	20.7		
Actuated g/C Ratio		0.29	0.29	0.10	0.47	0.36	0.36		
v/c Ratio		1.14dl	0.13	0.29	0.18	0.29	0.30		
Control Delay		21.4	1.2	32.0	9.9	16.3	4.6		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		21.4	1.2	32.0	9.9	16.3	4.6		
LOS		C	A	C	A	B	A		
Approach Delay		18.6			13.2	12.1			
Approach LOS		B			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 56.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	15.0	45.0	30.0	30.0	15.0	15.0
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	8.1	36.5	25.8	25.8	10.1	10.1
Actuated g/C Ratio	0.15	0.69	0.48	0.48	0.19	0.19
v/c Ratio	0.53	0.24	0.33	0.05	0.13	0.38
Control Delay	29.4	5.0	13.4	5.2	20.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.0	13.4	5.2	20.9	7.3
LOS	C	A	B	A	C	A
Approach Delay		9.8	12.8		10.2	
Approach LOS		A	B		B	

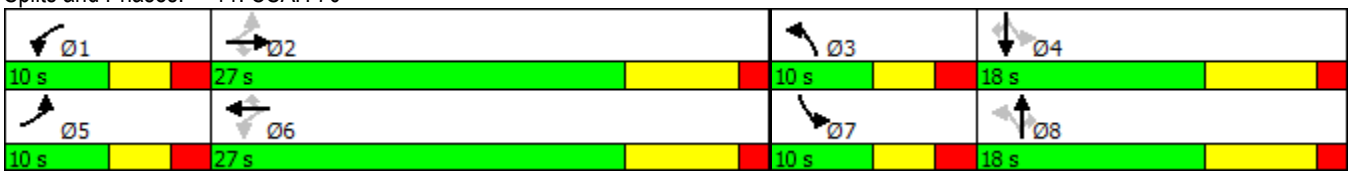
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: CSAH 70 & Jacquard Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	18.0	18.0	10.0	18.0	18.0
Total Split (%)	15.4%	41.5%	41.5%	15.4%	41.5%	41.5%	15.4%	27.7%	27.7%	15.4%	27.7%	27.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	27.2	20.1	20.1	28.3	22.4	22.4	16.3	12.4	12.4	15.4	10.6	10.6
Actuated g/C Ratio	0.45	0.33	0.33	0.47	0.37	0.37	0.27	0.20	0.20	0.25	0.18	0.18
v/c Ratio	0.24	0.35	0.07	0.38	0.45	0.08	0.18	0.28	0.19	0.06	0.57	0.14
Control Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
Queue Delay	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 Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
LOS	B	B	A	B	B	A	B	C	A	B	C	A
Approach Delay		14.6			15.3			13.9			22.9	
Approach LOS		B			B			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	23
CO Emissions (kg)	2.47
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	14
CO Emissions (kg)	2.78
NOx Emissions (kg)	0.54
VOC Emissions (kg)	0.64

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	24
CO Emissions (kg)	4.53
NOx Emissions (kg)	0.88
VOC Emissions (kg)	1.05

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.78
NOx Emissions (kg)	0.15
VOC Emissions (kg)	0.18

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.64
NOx Emissions (kg)	0.51
VOC Emissions (kg)	0.61

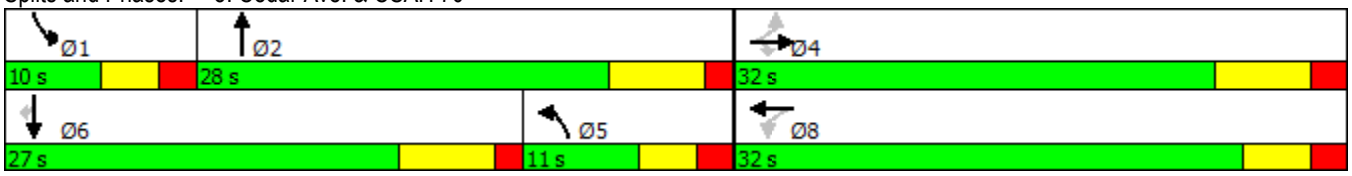
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	19
CO Emissions (kg)	2.46
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		23.5	23.5	5.8	26.4	20.3	20.3		
Actuated g/C Ratio		0.37	0.37	0.09	0.42	0.32	0.32		
v/c Ratio		0.88	0.10	0.33	0.20	0.33	0.32		
Control Delay		42.0	0.3	35.3	12.3	19.1	4.9		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		42.0	0.3	35.3	12.3	19.1	4.9		
LOS		D	A	D	B	B	A		
Approach Delay		36.4			15.8	14.0			
Approach LOS		D			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 63.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

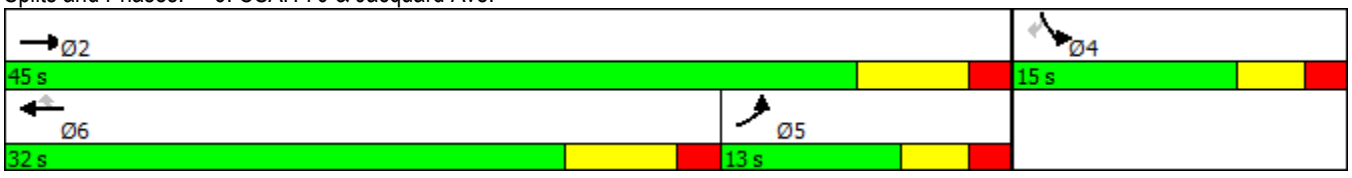
Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	13.0	45.0	32.0	32.0	15.0	15.0
Total Split (%)	21.7%	75.0%	53.3%	53.3%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	7.3	37.5	27.7	27.7	10.2	10.2
Actuated g/C Ratio	0.13	0.69	0.51	0.51	0.19	0.19
v/c Ratio	0.60	0.45	0.59	0.05	0.13	0.38
Control Delay	36.1	7.0	17.4	4.4	21.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	17.4	4.4	21.8	7.6
LOS	D	A	B	A	C	A
Approach Delay		12.8	16.6		10.6	
Approach LOS		B	B		B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

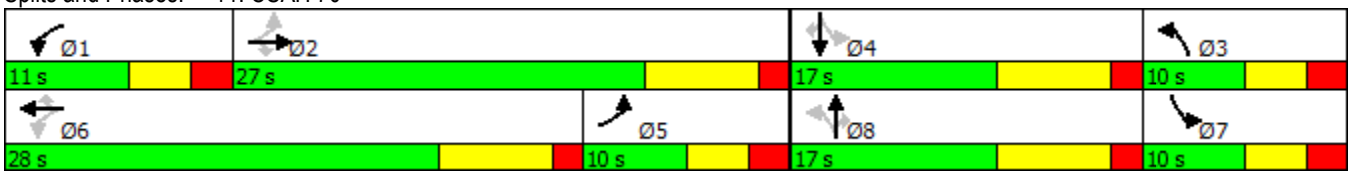
Splits and Phases: 6: CSAH 70 & Jacquard Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	11.0	28.0	28.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (%)	15.4%	41.5%	41.5%	16.9%	43.1%	43.1%	15.4%	26.2%	26.2%	15.4%	26.2%	26.2%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	22.2	20.2	20.2	25.3	23.3	23.3	18.1	11.9	11.9	16.0	10.1	10.1
Actuated g/C Ratio	0.36	0.33	0.33	0.42	0.38	0.38	0.30	0.20	0.20	0.26	0.17	0.17
v/c Ratio	0.29	0.67	0.07	0.61	0.82	0.07	0.15	0.30	0.16	0.06	0.60	0.12
Control Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
Queue Delay	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 Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
LOS	B	C	A	C	C	A	B	C	A	B	D	A
Approach Delay		22.3			29.0			14.3			25.1	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.27
NOx Emissions (kg)	0.44
VOC Emissions (kg)	0.53

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.82
NOx Emissions (kg)	0.55
VOC Emissions (kg)	0.65

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	16
CO Emissions (kg)	4.23
NOx Emissions (kg)	0.82
VOC Emissions (kg)	0.98

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	3
CO Emissions (kg)	0.72
NOx Emissions (kg)	0.14
VOC Emissions (kg)	0.17

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.49
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

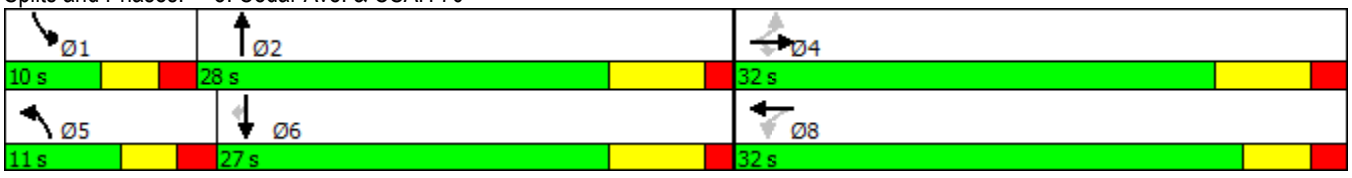
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.17
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		16.3	16.3	5.9	26.5	20.7	20.7		
Actuated g/C Ratio		0.29	0.29	0.10	0.47	0.36	0.36		
v/c Ratio		1.14dl	0.13	0.29	0.18	0.29	0.30		
Control Delay		21.4	1.2	32.0	9.9	16.3	4.6		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		21.4	1.2	32.0	9.9	16.3	4.6		
LOS		C	A	C	A	B	A		
Approach Delay		18.6			13.2	12.1			
Approach LOS		B			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 56.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	15.0	45.0	30.0	30.0	15.0	15.0
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	8.1	36.5	25.8	25.8	10.1	10.1
Actuated g/C Ratio	0.15	0.69	0.48	0.48	0.19	0.19
v/c Ratio	0.53	0.24	0.33	0.05	0.13	0.38
Control Delay	29.4	5.0	13.4	5.2	20.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.0	13.4	5.2	20.9	7.3
LOS	C	A	B	A	C	A
Approach Delay		9.8	12.8		10.2	
Approach LOS		A	B		B	

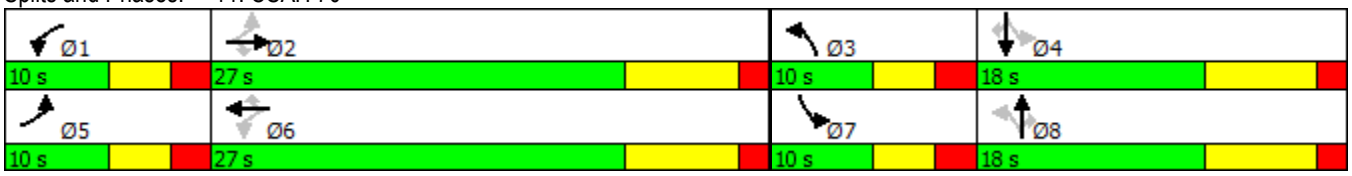
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: CSAH 70 & Jacquard Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	18.0	18.0	10.0	18.0	18.0
Total Split (%)	15.4%	41.5%	41.5%	15.4%	41.5%	41.5%	15.4%	27.7%	27.7%	15.4%	27.7%	27.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	27.2	20.1	20.1	28.3	22.4	22.4	16.3	12.4	12.4	15.4	10.6	10.6
Actuated g/C Ratio	0.45	0.33	0.33	0.47	0.37	0.37	0.27	0.20	0.20	0.25	0.18	0.18
v/c Ratio	0.24	0.35	0.07	0.38	0.45	0.08	0.18	0.28	0.19	0.06	0.57	0.14
Control Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
Queue Delay	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 Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
LOS	B	B	A	B	B	A	B	C	A	B	C	A
Approach Delay		14.6			15.3			13.9			22.9	
Approach LOS		B			B			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	23
CO Emissions (kg)	2.47
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	14
CO Emissions (kg)	2.78
NOx Emissions (kg)	0.54
VOC Emissions (kg)	0.64

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	24
CO Emissions (kg)	4.53
NOx Emissions (kg)	0.88
VOC Emissions (kg)	1.05

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.78
NOx Emissions (kg)	0.15
VOC Emissions (kg)	0.18

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.64
NOx Emissions (kg)	0.51
VOC Emissions (kg)	0.61

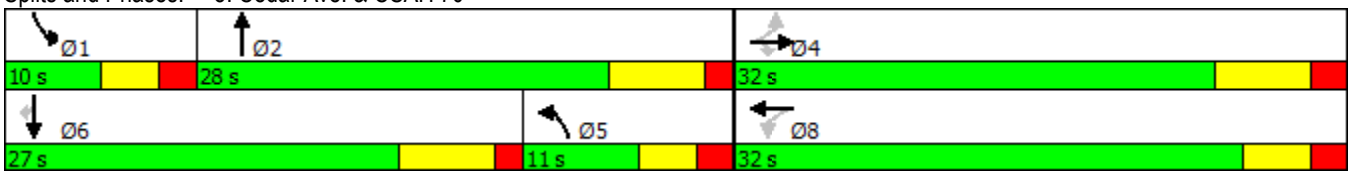
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	19
CO Emissions (kg)	2.46
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		23.5	23.5	5.8	26.4	20.3	20.3		
Actuated g/C Ratio		0.37	0.37	0.09	0.42	0.32	0.32		
v/c Ratio		0.88	0.10	0.33	0.20	0.33	0.32		
Control Delay		42.0	0.3	35.3	12.3	19.1	4.9		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		42.0	0.3	35.3	12.3	19.1	4.9		
LOS		D	A	D	B	B	A		
Approach Delay		36.4			15.8	14.0			
Approach LOS		D			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 63.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

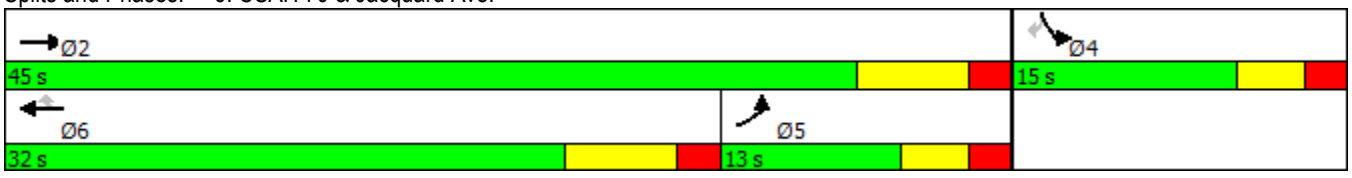
Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	13.0	45.0	32.0	32.0	15.0	15.0
Total Split (%)	21.7%	75.0%	53.3%	53.3%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	7.3	37.5	27.7	27.7	10.2	10.2
Actuated g/C Ratio	0.13	0.69	0.51	0.51	0.19	0.19
v/c Ratio	0.60	0.45	0.59	0.05	0.13	0.38
Control Delay	36.1	7.0	17.4	4.4	21.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	17.4	4.4	21.8	7.6
LOS	D	A	B	A	C	A
Approach Delay		12.8	16.6		10.6	
Approach LOS		B	B		B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

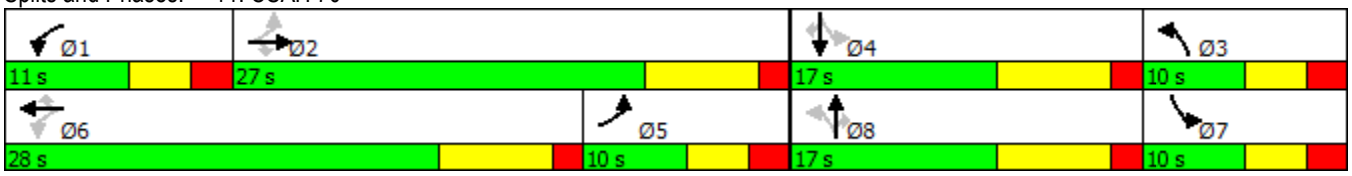
Splits and Phases: 6: CSAH 70 & Jacquard Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	11.0	28.0	28.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (%)	15.4%	41.5%	41.5%	16.9%	43.1%	43.1%	15.4%	26.2%	26.2%	15.4%	26.2%	26.2%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	22.2	20.2	20.2	25.3	23.3	23.3	18.1	11.9	11.9	16.0	10.1	10.1
Actuated g/C Ratio	0.36	0.33	0.33	0.42	0.38	0.38	0.30	0.20	0.20	0.26	0.17	0.17
v/c Ratio	0.29	0.67	0.07	0.61	0.82	0.07	0.15	0.30	0.16	0.06	0.60	0.12
Control Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
Queue Delay	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 Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
LOS	B	C	A	C	C	A	B	C	A	B	D	A
Approach Delay		22.3			29.0			14.3			25.1	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.27
NOx Emissions (kg)	0.44
VOC Emissions (kg)	0.53

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.82
NOx Emissions (kg)	0.55
VOC Emissions (kg)	0.65

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	16
CO Emissions (kg)	4.23
NOx Emissions (kg)	0.82
VOC Emissions (kg)	0.98

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	3
CO Emissions (kg)	0.72
NOx Emissions (kg)	0.14
VOC Emissions (kg)	0.17

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.49
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

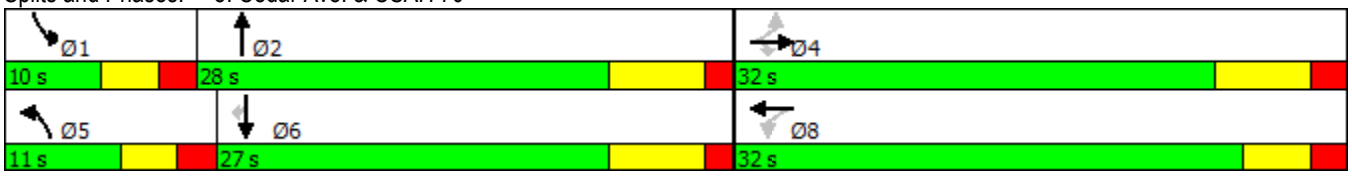
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.17
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		16.3	16.3	5.9	26.5	20.7	20.7		
Actuated g/C Ratio		0.29	0.29	0.10	0.47	0.36	0.36		
v/c Ratio		1.14dl	0.13	0.29	0.18	0.29	0.30		
Control Delay		21.4	1.2	32.0	9.9	16.3	4.6		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		21.4	1.2	32.0	9.9	16.3	4.6		
LOS		C	A	C	A	B	A		
Approach Delay		18.6			13.2	12.1			
Approach LOS		B			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 56.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	15.0	45.0	30.0	30.0	15.0	15.0
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	8.1	36.5	25.8	25.8	10.1	10.1
Actuated g/C Ratio	0.15	0.69	0.48	0.48	0.19	0.19
v/c Ratio	0.53	0.24	0.33	0.05	0.13	0.38
Control Delay	29.4	5.0	13.4	5.2	20.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.0	13.4	5.2	20.9	7.3
LOS	C	A	B	A	C	A
Approach Delay		9.8	12.8		10.2	
Approach LOS		A	B		B	

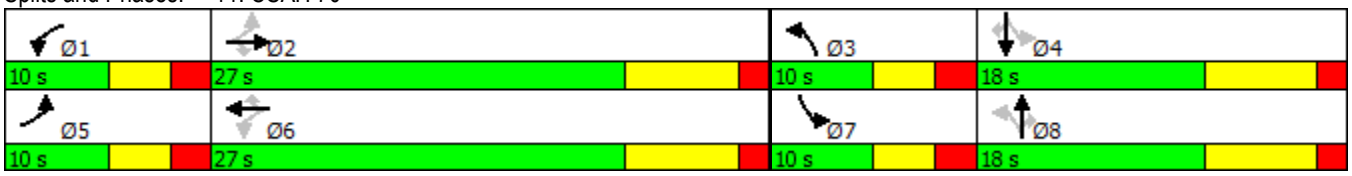
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: CSAH 70 & Jacquard Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	18.0	18.0	10.0	18.0	18.0
Total Split (%)	15.4%	41.5%	41.5%	15.4%	41.5%	41.5%	15.4%	27.7%	27.7%	15.4%	27.7%	27.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	27.2	20.1	20.1	28.3	22.4	22.4	16.3	12.4	12.4	15.4	10.6	10.6
Actuated g/C Ratio	0.45	0.33	0.33	0.47	0.37	0.37	0.27	0.20	0.20	0.25	0.18	0.18
v/c Ratio	0.24	0.35	0.07	0.38	0.45	0.08	0.18	0.28	0.19	0.06	0.57	0.14
Control Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
Queue Delay	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 Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
LOS	B	B	A	B	B	A	B	C	A	B	C	A
Approach Delay		14.6			15.3			13.9			22.9	
Approach LOS		B			B			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	23
CO Emissions (kg)	2.47
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	14
CO Emissions (kg)	2.78
NOx Emissions (kg)	0.54
VOC Emissions (kg)	0.64

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	24
CO Emissions (kg)	4.53
NOx Emissions (kg)	0.88
VOC Emissions (kg)	1.05

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.78
NOx Emissions (kg)	0.15
VOC Emissions (kg)	0.18

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.64
NOx Emissions (kg)	0.51
VOC Emissions (kg)	0.61

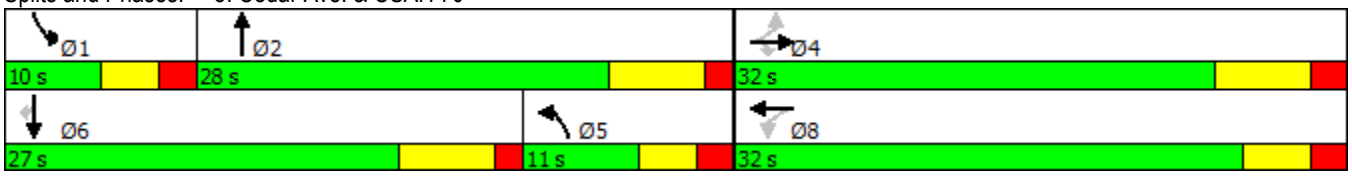
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	19
CO Emissions (kg)	2.46
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		23.5	23.5	5.8	26.4	20.3	20.3		
Actuated g/C Ratio		0.37	0.37	0.09	0.42	0.32	0.32		
v/c Ratio		0.88	0.10	0.33	0.20	0.33	0.32		
Control Delay		42.0	0.3	35.3	12.3	19.1	4.9		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		42.0	0.3	35.3	12.3	19.1	4.9		
LOS		D	A	D	B	B	A		
Approach Delay		36.4			15.8	14.0			
Approach LOS		D			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 63.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

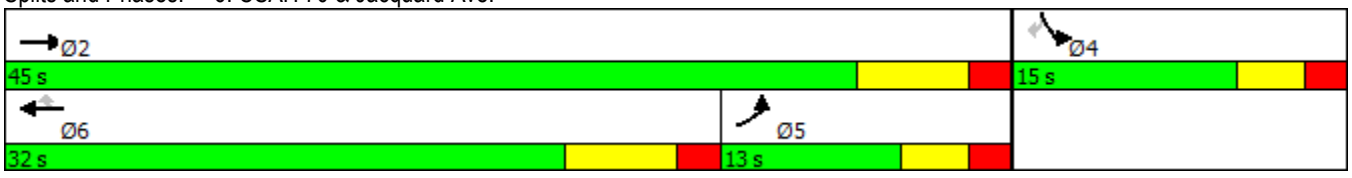
Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	13.0	45.0	32.0	32.0	15.0	15.0
Total Split (%)	21.7%	75.0%	53.3%	53.3%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	7.3	37.5	27.7	27.7	10.2	10.2
Actuated g/C Ratio	0.13	0.69	0.51	0.51	0.19	0.19
v/c Ratio	0.60	0.45	0.59	0.05	0.13	0.38
Control Delay	36.1	7.0	17.4	4.4	21.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	17.4	4.4	21.8	7.6
LOS	D	A	B	A	C	A
Approach Delay		12.8	16.6		10.6	
Approach LOS		B	B		B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

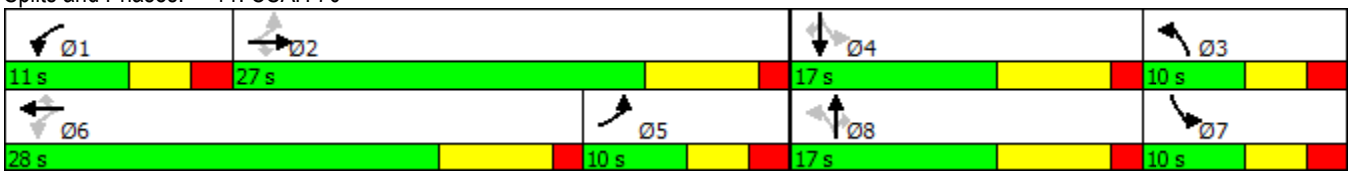
Splits and Phases: 6: CSAH 70 & Jacquard Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	11.0	28.0	28.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (%)	15.4%	41.5%	41.5%	16.9%	43.1%	43.1%	15.4%	26.2%	26.2%	15.4%	26.2%	26.2%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	22.2	20.2	20.2	25.3	23.3	23.3	18.1	11.9	11.9	16.0	10.1	10.1
Actuated g/C Ratio	0.36	0.33	0.33	0.42	0.38	0.38	0.30	0.20	0.20	0.26	0.17	0.17
v/c Ratio	0.29	0.67	0.07	0.61	0.82	0.07	0.15	0.30	0.16	0.06	0.60	0.12
Control Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
Queue Delay	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 Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
LOS	B	C	A	C	C	A	B	C	A	B	D	A
Approach Delay		22.3			29.0			14.3			25.1	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.27
NOx Emissions (kg)	0.44
VOC Emissions (kg)	0.53

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.82
NOx Emissions (kg)	0.55
VOC Emissions (kg)	0.65

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	16
CO Emissions (kg)	4.23
NOx Emissions (kg)	0.82
VOC Emissions (kg)	0.98

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	3
CO Emissions (kg)	0.72
NOx Emissions (kg)	0.14
VOC Emissions (kg)	0.17

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.49
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

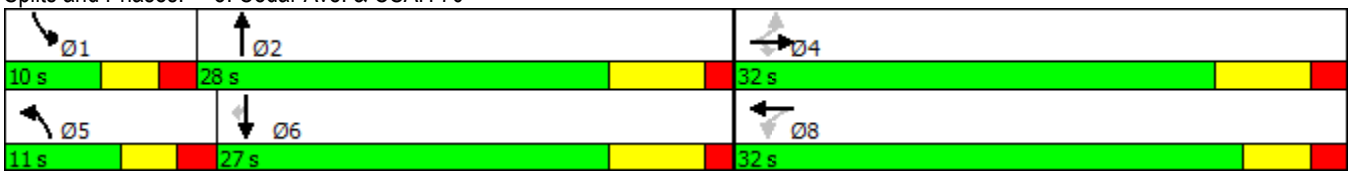
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.17
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		16.3	16.3	5.9	26.5	20.7	20.7		
Actuated g/C Ratio		0.29	0.29	0.10	0.47	0.36	0.36		
v/c Ratio		1.14dl	0.13	0.29	0.18	0.29	0.30		
Control Delay		21.4	1.2	32.0	9.9	16.3	4.6		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		21.4	1.2	32.0	9.9	16.3	4.6		
LOS		C	A	C	A	B	A		
Approach Delay		18.6			13.2	12.1			
Approach LOS		B			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 56.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	15.0	45.0	30.0	30.0	15.0	15.0
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	8.1	36.5	25.8	25.8	10.1	10.1
Actuated g/C Ratio	0.15	0.69	0.48	0.48	0.19	0.19
v/c Ratio	0.53	0.24	0.33	0.05	0.13	0.38
Control Delay	29.4	5.0	13.4	5.2	20.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.0	13.4	5.2	20.9	7.3
LOS	C	A	B	A	C	A
Approach Delay		9.8	12.8		10.2	
Approach LOS		A	B		B	

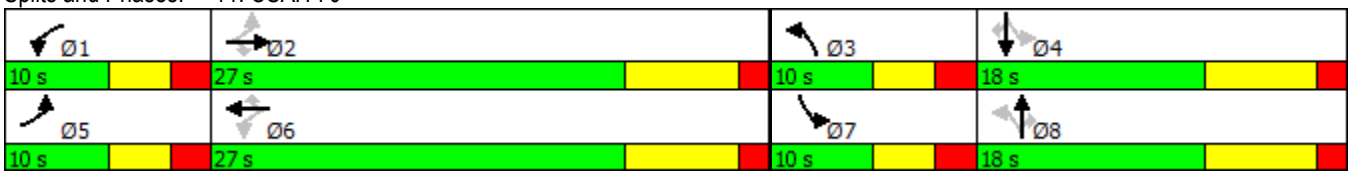
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: CSAH 70 & Jacquard Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	18.0	18.0	10.0	18.0	18.0
Total Split (%)	15.4%	41.5%	41.5%	15.4%	41.5%	41.5%	15.4%	27.7%	27.7%	15.4%	27.7%	27.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	27.2	20.1	20.1	28.3	22.4	22.4	16.3	12.4	12.4	15.4	10.6	10.6
Actuated g/C Ratio	0.45	0.33	0.33	0.47	0.37	0.37	0.27	0.20	0.20	0.25	0.18	0.18
v/c Ratio	0.24	0.35	0.07	0.38	0.45	0.08	0.18	0.28	0.19	0.06	0.57	0.14
Control Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
Queue Delay	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 Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
LOS	B	B	A	B	B	A	B	C	A	B	C	A
Approach Delay		14.6			15.3			13.9			22.9	
Approach LOS		B			B			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	23
CO Emissions (kg)	2.47
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	14
CO Emissions (kg)	2.78
NOx Emissions (kg)	0.54
VOC Emissions (kg)	0.64

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	24
CO Emissions (kg)	4.53
NOx Emissions (kg)	0.88
VOC Emissions (kg)	1.05

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.78
NOx Emissions (kg)	0.15
VOC Emissions (kg)	0.18

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.64
NOx Emissions (kg)	0.51
VOC Emissions (kg)	0.61

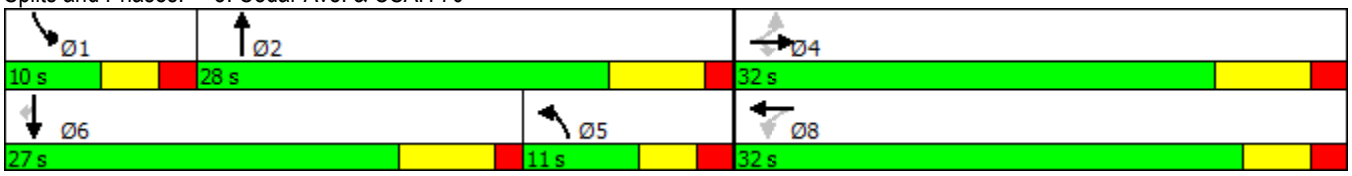
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	19
CO Emissions (kg)	2.46
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		23.5	23.5	5.8	26.4	20.3	20.3		
Actuated g/C Ratio		0.37	0.37	0.09	0.42	0.32	0.32		
v/c Ratio		0.88	0.10	0.33	0.20	0.33	0.32		
Control Delay		42.0	0.3	35.3	12.3	19.1	4.9		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		42.0	0.3	35.3	12.3	19.1	4.9		
LOS		D	A	D	B	B	A		
Approach Delay		36.4			15.8	14.0			
Approach LOS		D			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 63.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

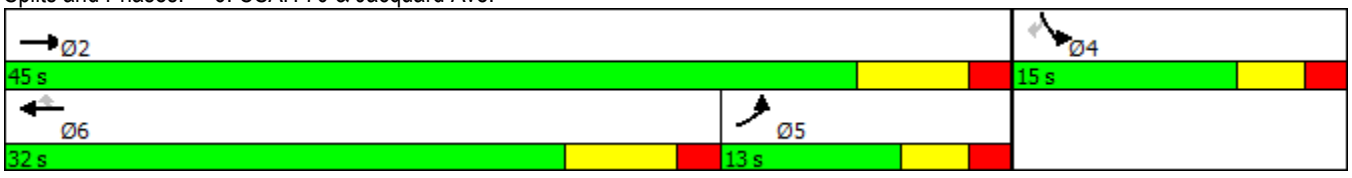
Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	13.0	45.0	32.0	32.0	15.0	15.0
Total Split (%)	21.7%	75.0%	53.3%	53.3%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	7.3	37.5	27.7	27.7	10.2	10.2
Actuated g/C Ratio	0.13	0.69	0.51	0.51	0.19	0.19
v/c Ratio	0.60	0.45	0.59	0.05	0.13	0.38
Control Delay	36.1	7.0	17.4	4.4	21.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	17.4	4.4	21.8	7.6
LOS	D	A	B	A	C	A
Approach Delay		12.8	16.6		10.6	
Approach LOS		B	B		B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

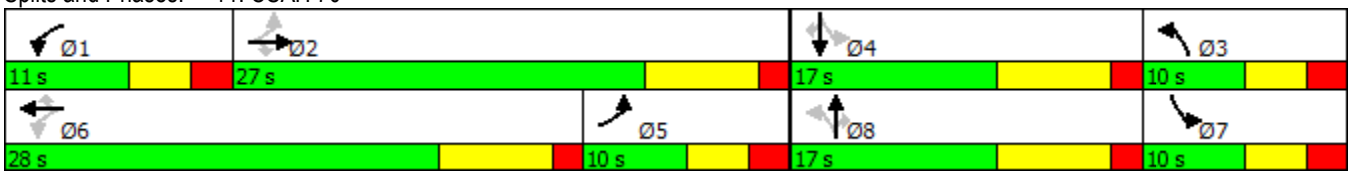
Splits and Phases: 6: CSAH 70 & Jacquard Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	11.0	28.0	28.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (%)	15.4%	41.5%	41.5%	16.9%	43.1%	43.1%	15.4%	26.2%	26.2%	15.4%	26.2%	26.2%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	22.2	20.2	20.2	25.3	23.3	23.3	18.1	11.9	11.9	16.0	10.1	10.1
Actuated g/C Ratio	0.36	0.33	0.33	0.42	0.38	0.38	0.30	0.20	0.20	0.26	0.17	0.17
v/c Ratio	0.29	0.67	0.07	0.61	0.82	0.07	0.15	0.30	0.16	0.06	0.60	0.12
Control Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
Queue Delay	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 Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
LOS	B	C	A	C	C	A	B	C	A	B	D	A
Approach Delay		22.3			29.0			14.3			25.1	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.27
NOx Emissions (kg)	0.44
VOC Emissions (kg)	0.53

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.82
NOx Emissions (kg)	0.55
VOC Emissions (kg)	0.65

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	16
CO Emissions (kg)	4.23
NOx Emissions (kg)	0.82
VOC Emissions (kg)	0.98

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	3
CO Emissions (kg)	0.72
NOx Emissions (kg)	0.14
VOC Emissions (kg)	0.17

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.49
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

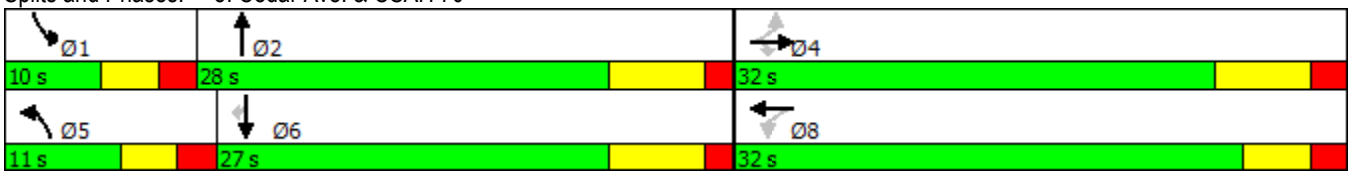
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.17
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		16.3	16.3	5.9	26.5	20.7	20.7		
Actuated g/C Ratio		0.29	0.29	0.10	0.47	0.36	0.36		
v/c Ratio		1.14dl	0.13	0.29	0.18	0.29	0.30		
Control Delay		21.4	1.2	32.0	9.9	16.3	4.6		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		21.4	1.2	32.0	9.9	16.3	4.6		
LOS		C	A	C	A	B	A		
Approach Delay		18.6			13.2	12.1			
Approach LOS		B			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 56.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	15.0	45.0	30.0	30.0	15.0	15.0
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	8.1	36.5	25.8	25.8	10.1	10.1
Actuated g/C Ratio	0.15	0.69	0.48	0.48	0.19	0.19
v/c Ratio	0.53	0.24	0.33	0.05	0.13	0.38
Control Delay	29.4	5.0	13.4	5.2	20.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.0	13.4	5.2	20.9	7.3
LOS	C	A	B	A	C	A
Approach Delay		9.8	12.8		10.2	
Approach LOS		A	B		B	

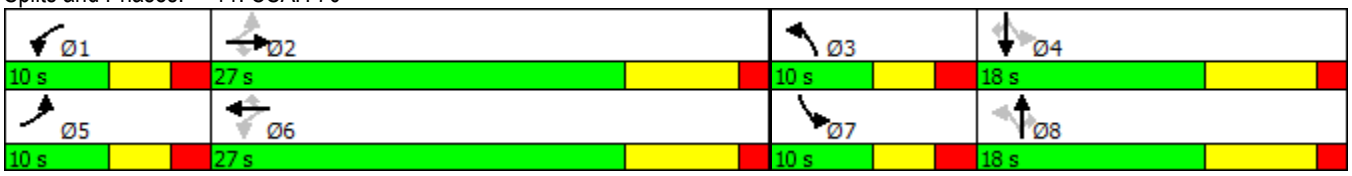
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: CSAH 70 & Jacquard Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	18.0	18.0	10.0	18.0	18.0
Total Split (%)	15.4%	41.5%	41.5%	15.4%	41.5%	41.5%	15.4%	27.7%	27.7%	15.4%	27.7%	27.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	27.2	20.1	20.1	28.3	22.4	22.4	16.3	12.4	12.4	15.4	10.6	10.6
Actuated g/C Ratio	0.45	0.33	0.33	0.47	0.37	0.37	0.27	0.20	0.20	0.25	0.18	0.18
v/c Ratio	0.24	0.35	0.07	0.38	0.45	0.08	0.18	0.28	0.19	0.06	0.57	0.14
Control Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
Queue Delay	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 Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
LOS	B	B	A	B	B	A	B	C	A	B	C	A
Approach Delay		14.6			15.3			13.9			22.9	
Approach LOS		B			B			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	23
CO Emissions (kg)	2.47
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	14
CO Emissions (kg)	2.78
NOx Emissions (kg)	0.54
VOC Emissions (kg)	0.64

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	24
CO Emissions (kg)	4.53
NOx Emissions (kg)	0.88
VOC Emissions (kg)	1.05

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.78
NOx Emissions (kg)	0.15
VOC Emissions (kg)	0.18

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.64
NOx Emissions (kg)	0.51
VOC Emissions (kg)	0.61

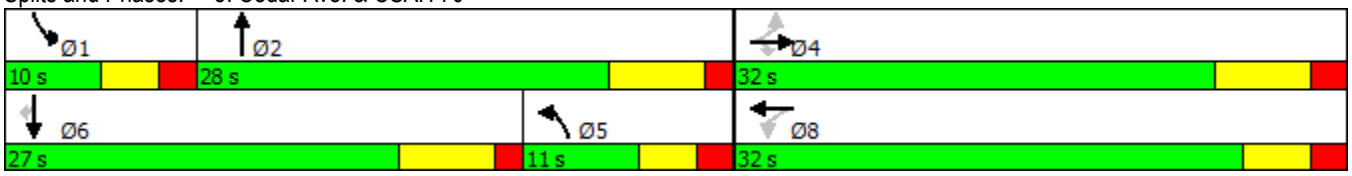
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	19
CO Emissions (kg)	2.46
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		23.5	23.5	5.8	26.4	20.3	20.3		
Actuated g/C Ratio		0.37	0.37	0.09	0.42	0.32	0.32		
v/c Ratio		0.88	0.10	0.33	0.20	0.33	0.32		
Control Delay		42.0	0.3	35.3	12.3	19.1	4.9		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		42.0	0.3	35.3	12.3	19.1	4.9		
LOS		D	A	D	B	B	A		
Approach Delay		36.4			15.8	14.0			
Approach LOS		D			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 63.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

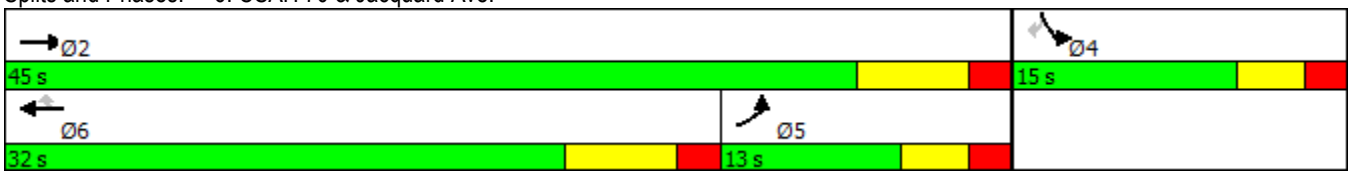
Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	13.0	45.0	32.0	32.0	15.0	15.0
Total Split (%)	21.7%	75.0%	53.3%	53.3%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	7.3	37.5	27.7	27.7	10.2	10.2
Actuated g/C Ratio	0.13	0.69	0.51	0.51	0.19	0.19
v/c Ratio	0.60	0.45	0.59	0.05	0.13	0.38
Control Delay	36.1	7.0	17.4	4.4	21.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	17.4	4.4	21.8	7.6
LOS	D	A	B	A	C	A
Approach Delay		12.8	16.6		10.6	
Approach LOS		B	B		B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

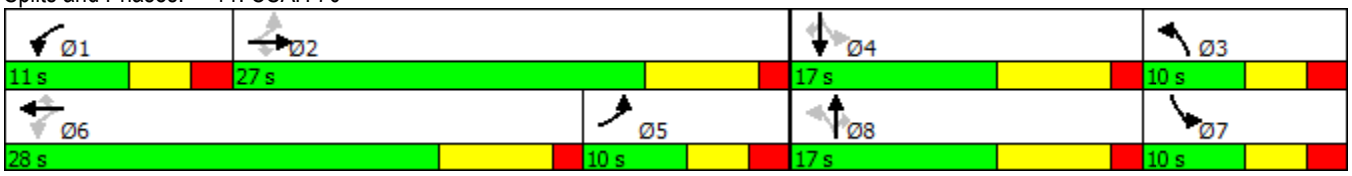
Splits and Phases: 6: CSAH 70 & Jacquard Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	11.0	28.0	28.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (%)	15.4%	41.5%	41.5%	16.9%	43.1%	43.1%	15.4%	26.2%	26.2%	15.4%	26.2%	26.2%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	22.2	20.2	20.2	25.3	23.3	23.3	18.1	11.9	11.9	16.0	10.1	10.1
Actuated g/C Ratio	0.36	0.33	0.33	0.42	0.38	0.38	0.30	0.20	0.20	0.26	0.17	0.17
v/c Ratio	0.29	0.67	0.07	0.61	0.82	0.07	0.15	0.30	0.16	0.06	0.60	0.12
Control Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
Queue Delay	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 Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
LOS	B	C	A	C	C	A	B	C	A	B	D	A
Approach Delay		22.3			29.0			14.3			25.1	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.27
NOx Emissions (kg)	0.44
VOC Emissions (kg)	0.53

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.82
NOx Emissions (kg)	0.55
VOC Emissions (kg)	0.65

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	16
CO Emissions (kg)	4.23
NOx Emissions (kg)	0.82
VOC Emissions (kg)	0.98

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	3
CO Emissions (kg)	0.72
NOx Emissions (kg)	0.14
VOC Emissions (kg)	0.17

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.49
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

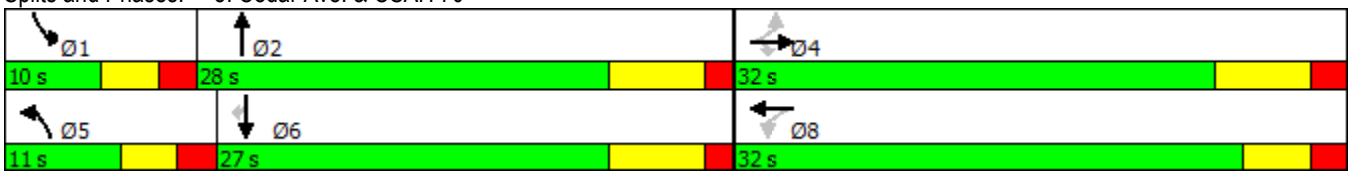
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.17
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		16.3	16.3	5.9	26.5	20.7	20.7		
Actuated g/C Ratio		0.29	0.29	0.10	0.47	0.36	0.36		
v/c Ratio		1.14dl	0.13	0.29	0.18	0.29	0.30		
Control Delay		21.4	1.2	32.0	9.9	16.3	4.6		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		21.4	1.2	32.0	9.9	16.3	4.6		
LOS		C	A	C	A	B	A		
Approach Delay		18.6			13.2	12.1			
Approach LOS		B			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 56.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	15.0	45.0	30.0	30.0	15.0	15.0
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	8.1	36.5	25.8	25.8	10.1	10.1
Actuated g/C Ratio	0.15	0.69	0.48	0.48	0.19	0.19
v/c Ratio	0.53	0.24	0.33	0.05	0.13	0.38
Control Delay	29.4	5.0	13.4	5.2	20.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.0	13.4	5.2	20.9	7.3
LOS	C	A	B	A	C	A
Approach Delay		9.8	12.8		10.2	
Approach LOS		A	B		B	

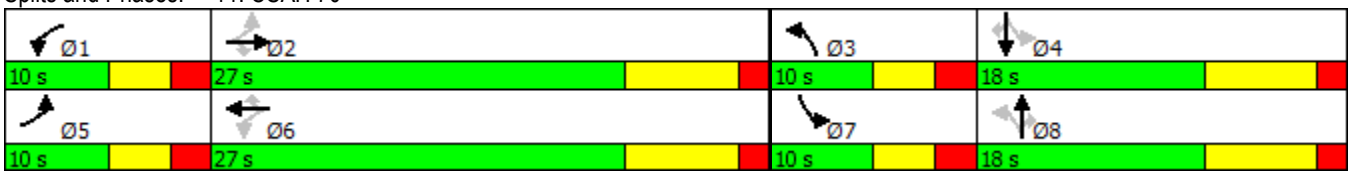
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: CSAH 70 & Jacquard Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	18.0	18.0	10.0	18.0	18.0
Total Split (%)	15.4%	41.5%	41.5%	15.4%	41.5%	41.5%	15.4%	27.7%	27.7%	15.4%	27.7%	27.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	27.2	20.1	20.1	28.3	22.4	22.4	16.3	12.4	12.4	15.4	10.6	10.6
Actuated g/C Ratio	0.45	0.33	0.33	0.47	0.37	0.37	0.27	0.20	0.20	0.25	0.18	0.18
v/c Ratio	0.24	0.35	0.07	0.38	0.45	0.08	0.18	0.28	0.19	0.06	0.57	0.14
Control Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
Queue Delay	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 Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
LOS	B	B	A	B	B	A	B	C	A	B	C	A
Approach Delay		14.6			15.3			13.9			22.9	
Approach LOS		B			B			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	23
CO Emissions (kg)	2.47
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	14
CO Emissions (kg)	2.78
NOx Emissions (kg)	0.54
VOC Emissions (kg)	0.64

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	24
CO Emissions (kg)	4.53
NOx Emissions (kg)	0.88
VOC Emissions (kg)	1.05

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	4
CO Emissions (kg)	0.78
NOx Emissions (kg)	0.15
VOC Emissions (kg)	0.18

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	18
CO Emissions (kg)	2.64
NOx Emissions (kg)	0.51
VOC Emissions (kg)	0.61

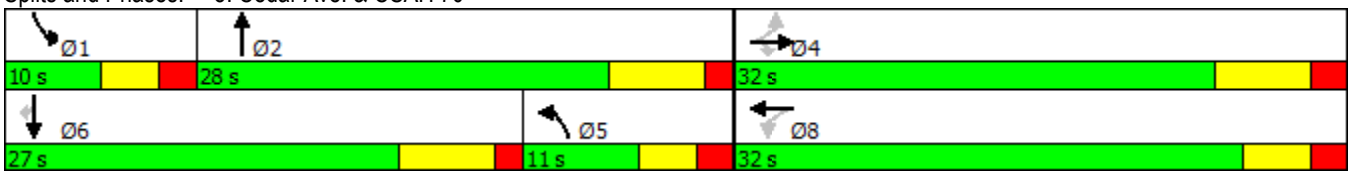
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	19
CO Emissions (kg)	2.46
NOx Emissions (kg)	0.48
VOC Emissions (kg)	0.57

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lag	Lag	Lead	Lead	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		23.5	23.5	5.8	26.4	20.3	20.3		
Actuated g/C Ratio		0.37	0.37	0.09	0.42	0.32	0.32		
v/c Ratio		0.88	0.10	0.33	0.20	0.33	0.32		
Control Delay		42.0	0.3	35.3	12.3	19.1	4.9		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		42.0	0.3	35.3	12.3	19.1	4.9		
LOS		D	A	D	B	B	A		
Approach Delay		36.4			15.8	14.0			
Approach LOS		D			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 63.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

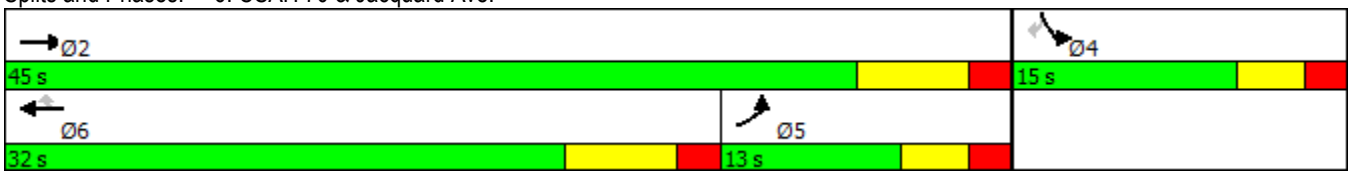
Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	13.0	45.0	32.0	32.0	15.0	15.0
Total Split (%)	21.7%	75.0%	53.3%	53.3%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	7.3	37.5	27.7	27.7	10.2	10.2
Actuated g/C Ratio	0.13	0.69	0.51	0.51	0.19	0.19
v/c Ratio	0.60	0.45	0.59	0.05	0.13	0.38
Control Delay	36.1	7.0	17.4	4.4	21.8	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	17.4	4.4	21.8	7.6
LOS	D	A	B	A	C	A
Approach Delay		12.8	16.6		10.6	
Approach LOS		B	B		B	

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 54.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

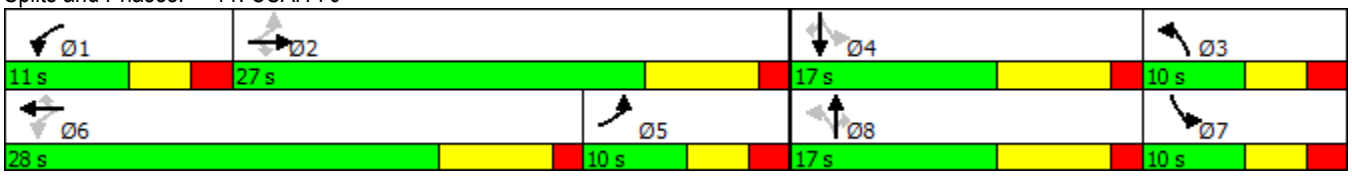
Splits and Phases: 6: CSAH 70 & Jacquard Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	11.0	28.0	28.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (%)	15.4%	41.5%	41.5%	16.9%	43.1%	43.1%	15.4%	26.2%	26.2%	15.4%	26.2%	26.2%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	22.2	20.2	20.2	25.3	23.3	23.3	18.1	11.9	11.9	16.0	10.1	10.1
Actuated g/C Ratio	0.36	0.33	0.33	0.42	0.38	0.38	0.30	0.20	0.20	0.26	0.17	0.17
v/c Ratio	0.29	0.67	0.07	0.61	0.82	0.07	0.15	0.30	0.16	0.06	0.60	0.12
Control Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
Queue Delay	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 Delay	19.4	25.5	0.2	25.4	32.9	0.2	16.1	25.2	0.6	15.2	35.0	0.4
LOS	B	C	A	C	C	A	B	C	A	B	D	A
Approach Delay		22.3			29.0			14.3			25.1	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



5: Cedar Ave. & CSAH 70

Direction	All
Future Volume (vph)	1349
Total Delay / Veh (s/v)	15
CO Emissions (kg)	2.27
NOx Emissions (kg)	0.44
VOC Emissions (kg)	0.53

6: CSAH 70 & Jacquard Ave.

Direction	All
Future Volume (vph)	1405
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.82
NOx Emissions (kg)	0.55
VOC Emissions (kg)	0.65

11: CSAH 70

Direction	All
Future Volume (vph)	1773
Total Delay / Veh (s/v)	16
CO Emissions (kg)	4.23
NOx Emissions (kg)	0.82
VOC Emissions (kg)	0.98

13: Grenada & CSAH 70

Direction	All
Future Volume (vph)	884
Total Delay / Veh (s/v)	3
CO Emissions (kg)	0.72
NOx Emissions (kg)	0.14
VOC Emissions (kg)	0.17

16: Holyoke & CSAH 70

Direction	All
Future Volume (vph)	1394
Total Delay / Veh (s/v)	11
CO Emissions (kg)	2.49
NOx Emissions (kg)	0.49
VOC Emissions (kg)	0.58

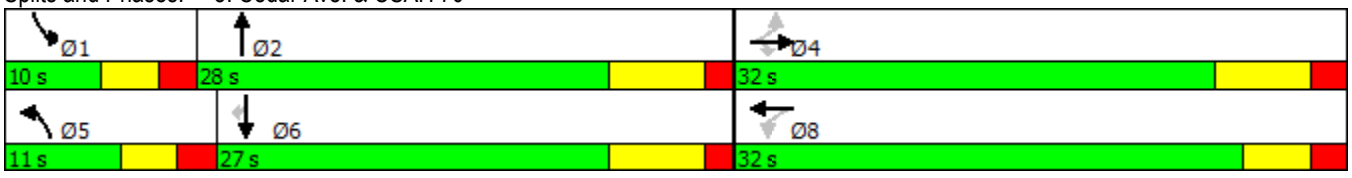
17: Hamburg Ave. & CSAH 70

Direction	All
Future Volume (vph)	1086
Total Delay / Veh (s/v)	0
CO Emissions (kg)	2.17
NOx Emissions (kg)	0.42
VOC Emissions (kg)	0.50

Lane Group	EBL	EBT	EBR	NBL	NBT	SBT	SBR	Ø1	Ø8
Lane Configurations									
Traffic Volume (vph)	424	0	66	48	270	348	193		
Future Volume (vph)	424	0	66	48	270	348	193		
Turn Type	Perm	NA	Perm	Prot	NA	NA	Perm		
Protected Phases		4		5	2	6		1	8
Permitted Phases	4		4				6		
Detector Phase	4	4	4	5	2	6	6		
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	5.0	20.0	20.0	20.0	5.0	10.0
Minimum Split (s)	32.0	32.0	32.0	11.0	26.5	26.5	26.5	10.0	30.5
Total Split (s)	32.0	32.0	32.0	11.0	28.0	27.0	27.0	10.0	32.0
Total Split (%)	45.7%	45.7%	45.7%	15.7%	40.0%	38.6%	38.6%	14%	46%
Yellow Time (s)	5.0	5.0	5.0	3.0	5.0	5.0	5.0	3.0	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		7.0	7.0	5.0	6.5	6.5	6.5		
Lead/Lag				Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)		16.3	16.3	5.9	26.5	20.7	20.7		
Actuated g/C Ratio		0.29	0.29	0.10	0.47	0.36	0.36		
v/c Ratio		1.14dl	0.13	0.29	0.18	0.29	0.30		
Control Delay		21.4	1.2	32.0	9.9	16.3	4.6		
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay		21.4	1.2	32.0	9.9	16.3	4.6		
LOS		C	A	C	A	B	A		
Approach Delay		18.6			13.2	12.1			
Approach LOS		B			B	B			

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 56.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 5: Cedar Ave. & CSAH 70



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	534	514	36	40	149
Future Volume (vph)	132	534	514	36	40	149
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	27.0	15.0	15.0
Total Split (s)	15.0	45.0	30.0	30.0	15.0	15.0
Total Split (%)	25.0%	75.0%	50.0%	50.0%	25.0%	25.0%
Yellow Time (s)	3.0	5.0	5.0	5.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Min	Min	Min	None	None
Act Effct Green (s)	8.1	36.5	25.8	25.8	10.1	10.1
Actuated g/C Ratio	0.15	0.69	0.48	0.48	0.19	0.19
v/c Ratio	0.53	0.24	0.33	0.05	0.13	0.38
Control Delay	29.4	5.0	13.4	5.2	20.9	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	5.0	13.4	5.2	20.9	7.3
LOS	C	A	B	A	C	A
Approach Delay		9.8	12.8		10.2	
Approach LOS		A	B		B	

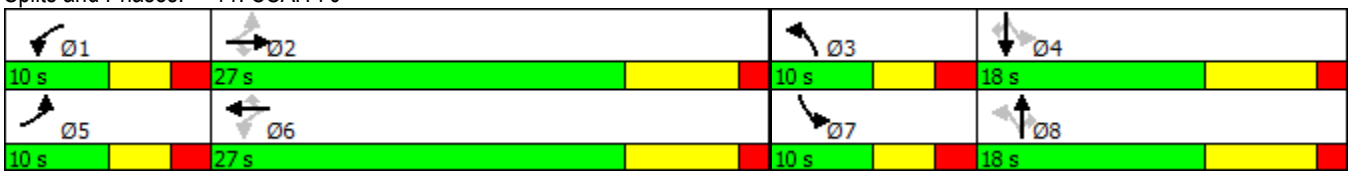
Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 53.2	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: CSAH 70 & Jacquard Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Future Volume (vph)	95	380	42	172	536	51	57	100	87	21	171	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	17.0	17.0	10.0	17.0	17.0
Total Split (s)	10.0	27.0	27.0	10.0	27.0	27.0	10.0	18.0	18.0	10.0	18.0	18.0
Total Split (%)	15.4%	41.5%	41.5%	15.4%	41.5%	41.5%	15.4%	27.7%	27.7%	15.4%	27.7%	27.7%
Yellow Time (s)	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5	3.0	5.5	5.5
All-Red Time (s)	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	27.2	20.1	20.1	28.3	22.4	22.4	16.3	12.4	12.4	15.4	10.6	10.6
Actuated g/C Ratio	0.45	0.33	0.33	0.47	0.37	0.37	0.27	0.20	0.20	0.25	0.18	0.18
v/c Ratio	0.24	0.35	0.07	0.38	0.45	0.08	0.18	0.28	0.19	0.06	0.57	0.14
Control Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
Queue Delay	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 Delay	10.2	17.3	0.2	11.8	17.8	0.2	15.9	24.1	0.8	14.6	31.9	0.6
LOS	B	B	A	B	B	A	B	C	A	B	C	A
Approach Delay		14.6			15.3			13.9			22.9	
Approach LOS		B			B			B			C	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: CSAH 70



HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	Summary of CSAH 70 from Kenrick Ave./Kensington Blvd. to Cedar Ave.	1+00.457	5+00.134	City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

Accident Diagram Codes		1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe - Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	**F**	0	0	0	0	0	0	0	0	
	Personal Injury (PI)	**A**	0	0	0	0	0	1	0	1	**2**
		B	2	0	1	0	1	0	0	0	**4**
		C	2	0	1	3	1	2	0	1	**10**
	Property Damage	**PD**	18	4	4	4	3	1	0	1	**35**
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	**F**									
	PI	**A**									
		B									
		C									
	Property Damage	**PD**									
Change in Crashes = No. of crashes **X** % change in crashes	Fatal	**F**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	PI	**A**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**	**0.00**	**-0.66**	**-1.32**
		B	**-1.32**	**0.00**	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-1.98**
		C	**-1.32**	**0.00**	**-0.66**	**-1.98**	**-0.66**	**-1.32**	**0.00**	**-0.66**	**-6.60**
	Property Damage	**PD**	**-11.22**	**-2.64**	**-1.98**	**-2.64**	**-1.98**	**-0.66**	**0.00**	**-0.66**	**-21.78**

Year (Safety Improvement Construction): **2021**

Project Cost (exclude Right of Way)	**$ 17,487,000**
Right of Way Costs (optional)	
Traffic Growth Factor	**0.5%**
Capital Recovery	
1. Discount Rate	**2%**
2. Project Service Life (n)	**20**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			**$ 1,140,000**	
A	**-1.32**	**-0.44**	**$ 570,000**	**$ 251,029**
B	**-1.98**	**-0.66**	**$ 170,000**	**$ 112,303**
C	**-6.60**	**-2.20**	**$ 83,000**	**$ 182,767**
PD	**-21.78**	**-7.27**	**$ 7,600**	**$ 55,226**
Total				**$ 601,325**

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology
August 2015

Desc.	2 to 4 lane road conversion
CMF ID	7566
CRF	66
Crash Type	All
Severity	All
Area Type	Urban
Intersection	
AADT	

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	CSAH 70			City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

			Accident Diagram Codes: 1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe -Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	**F**									
	Personal Injury (PI)	**A**						1			**1**
		B	1								**1**
		C	1		1	2	1	2		1	**8**
	Property Damage	**PD**	15	3	2	3	2	1		0	**26**
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	**F**									
	PI	**A**						-66%			
		B	-66%								
		C	-66%		-66%	-66%	-66%	-66%		-66%	
	Property Damage	**PD**	-66%	-66%	-66%	-66%	-66%	-66%		0%	
Change in Crashes = No. of crashes **x** % change in crashes	Fatal	**F**	**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	PI	**A**	**0.00**	**0.00**		**0.00**	**0.00**	**-0.66**	**0.00**	**0.00**	**-0.66**
		B	**-0.66**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**
		C	**-0.66**	**0.00**	**-0.66**	**-1.32**	**-0.66**	**-1.32**	**0.00**	**-0.66**	**-5.28**
	Property Damage	**PD**	**-9.90**	**-1.98**	**-1.32**	**-1.98**	**-1.32**	**-0.66**	**0.00**	**0.00**	**-17.16**

Year (Safety Improvement Construction): **2018**

Project Cost (exclude Right of Way): **$ 17,487,000**

Right of Way Costs (optional):

Traffic Growth Factor: **0.5%**

Capital Recovery

1. **Discount Rate:** **2%**
2. **Project Service Life (n):** **30**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			$ 1,140,000	
A	-0.66	-0.22	$ 570,000	$ 125,515
B	-0.66	-0.22	$ 170,000	$ 37,434
C	-5.28	-1.76	$ 83,000	$ 146,214
PD	-17.16	-5.73	$ 7,600	$ 43,512
Total				$ 352,674

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology
August 2015

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	CSAH 70 at Kenrick Ave./Kensington Blvd.			City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

			Accident Diagram Codes: 1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe -Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	**F**									
	Personal Injury (PI)	**A**									
		B									
		C									
	Property Damage	**PD**				1					**1**
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	**F**									
	PI	**A**									
		B									
		C									
	Property Damage	**PD**				-66%					
Change in Crashes = No. of crashes **x** % change in crashes	Fatal	**F**									
	PI	**A**									
		B									
		C									
	Property Damage	**PD**				**-0.66**					**-0.66**

Year (Safety Improvement Construction): **2018**

Project Cost (exclude Right of Way)	**$ 17,487,000**
Right of Way Costs (optional)	
Traffic Growth Factor	**0.5%**
Capital Recovery	
1. Discount Rate	**2%**
2. Project Service Life (n)	**30**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			**$ 1,140,000**	
A			**$ 570,000**	
B			**$ 170,000**	
C			**$ 83,000**	
PD	**-0.66**	**-0.22**	**$ 7,600**	**$ 1,674**
Total				**$ 1,674**

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology
August 2015

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	CSAH 70 at Jacquard Ave.			City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

Accident Diagram Codes			1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe -Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	**F**									
	Personal Injury (PI)	**A**								1	**1**
		B									
		C	1								**1**
	Property Damage	**PD**	1								**1**
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	**F**									
	PI	**A**								-66%	
		B									
		C	-66%								
	Property Damage	**PD**	-66%								
Change in Crashes = No. of crashes **X** % change in crashes	Fatal	**F**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	PI	**A**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**	**-0.66**
		B	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		C	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**
	Property Damage	**PD**	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**

Year (Safety Improvement Construction): **2018**

Project Cost (exclude Right of Way)	**$ 17,487,000**
Right of Way Costs (optional)	
Traffic Growth Factor	**0.5%**
Capital Recovery	
1. Discount Rate	**2%**
2. Project Service Life (n)	**30**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			**$ 1,140,000**	
A	**-0.66**	**-0.22**	**$ 570,000**	**$ 125,515**
B			**$ 170,000**	
C	**-0.66**	**-0.22**	**$ 83,000**	**$ 18,277**
PD	**-0.66**	**-0.22**	**$ 7,600**	**$ 1,674**
Total				**$ 145,465**

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **August 2015**

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	CSAH 70 at Dodd Blvd.			City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

Accident Diagram Codes			1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe - Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	**F**									
	Personal Injury (PI)	**A**									
		B			1						**1**
		C				1				0	**1**
	Property Damage	**PD**		1			1			1	**3**
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	**F**									
	PI	**A**									
		B			-66%						
		C				-66%					
	Property Damage	**PD**		-66%			-66%			-66%	
Change in Crashes = No. of crashes **X** % change in crashes	Fatal	**F**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	PI	**A**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		B	**0.00**	**0.00**	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**
		C	**0.00**	**0.00**	**0.00**	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**
	Property Damage	**PD**	**0.00**	**-0.66**	**0.00**	**0.00**	**-0.66**	**0.00**	**0.00**	**-0.66**	**-1.98**

Year (Safety Improvement Construction): **2018**

Project Cost (exclude Right of Way): **$ 17,487,000**

Right of Way Costs (optional):

Traffic Growth Factor: **0.5%**

Capital Recovery

1. **Discount Rate:** 2%
2. **Project Service Life (n):** 30

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			$ 1,140,000	
A			$ 570,000	
B	-0.66	-0.22	$ 170,000	$ 37,434
C	-0.66	-0.22	$ 83,000	$ 18,277
PD	-1.98	-0.66	$ 7,600	$ 5,021
Total				$ 60,731

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **August 2015**

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	CSAH 70 at Holyoke Ave.			City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

Accident Diagram Codes			1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe - Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	F									
	Personal Injury (PI)	A									
		B									
		C									
	Property Damage	PD	1								1
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	F									
	PI	A									
		B									
		C									
	Property Damage	PD	-66%								
Change in Crashes = No. of crashes **X** % change in crashes	Fatal	F	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	PI	A	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		B	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		C	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	Property Damage	PD	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**

Year (Safety Improvement Construction): **2018**

		Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
Project Cost (exclude Right of Way)	**$ 17,487,000**					
Right of Way Costs (optional)		F			**$ 1,140,000**	
Traffic Growth Factor	**0.5%**	A			**$ 570,000**	
Capital Recovery		B			**$ 170,000**	
1. Discount Rate	**2%**	C			**$ 83,000**	
2. Project Service Life (n)	**30**	PD	**-0.66**	**-0.22**	**$ 7,600**	**$ 1,674**
		Total				**$ 1,674**

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **August 2015**

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	CSAH 70 at Grenada Ave.			City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

Accident Diagram Codes			1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8, 9 Head On/ Sideswipe - Opposite Direction	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	F									
	Personal Injury (PI)	A									
		B									
		C									
	Property Damage	PD			1						1
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	F									
	PI	A									
		B									
		C									
	Property Damage	PD			-66%						
Change in Crashes = No. of crashes **X** % change in crashes	Fatal	F	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	PI	A	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		B	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		C	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	Property Damage	PD	**0.00**	**0.00**	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-0.66**

Year (Safety Improvement Construction)	**2018**
Project Cost (exclude Right of Way)	**$ 17,487,000**
Right of Way Costs (optional)	
Traffic Growth Factor	**0.5%**
Capital Recovery	
1. Discount Rate	**2%**
2. Project Service Life (n)	**30**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			$ 1,140,000	
A			$ 570,000	
B			$ 170,000	
C			$ 83,000	
PD	-0.66	-0.22	$ 7,600	$ 1,674
Total				**$ 1,674**

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

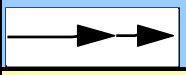
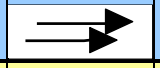
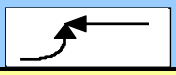
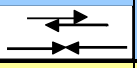
See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **August 2015**

HSIP worksheet

Control Section	T.H. / Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
	CSAH 70	CSAH 70 at Cedar Ave.			City of Lakeville	1/1/2013	12/31/2015

Description of Proposed Work: Expand CSAH 70 from a 2-lane to 4-lane highway

			Accident Diagram Codes									
			1 Rear End 	2 Sideswipe Same Direction 	3 Left Turn Main Line 	5 Right Angle 	4,7 Ran off Road 	8, 9 Head On/ Sideswipe - Opposite Direction 	Pedestrian	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	F									
	Personal Injury (PI)	A									
		B	1				1				2
		C									
	Property Damage	PD	1		1						2
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	F									
	PI	A									
		B	-66%				-66%				
		C									
	Property Damage	PD	-66%		-66%						
Change in Crashes = No. of crashes **x** % change in crashes	Fatal	F	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	PI	A	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		B	**-0.66**	**0.00**	**0.00**	**0.00**	**-0.66**	**0.00**	**0.00**	**0.00**	**-1.32**
		C	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
	Property Damage	PD	**-0.66**	**0.00**	**-0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-1.32**

Year (Safety Improvement Construction): **2018**

Project Cost (exclude Right of Way)	**$ 17,487,000**
Right of Way Costs (optional)	
Traffic Growth Factor	**0.5%**
Capital Recovery	
1. Discount Rate	**2%**
2. Project Service Life (n)	**30**

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			$ 1,140,000	
A			$ 570,000	
B	-1.32	-0.44	$ 170,000	$ 74,868
C			$ 83,000	
PD	-1.32	-0.44	$ 7,600	$ 3,347
Total				$ 78,215

B/C= 0.60

Using present worth values,

B= $ 10,485,735

C= $ 17,487,000

See "Calculations" sheet for amortization.

Office of Traffic, Safety and Technology **August 2015**

Amortizing…

Year	Crash Benefits	Present Worth Benefits	Present Worth Costs
2021	$ 601,325	$ 601,325	$ 17,487,000
2022	$ 604,332	$ 592,482	
2023	$ 607,353	$ 583,769	
2024	$ 610,390	$ 575,184	
2025	$ 613,442	$ 566,726	
2026	$ 616,509	$ 558,392	
2027	$ 619,592	$ 550,180	
2028	$ 622,690	$ 542,089	
2029	$ 625,803	$ 534,117	
2030	$ 628,932	$ 526,262	
2031	$ 632,077	$ 518,523	
2032	$ 635,237	$ 510,898	
2033	$ 638,414	$ 503,385	
2034	$ 641,606	$ 495,982	
2035	$ 644,814	$ 488,688	
2036	$ 648,038	$ 481,502	
2037	$ 651,278	$ 474,421	
2038	$ 654,534	$ 467,444	
2039	$ 657,807	$ 460,570	
2040	$ 661,096	$ 453,797	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
Totals =		**$ 10,485,735 (B)**	**$ 17,487,000 (C)**

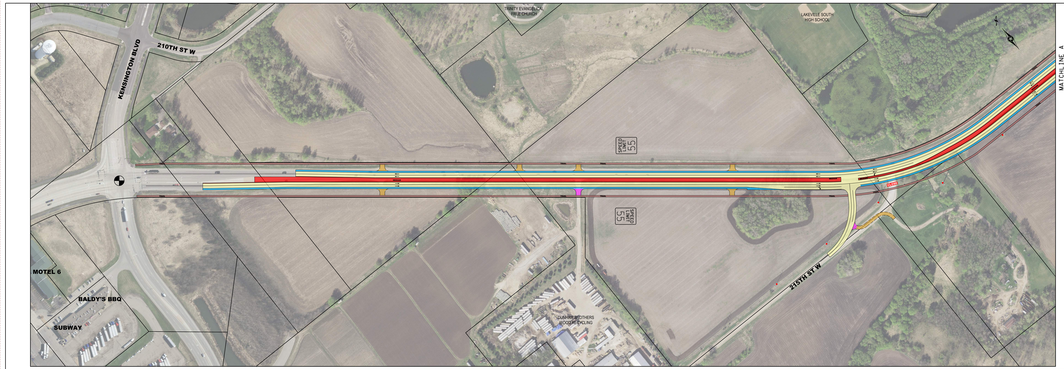
year (n)= 1, 2, 3,….
discount rate (i) = 7%

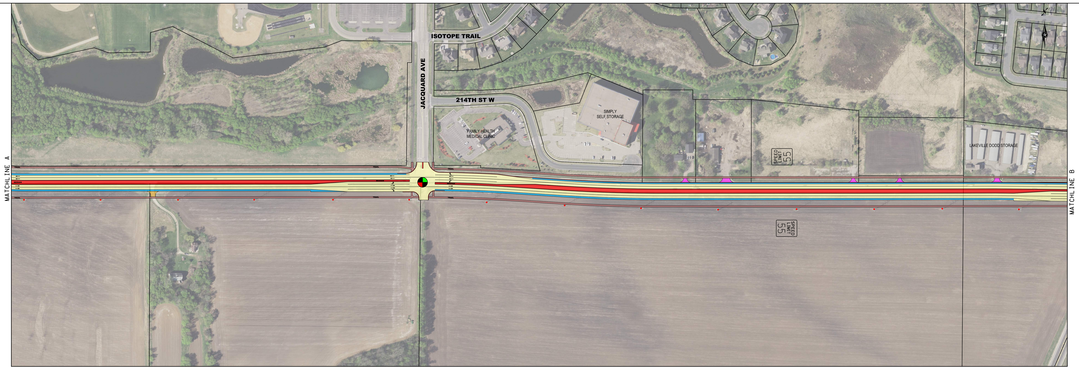
$$\text{Crash Benefits (@ year n)} = (\text{Crash Benefits})_{n-1} \times (1 + \text{Traffic Growth Factor})$$

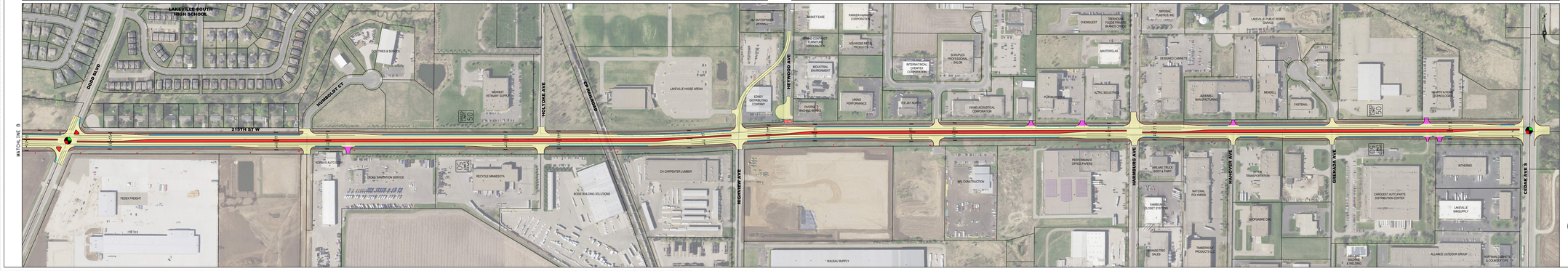
$$\text{Present Worth Benefits (@ year n)} = (\text{Crash Benefits})_{n} \times 1/(1 + \text{Discount Rate})^{n}$$

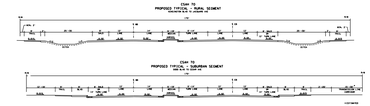
Type of Crash	Crash Severity	Cost per Crash
Fatal	K	$ 1,140,000
Personal Injury	A Incapacitating	$ 570,000
	B Non-Incapacitating	$ 170,000
	C Possible	$ 83,000
Property Damage	PDO or N	$ 7,600

Source: MnDOT Office of Transportation System Management
(July 2015)









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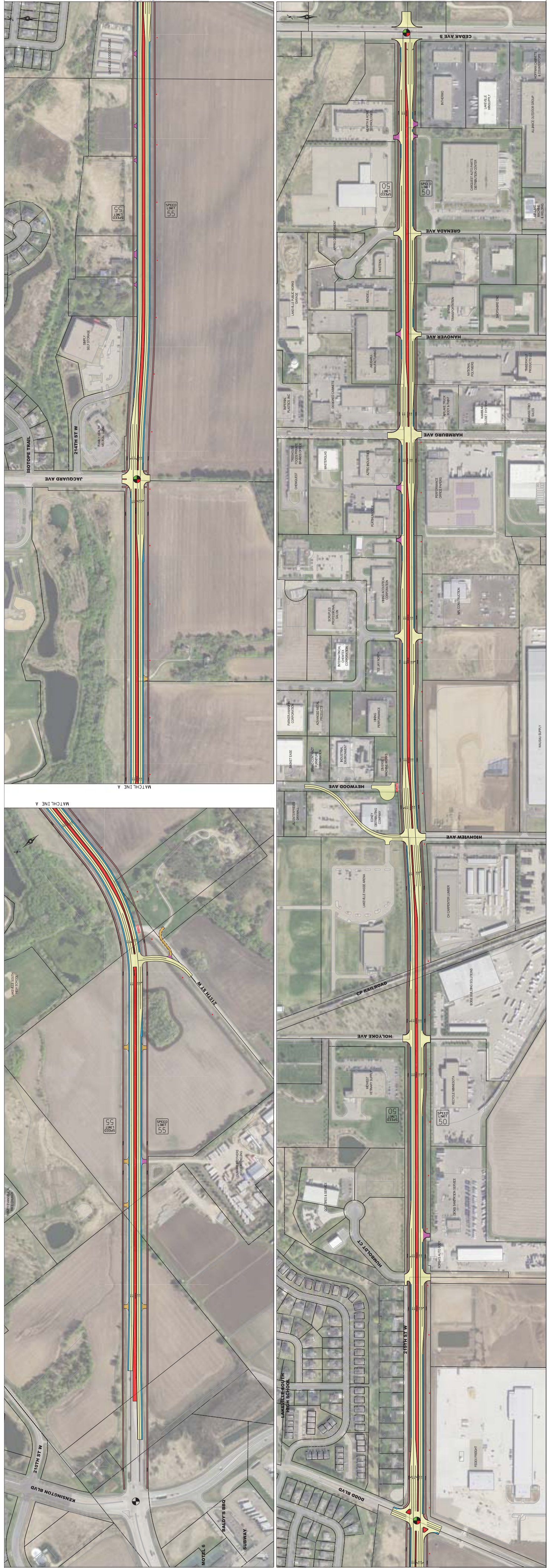
DRAFT
SDATES

CSAH 70 EXPANSION CONCEPT DESIGN LAYOUT



CEDAR AVE S
GRENADA AVE
HANOVER AVE
HAMBURG AVE
HEYWOOD AVE
HIGHVIEW AVE
CP RAILROAD
HOLYOKE AVE
HUMBOLDT CT
210TH ST W
DODD BLVD
JACQUARD AVE
ISOTOPE TRAIL
214TH ST W
KENSINGTON BLVD
MATCHLINE A
SPEED LIMIT 55
SPEED LIMIT 50

PROJECT SUMMARY

County Road 70 Expansion, Lakeville

July 3, 2018

Project Overview

Dakota County, in cooperation with the City of Lakeville is reconstructing County State Aid Highway (CSAH) 70 from Kensington Boulevard/Kenrick Avenue to Cedar Avenue in the City of Lakeville. The purpose of the project is to improve safety and operations, and accommodate increasing traffic volumes (including truck traffic).

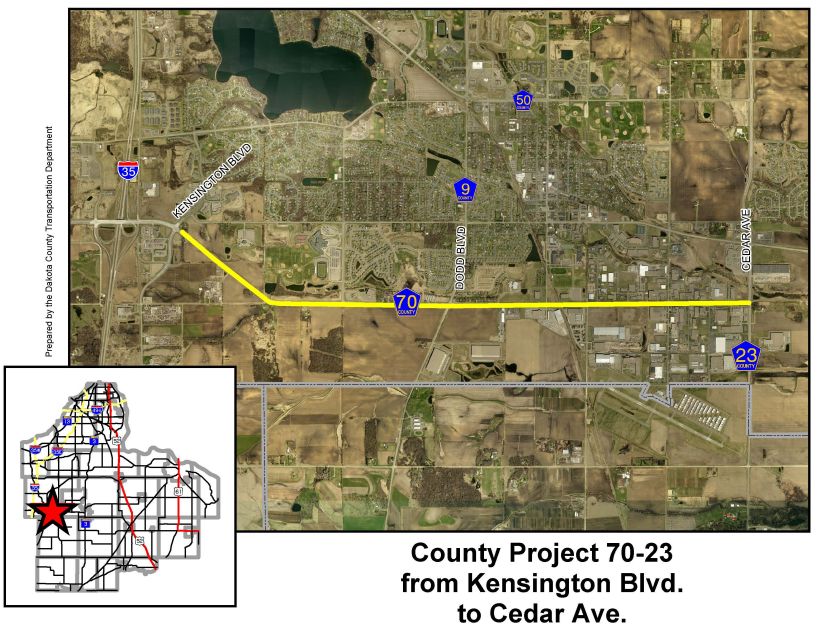
Work on the project is anticipated to include:

- Expanding the highway from a 3-lane to a 4-lane divided roadway
- Constructing turn lanes at major intersections along the corridor
- Improving drainage along the corridor
- Managing access along the corridor
- Reconstructing signals to accommodate the additional lanes

Project Benefits

The expansion of CSAH 70 will provide several benefits to the corridor and the area. The proposed project will:

- Add capacity to a major truck and business area that continues to grow
- Reduce delays along the corridor
- Address various drainage issues that exist



County Project 70-23 from Kensington Blvd. to Cedar Ave.

Project Funding

- Based on Dakota County 2018-2022 Capital Improvements Program
- Estimated Costs
  - Design = $1,750,000
  - Right of Way = $2,250,000
  - Construction = $17,500,000
  - Total Project Cost = $21,500,000*
    *Dakota County is requesting $7,000,000 in federal funds for construction in the 2018 FAST federal funding application

Project Schedule

- Design – 2018-2019
- Right of Way acquisition – 2019-2020
- Construction – 2020-2021

For More Information

- Contacts:
  Aaron Warford, Bolton & Menk
  952-890-0509
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  Jacob Rezac, Dakota County Project Manager
  952-891-7981
  jacob.rezac@co.dakota.mn.us

  Zach Johnson, City of Lakeville Engineer
  952-985-4501
  zjohnson@lakevillemn.gov

Dakota County

March 6, 2018

Proposal for

CSAH 70 Expansion in Lakeville

Contact:
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March 6, 2018

Jacob Rezac, County Project Manager
Dakota County Transportation Dept.
Western Service Center, 3rd Floor
14955 Galaxie Avenue
Apple Valley, MN 55124

RE: CSAH 70 Expansion in Lakeville

Dear Mr. Rezac:

Dakota County and the City of Lakeville have initiated the CSAH 70 project to expand a critical component of the transportation network that serves regional users, residents, ISD 194, Airlake Airport, and the thriving Airlake Industrial Park. The proposed capacity, safety, and access management improvements will support the designation of CSAH 70 as a future Principal Arterial. Like you, Bolton & Menk, Inc. takes pride in designing and managing safe, sustainable, and beautiful projects. We listen to your needs and challenges and create solutions that work for Dakota County and the City of Lakeville. We believe you will find outstanding value in our approach to the CSAH 70 Expansion project for the following reasons:

Effective Public Involvement and Communication – An organized, thorough, and flexible approach is needed to manage effective and engaging public and agency outreach. Our project team has led successful public involvement efforts for many similar projects, including the recent CSAH 50 expansion in Lakeville. An essential part of developing a sustainable solution involves obtaining informed consent from stakeholders with competing interests, which will be particularly challenging on this project. To ensure we reach all stakeholders, we will use specialty tools like Bolton & Menk's INPUTiD™ web application, 3D renderings and drone footage to illustrate concepts, and detailed analytics from a proprietary digital communications platform to track outreach effectiveness. Obtaining feedback from critical stakeholders is essential to developing a solution that blends all stakeholder needs.

Construction Staging/Access Management – Major components to achieve project goals will be improving access to freight-generating facilities and expanding capacity by instituting sound access management principles. Access during construction will be critical, as industrial stakeholders rely on CSAH 70 for 24/7 access to CSAH 23 and I-35. We will develop staging and access concepts that add safety benefits for all users but do not adversely impact operations. We will maintain constant contact with stakeholders throughout development and delivery via our proven communication platforms to ensure there no surprises during construction.

Proven and Experienced Team – We have assembled key leadership and technical experts from Bolton & Menk and Kimley-Horn—a team of professionals who have a demonstrated capability in developing and delivering transportation solutions for Dakota County and the City of Lakeville. Our previous work has provided us with the tools and processes needed to understand the most important issues in the community and establish a solution acceptable to all project stakeholders. This experience will greatly benefit this project as we apply the many lessons learned to this effort.

In continued service to Dakota County, we are excited at the opportunity to complete the CSAH 70 Expansion project. Our proposal will remain valid for a period of no less than 120 days from the submittal date. We comply with the terms identified for Standard Assurances and Insurance Terms. I will personally serve as your project manager and lead client contact on this project. Please contact me at 651-503-5700 or aaronwa@bolton-menk.com if you have any questions regarding our proposal.

Respectfully submitted,
Bolton & Menk, Inc.

Aaron J. Warford, P.E.
Principal Transportation Engineer

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Expect More. Experience Better.

PROJECT
UNDERSTANDING

Section 1

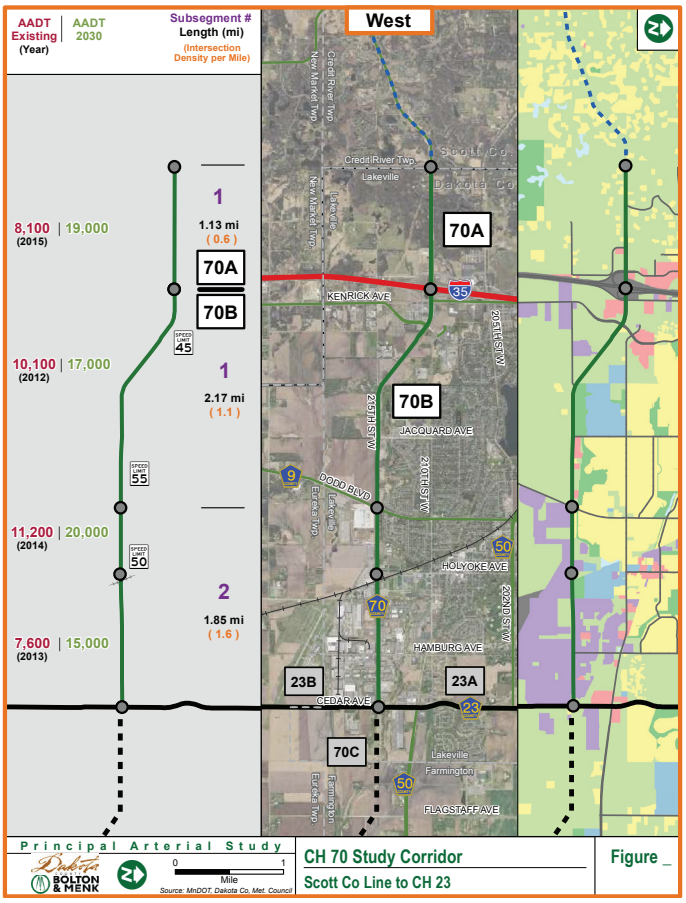
PROJECT **UNDERSTANDING**

Project Background

The CSAH 70 corridor is a critical component—Tier 1 A-Minor Arterial Expander—of the broader transportation network in Dakota County, providing connections from Lakeville and Farmington to I-35 and CSAH 23 (Cedar Avenue). CSAH 70 is also important to the City of Lakeville as it provides direct access to Lakeville South High School, residential neighborhoods, Airlake Airport, and the thriving Airlake Industrial Park west of CSAH 23. The industrial park is the second largest by area in the metro and is served by both freight and regional railroad services CP Rail (operated by Progressive).

The Dakota County Transportation Plan identifies this corridor for expansion to a four-lane divided urban roadway to accommodate growing demands ranging from 17,000 to 20,000 vehicles per day by 2030. The 2018 Capital Improvement Program (CIP) programs the CSAH 70 expansion from 1,900 feet east of I-35 to CSAH 23 for construction in 2020. The CIP also includes a consultant budget in 2018 of $1.75 million, right-of-way acquisition in 2019 with a budget of $2.625 million, and construction in 2020 with a budget of $17.5 million, totaling $21.875 million. Dakota County was successful in obtaining $7 million from Minnesota Highway Freight Program to offset the county and city shares in the project.

Bolton & Menk recently completed a principal arterial (PA) study for Dakota County that included this segment of CSAH 70. The final recommendation was that CSAH 70 be designated a short-term PA due to existing and planned land uses in Lakeville. We understand this will require work to not only expand the highway, but address related access needs to support the accepted guidelines for a future PA through access management and local roadway support. This will be the key to reducing the existing crash and severity rates that are currently over state averages.



Guidance: Principal Arterial Public Street Access Spacing and Volumes			
Facility Type	**Public Street Spacing**		**Signal Spacing**
	Primary Intersection	**Secondary Intersection**	
Rural	1 mile	1/2 mile	Only at Primary Intersections
Urban/Urbanized	1/2 mile	1/4 mile	Only at Primary Intersections
Urban Core	300-600 feet, dependent upon block length		1/4 mile
PA Typical Volumes Based on Land Use	**Urban Principal Arterial**	**Rural Principal Arterial**	
	15,000 to 100,000 ADT	2,500 to 25,000 ADT	

Project Considerations

A project considerations map is included on the following pages. The map provides a corridor evaluation focusing on deficiencies and opportunities within the immediate project area. Below is a listing of general considerations:

- Upgrade from a two-lane rural section to a four-lane rural/urban divided principal arterial
- 180-foot right-of-way planned
- Federal funding, environmental coordination, and schedule requirements
- Access management review required with expansion to four-lane section
- High truck volumes—17 percent HCADT
- 24/7 access to Airlake Industrial Park is essential
- Urban design will make stormwater rate control and treatment options more difficult
- Utility coordination with private oil pipelines and overhead transmission towers to avoid impacts

Project Objectives

The following key project objectives were developed based on our discussions with project stakeholders and our understanding of the project details:

- Lead a transparent and interactive public participation process
- Develop and communicate a complete understanding of the corridor history, evolution, traffic demands, and safety issues that all stakeholders can fully understand
- Fully engage stakeholders and the public throughout the project, seeking input and collaboration
- Generate a corridor vision that meets the access requirements and standards of a principal arterial with full stakeholder support
- Generate a construction staging and temporary access plan based on stakeholder feedback
- Provide safety improvements for all users
- Consider existing and planned land use
- Accommodate needs for the next 20 years of growth
- Improve city infrastructure (utilities and local roadway connections)
- Complete environmental documentation, final design, and ready the project for construction in 2020

Project Risks

A project the size of CSAH 70 has numerous complexities, all of which will positively or negatively impact delivery. We will work with Dakota County and the City of Lakeville to proactively manage the following key risks to ensure successful project delivery.

- ***Federal funding*** – Identifying right-of-way impacts, completing parcel sketches, and starting the acquisition process in early 2019 will be critical to meeting the delivery schedule. Our team has successfully worked with Dakota County's right-of-way staff on past projects and met all critical milestones for delivery.
- ***Access Management*** – A major component of achieving the project goals will be improving access to freight-generating facilities and expanding capacity, all while instituting sound access management principles into the final design. We are experienced working with local agencies and adjacent property owners to ensure access modifications do not adversely impact operations and add the requisite safety benefits for all users.

CRITICAL ACCESS MODIFICATION ON CSAH 50 IN LAKEVILLE

- ***Construction Staging*** – CSAH 70 is a critical connection point to I-35 and CSAH 23 (Cedar Avenue) for one of the largest industrial parks in the metro. It is a Tier 1 regional truck corridor with an HCADT volume approaching 2,000 per day (17 percent of ADT). Our staging alternatives will use the existing roadway, available right-of-way, and proposed extension of 220th Street to CSAH 23 to maintain 24/7 access during construction.

USING EXISTING RIGHT-OF-WAY WILL BE CRITICAL FOR ACCESS DURING CONSTRUCTION

- ***Public Engagement*** – Effective coordination with business owners, residents, ISD 194, and other area stakeholders on access management and construction staging will be critical to obtaining informed consent. We understand previous communication efforts on CSAH 70 were not effective in coordination during construction. We have developed a set of tools and an approach proven to manage this critical risk.

CSAH 70 Expansion in Lakeville

Dakota County

Project Considerations Map

March 2018

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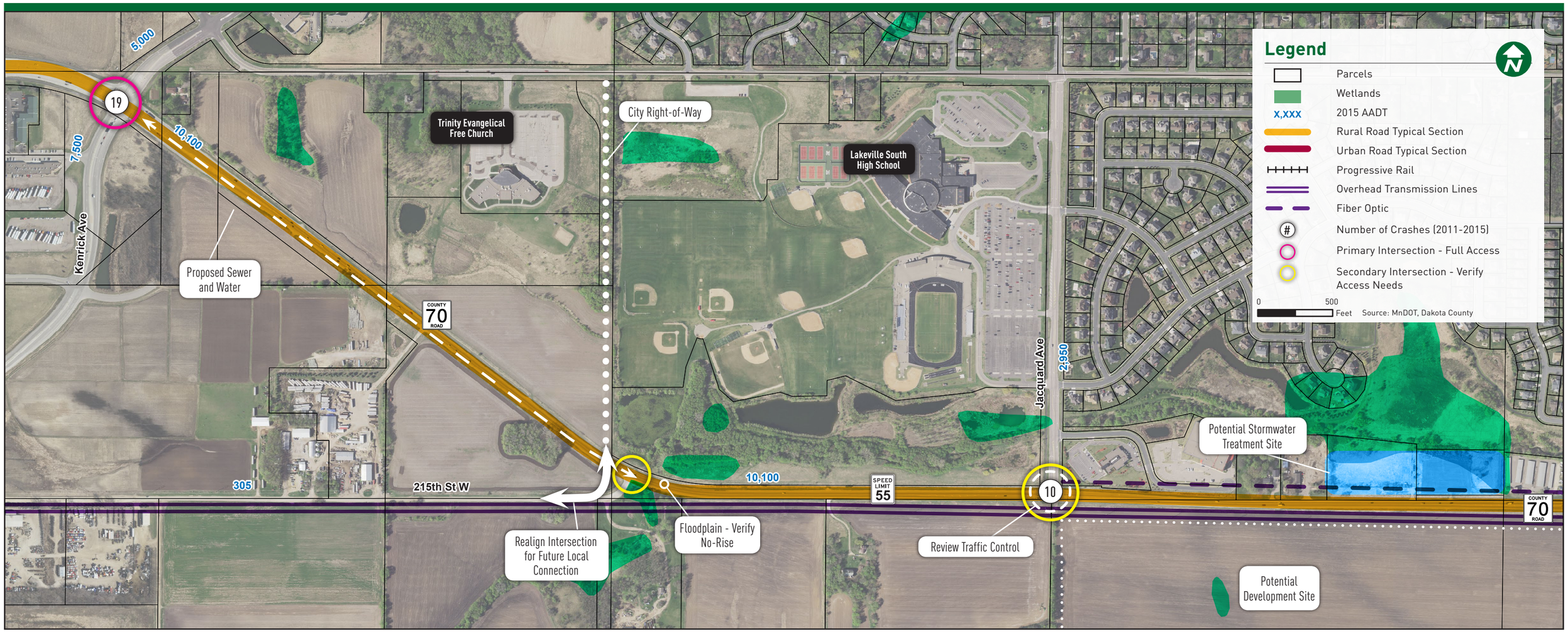

Key Consideration

We will develop intersection alternatives that reinforce the recommendations of the county PA study and arterial access spacing guidance. Primary intersections will maintain full access, while secondary intersections will be evaluated based on traffic analysis, existing and future volumes, operational and safety considerations, adjacent land use, and local network connectivity. Geometric design alternatives and traffic control options will be analyzed, developed, and evaluated for each primary and secondary intersection on the corridor.

Key Consideration

Our development of geometric alternatives will include a full analysis of both rural and urban roadway sections for the future four-lane highway, including a hybrid option that transitions from rural to urban as the corridor context changes. Based on our preliminary review of the project area, a rural design on the western segment of CSAH 70 that maintains the existing roadside ditches will improve stormwater conveyance and treatment. The eastern segment of CSAH 70 may benefit from a more urban design as access and development is more dense and traffic speeds are reduced.

CSAH 70 Expansion in Lakeville

Dakota County

Project Considerations Map

March 2018

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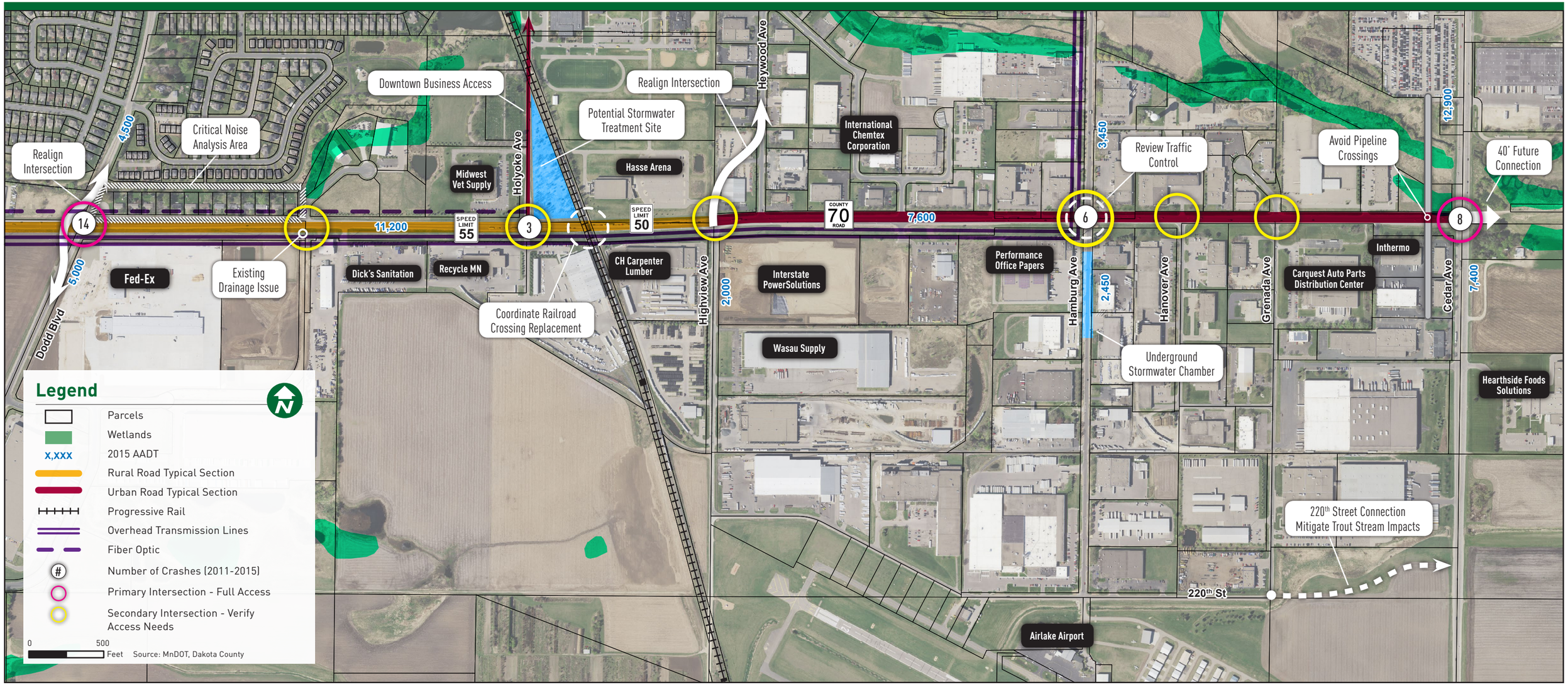


Key Consideration

The CSAH 70 project is an opportunity to review intersection alignment and consolidation. Realigning Dodd Boulevard to reduce the skew at the intersection and realigning Heywood Avenue. to eliminate the offset with Highview Avenue. are practical improvements that align with the overall project purpose and need. We will develop and evaluate these concepts, including the potential impacts to adjacent properties, as part of our alternatives analysis.

Key Consideration

We understand that the City of Lakeville has already initiated a conversation with the Metropolitan Airports Commission regarding extending 220th Street to CSAH 23 (Cedar Avenue), and has already completed the annexation of the NE parcel of airport property into the city limits. We will pursue expediting the design and construction of this extension in 2019, as it will add immeasurable value as an additional access for the Airlake Airport and Industrial Park during construction in 2020.

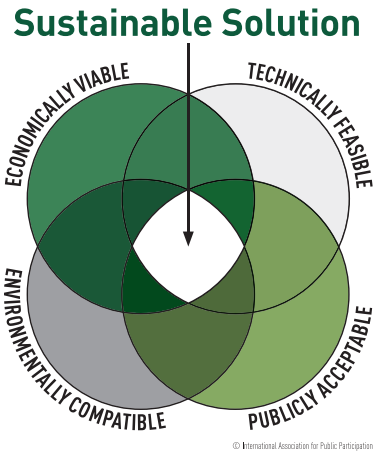
PROJECT **APPROACH**

Section 2

PROJECT **APPROACH**

Aaron Warford and the Bolton & Menk team will lead project partners through a successful public involvement and detailed design process that results in a sustainable solution fully supported by Dakota County and the City of Lakeville. Our balanced, focused, and flexible approach has proven successful on many similar projects over the past 17 years, including many in Dakota County such as CSAH 50 Expansion in Lakeville; CSAH 8 (Wentworth Avenue) in West St. Paul; Southview Boulevard in South St. Paul; CSAH 42 Segment 8 Design; River to River Greenway Improvements; and numerous other traffic and transportation studies.

We have tailored our approach based on our history working with Dakota County staff on other projects and our conversations with the county and City of Lakeville in advance of this Request for Proposals (RFP). We have done our homework and developed this detailed approach specific to the CSAH 70 Expansion project.

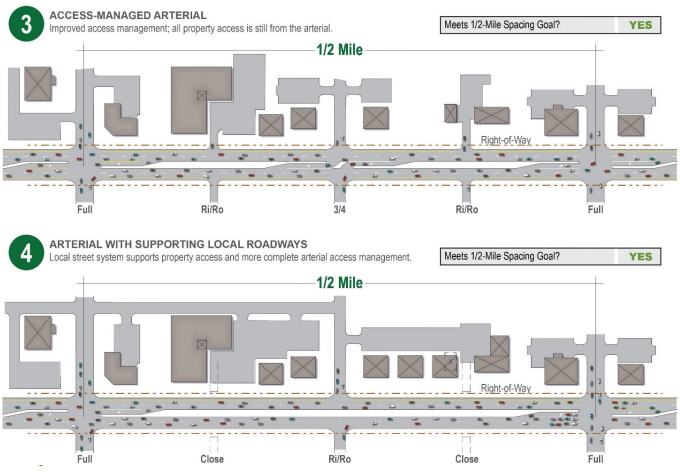


A sustainable solution that is technically feasible, environmentally compatible, economically viable, and publicly acceptable is the only way to deliver the proposed CSAH 70 Expansion project. This common-sense and transparent approach will provide a design solution that can be approved by elected officials, funded by both agencies, and constructed within the anticipated time frame. Our general approach for the project will focus on designing and constructing CSAH 70 to meet the standard of a principal arterial, support existing and future land use, and safely and efficiently convey all modes of transportation with the goal of reducing project cost for Dakota County and the City of Lakeville.

A **technically feasible** plan includes one that builds upon work already completed, establishes technical objectives based on sound planning and engineering principles, and applies extensive design experience to finding flexibility and feasible solutions. For the CSAH 70 Expansion project, this means developing and evaluating alternatives that are consistent with planning for future principal arterials on the Dakota County network, safely accommodating build year and projected traffic, meeting the needs of current and future land use, and supporting the overall roadway network in western Dakota County and within the City of Lakeville.

We will lead project partners in evaluating and selecting the proper technical solution. The following actions will aid the process:

- We will establish technical objectives based on sound planning and engineering principles, and apply extensive design experience to find flexible and feasible solutions
- Our team will build on the recommendations from the PA study and develop alternatives that support the short-term and future designation of CSAH 70
  - We will review alternatives that meet the intent of PA guidelines and support local land use and infrastructure
  - We will propose innovative, alternative intersections designed to support the access management goals



- We will develop construction plans and specifications that are technically feasible and have been checked by our QA/QC processes—this includes developing plans, specifications, and details with county and city standards

An **economically viable** plan will be sensitive to initial capital costs and lifecycle costs, and will focus on individual design details such as construction materials, construction phasing, right-of-way needs, and site planning details. For the CSAH 70 Expansion project, this means applying proven design and cost control methods in all development and final design work phases.

Our proposed team has effectively managed design, construction, and right-of-way costs on numerous Dakota County projects, recently demonstrated on the CSAH 50 Expansion project. We worked cooperatively with county and city staff to evaluate design alternatives, mitigate costly right-of-way impacts, and evaluate benefit/cost implications throughout preliminary and final design.

We will evaluate roadway geometry, grading, and stormwater treatment alternatives to maximize the benefit/cost ratio to project partners and users. We will continue to implement proven principles of design flexibility and right-sizing to stay within the CIP budget. We understand

- The importance of knowing the cost implications prior to decisions being made, and will have costs at the forefront when project alternatives are being developed and evaluated
- Right-of-way settlements are being negotiated 40-50 percent higher than appraisals on recent Dakota County projects and recognize the volatility in the market and will apply an appropriate factor to our estimates; we will seek to minimize right-of-way impacts through design flexibility and risk assessment
- Having a realistic budget and managing expenses is crucial for the success and continued support of the project from start to finish, including our professional fee, construction estimate, project changes, right-of-way acquisition, etc.; it is our job to manage the project and budget and also be aware of expenses beyond the basic construction elements, such as costs dictated by staged construction or utility impacts
- The county's standard cost share policy and project delivery process, and have demonstrated success leading project partners through design while having fair and active discussions on cost responsibility; there will be no surprises with the Bolton & Menk team

An **environmentally compatible** plan identifies sensitive features of the site, determines what levels of environmental review may be necessary, balances design alternatives to ensure water quality requirements are met, and protects and accentuates environmental, historic, and cultural resources all while accommodating the fundamental purpose of the roadway improvements.

Bolton & Menk has a demonstrated understanding of the City of Lakeville's ordinances related to stormwater treatment on linear projects. We have successfully implemented volume control BMPs and innovative stormwater treatment designs on CSAH 50 and on similar projects in the community. For the CSAH 70 project we will develop alternatives that take advantage of the sandy soils present in the project area. Alternatives will include

- Transitioning the roadway section between urban and rural as best fits the surrounding land use and drainage needs
- Using the 180-foot right-of-way to treat stormwater in medians and ditches
- Using proven innovative treatment alternatives like underground stormwater chambers where urban design limits treatment areas

Kimley-Horn will complete all of the required environmental reviews and documentation per MnRule 4410.4300 Subp.22B. A full environmental assessment (EA/EAW) will document all coordination, reviews, and impacts, including

- Meetings with various agency personnel to discuss purpose and need, alternatives, and impacts
- Wetland delineation report, wetland boundary map, and TEP meeting
- Air quality analysis
- Noise analysis
- Draft and final EA/EAW, findings of fact and conclusion, FONSI request, and negative declaration
- Hydraulic risk assessment and No-Rise Certification

A **publicly and politically acceptable** plan identifies and involves stakeholders early in the decision-making process, listens and understands issues, and informs and maintains communication. Our public participation approach is fully integrated into our design process and based on the principles of informed consent.

We believe we must be flexible in our design to accommodate specific needs of the public. We concurrently build trust and manage expectations by saying "Yes" when we can and "No" when we have to. Dakota County can expect our team to recognize different interests and allow opportunities for input, educate stakeholders on tradeoffs between improvement options, and ultimately create well-informed stakeholder groups that have a sense of ownership in the recommended corridor alternative.

Public Involvement Strategy

Bolton & Menk takes pride in involving the public in projects. We will lead project partners through a well-organized public involvement process resulting in a sustainable solution that will be supported by Dakota County and the City of Lakeville. Our balanced, focused, and flexible approach places great emphasis on being proactive, transparent, and open-minded.

PRESENTING NOISE WALL ANALYSIS AND RECOMMENDATIONS AT TH 41 OPEN HOUSE

We strive to change the feeling of "What are you going to do to us?" to "What can we do to improve the CSAH 70 corridor for all of us?"

Area property owners and businesses have individual perspectives on how this area should function and feel. Sharing their unique ideas, vetting their issues, and helping them understand why this project needs to happen will be fundamental to our planning process. Dakota County and the City of Lakeville can expect our team to recognize different interests and allow opportunities for input, educate stakeholders on trade-offs, and ultimately create well-informed stakeholder groups. We will accomplish these goals by assembling the right tools and techniques to hear, understand, educate, and inform stakeholders.

We have included several key elements in our public involvement plan that will be essential in conveying information and building informed consent. We will use high-quality graphics to help explain complex situations, potential roadway enhancements, and other improvement strategies. On recent projects we have had success creating videos for effectively communicating project purpose and need, alternatives, decisions, obtaining feedback from stakeholders, and ensuring transparency to the public. The videos have ranged from using drone videos to create 3D renderings of the preferred alternative of TH 41 in downtown Chaska (https://www.youtube.com/watch?v=R00aUiEtTCU) to project informational videos for a politically-charged project on TH 13 and CSAH 21 in Prior Lake (https://www.youtube.com/watch?v=wOtDqw6OqsQ).

However, we recognize the standard "toolbox" of items—stakeholder meetings, workshops, newsletters, web page, open houses—will not be enough to successfully deliver the CSAH 70 project. Our outreach efforts will be more challenging due to the number and cross section of industries adjacent to the corridor. Their accessibility to provide feedback, project concerns, and input will vary greatly. To ensure we reach these challenging stakeholders and that we are obtaining input and feedback throughout the delivery process, we have developed the following ***public involvement and communication plan*** specifically for the CSAH 70 Expansion project.

Public Involvement and Communication Plan

Develop a Public Involvement and Communication Plan

Our team will design and manage a comprehensive public communication plan. Our strategy of combining face-to-face and digital communication is proven to maintain project momentum and encourage a high level of participation. We seamlessly integrate project communications and engagement into our projects creating a dependable and transparent decision-making process that leads to a supported solution. leading to a supported solution.

Face-to-Face Engagement + Digital Campaign

Stakeholder Engagement

Face-to-Face Engagement

Project stakeholders include one of the largest industrial parks in the metro area, Airlake Airport, residential neighborhoods, Lakeville School District, and commuters accessing I-35 and Cedar Avenue. We understand that communication was an issues during the last pavement project and resulted in interrupted access to industrial properties. Our public involvement and communication plan will ensure consistent, responsive, and reliable communication from the onset of the project. It is our top priority to execute a plan that not only ensures project success, but establishes trust and credibility with the county and its stakeholders.

From project initiation, we will communicate with the public by sharing the purpose and need and anticipated schedule for the first public open house and stakeholder meetings, and direct them to the project website and online tools to be used for continuous project communication.

One-on-One and Focus Group Meetings

Prior to any mass communications, we will make individual contact with property owners with the most at stake. Establishing a point of contact early will build a foundation for consistent communication. We will conduct these individual outreach efforts in a format that is most convenient for the stakeholder.

We understand the airport, industrial, commercial, and school district stakeholders have different needs and concerns than other corridor users. For this reason, one-on-one and small group meetings will be focused on them. We also understand we cannot rely solely on in-person meetings to gather feedback from these stakeholders as not all are local or have availability to attend. We will use continually monitored and responsive online engagement tools for this purpose.

Public Open Houses

We propose three open houses at project milestones—these meetings will be geared towards engaging residents, students and parents, and property/business owners along the corridor. The first open house will provide an opportunity to share the project purpose and need and gather input on goals, issues, needs, and opportunities. The second open house will gather input on proposed solutions. The third open house will present the preferred solution and communicate construction staging and schedule information.

Project Website

Digital Campaign

The project website will be home to all project information, including notifications, public meeting summaries, and links to the following digital campaign tools. All communications will refer the audience to continuously check back to the website for up-to-date information. Update notifications will be sent to subscribers to receive this information.

Surveys

Digital Campaign

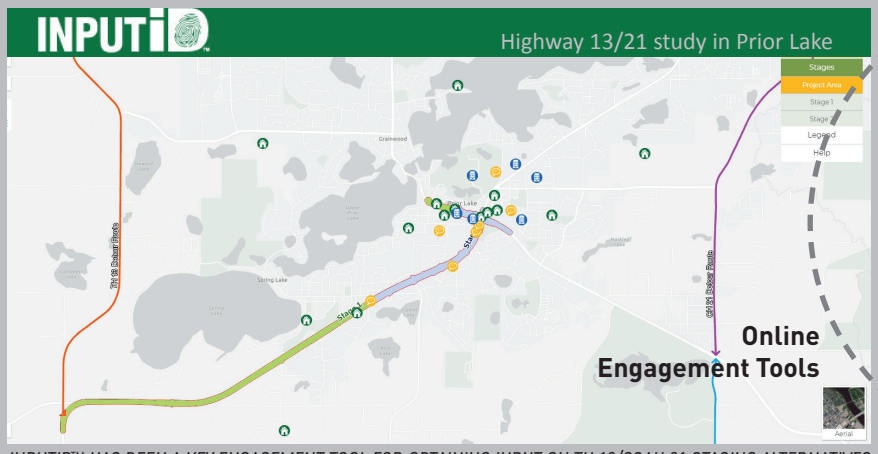
Online surveys will be distributed to gather specific input. We will use live surveys at open houses and focus group meetings to gather data from local stakeholders. Additionally, we will incorporate surveys into our digital campaign to gather input from those targeted stakeholders, residents, and concerned citizens not available to attend in-person meetings.

Online Engagement

Digital Campaign

We will use Bolton & Menk's INPUTiD™, a custom web-based application that allows the public to provide comments specific to a location. Users can react and respond to previous comments enabling us to track trends. Our communications specialist will regularly monitor input and provide timely responses. This will be a valuable tool to maintain communication with the public and stakeholders, especially industrial stakeholders that may be unable to attend meetings.

Initially, this application will be made available to gather concerns about existing conditions and needs to be considered in development of alternatives. Once developed, design alternatives will be uploaded into the application to collect input specific to proposed elements. Construction staging alternatives will also be uploaded to gather feedback on impacts or concerns, specifically to the industrial properties. When construction begins, INPUTiD™ will be used to layout a timeline of construction activities and provide updates as needed to maintain trust in our consistent, responsive, and reliable communication efforts.



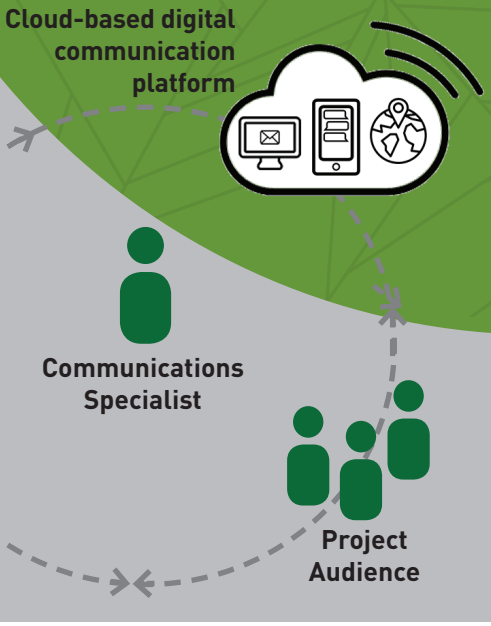
INPUTID™ HAS BEEN A KEY ENGAGEMENT TOOL FOR OBTAINING INPUT ON TH 13/CSAH 21 STAGING ALTERNATIVES

Digital Communication Platform

TIMELY, IMPACTFUL, RELEVANT, and **TARGETED** communications.

Well-crafted messages, visuals, and online input tools are only successful if we can connect them with the targeted audience. Our communications specialist works with a digital communication platform to launch a project campaign and effectively reach all demographics on the corridor. They also manage and track communication across a large audience that includes the 150+ industrial park stakeholders. Project stakeholders can subscribe to receive automated email and text updates throughout the project development and construction.

An organized and automated process is vital to successfully engage with the 150+ industrial businesses. We will run detailed analytics to track who we are reaching. With this insight we can easily adjust our approach to target an inactive audience or determine how to best reach other stakeholders throughout the life of the project.



Project Management

A strong project manager is an essential element to ensure engaging and informative communication throughout the project. ***This is critical for sending clear and consistent messages, project partners making informed decisions, maintaining the project budget, and keeping the project on-track with respect to scope, schedule, and cost.*** Our project manager, Aaron Warford, specializes in commanding the room at meetings, digging into concerns, and finding a sustainable solution. Our role is to lead. Our proactive and effective project management is critical for successful completion of the project resulting in full partnership support and to avoid stakeholder confusion, public discontinuity, delayed schedules, and a failure to meet the basic needs of the project partners.

We pride ourselves in our management approach to integrate all specialty areas. We challenge our team to look beyond their areas of expertise and to always question, understand, and promote innovative ideas that benefit multiple components of the project. Our approach for management relies on a structure of team initiative and clear communication and will lead this delivery process through consistent communication, firm schedules, and established milestones, all while building consensus along the way. We will schedule all meetings, complete all agendas, maintain meeting records, and offer regular updates on next steps and upcoming project requirements. You have our commitment that key staff highlighted in this proposal will indeed be performing and overseeing the work they have been identified to lead. Any changes in staffing will be communicated as requested if unforeseen circumstances arise.

Below is a listing of some of our project management tools that will be used on this project:

- Weekly updates to the county and city, even when nothing is happening
- CPM schedule and S-curves to track progess and budget
- Proactive discussions to stay on task and schedule
- Share presentations and meeting content one week prior to meetings

We understand that staff beyond the project managers for the county and city will be actively engaged. We will consider all input and, if direction seems to be straying from the project, will immediately alert the core management team and decide how to proceed.

Project Schedule

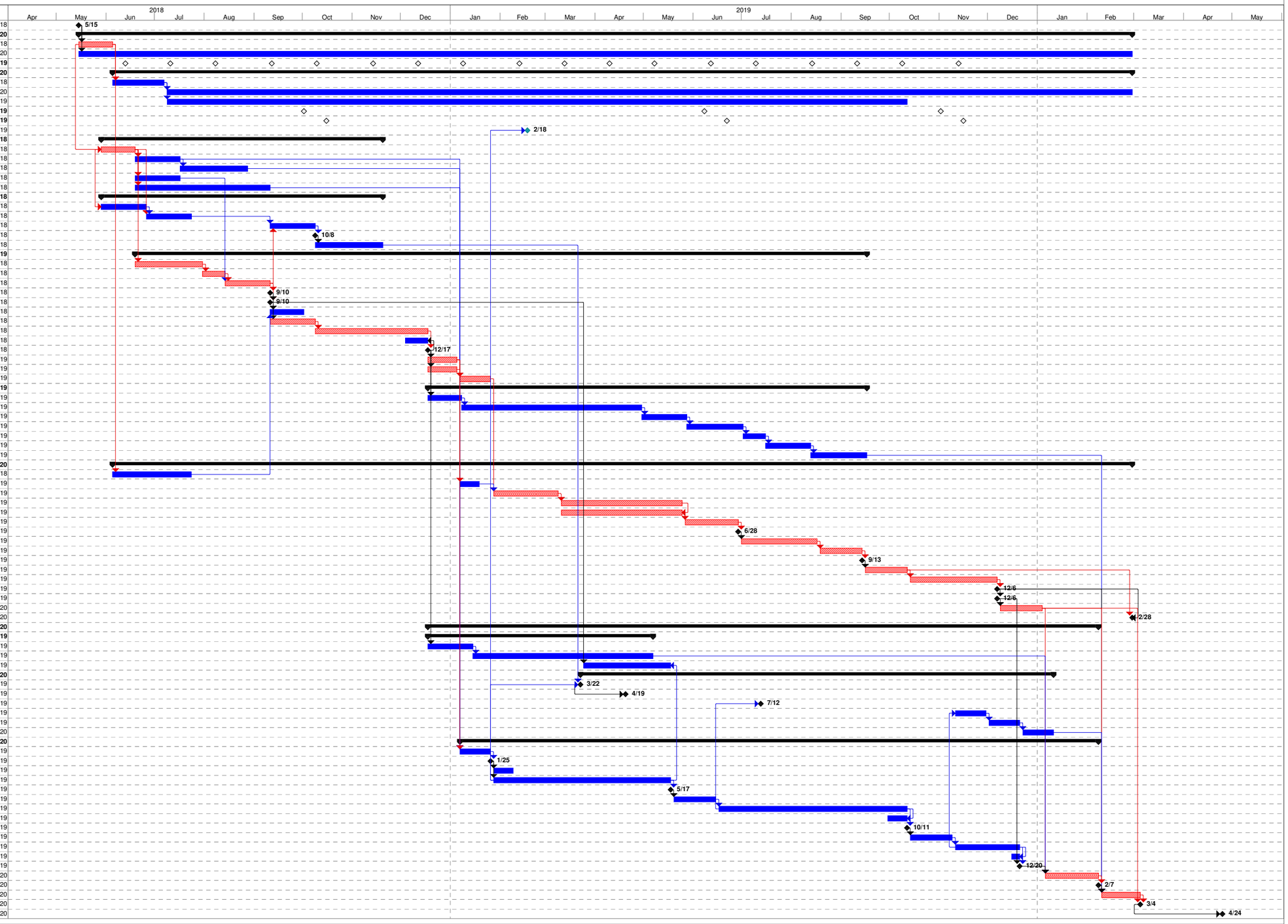
We have prepared a draft schedule anticipating notice to proceed in mid-May. We will complete the preliminary design and have right-of-way needs identified by January 25, 2019. We anticipate 60% plans in May 2019, 90% plans in October 2019, environmental clearance in September 2019, and final design plans by December 2019. The project will be ready to bid in spring 2020, with construction commencing later that summer. A detailed schedule has been included on the following page.

Project Deliverables

Dakota County developed a well thought out scope of services as part of the RFP. Rather than restate what was listed in the RFP, we have included a table following the project schedule which shows the tasks, task champions, and our planned deliverables. Our cost estimate, included in Appendix A of this proposal, further details the task structure.

Dakota County: CSAH 70 Expansion Project

ID	Task Name	Start	Finish
1	Anticipated Notice to Proceed	Tue 5/15/18	Tue 5/15/18
2	**Project Management**	**Tue 5/15/18**	**Fri 2/28/20**
3	Prepare Project Management Plan (PMP)	Tue 5/15/18	Mon 6/4/18
4	Project Coordination and Communication	Tue 5/15/18	Fri 2/28/20
5	**PMT Meetings**	**Wed 6/13/18**	**Wed 11/13/19**
24	**Public and Agency Involvement**	**Tue 6/5/18**	**Fri 2/28/20**
25	Public Participation Process Plan	Tue 6/5/18	Fri 7/6/18
26	Agency Coordination	Mon 7/9/18	Fri 2/28/20
27	Property and Business Owner Meetings	Mon 7/9/18	Fri 10/11/19
28	**Public Open House Meetings**	**Mon 10/1/18**	**Fri 11/1/19**
32	**Council Meetings/Workshops**	**Mon 10/15/18**	**Fri 11/15/19**
36	Staging and Constructability Workshop	Mon 2/18/19	Mon 2/18/19
37	**Data Collection and Analysis**	**Tue 5/29/18**	**Mon 11/19/18**
38	Field Surveys	Tue 5/29/18	Mon 6/18/18
39	Traffic and Safety Analysis	Tue 6/19/18	Mon 7/16/18
40	Intersection Control Evaluations	Tue 7/17/18	Mon 8/27/18
41	Access Management Plan	Tue 6/19/18	Mon 7/16/18
42	Stormwater Management Plan	Tue 6/19/18	Mon 9/10/18
43	**Preliminary Utility Coordination**	**Tue 5/29/18**	**Mon 11/19/18**
44	Subsurface Utility Exploration	Tue 5/29/18	Mon 6/25/18
45	Utility Identification	Tue 6/26/18	Mon 7/23/18
46	Preliminary Utility Plans	Tue 9/11/18	Mon 10/8/18
47	Utility Information Meeting	Mon 10/8/18	Mon 10/8/18
48	Review Owner Information	Tue 10/9/18	Mon 11/19/18
49	**Preliminary Design**	**Tue 6/19/18**	**Mon 9/16/19**
50	Alternatives Development	Tue 6/19/18	Mon 7/30/18
51	Alternatives Analysis	Tue 7/31/18	Mon 8/13/18
52	Prepare Draft Layout	Tue 8/14/18	Mon 9/10/18
53	Draft Construction Limits	Mon 9/10/18	Mon 9/10/18
54	Submit Draft Layout	Mon 9/10/18	Mon 9/10/18
55	Draft Right-of-Way Needs	Tue 9/11/18	Mon 10/1/18
56	Layout Review	Tue 9/11/18	Mon 10/8/18
57	Revise Layout	Tue 10/9/18	Mon 12/17/18
58	Preliminary Cost Estimate	Tue 12/4/18	Mon 12/17/18
59	Final Layout Submittal	Mon 12/17/18	Mon 12/17/18
60	Final Right-of-Way Needs	Tue 12/18/18	Fri 1/4/19
61	Easement Areas	Tue 12/18/18	Fri 1/4/19
62	Parcel Sketches (w/ TE & Limits)	Mon 1/7/19	Fri 1/25/19
63	**Environmental Documentation**	**Tue 12/18/18**	**Mon 9/16/19**
64	Early Agency Coordination Letters	Tue 12/18/18	Mon 1/7/19
65	Draft EAW Preparation	Tue 1/8/19	Mon 4/29/19
66	County/City Review Draft EA	Tue 4/30/19	Mon 5/27/19
67	Respond to Comments	Tue 5/28/19	Mon 7/1/19
68	EQB Coordination	Tue 7/2/19	Mon 7/15/19
69	30-Day Publication/Comment Period	Tue 7/16/19	Mon 8/12/19
70	Findings of Fact/Negative Declaration	Tue 8/13/19	Mon 9/16/19
71	**Right-of-Way (Dakota County)**	**Tue 6/5/18**	**Fri 2/28/20**
72	Title Work	Tue 6/5/18	Mon 7/23/18
73	Information letter to landowners	Mon 1/7/19	Fri 1/18/19
74	Stake for appraisal viewing	Mon 1/28/19	Fri 3/8/19
75	Appraisals	Mon 3/11/19	Fri 5/24/19
76	Review Appraisals	Mon 3/11/19	Fri 5/24/19
77	Draft Offers	Mon 5/27/19	Fri 6/28/19
78	Present Offers	Fri 6/28/19	Fri 6/28/19
79	Negotiation and Finalize Settlements	Mon 7/1/19	Fri 8/16/19
80	Draft Revised Offers (as needed)	Mon 8/19/19	Fri 9/13/19
81	Present Revised Offers (as needed)	Fri 9/13/19	Fri 9/13/19
82	Negotiation and Finalize Settlements	Mon 9/16/19	Fri 10/11/19
83	Decision on Condemnation	Mon 10/14/19	Fri 12/6/19
84	Potential Start of Condemnation Period	Fri 12/6/19	Fri 12/6/19
85	Submit Right-of-Way Certificates	Fri 12/6/19	Fri 12/6/19
86	Approval of Right-of-Way Certificates	Mon 12/9/19	Fri 1/3/20
87	Possession Date	Fri 2/28/20	Fri 2/28/20
88	**Final Engineering**	**Tue 12/18/18**	**Fri 2/7/20**
89	**Wetlands**	**Tue 12/18/18**	**Mon 5/6/19**
90	Finalize Wetland Impacts	Tue 12/18/18	Mon 1/14/19
91	Wetland Permitting	Tue 1/15/19	Mon 5/6/19
92	Geotechnical Evaluation	Mon 3/25/19	Fri 5/17/19
93	**Final Utility Coordination**	**Fri 3/22/19**	**Fri 1/10/20**
94	Utility Design Meeting	Fri 3/22/19	Fri 3/22/19
95	Request Utility Relocation Plans	Fri 4/19/19	Fri 4/19/19
96	Utility Design Change Meeting	Fri 7/12/19	Fri 7/12/19
97	Gopher State One Call Utility Verification	Mon 11/11/19	Fri 11/29/19
98	Utility Relocation Plan and Schedule Review	Mon 12/2/19	Fri 12/20/19
99	Agreements and Official Notification	Mon 12/23/19	Fri 1/10/20
100	**Highway Construction Plans and Special Provisions**	**Mon 1/7/19**	**Fri 2/7/20**
101	30% Plan Preparation and Cost Estimate	Mon 1/7/19	Fri 1/25/19
102	30% Plan Submittal	Fri 1/25/19	Fri 1/25/19
103	30% Plan Review	Mon 1/28/19	Fri 2/8/19
104	60% Plan Preparation and Cost Estimate	Mon 1/28/19	Fri 5/17/19
105	60% Plan Submittal	Fri 5/17/19	Fri 5/17/19
106	60% Plan Review	Mon 5/20/19	Fri 6/14/19
107	90% Plan Preparation	Mon 6/17/19	Fri 10/11/19
108	90% Cost Estimate and Special Provisions	Mon 9/30/19	Fri 10/11/19
109	90% Submittal	Fri 10/11/19	Fri 10/11/19
110	90% Submittal Review	Mon 10/14/19	Fri 11/8/19
111	Final Revisions	Mon 11/11/19	Fri 12/20/19
112	Final Engineer's Estimate	Mon 12/16/19	Fri 12/20/19
113	State Aid Submittal	Fri 12/20/19	Fri 12/20/19
114	Approvals and Permits	Mon 1/6/20	Fri 2/7/20
115	Final PS&E Sumbittal	Fri 2/7/20	Fri 2/7/20
116	Advertise	Mon 2/10/20	Wed 3/4/20
117	Construction Letting	Wed 3/4/20	Wed 3/4/20
118	Start Construction	Fri 4/24/20	Fri 4/24/20



Task
Project Guide: Critical Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Progress
Deadline

	Task	Task Champion	Deliverables
PM/PI	1 - Project Management	Warford	Regular communication, weekly conference calls, monthly invoices with progress reports, CPM schedule with ongoing updates, active website, 18 PMT meetings (including agendas and minutes)
PM/PI	2 - Public and Agency Involvement	Abere	Public involvement plan, 1 kickoff meeting, 3 open house meetings (including meeting materials, agendas, minutes, presentations), 20 private property owner meetings, 3 city council meetings or workshops, 2 newsletters/brochures, 2 meetings with CP/Progressive Rail, 3D visualizations and videos, INPUTiD™ database, digital communication platform, supporting information for 2018 Regional Solicitation
Preliminary Design	3 - Surveys and Mapping	Wilfahrt	Mobile 3D laser scanning of entire corridor on Dakota County standard datum, utilities, manholes, culverts, supplemental survey as needed
Preliminary Design	4 - Environmental	Kunkel	Wetland delineation report, wetland boundary map, TEP meeting, draft and final EA/EAW, findings of fact and conclusion, FONSI request, negative declaration, air quality analysis and documentation, noise analysis and noise mitigation public involvement process (balloting process and public meeting), hydraulic risk assessment, No-Rise Certification
Preliminary Design	5 - Public and Private Utility Identification and Coordination	Fosmo	Subsurface utility engineering, identification of private utilities within project area, inclusion of SUE findings, coordination of identified impacts, up to 4 private utility coordination meetings and/or conference calls to coordinate relocations
Preliminary Design	6 - Right-of-Way	King	Identify all permanent and temporary right-of-way needs (plat needs map and alternatives), right-of-way CADD file, right-of-way acquisition costs
Preliminary Design	7 - Traffic Analysis	Kuhnau	Conduct 13-hour traffic counts and modeling, Traffic Analysis Technical Memorandum, Access Modification Technical Memorandum, ICE reports for 5 intersections—Jacquard Avenue, Dodd Boulevard (CSAH 9), Holyoke Avenue, Highview Avenue/Heywood Avenue, Hamburg Avenue
Preliminary Design	8 - Alternatives Analysis	King	Develop 3 corridor alternatives (rural section, urban centerline, hybrid design), turn lane analysis and location recommendations, 220th Street extension, east leg of CSAH 70/Cedar Avenue extension
Preliminary Design	9 - Preliminary Design	King	Level 2 geometric layout, alignment, profiles, turn lane locations, access modifications, cross sections, construction limits
Final Design	10 - Geotechnical Information	Braun Intertec	Preliminary investigation (Phase I): 10 new alignment borings (220th Street – 10 feet deep), 8 roadway borings (10 feet deep), GPR and 6 pavement cores, preliminary geotechnical report Final investigation (Phase II): 20 additional roadway borings (10 feet deep), 15 widening borings (10 feet deep), 10 pond and utility borings (20-25 feet deep), engineering analysis (materials and pavement design recommendation), R-value, laboratory and field testing, final geotechnical report
Final Design	11 - Drainage Design	Rotchadl (Hydraulics) Olson (Water Quality)	Preliminary analysis (alignment, size, slope) for each design alternative, incorporate BMPs into geometric layout, South Creek crossing design, final design of storm sewer and hydraulics, final hydraulic report, coordination with MnDOT State Aid, identify and analyze treatment areas
Final Design	12 - Construction Staging	Warford	Three staging concepts that include construction working day estimates, construction schedule, construction cost estimates, business access plan, school and busing access plan, emergency access plan, residential access plan, primary intersection access plan, public/stakeholder input, and project team input; staging workshop; staging and detour plan; staging graphics (videos, 3D renderings, 3D fly-throughs, etc.)
Final Design	13 - Signal Design	Kuhnau	30%, 60%, 90%, and final signal plan submittals; 60%, 90%, and final interconnect plan submittals; 60%, 90%, and final traffic control plan and construction phasing/signal plan submittals; 90% and final cost estimates
Final Design	14 - Public Utility Design	Fosmo	Preparation of 60%, 90%, and final construction plans and specifications for up to 4,000 LF of city sanitary sewer and watermain in accordance with city and CEAM specifications
Final Design	15 - Final Construction Plans	King	Plan submittals at 30%, 60%, 90%, and final 100% completion; special provisions at 90% and final 100% completion; cost estimates at 30%, 60%, 90%, and final 100%; specifications; final proposal and bid documents; coordination with MnDOT state/federal aid; digital design files; digital and bound hard copies of the final construction plan (11x17 and 22x34) and proposal
Final Design	16 - Project Submittal	King	Electronic final submittal on flash drive, bidding addenda, clarification to construction documents
Final Design	17 - Obtain Permits and Approvals	Payne	Permit applications for NPDES, DNR public waters, Army Corp Section 404, WCA Replacement Plan (via city) requesting permits
Final Design	18 - Additional Tasks	King	Construction supplemental assistance (200 hrs), right-of-way parcel sketches (65 parcels)

PROJECT MANAGER AND **KEY SUPPORT STAFF**

Section 3

PROJECT MANAGER **AND KEY SUPPORT STAFF**

The Bolton & Menk team is intended to serve as an extension of county staff, with close coordination between the county, city, and project team maintained at all times. The proposed team provides the optimum combination of accessibility, community knowledge, and specialized expertise.

Our team values and understands the importance of achieving a vision that can be supported by stakeholders and efficiently implemented. Our team will be led by our project manager, Aaron Warford, who will be supported by key individuals and support staff. In addition to Bolton & Menk staff, our project team includes staff from Kimley-Horn who will provide environmental services, traffic analysis and design, utility design and coordination, and permitting. Braun will provide geotechnical engineering services. Bolton & Menk has the ability to draw upon more than 450 other team members throughout our firm, as needed, to meet your needs. Our team members will work interdependently to build synergy for a sustainable solution. Our team is 100 percent available and committed to completing this project. You have our commitment that staff highlighted in this proposal will indeed be performing and overseeing the work they have been identified to lead. The organizational chart below illustrates key personnel associated with individual tasks. Project team member bios have been included in the following pages of this section. Full resumes of all staff can be provided upon request.

Aaron Warford, P.E.

Project Manager

Aaron has the qualifications, experience, motivation, and work ethic to effectively manage each phase of this project. Aaron will provide close coordination with Dakota County, the City of Lakeville, and project partners. He will be responsible for overall management of the project team and all schedule, cost, public outreach, and scope management processes.

Aaron began his career in 1999, gaining experience in project management in both design and construction of county and MnDOT highways, complex intersections, roundabouts, and ADA-compliant facilities. Aaron's experience managing projects requiring extensive federal, state, local, and multiagency coordination efforts offer a unique service to clients. Aaron recently managed the preliminary and final design of the Dakota County CSAH 50 Expansion project. Under Aaron's leadership our team assisted county and city staff in developing and implementing a public involvement plan for a major expansion project of a critical arterial in a growing community. The project team developed publically acceptable solutions that met the needs of local and regional users and was designed and constructed within the county's CIP budget.

His other recent project experience includes leading the preliminary and final design phases for two major highway reconstruction projects: TH 61/Main Street in Red Wing and TH 14/TH 15 in New Ulm. Both were cooperative agreement projects requiring significant coordination between local partners and regulatory agencies. Aaron led MnDOT and local partners in developing reconstruction plans and special provisions that met the needs of all agencies and received the city, county, and state approvals needed for implementation.

Aaron will be a successful project manager for this project. This success, in part, will be due to the priority he places on maintaining effective communication with clients and project team members, delivering similar preliminary and final design projects, and the integration of the principles of Systematic Development of Informed Consent (SDIC) strategies in day-to-day project management.

Aaron's success is rooted in effective stakeholder involvement; he understands and appreciates that project acceptance and approval begins with those most affected and intimately connected. He relates well to a broad spectrum of people, establishing trust through genuine and honest discussion. He approaches each stakeholder with an open mind. He is humble enough to recognize he doesn't know everything, yet experienced enough to steer conversations in a constructive manner. Aaron is accommodating to an individual's needs, yet strikes an acceptable balance with the responsibility of the agencies he represents. Dakota County and the City of Lakeville can expect Aaron to immerse himself in communication with project partners, stakeholders, property owners, residents, and others. He will always represent project partner interests in a positive and professional manner and keep his client informed to the content and tone of stakeholder discussions. You can count on Aaron to deliver the difficult messages when necessary and accept responsibility for public criticism a project like this may generate.

Doug Abere

Public Involvement/Communications Lead

Doug will lead all stakeholder communication efforts, including the public and agency involvement efforts. His recent experience looking at CSAH 70 issues, along with his demonstrated ability to listen to and understand stakeholders' perspectives will help build trust and allow for productive two-way communication among project partners and key stakeholders.

Doug is a senior project manager and transportation planner with more than 30 years of experience. His background includes projects addressing issues in Dakota County and Lakeville, including the PA Study. The PA Study has highlighted Doug's background in coordination and facilitation of meetings, working with

a management team representing Lakeville, five other cities, and 13 townships. Doug and the county's team also hosted four subarea meetings, including a meeting focused on CSAH 70 and CSAH 23. His work with partners on the PA Study helped confirm why CSAH 70 is among the highest priorities on the county's system, providing focus and support for the current design project and for possible future extensions to the east.

Doug's experience includes public/stakeholder communication and facilitation for many high-profile projects, leveraging training in the principles of SDIC and context-sensitive design. He developed and implemented numerous outreach plans and organized workshops and programs aimed at the public, businesses, decision-makers, and community or political leaders. His work on Dakota County projects includes leadership to complete planning and design for the U.S. Highway 61 Hastings Bridge replacement; management of a Metro Transit study of the Orange Line bus rapid transit corridor; and stakeholder facilitation for the MVTA Strategic Plan Update. In Lakeville, Doug led the environmental documentation and meetings to quickly receive approvals for the 181st bus transit station on CSAH 23, then assisted on a later study to address planning for additional Lakeville station sites.

In delivering these projects, Doug worked with diverse stakeholders, including affected businesses and developers, to deliver design solutions that are well integrated with the local context. By leveraging his experience, Doug is well positioned to develop and implement a successful CSAH 70 engagement program.

Chris Chromy, P.E., PTOE

Quality Manager/PI Support

Chris will serve in a quality management role throughout project delivery as well as support all public and agency involvement tasks.

Chris is passionate about working with clients to create safe and efficient transportation systems throughout the Upper Midwest. He began his career in 1993 and leads the transportation work group. Chris has a track record of success delivering highly visible, multimodal transportation projects. He understands the interdependent relationships between the various functional areas of a project and promotes synergy between them to surpass our clients' expectations. Chris has formal training in project management from the University of Minnesota as well as professional development training in SDIC, Managing Effective Public Participation, and Context Sensitive Design. He has served in similar capacities on the delivery of numerous projects with state, county, and municipal agencies. Chris has worked with Aaron on delivering similar corridor expansion projects, including CSAH 50 in Lakeville, TH 61/Main Street in Red Wing, TH 61 in White Bear Lake, and TH 14/TH 15 in New Ulm.

Dena King, P.E., PTOE

Lead Roadway Designer

Dena will be responsible for all preliminary and final design tasks, including roadway geometry, ADA/pedestrian facility improvements, and determination of right-of-way impacts. She will also oversee the design of traffic signals, stormwater management, topographic surveys, and geotechnical studies.

Dena is a transportation project manager and leads design efforts on preliminary and final roadway design projects. She began her career in 2002 and has experience with urban highways, complex intersections, and trail design. As a key design team member, Dena's strength is in the development of concepts and design implementation. She enjoys the preliminary design phase when a project really takes shape. Taking a conceptual idea into reality and developing design layouts has always been a significant area of excellence for Dena.

Dena has developed significant technical expertise in geometric highway design. She has received specialized geometric design training from the Design Institute through the University of Minnesota and other training

including roundabout design, traffic engineering fundamentals, signal design, and bicycle and pedestrian facility design to meet ADA standards and public safety goals. Dena has worked with Aaron on delivering similar corridor expansion projects including CSAH 50 in Lakeville, and has additional experience leading geometric roadway and trail design efforts on Southview Boulevard, the CSAH 42 Segment 8 and Bikeway/Walkway projects, River to River Greenway, and numerous roadway and pedestrian facility projects for MnDOT, counties, and municipalities throughout Minnesota.

JoNette Kuhnau, P.E., PTOE (Kimley-Horn)

Lead Traffic Engineer

JoNette will lead the Bolton & Menk team in assessing potential impacts to intersections along the project corridor, safety, operations analysis, evaluation of preliminary design concepts, and all traffic design tasks.

JoNette has 16 years of experience on transportation and traffic engineering projects. Throughout her career, she has focused on working with local agencies on transportation issues and is known for her ability to effectively communicate with stakeholders on technical and complex topics. She has worked on challenges and opportunities in all areas of the Twin Cities in both planning and design capacities. She has led traffic tasks, including corridor and subarea microsimulation, corridor planning, transportation planning and programming, traffic safety and pedestrian studies, and signal and lighting design. Her analysis experience includes the simulation tools Synchro/SimTraffic, CORSIM, VISSIM, and RODEL. In addition to her technical capabilities, JoNette has proven leadership in managing a team of diverse disciplines and developing multimodal solutions in an urban environment. Her traffic experience includes the following projects:

- **CSAH 26 (Lone Oak Road/70th Street) Preliminary Design, Dakota County – Traffic Task Lead.** JoNette is leading the traffic analysis task including the evaluation of intersection controls and access management along the 2-mile expansion corridor.
- **CSAH 19 (Woodbury Drive) Safety and Mobility Project, Washington County – Traffic Task Lead.** JoNette was responsible for the traffic forecasting, operations modeling, completion of two ICE reports for the roundabout intersections, and the design of all signing, pavement marking, and traffic control on the project.
- **Cedar Avenue Transitway Final Design (METRO Red Line BRT), Dakota County – Traffic Task Lead.** JoNette was the task manager responsible for overseeing the traffic operations and design on all project segments. She also provided detailed design for traffic signals, interconnect, signing, and pavement markings for one project segment.

Beth Kunkel, PWS, CWD (Kimley-Horn)

Environmental Lead

Beth will lead the understanding of environmental resources and opportunities in the project area, completing environmental coordination and documentation, and obtaining environmental clearance. She will coordinate with the team so concepts will be developed that avoid critical impacts to resources.

Beth has more than 30 years of experience evaluating environmental impacts of roadway and development projects. She is proficient in purpose and need statement development, ranking alternatives, documenting existing and proposed environmental conditions, and identifying potential mitigation under both NEPA and MEPA requirements. Beth has prepared NEPA documents (categorical exclusions, EAs, and EISs) under FHWA guidance policies for several Dakota County projects. She has completed many training courses on NEPA implementation and also participated as a trainer on cumulative impacts for a FTA training seminar. Throughout her career, she has conducted more than 1,500 wetland delineations, prepared more than 300 wetland permit applications, designed dozens of wetland mitigation sites, and has contributed to

more than 100 environmental review documents. She has a thorough understanding of local issues and regulatory concerns around this project. With her knowledge and history working with Dakota County, Beth's insights into permitting, regulatory compliance, and technical analysis will be invaluable. Her extensive environmental experience includes the following:

- **Dodd Boulevard Environmental Documentation, Dakota County – QC/QA Reviewer.** Beth provided quality control on the project memorandum document and the delineation report. She also was responsible for agency coordination.
- **CSAH 17 (Marschall Road), Scott County – Project Manager.** Beth provided overall guidance regarding purpose and need, alternatives, and document review as well as the analysis of wetlands, noise, air quality, and Section 4(f).

Tony Rotchadl, P.E.

Hydraulics Engineer

Tony will lead all stormwater management and hydraulics evaluation tasks including related coordination efforts with the City of Lakeville, Vermillion River Watershed, and MPCA.

Tony is a water resources design engineer who joined Bolton & Menk in 2005. He is responsible for project management, hydraulic design on complex projects, storm sewer and pond design, stormwater BMP design and engineering, SWPPP design and implementation, identification and discussion of NPDES Phase I and II requirements, permit administration, and construction support. He is proficient in the use of Autodesk Storm and Sanitary Analysis, StormCAD, HydroCAD, P8 Water Quality Modeling, Culvert Master, and Flow Master software programs. Tony is passionate about ensuring our clients are receiving a level of service that our founders would be proud of through communication, collaboration, and execution. He enjoys navigating the complex requirements of multi-faceted projects and implementing real solutions that benefit all vested parties. Tony has worked with Aaron on many projects, including TH 169 Flood Mitigation and Resurfacing for MnDOT, TH 41 Expansion in Chaska for Carver County, TH 14/15 Reconstruction in New Ulm, and TH 169 in Blue Earth.

Eric Fosmo, P.E. (Kimley-Horn)

Public Utilities Lead

Eric will lead the public utility design and private utility coordination for the project. He will work closely with the design team, City of Lakeville staff, and utility companies to proactively coordinate potential utility conflicts and improvements.

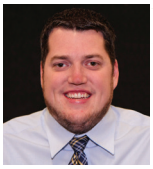
Eric has 12 years of public infrastructure design experience on local government improvement projects. Eric's experience includes all phases of project delivery, including preliminary design, feasibility studies, public engagement, final design, and construction phase services. Eric exhibits a passion for multidisciplinary projects and is adept at balancing the priorities of multiple project stakeholders to efficiently and effectively deliver complex projects. His project experience includes:

- **CSAH 28/CSAH 63 (Argenta Trail) Realignment, Inver Grove Heights – Project Design Lead.** Eric led the roadway design and private utility coordination process which required the relocation of Magellan and Xcel Energy underground pipelines and Xcel transmission overhead powerlines. Eric is well-versed in Dakota County's utility coordination requirements.
- **222nd Street Extension, Lakeville – Project Manager.** Eric led the development of final plans and specifications for the construction of 222nd Street east of Cedar Avenue and the extension of sanitary sewer and watermain to serve the Launch development site south of 222nd Street.
- **CSAH 26 (Lone Oak Road/70th Street) Preliminary Design, Dakota County – Project Design.** Eric is providing task management and project management support for all roadway, utility, and drainage design tasks.

Brandon Bourdon, P.E. (Kimley-Horn), Traffic Analysis/Signal Design

Brandon will assist with final signal system design and preparation of traffic control plans. He has 20 years of transportation planning and design experience, including interchange and roadway improvement, municipal street reconstruction, environmental planning and documentation, land development and redevelopment, access management, safety improvement, intersection signalization, parking, and transit. He specializes in traffic design, including traffic signals, signing and pavement markings, ITS, and construction phasing and temporary traffic control.

- CSAH 28/63 (Argenta Trail) Realignment, Inver Grove Heights
- CSAH 16 Expansion, Scott County
- CR E2 and CR F Reconstruction, New Brighton



Doug Arnold, P.E. (Kimley-Horn), Traffic Analysis

Doug will assist in traffic analysis tasks and intersection control evaluations. He has 12 years of experience in transportation engineering and has been involved with numerous transportation planning and traffic operations projects. He has completed more than 100 traffic impact analyses, providing valuable experience in evaluating intersections and determining optimal geometrics and operations. He has worked on various travel demand models. He has experience using Synchro/SimTraffic, Highway Capacity Software (HCS), SIDRA, AutoCAD, and Travel Demand Modeling (Cube/TransCAD).

- CSAH 26 Preliminary Design, Dakota County
- Texas Avenue Design Services, St. Louis Park
- Louisiana Avenue Design Services, St. Louis Park

Justin Schmidt, P.E., Roadway Designer

Justin will be responsible for roadway design, including the preliminary and final design of roadway alignment, profiles, and intersection geometry. Justin is a transportation project engineer who began his profession in 2005. He takes pride in the work he does and the fact that each of our projects improves the communities where we live and work. Justin is experienced with detailed roadway design, plan production, grading and drainage design, quantity computation, and utility coordination. He also supports CAD standards and surveying for Bolton & Menk's transportation work group.

- CSAH 50 Expansion in Lakeville, Dakota County
- TH 41 Expansion in Chaska, Carver County
- TH 169 Flood Mitigation, MnDOT

Tim Olson, P.E., CFM, Water Quality Engineer

Tim will lead water quality management and analysis, including coordination with the watershed district. He is a water resources project manager who began his career in 2006. He specializes in comprehensive surface water management plans; innovative best management practice design; detailed hyraulic and hydrologic modeling; drainage design and construction plan review; NPDES Phase I & II requirements; and stormwater permitting requirements. He has a passion for stormwater and water quality education and participates in several stormwater-related steering committees and stakeholder groups.

- CSAH 50 Expansion in Lakeville, Dakota County
- River to River Greenway, Dakota County
- Highway 42 Bikeway/Walkway Connection, Dakota County

John Crawford, P.E., PTOE (Kimley-Horn), Air Quality/Noise Analysis

John will lead all air quality and noise analysis for inclusion in the environmental clearance and documentation. He has 25 years of experience in traffic engineering, including noise analysis, air quality analysis, design, traffic impact studies, and project environmental reviews. He has extensive experience coordinating technical studies and has directed a variety of traffic, safety, design, operations, and engineering/planning related projects. His engineering experience includes project management, design, and documentation for a variety of traffic engineering studies and designs.

- CSAH 28/63 (Argenta Trail) Realignment, Inver Grove Heights
- CSAH 50/60 Noise Analysis and Abatement Design, Dakota County
- TH 34 Passing Lanes, MnDOT

Ashley Payne, CWD (Kimley-Horn), Wetland Specialist/Permitting

Ashley will be responsible for wetland analysis, delineation, permitting, and agency coordination. She is an environmental scientist with 9 years of experience specializing in wetland services, environmental documentation and assessments, and GIS mapping and data collection. She has successfully obtained environmental permits for clients through preparation of permit application and by coordinating with agency personnel to ensure permits stay on track. She is proficient in wetland delineation and assessment, having conducted hundreds of delineations for various roadway projects.

- CSAH 28/63 (Argenta Trail), Realignment, Inver Grove Heights
- Dodd Boulevard (CSAH 9), Dakota County
- Launch Properties, Air Lake Development, Lakeville

Ashley Hudson, Communications Specialist

Ashley will provide support in framing messaging and content for public and stakeholder communications. She will be responsible for managing the digital communication platform and running detailed analytics to track our success and needs in reaching all demographics along the project corridor. Ashley began her career in 2011 and has experience in public and stakeholder communication associated with several corridor projects from initial study process through preliminary/final design and construction administration.

- CSAH 50 Expansion in Lakeville, Dakota County
- CSAH 8 Reconstruction, Dakota County
- River to River Greenway, Dakota County

PREVIOUS **EXPERIENCE**

Section 4

PREVIOUS **EXPERIENCE**

Bolton & Menk has assembled an experienced team of professionals with a proven track record of delivering similar projects. We have highlighted several projects our team has delivered using a similar approach and/or with similar elements. We will draw upon this experience to benefit the CSAH 70 Expansion project. Additional project experience and references are available upon request.

CSAH 50 Expansion, Dakota County

The CSAH 50 corridor is a critical component of the broader transportation network in Dakota County, providing connections from the Cities of Lakeville and Farmington to I-35. CSAH 50 is important to the City of Lakeville as it provides direct access to Kenwood Trail Middle School, multiple residential neighborhoods, and commercial areas. The Dakota County Transportation Plan identified this corridor be expanded to a four-lane divided roadway to accommodate growing demands. Expansion of this important local and regional arterial to accommodate the existing and future traffic levels is critical to the overall county network and accessibility for residents and businesses.

Bolton & Menk led the preliminary study and final design which included

- Upgrading the corridor from a three-lane rural section to a four-lane urban divided section
- Limiting impacts to adjacent right-of-way
- Reducing conflict at intersections
- Maintaining access to key commercial and residential areas at all times during construction
- Accommodating needs for the next 20 years of growth
- Accommodating pedestrians, bicyclists, and disabled persons/evaluating key crossing locations (school)
- Maintaining city infrastructure
- Providing safety improvements for all users
- Evaluating stormwater rate control and treatment options to manage runoff to Lake Marion
- Leading transparent and interactive public participation

We led Dakota County and the City of Lakeville through a sustainable design process that resulted in a publicly supported project that met the needs of a growing community in Dakota County, while meeting the expected project budget and cost sharing between project partners.

We developed clear understanding of local preferences, key stakeholders, and county expectations for a safety and mobility improvement in a growing community. We will build on these local insights and approach to stakeholder and community engagement to successfully deliver the CSAH 70 project.

TH 41 Expansion, Carver County

TH 41 through Chaska is one of the most congested corridors in Carver County, carrying traffic regionally and locally to medical destinations, commercial centers, an industrial park, and residential neighborhoods. Carver County applied for and secured federal funding to lead an expansion project of TH 41 from Hundertmark Road to north of CSAH 14/Pioneer Trail. Expanding the highway from two- to four-lane divided required a significant engineering effort as the current alignment was woven between homes and Lake Grace on the west, and a ravine/drainage area on the east. Using technical expertise and knowledge in design flexibility, multiple right-sized alternatives were developed.

Roadway alignments and profiles were developed to best tie into natural terrain barriers and other utility

and private property constraints. The environmental documentation process included an in-depth noise analysis and public involvement. This process culminated in a vote to install a noise wall on the project's west side. Our team led the county, city, MnDOT, other project partners, and the general public through the preliminary design process to arrive at a consensus-based solution. Using design flexibility, impacts were minimized while still providing full roadway functionality. This process successfully developed a cost-conscious approach for which the county hired Bolton & Menk to design.

Delivery of the TH 41 project required significant federal environmental coordination, including air and noise analysis as part of the EA/EAW, and significant agency/public coordination to balance state and local interests. Our balanced approch to alternatives development, public engagement, and design ensure a sustainable solution was achieved.

TH 5 Corridor Improvements/EAW, City of Waconia

TH 5 was a two-lane rural highway with numerous access points. The highway had more than four times the state average for crash frequency and was at capacity. It was limited in terms of mobility, access, safety, and function, and was considered a barrier to the community. In addition, the corridor struggled with limited pedestrian facilities and was plagued with regional drainage issues, undersized pipes, and limited surface storage areas.

Bolton & Menk developed a concept, gathered support, and obtained TED funding, as well as refined the design and completed environmental analysis. The corridor was upgraded from a two-lane rural section to a four-lane divided urban section with trail and streetscaping improvements. A context sensitive design was developed with reduced lane widths and shoulders. Existing right-of-way was maximized with minimal impacts for expansion. Additionally, an effective drainage system was developed, along with larger regional stormwater ponds for flood control and water quality improvements.

The project exemplifies a low-cost/high-benefit approach, adding more capacity and function with minimal roadway width while also accommodating non-motorized traffic.

The TH 5 project included a similar expansion from a two-lane rural roadway to a four-lane divided highway, all accommodated within the existing right-of-way footprint. The project also included work on the local roadway network to support the implemented access management strategies.

CH 101 Infrastructure Replacement and River to Railroad Corridor Planning, Scott County

CH 101 had dire infrastructure replacement needs due to age and condition of the road and utilities. Bolton & Menk evaluated long-term transportation and land use needs. This work included establishing a long-term vision with community members and evaluating transportation alternatives capable of accommodating 50,000 vehicles per day. The study included forecasting, operational analysis, and traffic simulation to determine the preferred corridor section carried into the infrastructure replacement project. The project focused on addressing immediate infrastructure needs, recognizing and encompassing mobility and safety opportunities, and preserving future regional opportunities associated with the CH 101 river bridge. Infrastructure reconstruction included replacing the roadway and sidewalks, implementing decorative street lighting and streetscape elements, and executing corridor safety improvements between downtown Shakopee and CSAH 17/Marschall Road.

The CH 101 infrastructure replacement project demonstrates our experience in delivering complex access management and mobility improvements in a confined business corridor. The project delivery included the use of SDIC principles in developing consent for the construction staging approach with area businesses.

FEE ESTIMATE

Appendix A

Client: Dakota County Project: CSAH 70 Expansion		Bolton & Menk, Inc.												Kimley-Horn						
Task No.	Work Task Description	Project Manager	Quality Manager/PI	PI/Communications Lead	Lead Roadway Engineer	Sr. Roadway Engineer	Lead Hydraulics Engineer	Roadway Engineer	Hydraulics Engineer	Sr. Technician/GIS Specialist	Communications Specialist	Land Surveyor	Survey Crew	Clerical	Traffic/Environmental / Drainage Lead	Utilities Lead	Design Engineer/Technician	Environmental Scientist/Planner	Clerical	Totals
1.0	**Project Management**																			
1.1	Project Communications	100			40															140
1.2	Consultant Team Coordination	60																		60
1.3	Project Tracking/Billing	24												20		12			12	68
1.4	Website				16						40			16						72
1.5	Project Management Team Meetings	36	2	14	48	14	36		10						36					196
	Subtotal Hours - Task 1	220	2	14	104	14	36	0	10	0	40	0	0	36	36	12	0	0	12	**536**
2.0	**Public and Agency Involvement**																			
2.1	Public and Agency Involvement Plan	8	8	20							8									44
2.2	Public Involvement Kickoff Meeting	2	2	2							4									10
2.3	Public Open Houses *(3 meetings)*	10	12	24							60			12						118
2.4	Stakeholder Coordination *(20 meetings)*	40	16	12	12						12									92
2.5	City Council Meetings/Workshops (3 *meetings*)	12	12	12	4	4					12									56
2.6	Railroad Coordination *(2 meetings)*	4			4	4														12
2.7	Newsletters and Exhibits	4			24						40			24						92
2.8	Concept Design 3D Visualizations (flyover and typical sections)	4	8	16		30				240	120									418
2.9	Funding Support	4			4	12					24									44
	Subtotal Hours - Task 2	88	58	86	48	50	0	0	0	240	280	0	0	36	0	0	0	0	0	**886**
3.0	**Surveys and Mapping**																			
3.1	Survey Data				8					18		10	305							341
	Subtotal Hours - Task 3	0	0	0	8	0	0	0	0	18	0	10	305	0	0	0	0	0	0	**341**
4.0	**Environmental**																			
4.1	Environmental Site Assessment														2			10		12
4.2	Wetlands														7			80		87
4.3	Environmental Documentation														12		20	330	20	382
4.4	Air Quality Analysis														4			5		9
4.5	Noise Analysis														16		32	155	10	213
4.6	Floodplain						8								4		2	20		34
	Subtotal Hours - Task 4	0	0	0	0	0	8	0	0	0	0	0	0	0	45	0	54	600	30	**737**
5.0	**Utility Identification and Coordination**																			
5.1	Public Utilities															8	30		4	42
5.2	Private Utilities							2								24	100		8	134
5.3	Subsurface Utility Engineering							2									8			10
	Subtotal Hours - Task 5	0	0	0	0	0	0	4	0	0	0	0	0	0	0	32	138	0	12	**186**
6.0	**Right-of-Way**																			
6.1	Right-of-Way Identification	4			20	40		60		20										144
6.2	Mapping	2			20	20		60												102
6.3	Right-of-Way Estimating	12			40															52
	Subtotal Hours - Task 6	18	0	0	80	60	0	120	0	20	0	0	0	0	0	0	0	0	0	**298**
7.0	**Traffic Analysis**																			
7.1	Intersection Analysis					4									8			160		172
7.2	Intersection Control Evaluation														10			124	12	146
7.3	Access Modifications					4									14			72		90
	Subtotal Hours - Task 7	0	0	0	0	8	0	0	0	0	0	0	0	0	32	0	0	356	12	**408**
8.0	**Alternatives Analysis**																			
8.1	Roadway/Shoulder/Trail Design	12			40	80		100	20	20										272
8.2	Turn Lanes				16	24		40												80
8.3	Additional Design Opportunities	12			12	24		80	20	20										168
	Subtotal Hours - Task 8	24	0	0	68	128	0	220	40	40	0	0	0	0	0	0	0	0	0	**520**

Client: Dakota County Project: CSAH 70 Expansion		Bolton & Menk, Inc.													Kimley-Horn					
Task No.	Work Task Description	Project Manager	Quality Manager/PI	PI/Communications Lead	Lead Roadway Engineer	Sr. Roadway Engineer	Lead Hydraulics Engineer	Roadway Engineer	Hydraulics Engineer	Sr. Technician/GIS Specialist	Communications Specialist	Land Surveyor	Survey Crew	Clerical	Traffic/Environmental / Drainage Lead	Utilities Lead	Design Engineer/Technician	Environmental Scientist/Planner	Clerical	Totals
9.0	**Preliminary Engineering**																			
9.1	Layout	8			24			80		120										232
	Subtotal Hours - Task 9	8	0	0	24	0	0	80	0	120	0	0	0	0	0	0	0	0	0	**232**
10.0	**Geotechnical Information**																			
10.1	Investigations (Phase I)				8															8
10.2	Investigations (Phase II)				8															8
10.3	Typical Section Design				8	16														24
	Subtotal Hours - Task 10	0	0	0	24	16	0	0	0	0	0	0	0	0	0	0	0	0	0	**40**
11.0	**Drainage Design**																			
11.1	Drainage Design and Hydraulic Analysis						80	60	12	24										176
11.2	South Creek Crossing						8	16							24		140			188
11.3	Stormwater Treatment						80	12	80											172
	Subtotal Hours - Task 11	0	0	0	0	0	168	88	92	24	0	0	0	0	24	0	140	0	0	**536**
12.0	**Construction Staging**																			
12.1	Staging Concepts	24			40	30	8													102
12.2	Staging and Detour Plan					30		60		16										106
	Subtotal Hours - Task 12	24	0	0	40	60	8	60	0	16	0	0	0	0	0	0	0	0	0	**208**
13.0	**Signal Design**																			
13.1	Signal Systems									4					16		240			260
13.2	Fiber Interconnect									2					6		32			40
13.3	Traffic Control and Construction Phasing									4					24		370			398
	Subtotal Hours - Task 13	0	0	0	0	0	0	0	0	10	0	0	0	0	46	0	642	0	0	**698**
14.0	**Public Utility Design**																			
14.1	Sanitary Sewer									4						24	110			138
14.2	Watermain									4						24	110			138
	Subtotal Hours - Task 14	0	0	0	0	0	0	0	0	8	0	0	0	0	0	48	220	0	0	**276**
15.0	**Final Construction Plans**																			
15.1	30%, 60%, and 90% Plans	100	40		250	350	400	750		1050				24	12		160			3136
15.2	Railroad Crossing Plan	2			16			16		20										54
15.3	Lighting Plans														24		120			144
15.4	Final Plans	12	12		40	60	24	80		80				8	6		40			362
15.5	Special Provisions	16			40		24							4	8		24			116
15.6	Cost Estimates	16	8		40	60	24	80		80										308
	Subtotal Hours - Task 15	146	60	0	386	470	472	926	0	1230	0	0	0	36	50	0	344	0	0	**4120**
16.0	**Project Submittal**																			
16.1	Submittal of the Work	2			8	8	4			8										30
16.2	Bidding Assistance	4			8	8				8										28
	Subtotal Hours - Task 16	6	0	0	16	16	4	0	0	16	0	0	0	0	0	0	0	0	0	**58**
17.0	**Obtain Permits and Approvals**																			
17.1	Approvals and Permits	2			2		4								4		12	40	8	72
	Subtotal Hours - Task 17	2	0	0	2	0	4	0	0	0	0	0	0	0	4	0	12	40	8	**72**
18.0	**Additional Tasks**																			
18.1	Construction Supplemental Assistance	20			70	60	50													200
18.2	Parcel Sketches	8			20	12		20		60										120
	Subtotal Hours - Task 18	28	0	0	90	72	50	20	0	60	0	0	0	0	0	0	0	0	0	**320**

Client: Dakota County Project: CSAH 70 Expansion		Bolton & Menk, Inc.												Kimley-Horn						
Task No.	Work Task Description	Project Manager	Quality Manager/PI	PI/Communications Lead	Lead Roadway Engineer	Sr. Roadway Engineer	Lead Hydraulics Engineer	Roadway Engineer	Hydraulics Engineer	Sr. Technician/GIS Specialist	Communications Specialist	Land Surveyor	Survey Crew	Clerical	Traffic/Environmental/ Drainage Lead	Utilities Lead	Design Engineer/Technician	Environmental Scientist/Planner	Clerical	Total Hours	Total Cost
1.0	Project Management	220	2	14	104	14	36	0	10	0	40	0	0	36	36	12	0	0	12	536	$80,460
2.0	Public and Agency Involvement	88	58	86	48	50	0	0	0	240	280	0	0	36	0	0	0	0	0	886	$111,680
3.0	Surveys and Mapping	0	0	0	8	0	0	0	0	18	0	10	305	0	0	0	0	0	0	341	$45,689
4.0	Environmental	0	0	0	0	0	8	0	0	0	0	0	0	0	45	0	54	600	30	737	$90,475
5.0	Utility Identification and Coordination	0	0	0	0	0	0	4	0	0	0	0	0	0	0	32	138	0	12	186	$24,250
6.0	Right-of-Way	18	0	0	80	60	0	120	0	20	0	0	0	0	0	0	0	0	0	298	$36,610
7.0	Traffic Analysis	0	0	0	0	8	0	0	0	0	0	0	0	0	32	0	0	356	12	408	$50,520
8.0	Alternatives Analysis	24	0	0	68	128	0	220	40	40	0	0	0	0	0	0	0	0	0	520	$62,240
9.0	Preliminary Engineering	8	0	0	24	0	0	80	0	120	0	0	0	0	0	0	0	0	0	232	$26,520
10.0	Geotechnical Information	0	0	0	24	16	0	0	0	0	0	0	0	0	0	0	0	0	0	40	$5,200
11.0	Drainage Design	0	0	0	0	0	168	88	92	24	0	0	0	0	24	0	140	0	0	536	$67,356
12.0	Construction Staging	24	0	0	40	60	8	60	0	16	0	0	0	0	0	0	0	0	0	208	$26,028
13.0	Signal Design	0	0	0	0	0	0	0	0	10	0	0	0	0	46	0	642	0	0	698	$89,840
14.0	Public Utility Design	0	0	0	0	0	0	0	0	8	0	0	0	0	0	48	220	0	0	276	$36,764
15.0	Final Construction Plans	146	60	0	386	470	472	926	0	1230	0	0	0	36	50	0	344	0	0	4120	$494,710
16.0	Project Submittal	6	0	0	16	16	4	0	0	16	0	0	0	0	0	0	0	0	0	58	$7,358
17.0	Obtain Permits and Approvals	2	0	0	2	0	4	0	0	0	0	0	0	0	4	0	12	40	8	72	$8,810
18.0	Additional Tasks	28	0	0	90	72	50	20	0	60	0	0	0	0	0	0	0	0	0	320	$40,710
	Total Hours	564	120	100	890	894	750	1518	142	1802	320	10	305	108	237	92	1550	996	74	10472	
	Average Hourly Rate	$175.00	$195.00	$160.00	$140.00	$115.00	$125.00	$110.00	$132.00	$108.00	$105.00	$145.00	$135.00	$95.00	$185.00	$175.00	$125.00	$120.00	$80.00		
	Subtotal	$98,700	$23,400	$16,000	$124,600	$102,810	$93,750	$166,980	$18,744	$194,616	$33,600	$1,450	$41,175	$10,260	$43,845	$16,100	$193,750	$119,520	$5,920		

Bolton & Menk Subtotal:	**$926,085**
Kimley-Horn Labor:	$379,135
Kimley-Horn Expenses:	$12,880
Kimley-Horn Subtotal:	**$392,015**
SUBCONSULTANT (Braun, Geotechnical Evaluation):	**$49,360**
SUBCONSULTANT (UMS, Subsurface Utility Engineering):	**$27,837**
Total Fee	**$1,395,297**

COST PER MEETING:

Project Management Team Meeting (18 meetings) - $1,500 to $2,000
Open House Meetings (3 meetings) - $4,500 to $5,500
Stakeholder Meetings (20 meetings) - $750 to $850
City Meetings/Workshops (3 meetings) - $2,750 to $3,000

CONFLICT OF INTEREST **FORM**

Appendix B

Non-Collusion and Conflict of Interest Statement

Please print or type (in ink)

CONTRACTOR NAME: Bolton & Menk, Inc. FEDERAL TAX ID NUMBER: 41-0832249

Company Address: 12224 Nicollet Avenue

City: Burnsville State: MN Zip Code: 55337

Contact Person: Aaron Warford, P.E. Title: Principal Transportation Engineer

Phone Number: 952-890-0509 Fax Number: 952-890-8065 email: aaronwa@bolton-menk.com

In signing this bid, proposal or quote, Contractor certifies that it has not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of the competition; that no attempt has been made to induce any other person or firm to submit or not to submit a bid, proposal or quote; that this bid, proposal or quote has been independently arrived at without collusion with any other party submitting a bid, proposal or quote, competitor or potential competitor, that this bid, proposal or quote has not been knowingly disclosed prior to the opening of the bids, proposals or quotes to any bid, proposal or quote competitor; that the above statement is accurate under penalty or perjury.

Contractor also certifies that to the best of its knowledge none of its owners, directors, officers or principals (collectively, "Corporate Executive") are closely related to any County employee who has or may appear to have any control over the award, management, or evaluation of the contract. A Contractor's Corporate Executive is closely related when any of the following circumstances exist:

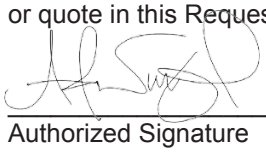
1. A Corporate Executive and any County employee who has or appears to have any control over the award, management or evaluation of the contract are related by blood, marriage or adoption; or

2. A Corporate Executive and any County employee who has or appears to have any control over the award, management or evaluation of the contract are current or former business partners, co-workers, or have otherwise previously worked closely together in the private or public sector; or

3. A Corporate Executive and any County employee who has or appears to have any control over the award, management or evaluation of the contract share a personal relationship that is beyond that of a mere acquaintance, including but not limited to friendship or family friendship.

If one or more of the above circumstances exist, Contractor must disclose such circumstance(s) to Dakota County in writing. Failure to disclose such circumstances invalidates the Contract.

Contractor will comply with all terms, conditions, specifications required by the party submitting a bid, proposal or quote in this Request for Bid, Proposal or Quote and all terms of our bid, proposal or quote response.

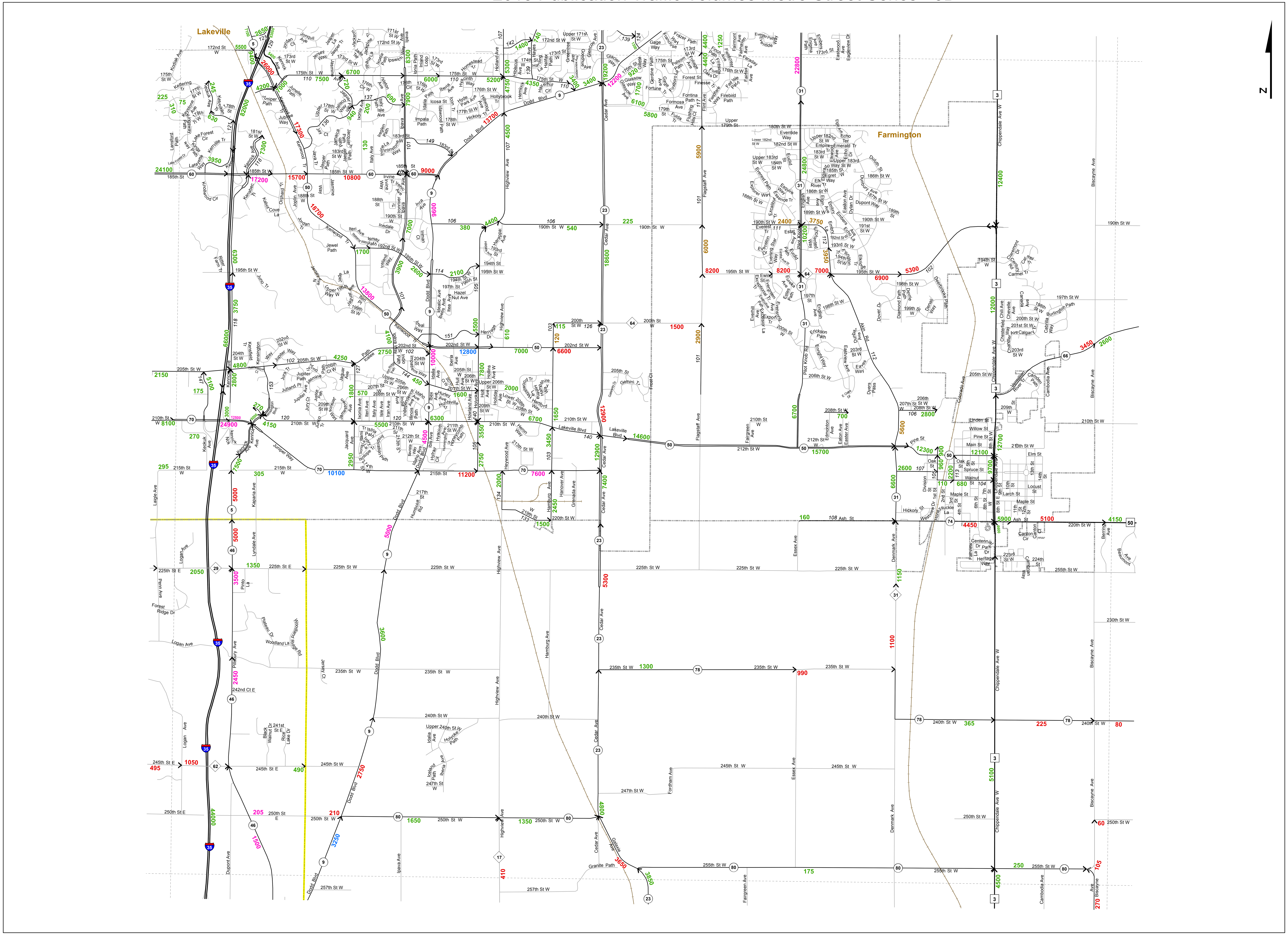


Authorized Signature | Principal Transportation Engineer (Title) | 2/15/2018 (Date)

You are advised that according to Dakota County Board Resolution 12-508, if there is a question as to whether there may be an appearance of a conflict of interest, the contract shall be presented to the County Board for approval, regardless of the amount of the contract. Whether a conflict of interest or the appearance of a conflict of interest exists is a determination made by Dakota County.

Submit this form as part of the Bid, Proposal or Quote response.

2015 Publication Traffic Volumes Metro Street Series - 3B



0 0.25 0.5 0.75 1 Mi.

Numerals Indicate Average Annual Daily Traffic (AADT) Volumes on Designated Roads

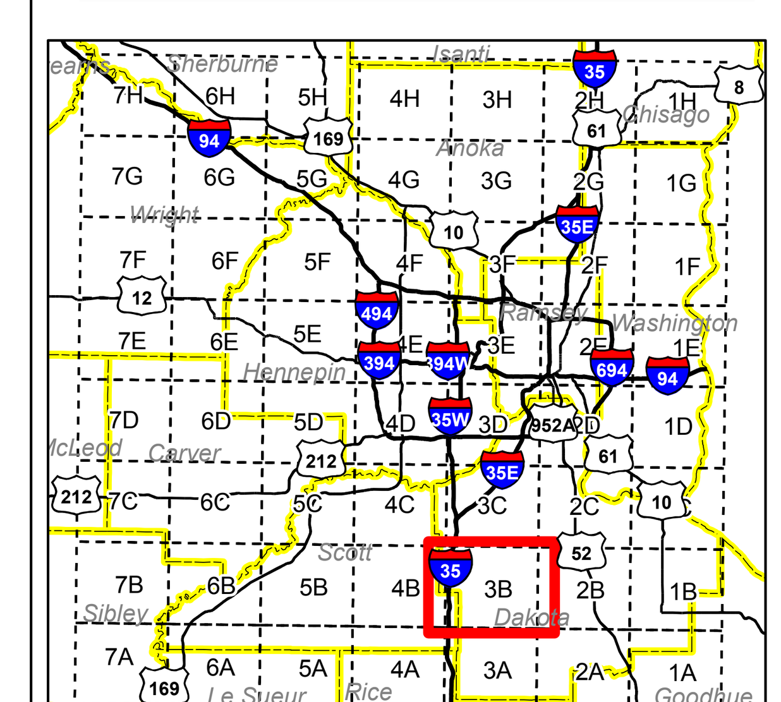
Traffic Volumes are Subject to Variability and Construction Effects
For More Info Visit:
http://www.dot.state.mn.us/traffic/data/coll-methods.html#cp

Minnesota Department of Transportation
Office of Transportation Data and Analysis
Traffic Volume Program
http://www.dot.state.mn.us/traffic/data/index.html

MAP LEGEND

AADT Year
2015 2014
2013 2012
2011 and older

Interstate 94
US Highway 169
MN Highway 55
CSAH 55
MSAS 101
County Road 55
Other Roads
Railroads
Street Series Grid
Cities
COUNTIES
Lakes
Rivers
Perennial Streams
Ditches
National Forests
National Parks
Tribal Gov'ts
State Forests
State Parks



Map Source:
Minnesota Department of Transportation
Office of Transportation Data and Analysis
Traffic Volume Program
2015 AADT Product
http://www.dot.state.mn.us/traffic/data/data-products.html

To view this data using an online interactive map please visit: http://www.dot.state.mn.us/traffic/data/tma.html

City of Lakeville
Positioned to Thrive

July 13, 2018

Mr. Mark Krebsbach, P.E.
Transportation Director/County Engineer
Dakota County Transportation Department
14955 Galaxie Avenue, 3rd Floor
Apple Valley, MN 55124

SUBJECT: Federal FAST Act Letter of Support for Dakota County
County State Aid Highway 70 A-Minor Arterial Expander Project

Dear Mark,

The City of Lakeville supports Dakota County's application for federal funding through the Metropolitan Council's 2018 Regional Solicitation for the County State Aid Highway (CSAH) 70 (210th/215th Street) A-Minor Expander Project.

The proposed project includes the reconstruction of CSAH 70 from Kensington Boulevard to CSAH 23 (Cedar Avenue) to a 4-lane divided roadway. The improvement of this segment of CSAH 70 is critical for the safe, reliable and efficient movement of local and regional transportation needs and therefore is a priority for the City.

The City understands the project is a joint effort between the City and County. The City supports this project for federal funding and agrees to provide a financial commitment for the improvements directly related to CSAH 70, consistent with the current and draft County highway cost-participation policy revisions.

Thank you for making us aware of this application effort and the opportunity to provide support.

Respectfully,

Zach Johnson, P.E.
City Engineer

C: Justin Miller, City Administrator
Neil Normandin, Interim Public Works Director

20195 Holyoke Avenue, Lakeville, MN 55044
952-985-4400 • 952-985-4499 fax
www.lakevillemn.gov