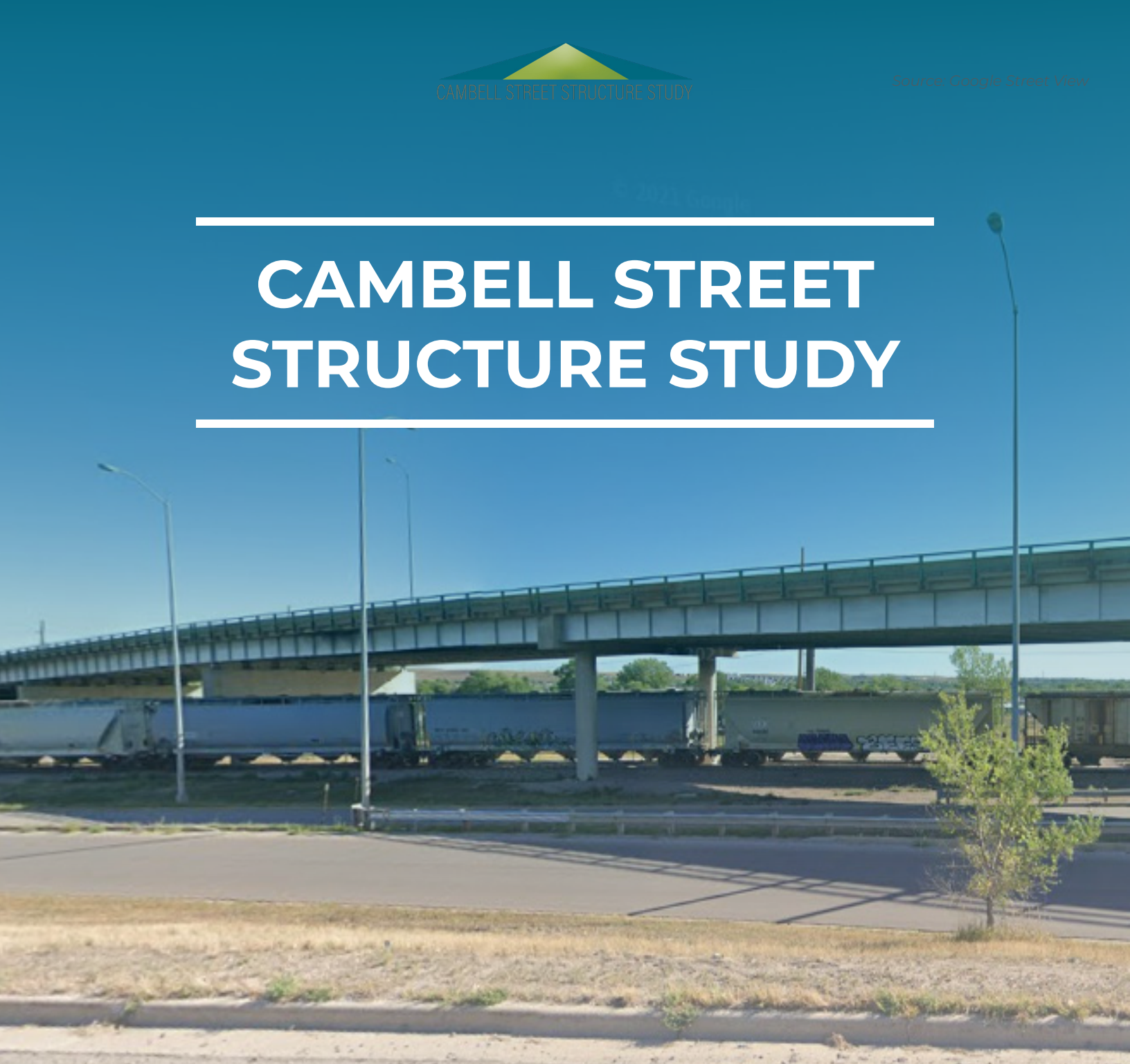

CAMBELL STREET STRUCTURE STUDY

Rapid City Metropolitan Planning Organization
May 2022

RAPID CITY AREA Metropolitan Planning Organization

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

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PREPARED BY:

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

Source: BENJAMIN F SULLIVAN/SHUTTERSTOCK

Introduction

The Rapid City Metropolitan Planning Organization (MPO) initiated the Cambell Street Structure Study in an effort to identify potential mobility improvements along the Cambell Street corridor. The Cambell Street Structure that extends over the Rapid City, Pierre and Eastern Railroad (RCP&E) is scheduled to be replaced in the next five to 10 years, offering an opportunity to make the surrounding area safer, more accessible, and more functional for everyone.

Study Area Context

This section of Cambell Street, extending from Fairmont Boulevard to St. Patrick Street, is located on the eastern side of Rapid City and serves as one of the north-south spines for the area. The corridor leads into State Highway 79 on the south, and to the north links to I-90 and newer development that has occured in Rapid City. Currently, this part of Cambell Street only accomodates travel by vehicle; bicycle and pedestrian facilities are not provided.

This particular stretch of Cambell Street borders a variety of land uses, including a combination of heavy industrial and medium-density residential uses on the eastern side. Additionally, a mobile home community, Silver Leaf MHP, is located along the northern end of study area and borders St. Patrick Street. On the western side of Cambell Street, the zoning districts include light industrial and general commercial uses. Just west of this area the makeup is more residential, with both low- and medium-density residential districts.

In the future, the City envisions this area gradually redeveloping to become more mixed-use and urban, with a more multimodal feel and a variety of greenway amenities. The current location and makeup of the study area along with the vision for how this part of the city will evolve were critical in informing the planning process and ultimately the development of recommendations.

A routing and infrastructure improvement recommendation was developed through an evaluation of travel analysis data, gathering of public input, regular discussions with local and regional stakeholders, and an alternatives analysis. The recommended improvements will support safe and comfortable multimodal travel through this the Cambell Street structure area.

Past Planning & Analysis Efforts

The impetus for the Cambell Street Structure Study was a culmination of previous planning and analysis work conducted by the City and the South Dakota Department of Transportation, focused both on the immediate study area and Rapid City as a whole. These past efforts were reviewed by the project team early on to establish a baseline understanding of what has previously been envisioned to ensure this study's recommendations would be in alignment. That review led to two main takeaways: the need to replace the structure in the relatively near-term is primarily due to aging infrastructure (not traffic); and there is a desire for the surrounding area to become more mixed-use and pedestrian-friendly in the future. Following are summaries of each reviewed document and their relevance to this study.

Major Bridge Reinvestment Study

The South Dakota Department of Transportation conducted the Major Bridge Investment Study in 2016 to develop a systematic, long-range improvement plan for 18 major bridges throughout the state – one of which is the Cambell Street structure. Components of the study process included a detailed evaluation of existing and future conditions, identification of capacity and safety improvement needs, preparation of improvement cost estimates, and development of a prioritized implementation plan through 2040.

For the Cambell Street structure, the study notes several geometric and structural issues (substandard widths, minor rusting, etc.). A pattern of rear-end and angle type crashes at the St. Joseph/Cambell intersection was identified through a detailed safety analysis. Considering future anticipated growth in traffic, the study notes a possible need for expanded capacity on Cambell Street in 2066 – well beyond when a replacement of the structure will be needed. Following an in-depth prioritization process and financial assessment, the study ultimately recommended replacement of the Cambell Street structure in 2024 at an estimated cost of $8.5 million. That recommendation was a key driver of Rapid City's interest in conducting this study.

Plan Rapid City

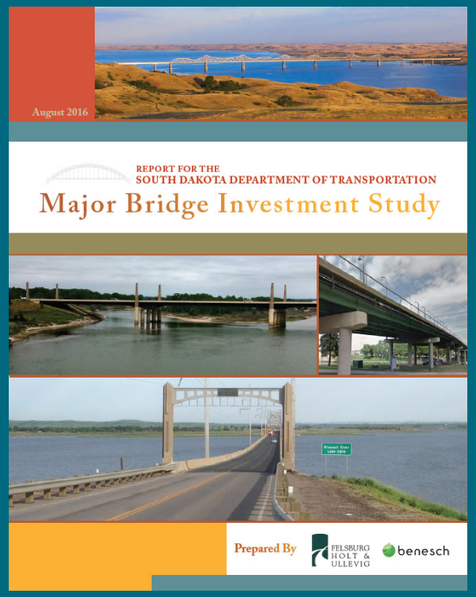
Rapid City's comprehensive plan, known as Plan Rapid City (2014), is the defining vision for the long-term growth and development of the community. The plan weaves together all aspects of community vitality – from transportation to housing to governance, and provides high-level recommendations to continue enhancing Rapid City. The Plan identifies incorporating more transportation options such as transit, walking, and biking and improving connectivity of roadways across Rapid City. Additionally, the comprehensive plan encourages compact growth and infill development and coordinating these efforts with transportation and infrastructure funding. Providing flexibility in future land use and enhancing pedestrian and bicycle connections between neighborhoods and nearby activity centers are also noted as focus areas for the comprehensive plan. Future land use maps developed as a part of this effort show the study area envisioned as a mixed-use urban neighborhood bordered by parks and greenways. The area near the RCP&E railroad will maintain its industrial zoning classification.

Rapid City Metropolitan Transportation Plan

The Metropolitan Transportation Plan developed by Rapid City in 2020 serves as a guiding framework for transportation needs and investments in the region over a 25-year period. The plan, considers all modes of transportation. Specific objectives and recommendations relevant to the study area include capacity improvements along the corridor and a shared use path and sidewalk on the eastern side of Cambell Street.

Rapid City Area Bicycle & Pedestrian Master Plan,

The Rapid City Area Bicycle and Pedestrian Master Plan (2020) identifies and prioritizes improvements to the bicycle and pedestrian network and provides guidance on policies and strategies for more accessible and safer multimodal facilities. The Plan establishes several objectives related to the multimodal connectivity and access including incorporating bicycle and pedestrian facilities in projects and integrating treatments as part of new developments and roadway reconstruction projects. Proposed bicycle network projects that would impact Cambell Street include a separated bikeway along Cambell St from Bridgeview Drive to Catron Boulevard and a sidepath along Cambell Street from Oakland Street to St Patrick Street. Proposed pedestrian facilities along Cambell Street include a new sidewalk on the eastern side of Cambell Street between St Patrick and St Charles Street.



Community & Stakeholder Engagement

The potential for implementing substantial land use and mobility changes so close to Rapid City's core is an exciting opportunity for the community, but it also means there is a responsibility to do it right. Previous planning efforts have identified at a high-level what types of improvements are desired around the Cambell Street structure area; this study is going a step further to determine what the mobility improvements might look like. As such, it was critical that the process be informed throughout by the community and stakeholders to ensure any recommendations were in alignment with the vision. Throughout the planning process for the Sixth Street Corridor Plan, numerous in-person and online opportunities were available for community members and stakeholders to interact with the project team and provide their input.

Study Advisory Team

A Study Advisory Team (SAT) composed of City and DOT staff met regularly throughout the planning process and guided the evaluation and recommendation processes. Because the Cambell Street structure is currently maintained by SDDOT, several representatives from various DOT departments participated to offer the agency's perspective on potential changes within the study area and future mobility and maintenance considerations. Because Cambell Street is a key connection in Rapid City, is in close proximity to other planned and programmed infrastructure projects, and is an integral piece of any future land use changes east of downtown, close coordination between the City's Community Development, Public Works, and Traffic departments through the SAT was important. The SAT served as the primary entity for crafting the Methods & Assumptions document, and for reviewing and discussing analysis/evaluation results, preliminary recommendations, and draft documentations – they guided the study process.

Source: Rapid City Journal

Railroad Coordination

Mobility in the study area is complicated by the presence of a large RCP&E switchyard just east of the Cambell/St. Joseph merge point. The Cambell structure largely exists to provide a grade-separated crossing above the train tracks, as the train switching operations in the area would result in frequent traffic blockages in an at-grade scenario. Given the railroad's close integration with the existing street network, train operations were a major consideration in assessing what types of infrastructure improvements would be feasible along and around Cambell Street; direct coordination with railroad representatives was necessary to identifying implementable solutions. Members of the project team met with GWRR representatives at two points in the study: early on to give an overview of the study's intent and understand any current issues railroad operators have noticed in the area, and later in the study to present developed alternatives and collect input on them from the railroad's perspective. Their input is summarized later on in the Evaluation Approach & Process section of this report.

Public Engagement Overview

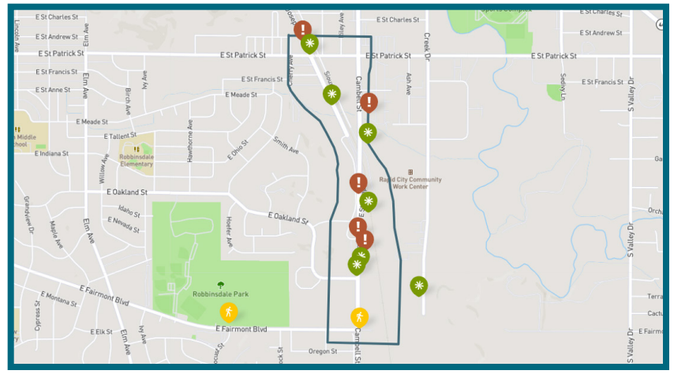
Community members were given opportunities to engage in the study process through a variety of means, both virtual and in-person. Public engagement was organized in a series of three primary phases – the first focused on an introduction to the study and community input on issues and opportunities, the second focused on collecting input on draft alternatives, and the third (yet to occur) focused on presenting study recommendations. Throughout the study, a dedicated project website served as the main outlet for sharing information and collecting digital input; and in-person public meetings during each phase provided the community with opportunities to directly engage with the study team. Input collected from the public, as well as business owners in the study area, during the second phase of outreach – which was critical to shaping the final recommendations – is summarized in detail in the Evaluation Approach & Process section.

Digital Engagement

A dedicated study website – cambellstreetstudy.com – was developed using the Social Pinpoint platform to act as a central online portal for information and engagement during the study. This site provided community members access to information about the project, including details on upcoming input opportunities and links to live surveys, the project schedule, and interim deliverables. It also had a variety of engagement tools, including a commenting map and an 'idea wall', directly built in.

Various other tools and strategies were utilized throughout the planning process so as to maximize public exposure to the project and to give as large and diverse a portion of the public as possible the opportunity to be involved. Tools and materials used included:

- Agency website updates
- Social media and press releases
- Postcard mailings to property owners along and near the corridor



Public Meetings

During the first phase of engagement, a public meeting to introduce the study and capture input on mobility issues and opportunities along and around Cambell Street was held at Western Dakota Technical College (a venue selected for its proximity to the study area). A series of boards detailing the study area and process, as well as specific information about the Cambell Street structure, were presented. Community input was captured primarily through a large roll-plot map of the study area. Meeting attendees were asked to provide any location-specific thoughts on mobility-related concerns and ideas by writing on the maps, and general comment cards were provided as well. A recorded presentation of the public meeting materials and an online commenting map were made available through the project website for community members not able to attend the in-person meeting.

For phase two, the project team staged two public 'pop-up' events – setting up a table and some boards in places where community members are already going – to collect input on the draft study alternatives. These pop-ups were held at the Rapid City Public Library and at The Monument (prior to a Rapid City Rush game). At each pop-up, a study overview board and a board detailing the six preliminary alternatives were set up; copies of the initial evaluation matrix were available as well. After reviewing the alternatives and discussing their relative benefits and drawbacks with project team members, community members were asked to identify their preferred alternative through a marble voting exercise. A similar voting exercise was made available to the broader community through an online survey.

This final round of engagement for the study will center around presentation of this draft report to RCAMPO committees and Rapid City City Council. Comments on the draft will then be incorporated into a final version.

Baseline Conditions

The Cambell Street Structure Study focused primarily on a roughly triangular area bounded by Cambell Street, St. Patrick Street, St. Joseph Street, and Bridge View Drive; the portion of Cambell Street between Bridge View Drive and Fairmount Boulevard was also part of the study area, for an overall corridor length of approximately 1 mile. Cambell Street itself largely serves as a connection from Highway 79 and the south part of the city to Rapid City's core and I-90, and vice versa; the adjacent street network provides access to various businesses and residential areas. An assessment of existing transportation infrastructure and traffic operations (both current and future) was conducted to understand current conditions for all users in the study area. This section provides an overview of mobility along, across, and around Cambell Street as it functions today.

Transportation Infrastructure

Currently, this portion of Cambell Street serves only vehicular traffic through four travel lanes (two in each direction). There are two signalized intersections in the study area. The posted speed limit is 45 miles per hour. Multimodal components are limited; from Fairmont Boulevard to St. Patrick Street, there are no pedestrian and bicycle facilities provided along the corridor or the adjacent streets. The character of the corridor is shaped by the surrounding land uses that front the corridor, such as the various business parking lots located on the north and south ends of Cambell Street.

There are two major transit routes that weave in and out of the study area. The City's Rapid Transit Service, Rapid Ride, operates the Lincoln Route that traverses the City and links from Minnesota Street, travels along Cambell Street, and heads west on Fairmont Boulevard. The Lincoln Route has one stop located in the study area at the intersection of Cambell Street and Fairmont Boulevard. To the north of the study area, the Jefferson Route, provides service to the central portion of Rapid City. The Jefferson Route travels along Cambell Street outside of the study area boundary and heads west on St. Patrick Street.

There is one stop along the Jefferson Route located in the study area at the intersection of Cambell Street and St. Patrick Street.

The Cambell Street Structure that extends over the RCP&E Railroad is a prominent component of the transportation infrastructure in the area. Cherry Avenue, an access road to the railroad switchyards, runs parallel to Cambell Street.

Traffic Operations

One of the early tasks in the study process was an assessment of existing and future background traffic conditions. Traffics counts were collected at three intersections and four mid-block locations to establish baseline volume numbers for use in later alternatives development and evaluation efforts. Generally, the study area intersections currently operate acceptably at Level of Services (LOS) C or better – LOS E or worse was considered unacceptable for the purposes of this study. The RCAMPO travel demand model was then reviewed to identify future growth rates for projecting short-term (2030) and long-term (2050) traffic forecasts. Based on the model data, an annual growth rate of 1% was utilized (slightly higher than the model growth rates). In a no-build scenario, most study area intersections would still operate at LOS C or better in 2030; in 2050, only the Cambell/St. Patrick intersection drops to LOS D. Several minor improvements deemed reasonable to implement by 2050 – signal timing modifications and an additional Cambell-St. Patrick right turn lane were included in the background scenario for the long-term traffic evaluation. More detail about the traffic analysis for this study can be found in **Appendix A**.

Evaluation Approach & Process

To develop recommendations for improving mobility in the Cambell Street structure area, a tiered alternatives development and evaluation process was followed. Public/stakeholder input and technical analysis informed each step to ensure the final recommendations would be both feasible and in alignment with the community vision.

PHASE 1 ENGAGEMENT + **EXISTING CONDITIONS ASSESSMENT**

TIER 1 ALTERNATIVES DEVELOPMENT → **ALTERNATIVES EVALUATION**

PHASE 2 ENGAGEMENT → **TIER 2 ALTERNATIVES REFINEMENT**

TRAFFIC ANALYSIS + **CONCEPTUAL DESIGN** → **FINAL RECOMMENDATIONS**

Initial Routing Alternatives Development

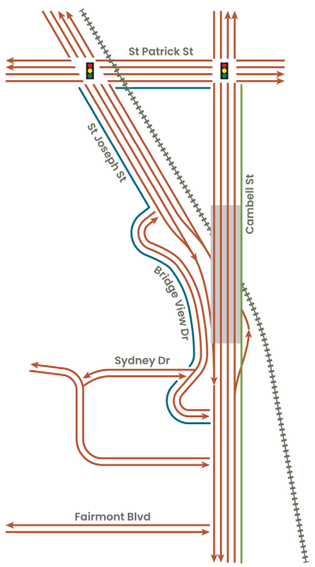
An initial set of six alternatives for multimodal improvements in the study area was developed for further evaluation following the first phase of engagement and the existing conditions assessment. A key factor informing preliminary alternatives development was the proximity of the RCP&E switchyard to Cambell Street. Early conversations with both the SAT and railroad representatives revealed interest in potentially moving the railroad switchyard to a different location farther out from Rapid City, if feasible – for reasons relating to traffic, train operations, and structural impacts, its current location is not ideal. Any such move would require more coordination between Rapid City, SDDOT, and railroad representatives; however, given the mutual interest in the concept, a future scenario in which the switchyard is not immediately adjacent to the study area was considered while developing alternatives.

The switchyard's proximity is a major reason why the Cambell Street structure exists, and why it has such a substantial footprint: without the structure, regular switching operations would regularly block traffic on Cambell Street. A primary benefit of a relocated switchyard would be the reduction in rail tracks through the study area from three to one, allowing for a smaller Cambell Street structure – or even no structure at all. Given how important the switchyard's presence is to the feasibility of various infrastructure changes, the six preliminary alternatives were divided into two categories assuming either its relocation or its remaining in the current location.

Legend
= Shared-Use Path
= Sidewalk
= Travel Lane
= Trail
= Structure

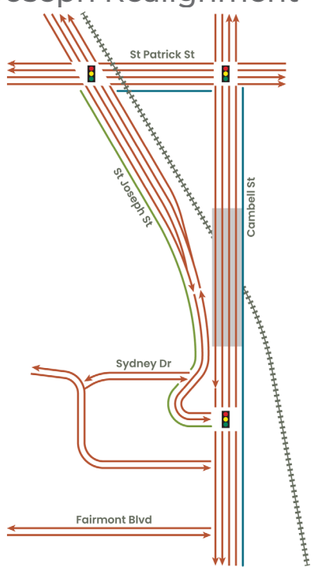
Switchyard & Bridge Retention

Alternative 1: Sidewalks



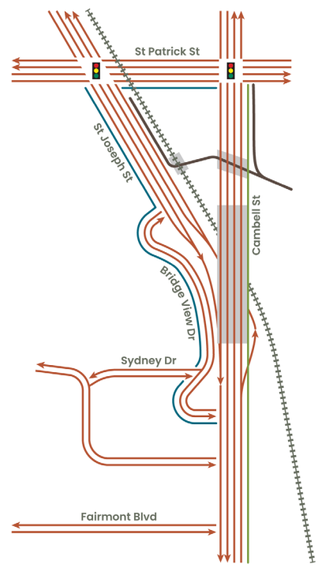
This alternative would retain the existing street configuration in the study area. The only infrastructure change would be addition of sidewalks along St. Joseph Street, Bridge View Drive, and Cambell Street.

Alternative 2: Ramp Elimination & St. Joseph Realignment



This alternative would eliminate the existing on/off-ramps that connect St. Joseph Street and Cambell Street. St. Joseph Street and Bridge View Drive would be merged into a continuous alignment, and a new traffic signal would be added to the intersection of Cambell Street and St. Joseph Street. Sidewalks would be added to Cambell Street and St. Joseph Street/Bridge View Drive.

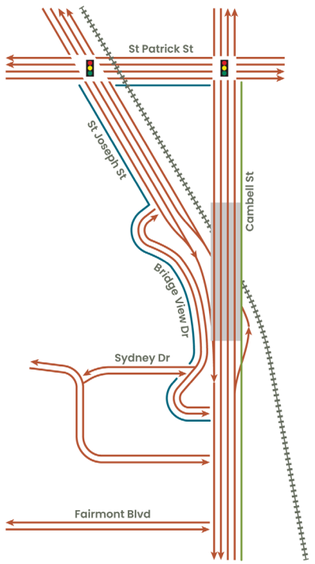
Alternative 3: Drainage Way Trail



This alternative would retain the existing street configuration in the study area. A trail connection would be added along the existing drainage way that goes underneath Cambell Street and the railroad, with connections up to St. Joseph Street and Creek Drive on the west and east ends, respectively. Sidewalks would also be added to St. Joseph Street, Bridge View Drive, and Cambell Street.

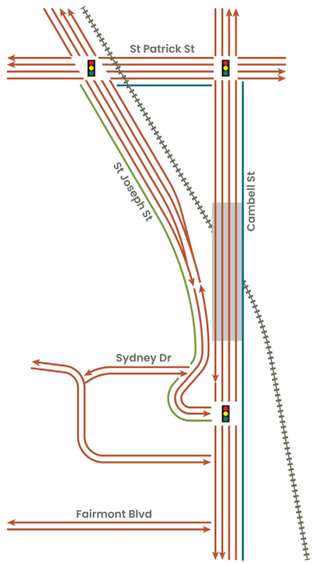
Switchyard Relocation & Bridge Elimination

Alternative 4: Sidewalks



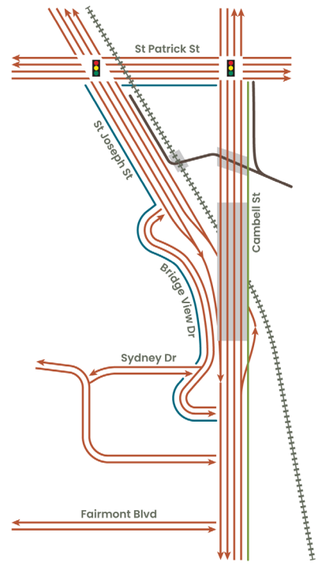
This alternative would retain the existing street configuration largely as is, with the Cambell Street railroad crossing changed from grade-separated to at-grade. Sidewalks would be added along St. Joseph Street, Bridge View Drive, and Cambell Street.

Alternative 5: Cambell Street Split with Railroad Crossing



This alternative would split the alignment on Cambell Street into two segments. The south leg of Cambell Street would be merged into a continuous alignment with St. Joseph Street, and the north leg would be curved around the existing warehouse facility at 1313 St. Patrick Street to cross the railroad (at-grade or via a structure) and intersect the St Joseph Street at a 90-degree angle. A traffic signal would be installed at the new intersection of St. Joseph Street and Cambell Street, with sidewalks added to Cambell Street and St. Joseph Street.

Alternative 6: St. Joseph Street Split with Railroad Crossing



This alternative would adjust the alignment of St. Joseph Street to cross the railroad (at-grade or via a structure) and intersect with Cambell Street at a 90-degree angle south of the existing warehouse facility at 1313 St. Patrick Street. A traffic signal would be installed at the new intersection of St. Joseph Street and Cambell Street, with sidewalks added to Cambell Street and St. Joseph Street

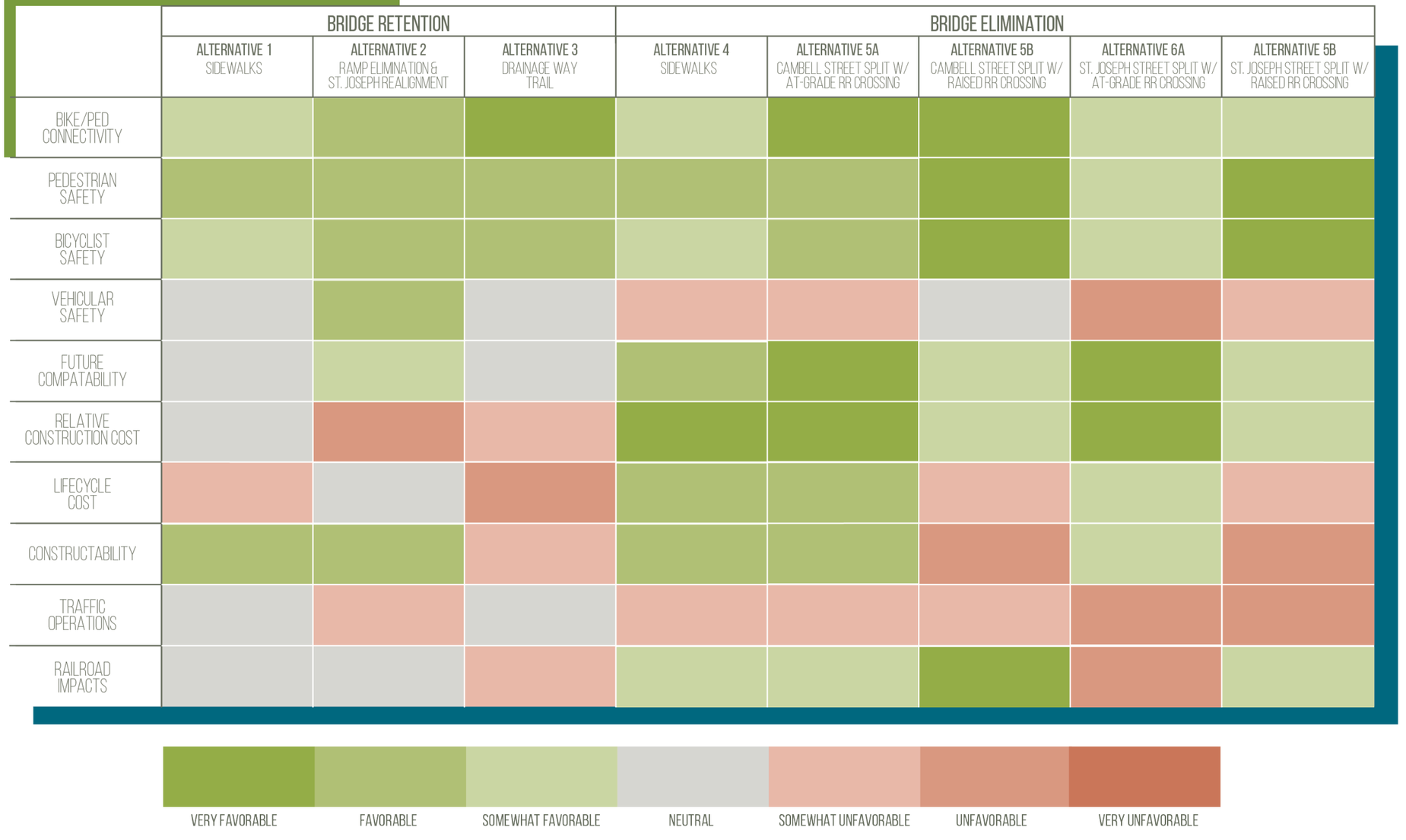
Alternatives Process

The six preliminary alternatives were evaluated using a set of qualitative and quantitative criteria developed collaboratively with the SAT. These criteria were selected with the overall intents of the study – enhancing mobility for all users and supporting previous planning recommendations in the Cambell Street structure area – in mind, to give an overview of how well each alternative would support them.

- Bicycle & Pedestrian Connectivity
- Pedestrian Safety
- Bicyclist Safety
- Vehicular Safety
- Future Compatibility
- Relative Construction Cost
- Lifecycle Cost
- Constructability
- Traffic Operations
- Railroad Impacts

A favorability scale was used to compare the alternatives relative to the baseline/ no-build condition and to each other. The ratings shown in the evaluation matrix were determined through a combination of technical analysis, SAT coordination, and knowledge of best practices. Discussions with the SAT and structural engineers helped identify potential feasibility constraints with certain alternatives. For instance, there is an existing box culvert just north of the Cambell Street structure programmed for a significant expansion in the future which would make Alternative 3 difficult to implement; and the existing topography would make providing a grade-separated crossing of the railroad in Alternatives 5 and 6 a substantial structural challenge.

EVALUATION MATRIX



Alternatives Evaluation & Public Input

Public opinion was also a key input for evaluating the alternatives. Conceptual layouts and key elements of each were shared with the community through two pop-up events and the project website, and community members were asked to identify their preferred alternative. The following page highlights the results of this second phase of engagement.

Alternative Descriptions

Bridge Retention

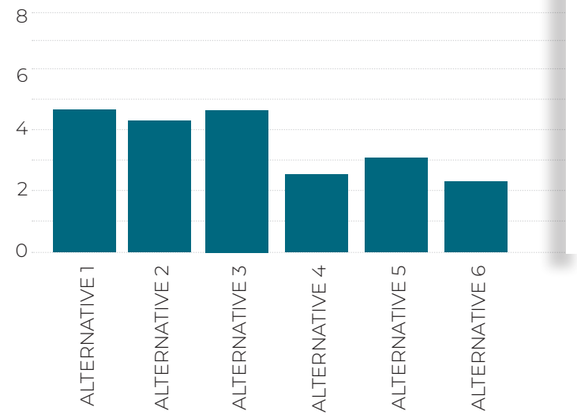
- **Alternative 1:** Sidewalks
- **Alternative 2:** Ramp Elimination & St. Joseph Realignment
- **Alternative 3:** Drainage Way Trail

Bridge Elimination

- **Alternative 4:** Sidewalks
- **Alternative 5:** Cambell St Split with Railroad Crossing
- **Alternative 6:** St. Joseph St Split with Railroad Crossing

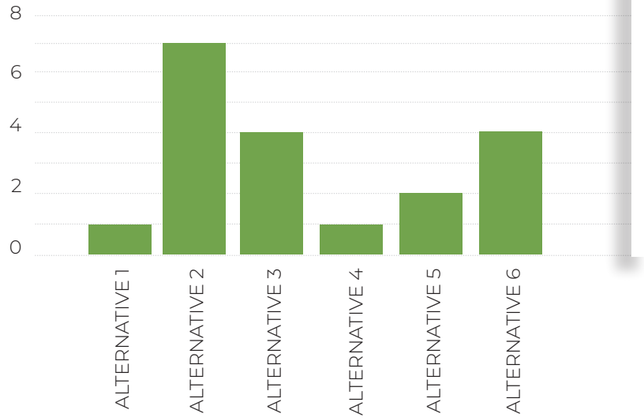
ONLINE SURVEY

An online survey was developed and promoted through various local communication channels to encourage community members to provide feedback on their preferred alternative. In total, there were **103 survey responses** collected as a part of the online public engagement effort. The average ranking scores for each alternative is provided below.



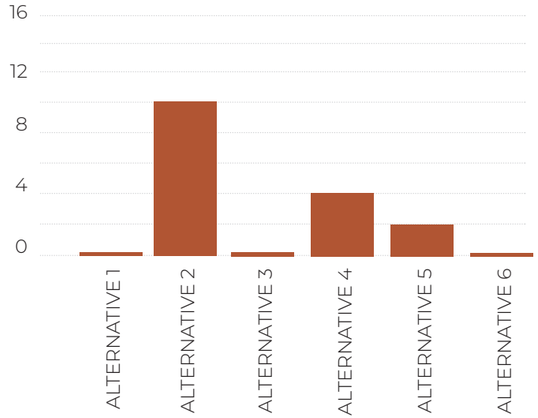
IN-PERSON OUTREACH

Two in-person pop-up events were held in early March 2022 at the Rapid City Public Library and The Monument. The project team reached approximately **30 people and more than half** ranked their preferred alternative via the in-person jar and marble exercise.



COFFEE WITH PLANNERS

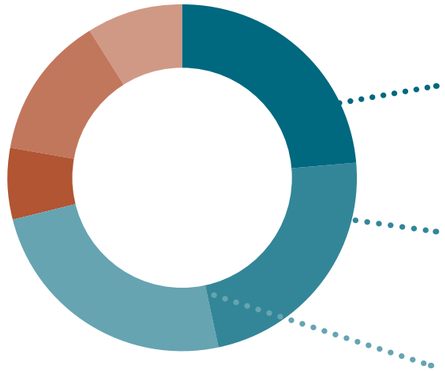
The in-person marble and jar ranking exercise was presented at the quarterly Coffee with Planners. **Sixteen participants** ranked their preferred alternative for the study area.



LOCAL BUSINESS ONE-ON-ONE CONVERSATIONS

- Consider improving access to local businesses in alternatives advanced in the study
- Adding an additional railroad crossing was a concern for some local business owners

AGGREGATED PREFERRED ALTERNATIVE RESULTS



61%
of participants ranked Alternative 1 as one of their top two preferred alternatives in the online survey

48%
of participants ranked Alternative 2 as one of their top two preferred alternatives in the online survey

54%
of participants ranked Alternative 3 as one of their top two preferred alternatives in the online survey

- **24%** - Alternative 1
- **23%** - Alternative 2
- **24%** - Alternative 3
- **7%** - Alternative 4
- **13%** - Alternative 5
- **9%** - Alternative 6

Alternatives Refinement

Following the alternatives evaluation process and second round of engagement, the project team collaborated with the SAT to determine which of the six preliminary alternatives should be retained for further refinement and additional analysis. Community support was generally highest for the three 'bridge retention' alternatives, and there was no clearcut favorite among those three, while Alternative 5 was the most supported of the 'bridge elimination' alternatives. The project team chose to eliminate Alternative 1 from further consideration since it would bring minimal improvements to bicycle and pedestrian mobility in the study area; and to eliminate Alternative 3 due to the substantial feasibility concerns. Alternative 2 and Alternative 5 – one each from the bridge retention and bridge elimination categories – were retained for further assessment.

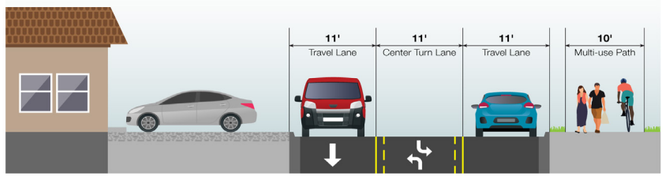
Conceptual Design

To understand and assess the spatial impacts of the retained alternatives, high-level stick diagrams of proposed changes were evolved into two-dimensional concept drawings with proposed facility widths, intersection configurations, and other details more concretely identified. These concept drawings allowed for more refined feasibility assessments and more detailed discussions with stakeholders.

St. Joseph Street Impacts

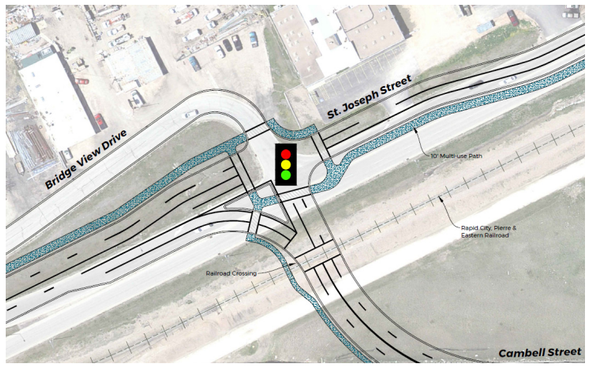
Preliminary traffic analysis had determined that St. Joseph Street would operate at an acceptable level of service with one through lane in each direction, so both alternative concepts included modification of St. Joseph to a three-lane cross-section from its existing four-lane cross-section. Doing so provides space to add a multi-use path along one side of the street – identified as the east side in both concepts to avoid driveway conflicts. In Alternative 2, St. Joseph Street is merged with Bridge View Drive into a continuous alignment.

Proposed St. Joseph Street Cross-section (looking north)



Cambell Street Impacts

In Alternative 2, Cambell Street would follow its current alignment and pass over the railroad tracks, with the only change from a traffic perspective being a new signal at the intersection with Bridge View Drive. Multi-use paths are included along the sides of Cambell expected to have the highest pedestrian demand given the surrounding land uses: along the east side north of Bridge View Drive, by the mobile home site; and along the west side south of Bridge View Drive, nearest to the residential areas accessed via Oakland Street. An additional sidewalk could be considered on the west side of Cambell Street north of Bridge View Drive as week,



In Alternative 5, Cambell Street would be majorly impacted by a proposed alignment split to create a new four-leg signalized intersection where St. Joseph Street and Bridge View Drive currently intersect. Traffic modeling was used to determine the necessary configuration of through and turn lanes at the intersection to maintain adequate levels of service; the resulting intersection has a large footprint with dual westbound-to-northbound slip lanes. Similar to Alternative, a multi-use path would be provided along the west side of Cambell Street south of this intersection; to the north, sidewalk is proposed on both sides.

Railroad Impacts

Alternative 5 would have a substantial impact on railroad operations. Providing a structure to cross the new Cambell Street alignment over the railroad would be a substantial challenge due to grading and space constraints, so an additional at-grade railroad crossing would be necessary immediately adjacent to the St. Joseph/Cambell intersection. The existing access road to the rail facility would also need to be rebuilt in a new location. Alternative 2 would have no impacts to current railroad operations.

Traffic Analysis

Once more refined conceptual layouts of Alternative 2 and Alternative 5 were developed, an additional round of traffic analysis was conducted to assess how the new intersection configurations established in each one would operate under current and projected future levels of demand. The table below presents the projected future intersection LOS values for a background no-build scenario and both refined alternatives in the midday and evening peak hours (midday/evening peak). Overall, there are not substantial operational concerns associated with existing or new intersections for either retained alternative – LOS values generally stay at C or better aside from the Cambell/St. Patrick intersection, which is expected to drop to LOS D even in the background scenario. The new Cambell/St. Joseph intersection established in Alternative 5 would drop to LOS D in 2050, which is acceptable but not preferred. A more detailed account of this traffic analysis may be found in **Appendix A**.

Scenario		St. Patrick Street at St. Joseph Street	St. Patrick Street at Cambell Street	Cambell Street at St. Joseph Street (diverge)	Cambell Street at St. Joseph Street (merge)	Cambell Street at Fairmont Boulevard	Cambell Street at Bridge View Drive	Cambell Street (realigned) at St. Joseph Street
Existing Counts		C/C	C/C	B/B	A/B	B/B	–	–
Background	2030	C/C	C/D	B/B	B/B	B/B	–	–
	2050	C/C	D/D	B/B	B/B	B/C	–	–
Alternative 2	2030	C/C	C/D	–	–	B/B	B/C	–
	2050	C/C	D/D	–	–	B/C	B/C	–
Alternative 5	2030	C/C	C/D	–	–	B/B	–	B/C
	2050	C/C	D/D	–	–	B/C	–	C/D

Recommended Alternative Selection

Following the alternatives refinement process, the conceptual layouts and traffic analysis results were reviewed by the project team and stakeholders to determine which to recommend as a solution for enhancing mobility in the study area. Key takeaways from this review included:

- Both Alternative 2 and Alternative 5 would result in a better pedestrian environment than the existing street network, though the new St. Joseph/Cambell intersection in Alternative 5 could be challenging to cross given its large footprint
- For safety and operational reasons, the addition of an at-grade railroad crossing in close proximity to the exitsting one at St. Patrick Street and the new St. Joseph/Cambell intersection in Alternative 5 was not supported by RCP&E representatives
- The disruption of through north-south flow along Cambell Street caused by the realignment in Alternative 5 is not a desirable traffic change
- Existing topography would make construction of the realigned section of Cambell Street in Alternative 5 a challenge, potentially negating any cost savings from not reconstructing the Cambell Street structure

For these reasons, Alternative 2 was identified as the recommended alternative.

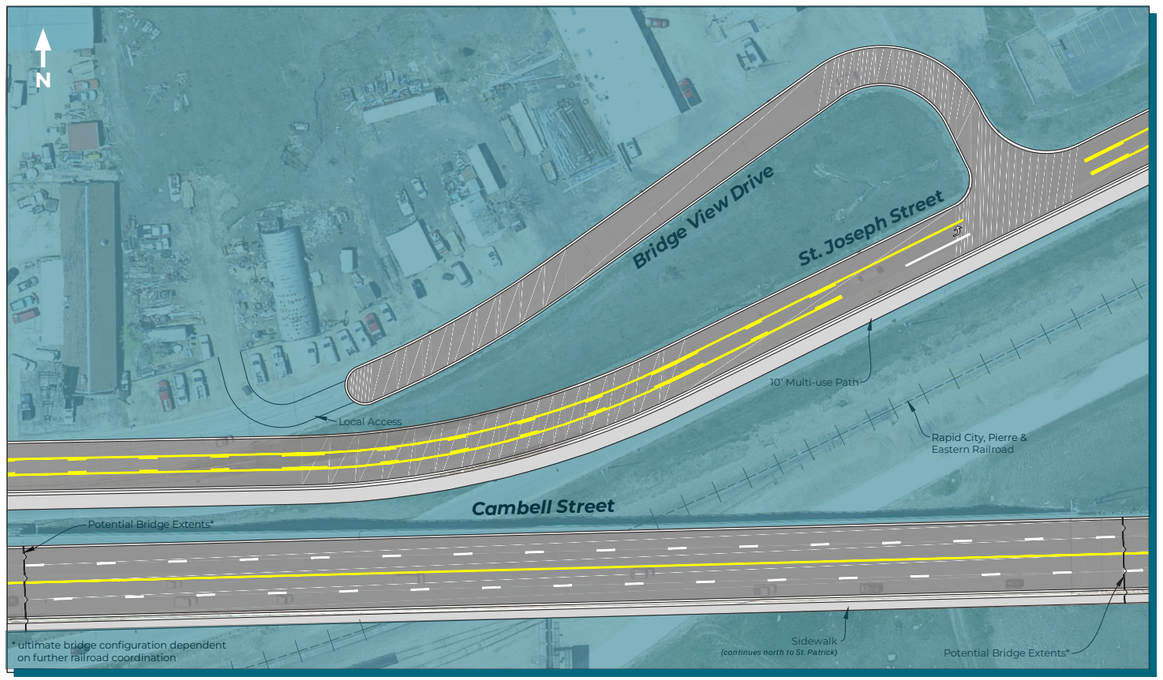
Recommendations

Removal of the ramp connections between Cambell Street and St. Joseph Street – the most significant street network change in the recommended study area concept – will bring safety and mobility benefits for all users while maintaining functionality. With the ramps in place, north-south pedestrian mobility along Cambell Street is difficult; there is no space to add sidewalks to the west side, and any sidewalks on the east side would involve a difficult crossing of the Cambell-to-St. Joseph ramp. They also limit options for providing an additional crossing of Cambell Street between St. Patrick Street and Fairmont Boulevard. From a motorist perspective, the existing merge from southbound St. Joseph Street to southbound Cambell Street is a safety concern due to poor visibility.

In the recommended alternative, St. Joseph Street would be transformed from a vehicular connection between Cambell Street and St. Patrick Street to a multimodal corridor providing access for both motorized and non-motorized modes. Current and projected future traffic volumes on the street are low enough be accommodated well with a three-lane section, as opposed to the existing four-lane section. Narrowing the width of the roadway in turn provides space to add a wide multi-use path in an area where sidewalks are largely missing today. The path would be on the east side to eliminate driveway conflicts, with crosswalks added at two points to provide connections to residential areas further west. Cambell Street itself will continue to be a major vehicular connection in and out of Rapid City, but – as evidenced by existing dirt paths along the corridor – there is some pedestrian demand, so the recommended alternative includes addition of a sidewalk. This sidewalk would be on the east side north of the Bridge View Drive intersection (adjacent to the Silver Leaf mobile home community), and transitioned to the west side and widened south of the intersection (closer to residential development along Oakland Street). As adjacent land uses change over time and pedestrian demand grows, adding sidewalks to both sides of Cambell Street may be considered. Signalizing the St. Joseph (formerly Bridge View)/Cambell intersection provides both an additional crossing point for pedestrians and a safer vehicular connection between Cambell Street and St. Joseph Street.

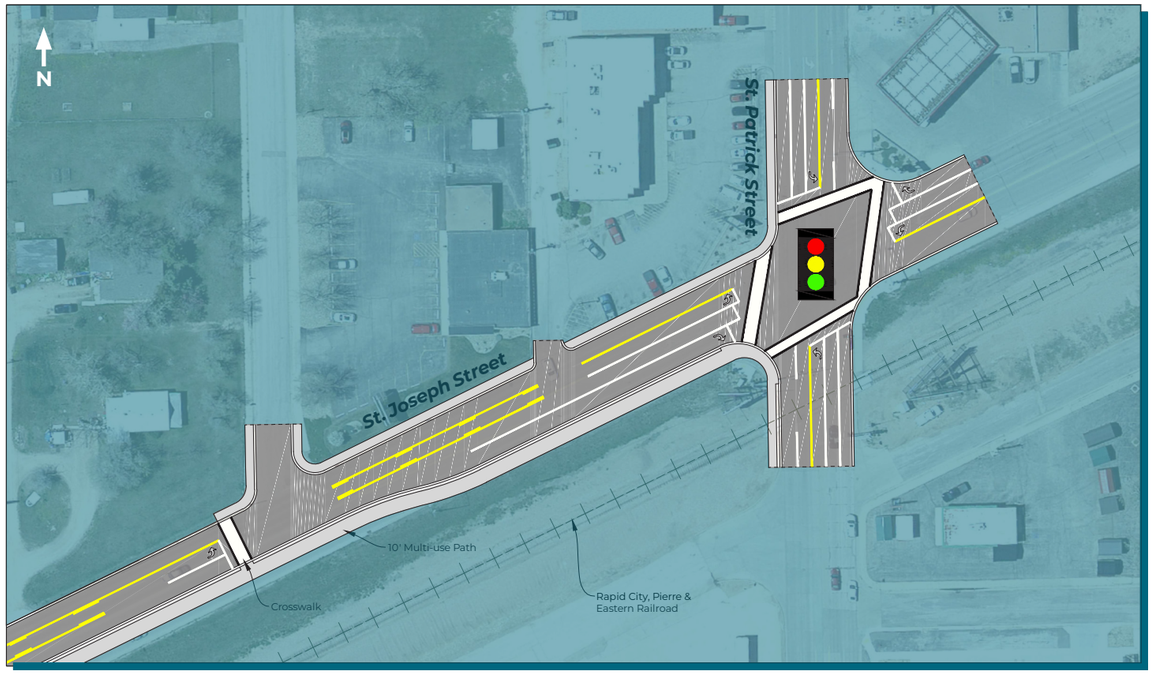
Recommended Alternative - St Joseph Ramp Elimination

St. Joseph & Bridge View Conceptual Layout



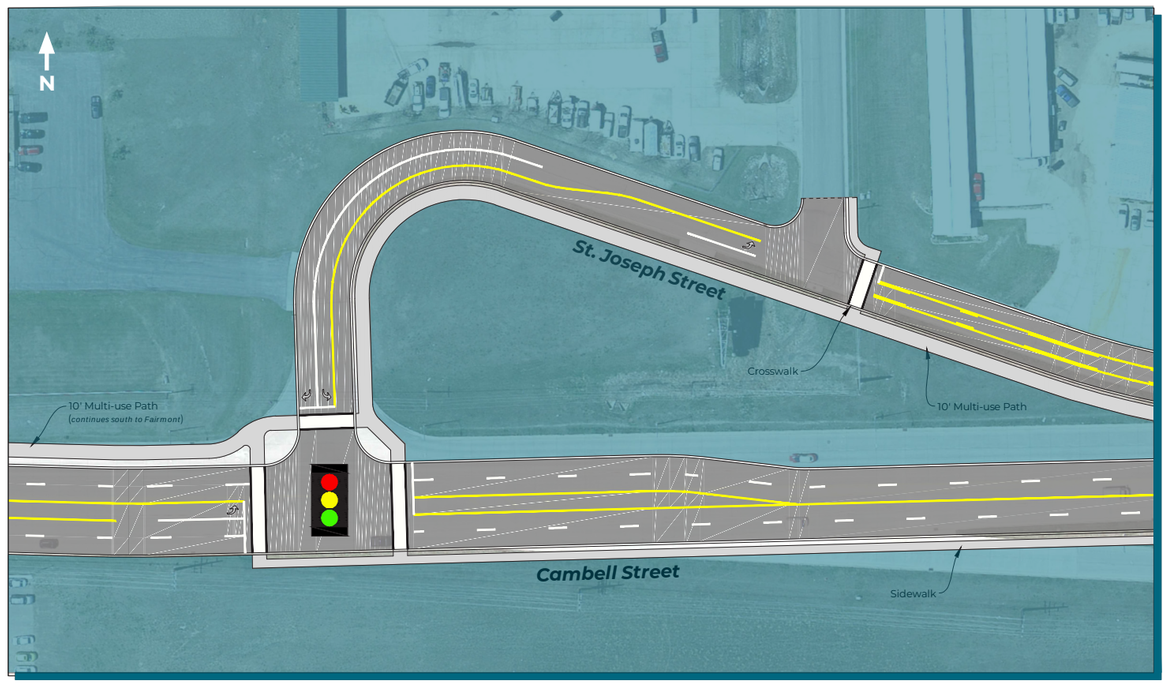
Recommended Alternative - St Joseph Ramp Elimination

St. Joseph & St. Patrick Conceptual Layout



Recommended Alternative - St Joseph Ramp Elimination

St. Joseph & Cambell Conceptual Layout

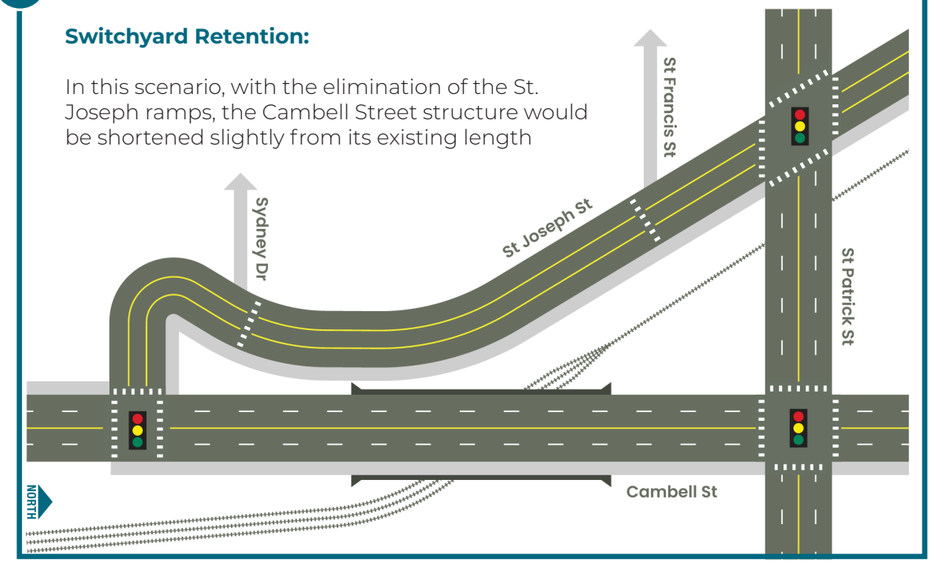


The extents of the new Cambell Street structure will depend on further coordination with RCP&E representatives regarding a possible relocation of the nearby switchyard. Preliminary discussions between the City, SDDOT, and RCP&E revealed a mutual interest in that concept for a variety of reasons, but more detailed conversations about timelines, funding, etc. are necessary before it can move forward. Part of the reason the existing structure is so large is that it must span several railroad tracks, in addition to the St. Joseph ramps. Were the switchyard to ultimately be relocated farther out from Rapid City, the structure would only need to span one track and could be substantially smaller than it is today. With that in mind, the recommended alternative includes three different scenarios for the future Cambell Street structure configuration, with the ultimate recommendation dependent on further railroad coordination:

1

Switchyard Retention:

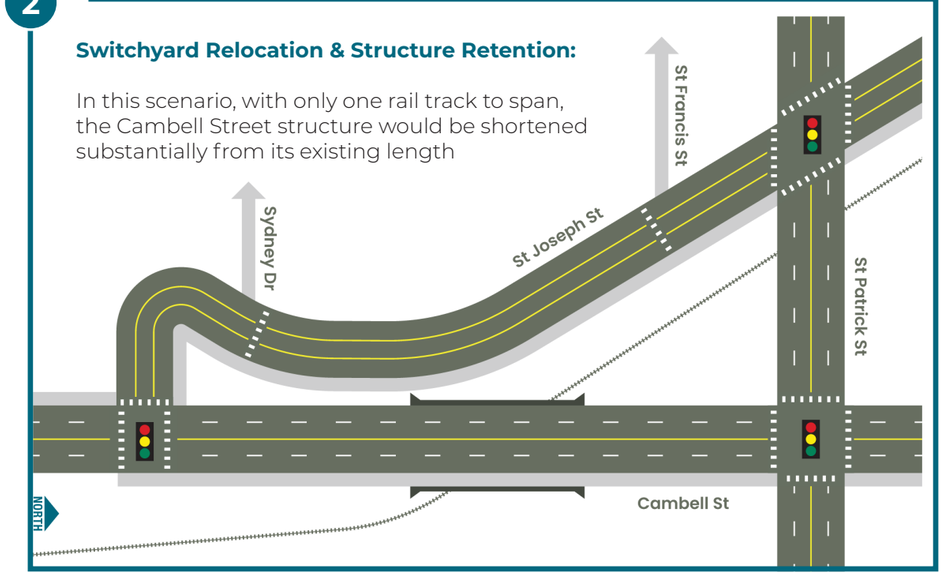
In this scenario, with the elimination of the St. Joseph ramps, the Cambell Street structure would be shortened slightly from its existing length



2

Switchyard Relocation & Structure Retention:

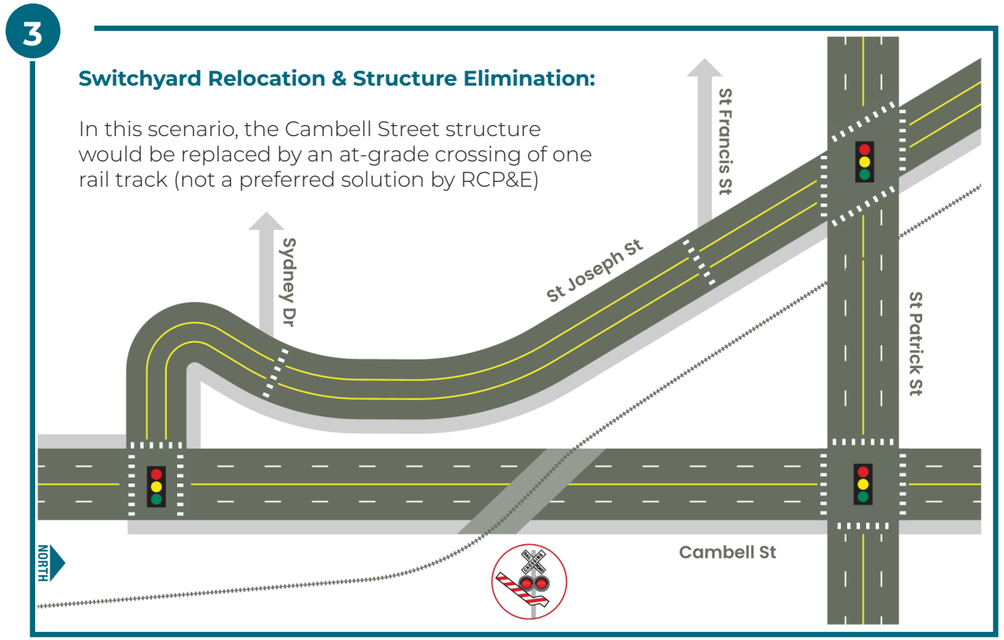
In this scenario, with only one rail track to span, the Cambell Street structure would be shortened substantially from its existing length



3

Switchyard Relocation & Structure Elimination:

In this scenario, the Cambell Street structure would be replaced by an at-grade crossing of one rail track (not a preferred solution by RCP&E)



Next Steps

The recommended study area concept presented in this report builds off previous planning efforts and stakeholder discussions to more definitely envision how mobility along, across, and adjacent to Cambell Street can be improved for everyone. The contents of this study will be valuable for informing further design and for facilitating further discussions about agency partnerships and fundings. The engagement efforts conducted as part of the study to ensure recommendations were aligned with the community vision will also be valuable as they move towards implementation.

Replacement of the Cambell Street structure is currently slated for 2027, but that date has some flexibility – interim improvements to extend the current structure's useful life can be made while stakeholders work to solidify and finalize plans for how to improve the study area. From here, the City and MPO, SDDOT, RCP&E, and other stakeholders must continue to work collaboratively on refining the recommended concept. Determining whether or not relocation of the switchyard will ultimately be feasible is critical, as that decision will help inform what the new Cambell Street structure looks like.

Funding for improvements along and around Cambell Street is likely to come from a variety of sources. The multimodal nature of the recommended concept makes it a potential candidate for a variety of Federal grant programs targeted towards infrastructure projects that promote different modes of transportation. The 2021 Bipartisan Infrastructure Law has a strong multimodal focus and is expected to produce even more funding opportunities for active transportation and transit projects in the coming years. SDDOT will be an important funding partner for work on Cambell Street since the agency still maintains the structure, while improvements to St. Joseph Street and Bridge View Drive will need to be City/MPO-led. This study - particularly the public and stakeholder consensus around recommendations it worked to develop - will serve as an important supporting document to future funding pursuits. Exciting things are ahead for the Cambell Street structure area!

CAMBELL STREET STRUCTURE STUDY