

**Town of Ennis  
Main Street/Highway 287 Traffic Calming Project  
Final Report (DRAFT)**



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Prepared for

The Town of Ennis, Montana

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**MONTANA**  
STATE UNIVERSITY

Western  
Transportation  
Institute

## **About the Small Urban, Rural and Tribal Center on Mobility**

The mission of the Small Urban, Rural and Tribal Center on Mobility (SURTCOM) is to conduct research and provide leadership, education, workforce development and technology transfer in all transportation-related aspects of mobility for people and goods, focusing specifically on small urban, rural and tribal areas. Member institutions include the Western Transportation Institute at Montana State University, the Upper Great Plains Transportation Institute at North Dakota State University, and the Urban and Regional Planning program at Eastern Washington University. More information about SURTCOM can be found at: <http://surtcom.org/>.

## **Disclaimer**

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## **Availability of Dataset**

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## Project Background

The Town of Ennis is located in southwestern Montana, approximately 70 miles northwest of West Yellowstone (Figure 1). Ennis lies on the eastern side of Madison County in the Madison River Valley. A vibrant community of approximately 900 residents, Ennis features year-round outdoor recreation and an authentic, western atmosphere (Town of Ennis, 2018).

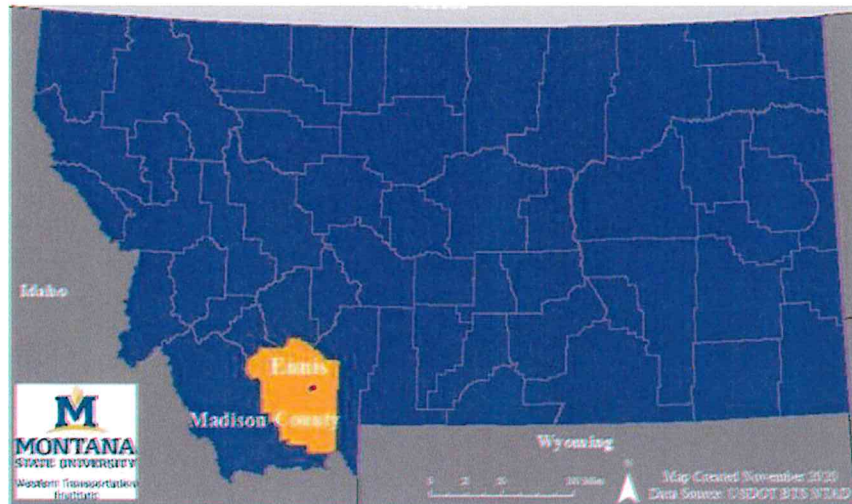


Figure 1. Map of Montana with Madison County and Town of Ennis highlighted

Not unlike many rural communities in Montana and other states, Ennis' Main Street is also U.S. Highway. US 287 runs north-south from Choteau, MT to Port Arthur, TX. As a result, “through traffic” is a major concern, as motorists may not notice or abide the transition from a highway to a Main Street, which requires a slower speed (25 mph speed limit) and yielding to pedestrians, in downtown Ennis.

The Town of Ennis reached out to the Western Transportation Institute (WTI) to determine options for ensuring that motorists followed the posted speed limit and yielded to pedestrians crossing Main Street/Highway 287. As a U.S. Highway, Main Street is under the jurisdiction of the Montana Department of Transportation (MDT). As such, researchers partnered with MDT to develop solutions for the portion of Highway 287 running through downtown Ennis.

WTI is part of Montana State University-Bozeman (MSU) and the largest research institute in the nation focusing on rural transportation issues. For this project, WTI provided technical assistance to the Town of Ennis for a demonstration (often called “pop-up”) project aimed at lowering traffic speeds and increasing pedestrian safety. WTI assistance included planning, installation and removal of infrastructure, data collection and analysis, and final reporting. In addition, the Local Technical Assistance Program (LTAP), housed within WTI, provided flagger certification training and assistance with traffic control on the project.

WTI has been involved in the implementation of pop-up projects in Bozeman, Big Sky, and Helena since 2017. During this time, staff from WTI worked with the City of Bozeman to create

a pop-up toolkit for implementation of projects within the city limits. Standards for the pop-up installations were crafted with guidance from the [Burlington, VT Quick Build Guide](#) and the [Tactical Urbanism Toolkit](#). Following the completion of the City of Bozeman Pop-up Toolkit, WTI worked with Bike/Walk Montana to develop an approved [Pop-up Project Guide](#) for the state of Montana. This project is the first time that a pop-up traffic calming project occurred on a state highway in Montana.

## Pop-up Project Process

Pop-up traffic calming projects work to slow traffic and increase pedestrian/cyclist safety. A temporary pop-up traffic calming project uses low cost temporary materials for the testing of different strategies to see the impact they have on driver and pedestrian behaviors. The goals of pop-up traffic calming projects are defined by the community and allow for community input on the design and implementation before the construction of a long-range construction project. Data is collected throughout the process to determine the effectiveness of the installation. Figure 2 shows a representation of the pop-up process utilized by WTI.

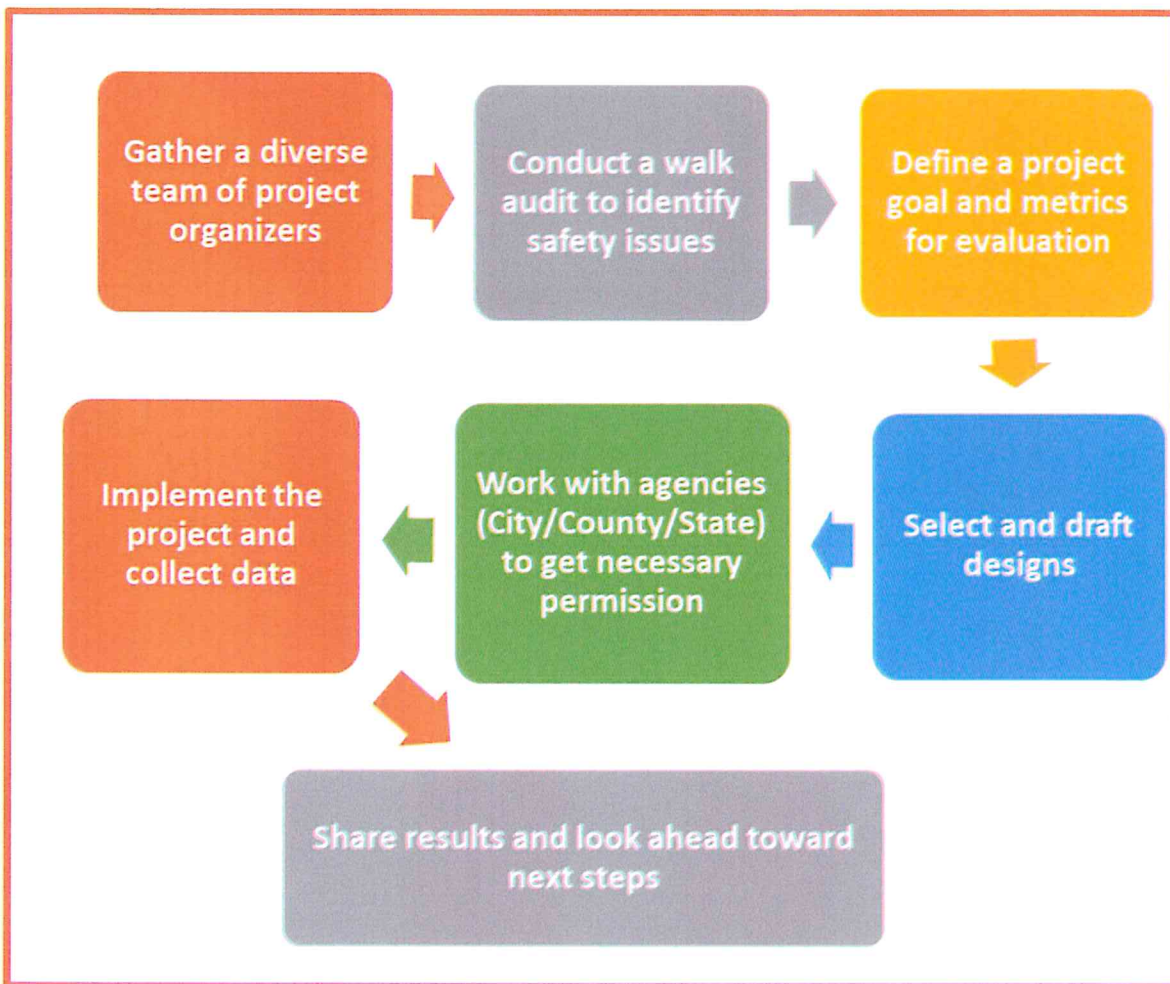


Figure 2. Pop-up Project Process

Pop-up projects also provide the opportunity to test out different uses of a street's public space. For example, extending the curb further into the street not only helps increase visibility of pedestrians to motorists, it also creates space for other uses that the community wants. For example, some communities value aesthetics and want to add planters with flowers; others may want a bench, bike rack or public art. Curb extensions can also create space for an attractive

place to sit outside (sometimes called Parklets/Pedlets), as well as planters and art installations. Parklets/Pedlets can create useable space for businesses, restaurants, and the community to access.



## Project Timeline & Startup Activities

In 2018, Mark Fenton, a nationally recognized walkability expert, conducted a walk audit in Ennis, MT with residents as well as representatives from various local and state organizations. The walk audit provided a forum for sharing concerns about traffic speeds and pedestrian safety in downtown Ennis. In July 2019, the Town of Ennis Commission approached WTI regarding concerns over the safety of people walking and biking on Main Street/Highway 287 and requested WTI provide technical assistance for a temporary traffic calming demonstration project. The Main Street pop-up project was completed as a partnership between the Town of Ennis, WTI and MDT.

During the winter of 2019, MDT was made aware of the project planning efforts by the Town of Ennis leadership. At this time, WTI connected with the Town of Ennis Commission to discuss the processes involved for contracts, budgets, funding, and partnership roles and responsibilities. Emails and phone calls were exchanged among WTI, the Town of Ennis, and MDT to begin the discussion necessary to work towards a collaborative project.

In March 2020, a kick-off collaborative planning meeting was held with WTI, the Town of Ennis Commission, and the MDT Butte District to discuss proper permitting, drainage, and project deliverables. A walk audit was planned for mid-April as a community engagement opportunity.

Shortly after the initial kick off meeting, statewide restrictions in response to the COVID-19 virus limited group sizes to 10 people or less through May 31, 2020, impacting the project. Due to the limited group sizes, the walk audit had to be conducted on a smaller scale than originally planned. WTI staff produced a paper copy of walk audit questions to be disseminated to the public to give others an opportunity to provide input for the project.

A walk audit was conducted on May 14, 2020 and findings from that effort were synthesized in the “Final Summary Report: Town of Ennis Hwy 287/Main St Walk Audit” provided to the Town of Ennis Commission and the MDT Butte District on June 8, 2020 (see Appendix A for the full report).

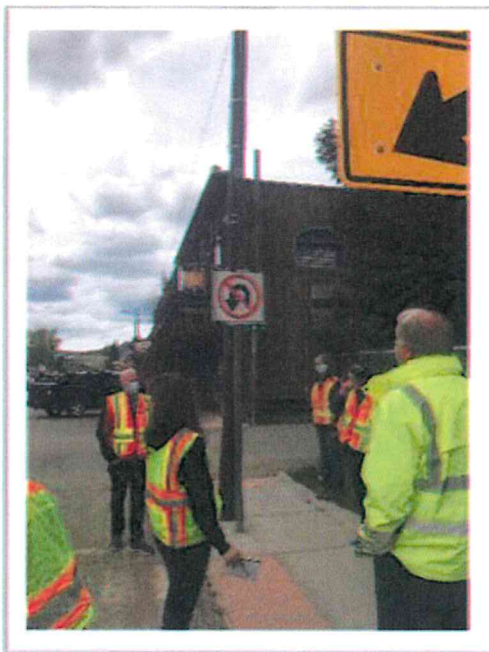


Figure 3. Project team conducting a walk audit

After the walk audit, researchers asked the community to develop a community goal to direct the entire project. After the release of the Walk Audit Report, the Commission met to discuss and set a community goal for the project. On June 11, 2020, the Town of Ennis Commission submitted the following community goal to the researchers and MDT:

*“Our community goal is to improve safety on Hwy 287 in downtown Ennis for a variety of users (pedestrian, bike, vehicle). By reducing vehicle speed and increasing pedestrian/bicycle visibility, we hope to increase user awareness for a safe and active downtown Ennis.”*

A project timeline was developed, as depicted in Figure 4. Subsequent tasks are described in the sections that follow.

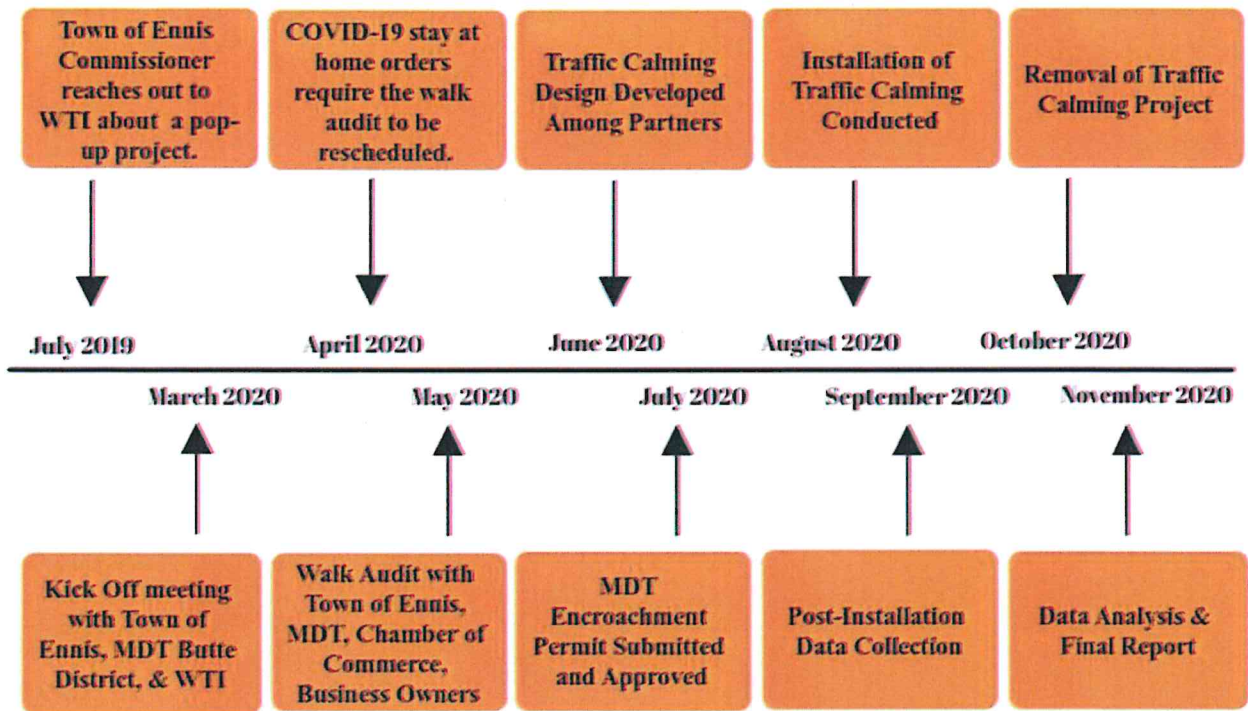
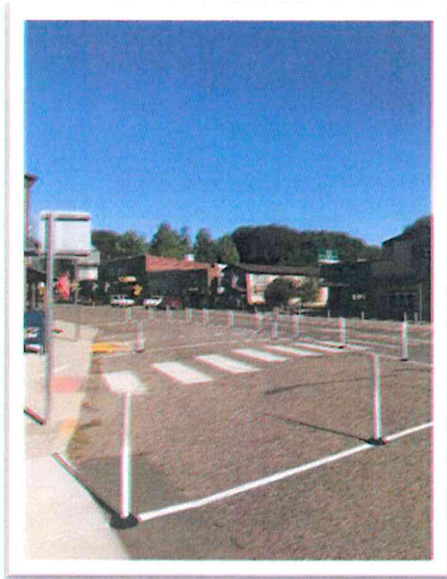


Figure 4. Project Timeline

## Plan Development and Installation

The width of Hwy 287/Main St is 75ft and includes two travel lanes and on-street angled parking on both sides. The 1<sup>st</sup> St crosswalk is approximately 100 ft long and is skewed diagonally across Main St (Figure 5). One of the outcomes of the walk audit was the identification of four locations (three with existing crosswalks and one with none) as possible sites for temporary traffic calming design installations (see Figure 6 for overview):



*Figure 5. 1st Street Crosswalk*

- (A) Crosswalk at east end of Main St adjacent to Willie’s Distillery. The crosswalk is continental (considered highly-visibility roadway markings). Both curb ramps have truncated domes as required by the Americans with Disabilities Act (ADA).
- (B) 3<sup>rd</sup> St intersection with Hwy 287 across from the Gravel Bar. There are curb ramps at the corners of 3<sup>rd</sup> and Main St. but no painted crosswalk. The intersection is offset so curb ramps do not align.
- (C) 2<sup>nd</sup> St. crosswalk, in the center part of downtown Ennis. Crosswalk marked continental and meets ADA requirements.
- (D) 1<sup>st</sup> St. crosswalk that is skewed from the southeast corner of 1<sup>st</sup> St. to the curb ramp in-front of Plain Jane’s, on the north side of Main St (Figure 5).

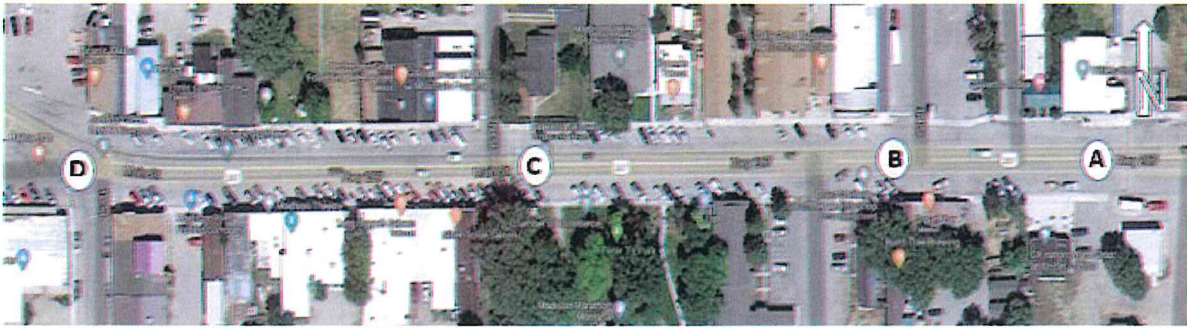
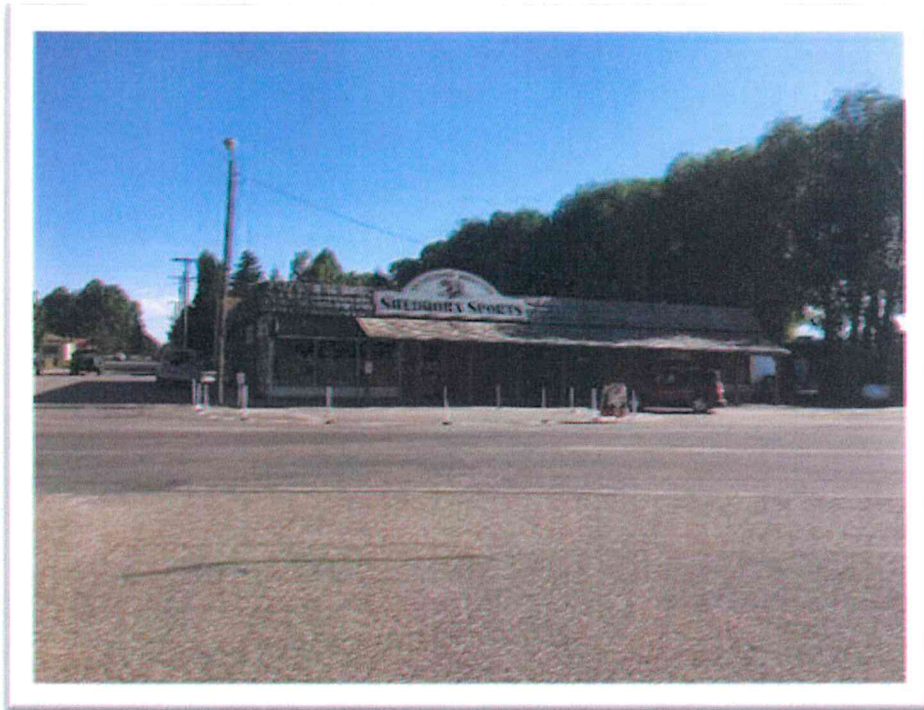


Figure 6. Google Maps aerial image of Main Street in Ennis with the four crosswalks labeled A, B, C, and D.

After discussion with Town Commissioners, it was decided to proceed with temporary pop-up traffic calming design treatments at all three existing marked crosswalks and one currently unmarked crosswalk. In addition, a realignment of the Main St, 1<sup>st</sup> St, and Hwy 287 intersections was proposed by Town of Ennis Commissioners. WTI staff developed conceptual designs for the temporary traffic calming project. (See Appendix B for the final approved designs).

Curb extensions were selected to be installed at all four of the proposed crossings on both sides of the Main St corridor to narrow the roadway and provide visual cues to discourage high-speed vehicle turning movements. Curb extensions also shorten the crossing distance for pedestrians and improve the visibility of people crossing. The removal of parking created safe space for pedestrians within the curb extensions. It also improved the line of sight for motorists, because vehicles parked on the street formerly obscured the view of drivers turning from side streets onto Main St/Hwy 287. In total, 13 parking spaces were removed from the original configuration of Main St.

In addition to the four street crossings, the Commissioners requested to realign the 1<sup>st</sup> St, West Main St, and Hwy 287 intersection in front of Shedhorn Sports to reduce conflict points between roadway users and allocate more space for people walking and biking (Figure 7). This resulted in West Main St being nearly perpendicular to Hwy 287. A temporary stop sign was installed for traffic on West Main so that traffic along Hwy 287 continued to have the right of way.



*Figure 7. Main Street realignment*

Once the proposed designs were reviewed and approved by MDT, WTI worked with the Town of Ennis to submit an MDT Encroachment Permit. The Town of Ennis was the permit applicant and assumed responsibility for the project.

Once the encroachment permit was submitted and approved, WTI assisted the Town of Ennis with the procurement of materials and supplies. The project was implemented using funds from the Town of Ennis to purchase traffic calming materials, as well as both staff and volunteer time. WTI provided matching funds to cover WTI's staff time and travel expenses.

In the time leading up to the installation, WTI developed a Community Outreach Plan for the Town of Ennis to ensure that businesses and residents were familiar with the upcoming project (see Appendix D). WTI also worked with MDT to develop a Work Zone Traffic Control Plan for installation day based on the Manual for Uniform Traffic Control (MUTCD 2012). Work zone signage was borrowed from partners at the City of Bozeman, Madison County, and MDT. As part of the Traffic Control Plan, staff from the WTI Local Technical Assistance Program (LTAP) conducted a flagger certification training at the Ennis Library. The training was attended by seven persons including staff from the Town of Ennis Public Works Department and one Town Commissioner. The training was funded by WTI and provided to the Town at no cost.

Installation of the projects took place over a two-day period in August 2020. On August 3 staff from WTI laid out the temporary curb extensions. During this time, WTI worked with the Town of Ennis Volunteer Fire Department to test the turning radii on the 1<sup>st</sup> St intersection realignment

with the department's largest truck (Figure 8). Upon the initial test, it was determined that the radius needed to be adjusted to accommodate the radius of a large vehicle turning rapidly.



*Figure 8. Town of Ennis Fire Engine on Main Street*

On August 4, WTI helped to facilitate the installation of the pop-up traffic calming project. Installation was completed by a group of volunteers, staff from the Town of Ennis, and WTI researchers. Town of Ennis Public Works staff were also on site to assist with the moving of materials and traffic control, as well as the installation of the project. Installation was completed that day and left in place until Monday October 19, 2020 for a total of 77 days, which was consistent with the approved MDT encroachment permit. Traffic data were collected both pre- and post-installation by WTI staff and MSU students. Based off on initial feedback from businesses and residents, staff from WTI updated the design and submitted it to Town of Ennis Commissioners. Changes were not made to the installation.

## Data Collection Process

WTI conducted both the pre- and post-installation data collection and analysis on the Town of Ennis temporary pop-up traffic calming project utilizing the following parameters.

### Pre-installation Data Collection

Data collected using MetroCount traffic tubes and CountCam traffic cameras between Friday, July 24 to Monday, August 3 is considered the “pre-installation” data for the purposes of this project.

### Post-installation Data Collection

Data collected between Friday, September 4 to Monday, September 14 is considered the “post-installation” data for the purposes of this project. An initial desensitization period of 30 days dictates the timing of the post-installation collection.

The following data types, collection tools, and dates/times were utilized to conduct the data collection at the different locations.

### Data Equipment Locations



Figure 9. Location of data collection devices on Main St. (Notes: The stars indicate approximate locations of MetroCount traffic tube locations; the arrows designate approximate locations of CountCam2 traffic cameras pointing in the same direction of the camera orientation.)

Flyers with SurveyMonkey QR Code and Hyperlink were installed on each side of every curb extension location (not shown in Figure 9).

1. MetroCount traffic tubes were utilized to capture **traffic volume** and **traffic speed**. Locations were selected to be close to the proposed traffic calming project while minimizing the impact of vehicle turning and parking movements.
  - a. Locations (see Figure 9):
    - i. The west side of downtown on Hwy 287, near the Town Pump gas station
    - ii. The east side of downtown on Hwy 287, near the Lions Park
  - b. Dates:
    - i. Pre-installation Data – July 24 to July 30
    - ii. Post-installation Data – September 3 to September 7



2. CountCam traffic cameras were installed to capture **pedestrian counts** and to determine **driver yielding rates**. Driver yielding rates are determined by observing whether a pedestrian has approached the edge of a curb or curb extension before a car arrived and then whether the car stopped and allowed the pedestrian to cross.
  - a. Locations (see Figure 9):
    - i. The south side of Main St/Hwy 287 oriented towards the east to capture the crosswalk near Willie’s Distillery
    - ii. The north side of Main St/Hwy 287, oriented towards the Gravel Bar and temporarily installed crosswalk at 3<sup>rd</sup> St.
  - b. Dates:
    - i. Pre-installation Data – July 24 to July 29
    - ii. Post-Installation Data – September 3 to September 7, which was Labor Day weekend.
  - c. Protocol:
    - i. Pedestrian counts were conducted following protocol from the American Planning Association (APA). Pedestrian counts utilized video data that was tracked and counted from 6:00am – 7:00pm (Emmons, 1965).
    - ii. Yielding rates were analyzed utilizing City of Milwaukee driver yielding methodology as used by WTI in previous pop-up projects. Data was analyzed between the time of 6:00am and 7:00pm to coincide with pedestrian count data.
    - iii. Students in the Institute of Transportation Engineers (ITE) group at Montana State University analyzed the video data, with oversight from WTI researchers.
  
3. SurveyMonkey was utilized as the primary surveying instrument to capture **public comments**. The survey was prepared by WTI with input from the Town of Ennis Commission.
  - a. Location:
    - i. The SurveyMonkey QR code and hyperlink were placed on a flyer adjacent to the curb extensions. The signs were installed on August 4, 2020 and removed on Monday October 19. In addition to posting the information at the installation, the weblink to the survey was provided to the Town of Ennis Commission to be shared with the community through its communication network. The link utilized was <https://www.surveymonkey.com/r/TownOfEnnis>
  - b. Dates:
    - i. August 3, 2020 – October 27, 2020
  - c. Analysis:
    - i. WTI researchers analyzed 421 responses to create graphs, charts, word clouds, and the survey report document. See Appendix E for all community survey results.

## Results

### Speed and Volume Data

Speed and volume data collected from both the north end and south end of Main St is shown in Table 1 and Table 2. Southbound traffic at the Lions Park data collection site as well as northbound traffic at the Town Pump collection site show traffic that has already passed through the traffic calmed areas. Analysis indicated that traffic heading both directions into and out of the traffic calming installation saw increases of speed from pre-installation to post-installation. Data indicated 85<sup>th</sup> percentile speeds for vehicles leaving town increased by 2.6 mph at Lions Park and 3.7 mph near the Town Pump. It is not clear why speeds increased. Traffic patterns across the US have changed during COVID-19. Higher speeds may indicate the location of the road tubes was outside the traffic calming project's area of influence. In addition, the maximum recorded speed at all the sites went up post-installation.

*Table 1. Highway 287 Lions Park Site: speed and volume data*

Metric	South Bound (pre-)	South Bound (post-)	Difference
Average Speed	27.3 mph	30.9 mph	+ 3.6 mph
Average Daily Traffic	1269	1542	N/A
85 <sup>th</sup> Percentile	32.0 mph	34.6 mph	+ 2.6 mph
% Speeding	75.0%	94.4%	+ 19.4%
Max Speed	64 mph	97.1 mph	+ 27.1 mph

*Table 2. Highway 287 Town Pump Site: speed and volume data*

Metric	North Bound (pre-)	North Bound (post-)	Difference
Average Speed	20.0 mph	23.1 mph	+ 3.1 mph
Average Daily Traffic	3759	1465	N/A
85 <sup>th</sup> Percentile	23.5 mph	27.2 mph	+ 3.7 mph
% Speeding	21.3%	31.3%	+ 10.0%
Max Speed	55 mph	94.9 mph	+ 5.9 mph

Box and whisker plots are an effective way to visualize data to see where points are clustered as well as identify the outliers (both high and low). Figure 10 and Figure 11 show the speed data from southbound traffic at the Lions Park data collection site, as well as northbound traffic from the Town Pump data collection site respectively. Of note, the average speeds increased from pre- to post-installation.

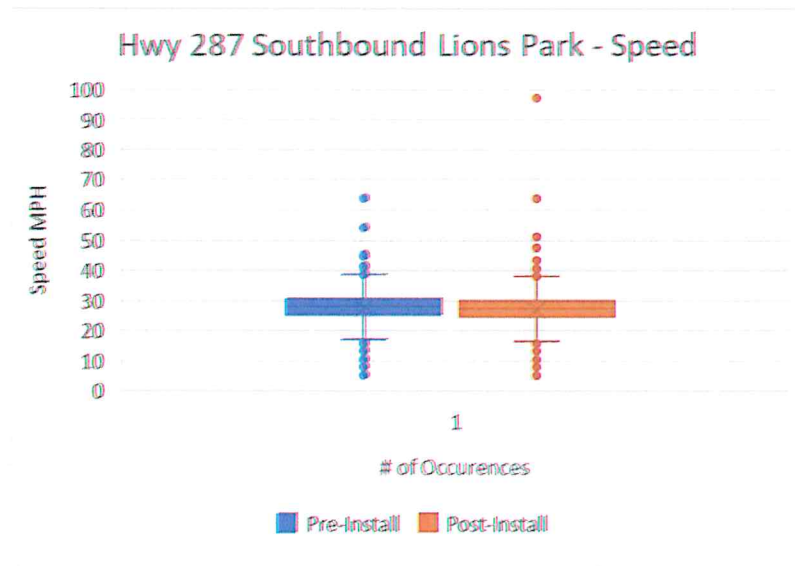


Figure 10. Highway 287 Southbound Lions Park - Speed

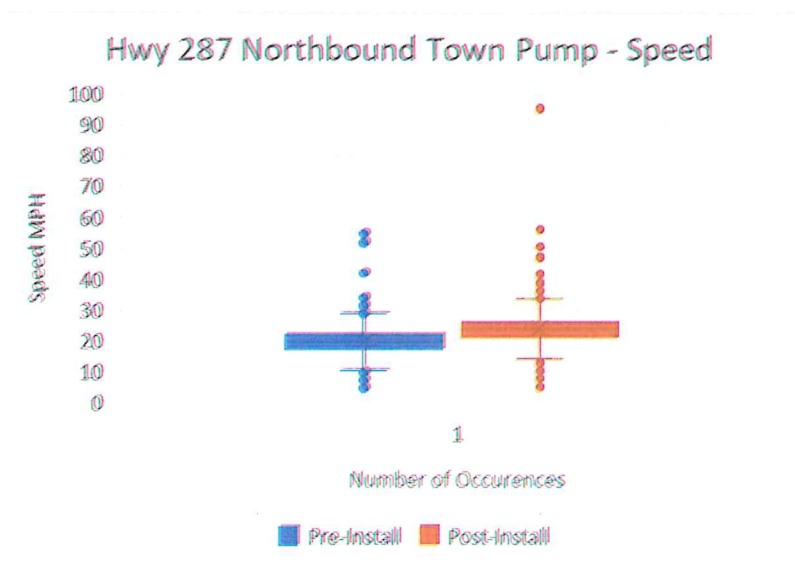


Figure 11. Highway 287 Northbound Town Pump - Speed

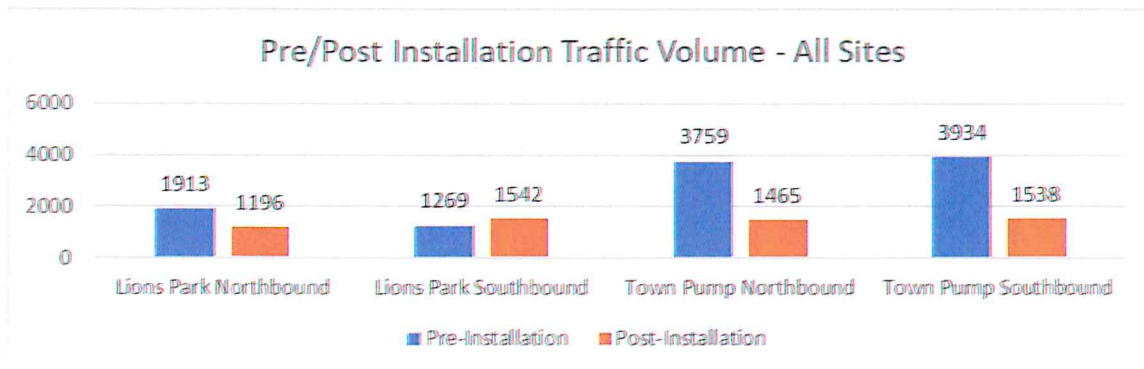


Figure 12. Pre/Post Installation Traffic Volume - All Sites

### Driver Yielding Rates

Table 3 displays the observed total number of pedestrians, driver yielding opportunities and driver yielding rates at the crosswalk at the south end of Main St. adjacent to Willie’s Distillery. Based on the data collected and analyzed from the crosswalk located adjacent to Willie’s Distillery, driver yielding rates improved by 8.9% with the installation of the curb extensions. Figure 13 and Figure 14 are pie charts that represent the improvement of driver yielding rates pre- and post-installation.

Table 3. South End Crosswalk Adjacent to Willie's Distillery (Location A): driver yielding rates

Curb Extensions	# of pedestrians	Driver Yielding Opportunities	# of Drivers who yielded	% yielding
Without Curb Extensions	594	366	194	53.0%
With Curb Extensions	966	616	381	61.9%
<b>% Change in Yielding Rates with Curb Extensions</b>				<b>+ 8.9%</b>

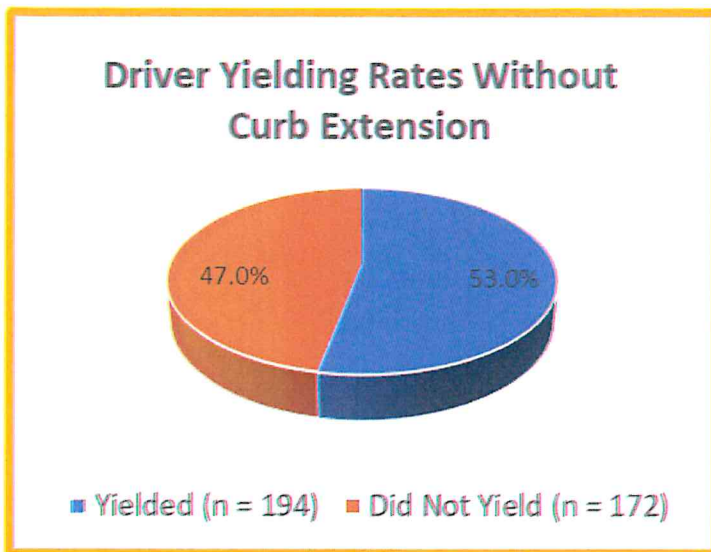


Figure 13. South End Crosswalk Adjacent to Willie's Distillery (Location A): Driver yielding rates without curb extension

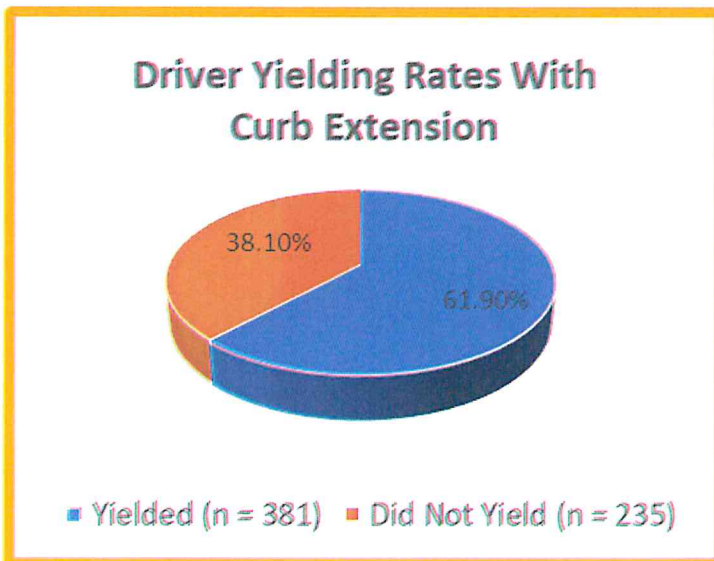


Figure 14. South End Crosswalk Adjacent to Willie's Distillery (Location A): Driver yielding rates with curb extension

### Pedestrian Counts

Pedestrian counts were conducted at the 3<sup>rd</sup> Street crossing to determine the total number of pedestrians utilizing the temporary pop up crosswalk. Table 4 represents the pedestrian count totals from the crossing. MUTCD standards state that pedestrian use of more than 20 persons per hour justify the installation of a permanent crosswalk feature (USDOT 2012).

During the installation, average hourly crossings on the weekdays were between 10-15 persons. There was an average hourly crossing of 20-25 persons on weekend days.

*Table 4. Pedestrian Counts at 3rd Street Crosswalk*

<b>Friday Total</b>	<b>188</b>
<b>Monday Total</b>	<b>163</b>
<b>Weekday Total</b>	<b>351</b>
<b>Weekday Average</b>	<b>175.5</b>
<b>Saturday Total</b>	<b>366</b>
<b>Sunday Total</b>	<b>361</b>
<b>Weekend Total</b>	<b>727</b>
<b>Weekend Average</b>	<b>363.5</b>

### Public Comment/Survey Results

More than 400 people responded to the community survey after the installation of the pop-up traffic calming project on Main St in Ennis, MT. This feedback is a crucial part of the pop-up project process and can be used by the Town as it moves forward with future planning. The survey asked respondents for their opinion of the temporary traffic calming projects, funding, support, safety, and visual appearance. Key takeaways from the survey included the following. (Full survey analysis and responses can be found in Appendix E.)

1. More than 75% of respondents were either part-time, seasonal, or full-time residents of the Town of Ennis. With a population of just under 1,000 year-round residents, the response rate was high.
2. More than 60% of respondents travelled through the project area in a vehicle, 25% travelled through as pedestrians, less than 1% travelled through on a bicycle, and one respondent was a wheelchair user.
3. Respondents were asked whether curb extensions increased visibility and improved perceived safety for users. One question targeted pedestrians, while the other was focused on drivers. The question was open to any respondent and answers were analyzed by user group. Figure 15 shows responses for and by pedestrians; notably, pedestrian users had more perceived safety and driver yielding. Figure 16 represents responses around visibility of pedestrians for and by drivers.

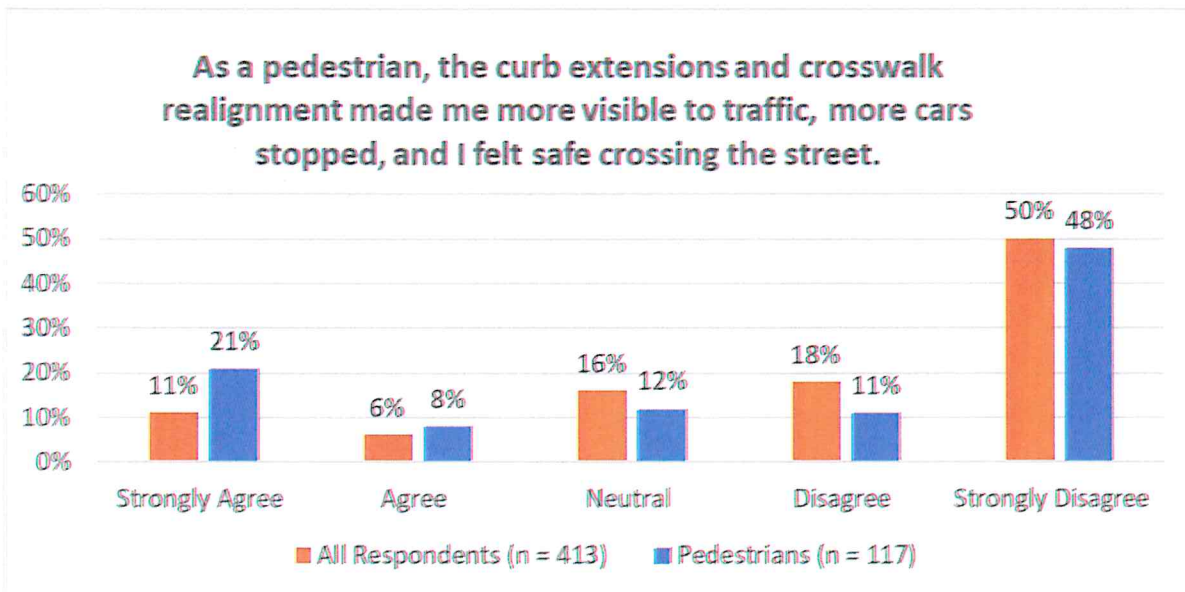


Figure 15. Survey results regarding pedestrian perceptions of the effectiveness of curb extensions and crosswalk realignment

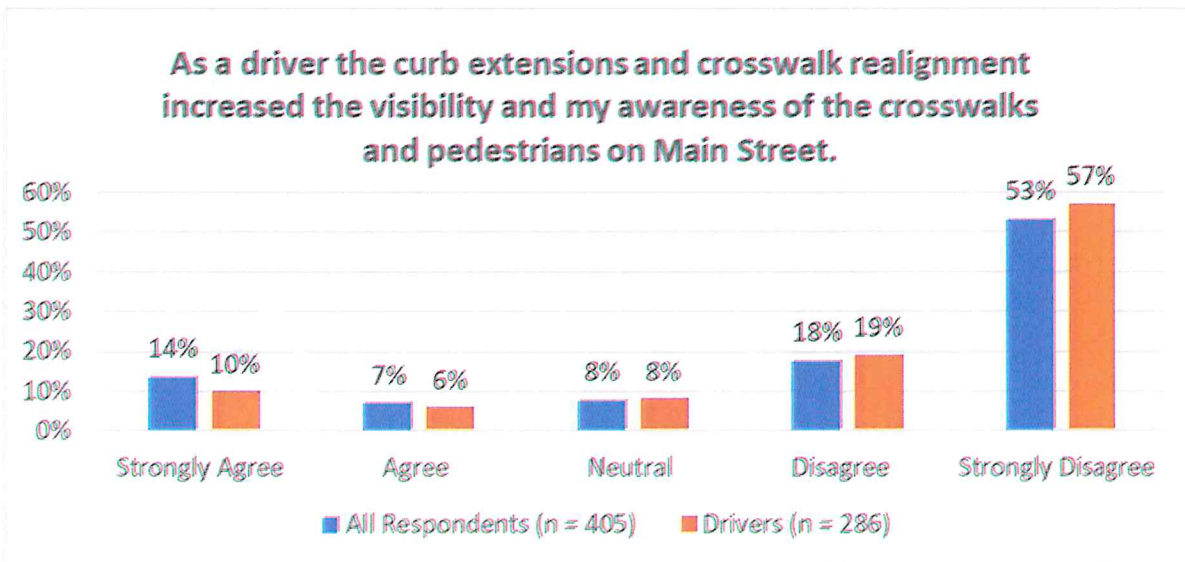


Figure 16. Survey results regarding motorist perceptions of the effectiveness of curb extensions and crosswalk realignment

4. Among all user groups, there were common themes that emerged from the survey responses.
  - a. Maintaining parking for downtown businesses is important.
  - b. Respondents used the following words most often: Parking, parking spaces, business, business owners, money, traffic, speed limit signs, traffic lights and public comments.





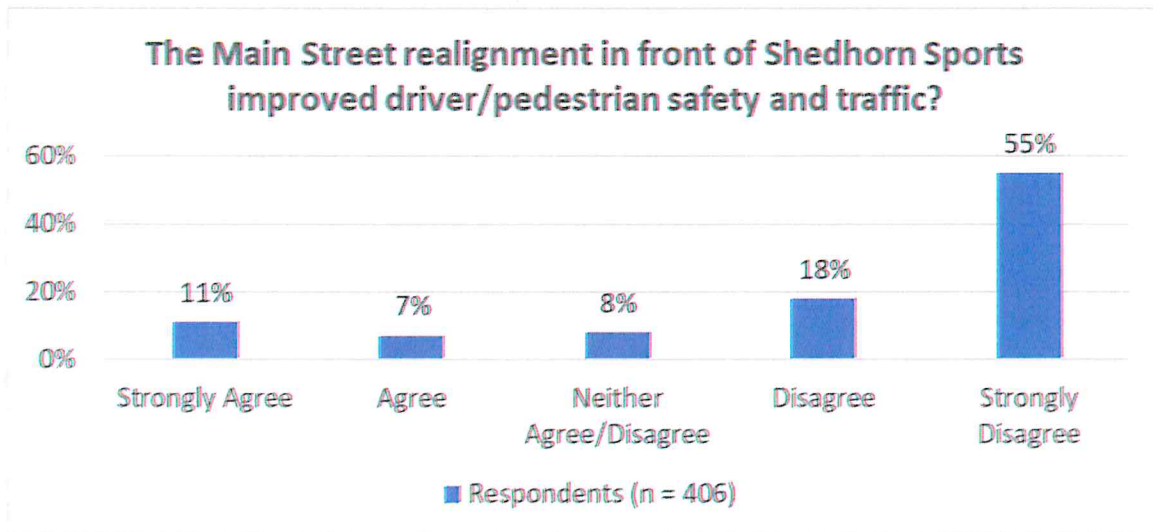


Figure 18. Survey responses to question "Did the Main Street realignment improve driver/pedestrian safety and traffic?"

6. Survey respondents were asked the question: "Did the curb extensions create more space for public events?" There was mixed feedback around the use of Parklets/Pedlets. Some respondents were opposed to creating usable space along the state highway, while some respondents were in favor of the idea of creating usable and creative space for the community, as well as businesses that would like to use the space to try to create café style seating for their customers. Some respondents shared safety concerns about being on the state highway, others stated that enough parks already exist in town, while others were in support of working on the placemaking idea.
7. Survey respondents were allowed the opportunity to provide comments on all of the questions on the survey. Examples of two comments that provided constructive and direct feedback, one in favor of the project and one opposed, are included here to show differing opinions amongst residents:
  - a. **Opposed to the project:** *"1. Lower traffic speed on Main Street (from Town Pump to bridge) to 15mph(best) or 20mph. 25mph speed is too fast and not safe for pedestrians or for cars backing out of parking spaces. 2. Install a couple of robust steel bump-out posts (4"-6" diameter) on each end of crosswalk from Plain Janes because the beginning of this particular crosswalk is hidden from the view of vehicle drivers. The pole color should not be stark white (perhaps light gray color?). Perhaps consider other crosswalks could have a couple of robust poles on each end too -- this plan would minimize the loss [of] parking spaces 3. Eliminate the crosswalk at Gravel Bar. 4. Add a crosswalk at Pharmacy (that's where most people cross Main Street) 5. The current pedestrian signs are helpful for causing vehicle drivers to be aware a crosswalk is upcoming--keep them for safety purposes. 6. Eliminate the design of bump-out spaces for additional public space. **Parking spaces for our downtown businesses are MUCH more important than more public space.....and these proposed public spaces would be very***

*Unsafe for anyone utilizing them. Bad idea! 7. **Safety is extremely important, but there are better ways to achieve this goal (see above suggestions) than losing 20+ parking spaces that our town's businesses require for successful buying opportunities for residents, seasonal residents, visitors and tourists.***

- b. **In favor of the project:** *“We take the kiddos to the library every Friday and also walk to Lions Club Park. At the 1st Street crosswalk, it would always take some time before I was fully confident that my big group of children had been noticed and that it was safe to cross. The Friday before the demo was put up, as we were about to cross at 1st Street, an RV came flying by us when they had plenty of time to see us and let us cross. **The next week when the demo was in place, vehicles were able to see us clearly and they stopped immediately. We have also crossed at 2nd Street since the demo with the same positive results.** I am also a mother of an 18 month old and we live on East Ennis Street. We are always walking downtown and to the park. I appreciate anything our town can do to help me keep her safe. Improving our crosswalks seems like a no-brainer when it comes to protecting our children.”*

In addition to the SurveyMonkey tool, individuals had the opportunity to submit public comment to both MDT and the Ennis Town Commission, resulting in eight public comments. These comments were mixed in terms of support or opposition to the project. Some of the responses offered constructive feedback on the project, installation, and possible future solutions. All public comments can be found in Appendix F.

## Discussion

The Ennis pop-up project gave the community an opportunity to test out different traffic calming designs at significantly lower cost than an actual construction project. The pop-up project was designed through an iterative process that required collaboration among multiple partners before installation. Once the installation was complete, community input and other data were collected to determine attitudes and the effectiveness of the traffic calming. This feedback and data are intended to help decision makers develop a long-term plan for managing the safety of all road users along the Hwy 287/Main St corridor in the Town of Ennis.

One success of the project was the collaboration between the Town of Ennis, WTI, and MDT. All partners were able to work together to create a process for which small communities can develop pop-up traffic calming projects on Main Streets that are also state highways. The partners came together to develop designs that met the requests of the community while working within the parameters of MDT's safety and engineering standards.

Community engagement, input, and feedback are an important component to a successful pop-up project. At the beginning, a community goal was developed to help guide the project. The Town of Ennis's goal was: "Our community goal is to improve safety on Hwy 287 in downtown Ennis for a variety of users (pedestrian, bike, vehicle). By reducing vehicle speed and increasing pedestrian/bicycle visibility, we hope to increase user awareness for a safe and active downtown Ennis." With safety as the number one goal, vehicle speed data and driver yielding data were collected. Speed is a very important factor when it comes to overall pedestrian safety. Accidents that occur at lower speeds result in less serious injury or death (Tefft 2011).

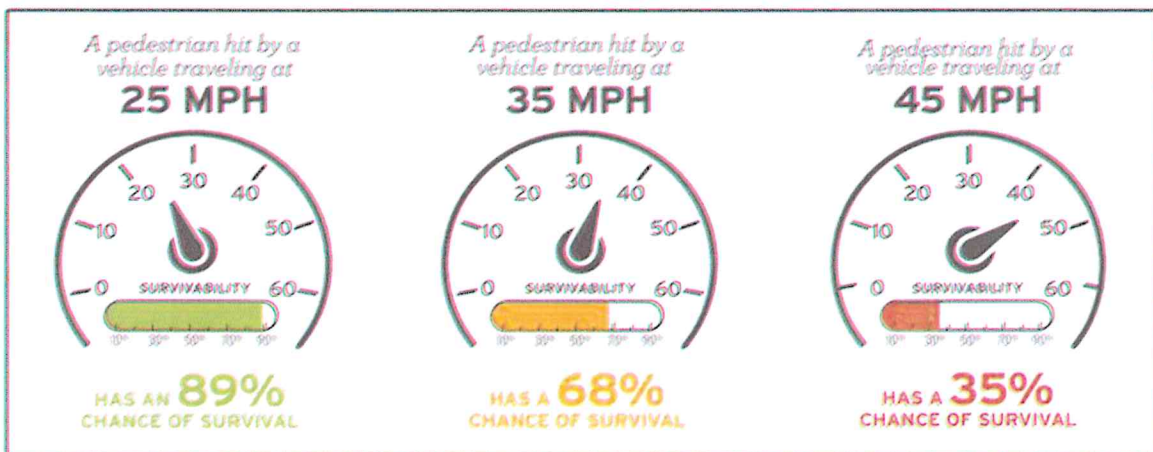


Figure 19. Comparing vehicle speeds with a pedestrian's risk of severe injury or death (Tefft 2011)

Data indicates that the project helped to make some progress toward the community goal. Based on data from the pedestrian crossing at the south end of town after project installation, driver yielding rates increased by 9%, which means that 9% more drivers stopped for pedestrians who were waiting to cross the street. Factors that may improve driver yielding rates include:

increased pedestrian visibility, slower vehicle speeds, and narrower roadways. All of these factors can be addressed by curb extensions.

Speed data collected outside of the pop-up traffic calming area on both the north and south end of Hwy 287/Main Street indicated increased speeds while the pop-up project was in place. It should be noted that speed data was not collected within the traffic calmed area because the movement of vehicles backing out from the on-street parking spaces can result in unreliable speed data from road tubes. According to MetroCount, vehicles should travel perpendicular to the sensors. If vehicles cross at an angle, the calculated speed value will be less than the actual vehicle speed. An angle of incidence less than  $10^\circ$  gives a maximum error of 1%. ( MetroCount, 2012).

Community input is another important component of the pop-up process. With this project, there were more than 400 respondents to the community survey with 75% of them being from residents. Based on the results, many respondents believed they were not informed of the project beforehand and would have liked to have been involved in the process or kept aware of what was going on. Education about the purpose of pop-up projects and involving the community in the design and place-making aspect of the project can result in greater community buy-in, and the final product will have more community approval and appeal.

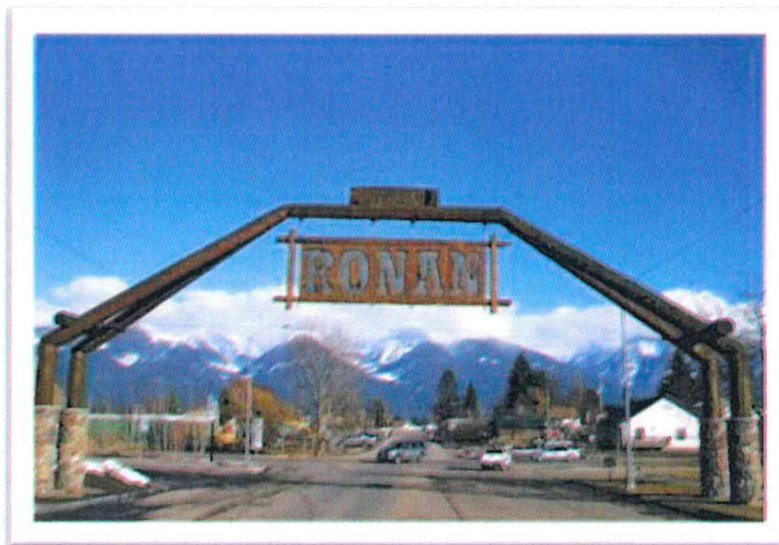
The placemaking portion of the project was not successfully completed before the removal in October. Placemaking could have occurred in the space created within the curb extensions. This was a lesson learned for all involved in the project. In July of 2020, MDT redid the state's Parklet/Pedlet encroachment permitting process. It requires the construction of a platform that raises the parklet or pedlet off the road surface and makes it even with the existing curb. Due to the timing of the project and Covid-19 restrictions, team members were unable to access the infrastructure to install a parklet. In addition, MDT will not permit the placement of planters within the roadway, so small parklets could not be built out without a platform.

In summary, the Ennis traffic calming pop-up project offered visitors and residents the opportunity to experience temporary curb extensions and crosswalks on Hwy 287/Main Street from early August through late October 2020. Researchers collected data and received community feedback that may be used to inform long-term projects. Community members want to be involved in the planning process for long-term projects on Hwy 287/Main Street moving forward.

## Next Steps

Based on the results of the Pop-up Traffic Calming Project, WTI makes the following recommendations to the Town of Ennis to assist in efforts to move forward with long-term planning for Main Street. WTI offers these recommendations to help guide future planning for the Town, without guarantee of results.

1. Data showed a high percentage of drivers speeding outside of the downtown area. The Town of Ennis could install gateway treatments at both ends of Main Street to help to slow traffic, while letting drivers know that they are moving from a state highway to the Main Street of a small town. Gateway treatments are used to mark a change in speed environment, including the transition from a high-speed road to a lower-speed environment, such as a downtown Main Street. Examples of gateway treatments include on-street markings, welcome signs, median islands, or narrowing of travel lanes (Hallmark et. al., 2007). Any design and implementation would have to be approved by MDT through either a maintenance agreement or an encroachment permit process. As a Montana example, the town of Ronan completed a community project that built a steel arch as a gateway treatment onto its Main Street. (It is important to note that this arch is on Main Street, but it is not an MDT controlled state highway.)



*Figure 20. Ronan Gateway Arch (Photo: Ronan Chamber of Commerce)*

2. The Town of Ennis is about to start a Master Planning Process. Based on community feedback, it will be important to incorporate community engagement. Whether the Town decides to lead the process or hire outside consultants, Town staff needs to make sure that there is a community engagement plan as well as a good outreach and communication plan to garner input and feedback.

3. Based on the improved driver yielding rates, the Town should install temporary curb extensions at the 2<sup>nd</sup> St and south end crosswalks. Utilize designs that do not remove many parking spaces but still create the safe space for pedestrians to be more visible. The Town of Ennis has already purchased the materials and supplies that are necessary to install another curb extension to increase pedestrian visibility. In addition, it would be possible to conduct a placemaking project that utilizes the extra space from the curb extensions and works through the MDT Parklet/Pedlet Encroachment Permit process.
4. Conduct annual or bi-annual restriping of the existing crosswalks and side street crosswalks on Main Street. This will ensure that the crosswalks maintain high retro reflectivity to improve visibility of the crosswalks as well as pedestrians who will be using them.



Figure 21. Downtown Parklet in the City of Spokane



Figure 22. Downtown Parklet in the City of Butte (Photo: ABC Montana)

## News Stories

NBC Montana – August 12<sup>th</sup>, 2020. <https://nbcmontana.com/news/local/downtown-ennis-loses-parking-spaces-to-curb-extension-project>

NBC Montana – October 21<sup>st</sup>, 2020. <https://nbcmontana.com/news/local/ennis-finishes-main-street-traffic-calming-test-project>

The Madisonian – November 11<sup>th</sup>, 2020. <http://www.madisoniannews.com/news/semi-rolls-ennis-main-street>

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## Appendices

Appendix A – Final Summary Report for the Walk Audit

Appendix B – Final and Modified Sketches

Appendix C – Encroachment Permits

Appendix D – Outreach Plan

Appendix E – Survey Monkey Results

Appendix F – Traffic Control Plan

Appendix G – Public Comment