

**Bringing Montana's History into the Future:
Modernizing MDT's Interpretive Marker System**

by

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A proposal prepared for the

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2701 Prospect Avenue
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March 15, 2024

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PROBLEM STATEMENT

The Montana Department of Transportation (MDT) currently administers 295 historic and geological interpretive markers along the state's primary and secondary roads and in rest areas along interstates. The markers have been an important part of the Montana transportation landscape since 1935. Traditionally, one would access the information that they convey by reading the sign itself. Or a traveler may review the content in a booklet in cooperation with a static map about each sign's location. However, with modern times, there is a need to consider contemporary approaches to disseminating this information to Montanans and visitors to the state. One potential approach is by leveraging interactive electronic maps on the MDT website. Furthermore, there may be other methods available to better disseminate the history and geology of Montana described in the interpretive markers. For example, smartphone applications (a.k.a. apps) have been a commonly used technological approach. An app could provide the text of the markers without the user stopping to read them. However, an important caveat regarding not requiring someone to physically stop at a marker is that the tool should not encourage unsafe or distracted driving. Therefore, there is a need to better understand how other states, and potentially federal agencies (e.g., National Park Service) are trying to use more contemporary media for better dissemination of their history.

BACKGROUND SUMMARY

Interpretive markers, like the one on the right from Morrisville, Vermont, provide information that enable the reader to connect to a place. However, ensuring that the information is disseminated to readers is becoming more challenging as vehicles can travel at faster speeds and people's lives have more and more activities crammed into a finite amount of time. Therefore, while the markers remain in place, ready to share information, whether or not they are viewed and the information consumed is becoming more questionable. The following sections describe what interpretive markers are and their purpose; a short history, and innovations in dissemination.

What are interpretive markers, what are their purpose?

In large part, when one looks for information on interpretive markers, the vast majority of the information found is more specifically described as “historical markers.”

Historical markers have been described as a “relatively easy way to educate many people on historical topics” (Robinson & Galle, 2014). An interpretive marker suggests that “certain person or story matters” (Marks, 2023). They are a testament to “years of community organizing, fundraising, research, patience and persistence” (Marks, 2023). Historical markers can also be a “great starting point to learn more” (Lapshan & Voigt, 2017). Interpretive markers are a way to “promote history-related tourism and research” (Daniels, Meinkoth, & Loux, 2023). The purpose of the program has been suggested as “stimulating economic development using strategies tailored to the age of the automobile” (Daniels, Meinkoth, & Loux, 2023).

More recently, when considering whether or not New Jersey should initiate historic marker program at the state level, the consultants provided four recommendations for the purpose of an interpretive marker program: 1) pride of place, 2) cultural tourism, 3) public education, and 4) preservation of historic resources (Schultz & Kelly, 2007).

A Short History of Interpretive Markers

The number of markers that each state reports varies widely, from as few as 44 in Iowa (Schultz & Kelly, 2007), to as many as 13,000 in Texas (Schultz & Kelly, 2007), with states like Georgia, Kentucky, Michigan, New York, Pennsylvania, and Virginia falling somewhere in between with about 1,700 to more than 2,000 markers (Lapshan & Voigt, 2017), (Schultz & Kelly, 2007)).

In 2007, a review of state-level historic marker programs concluded that thirty-four states had some type of program (Schultz & Kelly, 2007). When considering which program is “the oldest”, while many suggest Virginia ((Marks, 2023), (Daniels, Meinkoth, & Loux, 2023),



Figure 1: Historical marker in Morrisville, VT

(Barni, 2018)), South Carolina reported having a program since 1905, which would make it the oldest (Schultz & Kelly, 2007). Colorado has had one since 1907 (Schultz & Kelly, 2007), Missouri since 1913 (Daniels, Meinkoth, & Loux, 2023), Pennsylvania since 1914 (Robinson & Galle, 2014), with more recent programs like Michigan starting in 1955. However, what constitutes a formal definition of a historic marker program and whether or not it is consistent in what each program looked like at various points in time could likely be debated.

From the onset, historical markers have been seen as bringing economic benefits (Robinson & Galle, 2014). The belief of their economic influence continues today, although research does not suggest a direct connection or a specific dollar amount that may be associated with a historical marker being present ((Marks, 2023), (Daniels, Meinkoth, & Loux, 2023)).

As recently as 2007, New Jersey asked a consultant to provide recommendations for what a statewide program would look like (Schultz & Kelly, 2007). While some markers exist and have been in place as early as the 1930s, there has never been “an organized state historical marker program.” However, four counties within New Jersey have their own programs: Bergen, Middlesex, Morris, and Sussex.

Considering the markers themselves, what may be seen as “the iconic interpretive marker” is often constructed of aluminum and painted with raised lettering; such a design has been used since the 1930s (Schultz & Kelly, 2007).

The state of interpretive markers over time varies. In some cases, the wording has deteriorated. In others, like Virginia, the markers remain in place (Daniels, Meinkoth, & Loux, 2023). Some have been hit when vehicles leave the roadway or by snowplows ((Marks, 2023), (Barni, 2018)). As a result of interpretive markers being fairly regularly hit by vehicles leaving the roadway, at least one state has begun to use a “honeycombed constructed post” to be more forgiving (Schultz & Kelly, 2007).

Early speed limits of 25 miles per hour more easily allowed motorists to pull over and read the historical markers (Robinson & Galle, 2014), although some have suggested that markers were originally intended to be read as the vehicle was moving (Schultz & Kelly, 2007). As roads improved, the speeds that vehicles could travel increased. By 1929, speed limits rose to 40 mph, and motorists were less likely to stop and read the markers (Robinson & Galle, 2014). Some have suggested that markers could compel motorists to slow down (Barni, 2018). With this in mind, how then, is the information contained on interpretive markers disseminated?

Innovations

While acknowledging that “augmented reality, virtual tours and online programing” are more contemporary than the “old-school vibe” of historical markers, “the power these displays wield to shape the public’s ideas about history” remain (Marks, 2023). Even so, some states have taken innovative approaches to dissemination of the information on interpretive markers.

A popular approach for disseminating information about historic marker programs is the production of marker guides, including Delaware as early as 1933 ((Barni, 2018), (Schultz & Kelly, 2007)). In Pennsylvania, through 2000, the text and locations of historical markers were provided in marker guides (Robinson & Galle, 2014). South Carolina last produced one in 2019 (S.C. Department of Archives & History, 2019). Nevada’s sixth edition was produced in 2021 (Martin, 2021).

The challenge of marker guides is that as soon as they were published, the information was “obsolete,” as new markers were already being installed ((Robinson & Galle, 2014), (Schultz & Kelly, 2007)). As access to the internet became more commonplace, Pennsylvania's database was provided via a website, where a user could access the information from a variety of searches. Now, global positioning system (GPS) coordinates are provided for each marker in Pennsylvania. In 2001, in an effort to better disseminate the information from the markers, the Pennsylvania's marker program partnered with WITF, a “trusted, valued supplier of programs and services that both satisfy and stimulate curiosity for residents in every community in the central Pennsylvania region” (WITF, n.d.). A review of all statewide programs resulted in this effort being described as “unique and extraordinary” (Schultz & Kelly, 2007). The collaboration between these two entities and others resulted in the development of the website, ExplorePAhistory.com. In addition to generally providing information about the markers, the website also provides lesson plans that can be used by teachers that align with the state's teaching standards. WITF then went on to create an app, PA Markers. The creation of the lesson plans and other associated tasks were said to have cost about \$6 million (Schultz & Kelly, 2007).

Michigan has created their own “web-based tool” (Lapshan & Voigt, 2017) in an attempt to disseminate the information contained on their historic markers. Their website is described as “interactive” and they tout the fact that there is “no special app required”. Information provided by the tool includes the title, address information of the marker, links that enable someone to learn more about the marker, Google maps driving directions, installation dates, an image, and marker text. The user is also able to download a PDF copy of the marker. The website also provided a “contact form link” so if someone cannot find a marker, the administrators are made aware of its absence. Furthermore, the tool allows the user to filter the markers by county, theme or time period. The map can be viewed in a road or topographical format. Information about state parks, campgrounds and the state's network of rail trails can also be incorporated onto the map, allowing for someone using the tool to coordinate traveling to marker locations with places to stay and other destinations. The database can be downloaded in the KML or CSV file format.

The Virginia Department of Historic Resources (DHR) is working with the Virginia Department of Transportation to develop a “more flexible ArcGIS app” (Daniels, Meinkoth, & Loux, 2023). The Georgia Historical Society had apparently created an app, but the link to access that app now appears to be broken (American Association for State and Local History (AASLH), n.d.).

Recommendations for development of a marker program for New Jersey suggested that the website should be “dynamic and innovative”; they also recommended that an online GIS-based database be “interactive” and “searchable” (Schultz & Kelly, 2007). Overall, this seems to be the trend for more contemporary dissemination of the information found on interpretive markers.

Indiana, Kentucky, Michigan, North Carolina and Pennsylvania were identified as states that had the most “comprehensive user-friendly websites” (Schultz & Kelly, 2007).

There are other websites that may feature some markers, including Waymarking.com, Historical Marker Database (www.hmdb.org), and Markeroni.com ((Robinson & Galle, 2014), (Schultz & Kelly, 2007)). Data from the Historical Marker Database was used as the source for the “Explore Here” application (Guld, 2021).

Finally, one more contemporary suggestion for the dissemination of interpretive marker information was “self-guided public tour opportunities” (Schultz & Kelly, 2007).

BENEFITS AND BUSINESS CASE

Better dissemination of interpretive markers can help with economic development, both for in-state and out-of-state visitors, as this has long been one of the primary impetus for the implementation of interpretive markers (Robinson & Galle, 2014). The travel and tourism industry is Montana's second largest industry (Tourism Matters to Montana, 2022). Montana's history and culture is an important focus for the State Tourism Office, for local communities, and for businesses throughout the state when promoting Montana as an in-state and out-of-state travel destination. There would be benefits to expanding this resource that would improve the state's travel and tourism economy, particularly in areas where the historical markers are located.

Furthermore, by using contemporary approaches to disseminating historical and geologic information, the quality of information being disseminated is improved. Such an improvement can also be viewed as a service benefit. A traveler no longer has to stop at a marker to appreciate its significance.

OBJECTIVE

The objective of this research project is to enable information to more readily be accessible to the public through Montana Department of Transportation on-line applications. A focus audience includes interested travelers visiting or considering visiting the locations of these markers while traveling Montana's roads.

RESEARCH PLAN

This project is divided into the five following tasks:

- Task 0: Project Management
- Task 1: Literature Review, Information Gathering, & Survey of Other States & Federal Lands
- Task 2: Investigate Innovative Approaches, including App Development
- Task 3: Provide Recommendations for an Online Interactive Map
- Task 4: Report & Project Close-Out Deliverables

TASK 0: PROJECT MANAGEMENT

Task 0 consists of managing the project. A kick-off meeting will be held as soon as the contract is in place to ensure all are aware of contractual obligations, scope of work, data requirements and source, deliverables, project milestones, timetable, and other project elements. Technical issues and any concerns will also be addressed during the kick-off meeting.

In addition, as discussed during preliminary meetings, monthly check-in conference calls will be held with the Technical Panel using web-enabled software to obtain input on deliverables through the duration of the research project. The meetings will be kept to an hour. These meetings will ensure that the Technical Panel is kept aware of the current project status. The meeting agenda will be provided one week prior to the meeting, and it is expected that the meetings will be scheduled well in advance to ensure the availability of all participants. Meeting notes will be provided within a week after the meeting. In addition, should it be agreed upon by the panel, a select monthly meeting(s) may be cancelled (e.g., during the holidays when many are out-of-the-office).

Deliverable No. 1: Kick-off Meeting

Deliverable No. 2: Monthly Check-In Conference Calls

Deliverable No. 3: Quarterly Progress Reports

TASK 1: LITERATURE REVIEW, INFORMATION GATHERING, & SURVEY OF OTHER STATES & FEDERAL LANDS

In this task, the researchers will first review relevant studies of historical and geological marker programs in other states, including but not limited to, *From Then to Now: History Along the Roadway* and *Assessment of State Historical Marker Programs: A Report for the New Jersey Historical Commission* (Schultz & Kelly, 2007) to determine current practices and innovative approaches to the dissemination of information. From the preliminary literature review, overall, it seems that there is limited research on the topic of innovative ways for disseminating interpretive markers. This does not mean that there is not a lot of work going on in this realm, rather, there are a limited number of reports and publications describing this work. A similar experience has been seen when considering the limited number of papers presented to the TRB Committee, Transportation Needs of National Parks and Public Lands, for which the outcome of this work would be relevant. Therefore, the researchers will seek out journal articles, reports and grey literature (e.g., periodical articles). The researchers will focus, in particular, on examples of how

the historical and geological marker programs are shared through smartphone applications (apps). The researchers will also consider how other features, like murals, have been innovatively compiled and disseminated, as there may be some great approaches that could be applied to interpretive markers.

With the information collected, the researchers will develop a survey to be administered to other states as well as local agencies (e.g., counties, communities), the National Park Service (NPS), and U.S. Fish and Wildlife Service (USFWS) to obtain information on their historical and geological marker programs focusing on their smartphone apps (if one exists). Topics of interest regarding smartphone apps include app development, app features, what information is shared for each marker, challenges, and best practices. The researchers will seek to identify at least one contact in every state for which the survey will be distributed to. In addition, the researchers may include, as a result of the information gathered in Task 1, if other contacts identified in the articles (e.g., consultants or other) may also serve as potential survey respondents. The Technical Panel will also be asked to comment on the proposed distribution list. The intent for the survey is for it to be relatively short, taking less than ten minutes, and more desirably, expected to take five minutes or less to complete. Once a survey has been developed, the researchers will leverage technical review staff to provide technical editing of the survey. It will then be provided to the Technical Panel for review and comment. After updates are made, it will be submitted to Montana State University's Institutional Review Board (IRB) for approval. The researchers will use MSU's platform, Qualtrics, to conduct the survey. The survey would be distributed in May and close in June. After the initial outreach, the researchers would attempt one more outreach to obtain participation by the survey respondent.

Once the data is collected from the survey, the findings would be added to the literature review to develop the Task Report. The researchers will leverage technical review staff to provide technical editing. The draft Task Report would be provided to MDT by June 30, 2024, with comments requested by July 31, 2024 and the updated version sent back to MDT by August 15, 2024.

The literature review will be updated for the final report.

Deliverable No. 4: Draft Survey Instrument

Deliverable No. 5: Final Survey Instrument

Deliverable No. 6: Task Report: Literature Review, Information Gathering & Survey of Other States & Federal Lands

TASK 2: INVESTIGATE INNOVATIVE APPROACHES, INCLUDING APP DEVELOPMENT

Information gathered during the report review as well as that collected from other states and federal entities may identify innovative approaches for MDT to consider. This includes considerations for making the app hands-free for people traveling in Montana, methods to communicate marker information, and how to handle a lack of cellular service.

This task will include examining existing applications which are used to provide information on historical or other markers. ExploreHere – Historical Guide has features that MDT is interested in (see right). However, some of them require the user to pay for the features. This application is currently available via the Apple App Store and Google Play, reaching both Apple and Android users. Furthermore, depending on who MDT is interested in accessing these resources, the project panel may want to consider more fully integrating the interpretive markers into interfaces like Pokémon GO, which may reach a different audience than typical.

WTF, from Pennsylvania, would be a good program to learn more about, as they began with a website and evolved into an application. Their experience with the development of the app and the benefits and drawbacks of having an app would be valuable information. Furthermore, it may be of interest to learn more about the process that they used to create lesson plans, as it is a great way to engage the next generation of historians.

Several organizations including the Michigan History Center and Georgia Historical Society developed online interactive maps which allow a user to explore historic markers by providing associated information and photos. These resources will be investigated to determine what information is being shared with the public, which will provide recommendations on how MDT may utilize their historic marker data in the future.

These resources and others, as identified as a result of the survey of other states, will be investigated through this task including the development of recommendations for MDT and associated costs. Marks (Marks, 2023) identified the William G. Pomeroy Foundation and the National Endowment for the Humanities as sources that have been used to create historical markers.

The findings from this task will be summarized in the Task Report. The researchers will leverage technical review staff to provide technical editing. The draft Task Report would be provided to MDT by September 30, 2024, with comments from MDT requested by October 31, 2024 and the updated version sent back to MDT by November 14, 2024.

Deliverable No. 7: Task Report, Innovative Approaches

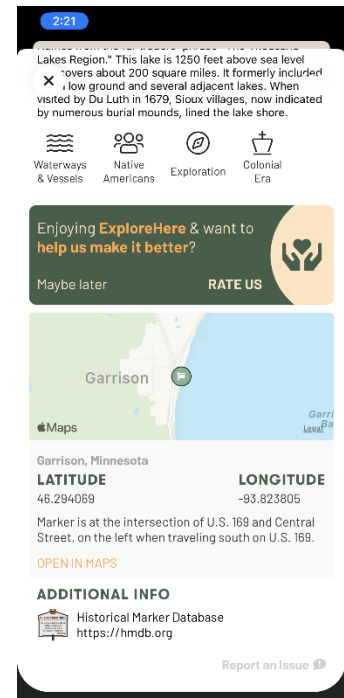


Figure 2: Example of ExploreHere app

TASK 3: PROVIDE RECOMMENDATIONS FOR AN ONLINE INTERACTIVE MAP

Based on the Scope of Work provided by MDT, it identified that GIS location data is available for all sites but not accessible or in a user-friendly platform. The researchers are aware that MDT currently has an interactive imagemap that provides the Geologic Road Sign information.¹ MDT also currently has an interactive webmap and dashboard which include data on the historic markers themselves including photos; however, these resources are not currently available to the public. In addition, The Historical Marker Database currently has information across the state.² Therefore, this task will seek to better understand MDT's view of how they would like the data presented. This will include discussions with MDT staff (including maintenance staff) to identify what these data resources need to accomplish and provide recommendations on how to maintain this data and what data should be made available to the general public. Karalyn Clouser, WTI's GIS-expert, will lead these discussions. For example, do they want a similar interface for the historical data as is already available for the Geologic Road Sign information? Do they want an interface that displays both sets of data? One example that the researchers can discuss with the technical panel is found from Vermont, Vermont Roadside Historic Markers.³ Based on the discussions with the technical panel, the researchers can then follow-up with contacts related to examples found in the preceding sections to obtain more information. The researchers will leverage the check-in meetings discussed in Task 0 to identify data needs and develop recommendations on how historic marker data will be used both internally and publicly and how this data will be maintained in the long term.

The findings from this task will be summarized in the Task Report. The researchers will leverage technical review staff to provide technical editing. The draft Task Report would be provided to MDT by March 31, 2025, with comments from MDT requested by April 30, 2025 and the updated version sent back to MDT by May 14, 2025.

Deliverable No. 8: Task Report, Recommendations

TASK 4: REPORT & PROJECT CLOSE-OUT DELIVERABLES

This task will be the development of a final report that summarizes the entire project. A draft will be provided to MDT who will have one month to review. The researchers will then address the feedback in the updated final report. In addition, the researchers will create the Performance Measures Report, Implementation Report and Project Summary Report, deliverables required by MDT's Research Bureau.

This task also includes the development of an Implementation Report. The Implementation Report will include an: 1) Introduction and Purpose, 2) Implementation Summary, and 3) Implementation Recommendations (including the Principal Investigator's recommendations and MDT response).

This task also includes the development of Data Management Plan which will be submitted with the Final Report.

This task also includes the Project Close-Out Meeting which summarizes the information and is recorded, as required by MDT's Research Bureau guidelines. The presentation will include an

¹ <https://www.mdt.mt.gov/travinfo/geomarkers.aspx>

² [Historical Markers and War Memorials in Montana \(hmdb.org\)](https://www.hmdb.org/)

³ [Vermont Historic Roadside Markers](https://www.vermont.gov/news/2018/01/11/vermont-historic-roadside-markers)

overview of the project along with detailed discussions on the findings and recommendations. This meeting will also include a discussion of the Implementation Report.

Deliverable No. 9: Draft Final Report

Deliverable No. 10: Final Report

Deliverable No. 11: Performance Measures Report

Deliverable No. 12: Implementation Report

Deliverable No. 13: Project Summary Report

Deliverable No. 14: Project Poster

Deliverable No. 15: Final Presentation

Deliverable No. 16: Project Webinar

Deliverable No. 17: Data Management Plan

INTELLECTUAL PROPERTY

We anticipate no intellectual property issues.

MDT AND TECHNICAL PANEL INVOLVEMENT

As discussed during a preliminary call, the researchers would like to schedule a monthly meeting with the Technical Panel throughout the duration of the project. These meetings would be kept to an hour time frame, and they would be cancelled in advance should that month not need comment from the Technical Panel or at the Technical Panel's request. This would allow more continuous engagement of the Technical Panel to ensure that the results of the project are in line with expectations.

The researchers will also ask the Technical Panel to review and provide comment on the draft survey (Deliverable No. 4), the three technical memorandums (Deliverable No. 6, 7, and 8), the draft final report (Deliverable No. 9), the performance measures report (Deliverable No. 11), the implementation report (Deliverable No. 12), the project summary report (Deliverable No. 13), and the project poster (Deliverable No. 14).

The researchers anticipate needing access to MDT's current data on interpretive markers in order to understand what data elements are currently being collected by MDT. This may include access to the MDT's Historic Highway Markers webmap, app, and dashboard.

OTHER COLLABORATORS, PARTNERS, AND STAKEHOLDERS

The researchers will be reaching out to other state departments of transportation and potentially other state agencies (depending upon how each state is structured) to learn more about each state's specific approach to dissemination of historical and geological markers within the state. The researchers have a lot of experience in engaging other states in such data collection efforts.

In addition, the P.I. will leverage their network as a result of serving as Chair of the Transportation Research Board's (TRB's) Transportation Needs of National Parks and Public Lands (AEP20) to learn about how federal partners are using innovative tools for the dissemination of interpretive markers. In addition, the researchers will look for opportunities to share the results with AEP20 as well as TRB's Transportation History Subcommittee.

PRODUCTS

As described in the research plan, the following sixteen deliverables are proposed:

- Deliverable No. 1: Kick-Off Meeting
- Deliverable No. 2: Monthly Check-In Calls
- Deliverable No. 3: Quarterly Reports
- Deliverable No. 4: Draft Survey Instrument
- Deliverable No. 5: Final Survey Instrument
- Deliverable No. 6: Task Report: Literature Review, Information Gathering, & Survey of Other States and Federal Lands
- Deliverable No. 7: Task Report: Investigate Innovative Approaches, Including App Development
- Deliverable No. 8: Task Report: Provide Recommendations for an Online Interactive Map
- Deliverable No. 9: Draft Final Report
- Deliverable No. 10: Final Report
- Deliverable No. 11: Performance Measures Report
- Deliverable No. 12: Implementation Report
- Deliverable No. 13: Project Summary Report
- Deliverable No. 14: Project Poster
- Deliverable No. 15: Final Presentation
- Deliverable No. 16: Project Webinar
- Deliverable No. 17: Data Management Plan.

RISKS

We anticipate the risks in conducting this project to be low. The biggest challenge will be that there may be limited states that have attempted innovative approaches to disseminating information about interpretive markers. The researchers have extensive experience in conducting outreach to a variety of states and will draw on this expertise to obtain the information necessary to complete this project.

IMPLEMENTATION

We anticipate that the database associated with the interpretive markers may be updated to include some more innovative features that other state departments of transportation have implemented. No AASHTO or MDT specifications, MDT policies and procedures, legislation or fiscal requirements are anticipated to be impacted as a result of the research findings.

SCHEDULE

The project would be conducted for a duration of 18 months.

Table 1: Project Time Schedule

Task	Dates	2024										2025							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
0 Project Management																			
Kick-Off Meeting	3/1/2024	X																	
Monthly Check-In Calls	Monthly		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Quarterly Reports	Jun, Oct, Feb, Jun				X				X				X				X		
1 Literature Review, Information Gathering, & Survey of Other States & Federal Lands																			
Draft Survey Instrument	May 15, 2024			X															
Final Survey Instrument	May 31, 2024			X															
Task Report	July 31, 2024					X													
2 Investigate Innovative Approaches, Including App Development																			
Task Report	October 31, 2024								X										
3 Provide Recommendations for an Online Interactive Map																			
Task Report	April 30, 2025															X			
4 Report & Project Close-Out Deliverables																			
Draft Final Report	July 18, 2025																	X	
Final Report	August 29, 2025																	X	
Performance Measures Report	July 18, 2025																	X	
Implementation Report	July 18, 2025																	X	
Project Summary Report	July 18, 2025																	X	
Project Poster	July 18, 2025																	X	
Final Presentation	July 18, 2025																	X	
Project Webinar	July 18, 2025																	X	
Data Management Plan	29-Aug-25																	X	

BUDGET

The total project budget is \$77,458.09. No travel has been identified for the project, which is reflected in the following tables that detail:

- Table 2: Task, Meeting, and Deliverable Budget,
- Table 3: Detailed Project Budget, and
- Table 4: State Fiscal Year (SFY) (7/1 – 6/30) Breakdown.

Table 2: Task, Meeting, and Deliverable Budget

Task, Meeting, and Deliverable Cost Breakout			
Item	Labor	Travel	Total
Task 0 Project Management	\$ 1,901.19	\$	\$ 1,901.19
Deliverable: Kick-Off Meeting			
Deliverable: Monthly Check-In Conference Calls			
Deliverable: Quarterly Progress Report			
Task 1 Literature Review, Information Gathering, & Survey of Other States & Federal Lands	\$ 7,791.62	\$	\$ 7,791.62
Deliverable: Draft Survey Instrument			
Deliverable: Final Survey Instrument			
Deliverable: Task Report			
Task 2 Investigate Innovative Approaches, Including App Development	\$23,947.26	\$	\$23,947.26
Deliverable: Task Report			
Task 3 Provide Recommendations for an Online Interactive Map	\$18,430.56		\$18,430.56
Deliverable: Task Report			
Task 4 Report & Project Close-Out Deliverables	\$ 9,895.84		\$ 9,895.84
Deliverable: Draft Final Report			
Deliverable: Final Report			
Deliverable: Performance Measures Report			
Deliverable: Implementation Report			
Deliverable: Project Summary Report			
Deliverable: Project Poster			
Deliverable: Final Presentation			
Deliverable: Project Webinar			
Total:	\$61,966.47	\$	\$61,966.47

Table 3: Detailed Project Budget

Labor Expenses												
Person	Role	Task 0	Task 1	Task 2	Task 3	Task 4	Total Hours	Hourly Wage Rate	Total Wages	Hourly Benefit Rate	Total Benefits	Total Cost
Total:		36	214	502	472	212	1436		\$45,303.30	\$	\$16,663.17	\$61,966.47
	Indirect Cost @ 25%:											\$15,491.62
	Fixed Fee @ X%:											\$
	Total Labor Cost:											\$77,458.09
Direct Expenses												
	No Direct Expenses are anticipated.											\$0
	Total Project Cost:											\$77,458.09

Table 4: State Fiscal Year (SFY) (7/1 – 6/30) Breakdown

Item	State Fiscal Year (SFY)			Total Cost
	2024	2025	2026	
Salaries	\$ 10,067.40	\$ 30,202.20	\$ 5,033.70	\$ 45,303.30
Benefits	\$ 3,702.93	\$ 11,108.77	\$ 1,851.47	\$ 16,663.17
In State Travel	\$	\$	\$	\$
Out of State Travel	\$	\$	\$	\$
Expendable Supplies	\$	\$	\$	\$
Total Direct Costs	\$ 13,770.33	\$ 41,310.97	\$ 6,885.17	\$ 61,966.47
Indirect Cost – 25%	\$ 3,442.58	\$ 10,327.74	\$ 1,721.29	\$ 15,491.62
Total Project Cost:	\$ 17,212.91	\$ 51,638.71	\$ 8,606.46	\$ 77,458.09

STAFFING

Principal Investigator (PI) Natalie Villwock-Witte with the Western Transportation Institute has reviewed the background, objectives, and desired outcomes of the “Bringing Montana's History into the Future: Modernizing MDT's Interpretive Marker System” project. She and co-PI Karalyn Clouser have developed a Work Plan to make information more readily accessible to the public through MDT online applications, particularly for interested travelers visiting or considering visiting the locations of these markers while traveling Montana’s roads. In summary, the primary tasks will include surveying other states and Federal lands, investigating innovative approaches, and developing an online interactive map.

Villwock-Witte and Clouser have developed and administered numerous surveys to other states and individuals through a variety of media (e.g., online, in-person, over-the-phone). Some recent project examples where a survey was developed includes *Case Studies of Communities of Less Than 10,000 People with Bicycle and Pedestrian Infrastructure*; *Implication of School Format on Women in STEM*; and *Recruitment and Retention of Highway Maintenance Workers*, where the latter sought input from state departments of transportation. In addition, as the Transportation Research Board Chair for Transportation Needs of National Parks and Public Lands Committee, Dr. Villwock-Witte regularly interfaces with federal land managers, whom she can reach out to obtain information regarding innovative dissemination methods.

Villwock-Witte and Clouser used the application Survey123 to collect data for *Case Studies of Communities of Less Than 10,000 People with Bicycle and Pedestrian Infrastructure*. They are also aware of the challenges associated with connectivity in the rural environment and championed the need for improvements in Federal Highway Administration (FHWA) project, *Emerging Technologies and Opportunities for Improved Mobility and Safety for Rural Areas*. Dr. Villwock-Witte and Ms. Clouser also serve as mentors to Public Lands Transportation Fellows (PLTFs) who have previously investigated options for information dissemination via applications. They can reach out to learn more.

For the interactive map, Ms. Clouser has extensive experience creating static and interactive maps as well as ArcGIS storymaps, including for Bureau of Land Management project, Owyhee Transportation System Development.

Dr. Villwock-Witte and Ms. Clouser have experience creating final reports and other MDT close-out deliverables, most recently when completing MDT project, *Effectiveness of Highway Safety Public Education at Montana Motor Vehicle Registration Stations and by Streaming a Variety of Safety Content*.

An overview of Dr. Villwock-Witte’s and Ms. Clouser’s academic, professional, and research experiences is provided below.

Natalie Villwock-Witte, PhD, P.E. Associate Research Professor / Research Engineer,
Western Transportation Institute, Montana State University
Ph.D., Civil Engineering, Purdue University, West Lafayette, Indiana, 2010
M.S., Civil Engineering, Purdue University, West Lafayette, Indiana, 2006
B.S., Civil Engineering, Univ. of Minnesota – Twin Cities, Minneapolis, Minnesota, 2004
Professional Engineer, State of New Mexico, License No. 20262

Dr. Natalie Villwock-Witte, P.E., has served as the Principal Investigator (PI) or co-PI on more than twenty-one projects amounting to more than \$1.6 million in her thirteen years with the Western Transportation Institute at Montana State University. She has conducted research in the areas of transportation needs in public lands, safety, bicycle and pedestrian travel, public transportation, workforce development, and winter maintenance, using a multidisciplinary lens. Dr. Villwock-Witte has served on a TCRP Panel, is currently serving on an NCHRP Panel, and is in her second term as Chair of TRB's AEP20 Transportation Needs of National Parks and Public Lands.

Over the past five years, Dr. Villwock-Witte has been working in cooperation with the National Association of Development Organization Research Foundation (NADORF) on projects that tie transportation and economics together, often addressing divisions created in the communities as a result of transportation infrastructure. Most recently, Natalie is the P.I. for *Supporting Active Transportation Mobility in LaBelle, Florida*, whose tasks include listening to community concerns and providing recommendations regarding a proposed state roadway project that would change the community's feel as well as reviewing how other projects of interest to the community impacted peer Florida downtowns.

Karalyn Clouser, WTI Research Associate

M.S., Sustainable Transportation, University of Washington, 2020
B.S., Earth Sciences - GIS/Planning, Montana State University, 2013

Karalyn Clouser's background is in GIS and transportation planning. She has experience editing and managing spatial data to support transportation planning and implementation projects and offers skills with numerous GIS tools. As part of her role with the National Center for Rural Road Safety (managed by WTI), Ms. Clouser manages and prepares many of the Safety Center's outreach activities including bi-weekly training newsletters, quarterly newsletters, training invitations, and questionnaires. She also assisted senior researchers in conducting literature reviews and prepared surveys for research efforts for the WTI managed West Region Transportation Workforce Center (WRTWC). She maintained WRTWC's databases of transportation-related degrees and experiential learning programs. WRTWC brought together transportation organizations, workforce advocates, and educational institutions to develop partnerships that apply knowledge, experience, and resources to strategically build a strong transportation workforce for the future.

Karalyn has conducted research in the areas of rural mobility, safety, public transportation, workforce development, and winter maintenance.

Table 5 presents the number of person-hours devoted to each task by research team members. It also details the percentages of time that each employee is committed to all projects. The level of effort proposed for the Principal Investigator and professional members of the research team will not be changed without written consent of MDT.

Table 5: Project Staffing

Name of Employee, or Support Classification	Role in Study	Task						Percent of Time vs. Total Project Hours (total hrs./person/total project hrs.)	Percent of Time - Annual Basis (total hours/ person/ 2080 hr.
		0	1	2	3	4	Total		
Natalie Villwock-Witte	Principal Investigator	12	38	150	20	60	280	19%	9%
Karalyn Clouser	Researcher - GIS	9	38	170	220	60	497	35%	16%
Undergraduate Student	Researcher	9	126	170	220	80	605	42%	19%
Accounting	Administration	6					6	0.4%	0.2%
Dana May	Technical Editing		8	8	8	8	32	2%	1.0%
Neil Hetherington	Graphic Design		4	4	4	4	16	1%	0.5%
TOTAL		36	214	502	472	212	1436		

FACILITIES



The research team has the resources necessary to successfully complete the research and does not anticipate needing additional equipment or facilities that are not already on hand.

The Western Transportation Institute at Montana State University is housed in the Transportation and Systems Engineering Building on the south side of the Montana State University (MSU) campus, which provides ready access to MSU's library, computing, and other facilities. The 27,000 square feet of office space provides dedicated onsite space for project staff and facilities for archiving and transmitting data.

Research Computing: MSU computing resources and software will be available and sufficient to perform the research tasks described in the Research Plan.

Information Services: The MSU Library system has licenses with the largest databases of published literature and open access to published articles in many peer-reviewed journals. Literature and information gathering is performed through the extensive resources of the MSU Library which subscribes to more than 250 databases and 18,000 journals in print and electronic format. Specific items not accessible through these sources can be located and retrieved by the Interlibrary Loan service, which is affiliated with other research libraries across the United States.

Graphic and Communication Services: Communications staff provide technical editing, layout, graphic design, and web page support. Information Technology staff maintains network servers and individual computers, software, and hardware. Relevant university communication facilities include fully equipped video and conference room facilities. WTI routinely conducts internet-based meetings with clients and staff located around the world. Webinars are hosted to facilitate training and information dissemination and recorded for later access by stakeholders.

Administrative Services: The researchers at WTI are assisted by a highly qualified group of experienced support staff. Administrative staff members assist with budgeting, procurement, contracts, and accounting. The university provides Extended University services for online educational course development and publications and an Institutional Review Board (IRB) to oversee all research engaging humans. In addition, the MSU Academic Technology and Outreach department can provide continuing education units.

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