



Memorial Avenue Upgrades

Phase 3

17 September 2018

Addressing Concerns
About The Roundabout

**Correspondence has been received
expressing concern about:**

**1. Preference for a roundabout at Village
Way/Country Club/Highway 19A**

**2. Suitability of a roundabout at Memorial
Avenue at Highway 19A**

1. Preference for a roundabout at Village Way/Country Club/Highway 19A

This first point is ultimately a strategic priority and budgetary decision of Council.

I will review the methodology by which Council ranks and prioritizes transportation initiatives.



Age-Friendly Transportation Plan Update

Council has commissioned and regularly updates an Age Friendly Transportation Plan with the goal of improving mobility and safety of all users.

A key component of the Age-Friendly Transportation Plan is a prioritized list of transportation projects throughout Qualicum Beach.

Given that there are limited resources and a multitude of projects, the AFTP establishes an objective methodology to evaluate projects based on their contribution to the goals of the plan using the criteria of; safety, vulnerable users, volume & use, network contribution and cost.

Transportation Priorities

From the Age Friendly Transportation Plan

Transportation Priorities

Criteria: 5 = Highest Priority, 1 = Lowest Priority

16 November 2017

Section	Location	Description	Criteria							Total Score	Weighted Score	Notes
			Safety	Use	Vulnerable Users	Network Contribution	Cost	Other				
2.1.1	Memorial Trail, Crescent Rd.-Village Way	Multi-use pathway to waterfront	5	5	5	5	2	4	26	41	RFP issued for design and construction	
2.1.2	Downtown Trail, Beach Rd.-Memorial Ave.	School Connector Route pathway	5	5	5	5	2	3	25	40	Pathway alignment to be determined	
2.1.3	Dollymount Trail, Memorial Ave.-Berwick Rd.	School Connector Route pathway	5	5	5	5	2	3	25	40	Pathway alignment to be determined	
2.3.1	Village Way at Kwalkum Secondary School	Traffic calming	5	4	4	5	2	4	24	38	New crossing with landscaped parking to be determined. RFP issued for design and construction	
2.2.1	Memorial Ave.-Hwy. 19A	Roundabout	5	4	3	5	2	4	23	36	MEMORIAL	
2.1.9	Core bicycle network	Bicycle route and wayfinding signs	2	5	3	5	4	4	23	33		
2.1.4	Harloch Trail, Cedar St.-Beach Rd.	School Connector Route pathway	5	4	4	4	2	3	22	35		
2.2.12	Bennett Rd.-Cardinal Way	Flashing light crossing and streetlight	5	2	4	3	4	4	22	34		
2.2.7	Jones St.-Fern Rd.	Flashing light crossing	5	3	3	4	4	3	22	34		
2.3.3	Hwy. 19A, #2919-#3035	Reconfigure parking, walkway and bike lanes	4	4	3	5	3	3	22	34		Evaluate cross-section options and select preferred configuration
2.2.13	Bennett Rd.-Sunrise Dr.	Flashing light crossing and streetlights	5	4	3	3	4	3	22	33		
2.1.5	Hoylake Trail, Arbutus St.-Grandon Cr.	School Connector Route pathway	5	4	4	3	2	3	21	33		Pathway alignment to be determined
2.2.10	Village Way-Qualkum Rd.	Roundabout	5	4	3	4	2	3	21	33		QUALICUM RD.
2.1.7	Heimsworth Rd., Village Way-Chester Rd.	Accessible pathway	3	3	4	3	3	3	21	31		
2.1.8	Various	Neighbourhood bikeways	2	4	3	5	4	3	21	31		
2.2.11	Qualkum Rd.-Fam Rd. E.	Flashing light crossing and streetlight	4	4	2	4	4	3	21	31	Key crossing on Dollymount Trail	
2.2.9	Village Way-Berwick Rd.	Flashing light crossing	5	2	3	4	3	3	20	32		
2.2.6	Rupert Rd.-Arbutus St.	Flashing light crossing	5	3	3	2	4	3	20	30	Extend Rupert pathway to crossing	
2.2.7	Jones St.-Fern Rd.	Additional streetlights	2	2	4	4	5	3	20	30		
2.2.8	Berwick Rd.-Railway tracks	Extend Berwick Rd.	2	5	4	5	2	1	19	30	Subject to railway approval and signal requirements	
2.1.6	Bennett Trail, Hwy. 19A-Railway tracks	Pathway/sidewalk	5	3	3	2	3	3	19	29		
2.2.14	Hwy. 19A-Village Way-Country Club Dr.	Roundabout	4	5	1	5	1	2	19	29	VILLAGE WAY	
2.3.2	Primrose St. and Beach Rd.	Speed humps, raised x-walks, traffic circles	3	3	3	4	3	3	19	29		Proposed to be replaced with raised crossings (New cross streetgrass)
2.2.10	Village Way-Qualkum Rd.	Additional streetlight	2	3	3	4	4	3	19	28		
2.2.5	Arbutus St.-Hoylake Rd.	Flashing light crossing	2	3	3	3	5	3	19	27		
2.2.10	Village Way-Qualkum Rd.	Traffic signal	3	3	3	4	2	3	18	28		Roundabout is higher priority
2.1.7	Laburnum Rd.-Railway tracks	Pathway connection across tracks	3	3	3	3	3	3	18	27		Widened shoulder with barrier or separate pathway crossing
2.1.8	Rupert Rd., Primrose St.-Memorial Ave.	Pathway	4	3	3	2	3	3	18	27		
2.2.2	Memorial Ave.-First Ave.	Traffic signal	2	4	3	4	2	3	18	27		Adjacent redevelopment, railway signal req.
2.2.8	Berwick Rd.-Railway tracks	Accessible crossing	2	4	3	4	3	2	18	27		Subject to railway approval
2.1.7	Rupert Rd., Primrose St.-Memorial Ave.	Pathway	4	2	3	2	3	3	17	26		Extension of Primrose St. neighbourhood bikeway to Memorial Ave.
2.1.7	Laburnum Rd.-Rupert Rd.	Barriers on shoulder	3	2	3	2	4	3	17	25	Concrete barriers where pathway is on shoulder or road	
2.2.4	Memorial Ave.-Fern Rd.	Intersection operations improvements	2	5	1	5	2	2	17	25	Re-evaluate after Memorial-First Intersection is signalized	
2.3.4	Jones St., Valdez Ave.-Fern Rd.	Pathway/sidewalk	4	2	3	2	2	3	16	25		
2.2.17	Hwy. 19A-Drascent Rd. W.	Warning sign	2	2	1	3	5	3	16	22		
2.3.7	Various	Leased streetlights	2	1	1	3	5	3	15	21		
2.3.7	Various	Reflectors	2	1	1	3	5	3	15	21		
2.2.16	Hwy. 19A-Yambury Rd.	Additional streetlight	2	2	1	2	5	3	15	20		
2.2.15	Hwy. 19A-Charwell Blvd.-Eaglecrest Cr.	Median modifications	2	3	1	2	3	3	14	19		
2.3.6	Ravensbourne Ln.	Resign roadway	1	3	1	3	3	3	14	18		
2.2.3	Memorial Ave.-Railway St.	Full closure	4	2	1	2	3	2	13	20	Traffic redirected to Village Way	
2.2.3	Memorial Ave.-Railway St.	Partial closure	3	2	1	2	3	2	13	18	Traffic redirected to Village Way	
2.2.16	Hwy. 19A-Yambury Rd.	Protected T-intersection	4	1	1	1	2	3	12	18	Priority reduced due to new signal at Drew/Johnston	
2.3.5	Heimsworth Rd., Dogwood Rd.-Chester Rd.	Improved trail	1	2	2	1	2	3	11	15		

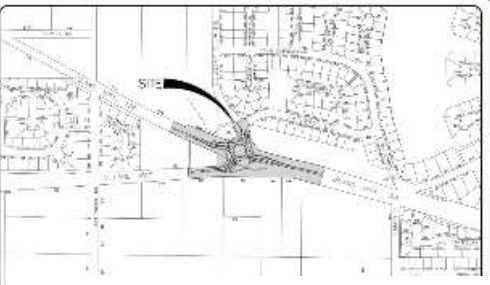
**Memorial Ave – Highway 19A is
the highest ranking roundabout
project**

**It also aligns with the number 1
priority of improving the linkage
from the Village Centre to the
waterfront**

Considerable work has been done on the design of a roundabout at Village Way and Highway 19A and it remains a major capital priority

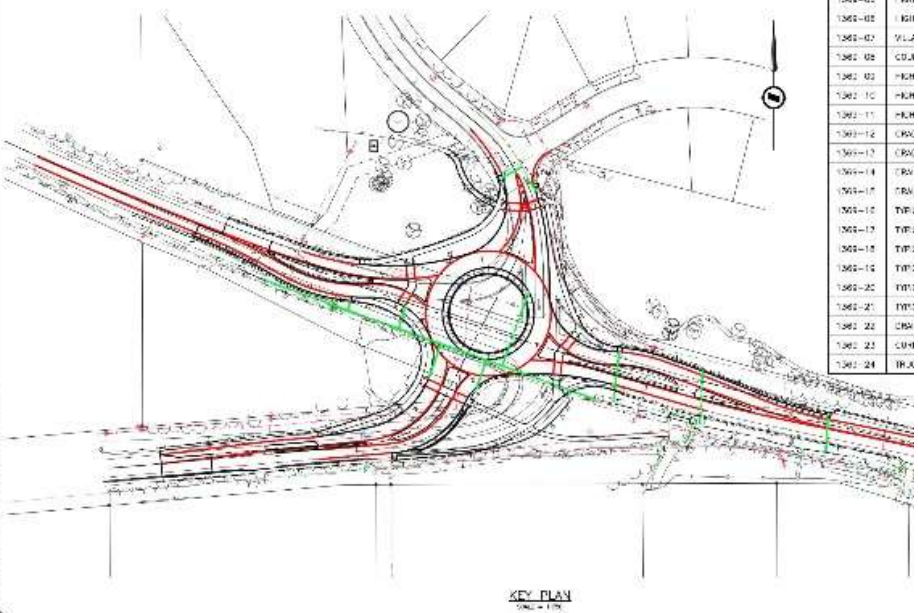
LEGEND

EXISTING	DESCRIPTION	PROPOSED	EXISTING	DESCRIPTION	PROPOSED
(Symbol)	MAINTAIN (NOF LINES)	(Symbol)	(Symbol)	NEW	(Symbol)
(Symbol)	NEW DRIVE & VEH	(Symbol)	(Symbol)	EX. VEH. STOPPING POINT	(Symbol)
(Symbol)	EXIST. UT	(Symbol)	(Symbol)	EX. ROADWAY / THROUGH DRIVE	(Symbol)
(Symbol)	NEW UT	(Symbol)	(Symbol)	EX. SIDEWALK / CYCLEWAY	(Symbol)
(Symbol)	NEW DRIVE	(Symbol)	(Symbol)	EXIST. DRIVE	(Symbol)
(Symbol)	EXIST. DRIVE	(Symbol)	(Symbol)	NEW DRIVE	(Symbol)
(Symbol)	NEW DRIVE	(Symbol)	(Symbol)	EXIST. DRIVE	(Symbol)
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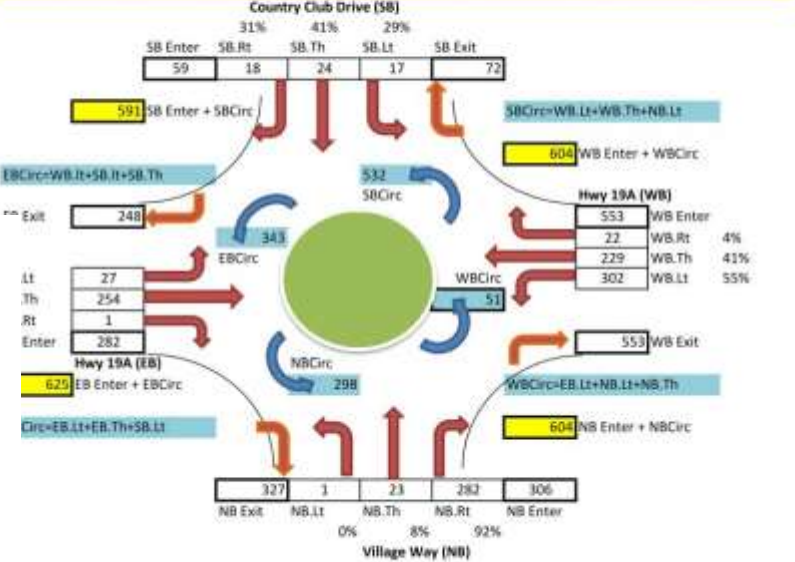


DRAWING LIST

NO.	REV.	DATE	DESCRIPTION
1595-01		11/04	
1595-02		11/7	
1595-03		11/21	
1595-04		11/21	
1595-05		11/21	
1595-06		11/21	
1595-07		11/21	
1595-08		11/21	
1595-09		11/21	
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1595-22		11/21	
1595-23		11/21	
1595-24		11/21	



Town of Qualicum Beach
Village Way and Hwy 19A Roundabout: 1 June 2011 (2:30-3:30pm) Traffic Movement Counts
Project: 1369
Date: 20Mar2014
Warrant for Number of Lanes using Turning-Movement Volumes. (Exhibit 3-15)
By: TJC
TSB NCHRP Report 672: Roundabouts: An Informational Guide Second Edition, Chapter 3: Planning
If sum of entering and circulating volumes for each approach is less than 1,000 vehicles/hour = Single Lane Okay



001 Qualicum Beach Town\1369 Village Way & Hwy 19A Roundabout\02 Design\TQB Traffic\1369 Planning-Lanes Hwy 19A\02\KeyPlan KeyPlan2011_230pm-130pm Exts.dwg

2. Suitability of a roundabout at Memorial Avenue at Highway 19A

The second point is one of Transportation Engineering for which I will answer commonly stated objections with material from the mainstream literature.

I also wish to address data that has been forwarded to Council from a Minnesota DOT study.

Prior to the construction of the Memorial/Rupert roundabout, staff from the Town and Koers Engineering attending training for Troubleshooting Roundabout Design

TROUBLESHOOTING
roundabout design

Safe and efficient roundabouts for all users (vehicles, bicycles, pedestrians)

- Proper Deflection
- Good Speed Control
- Fluid Drive Paths

presented by
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Certificate of Attendance

Presented to
Bob Weir

For attending 16 classroom hours of training in
Troubleshooting Roundabout Design

Sponsored by
WSDOT Highways & Local Programs
Washington State LTAP Center

June 16 - 17, 2009
Shoreline, Washington

 **Washington State
Department of Transportation**

Judy McDonald
Judy McDonald, Training Program Coordinator
Washington State LTAP Center

Patrick McGrady
Patrick McGrady, Project Engineer, Reid Middleton, Inc.
Instructor

Roundabouts are not pedestrian friendly.

- There are statistically fewer pedestrian crashes at roundabouts than at signalized intersections. At roundabouts, vehicle speeds are much slower and drivers sight lines are directed towards pedestrians in and adjacent to the crosswalks, while raised splitter islands provide a space for pedestrians in the middle of each crossing so pedestrians only need to cross one direction of traffic at a time.
- <http://healdsburgaveimprovements.com/wp-content/uploads/Roundabout-Myths-and-Facts.pdf>

Roundabouts segregate the conflicts –only encounter one at a time

Pedestrians – Vehicles – Pedestrians

Roundabouts channelize driver's view to where they should look. At an intersection a driver is required to constantly scan for multiple conflicts

Vehicle speed in roundabouts is slow. Easy for a vehicle to stop for a conflict.

Driveways near roundabouts will not be accessible or functional.

- Roundabouts can provide a useful tool within an access management program to provide U-turn opportunities at the intersections, thereby allowing for a reduction of full access points along the adjoining roadway segments. Further, the ability to make U-turn at the roundabout intersection allows access to opposite parking and driveway without creating congestion on roadway without turn lanes. Access management at roundabouts follows many of the principles used for access management at conventional intersections, except that at roundabouts the prevailing lower speeds make separation distances less onerous than at traffic signals. Some small businesses such pursue roundabout locations because their low speed operation facilitates safer, more flexible driveway access
- <http://healdsburgaveimprovements.com/wp-content/uploads/Roundabout-Myths-and-Facts.pdf>





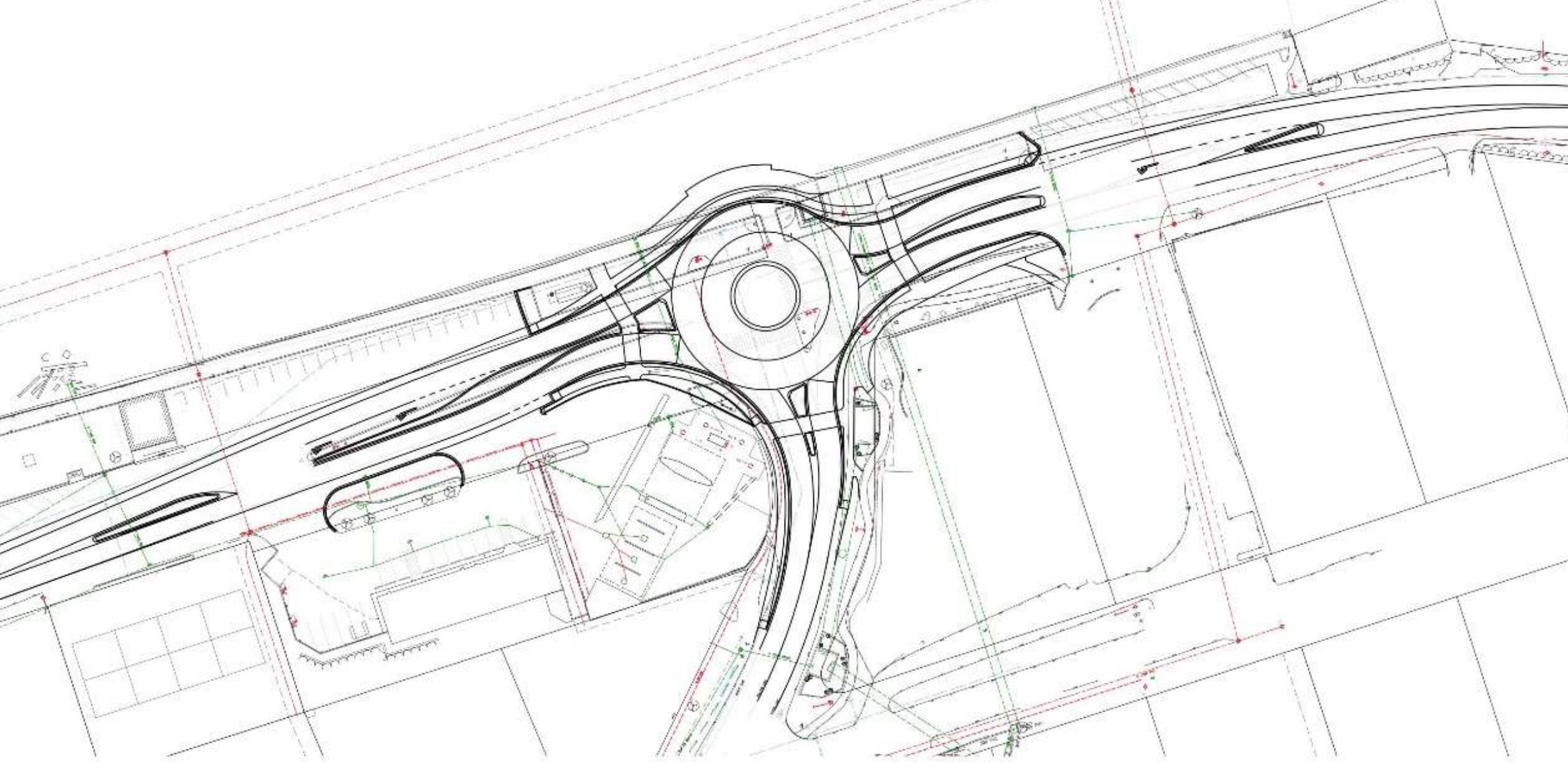






The slower speeds and continuously moving traffic at a roundabout make moving in and out of accesses to adjacent businesses easier. Slower speeds mean smaller gaps will be necessary for drivers to enter the roadway.

With a conventional intersection, the roadway can be blocked by vehicles waiting for the light, or higher speeds of moving vehicles will result in more gap rejection for a user trying to enter the roadway.



A Study of the Traffic Safety at Roundabouts in Minnesota



Office of Traffic, Safety, and Technology
Minnesota Department of Transportation



October 30, 2017

Derek Leuer, P.E.

Office of Traffic, Safety, and Technology

Data from this study was selectively mined in an attempt to show that vehicle crashes increased significantly at roundabouts.

In fact the summary of the study states:

- 86% reduction in fatal crashes
- 83% reduction in serious injury crashes
- 69% reduction in right angle crashes
- 83% reduction in left turning crashes
- 61% reduction in injury crashes

An increase of 683% in a certain type of crash was represented as demonstrating the significant increase in vehicle crashes in roundabouts

Table 22: Crash data from all Roundabouts with before construction and

Description	Rear End	Sideswipe Same Dir	Left Turn
Before Crashes	453	50	114
Before Rate	0.193	0.021	0.048
After Crashes	308	414	35
After Rate	0.124	0.167	0.014
Percent Increase/Decr	-35.7%	+683.1%	-71.2%

Table 3: Site Years and Vehicles Entering for certain Roundabout Types

Type of Roundabouts	Number of Sites	Site-Years		Vehicles Entering the Intersection	
		Before Construction	After Construction	Before Construction	After Construction*
Single Lane	104	279	622	1,129 Million	1,605 Million
Unbalanced (2 lanes x 1 lane)	34	162	120	998.9 Million	664.9 Million
Full Multi-Lane	6	22	29	222.9 Million	216.2 Million
Total	144	463	771	2,351 Million	2,486 Million

The number of pedestrian and bicycle crashes are so small that they are not meaningful for statistical analysis

Before data (page 18):

Pedestrian + bicycle crashes single lane roundabouts = $6 + 1 = 7$ crashes
in 463 site years = 0.015 crashes/site year

After data (page 19):

Pedestrian + bicycle crashes single lane roundabouts = $10 + 3 = 13$
crashes in 771 site years = 0.017 crashes/site year

It is important to recognize that bicycle and pedestrian crashes are often not reported or reported correctly, a minor error in this type of data could completely reverse the results.

The slower speeds dictated by roundabout geometry mean that even if a bicycle or pedestrian crash occurs it is likely to be less severe.

The Minnesota data showed a 61% reduction of injury crashes and an 83% reduction of serious injury crashes.

How About a Roundabout? Features of a Modern Roundabout - Single Lane

A modern roundabout is a circular intersection where traffic flows around a center island.

Roundabouts are an alternative to traffic signals and stop signs to control traffic. In many situations, they have several advantages over signals and stop signs, including:

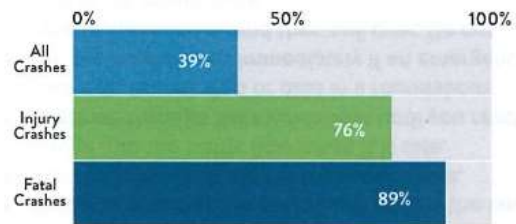
- Fewer injury crashes and fatalities
- Increased pedestrian safety
- Less vehicle delay and pollution

Roundabouts, like all intersections, undergo thorough analysis prior to implementation to determine if it is the appropriate solution.

Safety

Roundabouts can dramatically improve safety when compared to conventional intersections. A study of 23 intersections converted to roundabouts shows a decrease in total crashes by 39 percent, a decrease in injury crashes of 76 percent, and a dramatic 89 percent decrease in fatal crashes. ("Safety Effects of Roundabout Conversions in the U.S.," Insurance Institute for Highway Safety)

Reduction in crashes after conversion to roundabouts (23 intersections)



Traffic Flow
Pavement markings, curves at entry points and raised islands direct traffic into a one-way counter-clockwise flow around the central island.

Speed Control
The size of the roundabout and the curvatures of entry are designed to slow the speed of vehicles.

Yield-at-entry
Traffic entering the circle yields to traffic already in the circle.



The reasons stated in the correspondence for opposing a roundabout at Memorial and Highway 19A actually turn out to be the reasons why a roundabout should be chosen and will be safer and offer a higher level of service to the users.

