Application

10354 - 2018 Roadway Modernization

10828 - Minneapolis, Hennepin Avenue - Douglas to Lake

Regional Solicitation - Roadways Including Multimodal Elements

Status:	Submitted
Submitted Date:	07/13/2018 11:35 AM

Primary Contact

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

Organization Information

Name:	MINNEAPOLIS,CITY OF

Jurisdictional Agency (if different):	
Organization Type:	City
Organization Website:	http://www.ci.minneapolis.mn.us/
Address:	DEPT OF PUBLIC WORKS
	309 2ND AVE S #300

*	MINNEAPOLIS	Minnesota	55401
	City	State/Province	Postal Code/Zip

County:	Hennepin
Phone:*	612-673-3884 Ext.
Fax:	
PeopleSoft Vendor Number	0000020971A2

Project Information

Project Name	Hennepin Avenue - Douglas Avenue to Lake Street
Primary County where the Project is Located	Hennepin
Cities or Townships where the Project is Located:	Minneapolis
Jurisdictional Agency (If Different than the Applicant):	

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

The project will reconstruct 1.4 miles of Hennepin Ave, from Douglas Ave to W Lake St, completing one of the final remaining segments of Hennepin Ave under the City's jurisdiction. The corridor is an A-Minor Augmentor within an area of high residential and commercial density. Due to its population and concentration of trip generators, Hennepin Ave is a heavily used multimodal corridor with daily averages of 3,400 pedestrians, 280 bicyclists, 6,600 transit riders, and 31,500 motorists. The corridor is along the future E Line rapid bus route and will connect with the future B Line rapid bus route at W Lake St. These rapid bus routes will connect Uptown, a Metropolitan Council identified Job Concentration Center, with Areas of Concentrated Poverty with greater than 50% residents of color, providing benefits to low-income communities and communities of color.
Overall, the project will modernize the over 60 year old roadway with a Pavement Condition Index (PCI) below 60, to better meet the needs of the diverse and growing community. While the project will meet requirements for vehicle flow, operation, level of service and access management for autos, it will include improvements to pedestrian, bicycle and transit facilities making them more convenient and inviting travel options thereby increasing corridor throughput. The Hennepin Ave right-of-way will be redistributed to align with the City's Complete Streets Policy, prioritizing public right-of-way use in the following order: walking, biking or taking transit, and driving motor vehicles.

The project will provide a fully reconstructed street with storm sewer, signals, lighting, landscaping and ADA upgrades. In addition to ADA intersection upgrades, the project will improve the pedestrian environment with elements such as expanded pedestrian space; crossing improvements; LPIs where appropriate; updated LED lighting; and streetscape features. Provisions for bicyclists

include elements such as intersection delineation for intersecting bicycle routes, space for racks and bike share, and new bicycle facilities. The ability to include bicycle facilities on a portion of the corridor or a parallel route is being analyzed to connect existing facilities between Lake St, the Midtown Greenway and the protected bikeways at 26th/28th St. Layouts analyzed to date include a "flex lane" for peak dedicated transit use, and transit signal priority, to promote transit reliability and operational efficiency increasing the overall person throughput of the corridor. This Roadway Modernization project complements the separate Transit Modernization effort led by Metro Transit to upgrade future E Line station shelters, signs and buses. Both projects have independent utility and benefits, with inter-agency coordination.

(Limit 2,800 characters; approximately 400 words)

TIP Description Guidance (will be used in TIP if the project is selected for funding)

HENNEPIN AVE (MSAS 425) FROM DOUGLAS AVE TO LAKE STREET: RECONSTRUCT ROADWAY, CURB AND GUTTER, SEWER, SIDEWALK, TRAFFIC SIGNALS, AND STREETSCAPING.

Project Length (Miles)

1.4

to the nearest one-tenth of a mile

Project Funding

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

No

If yes, please identify the source(s)

Federal Amount

$7,000,000.00

Match Amount

$10,440,816.00

Minimum of 20% of project total

Project Total

$17,440,816.00

Match Percentage

59.86%

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

Source of Match Funds

City of Minneapolis (Municipal State Aid, Net Debt Bonds, Special Assessment Bonds, Stormwater Revenue, General Funds, and Stormwater Funds)

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: 2023

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

Additional Program Years:

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

Project Information-Roadways

County, City, or Lead Agency City of Minneapolis

Functional Class of Road A-Minor Augmentor

Road System MSAS

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

Road/Route No. 425

i.e., 53 for CSAH 53

Name of Road Hennepin Avenue

Example; 1st ST., MAIN AVE

Zip Code where Majority of Work is Being Performed 55408

(Approximate) Begin Construction Date 04/30/2023

(Approximate) End Construction Date 11/30/2024

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

From:
(Intersection or Address) Hennepin Avenue and Douglas Avenue

To:
(Intersection or Address) Hennepin Avenue and West Lake Street

DO NOT INCLUDE LEGAL DESCRIPTION

Or At

Primary Types of Work AGG BASE, PAVEMENT, CURB AND GUTTER, SIGNALS, SIGNS, STORM SEWER, DRIVEWAY APRON, SIDEWALKS, PED RAMPS, LIGHTING, LANDSCAPING

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:

The proposed project is consistent with the 2040 TPP and following objectives and strategies:

A. Transportation system stewardship. Efficiently preserve and maintain the regional transportation system. Strategies A1, A2 and A3. Pages 2.6, 2.17-2.19

B. Safety and Security. Reduce crashes and improve safety and security for all modes of passenger travel and freight transport. Strategies B1, B6. Pages 2.7, 2.20, 2.23

C. Access to Destinations. Increase the availability of multimodal travel options, increase transit ridership and share of trips taking using transit, walking and bicycling, and improve multimodal travel options for people of all ages and abilities to connect to jobs and other opportunities, particularly for historically under represented populations.

Strategies C2, C4, C7, C8, C11, C15. Pages 2.8, 2.25, 2.28, 2.30-2.31, 2.34, 2.36

D. Competitive economy. Improve multimodal access to regional job concentrations identified in the MSP 2040, invest in a multimodal transportation system to attract and retain businesses and residents. Strategies D1, D3. Pages 2.11, 2.38-2.39

E. Healthy Environment. Reduce transportation related air emissions and increase the availability and attractiveness of transit, bicycling and walking to encourage healthy communities and active car-free lifestyles. Strategies E2, E3, E5, E6, E7. Pages 2.12, 2.43-2.47

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:

1. 2019-2023 Capital Budget Requests, 2018 (Page 277)
2. Minneapolis Bicycle Master Plan, 2011 (Page 4, 65)
3. Metro Transit Arterial Transitway Corridors Stud, 2012 (Pages 38-41)

4. Minneapolis Pedestrian Master Plan (2009). (Pages 3, 4, 5, 40)

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	11/01/2017 Date process started	11/01/2018 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)	$660,637.00
Removals (approx. 5% of total cost)	$442,940.00
Roadway (grading, borrow, etc.)	$710,152.00
Roadway (aggregates and paving)	$1,619,097.00
Subgrade Correction (muck)	$0.00
Storm Sewer	$442,940.00
Ponds	$0.00
Concrete Items (curb & gutter, sidewalks, median barriers)	$433,800.00
Traffic Control	$265,764.00
Striping	$177,176.00
Signing	$442,940.00
Lighting	$0.00
Turf - Erosion & Landscaping	$177,176.00
Bridge	$0.00
Retaining Walls	$91,680.00
Noise Wall (not calculated in cost effectiveness measure)	$0.00
Traffic Signals	$2,542,500.00
Wetland Mitigation	$0.00
Other Natural and Cultural Resource Protection	$0.00
RR Crossing	$0.00

Roadway Contingencies	$1,996,965.00
Other Roadway Elements	$0.00
Totals	**$10,003,767.00**

Specific Bicycle and Pedestrian Elements

CONSTRUCTION PROJECT ELEMENTS/COST ESTIMATES	Cost
Path/Trail Construction	$0.00
Sidewalk Construction	$1,485,622.00
On-Street Bicycle Facility Construction	$295,452.00
Right-of-Way	$0.00
Pedestrian Curb Ramps (ADA)	$450,000.00
Crossing Aids (e.g., Audible Pedestrian Signals, HAWK)	$457,500.00
Pedestrian-scale Lighting	$2,465,000.00
Streetscaping	$638,000.00
Wayfinding	$25,000.00
Bicycle and Pedestrian Contingencies	$1,570,475.00
Other Bicycle and Pedestrian Elements	$0.00
Totals	**$7,387,049.00**

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.)	$50,000.00
Vehicles	$0.00
Contingencies	$0.00
Right-of-Way	$0.00
Other Transit and TDM Elements	$0.00
Totals	**$50,000.00**

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	$17,440,816.00
Construction Cost Total	$17,440,816.00
Transit Operating Cost Total	$0.00

Congestion on adjacent Parallel Routes:

Adjacent Parallel Corridor	Lyndale Ave S

Adjacent Parallel Corridor Start and End Points:

Start Point:	W Franklin Ave
End Point:	W Lake St
Free-Flow Travel Speed:	26

The Free-Flow Travel Speed is black number.

Peak Hour Travel Speed:	16

The Peak-Hour Travel Speed is red number.

Percentage Decrease in Travel Speed in Peak Hour Compared to Free-Flow (calculation):	38.46%
Upload the "Level of Congestion" map:	1528922437859_RM-LoC-HennepinAve-Douglas to Lake.pdf

Principal Arterial Intersection Conversion Study:

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

(65 Points)

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

(55 Points)

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

(45 Points)

Not listed as a priority in the study:	Yes

(0 Points)

Congestion Management and Safety Plan IV:

Proposed at-grade project that reduces delay at a CMSP opportunity area:

(65 Points)

Not listed as a CMSP priority location: Yes

(0 Points)

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

Existing Employment within 1 Mile:	23679
Existing Manufacturing/Distribution-Related Employment within 1 Mile:	1156
Existing Post-Secondary Students within 1 Mile:	796
Upload Map	1531147502826_RM-RegEc-HennepinAve-Douglas to Lake.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:

Along Tier 2: Yes

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	Hennepin Ave, Between Lincoln Ave and Summit Ave
Current AADT Volume	31500
Existing Transit Routes on the Project	2, 4, 6, 12, 17, 21, 23, 25, 53, 113, 114, 612, 652

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

Upload Transit Connections Map	1531147732623_RM-Transit-HennepinAve-Douglas to Lake.pdf

Please upload attachment in PDF form.

Response: Current Daily Person Throughput

Average Annual Daily Transit Ridership	43591.0
Current Daily Person Throughput	84541.0

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	35100

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)*	Yes
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: *(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:

Since March 2018, the City has conducted an inclusive engagement process that will continue through the planning, design and construction phases of the project. This is consistent with City-adopted principles for community engagement as well as with other recent reconstruction efforts within the city. Initial engagement includes: an ADA and multi-lingual project website to communicate basic project information to the public; an online survey to target all corridor users; an initial open house held at Jefferson Community School with direct invitations sent to corridor residents and businesses and notification shared with 7 adjacent neighborhoods; and meetings with stakeholders including 3 neighborhood groups, 2 special service districts, 1 business association, various city advisory groups, and a technical advisory group.

Further targeted outreach is anticipated to occur beginning in the fall of 2018 that will include outreach to populations traditionally not involved in the engagement process. Activities such as direct contact with affordable housing tenants and participation at free community events will be used to remove barriers and engage the full cross-section of the population.

(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:

The Hennepin corridor project supports the City and the Metropolitan Council's goal of providing safe, convenient and affordable transportation for all individuals, particularly for low-income populations, communities of color, and for vulnerable populations such as children, the elderly, and people with disabilities. The project benefits these populations through improvements to and prioritization of multimodal transportation facilities, on which these populations heavily rely. The corridor has 3 of the top 25 intersections with the most pedestrian crashes over the last ten years, as identified in City's Pedestrian Crash Study. Current conditions such as wide crossing distances expose pedestrians and bicyclists to traffic, which is more problematic to pedestrians with mobility limitations. The project will modernize the roadway and integrate critical safety improvements to reduce crash risk exposure, while also improving safety and comfort for all users, particularly children, the elderly and people with disabilities. All intersections will be upgraded to full ADA compliance including ramps, countdown timers and Accessible Pedestrian Signals to further improve pedestrian safety and access to key destinations and transit stops. Crossing improvements will be implemented on cross-streets and along Hennepin where appropriate, to shorten crosswalk distances and improve visibility of the most vulnerable travelers. Streetscape improvements such as boulevards and trees will provide added comfort through separation from moving vehicles and shelter from natural elements. The project will also provide benefits to low-income communities and communities of color through greater access to economic opportunities. The planned E Line (Hennepin) and B Line (Lake) Rapid Bus service will connect Uptown, a job concentration center, with Areas of Concentrated Poverty with greater than 50% residents of color. For low income households who may have limited

access to an automobile, transit is essential to connecting people to opportunities. Improvements to Hennepin will prioritize access to transit service and mobility along arterial routes that connect to regional destinations and job concentrations. Improved reliability and efficiency of transit service will equate to time-cost savings and expanded job/destination access. The project team will continue to work closely with Metro Transit to improve bus operations and station area design along the corridor and support the possible implementation of Rapid Bus service along Hennepin.

In addition to public transportation, improvements to bicycle facilities on, near, or intersecting the corridor will expand opportunities for low-cost and active modes of transportation, equating to various economic and health benefits.

(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:	The project does not impose adverse human health or environmental effects on low-income populations, communities of color, or vulnerable populations such as children, the elderly, and people with disabilities. Project construction will incorporate proper noise, dust and traffic mitigation as well as planned detour routes consistent with adopted city policies. During construction, a transit advantage will be maintained as to not adversely impact disadvantaged populations who live in or use the project corridor.
(Limit 2,800 characters; approximately 400 words)	
Upload Map	1531147874498_RM-SocEc-HennepinAve-Douglas to Lake.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
Minneapolis	1.4	1.0	100.0	100.0

Total Project Length

Total Project Length (as entered in the "Project Information" form)	1.4

Affordable Housing Scoring

Total Project Length (Miles) or Population	1.4
Total Housing Score	100.0

Affordable Housing Scoring

Measure A: Year of Roadway Construction

Year of Original Roadway Construction or Most Recent Reconstruction	Segment Length	Calculation	Calculation 2
1957	1.4	2739.8	1957.0
	1	**2740**	**1957**

Total Project Length

Total Project Length (as entered in "Project Information" form) 1.4

Average Construction Year

Weighted Year 1957

Total Segment Length (Miles)

Total Segment Length 1.4

Measure B: Geometric, Structural, or Infrastructure Improvements

Improved roadway to better accommodate freight movements: Yes

Response:

This project has substantial carry-over benefits to the freight system. The project's location on a "Tier 2" corridor means that it is inherently valuable and will strongly benefit freight movements. As part of the initial public engagement the City surveyed businesses and inventoried the curbside uses along and adjacent to Hennepin to better understand freight needs and advance a design that better accommodates freight movement to and through the corridor. The pavement (PCI

(Limit 700 characters; approximately 100 words)

Improved clear zones or sight lines: Yes

Response:

A variety of improvements will be made to improve sight lines along the corridor. Crossing improvements will be implemented on cross streets and along Hennepin where appropriate, to increase visibility of pedestrians and bicyclists at intersections. All access points will be evaluated. Curb cuts will be consolidated and/or removed to improve sight lines and reduce conflict. Upgraded and consistent street and pedestrian scale lighting will improve night visibility and safety via CPTED principles. Streetscape elements will be designed to not obstruct sight lines along the corridor.

(Limit 700 characters; approximately 100 words)

Improved roadway geometrics:

Yes

Response:

The City's list of top 25 intersections with the most pedestrian crashes in the last ten years includes Hennepin intersections at Lake, Franklin and Lagoon (City's Pedestrian Crash Study). Roadway geometric improvements such as optimized turning radii, lane widths, crossing improvements, and consolidated curb cuts will reduce crossing distances and exposure for pedestrians and bicyclists while preserving auto movements. The current 4 to 6 lane configuration will be redistributed to prioritize multimodal facilities, balancing the desire for parking and the need to improve pedestrian, bicycle, and transit facilities with consideration of flex lanes for exclusive transit operation during peaks.

(Limit 700 characters; approximately 100 words)

Access management enhancements:

Yes

Response:

A large number of existing curb cuts place pedestrians and bicycles at higher risk for conflict while vehicles turning onto and off Hennepin negatively impact traffic flow and pedestrian safety. To reduce pedestrian and bicycle exposure and potential conflict points while improving traffic flow, the following access management enhancements will be included as appropriate: removal, consolidation, or shortening of curb cuts and updated turning restrictions such as right-in, right-out and no turn on red. By removing excess curb cuts, additional space will be available for multimodal enhancements, such as larger transit platforms, wider boulevards and improved conditions for pedestrians.

(Limit 700 characters; approximately 100 words)

Vertical/horizontal alignment improvements:

Yes

Response:

Hennepin is fully developed with mostly straight horizontal and vertical alignments. The project will maintain existing horizontal and vertical alignments with location-specific changes to the vertical alignment to optimize sightlines and storm water management. The horizontal alignment of the corridor is not expected to significantly change and therefore no permanent right-of-way acquisitions are anticipated. The project will meet all applicable State & Federal design requirements.

(Limit 700 characters; approximately 100 words)

Improved stormwater mitigation:

Yes

Response:

The project will evaluate if stormwater mitigation is appropriate to address localized flooding that may exist along the corridor. The City is currently reviewing new stormwater models to better understand localized flooding issues and completing a condition inventory of all stormwater pipes. Streetscape elements such as bio-retention features and other sustainable landscaping practices will be evaluated as needed to address localized stormwater retention and necessary stormwater quality requirements. The project will comply with MPCA, City, and Minnehaha Creek Watershed District requirements.

(Limit 700 characters; approximately 100 words)

Signals/lighting upgrades:

Yes

Response:

Currently only 2 of the 10 signals along Hennepin operate with LPIs and have APS fully or partially installed. The project will upgrade all 10 traffic signals to include: meeting ADA requirements at 75 ramps and push buttons, adding APS, countdown timers, TSP and the potential inclusion of additional LPIs to establish pedestrians in the crosswalk. Left turn phases will be implemented as needed to improve traffic flow and safety. Street light replacement will provide roadway illumination above residential level to accommodate all modes of travel and fixtures will be upgraded to LED for longer life span, reduced maintenance and glare, improved uniformity, and up-lighting elimination.

(Limit 700 characters; approximately 100 words)

Other Improvements

Yes

Response:

Hennepin, from Douglas to Lake, will complete one of the last remaining segments of Hennepin under the City's jurisdiction. The corridor will be designed based on the City's Complete Streets Policy to prioritize the most vulnerable users, and support the City's commitment to Vision Zero. In addition to improving vulnerable user prioritization and safety, the reconstruction of Hennepin addresses aging infrastructure, while presenting a unique design and branding opportunity. Creating a visual identity through streetscaping and public art is proven to have a positive impact on economic development and promote active transportation by providing an inviting and comfortable sidewalk environment.

(Limit 700 characters; approximately 100 words)

Measure A: Congestion Reduction/Air Quality

Total Peak Hour Delay Per Vehicle Without The Project (Seconds/Vehicle)	Total Peak Hour Delay Per Vehicle With The Project (Seconds/Vehicle)	Total Peak Hour Delay Per Vehicle Reduced by Project (Seconds/Vehicle)	Volume (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
14.0	13.0	1.0	30211	30211.0		1531416924796_Hennepin Ave_5-6PM_optimized - Synchro Report.pdf

Vehicle Delay Reduced

Total Peak Hour Delay Reduced 30211.0

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):
36.4	35.83	0.57
36	**36**	**1**

Total

Total Emissions Reduced: 0.57

Upload Synchro Report 1531426444062_Hennepin Ave_5-6PM_optimized - Synchro Report.pdf

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

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

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

Total Parallel Roadway

Emissions Reduced on Parallel Roadways 0

Upload Synchro Report

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

New Roadway Portion:

Cruise speed in miles per hour with the project: 0

Vehicle miles traveled with the project: 0

Total delay in hours with the project: 0

Total stops in vehicles per hour with the project: 0

Fuel consumption in gallons:	0
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced or Produced on New Roadway (Kilograms):	0
EXPLANATION of methodology and assumptions used:(Limit 1,400 characters; approximately 200 words)	
Total (CO, NOX, and VOC) Peak Hour Emissions Reduced by the Project (Kilograms):	0.0

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

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

Measure A: Roadway Projects that do not Include Railroad Grade-Separation Elements

Crash Modification Factor Used:

CMF Used: 0.65 Total

Reconstruction of existing poor roadway surface with skid resistant pavement. CMF 2259 of 0.799 (20.1% reduction): sideswipe, left turn, right angle, ran off road, head on, pedestrian, and other crash types for all crash severity types. CMF 2273 of 0.582 (41.8% reduction): rear end crashes for all crash severity types.

Transit Signal Priority. CMF 7273 of 0.861 (13.9% reduction): sideswipe, left turn, right angle, ran off road, head on, and other crash types for all crash severity types.
For crash types and severities where two CMFs are being used the CMFs are multiplied together. [CMF 2259 (0.799) & 7273 (0.861) used together give a total CMF 0.687]

(Limit 700 Characters; approximately 100 words)

Rationale for Crash Modification Selected:

There have been a significant number of wet pavement crashes on Hennepin Avenue, approximately 29% or 96 crashes occurred on wet pavement. The existing pavement surface is worn and generally in poor condition with severe cracking, patching and potholes. The Pavement Condition Index is below 60 which is considered a rating of "poor". As part of the Hennepin Ave Reconstruction project, skid resistant pavement (as described in CMFs 2259 and 2273) will be installed improving the pavement quality and reducing crashes along the corridor.

Transit Signal priority will also be added at all signals along the corridor to improve transit operations along Hennepin Avenue. The CMF 7273 for transit signal priority was applied to the whole corridor because there are transit stops in each direction of Hennepin Avenue at all signalized intersections.

(Limit 1400 Characters; approximately 200 words)

Project Benefit ($) from B/C Ratio	$1.15
Worksheet Attachment	1531497996453_Hennepin Ave HSIP CMF Info and 2013-2015Crashes MSAS 425 070918.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

Hennepin, from Douglas to Lake, is a high density corridor with existing land use patterns that support active transportation and increasing development that demands it. The City's Complete Streets Policy will guide the design, redistributing space within the right-of-way to the most vulnerable users: pedestrians, bicyclists and transit users.

The corridor currently has 3 intersections identified in the City's Pedestrian Crash Study list of top 25 intersections with the most crashes for pedestrians over the last ten years. It is also heavily utilized by pedestrians with over 3,500 per day. The following pedestrian improvements will be included, where appropriate, to improve pedestrian safety and user experience: expanded pedestrian space; crossing improvements; ADA compliant ramps and signals (APS); LPIs and updated LED lighting; and streetscape features.

Response:

The Hennepin corridor crosses the Midtown Greenway, one of the most heavily used Tier 1 RBTN corridor alignments in the region. Even without dedicated bicycle facilities, Hennepin has an average of 280 people biking along the corridor each day. From 2000-2010, the intersection of 28th and Hennepin ranked 24th in the city for the number of bicycle-motorist crashes. This project supports improvements to bicycle network connectivity, mobility, and safety between 26th and Lake, either through a bicycle facility along Hennepin, or through the identification of an alternate alignment. Either alignment will provide Midtown Greenway users with convenient access to shops along Hennepin as well as connections to bike share stations and the existing and planned bicycle facilities on 24th, 26th, 28th, Bryant, and Hennepin (south of Lake).

Because public transit provides the greatest person throughput in an efficient and sustainable way, it is

a priority for the corridor. Current ridership is 6,600 per day over 13 routes, with increases expected as Route 6 is converted to the E Line (Rapid Bus). The proposed Hennepin design will look to redistribute the existing 4-6 lane configuration, and prioritize transit through design and signal priority (TSP) to improve operational efficiency increasing the overall person throughput and travel time reliability. A "flex lane" will be considered as a part of the project for peak period dedicated transit use. Preliminary findings from a May 2018 pilot study along Hennepin were positive for bus operations, user experience and general traffic flow. Operational decisions will be facilitated in a coordinated effort with Metro Transit to support optimization of existing service and planned Rapid Bus improvements.

This Roadway Modernization project complements the separate Transit Modernization effort led by Metro Transit to upgrade future E Line station shelters, signs and buses.

(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.

50%

Attach Layout

Please upload attachment in PDF form.

Layout has not been started Yes

0%

Anticipated date or date of completion

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

100%

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

100%

Historic/archeological property impacted; determination of no adverse effect anticipated

80%

Historic/archeological property impacted; determination of adverse effect anticipated

40%

Unsure if there are any historic/archaeological properties in the project area.

0%

Project is located on an identified historic bridge

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

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) Yes

100%

Signature Page

Please upload attachment in PDF form.

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

50%

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

0%

Anticipated date or date of executed Agreement

Measure A: Cost Effectiveness

Total Project Cost (entered in Project Cost Form): $17,440,816.00

Enter Amount of the Noise Walls: $0.00

Total Project Cost subtract the amount of the noise walls: $17,440,816.00

Points Awarded in Previous Criteria

Cost Effectiveness $0.00

Other Attachments

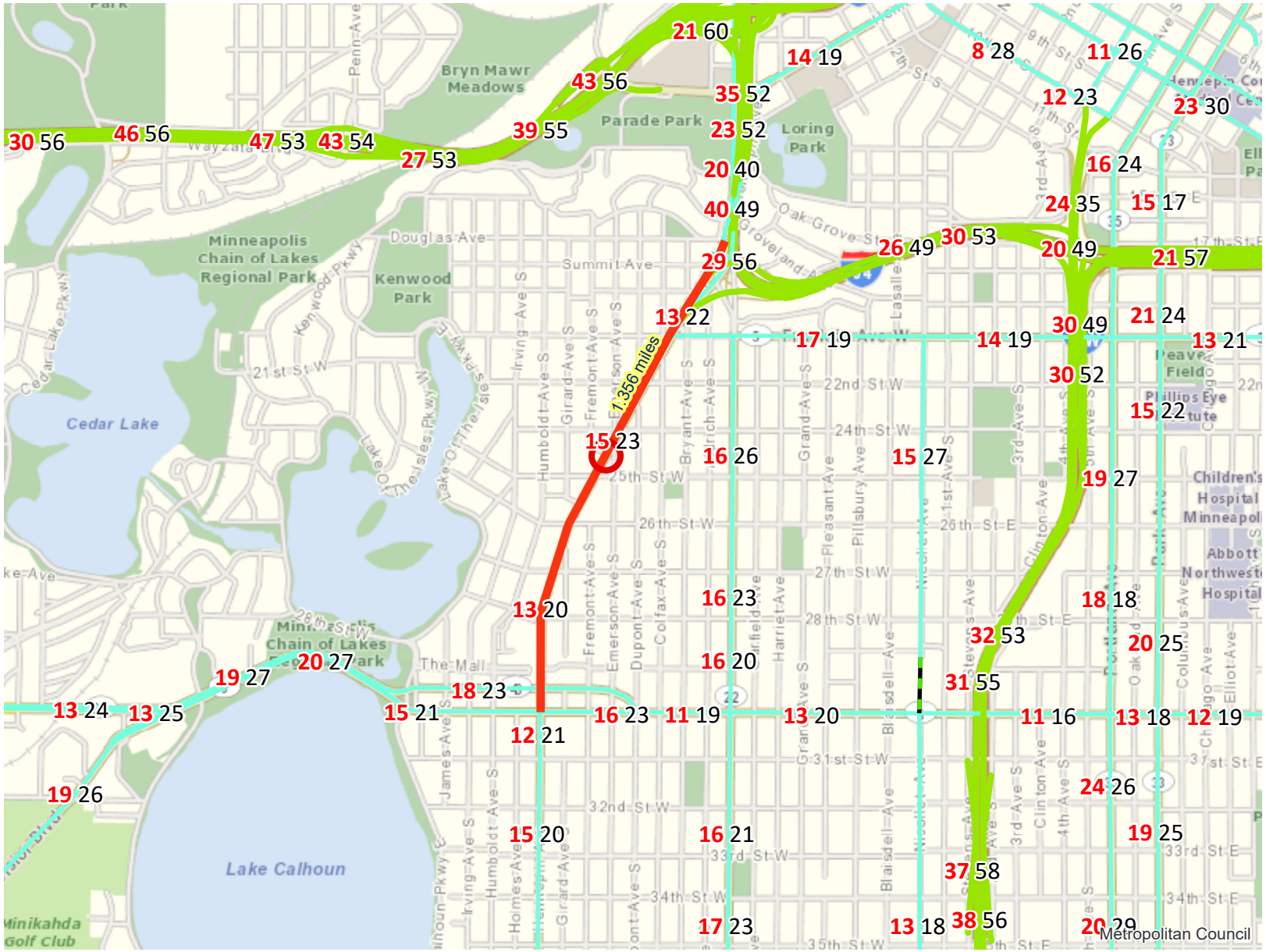
Before photo of Hennepin Ave

279 KB

File Name	Description	File Size
10828_RM_BeforePic_PDF.pdf	Before Picture in a PDF	205 KB
2018 07 10 Hennepin Support Letter to City of Mpls.pdf	Metro Transit Letter of Support	107 KB
MPLS_LetterSupport_Formatted.pdf	City Letter of Support	547 KB
RM-Corridor and bus pilot map-HennepinAve-Douglas to Lake.pdf	Corridor and Bus Map for Hennepin Ave	422 KB
RM-One-Pager-HennepinAve-Douglas to Lake.pdf	One Page Summary for Hennepin Ave	450 KB
_SIGNED - Letter of Support - Hennepin Ave Reconstruction - Minneapolis ....pdf	County Letter of Support	1.5 MB

Level of Congestion

Roadway Reconstruction/Modernization Project: Hennepin Ave - Douglas to Lake | Map ID: 1528391231168



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

0 0.25 0.5 1 1.5 2 Miles

Created: 6/7/2018
LandscapeRSA1

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

METROPOLITAN COUNCIL

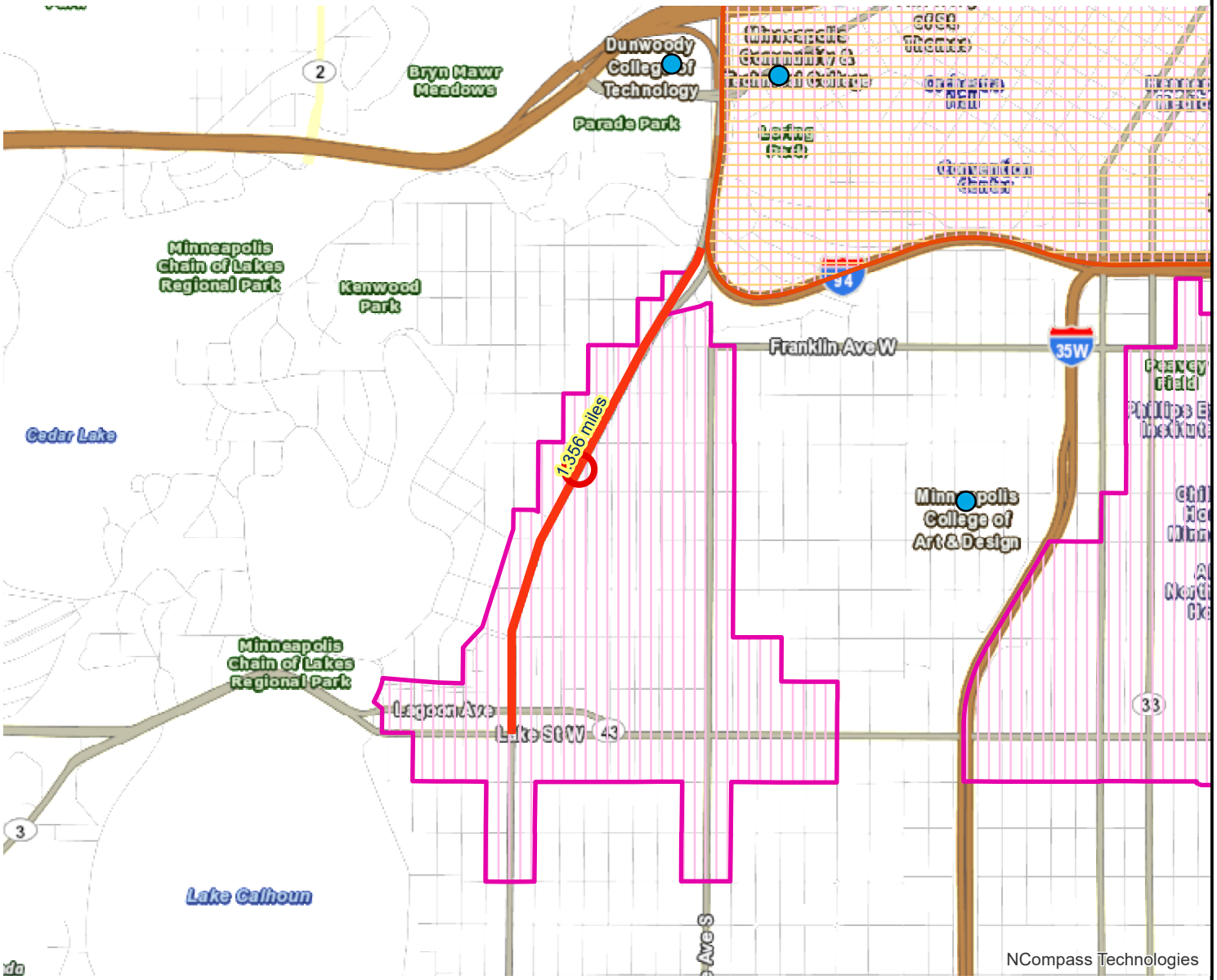
Regional Economy

Roadway Reconstruction/Modernization Project: Hennepin Ave - Douglas to Lake | Map ID: 1528391231168

Results

WITHIN ONE MI of project:
Postsecondary Students: 796

Totals by City:
Minneapolis
Population: 53819
Employment: 23679
Mfg and Dist Employment: 1156



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

0 0.25 0.5 1 1.5 2 Miles

Created: 6/7/2018
LandscapeRSA5

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

METROPOLITAN COUNCIL

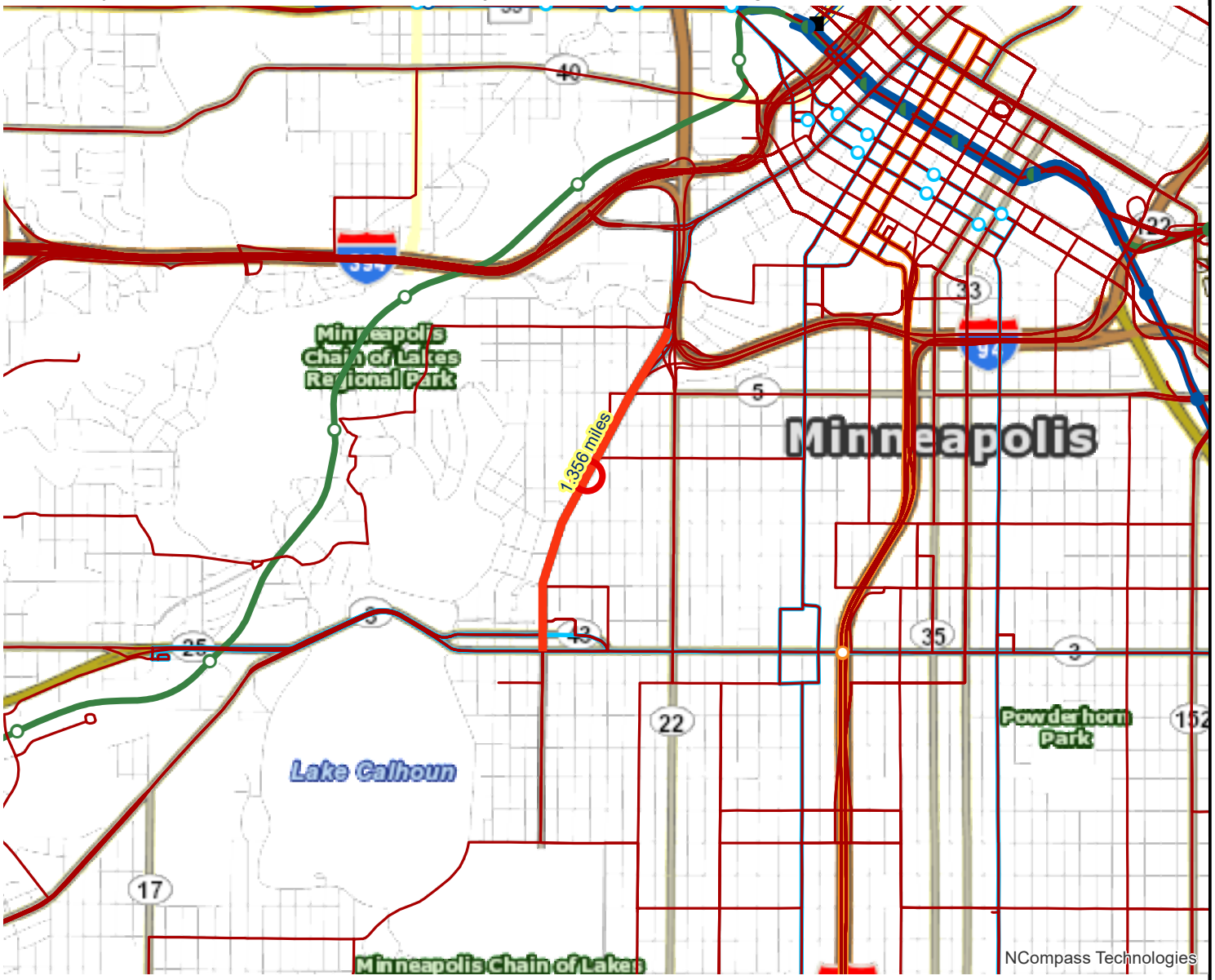
Transit Connections

Roadway Reconstruction/Modernization Project: Hennepin Ave - Douglas to Lake | Map ID: 1528391231168

Results

Transit with a Direct Connection to project:
113 114 12 17 2 21 23 25 4 53 6
612 652
*Hennepin
*Lake

**indicates Planned Alignments*



Project Points
Project
Blue Line
Green Line
Green Line Extension
Orange Line
Transit Routes
Blue Line
Green Line
Northstar Line
Blue Line Extension
Green Line Extension
Arterial BRT

Transitway Stations
Northstar Line
Blue/Green Line

Planned Transitway Stations
Blue Line Extension
C Line

Transitway
Blue / Green Line

Planned Transitway Alignments
Orange Line

0 0.375 0.75 1.5 2.25 3 Miles

Created: 6/7/2018
LandscapeRSA3

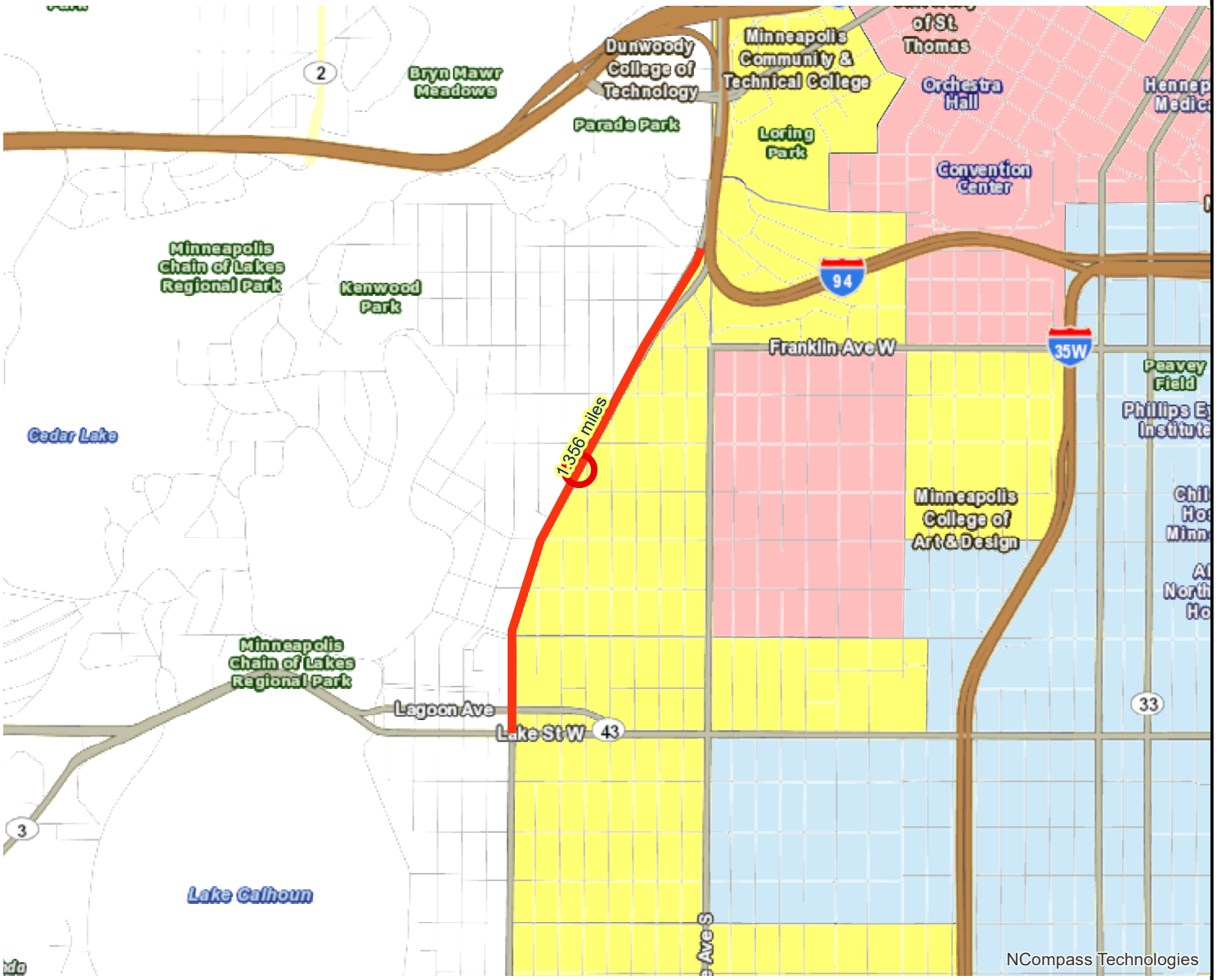
METROPOLITAN COUNCIL

Socio-Economic Conditions

Roadway Reconstruction/Modernization Project: Hennepin Ave - Douglas to Lake | Map ID: 1528391231168

Results

Project census tracts are above the regional average for population in poverty or population of color:
(0 to 18 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 0.25 0.5 1 1.5 2 Miles

Created: 6/7/2018
LandscapeRSA2

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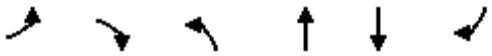
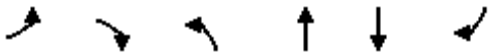
METROPOLITAN COUNCIL



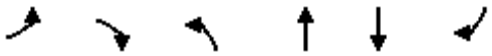
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	20	0	0	731	63
Future Volume (vph)	0	20	0	0	731	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			0%	-1%	
Storage Length (ft)	0	0	0			119
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	0	3557	1591
Flt Permitted						
Satd. Flow (perm)	0	1611	0	0	3557	1591
Link Speed (mph)	30			30	30	
Link Distance (ft)	863			928	903	
Travel Time (s)	19.6			21.1	20.5	
Confl. Bikes (#/hr)			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	22	0	0	795	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	22	0	0	795	68
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.2%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary



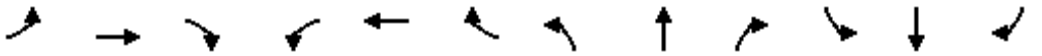
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	20	0	0	731	63
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	20	0	0	731	63
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	0	1615	0	0	3618	1615
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			Yes	Yes	
Reference Time (s)		1.5	0.0	0.0	24.2	4.7
Adj Reference Time (s)		8.0	0.0	0.0	28.2	8.7
Permitted Option						
Adj Saturation A (vph)	0		0	0	1809	
Reference Time A (s)	0.0		0.0	0.0	24.2	
Adj Saturation B (vph	NA		NA	NA	3618	
Reference Time B (s)	NA		NA	NA	24.2	
Reference Time (s)				0.0	24.2	
Adj Reference Time (s)				8.0	28.2	
Split Option						
Ref Time Combined (s)	0.0		0.0	0.0	24.2	
Ref Time Seperate (s)	0.0		0.0	0.0	24.2	
Reference Time (s)	0.0		0.0	0.0	24.2	
Adj Reference Time (s)	0.0		0.0	0.0	28.2	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	28.2	
Permitted Option (s)	Err	28.2	
Split Option (s)	0.0	28.2	
Minimum (s)	0.0	28.2	28.2

Right Turns	EBR	SBR
Adj Reference Time (s)	8.0	8.7
Cross Thru Ref Time (s)	28.2	0.0
Oncoming Left Ref Time (s)	0.0	0.0
Combined (s)	36.2	8.7

Intersection Summary			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

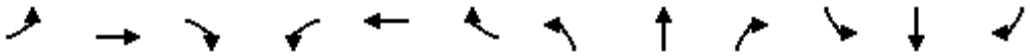


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Future Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			5%			1%			1%	
Storage Length (ft)	0		25	62		0	0		0	0		25
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Frt		0.924			0.928							0.850
Flt Protected		0.979		0.950				0.999				
Satd. Flow (prot)	0	1668	0	3347	1685	0	0	3518	0	0	3522	1575
Flt Permitted		0.832		0.747				0.923				
Satd. Flow (perm)	0	1418	0	2632	1685	0	0	3250	0	0	3522	1575
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			42							30
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		347			628			691			743	
Travel Time (s)		7.9			14.3			15.7			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	43	301	87	80	15	898	0	0	1220	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	301	167	0	0	913	0	0	1220	51
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	31.0	31.0		31.0	31.0		25.0	25.0			25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		73.0	73.0			73.0	73.0
Total Split (%)	33.6%	33.6%		33.6%	33.6%		66.4%	66.4%			66.4%	66.4%
Maximum Green (s)	31.0	31.0		31.0	31.0		67.5	67.5			67.5	67.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0		6.0	6.0			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		12.0	12.0			12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		31.0		31.0	31.0			67.5			67.5	67.5
Actuated g/C Ratio		0.28		0.28	0.28			0.61			0.61	0.61
v/c Ratio		0.18		0.41	0.33			0.46			0.56	0.05

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		16.3		34.1	25.3			2.7			3.5	0.3
Queue Delay		0.0		0.0	0.0			0.0			0.0	0.0
Total Delay		16.3		34.1	25.3			2.7			3.5	0.3
LOS		B		C	C			A			A	A
Approach Delay		16.3			30.9			2.7			3.4	
Approach LOS		B			C			A			A	

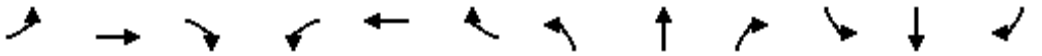
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 48 (44%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 32: Hennepin Av S & 26th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01

Intersection Summary



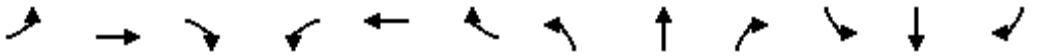
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	70	0	277	154	0	0	840	0	0	1122	47
Lane Utilization Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.89	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1700	0	3505	1763	0	0	3615	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.5
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	222		868	1763		0	1196		0	1809	
Reference Time A (s)	0.0	37.9		19.1	10.5		0.0	39.3		0.0	37.2	
Adj Saturation B (vph	NA	NA		0	1763		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		17.5	10.5		NA	NA		NA	NA	
Reference Time (s)		37.9			17.5			39.3			37.2	
Adj Reference Time (s)		43.9			23.5			44.8			42.7	
Split Option												
Ref Time Combined (s)	0.0	4.9		9.5	10.5		0.0	27.9		0.0	37.2	
Ref Time Seperate (s)	2.0	0.0		9.5	5.4		0.9	27.4		0.0	37.2	
Reference Time (s)	4.9	4.9		10.5	10.5		27.9	27.9		37.2	37.2	
Adj Reference Time (s)	16.0	16.0		16.5	16.5		33.4	33.4		42.7	42.7	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	43.9	44.8	
Split Option (s)	32.5	76.1	
Minimum (s)	32.5	44.8	77.3

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	33.4
Combined (s)	70.4

Intersection Summary			
Intersection Capacity Utilization	64.4%	ICU Level of Service	C

Reference Times and Phasing Options do not represent an optimized timing plan.

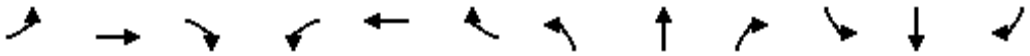


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Future Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Storage Length (ft)	0		0	0		0	0		50	0		25
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00							0.98		1.00	
Frt		0.979							0.850		0.993	
Flt Protected		0.993						0.999			0.994	
Satd. Flow (prot)	0	1798	0	0	0	0	0	3553	1591	0	3472	0
Flt Permitted		0.993						0.892			0.581	
Satd. Flow (perm)	0	1798	0	0	0	0	0	3173	1558	0	2030	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8							84		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		414			942			672			680	
Travel Time (s)		9.4			21.4			15.3			15.5	
Confl. Bikes (#/hr)			1	1			4		1	1		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	193	42	0	0	0	18	818	162	186	1184	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	272	0	0	0	0	0	836	162	0	1437	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA					Perm	NA	Perm	D.P+P	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4						2		1	1 2	
Permitted Phases	4						2		2	2		
Detector Phase	4	4					2	2	2	1	1 2	
Switch Phase												
Minimum Initial (s)	15.0	15.0					15.0	15.0	15.0	7.0		
Minimum Split (s)	31.0	31.0					26.0	26.0	26.0	13.0		
Total Split (s)	32.0	32.0					47.0	47.0	47.0	31.0		
Total Split (%)	29.1%	29.1%					42.7%	42.7%	42.7%	28.2%		
Maximum Green (s)	26.0	26.0					41.5	41.5	41.5	25.5		
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5		
All-Red Time (s)	2.5	2.5					2.0	2.0	2.0	2.0		
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		6.0						5.5	5.5			
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2					0.2	0.2	0.2	3.0		
Recall Mode	Max	Max					C-Max	C-Max	C-Max	Min		
Walk Time (s)	7.0	7.0					7.0	7.0	7.0			
Flash Dont Walk (s)	18.0	18.0					13.0	13.0	13.0			
Pedestrian Calls (#/hr)	0	0					0	0	0			
Act Effct Green (s)		26.0						41.5	41.5		67.0	
Actuated g/C Ratio		0.24						0.38	0.38		0.61	
v/c Ratio		0.63						0.70	0.25		0.91	
Control Delay		44.1						20.1	3.6		13.4	
Queue Delay		0.0						0.0	0.0		0.0	
Total Delay		44.1						20.1	3.6		13.4	
LOS		D						C	A		B	
Approach Delay		44.1						17.4			13.4	
Approach LOS		D						B			B	

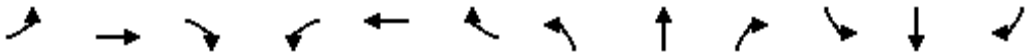
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 14 (13%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 86.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 33: Hennepin Av S & 28th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	

Intersection Summary



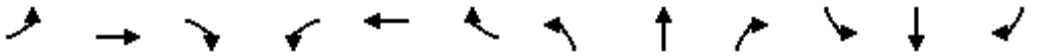
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	4.0	4.0	4.0	5.5	5.5	5.5	5.5	5.5	4.0
Minimum Green (s)	15.0	15.0	4.0	4.0	4.0	4.0	15.0	15.0	15.0	7.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	251	0	0	0	0	0	770	149	0	1322	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	1843	0	0	0	0	0	3614	1615	0	3569	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			11.1			0.0
Adj Reference Time (s)			0.0			0.0			20.5			0.0
Permitted Option												
Adj Saturation A (vph)	0	610		0	0		0	1065		0	192	
Reference Time A (s)	0.0	49.4		0.0	0.0		0.0	39.6		0.0	199.2	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	24.3		NA	NA		NA	NA		NA	NA	
Reference Time (s)		24.3			0.0			39.6			199.2	
Adj Reference Time (s)		30.3			8.0			45.1			204.7	
Split Option												
Ref Time Combined (s)	0.0	16.3		0.0	0.0		0.0	25.6		0.0	44.5	
Ref Time Seperate (s)	2.3	11.6		0.0	0.0		1.1	25.0		11.4	36.4	
Reference Time (s)	16.3	16.3		0.0	0.0		25.6	25.6		44.5	44.5	
Adj Reference Time (s)	22.3	22.3		0.0	0.0		31.1	31.1		50.0	50.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	30.3	204.7	
Split Option (s)	22.3	81.0	
Minimum (s)	22.3	81.0	103.4

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	22.3
Oncoming Left Ref Time (s)	50.0
Combined (s)	92.8

Intersection Summary			
Intersection Capacity Utilization	86.1%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

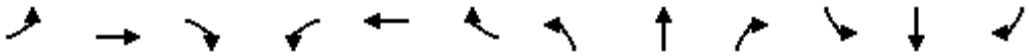


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Future Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			0%	
Storage Length (ft)	70		25	75		75	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.995			0.992	
Satd. Flow (prot)	1761	1853	1575	1761	1853	1575	0	1853	1583	0	1848	1583
Flt Permitted	0.532			0.661				0.928			0.885	
Satd. Flow (perm)	986	1853	1575	1225	1853	1575	0	1729	1583	0	1649	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			46			103			44			31
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		430			462			1923			648	
Travel Time (s)		9.8			10.5			43.7			14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	126	66	48	198	115	29	268	73	86	417	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	126	66	48	198	115	0	297	73	0	503	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4		4	2		2	2		2
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	76.0	76.0	76.0	76.0	76.0	76.0
Total Split (%)	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	69.1%	69.1%	69.1%	69.1%	69.1%	69.1%
Maximum Green (s)	28.5	28.5	28.5	28.5	28.5	28.5	70.0	70.0	70.0	70.0	70.0	70.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5		6.0	6.0		6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0	14.0	19.0	19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	28.5	28.5	28.5	28.5	28.5	28.5		70.0	70.0		70.0	70.0
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26		0.64	0.64		0.64	0.64
v/c Ratio	0.11	0.26	0.15	0.15	0.41	0.24		0.27	0.07		0.48	0.09

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	32.6	34.2	14.4	33.1	37.0	9.3		9.6	3.9		3.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	32.6	34.2	14.4	33.1	37.0	9.3		9.6	3.9		3.3	0.3
LOS	C	C	B	C	D	A		A	A		A	A
Approach Delay		28.1			27.6			8.4			2.9	
Approach LOS		C			C			A			A	

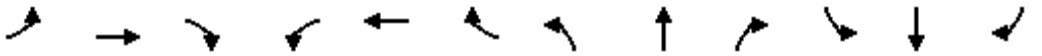
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 13 (12%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 178: Hennepin Av S & 31st St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



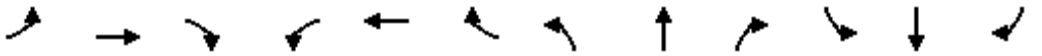
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	26	116	61	44	182	106	0	274	67	0	463	81
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1900	1615	0	1891	1615	0	1884	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	1.7	7.3	4.5	2.9	11.5	7.9			5.0			6.0
Adj Reference Time (s)	15.5	15.5	15.5	15.5	17.0	15.5			16.0			16.0
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1900		0	771		0	527	
Reference Time A (s)	25.9	7.3		43.9	11.5		0.0	42.6		0.0	105.4	
Adj Saturation B (vph	NA	NA		0	1900		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		10.9	11.5		NA	NA		NA	NA	
Reference Time (s)		25.9			11.5			42.6			105.4	
Adj Reference Time (s)		31.4			17.0			48.6			111.4	
Split Option												
Ref Time Combined (s)	1.7	7.3		2.9	11.5		0.0	17.4		0.0	29.5	
Ref Time Seperate (s)	1.7	7.3		2.9	11.5		1.8	15.6		5.3	24.3	
Reference Time (s)	7.3	7.3		11.5	11.5		17.4	17.4		29.5	29.5	
Adj Reference Time (s)	15.5	15.5		17.0	17.0		23.4	23.4		35.5	35.5	

Summary	EB WB	NB SB	Combined
Protected Option (s)	32.5	NA	
Permitted Option (s)	31.4	111.4	
Split Option (s)	32.5	58.9	
Minimum (s)	31.4	58.9	90.3

Right Turns	EBR	WBR	NBR	SBR
Adj Reference Time (s)	15.5	15.5	16.0	16.0
Cross Thru Ref Time (s)	35.5	23.4	15.5	17.0
Oncoming Left Ref Time (s)	15.5	15.5	35.5	23.4
Combined (s)	66.5	54.4	67.0	56.4

Intersection Summary			
Intersection Capacity Utilization	75.3%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.



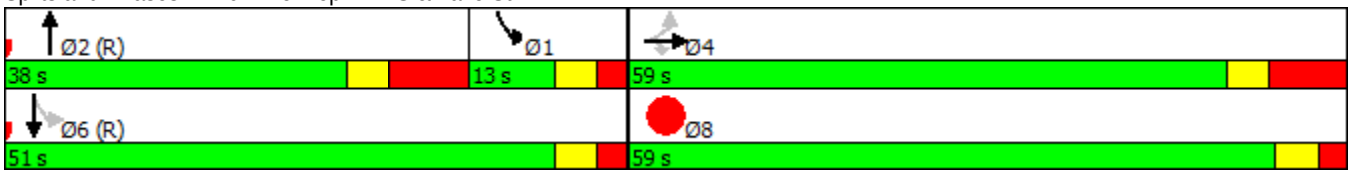
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Future Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			0%	
Storage Length (ft)	105		50	0		0	0		100	0		0
Storage Lanes	1		1	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.86	0.86	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor			0.98									
Frt			0.850					0.973				
Flt Protected	0.950	0.994									0.987	
Satd. Flow (prot)	1507	4729	1567	0	0	0	0	3239	0	0	3493	0
Flt Permitted	0.950	0.994									0.721	
Satd. Flow (perm)	1507	4729	1534	0	0	0	0	3239	0	0	2552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			129					22				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			337			648			321	
Travel Time (s)		15.0			7.7			14.7			7.3	
Confl. Bikes (#/hr)	1		2	2		1	1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	0	25	0	0	0	0
Adj. Flow (vph)	528	1046	142	0	0	0	0	338	73	158	457	0
Shared Lane Traffic (%)	28%											
Lane Group Flow (vph)	380	1194	142	0	0	0	0	411	0	0	615	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Minimum Split (s)	32.0	32.0	32.0					29.0		13.0	29.0	
Total Split (s)	59.0	59.0	59.0					38.0		13.0	51.0	
Total Split (%)	53.6%	53.6%	53.6%					34.5%		11.8%	46.4%	
Maximum Green (s)	49.0	49.0	49.0					28.0		7.0	45.0	
Yellow Time (s)	3.5	3.5	3.5					3.5		3.5	3.5	
All-Red Time (s)	6.5	6.5	6.5					6.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0			0.0	
Total Lost Time (s)	10.0	10.0	10.0					10.0			6.0	
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?												
Walk Time (s)	3.0	3.0	3.0					3.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0					16.0			16.0	
Pedestrian Calls (#/hr)	0	0	0					0			0	

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Bus Blockages (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turn Type	
Protected Phases	8
Permitted Phases	
Minimum Split (s)	32.0
Total Split (s)	59.0
Total Split (%)	54%
Maximum Green (s)	53.0
Yellow Time (s)	3.5
All-Red Time (s)	2.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	49.0	49.0	49.0					28.0			45.0	
Actuated g/C Ratio	0.45	0.45	0.45					0.25			0.41	
v/c Ratio	0.57	0.57	0.19					0.49			0.56	
Control Delay	26.7	23.9	4.6					29.8			6.3	
Queue Delay	0.4	0.0	0.0					0.0			0.4	
Total Delay	27.2	24.0	4.6					29.8			6.7	
LOS	C	C	A					C			A	
Approach Delay		23.1						29.8			6.7	
Approach LOS		C						C			A	

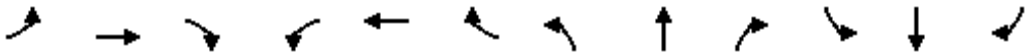
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 13 (12%), Referenced to phase 2:NBT and 6:SBTL, Start of 1st Green			
Natural Cycle: 75			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			
Description: Phase 1 lags; 4 second LPI			

Splits and Phases: 191: Hennepin Av S & Lake St W



Lane Group	Ø8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

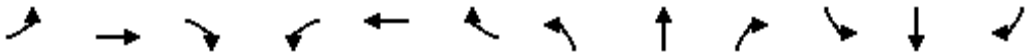
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00

Intersection Summary

Description: Phase 1 lags; 4 second LPI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	6.0	6.0	4.0
Minimum Green (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	7.0	10.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	1448	131	0	0	0	0	378	0	0	565	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	6785	1615	0	0	0	0	3521	0	0	3571	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			9.7			0.0			0.0			0.0
Adj Reference Time (s)			20.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	151		0	0		0	1761		0	119	
Reference Time A (s)	0.0	386.8		0.0	0.0		0.0	12.9		0.0	146.2	
Adj Saturation B (vph	0	3450		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	24.2	29.5		NA	NA		NA	NA		NA	NA	
Reference Time (s)		29.5			0.0			12.9			146.2	
Adj Reference Time (s)		39.5			8.0			22.9			152.2	
Split Option												
Ref Time Combined (s)	0.0	25.6		0.0	0.0		0.0	12.9		0.0	19.0	
Ref Time Seperate (s)	16.2	22.3		0.0	0.0		0.0	10.6		9.6	13.9	
Reference Time (s)	25.6	25.6		0.0	0.0		12.9	12.9		19.0	19.0	
Adj Reference Time (s)	35.6	35.6		0.0	0.0		22.9	22.9		25.0	25.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	39.5	152.2	
Split Option (s)	35.6	47.9	
Minimum (s)	35.6	47.9	83.5

Right Turns	EBR
Adj Reference Time (s)	20.0
Cross Thru Ref Time (s)	25.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	45.0

Intersection Summary			
Intersection Capacity Utilization	69.6%	ICU Level of Service	C

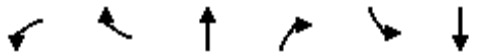
Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	0	921	1	0	1108
Future Volume (vph)	11	0	921	1	0	1108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%		3%			-2%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1437	0	3486	1560	0	3575
Flt Permitted	0.950					
Satd. Flow (perm)	1437	0	3486	1560	0	3575
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				1		
Link Speed (mph)	30		30			30
Link Distance (ft)	306		297			672
Travel Time (s)	7.0		6.8			15.3
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	46	0	0	0	0	0
Adj. Flow (vph)	12	0	1001	1	0	1204
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	1001	1	0	1204
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot		NA	Perm		NA
Protected Phases	4		2			2
Permitted Phases				2	2	
Detector Phase	4		2	2	2	2
Switch Phase						
Minimum Initial (s)	15.0		15.0	15.0	15.0	15.0
Minimum Split (s)	32.0		22.0	22.0	22.0	22.0
Total Split (s)	32.0		78.0	78.0	78.0	78.0
Total Split (%)	29.1%		70.9%	70.9%	70.9%	70.9%
Maximum Green (s)	26.0		72.5	72.5	72.5	72.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		5.5	5.5		5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Recall Mode	Min		C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0		9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	15.0		83.5	83.5		83.5
Actuated g/C Ratio	0.14		0.76	0.76		0.76
v/c Ratio	0.06		0.38	0.00		0.44
Control Delay	42.5		1.6	1.0		0.7
Queue Delay	0.0		0.4	0.0		0.2
Total Delay	42.5		2.0	1.0		0.9
LOS	D		A	A		A
Approach Delay	42.5		2.0			0.9
Approach LOS	D		A			A

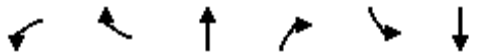
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 108 (98%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 1.6		Intersection LOS: A	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 292: Hennepin Av S & 29th St W



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Intersection Summary



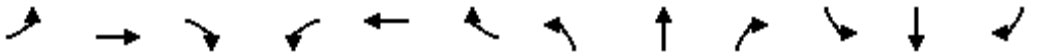
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	11	0	921	1	0	1108
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	4.0	5.5	5.5	5.5	5.5
Minimum Green (s)	15.0	4.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	11	0	921	1	0	1108
Lane Utilization Factor	1.00	1.00	0.95	1.00	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	3618	1615	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.1		
Adj Reference Time (s)		0.0		20.5		
Permitted Option						
Adj Saturation A (vph)	120		1809		0	1809
Reference Time A (s)	11.0		30.6		0.0	36.8
Adj Saturation B (vph	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			30.6			36.8
Adj Reference Time (s)			36.1			42.3
Split Option						
Ref Time Combined (s)	0.7		30.6		0.0	36.8
Ref Time Seperate (s)	0.7		30.6		0.0	36.8
Reference Time (s)	0.7		30.6		36.8	36.8
Adj Reference Time (s)	21.0		36.1		42.3	42.3

Summary	WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	42.3	
Split Option (s)	21.0	78.3	
Minimum (s)	21.0	42.3	63.3

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	42.3
Combined (s)	62.8

Intersection Summary			
Intersection Capacity Utilization	52.7%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

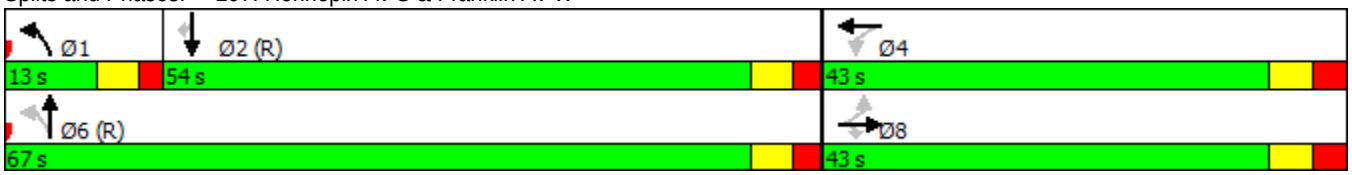


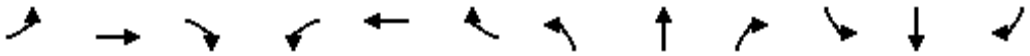
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Future Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			-1%	
Storage Length (ft)	114		55	50		25	0		250	0		25
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.952			0.988				0.850
Flt Protected	0.950			0.950				0.998				
Satd. Flow (prot)	1752	1844	1567	1761	1764	0	0	4964	0	0	3557	1591
Flt Permitted	0.557			0.657				0.751				
Satd. Flow (perm)	1027	1844	1567	1218	1764	0	0	3735	0	0	3557	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			84		23			21				89
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		434			240			751			618	
Travel Time (s)		9.9			5.5			17.1			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	151	38	129	149	71	45	1001	93	0	1272	224
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	151	38	129	220	0	0	1139	0	0	1272	224
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA			NA	Perm
Protected Phases		8			4		1	6			2	
Permitted Phases	8		8	4			6					2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		1	6			2	2
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		7.0	15.0			15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	41.0	41.0		13.0	33.0			33.0	33.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0		13.0	67.0			54.0	54.0
Total Split (%)	39.1%	39.1%	39.1%	39.1%	39.1%		11.8%	60.9%			49.1%	49.1%
Maximum Green (s)	36.5	36.5	36.5	36.5	36.5		7.5	61.0			48.0	48.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.5			2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5			6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	Max	Max	Max	Max	Max		Min	C-Max			C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0	27.0	27.0			20.0			20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	0
Act Effct Green (s)	36.5	36.5	36.5	36.5	36.5			61.0			48.5	48.5
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33			0.55			0.44	0.44
v/c Ratio	0.66	0.25	0.07	0.32	0.37			0.53			0.81	0.30
Control Delay	42.6	28.1	0.2	30.2	27.0			15.8			31.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Delay	42.6	28.1	0.2	30.2	27.0			15.8			31.9	12.8
LOS	D	C	A	C	C			B			C	B
Approach Delay		33.5			28.2			15.8			29.0	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 98 (89%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 25.0		Intersection LOS: C	
Intersection Capacity Utilization 91.3%		ICU Level of Service F	
Analysis Period (min) 15			

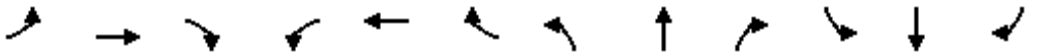
Splits and Phases: 297: Hennepin Av S & Franklin Av W





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



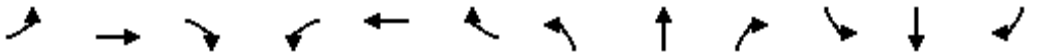
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.5	6.5	6.5	6.5	6.5	4.0	5.5	6.0	4.0	4.0	6.0	6.0
Minimum Green (s)	15.0	15.0	15.0	15.0	15.0	4.0	7.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	208	139	35	119	202	0	0	1048	0	0	1170	206
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.95	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1808	0	0	5102	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	13.8	8.8	2.6	7.9	13.4	0.0			0.0			15.3
Adj Reference Time (s)	21.5	21.5	21.5	21.5	21.5	0.0			0.0			21.3
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1808		0	475		0	1809	
Reference Time A (s)	207.4	8.8		118.7	13.4		0.0	60.6		0.0	38.8	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		207.4			118.7			60.6			38.8	
Adj Reference Time (s)		213.9			125.2			66.6			44.8	
Split Option												
Ref Time Combined (s)	13.8	8.8		7.9	13.4		0.0	24.6		0.0	38.8	
Ref Time Seperate (s)	13.8	8.8		7.9	9.1		2.7	21.6		0.0	38.8	
Reference Time (s)	13.8	13.8		13.4	13.4		24.6	24.6		38.8	38.8	
Adj Reference Time (s)	21.5	21.5		21.5	21.5		30.6	30.6		44.8	44.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	43.0	NA	
Permitted Option (s)	213.9	66.6	
Split Option (s)	43.0	75.5	
Minimum (s)	43.0	66.6	109.6

Right Turns	EBR	SBR
Adj Reference Time (s)	21.5	21.3
Cross Thru Ref Time (s)	44.8	21.5
Oncoming Left Ref Time (s)	21.5	30.6
Combined (s)	87.8	73.5

Intersection Summary			
Intersection Capacity Utilization	91.3%	ICU Level of Service	F

Reference Times and Phasing Options do not represent an optimized timing plan.

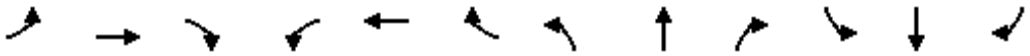


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Future Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		25	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00			1.00				0.98			0.98
Frt		0.961			0.984				0.850			0.850
Flt Protected		0.993			0.976						0.999	
Satd. Flow (prot)	0	1771	0	0	1768	0	0	3539	1583	0	3536	1583
Flt Permitted		0.937			0.670			0.936			0.926	
Satd. Flow (perm)	0	1671	0	0	1214	0	0	3313	1551	0	3277	1551
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			6				37			25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		532			267			737			748	
Travel Time (s)		12.1			6.1			16.8			17.0	
Confl. Bikes (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	143	73	61	48	15	9	937	107	22	1362	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	254	0	0	124	0	0	946	107	0	1384	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Minimum Split (s)	28.0	28.0		28.0	28.0		36.0	36.0	36.0	36.0	36.0	36.0
Total Split (s)	35.0	35.0		35.0	35.0		75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%		68.2%	68.2%	68.2%	68.2%	68.2%	68.2%
Maximum Green (s)	29.5	29.5		29.5	29.5		68.5	68.5	68.5	68.5	68.5	68.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5			5.5			6.5	6.5		6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		22.0	22.0	22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		29.5			29.5			68.5	68.5		68.5	68.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.27			0.27			0.62	0.62		0.62	0.62
v/c Ratio		0.55			0.38			0.46	0.11		0.68	0.03
Control Delay		37.3			35.2			10.3	3.4		3.4	0.7
Queue Delay		0.0			0.0			0.0	0.0		0.7	0.0
Total Delay		37.3			35.2			10.3	3.4		4.1	0.7
LOS		D			D			B	A		A	A
Approach Delay		37.3			35.2			9.6			4.1	
Approach LOS		D			D			A			A	

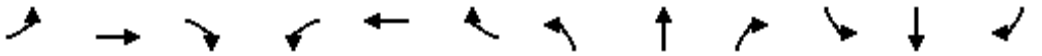
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 29 (26%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 462: Hennepin Av S & 24th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



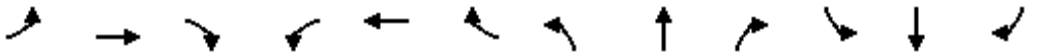
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	4.0	5.5	5.5	4.0	6.5	6.5	6.5	6.5	6.5	6.5
Minimum Green (s)	15.0	15.0	4.0	15.0	15.0	4.0	15.0	15.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	234	0	0	114	0	0	870	98	0	1273	30
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.96	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1805	0	0	1819	0	0	3616	1615	0	3615	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			7.3			2.2
Adj Reference Time (s)			0.0			0.0			21.5			21.5
Permitted Option												
Adj Saturation A (vph)	0	1763		0	719		0	1423		0	1222	
Reference Time A (s)	0.0	15.9		0.0	19.0		0.0	35.3		0.0	58.6	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	23.6		NA	NA		NA	NA		NA	NA	
Reference Time (s)		15.9			19.0			35.3			58.6	
Adj Reference Time (s)		21.4			24.5			41.8			65.1	
Split Option												
Ref Time Combined (s)	0.0	15.6		0.0	7.5		0.0	28.9		0.0	42.3	
Ref Time Seperate (s)	2.3	8.8		3.7	2.9		0.5	28.6		1.3	41.6	
Reference Time (s)	15.6	15.6		7.5	7.5		28.9	28.9		42.3	42.3	
Adj Reference Time (s)	21.1	21.1		20.5	20.5		35.4	35.4		48.8	48.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	24.5	65.1	
Split Option (s)	41.6	84.1	
Minimum (s)	24.5	65.1	89.6

Right Turns	NBR	SBR
Adj Reference Time (s)	21.5	21.5
Cross Thru Ref Time (s)	21.1	20.5
Oncoming Left Ref Time (s)	48.8	35.4
Combined (s)	91.3	77.4

Intersection Summary			
Intersection Capacity Utilization	76.1%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.

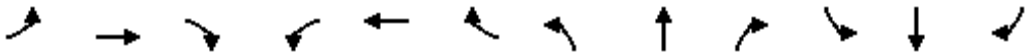


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Future Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.962			0.958				0.850			0.850
Flt Protected		0.978			0.977						0.999	
Satd. Flow (prot)	0	1753	0	0	1743	0	0	3539	1583	0	3536	1583
Flt Permitted		0.815			0.797			0.946			0.902	
Satd. Flow (perm)	0	1460	0	0	1422	0	0	3348	1549	0	3192	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			20				30			30
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		348			512			680			691	
Travel Time (s)		7.9			11.6			15.5			15.7	
Confl. Bikes (#/hr)									3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	42	45	49	22	32	5	848	22	39	1432	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	161	0	0	103	0	0	853	22	0	1471	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	32.0		32.0	32.0		26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	33.0	33.0		33.0	33.0		77.0	77.0	77.0	77.0	77.0	77.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	27.0	27.0		27.0	27.0		71.5	71.5	71.5	71.5	71.5	71.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		10.0	10.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		26.0			26.0			72.5	72.5		72.5	72.5
Actuated g/C Ratio		0.24			0.24			0.66	0.66		0.66	0.66
v/c Ratio		0.45			0.29			0.39	0.02		0.70	0.04
Control Delay		36.7			30.3			22.6	11.0		5.4	0.8
Queue Delay		0.0			0.0			0.0	0.0		0.6	0.0
Total Delay		36.7			30.3			22.6	11.0		6.0	0.8
LOS		D			C			C	B		A	A
Approach Delay		36.7			30.3			22.3			5.8	
Approach LOS		D			C			C			A	

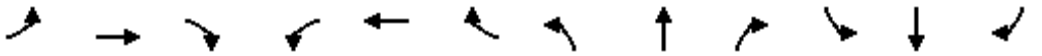
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 77 (70%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 467: Hennepin Av S & 27th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



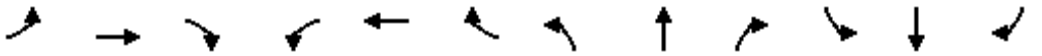
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	20.0	20.0	20.0	20.0	20.0	20.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	148	0	0	94	0	0	785	20	0	1353	39
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.94	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1779	0	0	1769	0	0	3616	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			1.5			2.9
Adj Reference Time (s)			0.0			0.0			25.5			25.5
Permitted Option												
Adj Saturation A (vph)	0	1433		0	1374		0	1527		0	970	
Reference Time A (s)	0.0	12.4		0.0	8.2		0.0	30.1		0.0	74.8	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	12.5	18.0		11.0	14.4		NA	NA		NA	NA	
Reference Time (s)		12.4			8.2			30.1			74.8	
Adj Reference Time (s)		18.4			16.0			35.6			80.3	
Split Option												
Ref Time Combined (s)	0.0	10.0		0.0	6.4		0.0	26.0		0.0	44.9	
Ref Time Seperate (s)	4.5	2.7		3.0	1.4		0.3	25.9		2.4	43.7	
Reference Time (s)	10.0	10.0		6.4	6.4		26.0	26.0		44.9	44.9	
Adj Reference Time (s)	16.0	16.0		16.0	16.0		31.5	31.5		50.4	50.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	18.4	80.3	
Split Option (s)	32.0	82.0	
Minimum (s)	18.4	80.3	98.7

Right Turns	NBR	SBR
Adj Reference Time (s)	25.5	25.5
Cross Thru Ref Time (s)	16.0	16.0
Oncoming Left Ref Time (s)	50.4	31.5
Combined (s)	91.9	73.0

Intersection Summary			
Intersection Capacity Utilization	82.2%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

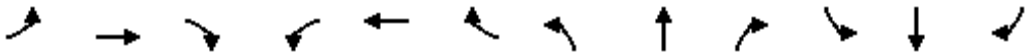


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Future Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			0%			0%			-1%	
Storage Length (ft)	0		10	25		0	0		100	0		100
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00			0.99							0.98
Frt		0.950			0.931							0.850
Flt Protected		0.969		0.950				0.999				
Satd. Flow (prot)	0	1673	0	1770	1724	0	0	3536	0	0	3557	1591
Flt Permitted		0.798		0.732				0.933				
Satd. Flow (perm)	0	1377	0	1364	1724	0	0	3302	0	0	3557	1558
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			23							35
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		432			448			748			751	
Travel Time (s)		9.8			10.2			17.0			17.1	
Confl. Bikes (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	0	32	16	27	23	11	1041	0	0	1386	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	16	50	0	0	1052	0	0	1386	55
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	36.0	36.0		36.0	36.0		26.0	26.0			26.0	26.0
Total Split (s)	37.0	37.0		37.0	37.0		73.0	73.0			73.0	73.0
Total Split (%)	33.6%	33.6%		33.6%	33.6%		66.4%	66.4%			66.4%	66.4%
Maximum Green (s)	30.5	30.5		30.5	30.5		67.5	67.5			67.5	67.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	3.0	3.0		3.0	3.0		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)		6.5		6.5	6.5			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0		13.0	13.0			13.0	13.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		30.5		30.5	30.5			67.5			67.5	67.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.28		0.28	0.28			0.61			0.61	0.61
v/c Ratio		0.22		0.04	0.10			0.52			0.64	0.06
Control Delay		23.4		29.7	19.3			8.7			3.9	0.4
Queue Delay		0.0		0.0	0.0			0.0			0.0	0.0
Total Delay		23.4		29.7	19.3			8.7			3.9	0.4
LOS		C		C	B			A			A	A
Approach Delay		23.4			21.8			8.7			3.7	
Approach LOS		C			C			A			A	

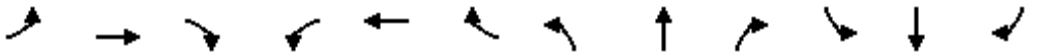
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 109 (99%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 483: Hennepin Av S & 22nd St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary



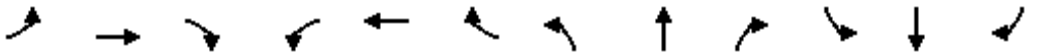
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.5	6.5	4.0	6.5	6.5	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	80	0	15	46	0	0	968	0	0	1275	51
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.92	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1739	0	1805	1770	0	0	3616	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.8
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	162		1271	1770		0	1385		0	1809	
Reference Time A (s)	0.0	59.2		1.4	3.1		0.0	40.2		0.0	42.3	
Adj Saturation B (vph	0	0		0	1770		NA	NA		NA	NA	
Reference Time B (s)	11.4	13.5		9.0	3.1		NA	NA		NA	NA	
Reference Time (s)		13.5			3.1			40.2			42.3	
Adj Reference Time (s)		20.0			16.5			45.7			47.8	
Split Option												
Ref Time Combined (s)	0.0	5.5		1.0	3.1		0.0	32.1		0.0	42.3	
Ref Time Seperate (s)	3.4	0.0		1.0	1.7		0.7	31.8		0.0	42.3	
Reference Time (s)	5.5	5.5		3.1	3.1		32.1	32.1		42.3	42.3	
Adj Reference Time (s)	16.5	16.5		16.5	16.5		37.6	37.6		47.8	47.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	20.0	47.8	
Split Option (s)	33.0	85.4	
Minimum (s)	20.0	47.8	67.8

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	37.6
Combined (s)	74.6

Intersection Summary			
Intersection Capacity Utilization	62.2%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

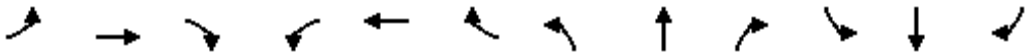


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Future Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			-2%	
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor						0.99					1.00	0.99
Frt						0.850					0.959	0.850
Flt Protected				0.950				0.996				
Satd. Flow (prot)	0	0	0	1761	3522	1575	0	3525	0	0	3270	1455
Flt Permitted				0.950				0.679				
Satd. Flow (perm)	0	0	0	1761	3522	1553	0	2403	0	0	3270	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						119					50	310
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		613			335			321			297	
Travel Time (s)		13.9			7.6			7.3			6.8	
Confl. Bikes (#/hr)	3					3	4		2	2		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	49	783	226	82	841	0	0	607	608
Shared Lane Traffic (%)												38%
Lane Group Flow (vph)	0	0	0	49	783	226	0	923	0	0	838	377
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					4		1	1 2			2	
Permitted Phases				4		4	1 2					2
Minimum Split (s)				30.0	30.0	30.0	13.0				27.0	27.0
Total Split (s)				41.0	41.0	41.0	22.0				47.0	47.0
Total Split (%)				37.3%	37.3%	37.3%	20.0%				42.7%	42.7%
Maximum Green (s)				31.0	31.0	31.0	16.5				37.5	37.5
Yellow Time (s)				3.5	3.5	3.5	3.5				3.5	3.5
All-Red Time (s)				6.5	6.5	6.5	2.0				6.0	6.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				10.0	10.0	10.0					9.5	9.5
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Walk Time (s)				3.0	3.0	3.0					3.0	3.0
Flash Dont Walk (s)				17.0	17.0	17.0					14.0	14.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				31.0	31.0	31.0		58.0			37.5	37.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio				0.28	0.28	0.28		0.53			0.34	0.34
v/c Ratio				0.10	0.79	0.43		0.64			0.73	0.54
Control Delay				30.0	43.3	17.8		15.1			25.3	6.0
Queue Delay				0.0	0.0	0.0		0.2			2.8	1.1
Total Delay				30.0	43.3	17.8		15.3			28.1	7.1
LOS				C	D	B		B			C	A
Approach Delay					37.2			15.3			21.6	
Approach LOS					D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 11 (10%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			
Description: lead/lag option			

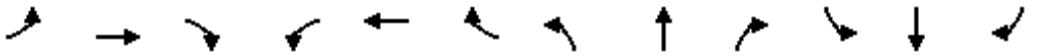
Splits and Phases: 495: Hennepin Av S & Lagoon Av S



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary

Description: lead/lag option



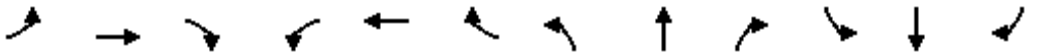
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	10.0	10.0	10.0	5.5	5.5	4.0	4.0	9.5	9.5
Minimum Green (s)	4.0	4.0	4.0	10.0	10.0	10.0	7.0	4.0	4.0	4.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	0	0	45	720	208	0	849	0	0	744	373
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.96	0.85
Saturated Flow (vph)	0	0	0	1805	3618	1615	0	3602	0	0	3482	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	0.0	0.0	0.0	3.0	23.9	15.5			0.0			27.7
Adj Reference Time (s)	0.0	0.0	0.0	20.0	33.9	25.5			0.0			37.2
Permitted Option												
Adj Saturation A (vph)	0	0		120	1809		0	346		0	1741	
Reference Time A (s)	0.0	0.0		44.9	23.9		0.0	95.3		0.0	25.7	
Adj Saturation B (vph	NA	NA		0	3618		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		11.0	23.9		NA	NA		NA	NA	
Reference Time (s)		0.0			23.9			95.3			25.7	
Adj Reference Time (s)		8.0			33.9			100.8			35.2	
Split Option												
Ref Time Combined (s)	0.0	0.0		3.0	23.9		0.0	28.3		0.0	25.7	
Ref Time Seperate (s)	0.0	0.0		3.0	23.9		5.0	25.7		0.0	19.2	
Reference Time (s)	0.0	0.0		23.9	23.9		28.3	28.3		25.7	25.7	
Adj Reference Time (s)	0.0	0.0		33.9	33.9		33.8	33.8		35.2	35.2	

Summary	EB WB	NB SB	Combined
Protected Option (s)	33.9	NA	
Permitted Option (s)	33.9	100.8	
Split Option (s)	33.9	68.9	
Minimum (s)	33.9	68.9	102.8

Right Turns	WBR	SBR
Adj Reference Time (s)	25.5	37.2
Cross Thru Ref Time (s)	33.8	33.9
Oncoming Left Ref Time (s)	0.0	33.8
Combined (s)	59.2	104.9

Intersection Summary			
Intersection Capacity Utilization	87.4%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

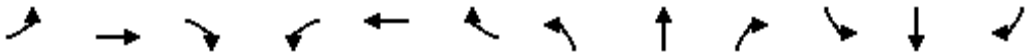


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Future Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		0	0		0	0		100	0		100
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.969			0.952				0.850			0.850
Flt Protected		0.988			0.985						0.999	
Satd. Flow (prot)	0	1778	0	0	1729	0	0	3539	1583	0	3536	1583
Flt Permitted		0.917			0.848			0.949			0.908	
Satd. Flow (perm)	0	1650	0	0	1489	0	0	3359	1583	0	3214	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			23				39			30
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		698			507			743			737	
Travel Time (s)		15.9			11.5			16.9			16.8	
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	58	25	20	22	23	5	982	45	29	1211	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	65	0	0	987	45	0	1240	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0		34.0	34.0		25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	35.0	35.0		35.0	35.0		75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%		68.2%	68.2%	68.2%	68.2%	68.2%	68.2%
Maximum Green (s)	29.0	29.0		29.0	29.0		69.5	69.5	69.5	69.5	69.5	69.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		12.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		12.7			12.7			85.8	85.8		85.8	85.8
Actuated g/C Ratio		0.12			0.12			0.78	0.78		0.78	0.78
v/c Ratio		0.54			0.34			0.38	0.04		0.49	0.03
Control Delay		49.6			34.7			1.6	0.3		2.0	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		49.6			34.7			1.6	0.3		2.0	0.2
LOS		D			C			A	A		A	A
Approach Delay		49.6			34.7			1.5			1.9	
Approach LOS		D			C			A			A	

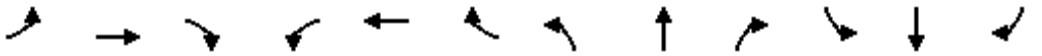
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 63 (57%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 496: Hennepin Av S & 25th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	7.0	7.0	4.0	7.0	7.0	4.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	100	0	0	59	0	0	908	41	0	1141	33
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1812	0	0	1771	0	0	3617	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			3.0			2.5
Adj Reference Time (s)			0.0			0.0			15.5			15.5
Permitted Option												
Adj Saturation A (vph)	0	1477		0	1208		0	1561		0	1030	
Reference Time A (s)	0.0	8.1		0.0	5.9		0.0	34.1		0.0	60.2	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	9.6	14.6		9.2	12.0		NA	NA		NA	NA	
Reference Time (s)		8.1			5.9			34.1			60.2	
Adj Reference Time (s)		14.1			13.0			39.6			65.7	
Split Option												
Ref Time Combined (s)	0.0	6.6		0.0	4.0		0.0	30.1		0.0	37.9	
Ref Time Seperate (s)	1.6	3.5		1.2	1.4		0.3	30.0		1.8	37.0	
Reference Time (s)	6.6	6.6		4.0	4.0		30.1	30.1		37.9	37.9	
Adj Reference Time (s)	13.0	13.0		13.0	13.0		35.6	35.6		43.4	43.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	14.1	65.7	
Split Option (s)	26.0	79.0	
Minimum (s)	14.1	65.7	79.8

Right Turns	NBR	SBR
Adj Reference Time (s)	15.5	15.5
Cross Thru Ref Time (s)	13.0	13.0
Oncoming Left Ref Time (s)	43.4	35.6
Combined (s)	71.9	64.1

Intersection Summary			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C

Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	625	0	0	1194	0	751
Future Volume (vph)	625	0	0	1194	0	751
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Lane Util. Factor	1.00	1.00	1.00	0.76	1.00	0.95
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3610	0	3557
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3610	0	3557
Link Speed (mph)	30		30			30
Link Distance (ft)	14057		618			928
Travel Time (s)	319.5		14.0			21.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	679	0	0	1298	0	816
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	0	0	1298	0	816
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	625	0	0	1194	0	751
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	625	0	0	1194	0	751
Lane Utilization Factor	1.00	1.00	1.00	0.89	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	0	4288	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		Yes			Yes
Reference Time (s)		0.0	0.0	33.4	0.0	24.9
Adj Reference Time (s)		0.0	0.0	37.4	0.0	28.9
Permitted Option						
Adj Saturation A (vph)	120		0		0	1809
Reference Time A (s)	623.3		0.0		0.0	24.9
Adj Saturation B (vph	NA		NA		0	3618
Reference Time B (s)	NA		NA		0.0	24.9
Reference Time (s)			0.0			24.9
Adj Reference Time (s)			8.0			28.9
Split Option						
Ref Time Combined (s)	41.6		0.0		0.0	24.9
Ref Time Seperate (s)	41.6		0.0		0.0	24.9
Reference Time (s)	41.6		0.0		24.9	24.9
Adj Reference Time (s)	45.6		0.0		28.9	28.9

Summary	WB	NB SB	Combined
Protected Option (s)	NA	28.9	
Permitted Option (s)	Err	28.9	
Split Option (s)	45.6	28.9	
Minimum (s)	45.6	28.9	74.5

Right Turns	NBR
Adj Reference Time (s)	37.4
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	37.4

Intersection Summary			
Intersection Capacity Utilization	62.1%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

1: Douglas Ave & Hennepin Av S

Direction	All
Future Volume (vph)	814
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	20
Fuel Consumed (gal)	6
Fuel Economy (mpg)	23.6
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

32: Hennepin Av S & 26th St W

Direction	All
Future Volume (vph)	2510
Total Delay / Veh (s/v)	8
Total Delay (hr)	6
Stops (#)	640
Fuel Consumed (gal)	21
Fuel Economy (mpg)	15.5
CO Emissions (kg)	1.49
NOx Emissions (kg)	0.29
VOC Emissions (kg)	0.35

33: Hennepin Av S & 28th St W

Direction	All
Future Volume (vph)	2490
Total Delay / Veh (s/v)	18
Total Delay (hr)	12
Stops (#)	1375
Fuel Consumed (gal)	29
Fuel Economy (mpg)	10.5
CO Emissions (kg)	2.05
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

178: Hennepin Av S & 31st St W

Direction	All
Future Volume (vph)	1419
Total Delay / Veh (s/v)	14
Total Delay (hr)	5
Stops (#)	498
Fuel Consumed (gal)	16
Fuel Economy (mpg)	14.4
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

191: Hennepin Av S & Lake St W

Direction	All
Future Volume (vph)	2523
Total Delay / Veh (s/v)	20
Total Delay (hr)	14
Stops (#)	1340
Fuel Consumed (gal)	29
Fuel Economy (mpg)	9.5
CO Emissions (kg)	2.05
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

292: Hennepin Av S & 29th St W

Direction	All
Future Volume (vph)	2041
Total Delay / Veh (s/v)	2
Total Delay (hr)	1
Stops (#)	113
Fuel Consumed (gal)	9
Fuel Economy (mpg)	20.9
CO Emissions (kg)	0.65
NOx Emissions (kg)	0.13
VOC Emissions (kg)	0.15

297: Hennepin Av S & Franklin Av W

Direction	All
Future Volume (vph)	3127
Total Delay / Veh (s/v)	25
Total Delay (hr)	22
Stops (#)	2060
Fuel Consumed (gal)	44
Fuel Economy (mpg)	9.1
CO Emissions (kg)	3.05
NOx Emissions (kg)	0.59
VOC Emissions (kg)	0.71

462: Hennepin Av S & 24th St W

Direction	All
Future Volume (vph)	2619
Total Delay / Veh (s/v)	10
Total Delay (hr)	8
Stops (#)	1019
Fuel Consumed (gal)	26
Fuel Economy (mpg)	13.7
CO Emissions (kg)	1.79
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.41

467: Hennepin Av S & 27th St W

Direction	All
Future Volume (vph)	2440
Total Delay / Veh (s/v)	14
Total Delay (hr)	10
Stops (#)	1113
Fuel Consumed (gal)	26
Fuel Economy (mpg)	11.9
CO Emissions (kg)	1.80
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

483: Hennepin Av S & 22nd St W

Direction	All
Future Volume (vph)	2435
Total Delay / Veh (s/v)	7
Total Delay (hr)	5
Stops (#)	662
Fuel Consumed (gal)	21
Fuel Economy (mpg)	16.1
CO Emissions (kg)	1.46
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.34

495: Hennepin Av S & Lagoon Av S

Direction	All
Future Volume (vph)	2940
Total Delay / Veh (s/v)	25
Total Delay (hr)	20
Stops (#)	2302
Fuel Consumed (gal)	35
Fuel Economy (mpg)	5.1
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.47
VOC Emissions (kg)	0.57

496: Hennepin Av S & 25th St W

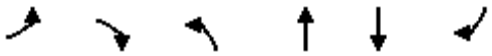
Direction	All
Future Volume (vph)	2283
Total Delay / Veh (s/v)	5
Total Delay (hr)	3
Stops (#)	406
Fuel Consumed (gal)	17
Fuel Economy (mpg)	18.1
CO Emissions (kg)	1.22
NOx Emissions (kg)	0.24
VOC Emissions (kg)	0.28

1297: Hennepin Av S & I-94 Ramps

Direction	All
Future Volume (vph)	2570
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	0
Fuel Consumed (gal)	80
Fuel Economy (mpg)	24.3
CO Emissions (kg)	5.57
NOx Emissions (kg)	1.08
VOC Emissions (kg)	1.29

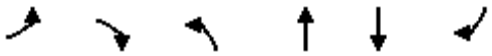
Network Totals

Number of Intersections	13
Total Delay / Veh (s/v)	13
Total Delay (hr)	106
Stops (#)	11548
Fuel Consumed (gal)	359
Fuel Economy (mpg)	14.7
CO Emissions (kg)	25.12
NOx Emissions (kg)	4.89
VOC Emissions (kg)	5.82
Performance Index	137.8



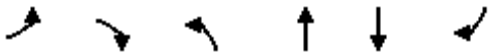
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	20	0	0	731	63
Future Volume (vph)	0	20	0	0	731	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			0%	-1%	
Storage Length (ft)	0	0	0			119
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	0	3557	1591
Flt Permitted						
Satd. Flow (perm)	0	1611	0	0	3557	1591
Link Speed (mph)	30			30	30	
Link Distance (ft)	863			928	903	
Travel Time (s)	19.6			21.1	20.5	
Confl. Bikes (#/hr)			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	22	0	0	795	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	22	0	0	795	68
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.2%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary



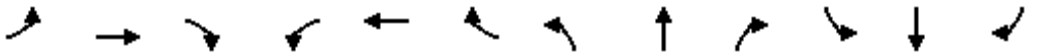
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	20	0	0	731	63
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	20	0	0	731	63
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	0	1615	0	0	3618	1615
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			Yes	Yes	
Reference Time (s)		1.5	0.0	0.0	24.2	4.7
Adj Reference Time (s)		8.0	0.0	0.0	28.2	8.7
Permitted Option						
Adj Saturation A (vph)	0		0	0	1809	
Reference Time A (s)	0.0		0.0	0.0	24.2	
Adj Saturation B (vph	NA		NA	NA	3618	
Reference Time B (s)	NA		NA	NA	24.2	
Reference Time (s)				0.0	24.2	
Adj Reference Time (s)				8.0	28.2	
Split Option						
Ref Time Combined (s)	0.0		0.0	0.0	24.2	
Ref Time Seperate (s)	0.0		0.0	0.0	24.2	
Reference Time (s)	0.0		0.0	0.0	24.2	
Adj Reference Time (s)	0.0		0.0	0.0	28.2	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	28.2	
Permitted Option (s)	Err	28.2	
Split Option (s)	0.0	28.2	
Minimum (s)	0.0	28.2	28.2

Right Turns	EBR	SBR
Adj Reference Time (s)	8.0	8.7
Cross Thru Ref Time (s)	28.2	0.0
Oncoming Left Ref Time (s)	0.0	0.0
Combined (s)	36.2	8.7

Intersection Summary			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

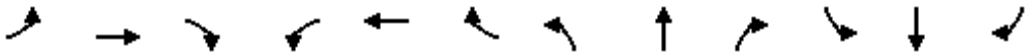


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Future Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			5%			1%			1%	
Storage Length (ft)	0		25	62		0	0		0	0		25
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Frt		0.924			0.928							0.850
Flt Protected		0.979		0.950				0.999				
Satd. Flow (prot)	0	1668	0	3347	1685	0	0	3518	0	0	3522	1575
Flt Permitted		0.828		0.729				0.920				
Satd. Flow (perm)	0	1411	0	2569	1685	0	0	3240	0	0	3522	1575
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			35							25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		347			628			691			743	
Travel Time (s)		7.9			14.3			15.7			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	43	301	87	80	15	898	0	0	1220	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	301	167	0	0	913	0	0	1220	51
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	31.0	31.0		31.0	31.0		25.0	25.0			25.0	25.0
Total Split (s)	41.0	41.0		41.0	41.0		89.0	89.0			89.0	89.0
Total Split (%)	31.5%	31.5%		31.5%	31.5%		68.5%	68.5%			68.5%	68.5%
Maximum Green (s)	35.0	35.0		35.0	35.0		83.5	83.5			83.5	83.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0		6.0	6.0			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		12.0	12.0			12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		35.0		35.0	35.0			83.5			83.5	83.5
Actuated g/C Ratio		0.27		0.27	0.27			0.64			0.64	0.64
v/c Ratio		0.18		0.44	0.35			0.44			0.54	0.05

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		19.3		41.7	32.4			6.4			4.5	0.9
Queue Delay		0.0		0.0	0.0			0.0			0.1	0.0
Total Delay		19.3		41.7	32.4			6.4			4.6	0.9
LOS		B		D	C			A			A	A
Approach Delay		19.3			38.4			6.4			4.5	
Approach LOS		B			D			A			A	

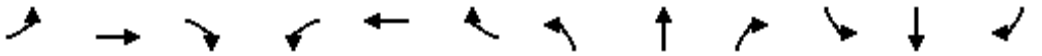
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 13 (10%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 32: Hennepin Av S & 26th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01

Intersection Summary



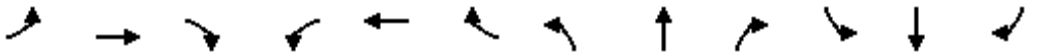
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	70	0	277	154	0	0	840	0	0	1122	47
Lane Utilization Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.89	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1700	0	3505	1763	0	0	3615	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.5
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	222		868	1763		0	1196		0	1809	
Reference Time A (s)	0.0	37.9		19.1	10.5		0.0	39.3		0.0	37.2	
Adj Saturation B (vph	NA	NA		0	1763		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		17.5	10.5		NA	NA		NA	NA	
Reference Time (s)		37.9			17.5			39.3			37.2	
Adj Reference Time (s)		43.9			23.5			44.8			42.7	
Split Option												
Ref Time Combined (s)	0.0	4.9		9.5	10.5		0.0	27.9		0.0	37.2	
Ref Time Seperate (s)	2.0	0.0		9.5	5.4		0.9	27.4		0.0	37.2	
Reference Time (s)	4.9	4.9		10.5	10.5		27.9	27.9		37.2	37.2	
Adj Reference Time (s)	16.0	16.0		16.5	16.5		33.4	33.4		42.7	42.7	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	43.9	44.8	
Split Option (s)	32.5	76.1	
Minimum (s)	32.5	44.8	77.3

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	33.4
Combined (s)	70.4

Intersection Summary			
Intersection Capacity Utilization	64.4%	ICU Level of Service	C

Reference Times and Phasing Options do not represent an optimized timing plan.

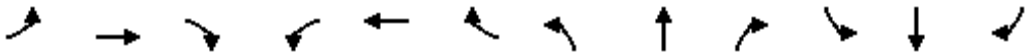


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Future Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Storage Length (ft)	0		0	0		0	0		50	0		25
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00							0.98		1.00	
Frt		0.979							0.850		0.993	
Flt Protected		0.993						0.999			0.994	
Satd. Flow (prot)	0	1798	0	0	0	0	0	3553	1591	0	3472	0
Flt Permitted		0.993						0.889			0.581	
Satd. Flow (perm)	0	1798	0	0	0	0	0	3162	1558	0	2030	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7							71		7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		414			942			672			680	
Travel Time (s)		9.4			21.4			15.3			15.5	
Confl. Bikes (#/hr)			1	1			4		1	1		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	193	42	0	0	0	18	818	162	186	1184	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	272	0	0	0	0	0	836	162	0	1437	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA					Perm	NA	Perm	D.P+P	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4						2		1	1 2	
Permitted Phases	4						2		2	2		
Detector Phase	4	4					2	2	2	1	1 2	
Switch Phase												
Minimum Initial (s)	15.0	15.0					15.0	15.0	15.0	7.0		
Minimum Split (s)	31.0	31.0					26.0	26.0	26.0	13.0		
Total Split (s)	37.0	37.0					57.0	57.0	57.0	36.0		
Total Split (%)	28.5%	28.5%					43.8%	43.8%	43.8%	27.7%		
Maximum Green (s)	31.0	31.0					51.5	51.5	51.5	30.5		
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5		
All-Red Time (s)	2.5	2.5					2.0	2.0	2.0	2.0		
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		6.0						5.5	5.5			
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2					0.2	0.2	0.2	3.0		
Recall Mode	Max	Max					C-Max	C-Max	C-Max	Min		
Walk Time (s)	7.0	7.0					7.0	7.0	7.0			
Flash Dont Walk (s)	18.0	18.0					13.0	13.0	13.0			
Pedestrian Calls (#/hr)	0	0					0	0	0			
Act Effct Green (s)		31.0						51.5	51.5		82.0	
Actuated g/C Ratio		0.24						0.40	0.40		0.63	
v/c Ratio		0.63						0.67	0.25		0.89	
Control Delay		50.5						18.8	4.1		11.9	
Queue Delay		0.0						0.0	0.0		0.0	
Total Delay		50.5						18.8	4.1		11.9	
LOS		D						B	A		B	
Approach Delay		50.5						16.4			11.9	
Approach LOS		D						B			B	

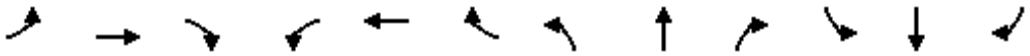
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 102 (78%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 86.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 33: Hennepin Av S & 28th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	

Intersection Summary



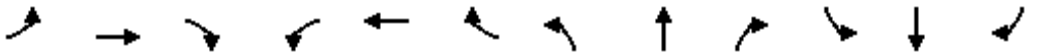
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	4.0	4.0	4.0	5.5	5.5	5.5	5.5	5.5	4.0
Minimum Green (s)	15.0	15.0	4.0	4.0	4.0	4.0	15.0	15.0	15.0	7.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	251	0	0	0	0	0	770	149	0	1322	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	1843	0	0	0	0	0	3614	1615	0	3569	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			11.1			0.0
Adj Reference Time (s)			0.0			0.0			20.5			0.0
Permitted Option												
Adj Saturation A (vph)	0	610		0	0		0	1065		0	192	
Reference Time A (s)	0.0	49.4		0.0	0.0		0.0	39.6		0.0	199.2	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	24.3		NA	NA		NA	NA		NA	NA	
Reference Time (s)		24.3			0.0			39.6			199.2	
Adj Reference Time (s)		30.3			8.0			45.1			204.7	
Split Option												
Ref Time Combined (s)	0.0	16.3		0.0	0.0		0.0	25.6		0.0	44.5	
Ref Time Seperate (s)	2.3	11.6		0.0	0.0		1.1	25.0		11.4	36.4	
Reference Time (s)	16.3	16.3		0.0	0.0		25.6	25.6		44.5	44.5	
Adj Reference Time (s)	22.3	22.3		0.0	0.0		31.1	31.1		50.0	50.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	30.3	204.7	
Split Option (s)	22.3	81.0	
Minimum (s)	22.3	81.0	103.4

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	22.3
Oncoming Left Ref Time (s)	50.0
Combined (s)	92.8

Intersection Summary			
Intersection Capacity Utilization	86.1%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

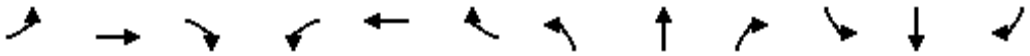


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Future Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			0%	
Storage Length (ft)	70		25	75		75	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.995			0.992	
Satd. Flow (prot)	1761	1853	1575	1761	1853	1575	0	1853	1583	0	1848	1583
Flt Permitted	0.512			0.641				0.926			0.883	
Satd. Flow (perm)	949	1853	1575	1188	1853	1575	0	1725	1583	0	1645	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			39			87			39			28
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		430			462			1923			648	
Travel Time (s)		9.8			10.5			43.7			14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	126	66	48	198	115	29	268	73	86	417	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	126	66	48	198	115	0	297	73	0	503	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4		4	2		2	2		2
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	91.0	91.0	91.0	91.0	91.0	91.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	33.5	33.5	33.5	33.5	33.5	33.5	85.0	85.0	85.0	85.0	85.0	85.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5		6.0	6.0		6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0	14.0	19.0	19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	33.5	33.5	33.5	33.5	33.5	33.5		85.0	85.0		85.0	85.0
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26		0.65	0.65		0.65	0.65
v/c Ratio	0.11	0.26	0.15	0.16	0.42	0.24		0.26	0.07		0.47	0.08

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	38.6	40.3	19.1	39.1	43.3	13.4		10.1	4.4		3.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.2	0.0
Total Delay	38.6	40.3	19.1	39.1	43.3	13.4		10.1	4.4		3.5	0.3
LOS	D	D	B	D	D	B		B	A		A	A
Approach Delay		33.7			33.2			9.0			3.1	
Approach LOS		C			C			A			A	

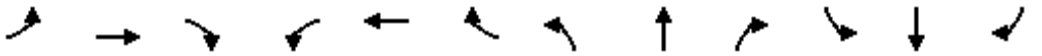
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 99 (76%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 178: Hennepin Av S & 31st St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



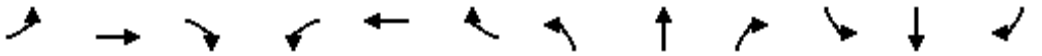
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	26	116	61	44	182	106	0	274	67	0	463	81
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1900	1615	0	1891	1615	0	1884	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	1.7	7.3	4.5	2.9	11.5	7.9			5.0			6.0
Adj Reference Time (s)	15.5	15.5	15.5	15.5	17.0	15.5			16.0			16.0
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1900		0	771		0	527	
Reference Time A (s)	25.9	7.3		43.9	11.5		0.0	42.6		0.0	105.4	
Adj Saturation B (vph	NA	NA		0	1900		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		10.9	11.5		NA	NA		NA	NA	
Reference Time (s)		25.9			11.5			42.6			105.4	
Adj Reference Time (s)		31.4			17.0			48.6			111.4	
Split Option												
Ref Time Combined (s)	1.7	7.3		2.9	11.5		0.0	17.4		0.0	29.5	
Ref Time Seperate (s)	1.7	7.3		2.9	11.5		1.8	15.6		5.3	24.3	
Reference Time (s)	7.3	7.3		11.5	11.5		17.4	17.4		29.5	29.5	
Adj Reference Time (s)	15.5	15.5		17.0	17.0		23.4	23.4		35.5	35.5	

Summary	EB WB	NB SB	Combined
Protected Option (s)	32.5	NA	
Permitted Option (s)	31.4	111.4	
Split Option (s)	32.5	58.9	
Minimum (s)	31.4	58.9	90.3

Right Turns	EBR	WBR	NBR	SBR
Adj Reference Time (s)	15.5	15.5	16.0	16.0
Cross Thru Ref Time (s)	35.5	23.4	15.5	17.0
Oncoming Left Ref Time (s)	15.5	15.5	35.5	23.4
Combined (s)	66.5	54.4	67.0	56.4

Intersection Summary			
Intersection Capacity Utilization	75.3%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.



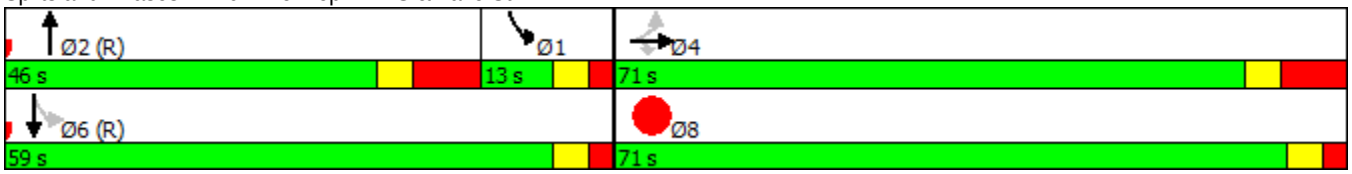
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Future Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			0%	
Storage Length (ft)	105		50	0		0	0		100	0		0
Storage Lanes	1		1	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.86	0.86	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor			0.98									
Frt			0.850					0.973				
Flt Protected	0.950	0.994									0.987	
Satd. Flow (prot)	1507	4729	1567	0	0	0	0	3239	0	0	3493	0
Flt Permitted	0.950	0.994									0.708	
Satd. Flow (perm)	1507	4729	1534	0	0	0	0	3239	0	0	2506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109					20				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			337			648			321	
Travel Time (s)		15.0			7.7			14.7			7.3	
Confl. Bikes (#/hr)	1		2	2		1	1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	0	25	0	0	0	0
Adj. Flow (vph)	528	1046	142	0	0	0	0	338	73	158	457	0
Shared Lane Traffic (%)	28%											
Lane Group Flow (vph)	380	1194	142	0	0	0	0	411	0	0	615	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Minimum Split (s)	32.0	32.0	32.0					29.0		13.0	29.0	
Total Split (s)	71.0	71.0	71.0					46.0		13.0	59.0	
Total Split (%)	54.6%	54.6%	54.6%					35.4%		10.0%	45.4%	
Maximum Green (s)	61.0	61.0	61.0					36.0		7.0	53.0	
Yellow Time (s)	3.5	3.5	3.5					3.5		3.5	3.5	
All-Red Time (s)	6.5	6.5	6.5					6.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0			0.0	
Total Lost Time (s)	10.0	10.0	10.0					10.0			6.0	
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?												
Walk Time (s)	3.0	3.0	3.0					3.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0					16.0			16.0	
Pedestrian Calls (#/hr)	0	0	0					0			0	

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Bus Blockages (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turn Type	
Protected Phases	8
Permitted Phases	
Minimum Split (s)	32.0
Total Split (s)	71.0
Total Split (%)	55%
Maximum Green (s)	65.0
Yellow Time (s)	3.5
All-Red Time (s)	2.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	61.0	61.0	61.0					36.0			53.0	
Actuated g/C Ratio	0.47	0.47	0.47					0.28			0.41	
v/c Ratio	0.54	0.54	0.18					0.45			0.57	
Control Delay	28.0	25.6	6.3					32.2			8.4	
Queue Delay	0.8	0.1	0.0					0.0			0.8	
Total Delay	28.8	25.7	6.3					32.2			9.2	
LOS	C	C	A					C			A	
Approach Delay		24.8						32.2			9.2	
Approach LOS		C						C			A	

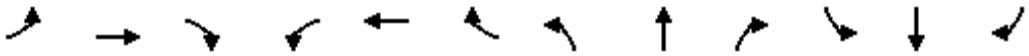
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of 1st Green			
Natural Cycle: 75			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 22.4		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			
Description: Phase 1 lags; 4 second LPI			

Splits and Phases: 191: Hennepin Av S & Lake St W



Lane Group	Ø8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

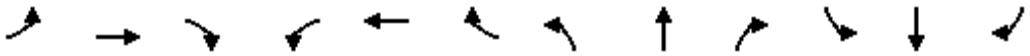
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00

Intersection Summary

Description: Phase 1 lags; 4 second LPI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	6.0	6.0	4.0
Minimum Green (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	7.0	10.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	1448	131	0	0	0	0	378	0	0	565	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	6785	1615	0	0	0	0	3521	0	0	3571	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			9.7			0.0			0.0			0.0
Adj Reference Time (s)			20.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	151		0	0		0	1761		0	119	
Reference Time A (s)	0.0	386.8		0.0	0.0		0.0	12.9		0.0	146.2	
Adj Saturation B (vph	0	3450		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	24.2	29.5		NA	NA		NA	NA		NA	NA	
Reference Time (s)		29.5			0.0			12.9			146.2	
Adj Reference Time (s)		39.5			8.0			22.9			152.2	
Split Option												
Ref Time Combined (s)	0.0	25.6		0.0	0.0		0.0	12.9		0.0	19.0	
Ref Time Seperate (s)	16.2	22.3		0.0	0.0		0.0	10.6		9.6	13.9	
Reference Time (s)	25.6	25.6		0.0	0.0		12.9	12.9		19.0	19.0	
Adj Reference Time (s)	35.6	35.6		0.0	0.0		22.9	22.9		25.0	25.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	39.5	152.2	
Split Option (s)	35.6	47.9	
Minimum (s)	35.6	47.9	83.5

Right Turns	EBR
Adj Reference Time (s)	20.0
Cross Thru Ref Time (s)	25.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	45.0

Intersection Summary			
Intersection Capacity Utilization	69.6%	ICU Level of Service	C

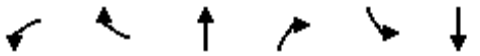
Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	0	921	1	0	1108
Future Volume (vph)	11	0	921	1	0	1108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%		3%			-2%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1437	0	3486	1560	0	3575
Flt Permitted	0.950					
Satd. Flow (perm)	1437	0	3486	1560	0	3575
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				1		
Link Speed (mph)	30		30			30
Link Distance (ft)	306		297			672
Travel Time (s)	7.0		6.8			15.3
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	46	0	0	0	0	0
Adj. Flow (vph)	12	0	1001	1	0	1204
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	1001	1	0	1204
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot		NA	Perm		NA
Protected Phases	4		2			2
Permitted Phases				2	2	
Detector Phase	4		2	2	2	2
Switch Phase						
Minimum Initial (s)	15.0		15.0	15.0	15.0	15.0
Minimum Split (s)	32.0		22.0	22.0	22.0	22.0
Total Split (s)	32.0		98.0	98.0	98.0	98.0
Total Split (%)	24.6%		75.4%	75.4%	75.4%	75.4%
Maximum Green (s)	26.0		92.5	92.5	92.5	92.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		5.5	5.5		5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Recall Mode	Min		C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0		9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	15.0		103.5	103.5		103.5
Actuated g/C Ratio	0.12		0.80	0.80		0.80
v/c Ratio	0.07		0.36	0.00		0.42
Control Delay	52.6		2.1	2.0		0.9
Queue Delay	0.0		0.3	0.0		0.3
Total Delay	52.6		2.4	2.0		1.2
LOS	D		A	A		A
Approach Delay	52.6		2.4			1.2
Approach LOS	D		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 72 (55%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 2.0		Intersection LOS: A	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 292: Hennepin Av S & 29th St W



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Intersection Summary

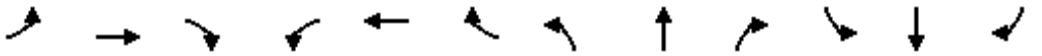
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	11	0	921	1	0	1108
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	4.0	5.5	5.5	5.5	5.5
Minimum Green (s)	15.0	4.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	11	0	921	1	0	1108
Lane Utilization Factor	1.00	1.00	0.95	1.00	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	3618	1615	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.1		
Adj Reference Time (s)		0.0		20.5		
Permitted Option						
Adj Saturation A (vph)	120		1809		0	1809
Reference Time A (s)	11.0		30.6		0.0	36.8
Adj Saturation B (vph	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			30.6			36.8
Adj Reference Time (s)			36.1			42.3
Split Option						
Ref Time Combined (s)	0.7		30.6		0.0	36.8
Ref Time Seperate (s)	0.7		30.6		0.0	36.8
Reference Time (s)	0.7		30.6		36.8	36.8
Adj Reference Time (s)	21.0		36.1		42.3	42.3

Summary	WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	42.3	
Split Option (s)	21.0	78.3	
Minimum (s)	21.0	42.3	63.3

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	42.3
Combined (s)	62.8

Intersection Summary			
Intersection Capacity Utilization	52.7%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

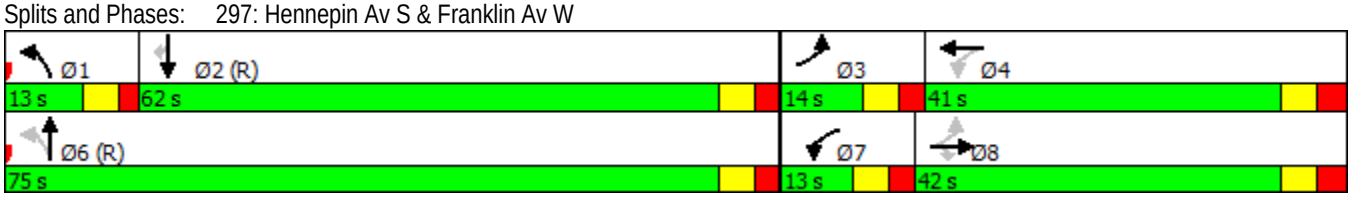


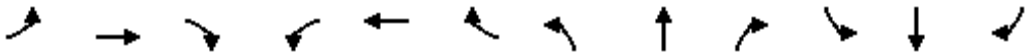
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Future Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			-1%	
Storage Length (ft)	114		55	50		25	0		250	0		25
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.952			0.988				0.850
Flt Protected	0.950			0.950				0.998				
Satd. Flow (prot)	1752	1844	1567	1761	1764	0	0	4964	0	0	3557	1591
Flt Permitted	0.484			0.639				0.729				
Satd. Flow (perm)	893	1844	1567	1184	1764	0	0	3626	0	0	3557	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			122		18			17				126
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		434			240			751			618	
Travel Time (s)		9.9			5.5			17.1			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	151	38	129	149	71	45	1001	93	0	1272	224
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	151	38	129	220	0	0	1139	0	0	1272	224
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA			NA	Perm
Protected Phases	3	8		7	4		1	6			2	
Permitted Phases	8		8	4			6					2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	3	8	8	7	4		1	6			2	2
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0		7.0	15.0			15.0	15.0
Minimum Split (s)	13.0	41.0	41.0	13.0	41.0		13.0	33.0			33.0	33.0
Total Split (s)	14.0	42.0	42.0	13.0	41.0		13.0	75.0			62.0	62.0
Total Split (%)	10.8%	32.3%	32.3%	10.0%	31.5%		10.0%	57.7%			47.7%	47.7%
Maximum Green (s)	8.0	35.5	35.5	7.0	34.5		7.5	69.0			56.0	56.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	2.5	3.0	3.0	2.5	3.0		2.0	2.5			2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	6.0	6.5	6.5	6.0	6.5			6.0			6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	Min	Max	Max	Min	Max		Min	C-Max			C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			20.0			20.0	20.0
Pedestrian Calls (#/hr)		0	0		0			0			0	0
Act Effct Green (s)	44.0	35.5	35.5	42.0	34.5			69.0			56.5	56.5
Actuated g/C Ratio	0.34	0.27	0.27	0.32	0.27			0.53			0.43	0.43
v/c Ratio	0.64	0.30	0.07	0.31	0.46			0.57			0.82	0.29
Control Delay	40.9	39.4	0.3	30.6	40.1			14.9			37.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Delay	40.9	39.4	0.3	30.6	40.1			14.9			37.9	11.1
LOS	D	D	A	C	D			B			D	B
Approach Delay		36.7			36.6			14.9			33.9	
Approach LOS		D			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 100 (77%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 89.9%		ICU Level of Service E	
Analysis Period (min) 15			

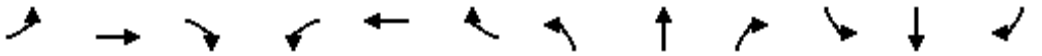
Splits and Phases: 297: Hennepin Av S & Franklin Av W





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



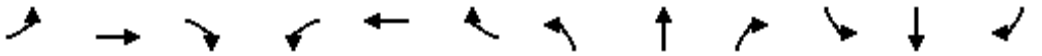
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.5	6.5	6.0	6.5	4.0	5.5	6.0	4.0	4.0	6.0	6.0
Minimum Green (s)	7.0	15.0	15.0	7.0	15.0	4.0	7.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	208	139	35	119	202	0	0	1048	0	0	1170	206
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.95	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1808	0	0	5102	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	13.8	8.8	2.6	7.9	13.4	0.0			0.0			15.3
Adj Reference Time (s)	19.8	21.5	21.5	13.9	21.5	0.0			0.0			21.3
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1808		0	475		0	1809	
Reference Time A (s)	207.4	8.8		118.7	13.4		0.0	60.6		0.0	38.8	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		207.4			118.7			60.6			38.8	
Adj Reference Time (s)		213.9			125.2			66.6			44.8	
Split Option												
Ref Time Combined (s)	13.8	8.8		7.9	13.4		0.0	24.6		0.0	38.8	
Ref Time Seperate (s)	13.8	8.8		7.9	9.1		2.7	21.6		0.0	38.8	
Reference Time (s)	13.8	13.8		13.4	13.4		24.6	24.6		38.8	38.8	
Adj Reference Time (s)	21.5	21.5		21.5	21.5		30.6	30.6		44.8	44.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	41.3	NA	
Permitted Option (s)	213.9	66.6	
Split Option (s)	43.0	75.5	
Minimum (s)	41.3	66.6	107.9

Right Turns	EBR	SBR
Adj Reference Time (s)	21.5	21.3
Cross Thru Ref Time (s)	44.8	21.5
Oncoming Left Ref Time (s)	13.9	30.6
Combined (s)	80.2	73.5

Intersection Summary			
Intersection Capacity Utilization	89.9%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

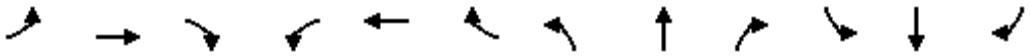


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Future Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		25	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00			1.00				0.98			0.98
Frt		0.961			0.984				0.850			0.850
Flt Protected		0.993			0.976						0.999	
Satd. Flow (prot)	0	1771	0	0	1768	0	0	3539	1583	0	3536	1583
Flt Permitted		0.937			0.656			0.935			0.924	
Satd. Flow (perm)	0	1671	0	0	1188	0	0	3309	1551	0	3270	1551
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			5				33			21
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		532			267			737			748	
Travel Time (s)		12.1			6.1			16.8			17.0	
Confl. Bikes (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	143	73	61	48	15	9	937	107	22	1362	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	254	0	0	124	0	0	946	107	0	1384	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Minimum Split (s)	28.0	28.0		28.0	28.0		36.0	36.0	36.0	36.0	36.0	36.0
Total Split (s)	41.0	41.0		41.0	41.0		89.0	89.0	89.0	89.0	89.0	89.0
Total Split (%)	31.5%	31.5%		31.5%	31.5%		68.5%	68.5%	68.5%	68.5%	68.5%	68.5%
Maximum Green (s)	35.5	35.5		35.5	35.5		82.5	82.5	82.5	82.5	82.5	82.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5			5.5			6.5	6.5		6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		22.0	22.0	22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		35.5			35.5			82.5	82.5		82.5	82.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.27			0.27			0.63	0.63		0.63	0.63
v/c Ratio		0.54			0.38			0.45	0.11		0.67	0.03
Control Delay		43.0			40.8			13.7	7.7		7.7	1.9
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		43.0			40.8			13.7	7.7		7.7	1.9
LOS		D			D			B	A		A	A
Approach Delay		43.0			40.8			13.1			7.6	
Approach LOS		D			D			B			A	

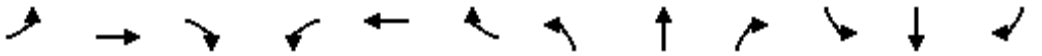
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 113 (87%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 462: Hennepin Av S & 24th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



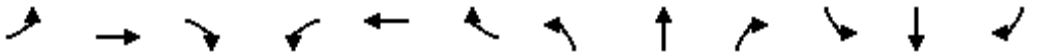
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	4.0	5.5	5.5	4.0	6.5	6.5	6.5	6.5	6.5	6.5
Minimum Green (s)	15.0	15.0	4.0	15.0	15.0	4.0	15.0	15.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	234	0	0	114	0	0	870	98	0	1273	30
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.96	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1805	0	0	1819	0	0	3616	1615	0	3615	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			7.3			2.2
Adj Reference Time (s)			0.0			0.0			21.5			21.5
Permitted Option												
Adj Saturation A (vph)	0	1763		0	719		0	1423		0	1222	
Reference Time A (s)	0.0	15.9		0.0	19.0		0.0	35.3		0.0	58.6	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	23.6		NA	NA		NA	NA		NA	NA	
Reference Time (s)		15.9			19.0			35.3			58.6	
Adj Reference Time (s)		21.4			24.5			41.8			65.1	
Split Option												
Ref Time Combined (s)	0.0	15.6		0.0	7.5		0.0	28.9		0.0	42.3	
Ref Time Seperate (s)	2.3	8.8		3.7	2.9		0.5	28.6		1.3	41.6	
Reference Time (s)	15.6	15.6		7.5	7.5		28.9	28.9		42.3	42.3	
Adj Reference Time (s)	21.1	21.1		20.5	20.5		35.4	35.4		48.8	48.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	24.5	65.1	
Split Option (s)	41.6	84.1	
Minimum (s)	24.5	65.1	89.6

Right Turns	NBR	SBR
Adj Reference Time (s)	21.5	21.5
Cross Thru Ref Time (s)	21.1	20.5
Oncoming Left Ref Time (s)	48.8	35.4
Combined (s)	91.3	77.4

Intersection Summary			
Intersection Capacity Utilization	76.1%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.

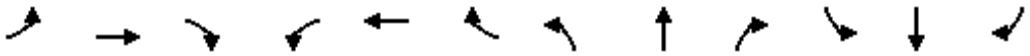


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Future Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.962			0.958				0.850			0.850
Flt Protected		0.978			0.977						0.999	
Satd. Flow (prot)	0	1753	0	0	1743	0	0	3539	1583	0	3536	1583
Flt Permitted		0.798			0.761			0.946			0.898	
Satd. Flow (perm)	0	1430	0	0	1358	0	0	3348	1549	0	3178	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			16				25			25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		348			512			680			691	
Travel Time (s)		7.9			11.6			15.5			15.7	
Confl. Bikes (#/hr)									3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	42	45	49	22	32	5	848	22	39	1432	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	161	0	0	103	0	0	853	22	0	1471	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	32.0		32.0	32.0		26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	35.0	35.0		35.0	35.0		95.0	95.0	95.0	95.0	95.0	95.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%		73.1%	73.1%	73.1%	73.1%	73.1%	73.1%
Maximum Green (s)	29.0	29.0		29.0	29.0		89.5	89.5	89.5	89.5	89.5	89.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		10.0	10.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		26.1			26.1			92.4	92.4		92.4	92.4
Actuated g/C Ratio		0.20			0.20			0.71	0.71		0.71	0.71
v/c Ratio		0.54			0.36			0.36	0.02		0.65	0.04
Control Delay		50.1			41.8			9.7	4.7		5.9	1.2
Queue Delay		0.0			0.0			0.0	0.0		0.4	0.0
Total Delay		50.1			41.8			9.7	4.7		6.3	1.2
LOS		D			D			A	A		A	A
Approach Delay		50.1			41.8			9.6			6.2	
Approach LOS		D			D			A			A	

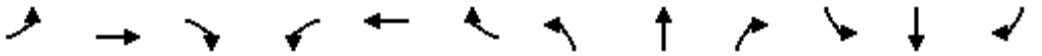
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 54 (42%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 467: Hennepin Av S & 27th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



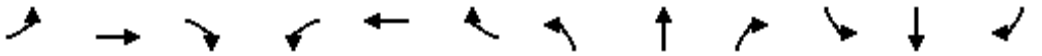
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	20.0	20.0	20.0	20.0	20.0	20.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	148	0	0	94	0	0	785	20	0	1353	39
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.94	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1779	0	0	1769	0	0	3616	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			1.5			2.9
Adj Reference Time (s)			0.0			0.0			25.5			25.5
Permitted Option												
Adj Saturation A (vph)	0	1433		0	1374		0	1527		0	970	
Reference Time A (s)	0.0	12.4		0.0	8.2		0.0	30.1		0.0	74.8	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	12.5	18.0		11.0	14.4		NA	NA		NA	NA	
Reference Time (s)		12.4			8.2			30.1			74.8	
Adj Reference Time (s)		18.4			16.0			35.6			80.3	
Split Option												
Ref Time Combined (s)	0.0	10.0		0.0	6.4		0.0	26.0		0.0	44.9	
Ref Time Seperate (s)	4.5	2.7		3.0	1.4		0.3	25.9		2.4	43.7	
Reference Time (s)	10.0	10.0		6.4	6.4		26.0	26.0		44.9	44.9	
Adj Reference Time (s)	16.0	16.0		16.0	16.0		31.5	31.5		50.4	50.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	18.4	80.3	
Split Option (s)	32.0	82.0	
Minimum (s)	18.4	80.3	98.7

Right Turns	NBR	SBR
Adj Reference Time (s)	25.5	25.5
Cross Thru Ref Time (s)	16.0	16.0
Oncoming Left Ref Time (s)	50.4	31.5
Combined (s)	91.9	73.0

Intersection Summary			
Intersection Capacity Utilization	82.2%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

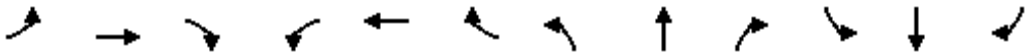


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Future Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			0%			0%			-1%	
Storage Length (ft)	0		10	25		0	0		100	0		100
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00			0.99							0.98
Frt		0.950			0.931							0.850
Flt Protected		0.969		0.950				0.999				
Satd. Flow (prot)	0	1672	0	1770	1724	0	0	3536	0	0	3557	1591
Flt Permitted		0.793		0.717				0.932				
Satd. Flow (perm)	0	1369	0	1336	1724	0	0	3299	0	0	3557	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			23							31
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		432			448			748			751	
Travel Time (s)		9.8			10.2			17.0			17.1	
Confl. Bikes (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	0	32	16	27	23	11	1041	0	0	1386	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	16	50	0	0	1052	0	0	1386	55
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	36.0	36.0		36.0	36.0		26.0	26.0			26.0	26.0
Total Split (s)	39.0	39.0		39.0	39.0		91.0	91.0			91.0	91.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		70.0%	70.0%			70.0%	70.0%
Maximum Green (s)	32.5	32.5		32.5	32.5		85.5	85.5			85.5	85.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	3.0	3.0		3.0	3.0		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)		6.5		6.5	6.5			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0		13.0	13.0			13.0	13.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		32.5		32.5	32.5			85.5			85.5	85.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.25		0.25	0.25			0.66			0.66	0.66
v/c Ratio		0.24		0.05	0.11			0.49			0.59	0.05
Control Delay		31.4		37.7	24.1			2.7			1.6	0.1
Queue Delay		0.0		0.0	0.0			0.0			1.0	0.0
Total Delay		31.4		37.7	24.1			2.7			2.6	0.1
LOS		C		D	C			A			A	A
Approach Delay		31.4			27.4			2.7			2.5	
Approach LOS		C			C			A			A	

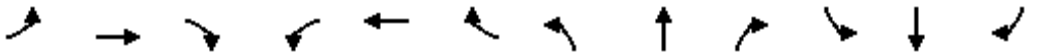
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 127 (98%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 4.2		Intersection LOS: A	
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 483: Hennepin Av S & 22nd St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary



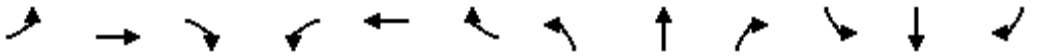
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.5	6.5	4.0	6.5	6.5	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	80	0	15	46	0	0	968	0	0	1275	51
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.92	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1739	0	1805	1770	0	0	3616	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.8
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	162		1271	1770		0	1385		0	1809	
Reference Time A (s)	0.0	59.2		1.4	3.1		0.0	40.2		0.0	42.3	
Adj Saturation B (vph	0	0		0	1770		NA	NA		NA	NA	
Reference Time B (s)	11.4	13.5		9.0	3.1		NA	NA		NA	NA	
Reference Time (s)		13.5			3.1			40.2			42.3	
Adj Reference Time (s)		20.0			16.5			45.7			47.8	
Split Option												
Ref Time Combined (s)	0.0	5.5		1.0	3.1		0.0	32.1		0.0	42.3	
Ref Time Seperate (s)	3.4	0.0		1.0	1.7		0.7	31.8		0.0	42.3	
Reference Time (s)	5.5	5.5		3.1	3.1		32.1	32.1		42.3	42.3	
Adj Reference Time (s)	16.5	16.5		16.5	16.5		37.6	37.6		47.8	47.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	20.0	47.8	
Split Option (s)	33.0	85.4	
Minimum (s)	20.0	47.8	67.8

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	37.6
Combined (s)	74.6

Intersection Summary			
Intersection Capacity Utilization	62.2%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

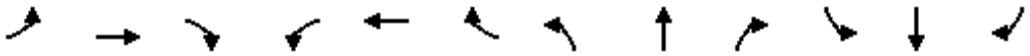


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Future Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			-2%	
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor						0.99					1.00	0.99
Frt						0.850					0.959	0.850
Flt Protected				0.950				0.996				
Satd. Flow (prot)	0	0	0	1761	3522	1575	0	3525	0	0	3270	1455
Flt Permitted				0.950				0.650				
Satd. Flow (perm)	0	0	0	1761	3522	1553	0	2300	0	0	3270	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						101					42	343
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		613			335			321			297	
Travel Time (s)		13.9			7.6			7.3			6.8	
Confl. Bikes (#/hr)	3					3	4		2	2		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	49	783	226	82	841	0	0	607	608
Shared Lane Traffic (%)												38%
Lane Group Flow (vph)	0	0	0	49	783	226	0	923	0	0	838	377
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					4		1	1 2			2	
Permitted Phases				4		4	1 2					2
Minimum Split (s)				30.0	30.0	30.0	13.0				27.0	27.0
Total Split (s)				48.0	48.0	48.0	29.0				53.0	53.0
Total Split (%)				36.9%	36.9%	36.9%	22.3%				40.8%	40.8%
Maximum Green (s)				38.0	38.0	38.0	23.5				43.5	43.5
Yellow Time (s)				3.5	3.5	3.5	3.5				3.5	3.5
All-Red Time (s)				6.5	6.5	6.5	2.0				6.0	6.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				10.0	10.0	10.0					9.5	9.5
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Walk Time (s)				3.0	3.0	3.0					3.0	3.0
Flash Dont Walk (s)				17.0	17.0	17.0					14.0	14.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				38.0	38.0	38.0		71.0			43.5	43.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio				0.29	0.29	0.29		0.55			0.33	0.33
v/c Ratio				0.10	0.76	0.43		0.62			0.75	0.53
Control Delay				34.3	47.6	22.9		15.9			30.3	6.1
Queue Delay				0.0	0.0	0.0		0.1			6.6	1.1
Total Delay				34.3	47.6	22.9		16.1			36.9	7.2
LOS				C	D	C		B			D	A
Approach Delay					41.7			16.1			27.7	
Approach LOS					D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 101 (78%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 29.0		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			
Description: lead/lag option			

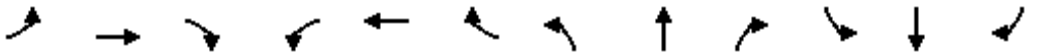
Splits and Phases: 495: Hennepin Av S & Lagoon Av S



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary

Description: lead/lag option



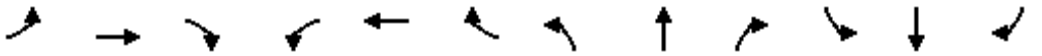
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	10.0	10.0	10.0	5.5	5.5	4.0	4.0	9.5	9.5
Minimum Green (s)	4.0	4.0	4.0	10.0	10.0	10.0	7.0	4.0	4.0	4.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	0	0	45	720	208	0	849	0	0	744	373
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.96	0.85
Saturated Flow (vph)	0	0	0	1805	3618	1615	0	3602	0	0	3482	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	0.0	0.0	0.0	3.0	23.9	15.5			0.0			27.7
Adj Reference Time (s)	0.0	0.0	0.0	20.0	33.9	25.5			0.0			37.2
Permitted Option												
Adj Saturation A (vph)	0	0		120	1809		0	346		0	1741	
Reference Time A (s)	0.0	0.0		44.9	23.9		0.0	95.3		0.0	25.7	
Adj Saturation B (vph	NA	NA		0	3618		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		11.0	23.9		NA	NA		NA	NA	
Reference Time (s)		0.0			23.9			95.3			25.7	
Adj Reference Time (s)		8.0			33.9			100.8			35.2	
Split Option												
Ref Time Combined (s)	0.0	0.0		3.0	23.9		0.0	28.3		0.0	25.7	
Ref Time Seperate (s)	0.0	0.0		3.0	23.9		5.0	25.7		0.0	19.2	
Reference Time (s)	0.0	0.0		23.9	23.9		28.3	28.3		25.7	25.7	
Adj Reference Time (s)	0.0	0.0		33.9	33.9		33.8	33.8		35.2	35.2	

Summary	EB WB	NB SB	Combined
Protected Option (s)	33.9	NA	
Permitted Option (s)	33.9	100.8	
Split Option (s)	33.9	68.9	
Minimum (s)	33.9	68.9	102.8

Right Turns	WBR	SBR
Adj Reference Time (s)	25.5	37.2
Cross Thru Ref Time (s)	33.8	33.9
Oncoming Left Ref Time (s)	0.0	33.8
Combined (s)	59.2	104.9

Intersection Summary			
Intersection Capacity Utilization	87.4%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

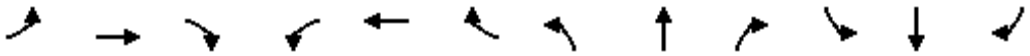


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Future Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		0	0		0	0		100	0		100
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.969			0.952				0.850			0.850
Flt Protected		0.988			0.985						0.999	
Satd. Flow (prot)	0	1778	0	0	1729	0	0	3539	1583	0	3536	1583
Flt Permitted		0.912			0.816			0.949			0.904	
Satd. Flow (perm)	0	1641	0	0	1433	0	0	3359	1583	0	3199	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			20				37			25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		698			507			743			737	
Travel Time (s)		15.9			11.5			16.9			16.8	
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	58	25	20	22	23	5	982	45	29	1211	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	65	0	0	987	45	0	1240	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0		34.0	34.0		25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		93.0	93.0	93.0	93.0	93.0	93.0
Total Split (%)	28.5%	28.5%		28.5%	28.5%		71.5%	71.5%	71.5%	71.5%	71.5%	71.5%
Maximum Green (s)	31.0	31.0		31.0	31.0		87.5	87.5	87.5	87.5	87.5	87.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		12.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		14.0			14.0			104.5	104.5		104.5	104.5
Actuated g/C Ratio		0.11			0.11			0.80	0.80		0.80	0.80
v/c Ratio		0.59			0.38			0.37	0.04		0.48	0.03
Control Delay		61.5			43.6			1.2	0.1		3.9	1.9
Queue Delay		0.0			0.0			0.0	0.0		0.6	0.0
Total Delay		61.5			43.6			1.2	0.1		4.5	1.9
LOS		E			D			A	A		A	A
Approach Delay		61.5			43.6			1.1			4.5	
Approach LOS		E			D			A			A	

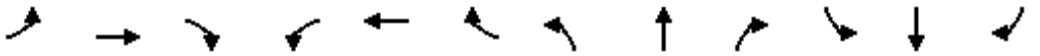
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 37 (28%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 6.6		Intersection LOS: A	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 496: Hennepin Av S & 25th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	7.0	7.0	4.0	7.0	7.0	4.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	100	0	0	59	0	0	908	41	0	1141	33
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1812	0	0	1771	0	0	3617	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			3.0			2.5
Adj Reference Time (s)			0.0			0.0			15.5			15.5
Permitted Option												
Adj Saturation A (vph)	0	1477		0	1208		0	1561		0	1030	
Reference Time A (s)	0.0	8.1		0.0	5.9		0.0	34.1		0.0	60.2	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	9.6	14.6		9.2	12.0		NA	NA		NA	NA	
Reference Time (s)		8.1			5.9			34.1			60.2	
Adj Reference Time (s)		14.1			13.0			39.6			65.7	
Split Option												
Ref Time Combined (s)	0.0	6.6		0.0	4.0		0.0	30.1		0.0	37.9	
Ref Time Seperate (s)	1.6	3.5		1.2	1.4		0.3	30.0		1.8	37.0	
Reference Time (s)	6.6	6.6		4.0	4.0		30.1	30.1		37.9	37.9	
Adj Reference Time (s)	13.0	13.0		13.0	13.0		35.6	35.6		43.4	43.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	14.1	65.7	
Split Option (s)	26.0	79.0	
Minimum (s)	14.1	65.7	79.8

Right Turns	NBR	SBR
Adj Reference Time (s)	15.5	15.5
Cross Thru Ref Time (s)	13.0	13.0
Oncoming Left Ref Time (s)	43.4	35.6
Combined (s)	71.9	64.1

Intersection Summary			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C

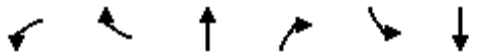
Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	625	0	0	1194	0	751
Future Volume (vph)	625	0	0	1194	0	751
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Lane Util. Factor	1.00	1.00	1.00	0.76	1.00	0.95
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3610	0	3557
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3610	0	3557
Link Speed (mph)	30		30			30
Link Distance (ft)	14057		618			928
Travel Time (s)	319.5		14.0			21.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	679	0	0	1298	0	816
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	0	0	1298	0	816
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	625	0	0	1194	0	751
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	625	0	0	1194	0	751
Lane Utilization Factor	1.00	1.00	1.00	0.89	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	0	4288	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		Yes			Yes
Reference Time (s)		0.0	0.0	33.4	0.0	24.9
Adj Reference Time (s)		0.0	0.0	37.4	0.0	28.9
Permitted Option						
Adj Saturation A (vph)	120		0		0	1809
Reference Time A (s)	623.3		0.0		0.0	24.9
Adj Saturation B (vph	NA		NA		0	3618
Reference Time B (s)	NA		NA		0.0	24.9
Reference Time (s)			0.0			24.9
Adj Reference Time (s)			8.0			28.9
Split Option						
Ref Time Combined (s)	41.6		0.0		0.0	24.9
Ref Time Seperate (s)	41.6		0.0		0.0	24.9
Reference Time (s)	41.6		0.0		24.9	24.9
Adj Reference Time (s)	45.6		0.0		28.9	28.9

Summary	WB	NB SB	Combined
Protected Option (s)	NA	28.9	
Permitted Option (s)	Err	28.9	
Split Option (s)	45.6	28.9	
Minimum (s)	45.6	28.9	74.5

Right Turns	NBR
Adj Reference Time (s)	37.4
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	37.4

Intersection Summary			
Intersection Capacity Utilization	62.1%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

1: Douglas Ave & Hennepin Av S

Direction	All
Future Volume (vph)	814
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	20
Fuel Consumed (gal)	6
Fuel Economy (mpg)	23.6
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

32: Hennepin Av S & 26th St W

Direction	All
Future Volume (vph)	2510
Total Delay / Veh (s/v)	11
Total Delay (hr)	8
Stops (#)	986
Fuel Consumed (gal)	25
Fuel Economy (mpg)	13.3
CO Emissions (kg)	1.74
NOx Emissions (kg)	0.34
VOC Emissions (kg)	0.40

33: Hennepin Av S & 28th St W

Direction	All
Future Volume (vph)	2490
Total Delay / Veh (s/v)	17
Total Delay (hr)	12
Stops (#)	1320
Fuel Consumed (gal)	29
Fuel Economy (mpg)	10.7
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

178: Hennepin Av S & 31st St W

Direction	All
Future Volume (vph)	1419
Total Delay / Veh (s/v)	16
Total Delay (hr)	6
Stops (#)	502
Fuel Consumed (gal)	17
Fuel Economy (mpg)	13.8
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

191: Hennepin Av S & Lake St W

Direction	All
Future Volume (vph)	2523
Total Delay / Veh (s/v)	22
Total Delay (hr)	16
Stops (#)	1299
Fuel Consumed (gal)	30
Fuel Economy (mpg)	9.2
CO Emissions (kg)	2.11
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

292: Hennepin Av S & 29th St W

Direction	All
Future Volume (vph)	2041
Total Delay / Veh (s/v)	2
Total Delay (hr)	1
Stops (#)	143
Fuel Consumed (gal)	10
Fuel Economy (mpg)	20.2
CO Emissions (kg)	0.67
NOx Emissions (kg)	0.13
VOC Emissions (kg)	0.16

297: Hennepin Av S & Franklin Av W

Direction	All
Future Volume (vph)	3127
Total Delay / Veh (s/v)	28
Total Delay (hr)	24
Stops (#)	2132
Fuel Consumed (gal)	46
Fuel Economy (mpg)	8.6
CO Emissions (kg)	3.21
NOx Emissions (kg)	0.63
VOC Emissions (kg)	0.74

462: Hennepin Av S & 24th St W

Direction	All
Future Volume (vph)	2619
Total Delay / Veh (s/v)	14
Total Delay (hr)	10
Stops (#)	929
Fuel Consumed (gal)	27
Fuel Economy (mpg)	12.9
CO Emissions (kg)	1.89
NOx Emissions (kg)	0.37
VOC Emissions (kg)	0.44

467: Hennepin Av S & 27th St W

Direction	All
Future Volume (vph)	2440
Total Delay / Veh (s/v)	11
Total Delay (hr)	8
Stops (#)	973
Fuel Consumed (gal)	24
Fuel Economy (mpg)	12.9
CO Emissions (kg)	1.65
NOx Emissions (kg)	0.32
VOC Emissions (kg)	0.38

483: Hennepin Av S & 22nd St W

Direction	All
Future Volume (vph)	2435
Total Delay / Veh (s/v)	4
Total Delay (hr)	3
Stops (#)	211
Fuel Consumed (gal)	17
Fuel Economy (mpg)	19.7
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

495: Hennepin Av S & Lagoon Av S

Direction	All
Future Volume (vph)	2940
Total Delay / Veh (s/v)	29
Total Delay (hr)	24
Stops (#)	2243
Fuel Consumed (gal)	37
Fuel Economy (mpg)	4.8
CO Emissions (kg)	2.59
NOx Emissions (kg)	0.50
VOC Emissions (kg)	0.60

496: Hennepin Av S & 25th St W

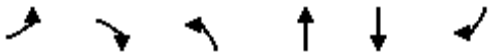
Direction	All
Future Volume (vph)	2283
Total Delay / Veh (s/v)	7
Total Delay (hr)	4
Stops (#)	415
Fuel Consumed (gal)	18
Fuel Economy (mpg)	17.2
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

1297: Hennepin Av S & I-94 Ramps

Direction	All
Future Volume (vph)	2570
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	0
Fuel Consumed (gal)	80
Fuel Economy (mpg)	24.3
CO Emissions (kg)	5.57
NOx Emissions (kg)	1.08
VOC Emissions (kg)	1.29

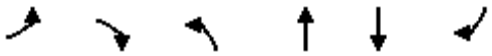
Network Totals

Number of Intersections	13
Total Delay / Veh (s/v)	14
Total Delay (hr)	116
Stops (#)	11173
Fuel Consumed (gal)	365
Fuel Economy (mpg)	14.5
CO Emissions (kg)	25.52
NOx Emissions (kg)	4.97
VOC Emissions (kg)	5.91
Performance Index	147.3



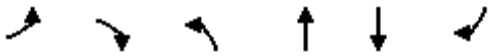
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	20	0	0	731	63
Future Volume (vph)	0	20	0	0	731	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			0%	-1%	
Storage Length (ft)	0	0	0			119
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	0	3557	1591
Flt Permitted						
Satd. Flow (perm)	0	1611	0	0	3557	1591
Link Speed (mph)	30			30	30	
Link Distance (ft)	863			928	903	
Travel Time (s)	19.6			21.1	20.5	
Confl. Bikes (#/hr)			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	22	0	0	795	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	22	0	0	795	68
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.2%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary



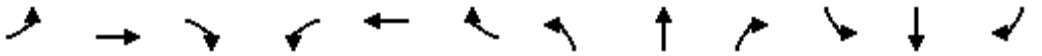
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	20	0	0	731	63
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	20	0	0	731	63
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	0	1615	0	0	3618	1615
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			Yes	Yes	
Reference Time (s)		1.5	0.0	0.0	24.2	4.7
Adj Reference Time (s)		8.0	0.0	0.0	28.2	8.7
Permitted Option						
Adj Saturation A (vph)	0		0	0	1809	
Reference Time A (s)	0.0		0.0	0.0	24.2	
Adj Saturation B (vph	NA		NA	NA	3618	
Reference Time B (s)	NA		NA	NA	24.2	
Reference Time (s)				0.0	24.2	
Adj Reference Time (s)				8.0	28.2	
Split Option						
Ref Time Combined (s)	0.0		0.0	0.0	24.2	
Ref Time Seperate (s)	0.0		0.0	0.0	24.2	
Reference Time (s)	0.0		0.0	0.0	24.2	
Adj Reference Time (s)	0.0		0.0	0.0	28.2	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	28.2	
Permitted Option (s)	Err	28.2	
Split Option (s)	0.0	28.2	
Minimum (s)	0.0	28.2	28.2

Right Turns	EBR	SBR
Adj Reference Time (s)	8.0	8.7
Cross Thru Ref Time (s)	28.2	0.0
Oncoming Left Ref Time (s)	0.0	0.0
Combined (s)	36.2	8.7

Intersection Summary			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

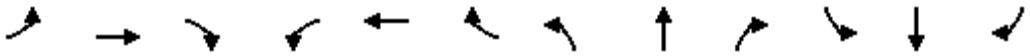


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Future Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			5%			1%			1%	
Storage Length (ft)	0		25	62		0	0		0	0		25
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Frt		0.924			0.928							0.850
Flt Protected		0.979		0.950				0.999				
Satd. Flow (prot)	0	1668	0	3347	1685	0	0	3518	0	0	3522	1575
Flt Permitted		0.832		0.747				0.923				
Satd. Flow (perm)	0	1418	0	2632	1685	0	0	3250	0	0	3522	1575
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			42							30
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		347			628			691			743	
Travel Time (s)		7.9			14.3			15.7			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	43	301	87	80	15	898	0	0	1220	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	301	167	0	0	913	0	0	1220	51
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	31.0	31.0		31.0	31.0		25.0	25.0			25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		73.0	73.0			73.0	73.0
Total Split (%)	33.6%	33.6%		33.6%	33.6%		66.4%	66.4%			66.4%	66.4%
Maximum Green (s)	31.0	31.0		31.0	31.0		67.5	67.5			67.5	67.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0		6.0	6.0			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		12.0	12.0			12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		31.0		31.0	31.0			67.5			67.5	67.5
Actuated g/C Ratio		0.28		0.28	0.28			0.61			0.61	0.61
v/c Ratio		0.18		0.41	0.33			0.46			0.56	0.05

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		16.3		34.1	25.3			2.7			3.5	0.3
Queue Delay		0.0		0.0	0.0			0.0			0.0	0.0
Total Delay		16.3		34.1	25.3			2.7			3.5	0.3
LOS		B		C	C			A			A	A
Approach Delay		16.3			30.9			2.7			3.4	
Approach LOS		B			C			A			A	

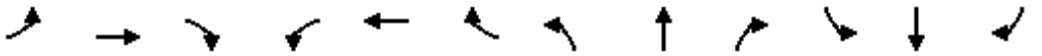
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 48 (44%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 32: Hennepin Av S & 26th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01

Intersection Summary



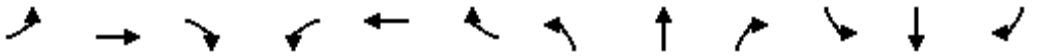
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	70	0	277	154	0	0	840	0	0	1122	47
Lane Utilization Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.89	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1700	0	3505	1763	0	0	3615	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.5
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	222		868	1763		0	1196		0	1809	
Reference Time A (s)	0.0	37.9		19.1	10.5		0.0	39.3		0.0	37.2	
Adj Saturation B (vph	NA	NA		0	1763		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		17.5	10.5		NA	NA		NA	NA	
Reference Time (s)		37.9			17.5			39.3			37.2	
Adj Reference Time (s)		43.9			23.5			44.8			42.7	
Split Option												
Ref Time Combined (s)	0.0	4.9		9.5	10.5		0.0	27.9		0.0	37.2	
Ref Time Seperate (s)	2.0	0.0		9.5	5.4		0.9	27.4		0.0	37.2	
Reference Time (s)	4.9	4.9		10.5	10.5		27.9	27.9		37.2	37.2	
Adj Reference Time (s)	16.0	16.0		16.5	16.5		33.4	33.4		42.7	42.7	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	43.9	44.8	
Split Option (s)	32.5	76.1	
Minimum (s)	32.5	44.8	77.3

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	33.4
Combined (s)	70.4

Intersection Summary			
Intersection Capacity Utilization	64.4%	ICU Level of Service	C

Reference Times and Phasing Options do not represent an optimized timing plan.

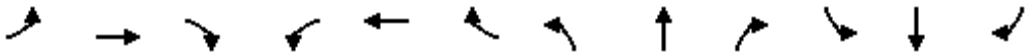


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Future Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Storage Length (ft)	0		0	0		0	0		50	0		25
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00							0.98		1.00	
Frt		0.979							0.850		0.993	
Flt Protected		0.993						0.999			0.994	
Satd. Flow (prot)	0	1798	0	0	0	0	0	3553	1591	0	3472	0
Flt Permitted		0.993						0.892			0.581	
Satd. Flow (perm)	0	1798	0	0	0	0	0	3173	1558	0	2030	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8							84		8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		414			942			672			680	
Travel Time (s)		9.4			21.4			15.3			15.5	
Confl. Bikes (#/hr)			1	1			4		1	1		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	193	42	0	0	0	18	818	162	186	1184	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	272	0	0	0	0	0	836	162	0	1437	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA					Perm	NA	Perm	D.P+P	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4						2		1	1 2	
Permitted Phases	4						2		2	2		
Detector Phase	4	4					2	2	2	1	1 2	
Switch Phase												
Minimum Initial (s)	15.0	15.0					15.0	15.0	15.0	7.0		
Minimum Split (s)	31.0	31.0					26.0	26.0	26.0	13.0		
Total Split (s)	32.0	32.0					47.0	47.0	47.0	31.0		
Total Split (%)	29.1%	29.1%					42.7%	42.7%	42.7%	28.2%		
Maximum Green (s)	26.0	26.0					41.5	41.5	41.5	25.5		
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5		
All-Red Time (s)	2.5	2.5					2.0	2.0	2.0	2.0		
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		6.0						5.5	5.5			
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2					0.2	0.2	0.2	3.0		
Recall Mode	Max	Max					C-Max	C-Max	C-Max	Min		
Walk Time (s)	7.0	7.0					7.0	7.0	7.0			
Flash Dont Walk (s)	18.0	18.0					13.0	13.0	13.0			
Pedestrian Calls (#/hr)	0	0					0	0	0			
Act Effct Green (s)		26.0						41.5	41.5		67.0	
Actuated g/C Ratio		0.24						0.38	0.38		0.61	
v/c Ratio		0.63						0.70	0.25		0.91	
Control Delay		44.1						20.1	3.6		13.4	
Queue Delay		0.0						0.0	0.0		0.0	
Total Delay		44.1						20.1	3.6		13.4	
LOS		D						C	A		B	
Approach Delay		44.1						17.4			13.4	
Approach LOS		D						B			B	

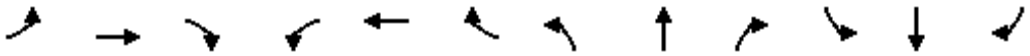
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 14 (13%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 86.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 33: Hennepin Av S & 28th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	

Intersection Summary



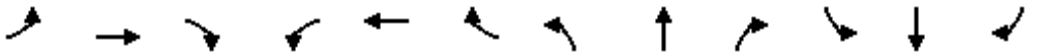
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	4.0	4.0	4.0	5.5	5.5	5.5	5.5	5.5	4.0
Minimum Green (s)	15.0	15.0	4.0	4.0	4.0	4.0	15.0	15.0	15.0	7.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	251	0	0	0	0	0	770	149	0	1322	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	1843	0	0	0	0	0	3614	1615	0	3569	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			11.1			0.0
Adj Reference Time (s)			0.0			0.0			20.5			0.0
Permitted Option												
Adj Saturation A (vph)	0	610		0	0		0	1065		0	192	
Reference Time A (s)	0.0	49.4		0.0	0.0		0.0	39.6		0.0	199.2	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	24.3		NA	NA		NA	NA		NA	NA	
Reference Time (s)		24.3			0.0			39.6			199.2	
Adj Reference Time (s)		30.3			8.0			45.1			204.7	
Split Option												
Ref Time Combined (s)	0.0	16.3		0.0	0.0		0.0	25.6		0.0	44.5	
Ref Time Seperate (s)	2.3	11.6		0.0	0.0		1.1	25.0		11.4	36.4	
Reference Time (s)	16.3	16.3		0.0	0.0		25.6	25.6		44.5	44.5	
Adj Reference Time (s)	22.3	22.3		0.0	0.0		31.1	31.1		50.0	50.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	30.3	204.7	
Split Option (s)	22.3	81.0	
Minimum (s)	22.3	81.0	103.4

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	22.3
Oncoming Left Ref Time (s)	50.0
Combined (s)	92.8

Intersection Summary			
Intersection Capacity Utilization	86.1%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

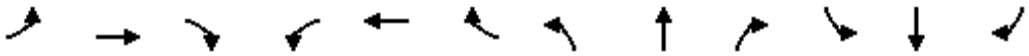


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Future Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			0%	
Storage Length (ft)	70		25	75		75	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.995			0.992	
Satd. Flow (prot)	1761	1853	1575	1761	1853	1575	0	1853	1583	0	1848	1583
Flt Permitted	0.532			0.661				0.928			0.885	
Satd. Flow (perm)	986	1853	1575	1225	1853	1575	0	1729	1583	0	1649	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			46			103			44			31
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		430			462			1923			648	
Travel Time (s)		9.8			10.5			43.7			14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	126	66	48	198	115	29	268	73	86	417	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	126	66	48	198	115	0	297	73	0	503	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4		4	2		2	2		2
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	76.0	76.0	76.0	76.0	76.0	76.0
Total Split (%)	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	69.1%	69.1%	69.1%	69.1%	69.1%	69.1%
Maximum Green (s)	28.5	28.5	28.5	28.5	28.5	28.5	70.0	70.0	70.0	70.0	70.0	70.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5		6.0	6.0		6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0	14.0	19.0	19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	28.5	28.5	28.5	28.5	28.5	28.5		70.0	70.0		70.0	70.0
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26		0.64	0.64		0.64	0.64
v/c Ratio	0.11	0.26	0.15	0.15	0.41	0.24		0.27	0.07		0.48	0.09

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	32.6	34.2	14.4	33.1	37.0	9.3		9.6	3.9		3.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	32.6	34.2	14.4	33.1	37.0	9.3		9.6	3.9		3.3	0.3
LOS	C	C	B	C	D	A		A	A		A	A
Approach Delay		28.1			27.6			8.4			2.9	
Approach LOS		C			C			A			A	

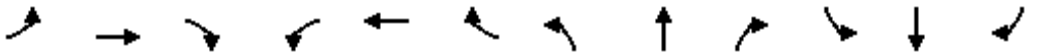
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 13 (12%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 178: Hennepin Av S & 31st St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



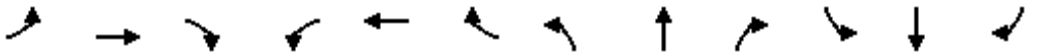
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	26	116	61	44	182	106	0	274	67	0	463	81
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1900	1615	0	1891	1615	0	1884	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	1.7	7.3	4.5	2.9	11.5	7.9			5.0			6.0
Adj Reference Time (s)	15.5	15.5	15.5	15.5	17.0	15.5			16.0			16.0
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1900		0	771		0	527	
Reference Time A (s)	25.9	7.3		43.9	11.5		0.0	42.6		0.0	105.4	
Adj Saturation B (vph	NA	NA		0	1900		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		10.9	11.5		NA	NA		NA	NA	
Reference Time (s)		25.9			11.5			42.6			105.4	
Adj Reference Time (s)		31.4			17.0			48.6			111.4	
Split Option												
Ref Time Combined (s)	1.7	7.3		2.9	11.5		0.0	17.4		0.0	29.5	
Ref Time Seperate (s)	1.7	7.3		2.9	11.5		1.8	15.6		5.3	24.3	
Reference Time (s)	7.3	7.3		11.5	11.5		17.4	17.4		29.5	29.5	
Adj Reference Time (s)	15.5	15.5		17.0	17.0		23.4	23.4		35.5	35.5	

Summary	EB WB	NB SB	Combined
Protected Option (s)	32.5	NA	
Permitted Option (s)	31.4	111.4	
Split Option (s)	32.5	58.9	
Minimum (s)	31.4	58.9	90.3

Right Turns	EBR	WBR	NBR	SBR
Adj Reference Time (s)	15.5	15.5	16.0	16.0
Cross Thru Ref Time (s)	35.5	23.4	15.5	17.0
Oncoming Left Ref Time (s)	15.5	15.5	35.5	23.4
Combined (s)	66.5	54.4	67.0	56.4

Intersection Summary			
Intersection Capacity Utilization	75.3%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.



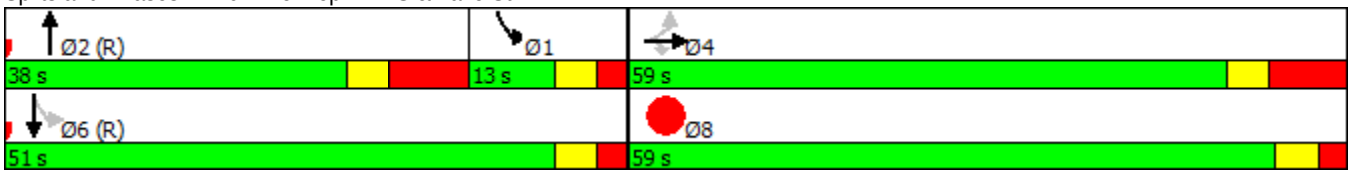
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Future Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			0%	
Storage Length (ft)	105		50	0		0	0		100	0		0
Storage Lanes	1		1	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.86	0.86	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor			0.98									
Frt			0.850					0.973				
Flt Protected	0.950	0.994									0.987	
Satd. Flow (prot)	1507	4729	1567	0	0	0	0	3239	0	0	3493	0
Flt Permitted	0.950	0.994									0.721	
Satd. Flow (perm)	1507	4729	1534	0	0	0	0	3239	0	0	2552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			129					22				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			337			648			321	
Travel Time (s)		15.0			7.7			14.7			7.3	
Confl. Bikes (#/hr)	1		2	2		1	1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	0	25	0	0	0	0
Adj. Flow (vph)	528	1046	142	0	0	0	0	338	73	158	457	0
Shared Lane Traffic (%)	28%											
Lane Group Flow (vph)	380	1194	142	0	0	0	0	411	0	0	615	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Minimum Split (s)	32.0	32.0	32.0					29.0		13.0	29.0	
Total Split (s)	59.0	59.0	59.0					38.0		13.0	51.0	
Total Split (%)	53.6%	53.6%	53.6%					34.5%		11.8%	46.4%	
Maximum Green (s)	49.0	49.0	49.0					28.0		7.0	45.0	
Yellow Time (s)	3.5	3.5	3.5					3.5		3.5	3.5	
All-Red Time (s)	6.5	6.5	6.5					6.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0			0.0	
Total Lost Time (s)	10.0	10.0	10.0					10.0			6.0	
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?												
Walk Time (s)	3.0	3.0	3.0					3.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0					16.0			16.0	
Pedestrian Calls (#/hr)	0	0	0					0			0	

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Bus Blockages (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turn Type	
Protected Phases	8
Permitted Phases	
Minimum Split (s)	32.0
Total Split (s)	59.0
Total Split (%)	54%
Maximum Green (s)	53.0
Yellow Time (s)	3.5
All-Red Time (s)	2.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	49.0	49.0	49.0					28.0			45.0	
Actuated g/C Ratio	0.45	0.45	0.45					0.25			0.41	
v/c Ratio	0.57	0.57	0.19					0.49			0.56	
Control Delay	26.7	23.9	4.6					29.8			6.3	
Queue Delay	0.4	0.0	0.0					0.0			0.4	
Total Delay	27.2	24.0	4.6					29.8			6.7	
LOS	C	C	A					C			A	
Approach Delay		23.1						29.8			6.7	
Approach LOS		C						C			A	

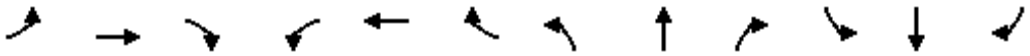
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 13 (12%), Referenced to phase 2:NBT and 6:SBTL, Start of 1st Green			
Natural Cycle: 75			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			
Description: Phase 1 lags; 4 second LPI			

Splits and Phases: 191: Hennepin Av S & Lake St W



Lane Group	Ø8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

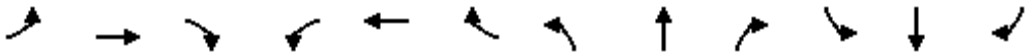
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00

Intersection Summary

Description: Phase 1 lags; 4 second LPI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	6.0	6.0	4.0
Minimum Green (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	7.0	10.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	1448	131	0	0	0	0	378	0	0	565	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	6785	1615	0	0	0	0	3521	0	0	3571	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			9.7			0.0			0.0			0.0
Adj Reference Time (s)			20.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	151		0	0		0	1761		0	119	
Reference Time A (s)	0.0	386.8		0.0	0.0		0.0	12.9		0.0	146.2	
Adj Saturation B (vph	0	3450		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	24.2	29.5		NA	NA		NA	NA		NA	NA	
Reference Time (s)		29.5			0.0			12.9			146.2	
Adj Reference Time (s)		39.5			8.0			22.9			152.2	
Split Option												
Ref Time Combined (s)	0.0	25.6		0.0	0.0		0.0	12.9		0.0	19.0	
Ref Time Seperate (s)	16.2	22.3		0.0	0.0		0.0	10.6		9.6	13.9	
Reference Time (s)	25.6	25.6		0.0	0.0		12.9	12.9		19.0	19.0	
Adj Reference Time (s)	35.6	35.6		0.0	0.0		22.9	22.9		25.0	25.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	39.5	152.2	
Split Option (s)	35.6	47.9	
Minimum (s)	35.6	47.9	83.5

Right Turns	EBR
Adj Reference Time (s)	20.0
Cross Thru Ref Time (s)	25.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	45.0

Intersection Summary			
Intersection Capacity Utilization	69.6%	ICU Level of Service	C

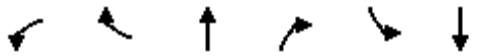
Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	0	921	1	0	1108
Future Volume (vph)	11	0	921	1	0	1108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%		3%			-2%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1437	0	3486	1560	0	3575
Flt Permitted	0.950					
Satd. Flow (perm)	1437	0	3486	1560	0	3575
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				1		
Link Speed (mph)	30		30			30
Link Distance (ft)	306		297			672
Travel Time (s)	7.0		6.8			15.3
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	46	0	0	0	0	0
Adj. Flow (vph)	12	0	1001	1	0	1204
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	1001	1	0	1204
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot		NA	Perm		NA
Protected Phases	4		2			2
Permitted Phases				2	2	
Detector Phase	4		2	2	2	2
Switch Phase						
Minimum Initial (s)	15.0		15.0	15.0	15.0	15.0
Minimum Split (s)	32.0		22.0	22.0	22.0	22.0
Total Split (s)	32.0		78.0	78.0	78.0	78.0
Total Split (%)	29.1%		70.9%	70.9%	70.9%	70.9%
Maximum Green (s)	26.0		72.5	72.5	72.5	72.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		5.5	5.5		5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Recall Mode	Min		C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0		9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	15.0		83.5	83.5		83.5
Actuated g/C Ratio	0.14		0.76	0.76		0.76
v/c Ratio	0.06		0.38	0.00		0.44
Control Delay	42.5		1.6	1.0		0.7
Queue Delay	0.0		0.4	0.0		0.2
Total Delay	42.5		2.0	1.0		0.9
LOS	D		A	A		A
Approach Delay	42.5		2.0			0.9
Approach LOS	D		A			A

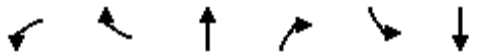
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 108 (98%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 1.6		Intersection LOS: A	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 292: Hennepin Av S & 29th St W



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Intersection Summary



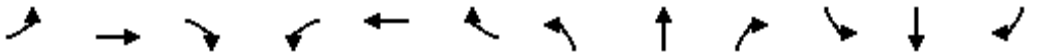
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	11	0	921	1	0	1108
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	4.0	5.5	5.5	5.5	5.5
Minimum Green (s)	15.0	4.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	11	0	921	1	0	1108
Lane Utilization Factor	1.00	1.00	0.95	1.00	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	3618	1615	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.1		
Adj Reference Time (s)		0.0		20.5		
Permitted Option						
Adj Saturation A (vph)	120		1809		0	1809
Reference Time A (s)	11.0		30.6		0.0	36.8
Adj Saturation B (vph	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			30.6			36.8
Adj Reference Time (s)			36.1			42.3
Split Option						
Ref Time Combined (s)	0.7		30.6		0.0	36.8
Ref Time Seperate (s)	0.7		30.6		0.0	36.8
Reference Time (s)	0.7		30.6		36.8	36.8
Adj Reference Time (s)	21.0		36.1		42.3	42.3

Summary	WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	42.3	
Split Option (s)	21.0	78.3	
Minimum (s)	21.0	42.3	63.3

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	42.3
Combined (s)	62.8

Intersection Summary			
Intersection Capacity Utilization	52.7%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

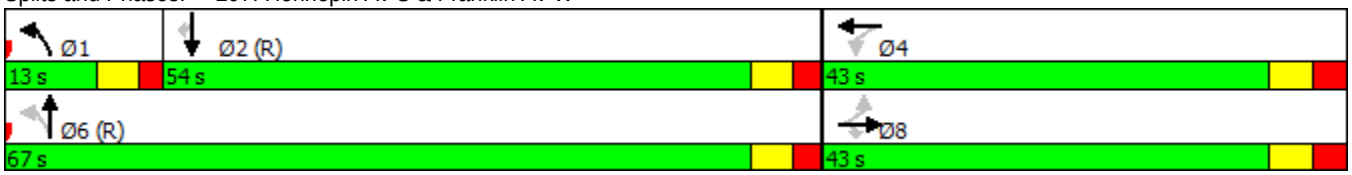


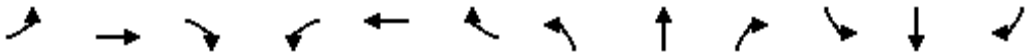
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Future Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			-1%	
Storage Length (ft)	114		55	50		25	0		250	0		25
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.952			0.988				0.850
Flt Protected	0.950			0.950				0.998				
Satd. Flow (prot)	1752	1844	1567	1761	1764	0	0	4964	0	0	3557	1591
Flt Permitted	0.557			0.657				0.751				
Satd. Flow (perm)	1027	1844	1567	1218	1764	0	0	3735	0	0	3557	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			84		23			21				89
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		434			240			751			618	
Travel Time (s)		9.9			5.5			17.1			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	151	38	129	149	71	45	1001	93	0	1272	224
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	151	38	129	220	0	0	1139	0	0	1272	224
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA			NA	Perm
Protected Phases		8			4		1	6			2	
Permitted Phases	8		8	4			6					2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	8	8	8	4	4		1	6			2	2
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0		7.0	15.0			15.0	15.0
Minimum Split (s)	41.0	41.0	41.0	41.0	41.0		13.0	33.0			33.0	33.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0		13.0	67.0			54.0	54.0
Total Split (%)	39.1%	39.1%	39.1%	39.1%	39.1%		11.8%	60.9%			49.1%	49.1%
Maximum Green (s)	36.5	36.5	36.5	36.5	36.5		7.5	61.0			48.0	48.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		2.0	2.5			2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5			6.0			6.0	6.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	Max	Max	Max	Max	Max		Min	C-Max			C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	27.0	27.0	27.0	27.0	27.0			20.0			20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	0
Act Effct Green (s)	36.5	36.5	36.5	36.5	36.5			61.0			48.5	48.5
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33			0.55			0.44	0.44
v/c Ratio	0.66	0.25	0.07	0.32	0.37			0.53			0.81	0.30
Control Delay	42.6	28.1	0.2	30.2	27.0			15.8			31.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Delay	42.6	28.1	0.2	30.2	27.0			15.8			31.9	12.8
LOS	D	C	A	C	C			B			C	B
Approach Delay		33.5			28.2			15.8			29.0	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 98 (89%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 25.0		Intersection LOS: C	
Intersection Capacity Utilization 91.3%		ICU Level of Service F	
Analysis Period (min) 15			

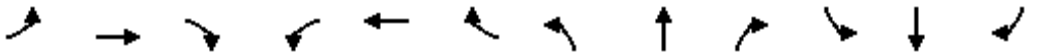
Splits and Phases: 297: Hennepin Av S & Franklin Av W





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



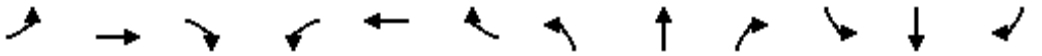
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.5	6.5	6.5	6.5	6.5	4.0	5.5	6.0	4.0	4.0	6.0	6.0
Minimum Green (s)	15.0	15.0	15.0	15.0	15.0	4.0	7.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	208	139	35	119	202	0	0	1048	0	0	1170	206
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.95	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1808	0	0	5102	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	13.8	8.8	2.6	7.9	13.4	0.0			0.0			15.3
Adj Reference Time (s)	21.5	21.5	21.5	21.5	21.5	0.0			0.0			21.3
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1808		0	475		0	1809	
Reference Time A (s)	207.4	8.8		118.7	13.4		0.0	60.6		0.0	38.8	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		207.4			118.7			60.6			38.8	
Adj Reference Time (s)		213.9			125.2			66.6			44.8	
Split Option												
Ref Time Combined (s)	13.8	8.8		7.9	13.4		0.0	24.6		0.0	38.8	
Ref Time Seperate (s)	13.8	8.8		7.9	9.1		2.7	21.6		0.0	38.8	
Reference Time (s)	13.8	13.8		13.4	13.4		24.6	24.6		38.8	38.8	
Adj Reference Time (s)	21.5	21.5		21.5	21.5		30.6	30.6		44.8	44.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	43.0	NA	
Permitted Option (s)	213.9	66.6	
Split Option (s)	43.0	75.5	
Minimum (s)	43.0	66.6	109.6

Right Turns	EBR	SBR
Adj Reference Time (s)	21.5	21.3
Cross Thru Ref Time (s)	44.8	21.5
Oncoming Left Ref Time (s)	21.5	30.6
Combined (s)	87.8	73.5

Intersection Summary			
Intersection Capacity Utilization	91.3%	ICU Level of Service	F

Reference Times and Phasing Options do not represent an optimized timing plan.

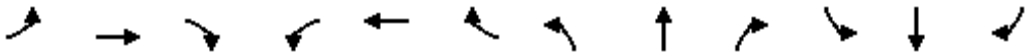


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Future Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		25	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00			1.00				0.98			0.98
Frt		0.961			0.984				0.850			0.850
Flt Protected		0.993			0.976						0.999	
Satd. Flow (prot)	0	1771	0	0	1768	0	0	3539	1583	0	3536	1583
Flt Permitted		0.937			0.670			0.936			0.926	
Satd. Flow (perm)	0	1671	0	0	1214	0	0	3313	1551	0	3277	1551
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			6				37			25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		532			267			737			748	
Travel Time (s)		12.1			6.1			16.8			17.0	
Confl. Bikes (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	143	73	61	48	15	9	937	107	22	1362	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	254	0	0	124	0	0	946	107	0	1384	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Minimum Split (s)	28.0	28.0		28.0	28.0		36.0	36.0	36.0	36.0	36.0	36.0
Total Split (s)	35.0	35.0		35.0	35.0		75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%		68.2%	68.2%	68.2%	68.2%	68.2%	68.2%
Maximum Green (s)	29.5	29.5		29.5	29.5		68.5	68.5	68.5	68.5	68.5	68.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5			5.5			6.5	6.5		6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		22.0	22.0	22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		29.5			29.5			68.5	68.5		68.5	68.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.27			0.27			0.62	0.62		0.62	0.62
v/c Ratio		0.55			0.38			0.46	0.11		0.68	0.03
Control Delay		37.3			35.2			10.3	3.4		3.4	0.7
Queue Delay		0.0			0.0			0.0	0.0		0.7	0.0
Total Delay		37.3			35.2			10.3	3.4		4.1	0.7
LOS		D			D			B	A		A	A
Approach Delay		37.3			35.2			9.6			4.1	
Approach LOS		D			D			A			A	

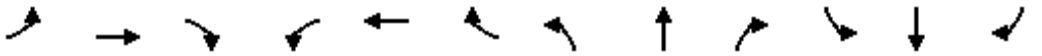
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 29 (26%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 462: Hennepin Av S & 24th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



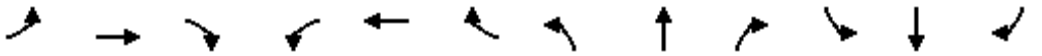
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	4.0	5.5	5.5	4.0	6.5	6.5	6.5	6.5	6.5	6.5
Minimum Green (s)	15.0	15.0	4.0	15.0	15.0	4.0	15.0	15.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	234	0	0	114	0	0	870	98	0	1273	30
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.96	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1805	0	0	1819	0	0	3616	1615	0	3615	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			7.3			2.2
Adj Reference Time (s)			0.0			0.0			21.5			21.5
Permitted Option												
Adj Saturation A (vph)	0	1763		0	719		0	1423		0	1222	
Reference Time A (s)	0.0	15.9		0.0	19.0		0.0	35.3		0.0	58.6	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	23.6		NA	NA		NA	NA		NA	NA	
Reference Time (s)		15.9			19.0			35.3			58.6	
Adj Reference Time (s)		21.4			24.5			41.8			65.1	
Split Option												
Ref Time Combined (s)	0.0	15.6		0.0	7.5		0.0	28.9		0.0	42.3	
Ref Time Seperate (s)	2.3	8.8		3.7	2.9		0.5	28.6		1.3	41.6	
Reference Time (s)	15.6	15.6		7.5	7.5		28.9	28.9		42.3	42.3	
Adj Reference Time (s)	21.1	21.1		20.5	20.5		35.4	35.4		48.8	48.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	24.5	65.1	
Split Option (s)	41.6	84.1	
Minimum (s)	24.5	65.1	89.6

Right Turns	NBR	SBR
Adj Reference Time (s)	21.5	21.5
Cross Thru Ref Time (s)	21.1	20.5
Oncoming Left Ref Time (s)	48.8	35.4
Combined (s)	91.3	77.4

Intersection Summary			
Intersection Capacity Utilization	76.1%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.

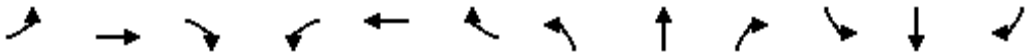


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Future Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.962			0.958				0.850			0.850
Flt Protected		0.978			0.977						0.999	
Satd. Flow (prot)	0	1753	0	0	1743	0	0	3539	1583	0	3536	1583
Flt Permitted		0.815			0.797			0.946			0.902	
Satd. Flow (perm)	0	1460	0	0	1422	0	0	3348	1549	0	3192	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			20				30			30
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		348			512			680			691	
Travel Time (s)		7.9			11.6			15.5			15.7	
Confl. Bikes (#/hr)									3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	42	45	49	22	32	5	848	22	39	1432	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	161	0	0	103	0	0	853	22	0	1471	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	32.0		32.0	32.0		26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	33.0	33.0		33.0	33.0		77.0	77.0	77.0	77.0	77.0	77.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	27.0	27.0		27.0	27.0		71.5	71.5	71.5	71.5	71.5	71.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		10.0	10.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		26.0			26.0			72.5	72.5		72.5	72.5
Actuated g/C Ratio		0.24			0.24			0.66	0.66		0.66	0.66
v/c Ratio		0.45			0.29			0.39	0.02		0.70	0.04
Control Delay		36.7			30.3			22.6	11.0		5.4	0.8
Queue Delay		0.0			0.0			0.0	0.0		0.6	0.0
Total Delay		36.7			30.3			22.6	11.0		6.0	0.8
LOS		D			C			C	B		A	A
Approach Delay		36.7			30.3			22.3			5.8	
Approach LOS		D			C			C			A	

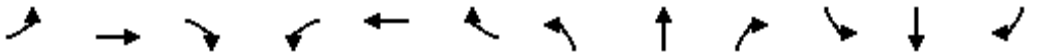
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 77 (70%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 467: Hennepin Av S & 27th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



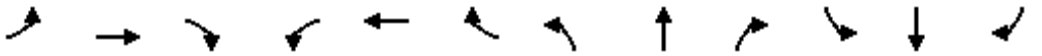
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	20.0	20.0	20.0	20.0	20.0	20.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	148	0	0	94	0	0	785	20	0	1353	39
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.94	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1779	0	0	1769	0	0	3616	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			1.5			2.9
Adj Reference Time (s)			0.0			0.0			25.5			25.5
Permitted Option												
Adj Saturation A (vph)	0	1433		0	1374		0	1527		0	970	
Reference Time A (s)	0.0	12.4		0.0	8.2		0.0	30.1		0.0	74.8	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	12.5	18.0		11.0	14.4		NA	NA		NA	NA	
Reference Time (s)		12.4			8.2			30.1			74.8	
Adj Reference Time (s)		18.4			16.0			35.6			80.3	
Split Option												
Ref Time Combined (s)	0.0	10.0		0.0	6.4		0.0	26.0		0.0	44.9	
Ref Time Seperate (s)	4.5	2.7		3.0	1.4		0.3	25.9		2.4	43.7	
Reference Time (s)	10.0	10.0		6.4	6.4		26.0	26.0		44.9	44.9	
Adj Reference Time (s)	16.0	16.0		16.0	16.0		31.5	31.5		50.4	50.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	18.4	80.3	
Split Option (s)	32.0	82.0	
Minimum (s)	18.4	80.3	98.7

Right Turns	NBR	SBR
Adj Reference Time (s)	25.5	25.5
Cross Thru Ref Time (s)	16.0	16.0
Oncoming Left Ref Time (s)	50.4	31.5
Combined (s)	91.9	73.0

Intersection Summary			
Intersection Capacity Utilization	82.2%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

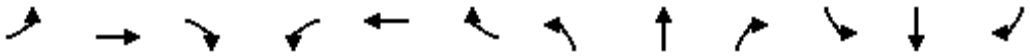


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Future Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			0%			0%			-1%	
Storage Length (ft)	0		10	25		0	0		100	0		100
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00			0.99							0.98
Frt		0.950			0.931							0.850
Flt Protected		0.969		0.950				0.999				
Satd. Flow (prot)	0	1673	0	1770	1724	0	0	3536	0	0	3557	1591
Flt Permitted		0.798		0.732				0.933				
Satd. Flow (perm)	0	1377	0	1364	1724	0	0	3302	0	0	3557	1558
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			23							35
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		432			448			748			751	
Travel Time (s)		9.8			10.2			17.0			17.1	
Confl. Bikes (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	0	32	16	27	23	11	1041	0	0	1386	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	16	50	0	0	1052	0	0	1386	55
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	36.0	36.0		36.0	36.0		26.0	26.0			26.0	26.0
Total Split (s)	37.0	37.0		37.0	37.0		73.0	73.0			73.0	73.0
Total Split (%)	33.6%	33.6%		33.6%	33.6%		66.4%	66.4%			66.4%	66.4%
Maximum Green (s)	30.5	30.5		30.5	30.5		67.5	67.5			67.5	67.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	3.0	3.0		3.0	3.0		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)		6.5		6.5	6.5			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0		13.0	13.0			13.0	13.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		30.5		30.5	30.5			67.5			67.5	67.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.28		0.28	0.28			0.61			0.61	0.61
v/c Ratio		0.22		0.04	0.10			0.52			0.64	0.06
Control Delay		23.4		29.7	19.3			8.7			3.9	0.4
Queue Delay		0.0		0.0	0.0			0.0			0.0	0.0
Total Delay		23.4		29.7	19.3			8.7			3.9	0.4
LOS		C		C	B			A			A	A
Approach Delay		23.4			21.8			8.7			3.7	
Approach LOS		C			C			A			A	

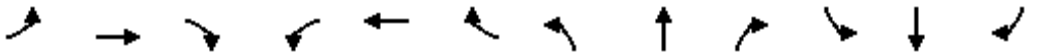
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 109 (99%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 6.8		Intersection LOS: A	
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 483: Hennepin Av S & 22nd St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary



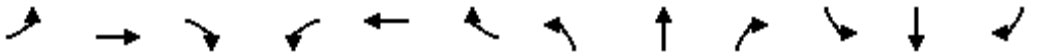
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.5	6.5	4.0	6.5	6.5	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	80	0	15	46	0	0	968	0	0	1275	51
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.92	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1739	0	1805	1770	0	0	3616	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.8
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	162		1271	1770		0	1385		0	1809	
Reference Time A (s)	0.0	59.2		1.4	3.1		0.0	40.2		0.0	42.3	
Adj Saturation B (vph	0	0		0	1770		NA	NA		NA	NA	
Reference Time B (s)	11.4	13.5		9.0	3.1		NA	NA		NA	NA	
Reference Time (s)		13.5			3.1			40.2			42.3	
Adj Reference Time (s)		20.0			16.5			45.7			47.8	
Split Option												
Ref Time Combined (s)	0.0	5.5		1.0	3.1		0.0	32.1		0.0	42.3	
Ref Time Seperate (s)	3.4	0.0		1.0	1.7		0.7	31.8		0.0	42.3	
Reference Time (s)	5.5	5.5		3.1	3.1		32.1	32.1		42.3	42.3	
Adj Reference Time (s)	16.5	16.5		16.5	16.5		37.6	37.6		47.8	47.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	20.0	47.8	
Split Option (s)	33.0	85.4	
Minimum (s)	20.0	47.8	67.8

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	37.6
Combined (s)	74.6

Intersection Summary			
Intersection Capacity Utilization	62.2%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

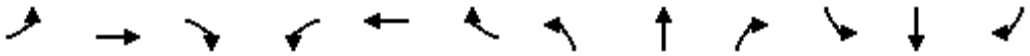


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Future Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			-2%	
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor						0.99					1.00	0.99
Frt						0.850					0.959	0.850
Flt Protected				0.950				0.996				
Satd. Flow (prot)	0	0	0	1761	3522	1575	0	3525	0	0	3270	1455
Flt Permitted				0.950				0.679				
Satd. Flow (perm)	0	0	0	1761	3522	1553	0	2403	0	0	3270	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						119					50	310
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		613			335			321			297	
Travel Time (s)		13.9			7.6			7.3			6.8	
Confl. Bikes (#/hr)	3					3	4		2	2		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	49	783	226	82	841	0	0	607	608
Shared Lane Traffic (%)												38%
Lane Group Flow (vph)	0	0	0	49	783	226	0	923	0	0	838	377
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					4		1	1 2			2	
Permitted Phases				4		4	1 2					2
Minimum Split (s)				30.0	30.0	30.0	13.0				27.0	27.0
Total Split (s)				41.0	41.0	41.0	22.0				47.0	47.0
Total Split (%)				37.3%	37.3%	37.3%	20.0%				42.7%	42.7%
Maximum Green (s)				31.0	31.0	31.0	16.5				37.5	37.5
Yellow Time (s)				3.5	3.5	3.5	3.5				3.5	3.5
All-Red Time (s)				6.5	6.5	6.5	2.0				6.0	6.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				10.0	10.0	10.0					9.5	9.5
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Walk Time (s)				3.0	3.0	3.0					3.0	3.0
Flash Dont Walk (s)				17.0	17.0	17.0					14.0	14.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				31.0	31.0	31.0		58.0			37.5	37.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio				0.28	0.28	0.28		0.53			0.34	0.34
v/c Ratio				0.10	0.79	0.43		0.64			0.73	0.54
Control Delay				30.0	43.3	17.8		15.1			25.3	6.0
Queue Delay				0.0	0.0	0.0		0.2			2.8	1.1
Total Delay				30.0	43.3	17.8		15.3			28.1	7.1
LOS				C	D	B		B			C	A
Approach Delay					37.2			15.3			21.6	
Approach LOS					D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 11 (10%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 24.9		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			
Description: lead/lag option			

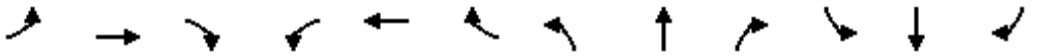
Splits and Phases: 495: Hennepin Av S & Lagoon Av S



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary

Description: lead/lag option



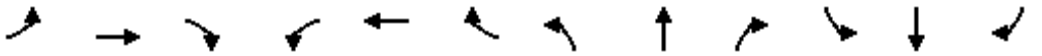
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	10.0	10.0	10.0	5.5	5.5	4.0	4.0	9.5	9.5
Minimum Green (s)	4.0	4.0	4.0	10.0	10.0	10.0	7.0	4.0	4.0	4.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	0	0	45	720	208	0	849	0	0	744	373
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.96	0.85
Saturated Flow (vph)	0	0	0	1805	3618	1615	0	3602	0	0	3482	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	0.0	0.0	0.0	3.0	23.9	15.5			0.0			27.7
Adj Reference Time (s)	0.0	0.0	0.0	20.0	33.9	25.5			0.0			37.2
Permitted Option												
Adj Saturation A (vph)	0	0		120	1809		0	346		0	1741	
Reference Time A (s)	0.0	0.0		44.9	23.9		0.0	95.3		0.0	25.7	
Adj Saturation B (vph	NA	NA		0	3618		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		11.0	23.9		NA	NA		NA	NA	
Reference Time (s)		0.0			23.9			95.3			25.7	
Adj Reference Time (s)		8.0			33.9			100.8			35.2	
Split Option												
Ref Time Combined (s)	0.0	0.0		3.0	23.9		0.0	28.3		0.0	25.7	
Ref Time Seperate (s)	0.0	0.0		3.0	23.9		5.0	25.7		0.0	19.2	
Reference Time (s)	0.0	0.0		23.9	23.9		28.3	28.3		25.7	25.7	
Adj Reference Time (s)	0.0	0.0		33.9	33.9		33.8	33.8		35.2	35.2	

Summary	EB WB	NB SB	Combined
Protected Option (s)	33.9	NA	
Permitted Option (s)	33.9	100.8	
Split Option (s)	33.9	68.9	
Minimum (s)	33.9	68.9	102.8

Right Turns	WBR	SBR
Adj Reference Time (s)	25.5	37.2
Cross Thru Ref Time (s)	33.8	33.9
Oncoming Left Ref Time (s)	0.0	33.8
Combined (s)	59.2	104.9

Intersection Summary			
Intersection Capacity Utilization	87.4%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

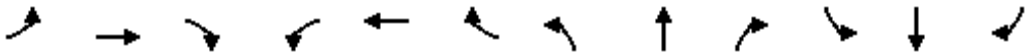


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Future Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		0	0		0	0		100	0		100
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.969			0.952				0.850			0.850
Flt Protected		0.988			0.985						0.999	
Satd. Flow (prot)	0	1778	0	0	1729	0	0	3539	1583	0	3536	1583
Flt Permitted		0.917			0.848			0.949			0.908	
Satd. Flow (perm)	0	1650	0	0	1489	0	0	3359	1583	0	3214	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			23				39			30
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		698			507			743			737	
Travel Time (s)		15.9			11.5			16.9			16.8	
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	58	25	20	22	23	5	982	45	29	1211	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	65	0	0	987	45	0	1240	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0		34.0	34.0		25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	35.0	35.0		35.0	35.0		75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	31.8%	31.8%		31.8%	31.8%		68.2%	68.2%	68.2%	68.2%	68.2%	68.2%
Maximum Green (s)	29.0	29.0		29.0	29.0		69.5	69.5	69.5	69.5	69.5	69.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		12.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		12.7			12.7			85.8	85.8		85.8	85.8
Actuated g/C Ratio		0.12			0.12			0.78	0.78		0.78	0.78
v/c Ratio		0.54			0.34			0.38	0.04		0.49	0.03
Control Delay		49.6			34.7			1.6	0.3		2.0	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		49.6			34.7			1.6	0.3		2.0	0.2
LOS		D			C			A	A		A	A
Approach Delay		49.6			34.7			1.5			1.9	
Approach LOS		D			C			A			A	

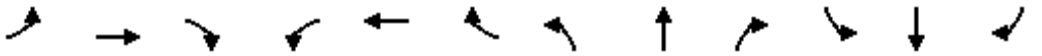
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 63 (57%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 496: Hennepin Av S & 25th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	7.0	7.0	4.0	7.0	7.0	4.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	100	0	0	59	0	0	908	41	0	1141	33
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1812	0	0	1771	0	0	3617	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			3.0			2.5
Adj Reference Time (s)			0.0			0.0			15.5			15.5
Permitted Option												
Adj Saturation A (vph)	0	1477		0	1208		0	1561		0	1030	
Reference Time A (s)	0.0	8.1		0.0	5.9		0.0	34.1		0.0	60.2	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	9.6	14.6		9.2	12.0		NA	NA		NA	NA	
Reference Time (s)		8.1			5.9			34.1			60.2	
Adj Reference Time (s)		14.1			13.0			39.6			65.7	
Split Option												
Ref Time Combined (s)	0.0	6.6		0.0	4.0		0.0	30.1		0.0	37.9	
Ref Time Seperate (s)	1.6	3.5		1.2	1.4		0.3	30.0		1.8	37.0	
Reference Time (s)	6.6	6.6		4.0	4.0		30.1	30.1		37.9	37.9	
Adj Reference Time (s)	13.0	13.0		13.0	13.0		35.6	35.6		43.4	43.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	14.1	65.7	
Split Option (s)	26.0	79.0	
Minimum (s)	14.1	65.7	79.8

Right Turns	NBR	SBR
Adj Reference Time (s)	15.5	15.5
Cross Thru Ref Time (s)	13.0	13.0
Oncoming Left Ref Time (s)	43.4	35.6
Combined (s)	71.9	64.1

Intersection Summary			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C

Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	625	0	0	1194	0	751
Future Volume (vph)	625	0	0	1194	0	751
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Lane Util. Factor	1.00	1.00	1.00	0.76	1.00	0.95
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3610	0	3557
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3610	0	3557
Link Speed (mph)	30		30			30
Link Distance (ft)	14057		618			928
Travel Time (s)	319.5		14.0			21.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	679	0	0	1298	0	816
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	0	0	1298	0	816
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	625	0	0	1194	0	751
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	625	0	0	1194	0	751
Lane Utilization Factor	1.00	1.00	1.00	0.89	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	0	4288	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		Yes			Yes
Reference Time (s)		0.0	0.0	33.4	0.0	24.9
Adj Reference Time (s)		0.0	0.0	37.4	0.0	28.9
Permitted Option						
Adj Saturation A (vph)	120		0		0	1809
Reference Time A (s)	623.3		0.0		0.0	24.9
Adj Saturation B (vph	NA		NA		0	3618
Reference Time B (s)	NA		NA		0.0	24.9
Reference Time (s)			0.0			24.9
Adj Reference Time (s)			8.0			28.9
Split Option						
Ref Time Combined (s)	41.6		0.0		0.0	24.9
Ref Time Seperate (s)	41.6		0.0		0.0	24.9
Reference Time (s)	41.6		0.0		24.9	24.9
Adj Reference Time (s)	45.6		0.0		28.9	28.9

Summary	WB	NB SB	Combined
Protected Option (s)	NA	28.9	
Permitted Option (s)	Err	28.9	
Split Option (s)	45.6	28.9	
Minimum (s)	45.6	28.9	74.5

Right Turns	NBR
Adj Reference Time (s)	37.4
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	37.4

Intersection Summary			
Intersection Capacity Utilization	62.1%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

1: Douglas Ave & Hennepin Av S

Direction	All
Future Volume (vph)	814
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	20
Fuel Consumed (gal)	6
Fuel Economy (mpg)	23.6
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

32: Hennepin Av S & 26th St W

Direction	All
Future Volume (vph)	2510
Total Delay / Veh (s/v)	8
Total Delay (hr)	6
Stops (#)	640
Fuel Consumed (gal)	21
Fuel Economy (mpg)	15.5
CO Emissions (kg)	1.49
NOx Emissions (kg)	0.29
VOC Emissions (kg)	0.35

33: Hennepin Av S & 28th St W

Direction	All
Future Volume (vph)	2490
Total Delay / Veh (s/v)	18
Total Delay (hr)	12
Stops (#)	1375
Fuel Consumed (gal)	29
Fuel Economy (mpg)	10.5
CO Emissions (kg)	2.05
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

178: Hennepin Av S & 31st St W

Direction	All
Future Volume (vph)	1419
Total Delay / Veh (s/v)	14
Total Delay (hr)	5
Stops (#)	498
Fuel Consumed (gal)	16
Fuel Economy (mpg)	14.4
CO Emissions (kg)	1.15
NOx Emissions (kg)	0.22
VOC Emissions (kg)	0.27

191: Hennepin Av S & Lake St W

Direction	All
Future Volume (vph)	2523
Total Delay / Veh (s/v)	20
Total Delay (hr)	14
Stops (#)	1340
Fuel Consumed (gal)	29
Fuel Economy (mpg)	9.5
CO Emissions (kg)	2.05
NOx Emissions (kg)	0.40
VOC Emissions (kg)	0.48

292: Hennepin Av S & 29th St W

Direction	All
Future Volume (vph)	2041
Total Delay / Veh (s/v)	2
Total Delay (hr)	1
Stops (#)	113
Fuel Consumed (gal)	9
Fuel Economy (mpg)	20.9
CO Emissions (kg)	0.65
NOx Emissions (kg)	0.13
VOC Emissions (kg)	0.15

297: Hennepin Av S & Franklin Av W

Direction	All
Future Volume (vph)	3127
Total Delay / Veh (s/v)	25
Total Delay (hr)	22
Stops (#)	2060
Fuel Consumed (gal)	44
Fuel Economy (mpg)	9.1
CO Emissions (kg)	3.05
NOx Emissions (kg)	0.59
VOC Emissions (kg)	0.71

462: Hennepin Av S & 24th St W

Direction	All
Future Volume (vph)	2619
Total Delay / Veh (s/v)	10
Total Delay (hr)	8
Stops (#)	1019
Fuel Consumed (gal)	26
Fuel Economy (mpg)	13.7
CO Emissions (kg)	1.79
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.41

467: Hennepin Av S & 27th St W

Direction	All
Future Volume (vph)	2440
Total Delay / Veh (s/v)	14
Total Delay (hr)	10
Stops (#)	1113
Fuel Consumed (gal)	26
Fuel Economy (mpg)	11.9
CO Emissions (kg)	1.80
NOx Emissions (kg)	0.35
VOC Emissions (kg)	0.42

483: Hennepin Av S & 22nd St W

Direction	All
Future Volume (vph)	2435
Total Delay / Veh (s/v)	7
Total Delay (hr)	5
Stops (#)	662
Fuel Consumed (gal)	21
Fuel Economy (mpg)	16.1
CO Emissions (kg)	1.46
NOx Emissions (kg)	0.28
VOC Emissions (kg)	0.34

495: Hennepin Av S & Lagoon Av S

Direction	All
Future Volume (vph)	2940
Total Delay / Veh (s/v)	25
Total Delay (hr)	20
Stops (#)	2302
Fuel Consumed (gal)	35
Fuel Economy (mpg)	5.1
CO Emissions (kg)	2.44
NOx Emissions (kg)	0.47
VOC Emissions (kg)	0.57

496: Hennepin Av S & 25th St W

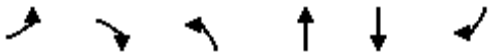
Direction	All
Future Volume (vph)	2283
Total Delay / Veh (s/v)	5
Total Delay (hr)	3
Stops (#)	406
Fuel Consumed (gal)	17
Fuel Economy (mpg)	18.1
CO Emissions (kg)	1.22
NOx Emissions (kg)	0.24
VOC Emissions (kg)	0.28

1297: Hennepin Av S & I-94 Ramps

Direction	All
Future Volume (vph)	2570
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	0
Fuel Consumed (gal)	80
Fuel Economy (mpg)	24.3
CO Emissions (kg)	5.57
NOx Emissions (kg)	1.08
VOC Emissions (kg)	1.29

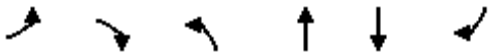
Network Totals

Number of Intersections	13
Total Delay / Veh (s/v)	13
Total Delay (hr)	106
Stops (#)	11548
Fuel Consumed (gal)	359
Fuel Economy (mpg)	14.7
CO Emissions (kg)	25.12
NOx Emissions (kg)	4.89
VOC Emissions (kg)	5.82
Performance Index	137.8



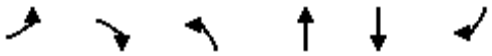
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	20	0	0	731	63
Future Volume (vph)	0	20	0	0	731	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%			0%	-1%	
Storage Length (ft)	0	0	0			119
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor						
Frt		0.865				0.850
Flt Protected						
Satd. Flow (prot)	0	1611	0	0	3557	1591
Flt Permitted						
Satd. Flow (perm)	0	1611	0	0	3557	1591
Link Speed (mph)	30			30	30	
Link Distance (ft)	863			928	903	
Travel Time (s)	19.6			21.1	20.5	
Confl. Bikes (#/hr)			1			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	22	0	0	795	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	22	0	0	795	68
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 30.2%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary



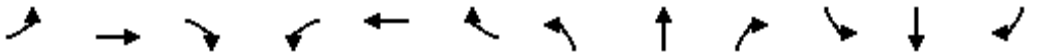
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	20	0	0	731	63
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	20	0	0	731	63
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	0	1615	0	0	3618	1615
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			Yes	Yes	
Reference Time (s)		1.5	0.0	0.0	24.2	4.7
Adj Reference Time (s)		8.0	0.0	0.0	28.2	8.7
Permitted Option						
Adj Saturation A (vph)	0		0	0	1809	
Reference Time A (s)	0.0		0.0	0.0	24.2	
Adj Saturation B (vph	NA		NA	NA	3618	
Reference Time B (s)	NA		NA	NA	24.2	
Reference Time (s)				0.0	24.2	
Adj Reference Time (s)				8.0	28.2	
Split Option						
Ref Time Combined (s)	0.0		0.0	0.0	24.2	
Ref Time Seperate (s)	0.0		0.0	0.0	24.2	
Reference Time (s)	0.0		0.0	0.0	24.2	
Adj Reference Time (s)	0.0		0.0	0.0	28.2	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	28.2	
Permitted Option (s)	Err	28.2	
Split Option (s)	0.0	28.2	
Minimum (s)	0.0	28.2	28.2

Right Turns	EBR	SBR
Adj Reference Time (s)	8.0	8.7
Cross Thru Ref Time (s)	28.2	0.0
Oncoming Left Ref Time (s)	0.0	0.0
Combined (s)	36.2	8.7

Intersection Summary			
Intersection Capacity Utilization	30.2%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

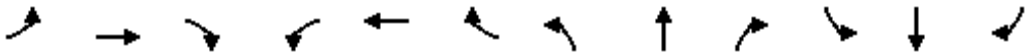


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Future Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			5%			1%			1%	
Storage Length (ft)	0		25	62		0	0		0	0		25
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Frt		0.924			0.928							0.850
Flt Protected		0.979		0.950				0.999				
Satd. Flow (prot)	0	1668	0	3347	1685	0	0	3518	0	0	3522	1575
Flt Permitted		0.828		0.729				0.920				
Satd. Flow (perm)	0	1411	0	2569	1685	0	0	3240	0	0	3522	1575
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			35							25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		347			628			691			743	
Travel Time (s)		7.9			14.3			15.7			16.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	0	43	301	87	80	15	898	0	0	1220	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	76	0	301	167	0	0	913	0	0	1220	51
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	31.0	31.0		31.0	31.0		25.0	25.0			25.0	25.0
Total Split (s)	41.0	41.0		41.0	41.0		89.0	89.0			89.0	89.0
Total Split (%)	31.5%	31.5%		31.5%	31.5%		68.5%	68.5%			68.5%	68.5%
Maximum Green (s)	35.0	35.0		35.0	35.0		83.5	83.5			83.5	83.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0		6.0	6.0			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		12.0	12.0			12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		35.0		35.0	35.0			83.5			83.5	83.5
Actuated g/C Ratio		0.27		0.27	0.27			0.64			0.64	0.64
v/c Ratio		0.18		0.44	0.35			0.44			0.54	0.05

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		19.3		41.7	32.4			6.4			4.5	0.9
Queue Delay		0.0		0.0	0.0			0.0			0.1	0.0
Total Delay		19.3		41.7	32.4			6.4			4.6	0.9
LOS		B		D	C			A			A	A
Approach Delay		19.3			38.4			6.4			4.5	
Approach LOS		B			D			A			A	

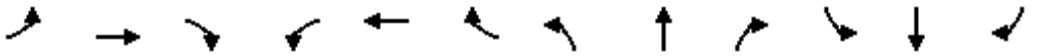
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 13 (10%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 32: Hennepin Av S & 26th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			24			0			0	
Link Offset(ft)		-4			-4			10			-10	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.03	1.03	1.03	1.01	1.01	1.01	1.01	1.01	1.01

Intersection Summary



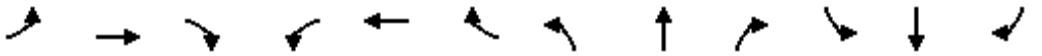
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	0	40	277	80	74	14	826	0	0	1122	47
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	70	0	277	154	0	0	840	0	0	1122	47
Lane Utilization Factor	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.89	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1700	0	3505	1763	0	0	3615	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.5
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	222		868	1763		0	1196		0	1809	
Reference Time A (s)	0.0	37.9		19.1	10.5		0.0	39.3		0.0	37.2	
Adj Saturation B (vph	NA	NA		0	1763		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		17.5	10.5		NA	NA		NA	NA	
Reference Time (s)		37.9			17.5			39.3			37.2	
Adj Reference Time (s)		43.9			23.5			44.8			42.7	
Split Option												
Ref Time Combined (s)	0.0	4.9		9.5	10.5		0.0	27.9		0.0	37.2	
Ref Time Seperate (s)	2.0	0.0		9.5	5.4		0.9	27.4		0.0	37.2	
Reference Time (s)	4.9	4.9		10.5	10.5		27.9	27.9		37.2	37.2	
Adj Reference Time (s)	16.0	16.0		16.5	16.5		33.4	33.4		42.7	42.7	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	43.9	44.8	
Split Option (s)	32.5	76.1	
Minimum (s)	32.5	44.8	77.3

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	33.4
Combined (s)	70.4

Intersection Summary			
Intersection Capacity Utilization	64.4%	ICU Level of Service	C

Reference Times and Phasing Options do not represent an optimized timing plan.

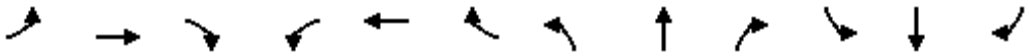


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Future Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Storage Length (ft)	0		0	0		0	0		50	0		25
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00							0.98		1.00	
Frt		0.979							0.850		0.993	
Flt Protected		0.993						0.999			0.994	
Satd. Flow (prot)	0	1798	0	0	0	0	0	3553	1591	0	3472	0
Flt Permitted		0.993						0.889			0.581	
Satd. Flow (perm)	0	1798	0	0	0	0	0	3162	1558	0	2030	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7							71		7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		414			942			672			680	
Travel Time (s)		9.4			21.4			15.3			15.5	
Confl. Bikes (#/hr)			1	1			4		1	1		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	37	193	42	0	0	0	18	818	162	186	1184	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	272	0	0	0	0	0	836	162	0	1437	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA					Perm	NA	Perm	D.P+P	NA	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4						2		1	1 2	
Permitted Phases	4						2		2	2		
Detector Phase	4	4					2	2	2	1	1 2	
Switch Phase												
Minimum Initial (s)	15.0	15.0					15.0	15.0	15.0	7.0		
Minimum Split (s)	31.0	31.0					26.0	26.0	26.0	13.0		
Total Split (s)	37.0	37.0					57.0	57.0	57.0	36.0		
Total Split (%)	28.5%	28.5%					43.8%	43.8%	43.8%	27.7%		
Maximum Green (s)	31.0	31.0					51.5	51.5	51.5	30.5		
Yellow Time (s)	3.5	3.5					3.5	3.5	3.5	3.5		
All-Red Time (s)	2.5	2.5					2.0	2.0	2.0	2.0		
Lost Time Adjust (s)		0.0						0.0	0.0			
Total Lost Time (s)		6.0						5.5	5.5			
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	0.2	0.2					0.2	0.2	0.2	3.0		
Recall Mode	Max	Max					C-Max	C-Max	C-Max	Min		
Walk Time (s)	7.0	7.0					7.0	7.0	7.0			
Flash Dont Walk (s)	18.0	18.0					13.0	13.0	13.0			
Pedestrian Calls (#/hr)	0	0					0	0	0			
Act Effct Green (s)		31.0						51.5	51.5		82.0	
Actuated g/C Ratio		0.24						0.40	0.40		0.63	
v/c Ratio		0.63						0.67	0.25		0.89	
Control Delay		50.5						18.8	4.1		11.9	
Queue Delay		0.0						0.0	0.0		0.0	
Total Delay		50.5						18.8	4.1		11.9	
LOS		D						B	A		B	
Approach Delay		50.5						16.4			11.9	
Approach LOS		D						B			B	

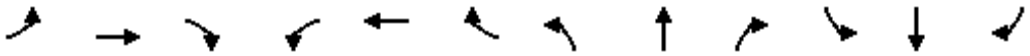
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 102 (78%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 86.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 33: Hennepin Av S & 28th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			20			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Number of Detectors	1	2					1	2	1	1	2	
Detector Template	Left	Thru					Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100					20	100	20	20	100	
Trailing Detector (ft)	0	0					0	0	0	0	0	
Detector 1 Position(ft)	0	0					0	0	0	0	0	
Detector 1 Size(ft)	20	6					20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0					0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	

Intersection Summary



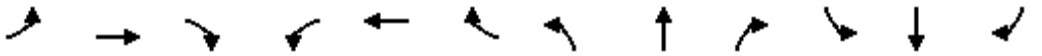
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	178	39	0	0	0	17	753	149	171	1089	62
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	4.0	4.0	4.0	5.5	5.5	5.5	5.5	5.5	4.0
Minimum Green (s)	15.0	15.0	4.0	4.0	4.0	4.0	15.0	15.0	15.0	7.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	251	0	0	0	0	0	770	149	0	1322	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.97	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	1843	0	0	0	0	0	3614	1615	0	3569	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			11.1			0.0
Adj Reference Time (s)			0.0			0.0			20.5			0.0
Permitted Option												
Adj Saturation A (vph)	0	610		0	0		0	1065		0	192	
Reference Time A (s)	0.0	49.4		0.0	0.0		0.0	39.6		0.0	199.2	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	24.3		NA	NA		NA	NA		NA	NA	
Reference Time (s)		24.3			0.0			39.6			199.2	
Adj Reference Time (s)		30.3			8.0			45.1			204.7	
Split Option												
Ref Time Combined (s)	0.0	16.3		0.0	0.0		0.0	25.6		0.0	44.5	
Ref Time Seperate (s)	2.3	11.6		0.0	0.0		1.1	25.0		11.4	36.4	
Reference Time (s)	16.3	16.3		0.0	0.0		25.6	25.6		44.5	44.5	
Adj Reference Time (s)	22.3	22.3		0.0	0.0		31.1	31.1		50.0	50.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	30.3	204.7	
Split Option (s)	22.3	81.0	
Minimum (s)	22.3	81.0	103.4

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	22.3
Oncoming Left Ref Time (s)	50.0
Combined (s)	92.8

Intersection Summary			
Intersection Capacity Utilization	86.1%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

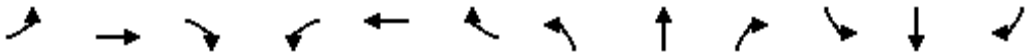


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Future Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			0%	
Storage Length (ft)	70		25	75		75	0		25	0		25
Storage Lanes	1		1	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.995			0.992	
Satd. Flow (prot)	1761	1853	1575	1761	1853	1575	0	1853	1583	0	1848	1583
Flt Permitted	0.512			0.641				0.926			0.883	
Satd. Flow (perm)	949	1853	1575	1188	1853	1575	0	1725	1583	0	1645	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			39			87			39			28
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		430			462			1923			648	
Travel Time (s)		9.8			10.5			43.7			14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	126	66	48	198	115	29	268	73	86	417	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	126	66	48	198	115	0	297	73	0	503	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4		4	4		4	2		2	2		2
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	39.0	91.0	91.0	91.0	91.0	91.0	91.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Maximum Green (s)	33.5	33.5	33.5	33.5	33.5	33.5	85.0	85.0	85.0	85.0	85.0	85.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5		6.0	6.0		6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	14.0	14.0	14.0	14.0	14.0	14.0	19.0	19.0	19.0	19.0	19.0	19.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effct Green (s)	33.5	33.5	33.5	33.5	33.5	33.5		85.0	85.0		85.0	85.0
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.26		0.65	0.65		0.65	0.65
v/c Ratio	0.11	0.26	0.15	0.16	0.42	0.24		0.26	0.07		0.47	0.08

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	38.6	40.3	19.1	39.1	43.3	13.4		10.1	4.4		3.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.2	0.0
Total Delay	38.6	40.3	19.1	39.1	43.3	13.4		10.1	4.4		3.5	0.3
LOS	D	D	B	D	D	B		B	A		A	A
Approach Delay		33.7			33.2			9.0			3.1	
Approach LOS		C			C			A			A	

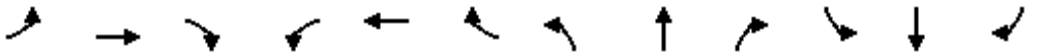
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 99 (76%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 178: Hennepin Av S & 31st St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



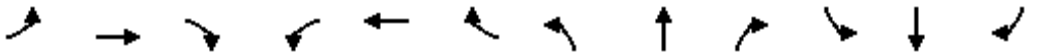
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	116	61	44	182	106	27	247	67	79	384	81
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Green (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	26	116	61	44	182	106	0	274	67	0	463	81
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.99	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1900	1615	0	1891	1615	0	1884	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	1.7	7.3	4.5	2.9	11.5	7.9			5.0			6.0
Adj Reference Time (s)	15.5	15.5	15.5	15.5	17.0	15.5			16.0			16.0
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1900		0	771		0	527	
Reference Time A (s)	25.9	7.3		43.9	11.5		0.0	42.6		0.0	105.4	
Adj Saturation B (vph	NA	NA		0	1900		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		10.9	11.5		NA	NA		NA	NA	
Reference Time (s)		25.9			11.5			42.6			105.4	
Adj Reference Time (s)		31.4			17.0			48.6			111.4	
Split Option												
Ref Time Combined (s)	1.7	7.3		2.9	11.5		0.0	17.4		0.0	29.5	
Ref Time Seperate (s)	1.7	7.3		2.9	11.5		1.8	15.6		5.3	24.3	
Reference Time (s)	7.3	7.3		11.5	11.5		17.4	17.4		29.5	29.5	
Adj Reference Time (s)	15.5	15.5		17.0	17.0		23.4	23.4		35.5	35.5	

Summary	EB WB	NB SB	Combined
Protected Option (s)	32.5	NA	
Permitted Option (s)	31.4	111.4	
Split Option (s)	32.5	58.9	
Minimum (s)	31.4	58.9	90.3

Right Turns	EBR	WBR	NBR	SBR
Adj Reference Time (s)	15.5	15.5	16.0	16.0
Cross Thru Ref Time (s)	35.5	23.4	15.5	17.0
Oncoming Left Ref Time (s)	15.5	15.5	35.5	23.4
Combined (s)	66.5	54.4	67.0	56.4

Intersection Summary			
Intersection Capacity Utilization	75.3%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.



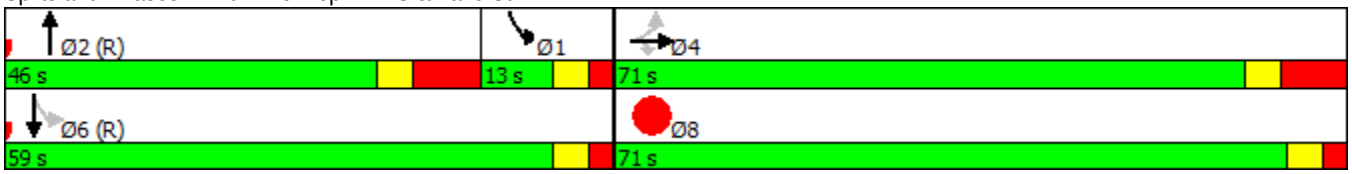
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Future Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			0%	
Storage Length (ft)	105		50	0		0	0		100	0		0
Storage Lanes	1		1	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.86	0.86	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Ped Bike Factor			0.98									
Frt			0.850					0.973				
Flt Protected	0.950	0.994									0.987	
Satd. Flow (prot)	1507	4729	1567	0	0	0	0	3239	0	0	3493	0
Flt Permitted	0.950	0.994									0.708	
Satd. Flow (perm)	1507	4729	1534	0	0	0	0	3239	0	0	2506	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109					20				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		660			337			648			321	
Travel Time (s)		15.0			7.7			14.7			7.3	
Confl. Bikes (#/hr)	1		2	2		1	1					1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	0	0	0	0	0	0	0	25	0	0	0	0
Adj. Flow (vph)	528	1046	142	0	0	0	0	338	73	158	457	0
Shared Lane Traffic (%)	28%											
Lane Group Flow (vph)	380	1194	142	0	0	0	0	411	0	0	615	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Minimum Split (s)	32.0	32.0	32.0					29.0		13.0	29.0	
Total Split (s)	71.0	71.0	71.0					46.0		13.0	59.0	
Total Split (%)	54.6%	54.6%	54.6%					35.4%		10.0%	45.4%	
Maximum Green (s)	61.0	61.0	61.0					36.0		7.0	53.0	
Yellow Time (s)	3.5	3.5	3.5					3.5		3.5	3.5	
All-Red Time (s)	6.5	6.5	6.5					6.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0					0.0			0.0	
Total Lost Time (s)	10.0	10.0	10.0					10.0			6.0	
Lead/Lag								Lead		Lag		
Lead-Lag Optimize?												
Walk Time (s)	3.0	3.0	3.0					3.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0					16.0			16.0	
Pedestrian Calls (#/hr)	0	0	0					0			0	

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Bus Blockages (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turn Type	
Protected Phases	8
Permitted Phases	
Minimum Split (s)	32.0
Total Split (s)	71.0
Total Split (%)	55%
Maximum Green (s)	65.0
Yellow Time (s)	3.5
All-Red Time (s)	2.5
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Walk Time (s)	7.0
Flash Dont Walk (s)	19.0
Pedestrian Calls (#/hr)	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	61.0	61.0	61.0					36.0			53.0	
Actuated g/C Ratio	0.47	0.47	0.47					0.28			0.41	
v/c Ratio	0.54	0.54	0.18					0.45			0.57	
Control Delay	28.0	25.6	6.3					32.2			8.4	
Queue Delay	0.8	0.1	0.0					0.0			0.8	
Total Delay	28.8	25.7	6.3					32.2			9.2	
LOS	C	C	A					C			A	
Approach Delay		24.8						32.2			9.2	
Approach LOS		C						C			A	

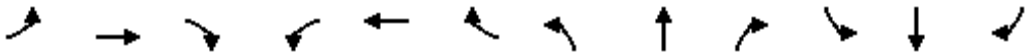
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 104 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of 1st Green			
Natural Cycle: 75			
Control Type: Pretimed			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 22.4		Intersection LOS: C	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			
Description: Phase 1 lags; 4 second LPI			

Splits and Phases: 191: Hennepin Av S & Lake St W



Lane Group	Ø8
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

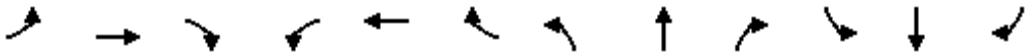
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		-22			22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.08	1.01	1.00	1.00	1.00

Intersection Summary

Description: Phase 1 lags; 4 second LPI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	486	962	131	0	0	0	0	311	67	145	420	0
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	6.0	6.0	4.0
Minimum Green (s)	10.0	10.0	10.0	4.0	4.0	4.0	4.0	10.0	4.0	7.0	10.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	1448	131	0	0	0	0	378	0	0	565	0
Lane Utilization Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.98	0.85	0.95	1.00	0.85	0.95	0.97	0.85	0.95	0.99	0.85
Saturated Flow (vph)	0	6785	1615	0	0	0	0	3521	0	0	3571	0
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			9.7			0.0			0.0			0.0
Adj Reference Time (s)			20.0			0.0			0.0			0.0
Permitted Option												
Adj Saturation A (vph)	0	151		0	0		0	1761		0	119	
Reference Time A (s)	0.0	386.8		0.0	0.0		0.0	12.9		0.0	146.2	
Adj Saturation B (vph	0	3450		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	24.2	29.5		NA	NA		NA	NA		NA	NA	
Reference Time (s)		29.5			0.0			12.9			146.2	
Adj Reference Time (s)		39.5			8.0			22.9			152.2	
Split Option												
Ref Time Combined (s)	0.0	25.6		0.0	0.0		0.0	12.9		0.0	19.0	
Ref Time Seperate (s)	16.2	22.3		0.0	0.0		0.0	10.6		9.6	13.9	
Reference Time (s)	25.6	25.6		0.0	0.0		12.9	12.9		19.0	19.0	
Adj Reference Time (s)	35.6	35.6		0.0	0.0		22.9	22.9		25.0	25.0	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	39.5	152.2	
Split Option (s)	35.6	47.9	
Minimum (s)	35.6	47.9	83.5

Right Turns	EBR
Adj Reference Time (s)	20.0
Cross Thru Ref Time (s)	25.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	45.0

Intersection Summary			
Intersection Capacity Utilization	69.6%	ICU Level of Service	C

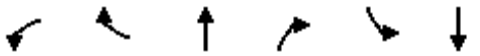
Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	11	0	921	1	0	1108
Future Volume (vph)	11	0	921	1	0	1108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	1%		3%			-2%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1437	0	3486	1560	0	3575
Flt Permitted	0.950					
Satd. Flow (perm)	1437	0	3486	1560	0	3575
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)				1		
Link Speed (mph)	30		30			30
Link Distance (ft)	306		297			672
Travel Time (s)	7.0		6.8			15.3
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Bus Blockages (#/hr)	46	0	0	0	0	0
Adj. Flow (vph)	12	0	1001	1	0	1204
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	1001	1	0	1204
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot		NA	Perm		NA
Protected Phases	4		2			2
Permitted Phases				2	2	
Detector Phase	4		2	2	2	2
Switch Phase						
Minimum Initial (s)	15.0		15.0	15.0	15.0	15.0
Minimum Split (s)	32.0		22.0	22.0	22.0	22.0
Total Split (s)	32.0		98.0	98.0	98.0	98.0
Total Split (%)	24.6%		75.4%	75.4%	75.4%	75.4%
Maximum Green (s)	26.0		92.5	92.5	92.5	92.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	2.5		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0
Total Lost Time (s)	6.0		5.5	5.5		5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		0.2	0.2	0.2	0.2
Recall Mode	Min		C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0		9.0	9.0	9.0	9.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	15.0		103.5	103.5		103.5
Actuated g/C Ratio	0.12		0.80	0.80		0.80
v/c Ratio	0.07		0.36	0.00		0.42
Control Delay	52.6		2.1	2.0		0.9
Queue Delay	0.0		0.3	0.0		0.3
Total Delay	52.6		2.4	2.0		1.2
LOS	D		A	A		A
Approach Delay	52.6		2.4			1.2
Approach LOS	D		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 72 (55%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 2.0		Intersection LOS: A	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 292: Hennepin Av S & 29th St W



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.30	1.01	1.02	1.02	0.99	0.99
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Intersection Summary

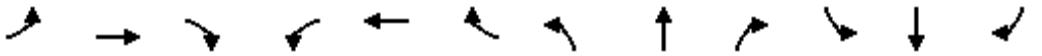
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	11	0	921	1	0	1108
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	4.0	5.5	5.5	5.5	5.5
Minimum Green (s)	15.0	4.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	11	0	921	1	0	1108
Lane Utilization Factor	1.00	1.00	0.95	1.00	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	3618	1615	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		No			No
Reference Time (s)		0.0		0.1		
Adj Reference Time (s)		0.0		20.5		
Permitted Option						
Adj Saturation A (vph)	120		1809		0	1809
Reference Time A (s)	11.0		30.6		0.0	36.8
Adj Saturation B (vph	NA		NA		NA	NA
Reference Time B (s)	NA		NA		NA	NA
Reference Time (s)			30.6			36.8
Adj Reference Time (s)			36.1			42.3
Split Option						
Ref Time Combined (s)	0.7		30.6		0.0	36.8
Ref Time Seperate (s)	0.7		30.6		0.0	36.8
Reference Time (s)	0.7		30.6		36.8	36.8
Adj Reference Time (s)	21.0		36.1		42.3	42.3

Summary	WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	42.3	
Split Option (s)	21.0	78.3	
Minimum (s)	21.0	42.3	63.3

Right Turns	NBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	42.3
Combined (s)	62.8

Intersection Summary			
Intersection Capacity Utilization	52.7%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

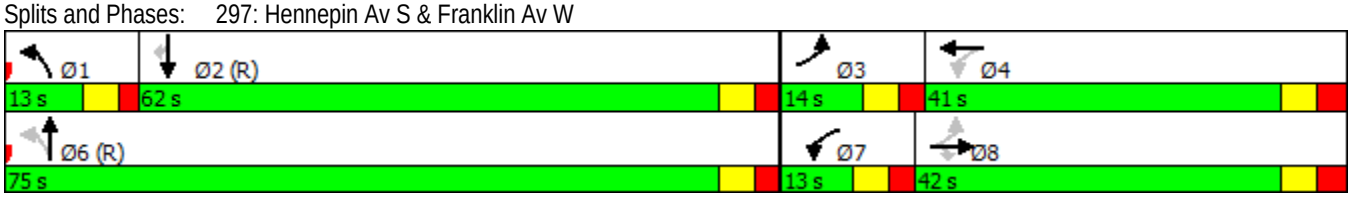


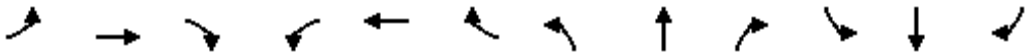
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Future Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			1%			2%			-1%	
Storage Length (ft)	114		55	50		25	0		250	0		25
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.95	1.00
Frt			0.850		0.952			0.988				0.850
Flt Protected	0.950			0.950				0.998				
Satd. Flow (prot)	1752	1844	1567	1761	1764	0	0	4964	0	0	3557	1591
Flt Permitted	0.484			0.639				0.729				
Satd. Flow (perm)	893	1844	1567	1184	1764	0	0	3626	0	0	3557	1591
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			122		18			17				126
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		434			240			751			618	
Travel Time (s)		9.9			5.5			17.1			14.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	226	151	38	129	149	71	45	1001	93	0	1272	224
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	151	38	129	220	0	0	1139	0	0	1272	224
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA			NA	Perm
Protected Phases	3	8		7	4		1	6			2	
Permitted Phases	8		8	4			6					2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	3	8	8	7	4		1	6			2	2
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0		7.0	15.0			15.0	15.0
Minimum Split (s)	13.0	41.0	41.0	13.0	41.0		13.0	33.0			33.0	33.0
Total Split (s)	14.0	42.0	42.0	13.0	41.0		13.0	75.0			62.0	62.0
Total Split (%)	10.8%	32.3%	32.3%	10.0%	31.5%		10.0%	57.7%			47.7%	47.7%
Maximum Green (s)	8.0	35.5	35.5	7.0	34.5		7.5	69.0			56.0	56.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	2.5	3.0	3.0	2.5	3.0		2.0	2.5			2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Lost Time (s)	6.0	6.5	6.5	6.0	6.5			6.0			6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	Min	Max	Max	Min	Max		Min	C-Max			C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0			20.0			20.0	20.0
Pedestrian Calls (#/hr)		0	0		0			0			0	0
Act Effct Green (s)	44.0	35.5	35.5	42.0	34.5			69.0			56.5	56.5
Actuated g/C Ratio	0.34	0.27	0.27	0.32	0.27			0.53			0.43	0.43
v/c Ratio	0.64	0.30	0.07	0.31	0.46			0.57			0.82	0.29
Control Delay	40.9	39.4	0.3	30.6	40.1			14.9			37.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0			0.0	0.0
Total Delay	40.9	39.4	0.3	30.6	40.1			14.9			37.9	11.1
LOS	D	D	A	C	D			B			D	B
Approach Delay		36.7			36.6			14.9			33.9	
Approach LOS		D			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 100 (77%), Referenced to phase 2:SBT and 6:NBTL, Start of 1st Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 89.9%		ICU Level of Service E	
Analysis Period (min) 15			

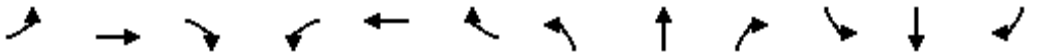
Splits and Phases: 297: Hennepin Av S & Franklin Av W





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			4			4	
Link Offset(ft)		0			0			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	0.99	0.99	0.99
Number of Detectors	1	2	1	1	2		1	2			2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru			Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100			100	20
Trailing Detector (ft)	0	0	0	0	0		0	0			0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0			0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6			6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



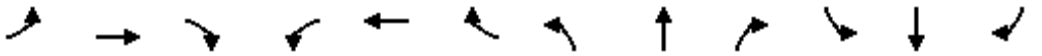
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	139	35	119	137	65	41	921	86	0	1170	206
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.5	6.5	6.0	6.5	4.0	5.5	6.0	4.0	4.0	6.0	6.0
Minimum Green (s)	7.0	15.0	15.0	7.0	15.0	4.0	7.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	208	139	35	119	202	0	0	1048	0	0	1170	206
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	0.95	0.85	0.95	0.99	0.85	0.95	1.00	0.85
Saturated Flow (vph)	1805	1900	1615	1805	1808	0	0	5102	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	13.8	8.8	2.6	7.9	13.4	0.0			0.0			15.3
Adj Reference Time (s)	19.8	21.5	21.5	13.9	21.5	0.0			0.0			21.3
Permitted Option												
Adj Saturation A (vph)	120	1900		120	1808		0	475		0	1809	
Reference Time A (s)	207.4	8.8		118.7	13.4		0.0	60.6		0.0	38.8	
Adj Saturation B (vph	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		NA	NA		NA	NA		NA	NA	
Reference Time (s)		207.4			118.7			60.6			38.8	
Adj Reference Time (s)		213.9			125.2			66.6			44.8	
Split Option												
Ref Time Combined (s)	13.8	8.8		7.9	13.4		0.0	24.6		0.0	38.8	
Ref Time Seperate (s)	13.8	8.8		7.9	9.1		2.7	21.6		0.0	38.8	
Reference Time (s)	13.8	13.8		13.4	13.4		24.6	24.6		38.8	38.8	
Adj Reference Time (s)	21.5	21.5		21.5	21.5		30.6	30.6		44.8	44.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	41.3	NA	
Permitted Option (s)	213.9	66.6	
Split Option (s)	43.0	75.5	
Minimum (s)	41.3	66.6	107.9

Right Turns	EBR	SBR
Adj Reference Time (s)	21.5	21.3
Cross Thru Ref Time (s)	44.8	21.5
Oncoming Left Ref Time (s)	13.9	30.6
Combined (s)	80.2	73.5

Intersection Summary			
Intersection Capacity Utilization	89.9%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

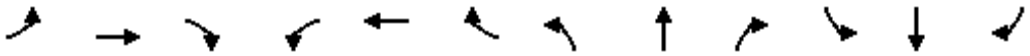


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Future Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		25	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00			1.00				0.98			0.98
Frt		0.961			0.984				0.850			0.850
Flt Protected		0.993			0.976						0.999	
Satd. Flow (prot)	0	1771	0	0	1768	0	0	3539	1583	0	3536	1583
Flt Permitted		0.937			0.656			0.935			0.924	
Satd. Flow (perm)	0	1671	0	0	1188	0	0	3309	1551	0	3270	1551
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			5				33			21
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		532			267			737			748	
Travel Time (s)		12.1			6.1			16.8			17.0	
Confl. Bikes (#/hr)	2		2	2		2	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	143	73	61	48	15	9	937	107	22	1362	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	254	0	0	124	0	0	946	107	0	1384	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Minimum Split (s)	28.0	28.0		28.0	28.0		36.0	36.0	36.0	36.0	36.0	36.0
Total Split (s)	41.0	41.0		41.0	41.0		89.0	89.0	89.0	89.0	89.0	89.0
Total Split (%)	31.5%	31.5%		31.5%	31.5%		68.5%	68.5%	68.5%	68.5%	68.5%	68.5%
Maximum Green (s)	35.5	35.5		35.5	35.5		82.5	82.5	82.5	82.5	82.5	82.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.5			5.5			6.5	6.5		6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		22.0	22.0	22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		35.5			35.5			82.5	82.5		82.5	82.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.27			0.27			0.63	0.63		0.63	0.63
v/c Ratio		0.54			0.38			0.45	0.11		0.67	0.03
Control Delay		43.0			40.8			13.7	7.7		7.7	1.9
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		43.0			40.8			13.7	7.7		7.7	1.9
LOS		D			D			B	A		A	A
Approach Delay		43.0			40.8			13.1			7.6	
Approach LOS		D			D			B			A	

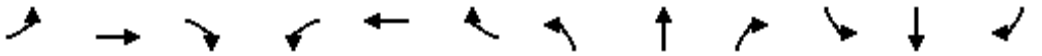
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 113 (87%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 462: Hennepin Av S & 24th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-4			4			12			-12	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00

Intersection Summary



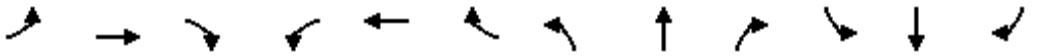
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	132	67	56	44	14	8	862	98	20	1253	30
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	5.5	5.5	4.0	5.5	5.5	4.0	6.5	6.5	6.5	6.5	6.5	6.5
Minimum Green (s)	15.0	15.0	4.0	15.0	15.0	4.0	15.0	15.0	15.0	15.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	234	0	0	114	0	0	870	98	0	1273	30
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.96	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1805	0	0	1819	0	0	3616	1615	0	3615	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			7.3			2.2
Adj Reference Time (s)			0.0			0.0			21.5			21.5
Permitted Option												
Adj Saturation A (vph)	0	1763		0	719		0	1423		0	1222	
Reference Time A (s)	0.0	15.9		0.0	19.0		0.0	35.3		0.0	58.6	
Adj Saturation B (vph	0	0		NA	NA		NA	NA		NA	NA	
Reference Time B (s)	10.3	23.6		NA	NA		NA	NA		NA	NA	
Reference Time (s)		15.9			19.0			35.3			58.6	
Adj Reference Time (s)		21.4			24.5			41.8			65.1	
Split Option												
Ref Time Combined (s)	0.0	15.6		0.0	7.5		0.0	28.9		0.0	42.3	
Ref Time Seperate (s)	2.3	8.8		3.7	2.9		0.5	28.6		1.3	41.6	
Reference Time (s)	15.6	15.6		7.5	7.5		28.9	28.9		42.3	42.3	
Adj Reference Time (s)	21.1	21.1		20.5	20.5		35.4	35.4		48.8	48.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	24.5	65.1	
Split Option (s)	41.6	84.1	
Minimum (s)	24.5	65.1	89.6

Right Turns	NBR	SBR
Adj Reference Time (s)	21.5	21.5
Cross Thru Ref Time (s)	21.1	20.5
Oncoming Left Ref Time (s)	48.8	35.4
Combined (s)	91.3	77.4

Intersection Summary			
Intersection Capacity Utilization	76.1%	ICU Level of Service	D

Reference Times and Phasing Options do not represent an optimized timing plan.

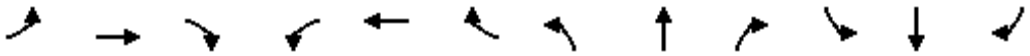


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Future Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor									0.98			
Frt		0.962			0.958				0.850			0.850
Flt Protected		0.978			0.977						0.999	
Satd. Flow (prot)	0	1753	0	0	1743	0	0	3539	1583	0	3536	1583
Flt Permitted		0.798			0.761			0.946			0.898	
Satd. Flow (perm)	0	1430	0	0	1358	0	0	3348	1549	0	3178	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			16				25			25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		348			512			680			691	
Travel Time (s)		7.9			11.6			15.5			15.7	
Confl. Bikes (#/hr)									3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	42	45	49	22	32	5	848	22	39	1432	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	161	0	0	103	0	0	853	22	0	1471	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			4			2			2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	32.0	32.0		32.0	32.0		26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	35.0	35.0		35.0	35.0		95.0	95.0	95.0	95.0	95.0	95.0
Total Split (%)	26.9%	26.9%		26.9%	26.9%		73.1%	73.1%	73.1%	73.1%	73.1%	73.1%
Maximum Green (s)	29.0	29.0		29.0	29.0		89.5	89.5	89.5	89.5	89.5	89.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	Ped	Ped		Ped	Ped		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		10.0	10.0	10.0	10.0	10.0	10.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		26.1			26.1			92.4	92.4		92.4	92.4
Actuated g/C Ratio		0.20			0.20			0.71	0.71		0.71	0.71
v/c Ratio		0.54			0.36			0.36	0.02		0.65	0.04
Control Delay		50.1			41.8			9.7	4.7		5.9	1.2
Queue Delay		0.0			0.0			0.0	0.0		0.4	0.0
Total Delay		50.1			41.8			9.7	4.7		6.3	1.2
LOS		D			D			A	A		A	A
Approach Delay		50.1			41.8			9.6			6.2	
Approach LOS		D			D			A			A	

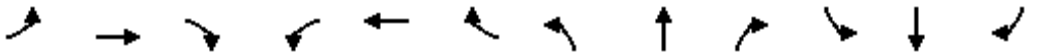
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 54 (42%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 467: Hennepin Av S & 27th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		-12			12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



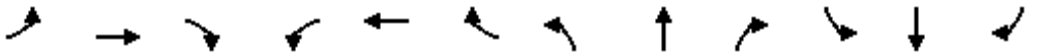
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	39	41	45	20	29	5	780	20	36	1317	39
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	20.0	20.0	20.0	20.0	20.0	20.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	148	0	0	94	0	0	785	20	0	1353	39
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.94	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1779	0	0	1769	0	0	3616	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			1.5			2.9
Adj Reference Time (s)			0.0			0.0			25.5			25.5
Permitted Option												
Adj Saturation A (vph)	0	1433		0	1374		0	1527		0	970	
Reference Time A (s)	0.0	12.4		0.0	8.2		0.0	30.1		0.0	74.8	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	12.5	18.0		11.0	14.4		NA	NA		NA	NA	
Reference Time (s)		12.4			8.2			30.1			74.8	
Adj Reference Time (s)		18.4			16.0			35.6			80.3	
Split Option												
Ref Time Combined (s)	0.0	10.0		0.0	6.4		0.0	26.0		0.0	44.9	
Ref Time Seperate (s)	4.5	2.7		3.0	1.4		0.3	25.9		2.4	43.7	
Reference Time (s)	10.0	10.0		6.4	6.4		26.0	26.0		44.9	44.9	
Adj Reference Time (s)	16.0	16.0		16.0	16.0		31.5	31.5		50.4	50.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	18.4	80.3	
Split Option (s)	32.0	82.0	
Minimum (s)	18.4	80.3	98.7

Right Turns	NBR	SBR
Adj Reference Time (s)	25.5	25.5
Cross Thru Ref Time (s)	16.0	16.0
Oncoming Left Ref Time (s)	50.4	31.5
Combined (s)	91.9	73.0

Intersection Summary			
Intersection Capacity Utilization	82.2%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

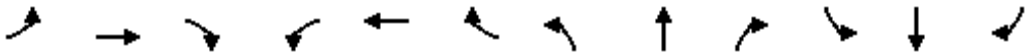


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Future Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			0%			0%			-1%	
Storage Length (ft)	0		10	25		0	0		100	0		100
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00			0.99							0.98
Frt		0.950			0.931							0.850
Flt Protected		0.969		0.950				0.999				
Satd. Flow (prot)	0	1672	0	1770	1724	0	0	3536	0	0	3557	1591
Flt Permitted		0.793		0.717				0.932				
Satd. Flow (perm)	0	1369	0	1336	1724	0	0	3299	0	0	3557	1559
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			23							31
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		432			448			748			751	
Travel Time (s)		9.8			10.2			17.0			17.1	
Confl. Bikes (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	0	32	16	27	23	11	1041	0	0	1386	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	16	50	0	0	1052	0	0	1386	55
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	Perm
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2					2
Minimum Split (s)	36.0	36.0		36.0	36.0		26.0	26.0			26.0	26.0
Total Split (s)	39.0	39.0		39.0	39.0		91.0	91.0			91.0	91.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		70.0%	70.0%			70.0%	70.0%
Maximum Green (s)	32.5	32.5		32.5	32.5		85.5	85.5			85.5	85.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5			3.5	3.5
All-Red Time (s)	3.0	3.0		3.0	3.0		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)		6.5		6.5	6.5			5.5			5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	7.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0		13.0	13.0			13.0	13.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0			0	0
Act Effct Green (s)		32.5		32.5	32.5			85.5			85.5	85.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.25		0.25	0.25			0.66			0.66	0.66
v/c Ratio		0.24		0.05	0.11			0.49			0.59	0.05
Control Delay		31.4		37.7	24.1			2.7			1.6	0.1
Queue Delay		0.0		0.0	0.0			0.0			1.0	0.0
Total Delay		31.4		37.7	24.1			2.7			2.6	0.1
LOS		C		D	C			A			A	A
Approach Delay		31.4			27.4			2.7			2.5	
Approach LOS		C			C			A			A	

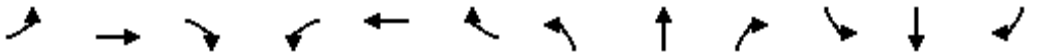
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 127 (98%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 4.2		Intersection LOS: A	
Intersection Capacity Utilization 62.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 483: Hennepin Av S & 22nd St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.03	1.03	1.03	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary



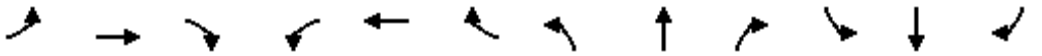
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	0	29	15	25	21	10	958	0	0	1275	51
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.5	6.5	4.0	6.5	6.5	4.0	5.5	5.5	4.0	4.0	5.5	5.5
Minimum Green (s)	10.0	10.0	4.0	10.0	10.0	4.0	15.0	15.0	4.0	4.0	15.0	15.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	80	0	15	46	0	0	968	0	0	1275	51
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.92	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1739	0	1805	1770	0	0	3616	0	0	3618	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			0.0			3.8
Adj Reference Time (s)			0.0			0.0			0.0			20.5
Permitted Option												
Adj Saturation A (vph)	0	162		1271	1770		0	1385		0	1809	
Reference Time A (s)	0.0	59.2		1.4	3.1		0.0	40.2		0.0	42.3	
Adj Saturation B (vph	0	0		0	1770		NA	NA		NA	NA	
Reference Time B (s)	11.4	13.5		9.0	3.1		NA	NA		NA	NA	
Reference Time (s)		13.5			3.1			40.2			42.3	
Adj Reference Time (s)		20.0			16.5			45.7			47.8	
Split Option												
Ref Time Combined (s)	0.0	5.5		1.0	3.1		0.0	32.1		0.0	42.3	
Ref Time Seperate (s)	3.4	0.0		1.0	1.7		0.7	31.8		0.0	42.3	
Reference Time (s)	5.5	5.5		3.1	3.1		32.1	32.1		42.3	42.3	
Adj Reference Time (s)	16.5	16.5		16.5	16.5		37.6	37.6		47.8	47.8	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	20.0	47.8	
Split Option (s)	33.0	85.4	
Minimum (s)	20.0	47.8	67.8

Right Turns	SBR
Adj Reference Time (s)	20.5
Cross Thru Ref Time (s)	16.5
Oncoming Left Ref Time (s)	37.6
Combined (s)	74.6

Intersection Summary			
Intersection Capacity Utilization	62.2%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

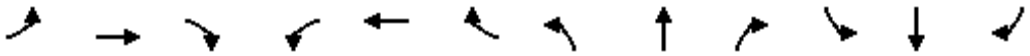


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Future Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			0%			-2%	
Storage Length (ft)	0		0	0		50	0		0	0		0
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00	1.00	0.91	0.91
Ped Bike Factor						0.99					1.00	0.99
Frt						0.850					0.959	0.850
Flt Protected				0.950				0.996				
Satd. Flow (prot)	0	0	0	1761	3522	1575	0	3525	0	0	3270	1455
Flt Permitted				0.950				0.650				
Satd. Flow (perm)	0	0	0	1761	3522	1553	0	2300	0	0	3270	1434
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						101					42	343
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		613			335			321			297	
Travel Time (s)		13.9			7.6			7.3			6.8	
Confl. Bikes (#/hr)	3					3	4		2	2		4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	49	783	226	82	841	0	0	607	608
Shared Lane Traffic (%)												38%
Lane Group Flow (vph)	0	0	0	49	783	226	0	923	0	0	838	377
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					4		1	1 2			2	
Permitted Phases				4		4	1 2					2
Minimum Split (s)				30.0	30.0	30.0	13.0				27.0	27.0
Total Split (s)				48.0	48.0	48.0	29.0				53.0	53.0
Total Split (%)				36.9%	36.9%	36.9%	22.3%				40.8%	40.8%
Maximum Green (s)				38.0	38.0	38.0	23.5				43.5	43.5
Yellow Time (s)				3.5	3.5	3.5	3.5				3.5	3.5
All-Red Time (s)				6.5	6.5	6.5	2.0				6.0	6.0
Lost Time Adjust (s)				0.0	0.0	0.0					0.0	0.0
Total Lost Time (s)				10.0	10.0	10.0					9.5	9.5
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Walk Time (s)				3.0	3.0	3.0					3.0	3.0
Flash Dont Walk (s)				17.0	17.0	17.0					14.0	14.0
Pedestrian Calls (#/hr)				0	0	0					0	0
Act Effct Green (s)				38.0	38.0	38.0		71.0			43.5	43.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio				0.29	0.29	0.29		0.55			0.33	0.33
v/c Ratio				0.10	0.76	0.43		0.62			0.75	0.53
Control Delay				34.3	47.6	22.9		15.9			30.3	6.1
Queue Delay				0.0	0.0	0.0		0.1			6.6	1.1
Total Delay				34.3	47.6	22.9		16.1			36.9	7.2
LOS				C	D	C		B			D	A
Approach Delay					41.7			16.1			27.7	
Approach LOS					D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 101 (78%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 29.0		Intersection LOS: C	
Intersection Capacity Utilization 87.4%		ICU Level of Service E	
Analysis Period (min) 15			
Description: lead/lag option			

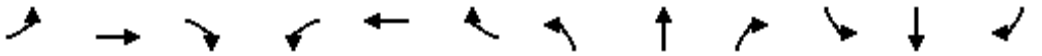
Splits and Phases: 495: Hennepin Av S & Lagoon Av S



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		24			-12			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99

Intersection Summary

Description: lead/lag option



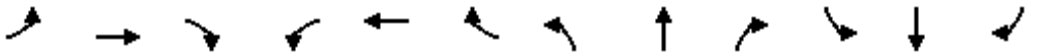
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	45	720	208	75	774	0	0	558	559
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	10.0	10.0	10.0	5.5	5.5	4.0	4.0	9.5	9.5
Minimum Green (s)	4.0	4.0	4.0	10.0	10.0	10.0	7.0	4.0	4.0	4.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	0	0	45	720	208	0	849	0	0	744	373
Lane Utilization Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	1.00	0.85	0.95	1.00	0.85	0.95	1.00	0.85	0.95	0.96	0.85
Saturated Flow (vph)	0	0	0	1805	3618	1615	0	3602	0	0	3482	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		Yes			Yes			No			No	
Reference Time (s)	0.0	0.0	0.0	3.0	23.9	15.5			0.0			27.7
Adj Reference Time (s)	0.0	0.0	0.0	20.0	33.9	25.5			0.0			37.2
Permitted Option												
Adj Saturation A (vph)	0	0		120	1809		0	346		0	1741	
Reference Time A (s)	0.0	0.0		44.9	23.9		0.0	95.3		0.0	25.7	
Adj Saturation B (vph	NA	NA		0	3618		NA	NA		NA	NA	
Reference Time B (s)	NA	NA		11.0	23.9		NA	NA		NA	NA	
Reference Time (s)		0.0			23.9			95.3			25.7	
Adj Reference Time (s)		8.0			33.9			100.8			35.2	
Split Option												
Ref Time Combined (s)	0.0	0.0		3.0	23.9		0.0	28.3		0.0	25.7	
Ref Time Seperate (s)	0.0	0.0		3.0	23.9		5.0	25.7		0.0	19.2	
Reference Time (s)	0.0	0.0		23.9	23.9		28.3	28.3		25.7	25.7	
Adj Reference Time (s)	0.0	0.0		33.9	33.9		33.8	33.8		35.2	35.2	

Summary	EB WB	NB SB	Combined
Protected Option (s)	33.9	NA	
Permitted Option (s)	33.9	100.8	
Split Option (s)	33.9	68.9	
Minimum (s)	33.9	68.9	102.8

Right Turns	WBR	SBR
Adj Reference Time (s)	25.5	37.2
Cross Thru Ref Time (s)	33.8	33.9
Oncoming Left Ref Time (s)	0.0	33.8
Combined (s)	59.2	104.9

Intersection Summary			
Intersection Capacity Utilization	87.4%	ICU Level of Service	E

Reference Times and Phasing Options do not represent an optimized timing plan.

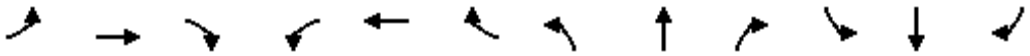


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Future Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			2%			0%			0%	
Storage Length (ft)	0		0	0		0	0		100	0		100
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00										
Frt		0.969			0.952				0.850			0.850
Flt Protected		0.988			0.985						0.999	
Satd. Flow (prot)	0	1778	0	0	1729	0	0	3539	1583	0	3536	1583
Flt Permitted		0.912			0.816			0.949			0.904	
Satd. Flow (perm)	0	1641	0	0	1433	0	0	3359	1583	0	3199	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			20				37			25
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		698			507			743			737	
Travel Time (s)		15.9			11.5			16.9			16.8	
Confl. Bikes (#/hr)			1	1								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	58	25	20	22	23	5	982	45	29	1211	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	65	0	0	987	45	0	1240	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		2
Detector Phase	4	4		4	4		2	2	2	2	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	34.0	34.0		34.0	34.0		25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		93.0	93.0	93.0	93.0	93.0	93.0
Total Split (%)	28.5%	28.5%		28.5%	28.5%		71.5%	71.5%	71.5%	71.5%	71.5%	71.5%
Maximum Green (s)	31.0	31.0		31.0	31.0		87.5	87.5	87.5	87.5	87.5	87.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5		2.5	2.5		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)		6.0			6.0			5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.0	4.0		4.0	4.0		0.2	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		12.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)		14.0			14.0			104.5	104.5		104.5	104.5
Actuated g/C Ratio		0.11			0.11			0.80	0.80		0.80	0.80
v/c Ratio		0.59			0.38			0.37	0.04		0.48	0.03
Control Delay		61.5			43.6			1.2	0.1		3.9	1.9
Queue Delay		0.0			0.0			0.0	0.0		0.6	0.0
Total Delay		61.5			43.6			1.2	0.1		4.5	1.9
LOS		E			D			A	A		A	A
Approach Delay		61.5			43.6			1.1			4.5	
Approach LOS		E			D			A			A	

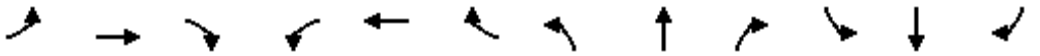
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 37 (28%), Referenced to phase 2:NBSB, Start of 1st Green			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 6.6		Intersection LOS: A	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 496: Hennepin Av S & 25th St W



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			8			-8	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	53	23	18	20	21	5	903	41	27	1114	33
Pedestrians												
Ped Button												
Pedestrian Timing (s)												
Free Right			No			No			No			No
Ideal Flow	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5
Minimum Green (s)	7.0	7.0	4.0	7.0	7.0	4.0	10.0	10.0	10.0	10.0	10.0	10.0
Refr Cycle Length (s)	120	120	120	120	120	120	120	120	120	120	120	120
Volume Combined (vph)	0	100	0	0	59	0	0	908	41	0	1141	33
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Turning Factor (vph)	0.95	0.95	0.85	0.95	0.93	0.85	0.95	1.00	0.85	0.95	1.00	0.85
Saturated Flow (vph)	0	1812	0	0	1771	0	0	3617	1615	0	3613	1615
Ped Intf Time (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
Pedestrian Frequency (%)		0.00			0.00			0.00			0.00	
Protected Option Allowed		No			No			No			No	
Reference Time (s)			0.0			0.0			3.0			2.5
Adj Reference Time (s)			0.0			0.0			15.5			15.5
Permitted Option												
Adj Saturation A (vph)	0	1477		0	1208		0	1561		0	1030	
Reference Time A (s)	0.0	8.1		0.0	5.9		0.0	34.1		0.0	60.2	
Adj Saturation B (vph	0	0		0	0		NA	NA		NA	NA	
Reference Time B (s)	9.6	14.6		9.2	12.0		NA	NA		NA	NA	
Reference Time (s)		8.1			5.9			34.1			60.2	
Adj Reference Time (s)		14.1			13.0			39.6			65.7	
Split Option												
Ref Time Combined (s)	0.0	6.6		0.0	4.0		0.0	30.1		0.0	37.9	
Ref Time Seperate (s)	1.6	3.5		1.2	1.4		0.3	30.0		1.8	37.0	
Reference Time (s)	6.6	6.6		4.0	4.0		30.1	30.1		37.9	37.9	
Adj Reference Time (s)	13.0	13.0		13.0	13.0		35.6	35.6		43.4	43.4	

Summary	EB WB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	14.1	65.7	
Split Option (s)	26.0	79.0	
Minimum (s)	14.1	65.7	79.8

Right Turns	NBR	SBR
Adj Reference Time (s)	15.5	15.5
Cross Thru Ref Time (s)	13.0	13.0
Oncoming Left Ref Time (s)	43.4	35.6
Combined (s)	71.9	64.1

Intersection Summary			
Intersection Capacity Utilization	66.5%	ICU Level of Service	C

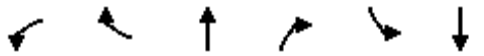
Reference Times and Phasing Options do not represent an optimized timing plan.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	625	0	0	1194	0	751
Future Volume (vph)	625	0	0	1194	0	751
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		0%			-1%
Lane Util. Factor	1.00	1.00	1.00	0.76	1.00	0.95
Frt				0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3610	0	3557
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3610	0	3557
Link Speed (mph)	30		30			30
Link Distance (ft)	14057		618			928
Travel Time (s)	319.5		14.0			21.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	679	0	0	1298	0	816
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	0	0	1298	0	816
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	0.99	0.99

Intersection Summary



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	625	0	0	1194	0	751
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No		No		
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	625	0	0	1194	0	751
Lane Utilization Factor	1.00	1.00	1.00	0.89	1.00	0.95
Turning Factor (vph)	0.95	0.85	1.00	0.85	0.95	1.00
Saturated Flow (vph)	1805	0	0	4288	0	3618
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00		0.00			0.00
Protected Option Allowed	No		Yes			Yes
Reference Time (s)		0.0	0.0	33.4	0.0	24.9
Adj Reference Time (s)		0.0	0.0	37.4	0.0	28.9
Permitted Option						
Adj Saturation A (vph)	120		0		0	1809
Reference Time A (s)	623.3		0.0		0.0	24.9
Adj Saturation B (vph	NA		NA		0	3618
Reference Time B (s)	NA		NA		0.0	24.9
Reference Time (s)			0.0			24.9
Adj Reference Time (s)			8.0			28.9
Split Option						
Ref Time Combined (s)	41.6		0.0		0.0	24.9
Ref Time Seperate (s)	41.6		0.0		0.0	24.9
Reference Time (s)	41.6		0.0		24.9	24.9
Adj Reference Time (s)	45.6		0.0		28.9	28.9

Summary	WB	NB SB	Combined
Protected Option (s)	NA	28.9	
Permitted Option (s)	Err	28.9	
Split Option (s)	45.6	28.9	
Minimum (s)	45.6	28.9	74.5

Right Turns	NBR
Adj Reference Time (s)	37.4
Cross Thru Ref Time (s)	0.0
Oncoming Left Ref Time (s)	0.0
Combined (s)	37.4

Intersection Summary			
Intersection Capacity Utilization	62.1%	ICU Level of Service	B

Reference Times and Phasing Options do not represent an optimized timing plan.

1: Douglas Ave & Hennepin Av S

Direction	All
Future Volume (vph)	814
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	20
Fuel Consumed (gal)	6
Fuel Economy (mpg)	23.6
CO Emissions (kg)	0.41
NOx Emissions (kg)	0.08
VOC Emissions (kg)	0.10

32: Hennepin Av S & 26th St W

Direction	All
Future Volume (vph)	2510
Total Delay / Veh (s/v)	11
Total Delay (hr)	8
Stops (#)	986
Fuel Consumed (gal)	25
Fuel Economy (mpg)	13.3
CO Emissions (kg)	1.74
NOx Emissions (kg)	0.34
VOC Emissions (kg)	0.40

33: Hennepin Av S & 28th St W

Direction	All
Future Volume (vph)	2490
Total Delay / Veh (s/v)	17
Total Delay (hr)	12
Stops (#)	1320
Fuel Consumed (gal)	29
Fuel Economy (mpg)	10.7
CO Emissions (kg)	2.01
NOx Emissions (kg)	0.39
VOC Emissions (kg)	0.47

178: Hennepin Av S & 31st St W

Direction	All
Future Volume (vph)	1419
Total Delay / Veh (s/v)	16
Total Delay (hr)	6
Stops (#)	502
Fuel Consumed (gal)	17
Fuel Economy (mpg)	13.8
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

191: Hennepin Av S & Lake St W

Direction	All
Future Volume (vph)	2523
Total Delay / Veh (s/v)	22
Total Delay (hr)	16
Stops (#)	1299
Fuel Consumed (gal)	30
Fuel Economy (mpg)	9.2
CO Emissions (kg)	2.11
NOx Emissions (kg)	0.41
VOC Emissions (kg)	0.49

292: Hennepin Av S & 29th St W

Direction	All
Future Volume (vph)	2041
Total Delay / Veh (s/v)	2
Total Delay (hr)	1
Stops (#)	143
Fuel Consumed (gal)	10
Fuel Economy (mpg)	20.2
CO Emissions (kg)	0.67
NOx Emissions (kg)	0.13
VOC Emissions (kg)	0.16

297: Hennepin Av S & Franklin Av W

Direction	All
Future Volume (vph)	3127
Total Delay / Veh (s/v)	28
Total Delay (hr)	24
Stops (#)	2132
Fuel Consumed (gal)	46
Fuel Economy (mpg)	8.6
CO Emissions (kg)	3.21
NOx Emissions (kg)	0.63
VOC Emissions (kg)	0.74

462: Hennepin Av S & 24th St W

Direction	All
Future Volume (vph)	2619
Total Delay / Veh (s/v)	14
Total Delay (hr)	10
Stops (#)	929
Fuel Consumed (gal)	27
Fuel Economy (mpg)	12.9
CO Emissions (kg)	1.89
NOx Emissions (kg)	0.37
VOC Emissions (kg)	0.44

467: Hennepin Av S & 27th St W

Direction	All
Future Volume (vph)	2440
Total Delay / Veh (s/v)	11
Total Delay (hr)	8
Stops (#)	973
Fuel Consumed (gal)	24
Fuel Economy (mpg)	12.9
CO Emissions (kg)	1.65
NOx Emissions (kg)	0.32
VOC Emissions (kg)	0.38

483: Hennepin Av S & 22nd St W

Direction	All
Future Volume (vph)	2435
Total Delay / Veh (s/v)	4
Total Delay (hr)	3
Stops (#)	211
Fuel Consumed (gal)	17
Fuel Economy (mpg)	19.7
CO Emissions (kg)	1.20
NOx Emissions (kg)	0.23
VOC Emissions (kg)	0.28

495: Hennepin Av S & Lagoon Av S

Direction	All
Future Volume (vph)	2940
Total Delay / Veh (s/v)	29
Total Delay (hr)	24
Stops (#)	2243
Fuel Consumed (gal)	37
Fuel Economy (mpg)	4.8
CO Emissions (kg)	2.59
NOx Emissions (kg)	0.50
VOC Emissions (kg)	0.60

496: Hennepin Av S & 25th St W

Direction	All
Future Volume (vph)	2283
Total Delay / Veh (s/v)	7
Total Delay (hr)	4
Stops (#)	415
Fuel Consumed (gal)	18
Fuel Economy (mpg)	17.2
CO Emissions (kg)	1.28
NOx Emissions (kg)	0.25
VOC Emissions (kg)	0.30

1297: Hennepin Av S & I-94 Ramps

Direction	All
Future Volume (vph)	2570
Total Delay / Veh (s/v)	0
Total Delay (hr)	0
Stops (#)	0
Fuel Consumed (gal)	80
Fuel Economy (mpg)	24.3
CO Emissions (kg)	5.57
NOx Emissions (kg)	1.08
VOC Emissions (kg)	1.29

Network Totals

Number of Intersections	13
Total Delay / Veh (s/v)	14
Total Delay (hr)	116
Stops (#)	11173
Fuel Consumed (gal)	365
Fuel Economy (mpg)	14.5
CO Emissions (kg)	25.52
NOx Emissions (kg)	4.97
VOC Emissions (kg)	5.91
Performance Index	147.3

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
	Hennepin Ave	Douglas Avenue to Lake Street	0+00.740	2+00.100	Hennepin Co.	1/1/2013	12/31/2015

Description of Proposed Work: Reconstruct Hennepin Avenue between Douglas Ave and Lake St

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		2		**3**
		B	7	2		1	1	2	10	1	**24**
		C	42	4	1	4	1	3	17	4	**76**
	Property Damage	PD	85	67	19	23	5	4		23	**226**
% Change in Crashes *Use Desktop Reference for Crash Reduction Factors	Fatal	F									
	PI	A					-31.3%		-20.1%		
		B	-41.8%	-31.3%		-31.3%	-31.3%	-31.3%	-20.1%	-31.3%	
		C	-41.8%	-31.3%	-31.3%	-31.3%	-31.3%	-31.3%	-20.1%	-31.3%	
	Property Damage	PD	-41.8%	-31.3%	-31.3%	-31.3%	-31.3%	-31.3%		-31.3%	
Change in Crashes = No. of crashes **X** % change in crashes	Fatal	F									
	PI	A					**-0.31**		**-0.40**		**-0.72**
		B	**-2.93**	**-0.63**		**-0.31**	**-0.31**	**-0.63**	**-2.01**	**-0.31**	**-7.13**
		C	**-17.56**	**-1.25**	**-0.31**	**-1.25**	**-0.31**	**-0.94**	**-3.42**	**-1.25**	**-26.29**
	Property Damage	PD	**-35.53**	**-20.97**	**-5.95**	**-7.20**	**-1.57**	**-1.25**		**-7.20**	**-79.66**

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

Project Cost (exclude Right of Way): **$ 17,440,815**

Right of Way Costs (optional):

Traffic Growth Factor: **0.0%**

Capital Recovery

1. **Discount Rate**: **4.5%**
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	-0.72	-0.24	$ 570,000	$ 135,974
B	-7.13	-2.38	$ 170,000	$ 404,232
C	-26.29	-8.77	$ 83,000	$ 728,132
PD	-79.66	-26.58	$ 7,600	$ 201,997
Total				$ 1,470,336

B/C= 1.15

Using present worth values,

B= $ 19,986,714

C= $ 17,440,815

See "Calculations" sheet for amortization.

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

Amortizing…

Year	Crash Benefits	Present Worth Benefits	Present Worth Costs
2018	$ 1,470,336	$ 1,470,336	$ 17,440,815
2019	$ 1,470,336	$ 1,407,020	
2020	$ 1,470,336	$ 1,346,431	
2021	$ 1,470,336	$ 1,288,451	
2022	$ 1,470,336	$ 1,232,967	
2023	$ 1,470,336	$ 1,179,873	
2024	$ 1,470,336	$ 1,129,065	
2025	$ 1,470,336	$ 1,080,445	
2026	$ 1,470,336	$ 1,033,919	
2027	$ 1,470,336	$ 989,396	
2028	$ 1,470,336	$ 946,790	
2029	$ 1,470,336	$ 906,019	
2030	$ 1,470,336	$ 867,004	
2031	$ 1,470,336	$ 829,669	
2032	$ 1,470,336	$ 793,942	
2033	$ 1,470,336	$ 759,753	
2034	$ 1,470,336	$ 727,036	
2035	$ 1,470,336	$ 695,728	
2036	$ 1,470,336	$ 665,769	
2037	$ 1,470,336	$ 637,099	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
0	$ -	$ -	
Totals =		**$ 19,986,714 (B)**	**$ 17,440,815 (C)**

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

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

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

▼ Countermeasure: Improve pavement friction (increase skid resistance)

Compare	CMF	CRF(%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
☐	0.799	20.1	★★★★☆	All	All	All	Lyon and Persaud, 2008	
☐	0.667	33.3	★★★★☆	All	All	All	Lyon and Persaud, 2008	
☐	0.819	18.1	★★★★☆	All	All	All	Lyon and Persaud, 2008	
☐	0.797	20.3	★★★★☆	All	All	All	Lyon and Persaud, 2008	
☐	1.271	-27.1	★★★★☆	All	All	All	Lyon and Persaud, 2008	
☐	0.426	57.4	★★★★☆	Wet road	All	All	Lyon and Persaud, 2008	
☐	0.372	62.8	★★★★☆	Wet road	All	All	Lyon and Persaud, 2008	
☐	0.355	64.5	★★★★☆	Wet road	All	All	Lyon and Persaud, 2008	
☐	0.217	78.3	★★★★☆	Wet road	All	All	Lyon and Persaud, 2008	
☐	0.546	45.4	★★★★☆	Wet road	All	All	Lyon and Persaud, 2008	
☐	0.597	40.3	★★★★☆	Wet road	All	All	Lyon and Persaud, 2008	

☐	0.597	40.3	★★★★☆	Wet road	All	All	Lyon and Persaud, 2008
☐	0.582	41.8	★★★★☆	Rear end	All	All	Lyon and Persaud, 2008
☐	0.554	44.6	★★★★☆	Rear end	All	All	Lyon and Persaud, 2008
☐	0.586	41.4	★★★★☆	Rear end	All	All	Lyon and Persaud, 2008
☐	0.585	41.5	★★★★☆	Rear end	All	All	Lyon and Persaud, 2008
☐	0.322	67.8	★★★★☆	Rear end,Wet road	All	All	Lyon and Persaud, 2008
☐	0.261	73.9	★★★★☆	Rear end,Wet road	All	All	Lyon and Persaud, 2008
☐	0.335	66.5	★★★★☆	Rear end,Wet road	All	All	Lyon and Persaud, 2008
☐	0.361	63.9	★★★★☆	Rear end,Wet road	All	All	Lyon and Persaud, 2008
☐	0.482	51.8	★★★★☆	Rear end,Wet road	All	All	Lyon and Persaud, 2008
☐	1.045	-4.5	★★★★☆	Angle	All	All	Lyon and Persaud, 2008
☐	1.687	-68.7	★★★★☆	Angle	All	All	Lyon and Persaud, 2008

CRASH MODIFICATION FACTORS CLEARINGHOUSE

CMF / CRF Details

CMF ID: 2259

Improve pavement friction (increase skid resistance)

Description:

Prior Condition: Sections of pavement with both a high proportion (35-40%) of wet-road crashes and low friction numbers (

Category: Roadway

Study: *Safety Effects of a Targeted Skid Resistance Improvement Program*, Lyon and Persaud, 2008

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.799
Adjusted Standard Error:	0.028
Unadjusted Standard Error:	0.028

Crash Reduction Factor (CRF)	
Value:	20.1 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	2.8

Unadjusted Standard Error:	2.8

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	All
Traffic Volume:	
Time of Day:	All

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	3475 to 65850 Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume:	174 to 10055 Annual Average Daily Traffic (AADT)

Development Details

Date Range of Data Used:	1994 to 2003
Municipality:	
State:	NY

Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	Crashes
Before Sample Size Used:	2857 Crashes
After Sample Size Used:	1581 Crashes

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	
Comments:	

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CRASH MODIFICATION FACTORS CLEARINGHOUSE

CMF / CRF Details

CMF ID: 2273

Improve pavement friction (increase skid resistance)

Description:

Prior Condition: Sections of pavement with both a high proportion (35-40%) of wet-road crashes and low friction numbers (

Category: Roadway

Study: *Safety Effects of a Targeted Skid Resistance Improvement Program*, Lyon and Persaud, 2008

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.582
Adjusted Standard Error:	0.034
Unadjusted Standard Error:	0.034

Crash Reduction Factor (CRF)	
Value:	41.8 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	3.4

Unadjusted Standard Error:	3.4

Applicability

Crash Type:	Rear end
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	All
Traffic Volume:	
Time of Day:	All

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	3475 to 65850 Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume:	174 to 10055 Annual Average Daily Traffic (AADT)

Development Details

Date Range of Data Used:	1994 to 2003
Municipality:	
State:	NY

Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	Crashes
Before Sample Size Used:	488 Crashes
After Sample Size Used:	206 Crashes

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	
Comments:	

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

▼ Countermeasure: Install transit signal priority (TSP) technology (at transit-serviced locations)

Compare	CMF	CRF(%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
☐	0.861	13.9	★★★★☆	All	All		Naznin et al., 2015	
☐	1.32	-31.8	★★★☆☆	All	All	Urban	Shalah et al., 2009	
☐	1.28	-28.4	★★★☆☆	All	All	Urban	Shalah et al., 2009	

Compare Reset Compare

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

CMF / CRF Details

CMF ID: 7273

Install transit signal priority (TSP) technology (at transit-serviced locations)

Description:

Prior Condition: Without transit signal priority

Category: Transit

Study: *Road Safety Impacts of Tram/Streetcar Priority Measures - A Before-After Study Using Empirical Bayes Method*, Naznin et al., 2015

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.861
Adjusted Standard Error:	
Unadjusted Standard Error:	0.082

Crash Reduction Factor (CRF)	
Value:	13.9 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	

Unadjusted Standard Error:	8.2

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	
Traffic Volume:	
Time of Day:	Not specified

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	Not specified
Traffic Control:	Signalized
Major Road Traffic Volume:	3000 to 33000 Annual Average Daily Traffic (AADT)
Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	2000 to 2013
Municipality:	
State:	

Country:	Australia
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Nov-01-2015
Comments:	

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

Hennepin (MSAS 425) Avenue between Douglas Avenue and Lake Street Hennepin County (2013-2015)

Crash data is managed by the Mn/DOT Office of Traffic, Safety, and Operations.

																																		PERSON1											PERSON2											PERSON3			
SYS	NUM	REF_POINT	GIS_ROUTE	GIS_TM	RD_DIR	ELEM	RELY	INV	R_U	ATP	CO	CITY	DOW	MONTH	DAY	YEAR	TIME	SEV	IUM_KILLE	NUM_VEH	JUNC	SL	TYPE	DIAG	LOC1	TCD	LIT	WTHR1	WTHR2	SURF	CHAR	DESGN	ACC_NUM	VTYPE	DIR	ACT	FAC1	FAC2	POSN	INJ	EQP	PHYS	AGE	SEX	VTYPE	DIR	ACT	FAC1	FAC2	POSN	INJ	EQP	PHYS	AGE	SEX	VTYPE	DIR	ACT	FAC1
05	25850425	000+00.740	0525850425	0.740	Z		2	0	U		27	2585	3-Tue	7	1	2014	1630	N	0	2	0	30	1	2	0	98	1	3	0	2	0	0	142170078	1	5	1	0	0	1	N	4	0	70	F	1	5	1	0	0	1	N	0	0	52	F				
05	25850425	000+00.740	0525850425	0.740	Z		1	3	U	DRIVER 1/VEHICLE 1 STRUCK VEHICLE 2 AND LEFT THE SCENE WITHOUT EXCHANGING INFORMATION REQUIRED BY S	27	2585	7-Sat	8	23	2014	1400	N	0	2	1	30	2	99	1	98	1	2	0	1	2	4	142360055	99	5	99	99	0	1	N	99	99	902	Z															
05	25850425	000+00.740	0525850425	0.740	S		1	3	U	VEHICLE-2 WAS NB ON HENNEPIN STOPPED IN TRAFFIC ATTEMPTING TO PARK WHEN IT WAS REAR-ENDED BY VEHICL	27	2585	2-Mon	11	17	2014	1541	N	0	2	4	30	1	1	1	1	1	1	2	5	1	5	143210219	1	1	1	4	8	1	N	99	1	22	M	1	1	11	1	1	1	N	4	1	22	M				
05	25850425	000+00.740	0525850425	0.740	Z		1	3	U	VEHICLE TWO ENTERED THE INTERSETION AGAINST A RED LIGHT ACCORDING TO WITNESS AND OPERATOR OF VEHICL	27	2585	6-Fri	11	28	2014	0756	C	0	2	2	30	7	5	1	1	1	1	0	3	1	4	143420064	1	1	1	1	0	1	N	4	1	32	M	1	3	1	2	5	1	N	4	1	30	M	51	98		
05	25850425	000+00.740	0525850425	0.740	Z		1	3	U	AND THEN LEFT THE SCENE. V1 DIDNT CALL THE POLICE AT THE TIME OF THE INCIDENT BECAUSE SHE DIDN'	27	2585	5-Thu	6	25	2015	1730	C	0	1	7	30	7	3	1	1	1	1	0	1	1	4	151770094	4	3	6	0	0	1	N	99	99	903	F	51	98	31	1	0	21	C	98	99	23	F				
05	25850425	000+00.745	0525850425	0.745	Z		1	3	U	THE DRIVER OF UNIT 2 WAS STOPPED IN THE INSIDE SOUTHBOUND TRAFFIC LANE ON HENNEPIN AVE S AT THE RED	27	2585	2-Mon	1	20	2014	2208	C	0	2	4	30	1	1	1	1	4	2	0	1	1	5	140200183	3	5	1	1	0	1	N	4	1	25	F	1	5	11	1	0	1	N	4	1	24	M	3	5		
05	25850425	000+00.758	0525850425	0.758	Z		1	3	U	VEHICLES 2 AND 3 WERE NB ON HENNEPIN AVE. S. VEHICLE 1 WAS PARKED ON HENNEPIN AVE, OVER 3 FEET FROM	27	2585	1-Sun	11	10	2013	1445	N	0	2	1	30	2	2	1	98	1	2	0	1	1	5	133150165	1	1	1	90	0	1	N	4	1	48	M	3	1	14	1	0	1	N	4	1	901	M	3	1		
05	25850425	000+00.765	0525850425	0.765	Z		1	0	U		27	2585	5-Thu	1	24	2013	9998	N	0	2	0	30	1	90	0	0	4	1	0	1	0	0	133170101	3	5	17	0	0	1	N	0	0	30	M															
05	25850425	000+00.774	0525850425	0.774	Z		1	0	U		27	2585	7-Sat	10	31	2015	1340	B	0	2	0	30	1	1	0	1	1	1	0	1	0	0	153360093	1	5	0	0	0	1	N	0	0	903	Z	3	5	6	0	0	1	B	4	0	37	F	3	5		
05	25850425	000+00.778	0525850425	0.778	S		1	3	U	UNIT 1 WAS LEGALLY PARKED AND UNIT 2 STRUCK UNIT 1 AND FLED THE SCENE. UNIT 1 HAD AN UNKNOWN PER	27	2585	5-Thu	10	16	2014	1800	N	0	2	1	30	2	1	2	98	4	1	1	1	1	5	142900014	1	5	99	9	9	1	N	98	98	902	Z															
05	25850425	000+00.792	0525850425	0.792	Z		1	3	U	. DRIVER 1 STATED THAT VEHICLE 2 WAS IN THE OUTSIDE LANE AS WELL. DRIVER 2/VEHICLE 2 (AND PASSENG	27	2585	7-Sat	7	18	2015	1120	N	0	2	1	30	1	2	1	98	1	1	0	1	1	5	151990075	1	1	14	8	0	1	N	4	1	61	F	3	1	1	1	0	1	N	4	1	67	M	3	1		
05	25850425	000+00.794	0525850425	0.794	Z		1	3	U	VICTIM BRIGHAM WAS ON HER PEDDLE BIKE GOING NORTHBOUND ON HENNIPEN AV WHEN JILAOW OPENED THE DOOR O	27	2585	7-Sat	7	13	2013	0330	B	0	1	7	30	6	90	1	1	4	3	0	2	1	5	131940018	53	1	1	1	0	31	B	98	1	23	F															
05	25850425	000+00.796	0525850425	0.796	Z		1	3	U	DRIVER 1 (FEMALE DRIVER APPROX 30YS...MALE PASSENGER)TRAVELING SB ON HENNEPIN AVE S STRUCK DRIVER 2	27	2585	7-Sat	1	4	2014	1135	N	0	2	1	30	1	1	1	1	1	2	0	4	2	5	140040102	1	5	11	1	0	1	N	4	1	30	F	3	5	99	99	0	1	N	99	99	902	F				
05	25850425	000+00.796	0525850425	0.796	Z		1	0	U		27	2585	5-Thu	5	29	2014	1545	C	0	2	0	30	1	1	0	90	1	1	0	1	0	0	141820104	3	5	1	0	0	1	C	4	0	34	F	3	5	1	0	0	1	N	0	0	20	M				
05	25850425	000+00.797	0525850425	0.797	Z		1	3	U	UNIT 2 WAS PARKED ON HENNEPIN AV S, HE TOLD ME HE WAS AN UBER CAB AND HIS REAR LEFT PASSENGER OPENE	27	2585	1-Sun	8	24	2014	0044	N	0	2	1	30	2	2	1	1	4	1	0	1	1	5	142360005	1	1	1	1	0	1	N	98	1	31	F															
05	25850425	000+00.800	0525850425	0.800	Z		1	0	U		27	2585	6-Fri	5	31	2013	1300	N	0	2	0	0	1	1	0	1	1	1	0	1	0	0	131830066	3	5	11	0	0	1	N	4	0	56	F	1	5	1	0	0	1	N	0	0	58	M				
05	25850425	000+00.800	0525850425	0.800	S		1	90	U		27	2585	5-Thu	8	1	2013	1939	N	0	2	2	30	1	2	1	1	1	1	0	1	2	5	132130185	1	5	11	1	0	1	N	99	1	46	F	8	5	6	8	0	1	N	99	1	57	M				
05	25850425	000+00.800	0525850425	0.800	Z		1	3	U	UNIT 1 WAS TRAVELING NB ON HENNEPIN AVE S AND ATTEMPTED TO TURN WB ON LAGOON AVE, ON A GREEN ARROW.	27	2585	2-Mon	11	25	2013	0850	N	0	2	4	30	1	5	1	1	1	1	0	1	1	4	133290051	38	7	1	5	0	1	N	4	1	47	M	3	8	6	1	0	1	N	4	1	33	F	38	7		
05	25850425	000+00.800	0525850425	0.800	Z		1	3	U	UNIT 1 WAS TRAVELING NB ON HENNEPIN AVE S. UNIT 2 WAS TRAVELING WB ON LAGOON AVE. THE DRIVER OF UN	27	2585	3-Tue	5	13	2014	1445	N	0	2	4	30	1	5	1	1	1	1	0	1	1	5	141350076	1	1	1	5	0	1	N	4	1	40	F	1	7	1	1	0	1	N	4	1	44	M				
05	25850425	000+00.800	0525850425	0.800	Z		1	90	U	UNIT 1 WAS SB ON HENNEPIN AVE AND WAS TRYING TO STOP FOR A LIGHT THAT HAD CHANGED TO YELLOW AND WAS	27	2585	3-Tue	1	6	2015	0750	N	0	1	4	30	38	7	1	1	1	2	4	3	2	5	150060267	8	5	1	3	61	1	N	4	1	51	M															
05	25850425	000+00.800	0525850425	0.800	Z		1	3	U	VEH #2 WAS NB ON HENNEPIN AVE S STOPPED IN TRAFFIC / INTERSECTION PREPARING TO TURN LEFT / WB ONTO	27	2585	1-Sun	4	12	2015	1228	N	0	2	7	30	1	5	1	1	1	1	0	1	1	4	151020054	1	7	1	5	8	1	N	4	1	84	F	1	1	6	1	0	1	N	4	1	42	M				
05	25850425	000+00.800	0525850425	0.800	S		1	3	U	DIAGRAM WOULDNT WORK. VEHICLE #1 TRAVELING NB OUT OF THE ALLEY STRUCK VEHICLE IN #1 LANE TRAVELING	27	2585	6-Fri	6	6	2014	2226	N	0	2	8	30	1	98	1	98	4	1	0	1	1	4	151580001	1	1	6	2	0	1	N	4	1	21	M	1	7	1	3	0	1	N	4	1	29	M	1	1		

Hennepin (MSAS 425) Avenue between Douglas Avenue and Lake Street Hennepin County (2013-2015)

Crash data is managed by the Mn/DOT Office of Traffic, Safety, and Operations.

SYS	NUM	REF_POINT	GIS_ROUTE	GIS_TM	RD_DIR	ELEM	RELY	INV	R_U	ATP
05	25850425	001+00.380	0525850425	1.380	Z		1	3	U	UNIT#2 WAS STOPPING IN TRAFFIC WHEN UNIT#1 REAR ENDED U
05	25850425	001+00.380	0525850425	1.380	Z		1	3	U	DRIVER #1/RIVERA WAS DRIVING MN 054PTB NB ON HENNEPIN AV
05	25850425	001+00.380	0525850425	1.380	Z		1	3	U	VEHICLE ONE WAS LEAVING A PARKING LOT ON THE WEST SIDE OF
05	25850425	001+00.384	0525850425	1.384	S		1	3	U	THE PEDESTRIAN WALKED OUT INTO TRAFFIC WITHOUT A SIGNAL T
05	25850425	001+00.385	0525850425	1.385	Z		1	3	U	VEH #2 IS TRAVELING NB AT POSTED SPEED IN RIGHT LANE. VEH
05	25850425	001+00.385	0525850425	1.385	Z		1	3	U	UNIT 2 WAS STOPPED FOR THE RED LIGHT WHEN HE WAS REAREND
05	25850425	001+00.386	0525850425	1.386	Z		2	0	U	
05	25850425	001+00.388	0525850425	1.388	Z		1	0	U	
05	25850425	001+00.389	0525850425	1.389	Z		1	3	U	DRIVER OF VEH#2 WAS TRAVELING SOUTH BOUND IN THE LEFT LANE
05	25850425	001+00.389	0525850425	1.389	Z		1	3	U	SEE DIAGRAM WITNESS 1 WAS A PEDESTRIAN ON THE NORTHEAST C
05	25850425	001+00.390	0525850425	1.390	Z		1	3	U	THE DRIVER OF VEH 2 WAS NB ON HENNEPIN AV TURNING LEFT INT
05	25850425	001+00.396	0525850425	1.396	Z		1	90	U	PARKED VEHICLE WAS STRUCK BY A MOVING METRO TRANSIT BUS.
05	25850425	001+00.396	0525850425	1.396	Z		1	3	U	#1 WAS PULLING OUT OF HOLIDAY LOT TO TURN NB ONTO HENNEP
05	25850425	001+00.398	0525850425	1.398	Z		1	3	U	UNIT#2 WAS STARTING IN TRAFFIC SB ON HENNEPIN WHEN UNIT#1
05	25850425	001+00.409	0525850425	1.409	Z		1	3	U	UNIT 1 WAS MAKING A LEFT TURN FROM THE BUSINESS PARKING
05	25850425	001+00.420	0525850425	1.420	Z		1	3	U	UNIT 1 WAS SB ON HENNEPIN AV S APPROACHING 26 ST W IN THE
05	25850425	001+00.447	0525850425	1.447	Z		1	3	U	DRIVER 1/VEHICLE 1 STATED THAT SHE WAS TRAVELING NB ON HEN
05	25850425	001+00.450	0525850425	1.450	E		1	3	U	ON 12/30/14 AT 1153 HOURS, A NON INJURY, PUBLIC PROPERTY A


SOUTHDALE
W 28th St
POTBELLY
SANDWICH SHOP

Metro Transit

July 13, 2018

RE: Independent Utility of Regional Solicitation Applications on Hennepin Avenue / Route 6

Dear Application Scorers:

Metro Transit and the City of Minneapolis have been working collaboratively since 2017 to develop a vision for multimodal improvements on Hennepin Avenue between Lake Street and Douglas Avenue. Both entities are seeking funds through the 2022-2023 Regional Solicitation to deliver the transit and roadway modernization aspects of this vision.

The roadway improvements in the City's project will complement a separate effort led by Metro Transit to improve bus stops along the Route 6 corridor, which includes this portion of Hennepin Avenue. Both the bus stop modernization project and the street reconstruction project have independent utility and individually accruable benefits, and each could be implemented without the other. However, both agencies are committed to coordinating project efforts to ensure the best possible multimodal solution in the corridor.

Past project collaborations of this nature between Metro Transit and roadway jurisdictions have led to better outcomes for each agency and the communities they serve, including lower cost, better-coordinated designs for each project, and coordinated construction timelines resulting in less disruption to businesses and residents. A key example of this collaboration is under construction this year, as Metro Transit, the City, and Hennepin County are partners in delivering Penn Avenue bus stop modernizations through joint C Line and Penn Avenue street construction in Minneapolis.

Metro Transit strongly supports the City's efforts to make transit-supportive improvements to Hennepin Avenue, and looks forward to continued collaboration in the Hennepin Avenue corridor.

Sincerely,

Charles Carlson
Director, BRT Projects
Metro Transit

Minneapolis
City of Lakes

Public Works
350 S. Fifth St. - Room 203
Minneapolis, MN 55415
TEL 612.673.2352
www.minneapolismn.gov

July 5, 2018

Ms. Elaine Koutsoukos
Metropolitan Council
390 North Robert Street
St. Paul, Minnesota 55101

RE: 2018 Regional Solicitation Applications

Dear Ms. Koutsoukos,

The City of Minneapolis Department of Public Works is submitting a series of applications for the 2018 Regional Solicitation for Federal Transportation Funds. The applications and the required matching funds have been authorized by the Minneapolis City Council as described in the Official Proceedings of the Council meeting on June 15, 2018.

The City is submitting applications for seven projects, as listed in the table below, and commits to operate and maintain these facilities through their design life.

Project Name	**Regional Solicitation Category**
Hennepin Avenue S - Douglas Avenue to Lake Street	Roadway Reconstruction/ Modernization
37th Avenue NE - Central Avenue to Stinson Boulevard	Roadway Reconstruction/ Modernization
Nicollet Avenue Bridge over Minnehaha Creek	Bridge Rehabilitation/ Replacement
Intelligent Transportation System Upgrades and Enhancements	Traffic Management Technologies
36th Street West Bicycle and Pedestrian Enhancements	Bicycle and Pedestrian Facilities
Lyndale Avenue N Pedestrian Safety Improvements	Pedestrian Facilities
Near North - Safe Routes to School	Safe Routes to School

The specific applications are described in the attached "Request for City Council Committee Action."

Thank you for the opportunity to submit these applications.

Sincerely,

Robin Hutcheson
Director of Public Works

Council Action No. 2018A-0448 **City of Minneapolis** **File No. 2018-00649**

Committee: TPW, WM Public Hearing: None Passage: Jun 15, 2018 Publication: JUN 23 2018

RECORD OF COUNCIL VOTE				
COUNCIL MEMBER	AYE	NAY	ABSTAIN	ABSENT
Bender	✖			
Jenkins	✖			
Johnson	✖			
Gordon	✖			
Reich	✖			
Fletcher	✖			
Cunningham	✖			
Ellison	✖			
Warsame				✖
Goodman	✖			
Cano	✖			
Schroeder	✖			
Palmisano	✖			

MAYOR ACTION

☑ APPROVED ☐ VETOED

MAYOR

JUN 19 2018

DATE

Certified an official action of the City Council

ATTEST:

CITY CLERK

Presented to Mayor: JUN 15 2018

Received from Mayor: JUN 20 2018

The Minneapolis City Council hereby:

1. Authorizes the submittal of a series of applications for federal transportation funds through the 2018 Metropolitan Council's Regional Solicitation Program, as further set forth in Legislative File No. 2018-00649.
2. Authorizes the commitment of local funds to provide the required local match for the federal funding.

Grant applications through the 2018 Metropolitan Council Regional Solicitation Program for federal transportation funds (RCA-2018-00568)

ORIGINATING DEPARTMENT

Public Works Department

To Committee(s)

#	Committee Name	Meeting Date
1	Transportation & Public Works Committee	Jun 5, 2018
2	Ways & Means Committee	Jun 12, 2018

LEAD STAFF: Liz Heyman, Transportation Planner, Transportation Planning and Programming Division

PRESENTED BY: Liz Heyman, Transportation Planner, Transportation Planning and Programming Division

Action Item(s)

#	File Type	Subcategory	Item Description
1	Action	Grant	Authorizing the submittal of a series of applications for federal transportation funds through the 2018 Metropolitan Council's Regional Solicitation Program.
2	Action	Grant	Authorizing the commitment of local funds to provide the required local match for the federal funding.

Previous Actions

None

Ward / Neighborhood / Address

#	Ward	Neighborhood	Address
1.	All Wards		

Background Analysis

The City will prepare a series of applications for the 2018 Regional Solicitation for Federal Transportation Funds in response to the current Metropolitan Council solicitation. This request includes a summary of the eligible project areas, a brief description of city projects, estimated costs, and the requested amounts. Each project requires a minimum local match for construction in addition to the costs for design, engineering, administration and any additional construction costs to fully fund the project. These applications will maximize the use of federal funding. The funding to be awarded is for projects to be constructed in 2022 and 2023.

Over the course of several months, Public Works identifies projects that meet the eligibility requirements for federal funding and closely evaluates which applications are submitted in a manner that is consistent with the equity-based approach used to select and prioritize as a part of the Capital Improvement Program (CIP). Additional consideration is given to identify which projects align with the criteria upon which the applications are scored, such as: role in the regional transportation system and economy, equity, affordable housing, asset condition, safety, connectivity, cost-benefit, operational benefits, number of users, multimodal elements, etc. Public Works also takes into account project readiness, cost, deliverability, and alignment with adopted plans, policies and initiatives (e.g., *Access Minneapolis*, *20 Year Street Funding Plan*, Complete Streets Policy, Vision Zero, etc.).

The 2018 Regional Solicitation for federal transportation funding is part of Metropolitan Council's federally-required continuing, comprehensive, and cooperative transportation planning process for the Twin Cities Metropolitan Area. The funding program and related rules and requirements are established by the U.S. Department of Transportation (USDOT) and administered locally through collaboration with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Minnesota Department of Transportation (MnDOT).

Applications are grouped into three primary modal evaluation categories; each category includes several sub-categories as detailed below.

1. Roadways Including Multimodal Elements
    - Roadway Expansion
    - Roadway Reconstruction/Modernization and Spot Mobility
    - Traffic Management Technologies (Roadway System Management)
    - Bridges Rehabilitation/Replacement
2. Transit and Travel Demand Management (TDM) Projects
    - Transit Expansion
    - Transit System Modernization
    - Travel Demand Management
3. Bicycle and Pedestrian Facilities
    - Multiuse Trails and Bicycle Facilities
    - Pedestrian Facilities
    - Safe Routes to School (Infrastructure Projects)

The City is recommending the submittal of up to seven applications, which are summarized below:

Project Name	Category	Requested Federal Amount	Minimum Local Match Required
Hennepin Avenue S - Douglas Avenue to Lake Street	Roadway Reconstruction/ Modernization	$7,000,000	$1,750,000
37th Avenue NE - Central Avenue to Stinson Boulevard	Roadway Reconstruction/ Modernization	$7,000,000	$1,750,000*
Nicollet Avenue Bridge over Minnehaha Creek	Bridge Rehabilitation/ Replacement	$7,000,000	$1,750,000
Intelligent Transportation System Upgrades and Enhancements	Traffic Management Technologies	$3,000,000	$750,000
36th Street West Bicycle and Pedestrian Enhancements	Bicycle and Pedestrian Facilities	$2,000,000	$500,000
Lyndale Avenue N Pedestrian Safety Improvements	Pedestrian Facilities	$1,000,000	$250,000
Near North - Safe Routes to School	Safe Routes to School	$1,000,000	$250,000
	Totals	$27,000,000	$6,750,000

* *Local expenditures on this project will be shared between Minneapolis and Columbia Heights, as the two cities share the right-of-way along this section of 37th Avenue NE.*

Details of the proposed applications are described below.

Hennepin Avenue S – Douglas Avenue to W Lake Street

The proposed project is a complete reconstruction of Hennepin Avenue South from Douglas Avenue to West Lake Street, a distance of approximately 1.3 miles. Hennepin Avenue has been identified as a future reconstruction candidate, driven primarily by pavement condition, multimodal connections, number of daily users, as well as an opportunity to better plan for Metro Transit's future E-Line Rapid Bus service. Hennepin Avenue serves an estimated 3,400 people walking, 280 people biking, 6,600 transit users, 400 buses, and 31,500 people driving per day. This segment is programmed in the City's Capital Improvement Program (CIP) for reconstruction in 2023. Hennepin Avenue South is identified as a Pedestrian Crash Concentration Corridor and High Injury Network in the *Minneapolis Pedestrian Crash Study* (2017). The prioritization of this project supports the City's commitment to Vision Zero to eliminate serious and fatal crashes within 10 years. The proposed project will reconstruct the pavement surface, curb and gutter, signage, storm drains,

driveway approaches, traffic signals, striping, lighting, street trees, sidewalks, ADA ramps, and implement shelters/platforms for the future Metro Transit E-Line. This is the last remaining segment of Hennepin Avenue under the City's jurisdiction to be reconstructed between 36th Street West and Washington Avenue South.

Program Category: Roadway Reconstruction/Modernization

37th Avenue NE – Central Avenue to Stinson Boulevard
The proposed project is a complete reconstruction of 37th Avenue NE from Central Avenue to Stinson Avenue, a distance of approximately 1 mile. This section of 37th Avenue NE is along the border between Minneapolis and Columbia Heights and is programmed in the City's Capital Improvement Program (CIP) for reconstruction in 2023. The application and proposed project will be done in collaboration with the City of Columbia Heights. The proposed project will reconstruct the pavement surface, curb and gutter, traffic signals, lighting, ADA ramps, some sidewalks, as well as construction of a bicycle facility.

Program Category: Roadway Reconstruction/Modernization

Nicollet Avenue Bridge over Minnehaha Creek
This project proposes the major repair and renovation of the Nicollet Avenue Bridge over Minnehaha Parkway and Minnehaha Creek and is programmed in the City's Capital Improvement Program (CIP) for reconstruction in 2022. The existing bridge is a 16-span open-spandrel concrete arch bridge, 818 feet long and 63 feet wide. The original bridge was built in 1923 and renovated in 1974. Numerous bridge components are significantly deteriorated, in poor condition and should be repaired or replaced in order to extend the useful life of the structure.

Program Category: Bridge Rehabilitation/Replacement

Intelligent Transportation System Upgrades & Enhancements
The purpose of the project is to upgrade the City's traffic management systems. Key features of the project include installing fiber optic cable to create a higher bandwidth and more reliable traffic communication network, deploying additional CCTV cameras, upgrading detection systems, and installing infrastructure for advancements in connected vehicle V2I technology in locations throughout the City. The City is collaborating with Hennepin County on the project.

Program Category: Traffic Management Technologies

36th Street W Bicycle and Pedestrian Enhancements
The proposed project involves ADA upgrades, sidewalk gap infill, transit accommodations, and construction of a protected bikeway to replace the interim bollard protected pedestrian and bicycle path between Richfield Road and Dupont Avenue S.

Program Category: Bicycle and Pedestrian Facilities

Lyndale Ave N Pedestrian Safety Improvements
The proposed project would include the implementation of pedestrian-related safety improvements at select intersection along Lyndale Avenue North between 18th Avenue North and 40th Avenue North. Lyndale Avenue North has been identified as part of the Pedestrian Crash Concentration Corridor and High Injury Network in the *Minneapolis Pedestrian Crash Study* (2017). The prioritization of this project supports the City's commitment to Vision Zero to eliminate serious and fatal crashes within 10 years. Intersection improvements may include signal upgrades, ADA-compliant curb ramps, bump outs, medians, signage, traffic control devices, and pavement markings at select locations.

Program Category: Pedestrian Facilities

Near North - Safe Routes to School
The proposed project would include pedestrian and bicycle-related improvements along 16th Avenue North between Penn Avenue North and Aldrich Avenue North, which connects North High School and Franklin Middle School. This portion of 16th Avenue North is identified in the Minneapolis Bicycle Master Plan as a future bicycle boulevard and has also been identified as a Pedestrian Crash Concentration Corridor in the *Minneapolis Pedestrian Crash Study* (2017). The prioritization of this project supports the City's commitment to Vision Zero to eliminate serious and fatal crashes within 10 years. Bicycle and pedestrian improvements may include ADA-compliant curb ramps, traffic circles, speed bumps, speed tables, bump outs, medians, signage, traffic control devices, and pavement markings at select locations.

Program Category: Safe Routes to School

The proposed projects were presented to the Pedestrian Advisory Committee on May 2nd, 2018, and to the Bicycle Advisory Committee on May 23rd, 2018.

FISCAL IMPACT STATEMENT

- No fiscal impact anticipated

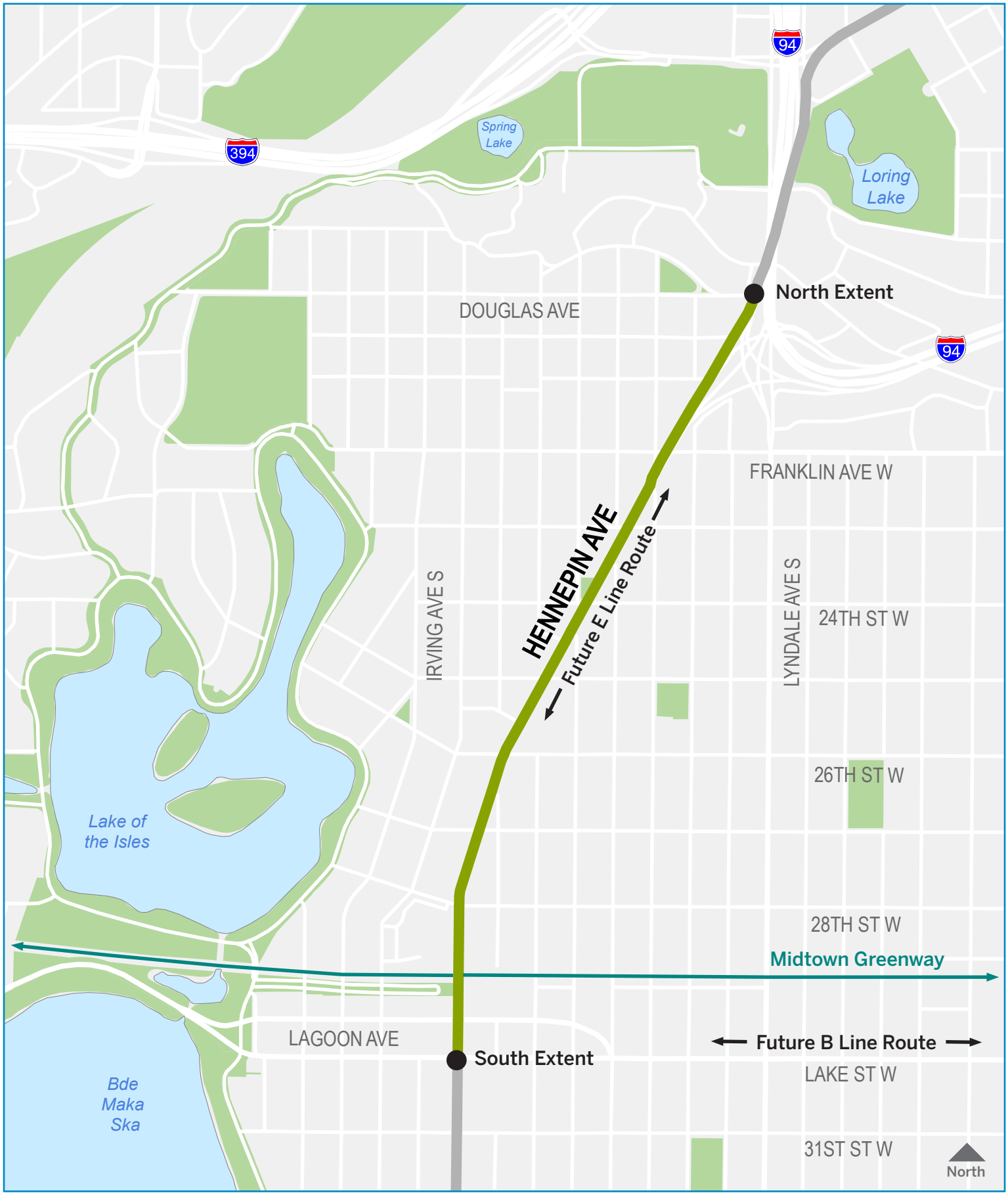
Attachments

Regional Solicitation Map

Hennepin Ave - Douglas Ave to W Lake St

Roadway Reconstruction/Modernization and Spot Mobility

City of Minneapolis
Estimated Project Total: $17.4 M
Requested Amount $7 M



Hennepin Ave Bus Lane Pilot

Franklin Ave to the Uptown Transit Center

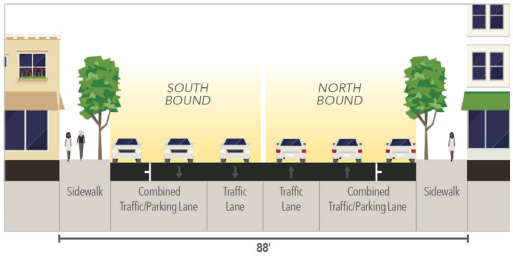
May 15-17, 2018
A partnership between Metro Transit and the City of Minneapolis

Hennepin Avenue has among the best transit service availability – and use – in the Twin Cities. Over 400 bus trips travel the corridor each weekday, providing service to more than 3,300 customers boarding between Franklin Avenue and Lake Street. Unfortunately, Hennepin Avenue is also one of the slowest corridors in the region. During the rush hour, transit speeds regularly slow to 6 mph. There is also a high level of variability of traffic flow along Hennepin Avenue, particularly when there are delays on I-94.

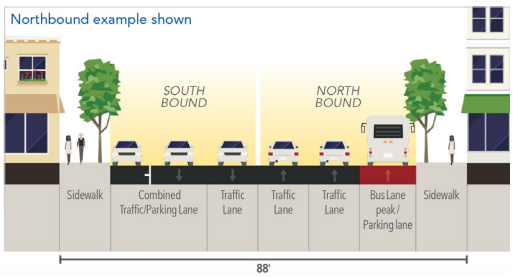
For three days – May 15-17, 2018 – the City of Minneapolis and Metro Transit tested a bus-only lane northbound at 26th Street in the morning and a southbound bus-only lane at 26th Street in the afternoon. On-street parking was removed during rush hours to accommodate the bus-only lanes. Based on ridership and travel speeds the bus-only pilot lanes split at 26th Street with a northbound lane north of 26th Street during the morning; a southbound lane south of 26th Street during the afternoon. This data supported approach provided the transit advantage where and when it's needed most.

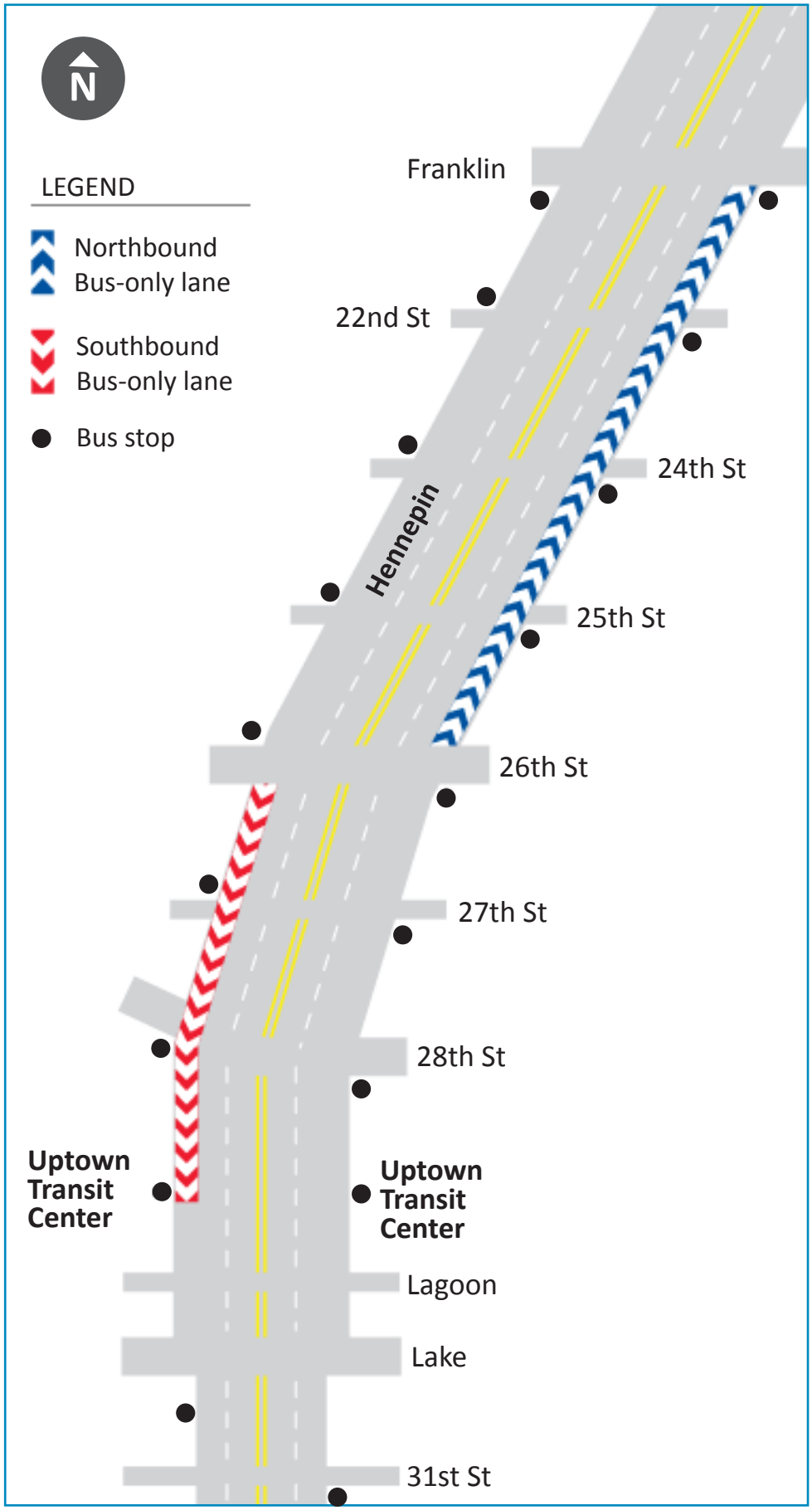
Preliminary findings from the study were positive for bus operations, user experience and general traffic flow.

Hennepin Avenue Existing



Hennepin Avenue Pilot





Hennepin Ave - Douglas Ave to W Lake St

Roadway Reconstruction/Modernization and Spot Mobility

City of Minneapolis
Estimated Project Total: $17.4 M
Requested Amount $7 M

The reconstruction of Hennepin Ave presents an opportunity to modernize a major corridor in the heart of the Twin Cities. The stretch connecting Douglas Ave near Downtown to W Lake St in Uptown was built over 60 years ago and is in need of full reconstruction. In addition to infrastructure deficiencies, the corridor suffers from congestion, crash rates far exceeding the critical and average crash rates, and inadequate pedestrian, bicycle and transit facilities.

Despite current roadway conditions, Hennepin Ave is heavily used by all modes, with particularly high pedestrian and transit usage. It is the "main street" of a major tourist destination with shopping, dining, entertainment, and access to the Chain of Lakes. With planned development in this high density residential area and the future E and B line rapid bus routes, the Hennepin Ave corridor will likely see substantial increases to the already high daily usage rates. The enhanced service will bring reliable and efficient transit service between Uptown, a Metropolitan Council identified Job Concentration Center, and Areas of Concentrated Poverty with greater than 50% residents of color.

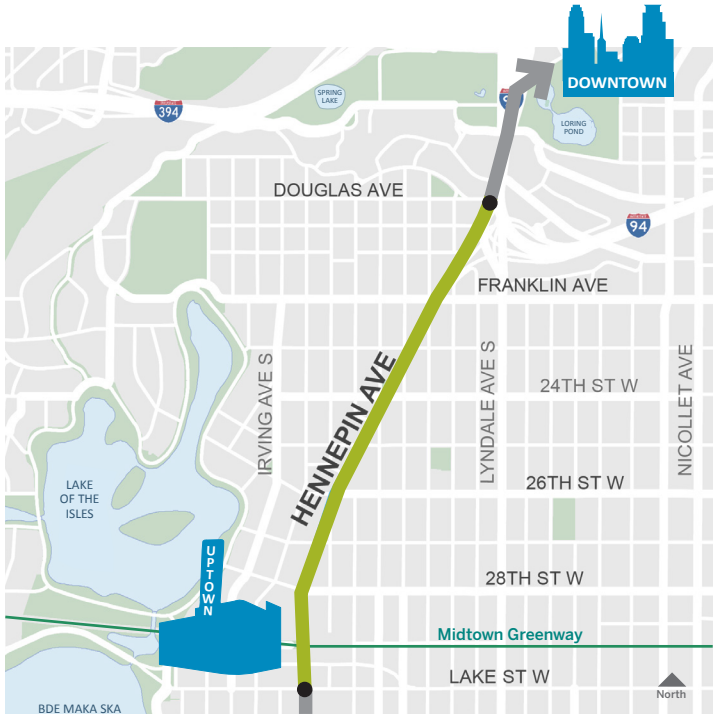
Daily Usage by Mode

Source: Minneapolis Public Works (2017-18); Metro Transit (2017)

While the project will meet requirements with respect to flow, operation, level of service and access management , it will include improvements to pedestrian, bicycle and transit facilities making them more convenient and inviting travel options, thereby increasing corridor throughput. To meet the needs of the diverse and growing community, the Hennepin Avenue right-of-way will be redistributed to align with the City's Complete Streets Policy. The project will prioritize people walking, the most vulnerable travelers, through expanded sidewalks exceeding today's widths and meeting guidance from the Minneapolis Street Design Guidelines. Not only will the project add more space for pedestrians requiring assistance to navigate the corridor and provide more space for transit users, it will upgrade all intersections with ADA improvements and shorten the crosswalks with curb extensions on most cross streets.

The project will include provisions for intersecting bicycle routes through intersection delineation, markings and include space for racks and bike share. The ability to include bicycle facilities on a portion of the corridor or a parallel route is also being analyzed to connect facilities between Lake Street, the Midtown Greenway and the protected bikeways at 26th/28th Street.

Person throughput for this vibrant commercial corridor will also be increased through the inclusion of peak period dedicated transit space along the corridor. Layouts analyzed to date include



four general traffic lanes with segments of dedicated curbside space during peak periods to operate transit, including rapid bus which will bring amenities and faster more reliable service to the corridor attracting more transit users. This Roadway Modernization project complements the separate Transit Modernization effort led by Metro Transit to upgrade future E Line stations, amenities and buses. While both projects have independent utility and benefits, both agencies are committed to coordinating project efforts to ensure synchronized construction timelines resulting in less disruption and lower costs as well as the best possible multimodal solution. In example, in spring of 2018 the City and Metro Transit partnered to conduct a pilot of bus-only lanes on Hennepin Avenue which will inform the design. Preliminary results showed improvements to both transit and vehicular traffic flow during peak travel times.

Project Benefits

- Preservation and modernization of existing infrastructure
- Opportunity to apply the City's Complete Streets Policy to prioritize the most vulnerable users
- Improved user safety to support the City's commitment to Vision Zero
- Increased transit efficiency and reliability to move the most people through the corridor
- Expanded access to economic opportunity for low-income communities and communities of color through more reliable and efficient transit service to a Job Concentration Center
- Improved access to active transportation and recreation opportunities, benefiting physical and mental health
- Completion of one of the final segments of Hennepin Avenue within the City's jurisdiction

HENNEPIN COUNTY
MINNESOTA

July 9, 2018

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

Re: Support for Regional Solicitation Application
Hennepin Avenue Reconstruction Project
From CSAH 3 (Lake Street) to Douglas Avenue

Dear Ms. Koutsoukos,

Hennepin County has been notified that the City of Minneapolis is submitting an application for funding as part of the Regional Solicitation through the Metropolitan Council. The project is the Hennepin Avenue Reconstruction Project as recommended by the Minneapolis Capital Improvement Program.

The project will reconstruct the existing Hennepin Avenue roadway that will provide improvements to the existing pavement, sidewalk, traffic signals, ADA facilities, and drainage elements. Hennepin County supports this funding application and acknowledges that the project aligns with the Hennepin County 2013 Pedestrian Plan. At this time, Hennepin County has no funding programmed in its 2018-2022 Transportation Capital Improvement Program (CIP) for this project. Additionally, Hennepin County will operate and maintain the CSAH 3 (Lake Street), CSAH 43 (Lagoon Avenue) and CSAH 5 (Franklin Avenue) roadway facilities for the useful life of the improvements.

Hennepin County looks forward to working with the City of Minneapolis on this project, if the city is successful in securing funding.

Sincerely,

Carla Stueve, P.E., P.T.O.E.
County Engineer
Hennepin County Transportation Project Delivery

cc: Chad Ellos, Transportation Planning Division Manger

Hennepin County Transportation Planning
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