

Environmental Assessment and Section 4(f) *De Minimis* Analysis

US14/US83/SD34 Bridge over the Missouri River and its approaches
Project NH 0014(194)227, PCN 03WN

Hughes County and Stanley County
Pierre and Fort Pierre,
South Dakota

Submitted Pursuant to 42 U.S.C. 4332(2) (c) and 49 U.S.C. 303
by the

U.S. Department of Transportation
Federal Highway Administration
and
South Dakota Department of Transportation

FOR

Replacement of the US14/US83/SD34 Bridge (Bridge No. 33-100-118), also known as the Lt. Commander John C. Waldron Bridge, connecting Fort Pierre and Pierre, SD over the Missouri River with a new bridge and reconstruction of the roadway approaches to the bridge that meet structural and geometric standards.

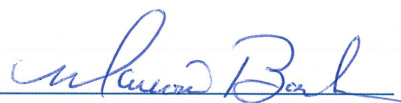
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TABLE OF CONTENTS

Acronyms and Abbreviations.....v

CHAPTER 1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION 1

1.1 Project Background..... 1

1.2 Project location..... 1

1.2.1 Project Study Area 2

1.3 Purpose and Need of the Project..... 3

1.3.1 Purpose of the Project 3

1.3.2 Project Need 3

CHAPTER 2 ALTERNATIVES 8

2.1 Range of Alternatives Considered 8

2.1.1 No-Build (E1)..... 8

2.1.2 Build Alternatives..... 8

2.1.2.1 Build Alternatives Eliminated from Further Consideration 11

2.1.2.2 Build Alternatives Retained for Further Analysis..... 15

2.2 Preferred Alternative: N1.1 19

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS 21

3.1 Land Use..... 21

3.1.1 Impacts of Alternatives 21

3.2 Utilities..... 22

3.2.1 Impacts of Alternatives 22

3.3 Railroads 22

3.3.1 Impacts of Alternatives 22

3.4 Bicyclists and Pedestrians 22

3.4.1 Impacts of Alternatives 22

3.5 Visual Impacts and Aesthetics 23

3.5.1 Impacts of Alternatives 23

3.6 Historical & Archaeological..... 23

3.6.1 Impacts of Alternatives 24

3.7 Economic Resources 25

3.7.1 Impacts of Alternatives 29

3.8 Environmental Justice..... 30

3.8.1 Impact of Alternatives 31

3.9 Noise 32

3.9.1 Impacts of Alternatives 33

3.10 Relocations..... 33

3.10.1 Impacts of Alternatives 33

3.11 Wetlands and Other Waters of the U.S. 33

3.11.1 Impacts of Alternatives 35

3.12 Water Quality..... 35

3.12.1 Impacts of Alternatives 35

3.13 Stormwater 36

3.13.1	Existing Conditions.....	36
3.13.2	Impacts of Alternatives.....	36
3.14	Floodplains.....	37
3.14.1	Impacts of Alternatives.....	37
3.15	Vegetation, Fish & Wildlife	38
3.15.1	Impacts of Alternatives.....	39
3.16	Threatened and Endangered Species	40
3.16.1	Federally Listed Threatened and Endangered Species	40
3.16.2	State Listed Species	41
3.16.3	Impacts of Alternatives.....	42
3.17	4(f) / 6(f) and FHWA Coordination.....	43
3.17.1	Impacts of Alternatives.....	47
3.18	Regulated Materials.....	48
3.18.1	Impacts of Alternatives.....	51
3.19	Construction	51
3.20	Cumulative Impacts	52
3.20.1	Past Actions.....	52
3.20.2	Present Actions	53
3.20.3	Reasonably Foreseeable Future Actions.....	53
3.20.4	Cumulative Impact Conclusion	53
CHAPTER 4	ENVIRONMENTAL COMMITMENTS.....	55
4.1	Summary of Environmental Commitments	55
CHAPTER 5	COMMENTS AND COORDINATION.....	58
5.1	Agency Coordination	58
5.2	Tribal Coordination	65
5.3	Public Involvement	66
5.3.1	Study Advisory Team (SAT).....	66
5.3.2	Community Advisory Committee (CAC).....	66
5.3.3	Stakeholders	66
5.3.4	Public Open House Meetings.....	66
5.3.5	Future Public Involvement.....	68
CHAPTER 6	REFERENCES.....	69

LIST OF TABLES

TABLE 1-1: CROSS SECTION DESIGN STANDARDS FOR LOW SPEED URBAN HIGHWAYS.....4
 TABLE 2-1: COSTS AND IMPACTS OF N1.1 AND N2.119
 TABLE 3-1: HISTORIC RESOURCES WITHIN THE PROJECT STUDY AREA24
 TABLE 3-2: PROJECTED POPULATION26
 TABLE 3-3: HISTORICAL POPULATION.....26
 TABLE 3-4: SOCIOECONOMIC STUDY AREA EMPLOYMENT (PRIMARY JOBS), 2011.....27
 TABLE 3-5: STUDY AREA EMPLOYMENT (EMPLOYED RESIDENTS), 2011.....28
 TABLE 3-6: STUDY AREA MEDIAN INCOME, 2012.....28
 TABLE 3-7: RACE AND ETHNICITY DISTRIBUTION, 201231
 TABLE 3-8: COMMON NOISE LEVELS32
 TABLE 3-9: WETLAND CLASSIFICATION AND SELECTED INFORMATION.....34
 TABLE 3-10: POTENTIAL SITES OF ENVIRONMENTAL CONCERN WITHIN STUDY AREA.....49
 TABLE 5-1: COMMUNICATION AND COORDINATION.....59

LIST OF FIGURES

FIGURE 1-1: PROJECT STUDY AREA.....2
 FIGURE 1-2: HISTORICAL BRIDGE ADT VOLUMES, 1983-20135
 FIGURE 2-1: BRIDGE LOCATIONS CONSIDERED9
 FIGURE 2-2: TYPICAL SECTION WITH MEDIAN CURB.....10
 FIGURE 2-3: HAUNCHED BRIDGE GIRDERS11
 FIGURE 2-4: ALTERNATIVE N413
 FIGURE 2-5: ALTERNATIVE N714
 FIGURE 2-6: ALTERNATIVE E215
 FIGURE 2-7: ALTERNATIVE N116
 FIGURE 2-8: N1.1 REFINEMENTS (PIERRE).....17
 FIGURE 2-9: N1.1 REFINEMENTS (FORT PIERRE)17
 FIGURE 2-10: ALTERNATIVE N2.118
 FIGURE 3-1: SOCIOECONOMIC STUDY AREA25
 FIGURE 3-2: ENVIRONMENTAL JUSTICE POPULATIONS30
 FIGURE 3-3: DELINEATED WETLANDS IN THE PROJECT STUDY AREA.....34
 FIGURE 3-4: THE FORMER DM&E RAILROAD BRIDGE.....47
 FIGURE 5-1: CENTER MEDIAN BARRIER WITH LIGHTING ON OUTSIDE OF BRIDGE LANES.....67
 FIGURE 5-2: PARABOLIC BRIDGE GIRDER67
 FIGURE 5-3: BRIDGE RAILING WITH STAR MOTIF67
 FIGURE 5-4: TWO COLUMN PIER TYPE68

LIST OF APPENDICES

APPENDIX A ALTERNATIVES ELIMINATED FROM CONSIDERATION PRIOR TO SECOND PUBLIC MEETING

ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
ADA	Americans with Disabilities Act
AST	Aboveground Storage Tank
BMP's	Best Management Practices
CAC	Community Advisory Committee
CFR	Code of Federal Regulations
CPR	Canadian Pacific Railway
C&NW	Chicago & Northwestern Railway
dB	Decibel (noise level measurement)
dba	A-weighted decibels (noise level measurement)
DM&E	Dakota, Minnesota & Eastern Railroad
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impacts
GIS	Geographic Information System
LEDPA	Least Environmentally Damaging Practical Alternative
LOS	Level of Service
LRFD	Load and Resistance Factor Design
L RTP	Long Range Transportation Plan
LUST	Leaking Underground Storage Tank
LWCF	Land and Water Conservation Fund
MSAT	Mobile Source Air Toxics
NEPA	National Environmental Policy Act of 1969
NBIS	National Bridge Inspection Standards
NHPA	National Historic Preservation Act
NHS	National Highway System
NLEB	Northern Long-Eared Bat
NPDES	National Pollutant Discharge Elimination System
NPS	National Park System
NRHP	National Register of Historic Places
RCP&E	Rapid City, Pierre, and Eastern Railroad
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RGA	Recovered Government Archive
ROW	Right-of-Way
SAT	Study Advisory Team
SDDOT	South Dakota Department of Transportation

ACRONYMS AND ABBREVIATIONS (Cont.)

SDDENR	South Dakota Department of Environment and Natural Resources
SDGFP	South Dakota Game, Fish & Parks
SHPO	State Historic Preservation Office
SQG	Small Quantity Generators
STIP	State Transportation Improvement Plan
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
UA	Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank

CHAPTER 1

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The South Dakota Department of Transportation (SDDOT) is proposing to replace the US14/US83/SD34 Bridge (Bridge No. 33-100-118), also known as the Lt. Commander John C. Waldron Bridge, connecting Fort Pierre and Pierre, SD over the Missouri River (Figure 1). The Environmental Assessment (EA) provides a document for evaluating alternatives, including the no-build alternative. Several alternatives are provided for public consideration and comment, and are documented in this EA to address the purpose and need for this project, resulting in a preferred alternative for the bridge. The purpose and need are described below in detail.

This EA was prepared in compliance with the requirements of the National Environmental Policy Act (NEPA). The intent of this EA is to analyze the proposed action, determine if there is a potential for significant environmental impacts and to inform and gather input from stakeholders and the public regarding the alternatives and impacts.

1.1 Project Background

The US14/US83/SD34 Bridge was built in 1962. A bicycle and pedestrian path was added to the south side of the US14/US83/SD34 Bridge in the mid-1980's. This bridge was built as a replacement for a former truss bridge, built in 1926, located north of the existing bridge. At least one of the previous bridge footings is still visible along the east bank of the Missouri River between the current bridge and the rail truss bridge.

The US14/US83/SD34 Bridge underwent a major rehabilitation in 2009 to address concrete deterioration problems in the substructure, and corrosion and fatigue prone items in the steel superstructure. The rehabilitation work was intended to extend the life of the bridge for up to 15 to 20 years. Beyond that point, the bridge may require more frequent repairs, which over time can be less cost-effective than to replace the bridge. Therefore, Build Alternatives considered in this study will address the replacement of this aging structure.

Bridge maintenance is part of the Mission, Vision, Goals and Purpose of the SDDOT Statewide Long-Range Transportation Plan (LRTP) (2010). The LRTP was designed to guide the annual decisions for the four-year Statewide Transportation Improvement Program (STIP) and the SDDOT's Developmental Program that feeds the STIP. The STIP and Developmental Program contain a list of transportation projects that are consistent with the LRTP and have been identified as priorities for the state. This study has been initiated in reaction to a project within the SDDOT's Developmental Program (Project number: NH 0014(194)228, PCN 03WN, "US14 - Missouri River Bridge at Pierre").

1.2 Project location

The Project is located on US14, a Principal Arterial roadway, which traverses the Missouri River between Pierre in Hughes County and Fort Pierre in Stanley County, South Dakota. These communities lie roughly in the center of South Dakota. The bridge connects the two urban areas of Pierre and Fort Pierre. The land west of Fort Pierre includes a vast, rural grassland area, while the area just east of Pierre is rural, hilly and includes agricultural land.

1.2.1 Project Study Area

The project study area is defined as the existing transportation network associated with the Missouri River Bridge, including bicycle and pedestrian facilities (see Figure 1-1). The study area is bounded on the north and east by the Rapid City, Pierre and Eastern Railroad (a subsidiary of Genesee & Wyoming Inc.) previously the Canadian Pacific Railway (CPR) Railroad, on the southeast by Poplar Avenue in Pierre, on the south by a line approximately 350 feet south of the existing bridge, and on the west by US14/SD34 and Yellowstone Street in Fort Pierre. The project area includes the bridge and the roadway and intersections leading to the bridge that contribute to the geometry and safety of the area and the bridge itself.

Figure 1-1: Project Study Area



The US14/US83/SD34 Bridge over the Missouri River is the primary route connecting the cities of Pierre and Fort Pierre. West of the bridge in Fort Pierre, U.S. Highway 14 and State Highway SD34 veer right (westward), while U.S. Highway 83 turns south, concurrent with Deadwood Street, the main thoroughfare in Fort Pierre.

On the east side of the bridge, US14/US83/SD34 (also W. Sioux Avenue) is the main thoroughfare in Pierre. Heading eastward over the bridge to Pierre, there is one off-ramp to W. Dakota Avenue, on the south side of the bridge. Within the study area, W. Dakota Avenue is a one-way street as it heads southeast toward the Pierre Business District. There is no corresponding westbound on-ramp to the bridge from Dakota Avenue or neighboring streets.

The bridge includes a five-foot wide combination bicycle and pedestrian path on the south side of the bridge, which connects to a network of bicycle and pedestrian paths along both sides of the river. These paths are part of the Lewis and Clark Trail which allow access to other recreational activities along the river.

1.3 Purpose and Need of the Project

NEPA and other environmental requirements rely on a project decision-making process guided by the Purpose and Need for the project. The purpose is a brief statement of the primary intended transportation objective and related goals to be achieved by a proposed transportation improvement. The need is a condition sought to be relieved, or a statement of the problem in need of a solution. The need proves that the problem exists based on existing data and information.

The following sections describe the purpose of and the need for the project. The need for the proposed improvements is the basis from which bridge improvement alternatives will be developed, compared and evaluated, ultimately leading to the preferred alternative.

1.3.1 Purpose of the Project

The purpose of this project is to maintain the intercity, intrastate, and interstate highway bridge crossing between Pierre and Fort Pierre, consistent with local, state, and regional transportation and development plans, while improving public safety and mobility.

1.3.2 Project Need

The need for this bridge study is demonstrated through a combination of factors, including the following:

- Structural Deficiencies
- Geometric Deficiencies
- System Linkage and Route Importance

Structural Deficiencies

This bridge was constructed in 1962 and is showing signs of age and wear, which is expected to continue and worsen with time. If a build alternative is selected, the construction year(s) for a replacement bridge is expected to be sometime between 2023 and 2025. Currently, the bridge is considered adequate by the Federal Highway Administration (FHWA); it is neither structurally deficient nor functionally obsolete based on the National Bridge Inventory (NBI) Pontis Database ratings, as well as the annual bridge inspections and load ratings.

All bridges in South Dakota are inspected in accordance with the National Bridge Inspection Standards (NBIS). NBIS inspections assess the condition of the bridge elements to ensure that a bridge can safely perform its transportation function. The NBIS condition ratings range from 0 (“Failed Condition”) to 9 (“Excellent Condition”). The deck, superstructure, and substructure of the US14/US83/SD34 Bridge are in “Fair Condition”, with an NBI condition rating of 5. A condition rating of 4 for the deck, superstructure, or substructure would render the bridge in “Poor Condition” and would classify the bridge as structurally deficient.

The 2013 annual inspection revealed fatigue cracks are appearing and lengthening in the steel and welds. Fatigue cracking in the steel is relatively common for bridges of this type due to the weld detail used. Likewise, the steel components are showing signs of corrosion. The concrete on the bridge is also showing signs of wear by cracking and spalling, or creating potholes.

The US14/US83/SD34 Bridge is classified as fracture critical (non-redundant). This classification is given to structures where the bridge components are dependent on one another, meaning if one of the main member bridge components becomes damaged or would fail, there is the potential for the structure to fail. However, a fracture critical (non-redundant) bridge does not necessarily mean the bridge is unsafe, unless main bridge members are determined to be structurally deficient. Because this bridge is considered fracture-critical, it is inspected annually, which can add to the cost of maintaining the bridge. In addition, inspections and any bridge maintenance work require at least one lane of the bridge to be closed, causing traffic inconveniences.

The most recent underwater inspection of the bridge was conducted in 2012. This inspection showed 18 feet of scour, which has exposed steel pilings under some of the bridge footings since the 2008 underwater inspection.

Geometric Deficiencies

The existing bridge roadway cross section does not meet current design standards for low speed urban highways (see Table 1-1).

Table 1-1: Cross Section Design Standards for Low Speed Urban Highways

SDDOT Standard Roadway/Bridge Cross-Section Information (for Urban Highways ≤ 40 mph with 3+ Lanes)					
Criteria	Outside shoulder width* (with bicycle accommodation present)	Outside* distance if curb or barrier is present	Outside lane width	Inside lane width	Inside* distance if median barrier is present
SDDOT Standard	3'-0"	2'-0"	11'-0"	11'-0"	2'-0"
Existing Bridge	0'-0"	1'-3"	12'-0"	12'-0"	1'-3"

* The space between the edge of a designated vehicular travel lane and roadway curb or barrier.

The bicycle and pedestrian path on the south side of the bridge is used for travel in both directions and is considered narrow at a width of five feet. The chain link fence, attached to the bridge when the path was added in the mid-1980's, has been showing surface corrosion and has been hooked by snow plows during snow removal on multiple occasions.

The current bridge does not meet current design standards for live loads, defined as the weight of traffic and pedestrian movement on a bridge. It was designed using an HS20 live load, which was the standard when the bridge was built and was a reflection of the trucks at that time. The HS20 live load was based on carrying a 72,000-pound truck or 640 pounds per lane-foot. The new Load and Resistance Factor Design (LRFD) standard¹, the HL-93 live load, maintains the same load for trucks, but requires the truck load to be applied concurrently with the uniform lane load (i.e. weight of the bridge components and bridge deck).

System Linkage and Route Importance

The US14/US83/SD34 Bridge concurrently carries US14, US83, and SD34, all major highways connecting the region to the rest of South Dakota and the nation. US14 is an east-west route that connects to, and runs concurrent with, I-90 west of the project study area near Wall, SD. US14 then continues west to Wyoming, and terminates at Yellowstone National Park. To the east, US14 travels through Minnesota, and terminates in Chicago, IL. US83 is a north-south route that provides a connection to I-90,

¹ Based on the American Association of State Highway and Transportation Officials (AASHTO) design guidelines

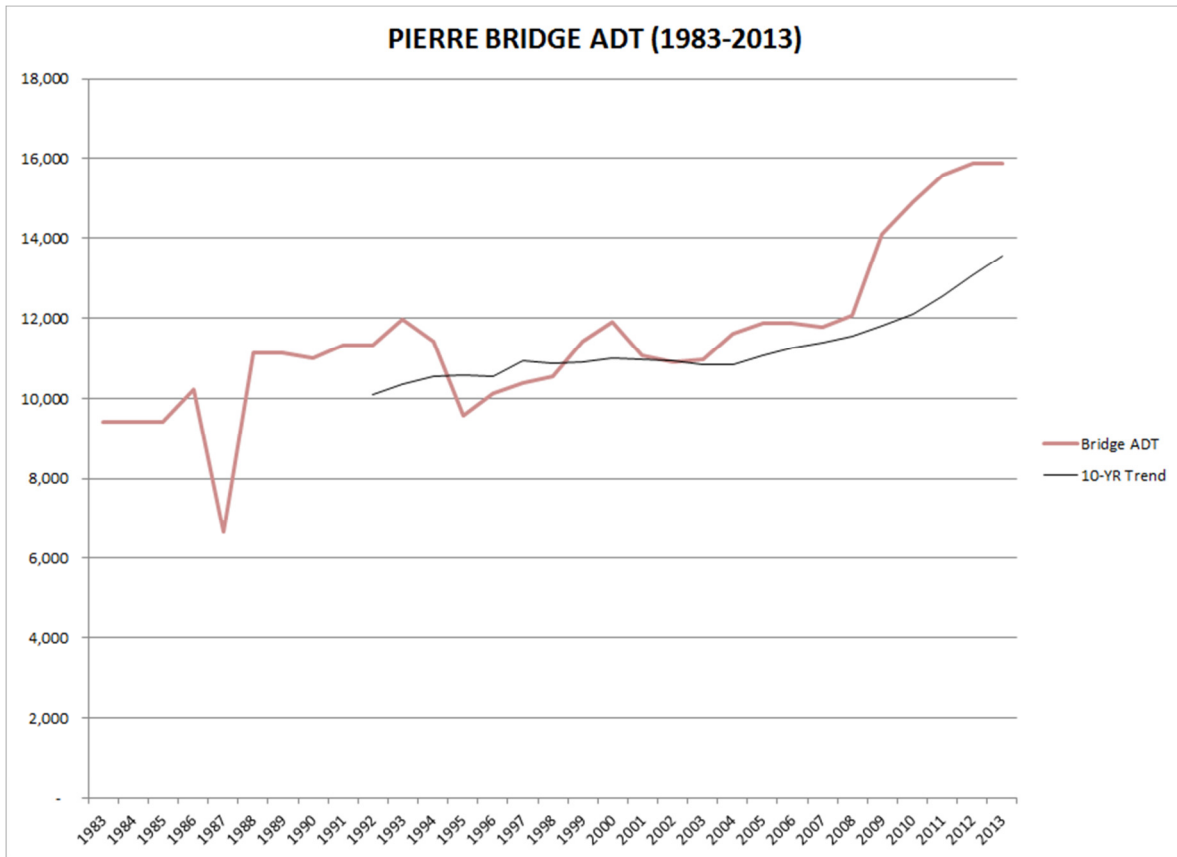
approximately 34 miles south of Pierre/Fort Pierre. US83 extends north to North Dakota, ending at the U.S. and Canadian border and south through Nebraska, terminating in Brownsville, Texas at the U.S. and Mexican border. South Dakota Highway 34 is an east-west route, traversing the entire state of South Dakota, from Minnesota to Wyoming.

US83 and US14 in Pierre are part of the National Highway System (NHS). The NHS is a priority system of highways designated to ensure connectivity to the national defense highway network and other important regional transportation routes, and provides a high level of safety, design, and operational standards. NHS routes are important to the economy, defense and mobility of the nation.

The bridge carries over 15,000 vehicles per day over the Missouri River. The US14/US83/SD34 route over the Missouri River Bridge is designated as a part of the SDDOT's Preferential Truck Network, as shown in the 2010 South Dakota Statewide LRTP. In addition to serving regional and national freight movement and long-distance travelers, the bridge is an important commuter route for employees who work in Stanley and Hughes counties. Over the last 30 years, traffic has been increasing fairly steadily, with more significant increases from 2009-2011. The Average Daily Traffic (ADT) trend over the past ten years is also shown on Figure 1-2.

Traffic projections were performed on the existing bridge and intersections in the project study area for year 2045, the future design year or horizon year considered for this study. These traffic projections show that the existing bridge would need to carry around 24,000 vehicles per day in 2045.

Figure 1-2: Historical Bridge ADT Volumes, 1983-2013



The US14/US83/SD34 Bridge is also a critical route for emergency services between the Fort Pierre and Pierre regions. The only regional hospital is located in Pierre; therefore, emergency responders and residents depend on the bridge for medical services.

The crossing of the Missouri River and its direct connection to the US14/US83/SD34 road network links the national, regional and local transportations systems and supports the communities that have developed along the US14/US83/SD34 route. The US14/US83/SD34 Bridge connects the communities of Fort Pierre and Pierre where the local and regional road network has developed over time in relation to the bridge's current location. The bridge connects and supports both communities' current developments, their comprehensive plans, and future planned developments on either side of the bridge, including plans in Fort Pierre for a residential development north of US14/US83/SD34, and a multi-use development south of US14/US83/SD34, which includes a river walk, marina, store and restaurant. The existing location of the bridge crossing along the Missouri provides a vital connection to both communities' commerce, services, education, recreation, and other shared amenities. The bridge also serves as a connection to tourism and recreational venues (rodeo grounds, Oahe Dam, State Capitol, grasslands, boat ramps, campgrounds, parks, trails, Black Hills, etc.) in the region. Maintenance activities that would be required to keep the existing bridge open would likely require periodic bridge closures with a sizable detour.

For these reasons, along with long term cost-effectiveness, SDDOT is considering bridge replacement options that include a 100-year design life for the bridge.

Additional Considerations of the Project

Safety

South Dakota Department of Public Safety Geographic Information Systems (GIS) crash data for the project study area was evaluated for the years 2008 – 2012. As part of that evaluation, the crash data was used to develop a crash rate. Crash rates are determined by the number crashes per 100 million vehicle miles traveled and include all reported crashes that caused a fatality, injury, or property damage². The 2012 average statewide crash rate was 2.41 per million vehicle miles for roads of a similar classification, urban principal arterials. The project study area crash rate for 2008 – 2012 is 3.60, higher than the statewide average.

The individual crashes were also evaluated. A total of 72 crashes occurred in the project study area in 2008 – 2012. An overall breakdown of the manner of collision for these crashes includes:

- 27 angle crashes
- 14 single vehicle crashes
- 14 rear end crashes
- 10 side-swipe crashes
- 7 animal crashes

The road segment within the project study area where the most crashes occurred is in Pierre, on Sioux Avenue from Poplar Avenue west to the bridge. The majority of these crashes occurred during morning, noon, and afternoon hours, times of the day with high traffic volumes. This segment has a curve in the

² Property Damage crashes are defined as crashes reported with damage that exceeds \$1000 to any one person, and/or exceeds \$2000 in total for all people involved.

roadway near the end of the bridge, heavily-used driveways, including a fast food drive-through window where vehicles enter and exit directly onto Sioux Avenue. Common causes for this crash trend include high density of access points or driveways, inadequate gaps in traffic, higher speeds, and restricted sight distance.

The bridge itself does not have access points or driveways, which limits conflict points for crashes compared to roadway intersections. However, there were 11 crashes between 2008 and 2012 on the bridge:

- 7 single vehicle crashes
- 2 side-swipe crashes
- 1 animal crash
- 1 rear end crash

The seven single vehicle crashes , including four trucks and one passenger bus, involved collisions with fixed objects, such as the bridge rail. Five of these crashes occurred with snow and wet conditions. Common causes for this type of crash include inadequate shoulder width, poor visibility, poor delineation, and poor traction.

CHAPTER 2 - ALTERNATIVES

Alternatives for the US14/US83/SD34 Bridge over the Missouri River and its approaches have been developed to address the Purpose and Need factors as discussed in Chapter 1. This Chapter will explain the process and rationale that were used in the development of alternatives, elimination of alternatives from consideration, as well as the decision on which alternatives were carried forward for further consideration, resulting in the Preferred Alternative. Discussions with, and comments from stakeholders, agencies, the Study Advisory Team (SAT), Community Advisory Committee (CAC) and the public were considered throughout the alternatives development process (See Section 5.3 for more information on the SAT and CAC).

2.1 Range of Alternatives Considered

The alternatives considered for the bridge are all located within the vicinity of the existing bridge. This is consistent with the Purpose of the project to "...maintain the intercity, intrastate, and interstate highway bridge crossing between Pierre and Fort Pierre." Therefore, the No-Build Alternative (E1) and a number of Build Alternatives are located partially or fully on the existing alignment, north of the existing bridge and south of the existing bridge. Each of the Build Alternatives, N1, N2, N3, N4, N5, N6, N7, E2, M1, M2, and S1 – S7, are discussed in the following sections.

2.1.1 No-Build (E1)

The No-Build Alternative, also referred to as the no action alternative, was considered and eliminated from consideration because it does not meet the Purpose and Need factors to safely maintain the US14/US83/SD34 connection between Pierre and Fort Pierre. Over time, deterioration of the bridge would require extensive and costly rehabilitation. In accordance with NEPA, the No-Build Alternative is carried forward as it serves as a base from which to compare the Build Alternatives.

2.1.2 Build Alternatives

The locations of the Build Alternatives were developed with the consideration of maintaining the existing connection to the US14/US83/SD34 roadway network in Pierre and Fort Pierre. The areas considered for the touchdown point locations in Pierre and Fort Pierre, along with the existing bridge location, are north and south of the existing bridge (see Figure 2-1). The current design criteria from The American Association of State Highway and Transportation Officials (AASHTO) Green Book and SDDOT Road Design Manual were used in the development of the alternatives and as one of the bases for eliminating alternatives that could not meet those design standards.

Figure 2-1: Bridge Locations Considered



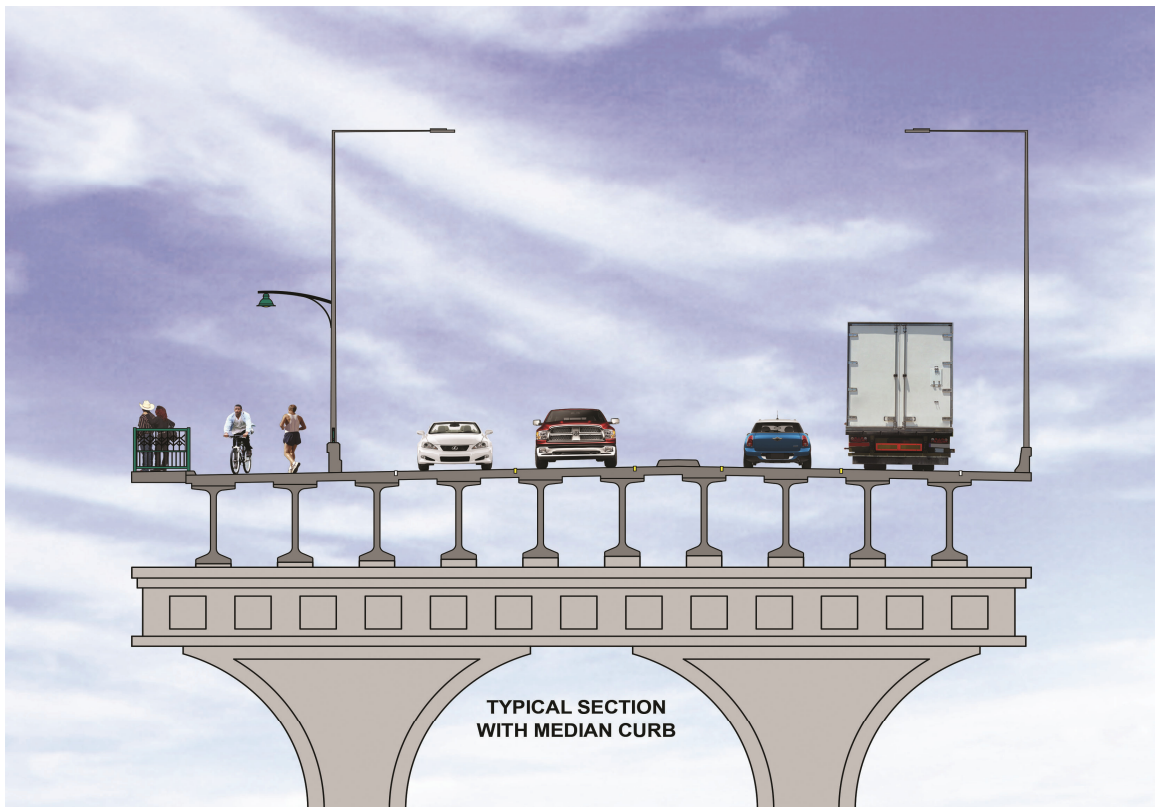
Public and stakeholder comments received early in the process indicated strong opposition to closing the existing bridge for any period of time. The next closest available crossing is over the Oahe Dam located approximately five miles to the north. Use of this crossing would amount to approximately a 17-mile detour, considered by the communities to be a great social and economic impact to both the public and local businesses. These socio-economic factors, along with the Purpose and Need and environmental impacts were considered in the development of the alternatives and used as a screening tool for the subsequent elimination of several of the alternatives.

The following design considerations were determined for the Build Alternatives and included the following:

- **Bicycle and Pedestrian Path**
 The existing bridge includes a five-foot bicycle and pedestrian path. Due to overwhelming public and stakeholder support for maintaining the access and to enhance the path, a 12-foot bicycle and pedestrian is included with the bridge. This wider path will also provide space to accommodate the SDDOT bridge inspection equipment. This requires Americans with Disabilities Act (ADA) connections at the east and west touch-down connections for all Build Alternatives.
- **Cross-section and Lighting Considerations**
 Options for the bridge cross-section were considered for the bridge alternatives. Four, 12-foot lanes with a 12-foot bicycle and pedestrian trail on the south side of the bridge, as described above, were the preferred options for the cross section of the bridge. Twelve-foot lanes were included as they are desired design standards for this type of roadway. Four lanes on the bridge

will accommodate for traffic into, and beyond, the design year of 2045 based on projected traffic growth. Projecting traffic growth beyond 2045 depends on many external factors and would not provide a reliable estimate. If traffic volumes increase to the point where additional lanes are needed, the bridge design will accommodate expansion with pier extensions and additional girders with existing bridge structure remaining in service. A median barrier and a curbed median were considered for the cross-section. The curbed median with lighting on the outside edge of the bridge (at the pier locations) was selected as the preferred option as it provides advantages for emergency vehicles, and allows for snow storage and easier bridge deck maintenance. Details on the type of lighting will be determined during final design.

Figure 2-2: Typical Section with Median Curb

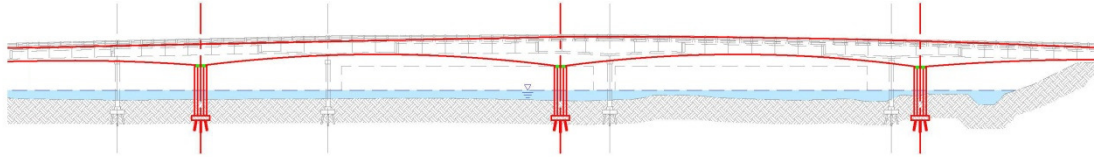


- **Bridge Types**

A universe of bridge types was considered, ranging from girder-type bridges (haunched concrete girders, haunched steel girders, and parallel flange girders) to box beams and cable-stayed bridges. The existing bridge is a steel haunched girder bridge. With consideration of the project study area location, span lengths, and public comments, a parabolically haunched, girder-type bridge, with two-column piers (classically styled) and the flexibility to widen in the future was selected. Steel and concrete were the options considered for the material type for the bridge. However, the decision on material type will be determined in later phases of the project, as it provides flexibility in construction methods which may result in overall cost savings for the project.

Haunched bridge girders are curved and vary in depth, deepest over bridge piers as illustrated in the graphic below:

Figure 2-3: Haunched Bridge Girders



- **Navigational Considerations**

The existing US14/US83/SD34 Bridge over the Missouri River does not meet the minimum vertical clearance of 30 feet over the design pool elevation of the river. Meanwhile, the railroad bridge to the north also does not meet this requirement when closed. While the Railroad bridge swing bridge function is currently not operational, it has had the ability in the past to open as a swing bridge and should not be precluded from opening again in the future. In coordination with the U.S. Coast Guard (USCG) regarding alternatives for this study, it was determined that any Build Alternatives will meet the 30-foot vertical clearance standard as well the 210-foot horizontal clearance standard between piers to accommodate navigation on the Missouri River. However, the river's design pool elevation has been lowered 4.4 feet since the design of the existing bridge (from 1425.7 feet above sea level to 1421.3 feet). This allows the bottom of the replacement structure to be approximately 3 feet lower than what currently exists over the navigational channel spans. Regarding demolition of the existing structure, USCG requires that a 150 foot wide channel be cleared for river navigation within 24 hours of demolition.

Based on boat registrations, boat ownership in Hughes and Stanley counties is high, at 25.5% and 17.7% of the population respectively in 2012. In these two counties, 4,922 boats were registered in 2012. A boat survey was performed over a weekend in the summer of 2014 to help determine the number and types of boats on the Missouri River that are crossing under the US14/US83/SD34 Bridge. The 4.5 hour boat survey was performed during various times of the day, with a total of 149 boats observed. Boat traffic on the river consisted of a variety of watercraft including fishing boats, ski boats, kayaks, jet-skis, pontoon boat and a raft, with highest boat traffic using the western-central and eastern-central spans. No barges were observed, as they have not used this portion of the river since the dam was constructed some 60 years ago.

As a result of the vertical and horizontal standards and the high boat traffic in the bridge area, the Build Alternatives for the bridge will include spans with widths of 210 feet or more, along with the navigational channel moving more to the center of the bridge. Therefore, the Build Alternatives for the bridge accommodate a reduction in the number of piers and a vertical clearance of at least 30 feet, which will result in increased safety.

2.1.2.1 *Build Alternatives Eliminated from Further Consideration*

Comments received regarding the bridge and the approaches during the first Public Meeting in November 2013 resulted in the development of several alternatives for the location of the US14/US83/SD34 Bridge. These alternatives are evaluated based on their ability to address Purpose and

Need factors for the project, and the level of impacts incurred. Considering that these alternatives are all located within the vicinity of the existing bridge, partially or fully on the existing bridge alignment, they share similar impacts but with subtle differences. For instance, all of the Build Alternatives will address the structural deficiencies and Geometric deficiencies Needs and would have some effect to the 4(f) properties at the touchdown point in the City of Pierre. Therefore these are not considered as distinguishing factors from which to compare alternatives. Similarly, many of the alternatives will impact private properties at the touchdown points and/or roadway realignments in Fort Pierre.

Cost is also considered as an impact, alternatives are considered as affecting the cost of the bridge relative to one another. For example, some alternatives would require relocation of a gas line that is located in the river, so that additional cost (approximately \$500,000) is noted in alternatives where that would need to be accomplished.

The Historic Chicago and & Northwestern (C&NW) Railroad bridge is located to the north of the existing US14/US83/SD34 Bridge. While the exiting bridge was not considered to be a visual impact to the C&NW Railroad bridge, alternatives that would move closer to the bridge may have a visual impact as it would lessen the distance between the two bridges. Also, some water navigational limits, based on pier placement for the two bridges, would occur from those alternatives that are located closer, within 200 feet, of the rail bridge.

Construction impacts resulting from the necessity to close the bridge during construction would include socio-economic impacts. The closing of this crossing would amount to approximately a 17-mile detour, considered by the communities to be a great social and economic impact to both the public and local businesses, and would affect access to the hospital. Also, the temporary closure of the bridge would not meet the System Linkage and Route Importance Need.

A summary of these considerations for the alternatives are included in the Comparison of Alternatives Table in Appendix 1.

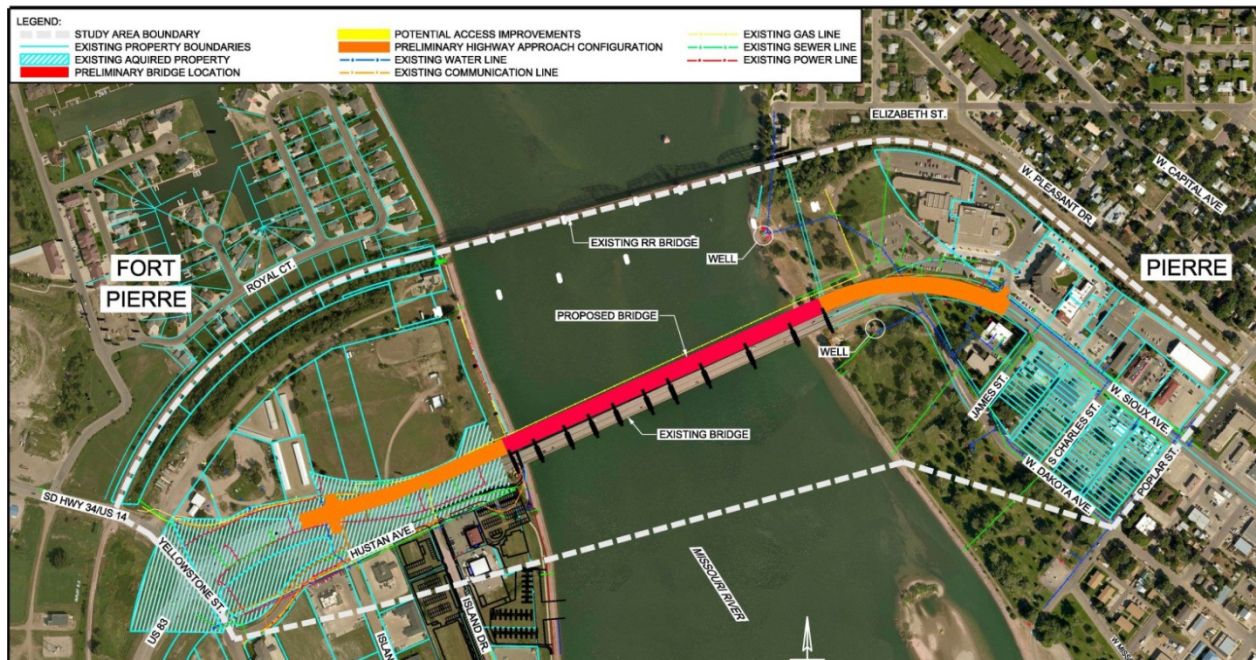
In order to reach a reasonable range of alternatives for consideration moving forward, and for the reasons previously mentioned, several alternatives were eliminated from consideration prior to the second Public Meeting in July 2014. Based on the information included in the Table provided in Appendix 1, several alternatives were eliminated from consideration. These include: N3, N5, N6, M1, M2, and S1 – S7.

The Build Alternatives that were retained for further consideration and presented for public comment at the second Public Meeting in July 2014 include N1, N2, N4, N7, and E2. Following the second Public meeting, the first round of stakeholder meetings, public comments and results of a public survey regarding the remaining build options were considered. Following these results and consideration of the impacts and Purpose and Need factors, alternatives N4, N7 and E2, described below, were eliminated from consideration.

Alternative N4: Overlapping, Non-parallel to Existing Bridge, Matching on Pierre Side

Presented at the second Public Meeting in July 2014, Alternative N4 overlaps the existing bridge on the east side at a diagonal. The approach on the west side would shift north of its current alignment, improving the S-curve on the west side, while the approaches on the east side would match the existing alignment. This alternative has property impacts on both the west and east sides of the bridge, including an impact to parkland at Outlot "F", which contains a disc golf course. Construction of this alternative would require traffic to be detoured approximately 17 miles, for two to six months causing social and economic impacts to both the public and local businesses, and would affect access to the hospital and other community services. Also, the temporary closure of the bridge would not meet the System Linkage and Route Importance Need. In addition, this alternative would have increased costs for construction and demolition, and it would involve a longer construction timeframe. N4 was eliminated from consideration due to the community disruption of a detour and ROW impacts, which include parkland impacts.

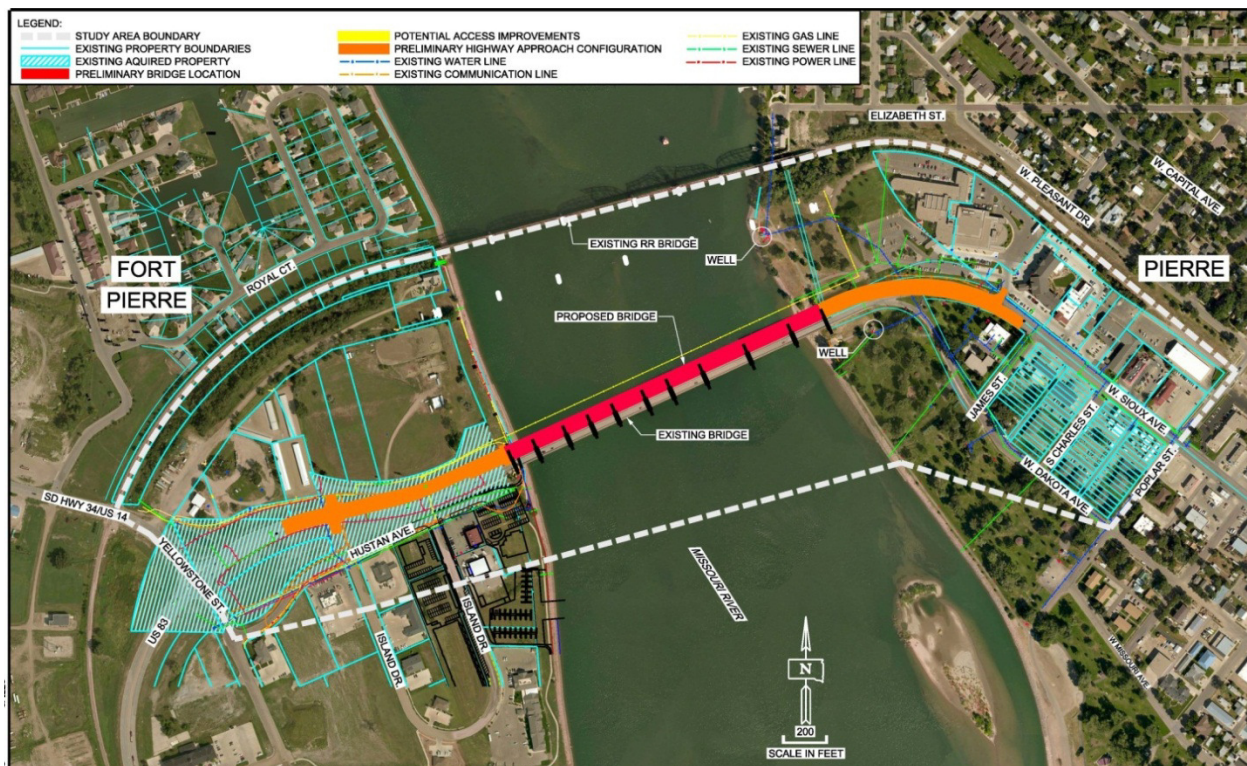
Figure 2-4: Alternative N4



Alternative N7: Parallel to Existing Bridge with some Overlap

Alternative N7 is noted as having the possibility of a detour during construction. The approach on the west side would shift slightly north of the current alignment, with minimal improvement to the S-curve. The approach on the east side would include a slightly flatter curve that would align with Sioux Avenue. This alternative has property impacts on both the west and east sides of the bridge, including an impact to parkland at the disc golf course, Outlot "F". After further evaluation, it was confirmed that a detour of approximately 6 -18 months would be required during construction of the bridge. N7 was eliminated from further consideration due to the socio-economic impacts and community disruption cause by a 17-mile detour during construction. These impacts include those to both the public and local businesses, and would affect access to the hospital and other community services. In addition, this alternative would incur ROW impacts, which include parkland impacts.

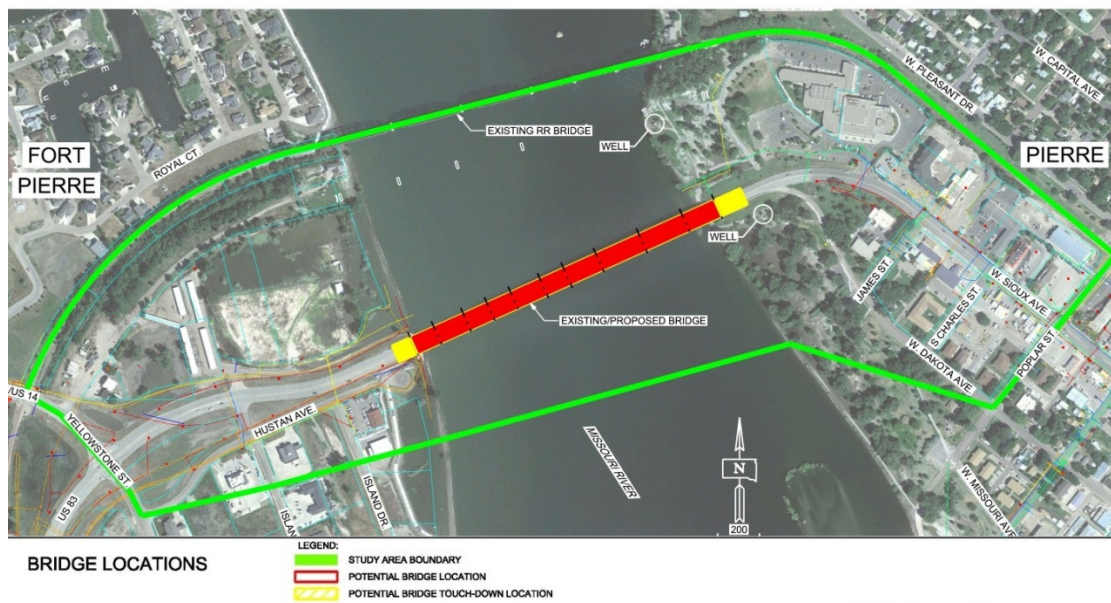
Figure 2-5: Alternative N7



Alternative E2: On Existing Alignment, Accommodates Future Widening

E2 was developed as an alternative that had the potential to avoid any impacts to the 4(f)/6(f) resource Steamboat Park and the 4(f) resource disc golf course, known as Outlot “F”. However, after further investigation, it was determined that the expanded cross section and resulting wider bridge proposed in the E2 alternative would impact Steamboat Park and the disc golf course (Outlot “F”). Construction of E2 would also require major traffic disruption with a 12 – 24 month 17-mile detour resulting in socio-economic impacts to residences and businesses in the community and would affect access to the hospital and other community services. In addition, the cost of construction staging and traffic mitigation for this alternative would be much greater than the remaining alternatives. For these reasons, the E2 Alternative was determined to be infeasible and eliminated from consideration.

Figure 2-6: Alternative E2



2.1.2.2 Build Alternatives Retained for Further Analysis

Comments received during and following the July 2014 Public meeting and stakeholder meetings, as well as results of a public opinion survey were evaluated. Two options emerged as the remaining alternatives: N1 and N2. Further refinements, including options using retaining walls, were made to Alternative N1, renamed as N1.1, and Alternative N2, renamed as N2.1, to minimize property and park impacts.

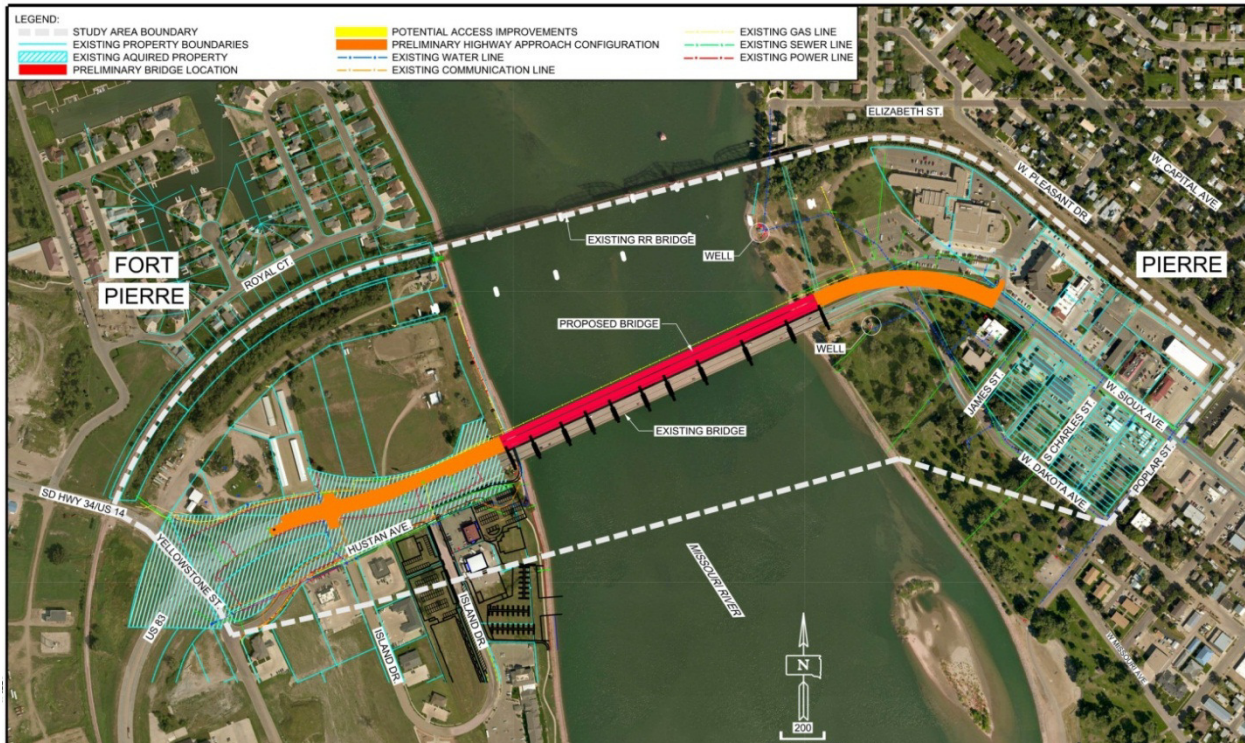
N1/N1.1 Alternative

The N1 build alternative is located 50 feet to the north of the existing bridge, with a 10 foot gap between the edges of the structures so the bridge construction would have minimal impact to the existing gas line. The approach on the west side would shift slightly north of the current alignment, with an improvement to the S-curve on US14/US83/SD34. The approach on the east side would include a slightly flattened curve that would connect to the existing Sioux Avenue alignment. This alternative has ROW impacts on the east side to the Ramkota Hotel Parking area and to parkland, the 4(f) resource disc golf course, Outlot “F”. In Fort Pierre, ROW impacts on west side would include private property on the

north side of US14/US83/SD34, while resulting in excess ROW from the previously reserved ROW for the bridge construction. This excess ROW would be transferred to the city of Fort Pierre. This N1 alternative can be constructed while the existing bridge is in operation, without requiring a detour and allows for minimal traffic impacts during construction.

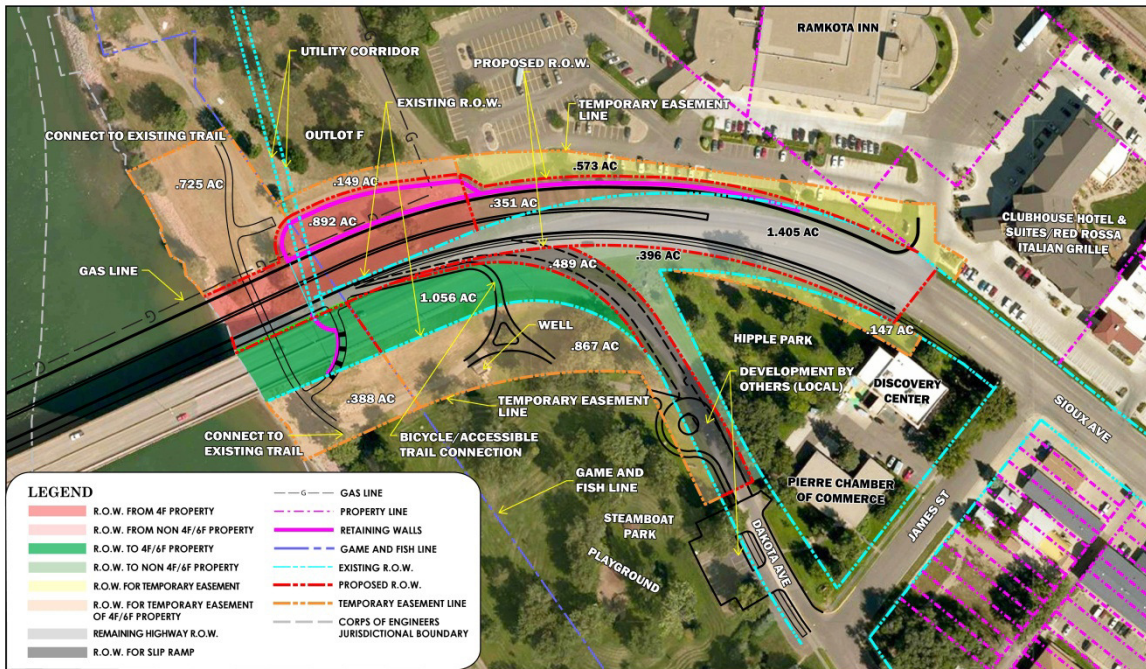
Public comments, stakeholder feedback and the public opinion survey indicated community support for the N1 alternative. A majority of those surveyed ranked N1 as their preferred alternative. Subsequently, further refinements were made to the N1 Alternative.

Figure 2-7: Alternative N1



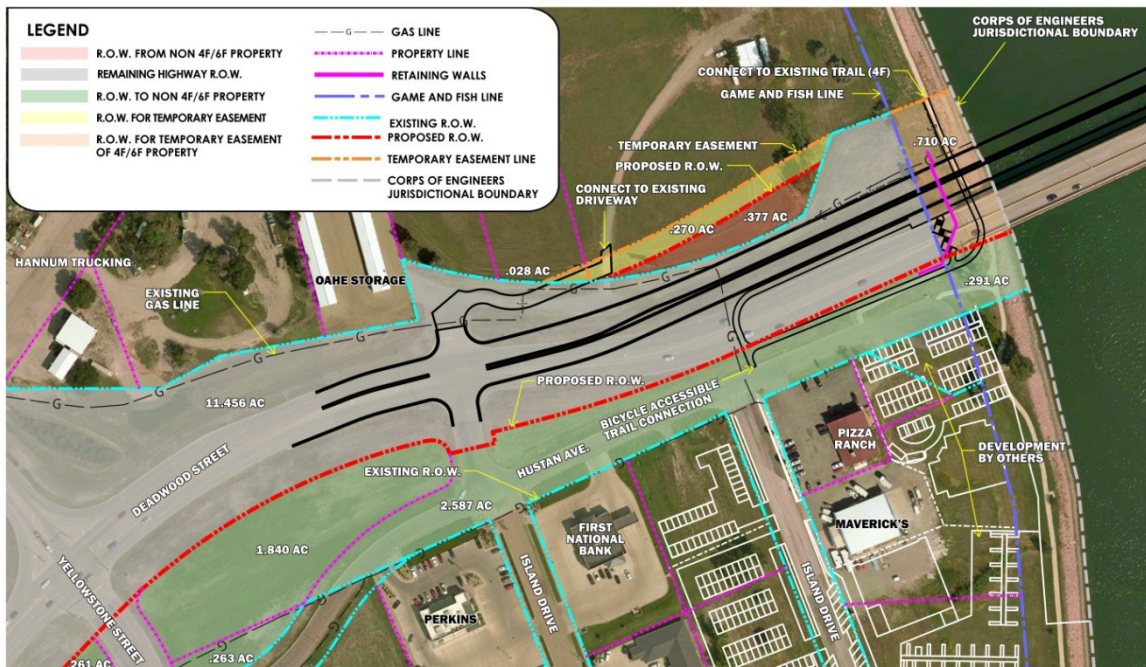
Refinements were made to Alternative N1, resulting in the N1.1 Alternative. These refinements included utilizing retaining walls on the east side rather than slopes, reducing the footprint of the ROW for the approach in Pierre. This minimizes the use of parkland in Outlot “F”, and allows for excess highway ROW on the south side of the roadway to be added to Steamboat Park. On the west side, private property ROW would be required in Fort Pierre. In addition, a portion of the existing ROW on the south side of US14/US83/SD34 in Fort Pierre would no longer be needed, resulting in excess ROW that would be transferred from SDDOT to the City of Fort Pierre.

Figure 2-8: N1.1 Refinements (Pierre)



US14/US83/SD34 MISSOURI RIVER BRIDGE REPLACEMENT STUDY
OPTION N1.1 R.O.W. REQUIREMENTS

Figure 2-9: N1.1 Refinements (Fort Pierre)



US14/US83/SD34 MISSOURI RIVER BRIDGE REPLACEMENT STUDY
OPTION N1.1 ADDITIONAL R.O.W. REQUIREMENTS

Alternative N2/N2.1

The N2 Alternative is located 120 feet to the north of the existing bridge, with an 80 foot gap between the proposed and existing structures. This alternative has ROW impacts in Fort Pierre and Pierre. The approach on the west side would shift north of the current alignment, providing an improvement to the S-curve. The approach on the east side would include a flattened curve that would join the existing alignment of Sioux Avenue near the Ramkota driveway entrance.

Public comments, stakeholder feedback, and the public opinion survey indicated community support for the N2 alternative, with those surveyed ranking N2 as second to N1.

Further refinements, such as retaining walls, were made to N2, resulting in Alternative N2.1 that reduced ROW impacts on the east side to the Ramkota Hotel Parking and to parkland, the 4(f) resource disc golf park, Outlot "F". The west side in Fort Pierre would have ROW impacts north of US14/US83/SD34, but would result in excess ROW on the south side of US14/US83/SD34 in Fort Pierre. This alternative can be constructed while the existing bridge is in operation, without requiring a detour and allowing for minimal traffic impacts during construction.

Figure 2-10: Alternative N2.1

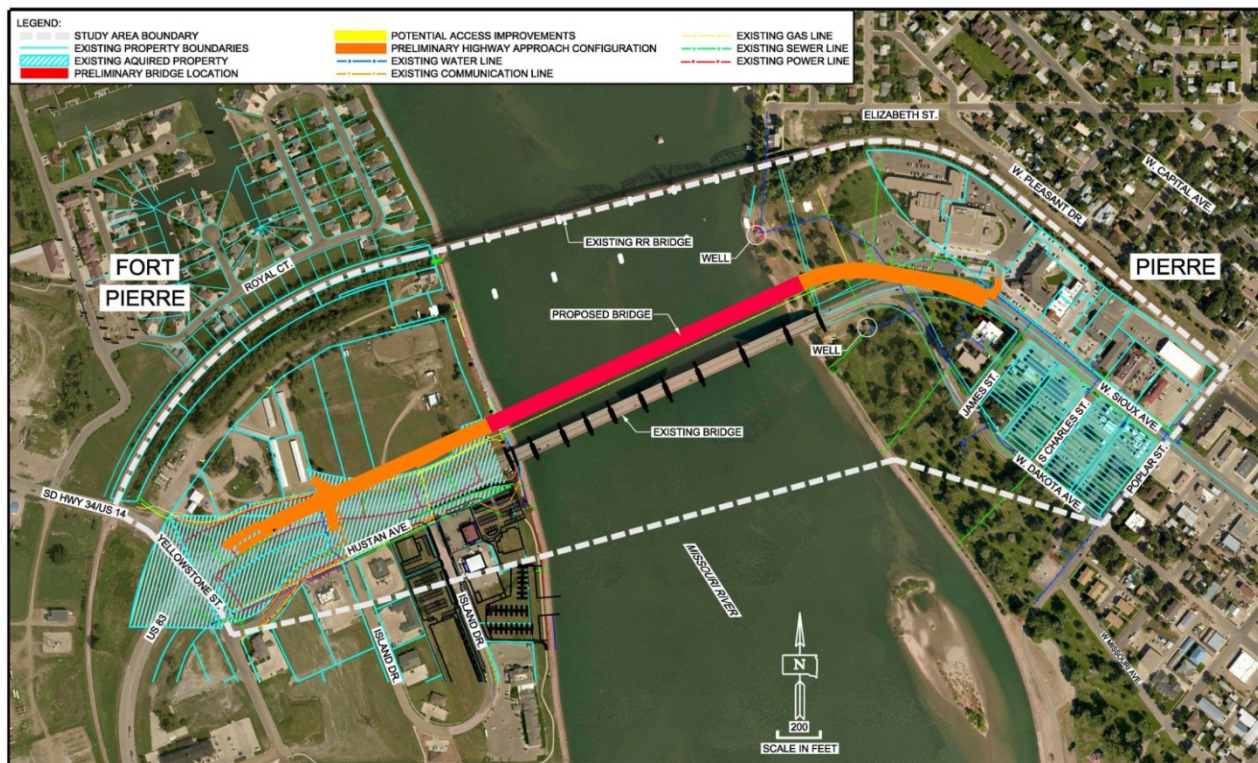


Table 2-1 provides a detailed comparison of N1.1 and N2.1.

Table 2-1: Costs and Impacts of N1.1 and N2.1

Criteria*	Alternative N1.1	Alternative N2.1
COST		
Roadway and Utility Cost	\$3,700,000	\$5,100,000
Structure Cost	32,200,000***	\$32,600,000***
Structure Removal Cost	\$2,500,000	\$2,500,000
Subtotal Construction Cost	\$38,400,000	\$40,200,000
Permanent ROW Costs	\$80,000	\$680,000
Temporary ROW Costs	\$50,000	\$330,000
Total Roadway, Structure, Utility and ROW Costs	\$38,530,000	\$41,210,000
DESIGN		
Meets SDDOT and AASHTO Design Guidelines (Yes/No)	Yes	Yes
Meets Purpose and Need (Yes/No)	Yes	Yes
IMPACTS		
ROW Impacts	1.7 acres**	3.5 acres**
Parkland/4(f) Use	1.1 acres**	2.3 acres**
Wetlands	0.0 acres	0.0 acres

*Other Impacts of Alternatives are considered in Chapter 3, Affected Environment and Environmental Impacts

**Impacts calculated with use of retaining walls on east side, no retaining walls on west side (9/2014)

***Difference in cost is N2/N2.1 has more retaining walls. The bridge costs for steel and concrete bridge types were seen as equal.

2.2 Preferred Alternative: N1.1

With consideration of the Purpose and Need factors, reduced impacts and public support, N1.1 was identified as the preferred alternative. After discussions with the City of Pierre, refinements were made to N1.1 to further reduce the parkland and ROW impacts. These included refinements to the use of retaining walls on the east side, reducing the footprint of the ROW for the approach in Pierre. This reduced the use of parkland in Outlot “F” to 0.892 acres, and includes 1.056 acres of excess highway ROW on the south to be added to Steamboat Park (See Figure 2-7). These changes resulted in a net gain to parkland in Pierre city parks of (see Chapter 3, 4(f)/6(f) Resources for more information on parkland in the project area).

On the west side, .377 acres of private property ROW would be required for a 4:1 slope on the north side of US14/US83/SD34 in Fort Pierre. Retaining walls were considered on the west side, but were eliminated from consideration due to the increased cost compared to purchasing 0.377 acres of adjacent property north of the existing US14/US83/SD34. In addition, previously reserved ROW for the bridge replacement on the south side of US14/US83/SD34 in Fort Pierre would no longer need to be reserved, resulting in a total of 5.242 acres of excess ROW that would be transferred from SDDOT to the City of Fort Pierre (See Figure 2-8).

Other features and reduced impacts of N1.1 also include:

- 1) Location N.1.1 – least amount of ROW and utility impacts, lowest construction cost, improved geometry and safety, no detour required

- 2) Steel or Concrete Girder-Type Bridge – long parabolic haunches for aesthetics, low maintenance, greater redundancy, greater live load carrying capacity, increased durability of beams, allows widening in the future, low visual impacts, low cost, context sensitive
- 3) Bridge/Roadway Cross-Section – four lanes to accommodate future traffic growth for the design year 2045 and beyond, larger shoulders for increased space for incidents to improve safety, raised, curbed median for safety and flexibility, widened path/trail on south to accommodate bi-directional bicycle and pedestrian traffic and SDDOT bridge inspection equipment, lighting position along outside of bridge at piers for easier maintenance, aesthetic metal railing along the path
- 4) Other – less river piers for improved river navigation and lower construction cost, abutment walls to be incorporated to provide more useable space under the bridges, classical two-column piers designed for aesthetics, stair and ADA ramps at both ends of the bridge for improved bicycle and pedestrian access

CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This chapter includes a description of the environmental and socioeconomic resources in the project study area and describes the potential impacts to those resources resulting from the Build Alternatives for the US14/US83/SD34 Bridge and Roadway. This chapter does not include resources that are not present in the study area, or are not impacted by the Build Alternatives. These include coastal barriers and zones, farmland, wild and scenic rivers, greenhouse gases, climate change, vibration and air quality.

This project would have no meaningful impacts on traffic volumes or vehicle mix, basic project location, or any other factor that would cause an increase in Mobile Source Air Toxics (MSAT) impacts to air quality compared to that of the no-build alternative. Therefore, air quality would not be impacted as this project would generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns.

3.1 Land Use

Land use surrounding the bridge is relatively diverse including commercial, parks and recreation, residential, industrial, and civic uses. Within the study area, land uses include commercial and undeveloped areas at the west bridge approach. Parks and recreational areas, commercial and some residential areas are present on the east side. A large portion of the study area is also attributed to transportation uses including publicly owned ROW and railroad ROW.

The comprehensive plans for the cities of Pierre (2008) and Fort Pierre (2003) noted goals to establish and preserve land for future development. The Pierre Comprehensive Plan also identified a need to provide locations for economic development projects, revitalize the downtown, and adapt to demographic and housing changes. A majority of planned development is targeted along the northern edge of the Pierre corporate limits along US14/US83 and west of the airport. Infill development opportunities also exist within the Pierre and Fort Pierre corporate limits including areas in the vicinity of the bridge.

In Fort Pierre, planned development districts are located immediately north of the project study area along the former Dakota, Minnesota, and Eastern (DM&E) Railroad, now owned by RCP&E Railroad. In May 2014, construction began southwest of the bridge on the Riverwalk Landing development which includes mixed commercial, condominiums and a marina.

Local plans also stress the importance of preserving park and recreational land and open space. Hipple Park, Steamboat Park, a disc golf course or Outlot "F", and a multi-use trail are located within the project study area in Pierre and Fort Pierre and are accessed by many residents and visitors via the bridge.

3.1.1 Impacts of Alternatives

The No-build alternative would not impact current land use; however, much of the future development in the areas adjacent to the bridge is dependent on a safe and reliable river crossing at this location.

Real estate acquisition, excess ROW and change to parkland would be a result of the Build Alternatives; however, land conversions required for the alternatives would be consistent with the local plans. Improvements to the US14/US83/US34 bridge roadway would be consistent with the planned developments in Fort Pierre and the commercial areas in Pierre and Fort.

3.2 Utilities

As the study area is in an urban environment, there are several utilities present in the project study area. Those utilities include water lines, water wells, storm sewers, natural gas lines, telecommunication infrastructure, electrical lines, lighting, and fiber optic communication lines. The City of Fort Pierre has water and sewer lines that run under the roadway to the north and south sides of the roadway, along with electrical lines under the bridge abutment. The City of Pierre has water lines that also run perpendicular to the US14/US83/SD34 roadway in Pierre that they are planning to replace in the next several years.

3.2.1 Impacts of Alternatives

The No-build alternative would not impact utilities in the project study area.

None of Build Alternatives would impact the gas line or water wells in the study area. Utilities that are located along, or within the US14/US83/SD34 roadway ROW of the existing bridge would be relocated as necessary during construction. Some utilities located within the ROW may require permanent easements. During the design phase of the project, SDDOT will coordinate with utilities, municipalities, and the counties to avoid or minimize interruptions in service during construction.

3.3 Railroads

The former DM&E Railroad, currently owned by RCP&E Railroad, is located on the northern edge of the Project Study Area. The railroad operations and crossings do not intersect with US14/US83/SD34 within the project study area. The railroad, including the bridge, known as the C&NW Railroad bridge which crosses over the Missouri River north of the existing US14/US83/SD34 Bridge, is listed on the National Register of Historic Places (NRHP) (see Section 3.6 for more information).

3.3.1 Impacts of Alternatives

The No-build alternative would not impact the RCP&E Railroad.

The Build Alternatives do not intersect with the RCP&E Railroad, and would not affect the operations or rail/road crossings in the project study area.

3.4 Bicyclists and Pedestrians

A recreational multi-use path, used by bicyclists and pedestrians, is located within the project area, along the south side of the bridge which continues and connects to a network of paths along the Missouri River in both Pierre and Fort Pierre. It connects to the Lewis and Clark Bicentennial Trail which spans 26 miles between the Oahe Dam in Stanley County and Farm Island Recreation Area in Hughes County.

3.4.1 Impacts of Alternatives

The No-build alternative would not impact the bicycle and pedestrian paths in the project study area.

The Build Alternatives include changes to bicycle and pedestrian paths along the US14/US83/SD34 Bridge, by increasing the width of the path on the south side of the bridge to 12 feet from the existing five foot wide path. In addition, connections from the bicycle and pedestrian path on the bridge to the paths within the parks in Pierre and to the Lewis and Clark Bicentennial paths would be enhanced to improve the overall recreational experiences on and near the paths, including providing ADA access to the paths (see Section 3.16 4(f) and 6(f) Resources for more information regarding the improvements to

the trail system under the Build Alternatives). During construction, detours would be provided to maintain access to, and use of, the bicycle and pedestrian paths within the project study area.

3.5 Visual Impacts and Aesthetics

The primary visual setting in the project study area is a developed, urbanized area. From the existing bridge, there is a view of the Missouri River as well as a view of the historic C&NW Railroad Bridge (see Section 3.6 Archaeological and Historic Resources for more information regarding the historical C&NW Railroad Bridge). Various bridge designs and aesthetic treatments have been presented throughout the study with the public providing comments.

3.5.1 Impacts of Alternatives

The No-build Alternatives would not alter the visual landscape or aesthetics.

The Build Alternatives will not alter the visual landscape as one bridge will be replaced by another. The Build Alternatives will include aesthetic treatments that have been developed in conjunction with input from the community. The bridge aesthetic treatments are intended to compliment the structural form of the bridge, provide opportunities to celebrate local history and culture, and to enhance the bridge appearance from multiple perspectives.

3.6 Historical & Archaeological

Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are properties that are listed on the NHRP or are eligible to be listed on the NHRP. Architectural and Historic investigations were conducted for the study.

A Level III Architectural Resources investigation (URS, October 2014) was performed for the project study area. The architectural portion of this survey resulted in the recording of three new historic properties, the resurvey of six previously recorded structures, and the creation of eight determinations of eligibility. Of these properties that were surveyed, listed in Table 3-1, only the C&NW Railroad bridge, was previously listed on the NHRP.

The CN&W Railroad bridge was listed on the NHRP based on two historic factors: Criterion A and Criterion C. Criterion A is associated with events that have made a significant contribution to the broad patterns of our history. Criterion C embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

The other eight properties that were surveyed were recommended as not eligible for listing on the NHRP.

Table 3-1: Historic Resources within the Project Study Area

SHPO ID or Field Number	Name	Site Type	Street Address	Previously Recorded	NRHP Eligibility Status
SD-001	Pumphouse No. 5	Historic Building	Steamboat Park	No	Not Eligible
SD-002	Pumphouse No. 3	Historic Building	Steamboat Park	No	Not Eligible
SD-003	Pumphouse No. 2	Historic Building	Steamboat Park	No	Not Eligible
HU00000096	Dwelling	Historic Building	312 N. James St.	Yes	Not Eligible
HU00000623	US14-US83-SD34 Highway Bridge	Bridge	Over the Missouri River	Yes	Not Eligible
HU00000378	Old Municipal Light and Power Plant	Historic Building	805 West Sioux Avenue	Yes	Not Eligible
HU00000430	Schoolhouse	Historic Building	206 West Dakota Avenue	Yes	Not Eligible
HU00000490	W.P.A Warehouse	Historic Building	316 Charles Street	Yes	Not Eligible
HU00000568	Chicago and Northwestern Railroad Bridge	Bridge	Over the Missouri River	Yes	Listed

An archaeological cultural resource survey and shovel tests were performed within the project study area with no Archaeological sites discovered. As no archeological sites were uncovered within the study area, a recommendation of a finding of *No Historic Properties Affected* for the archaeological portion of the cultural resources survey was submitted to SHPO and SHPO concurred with these findings on 2/12/2016.”. Adverse indirect effects are equally unlikely, given the fact that this replacement will not substantially alter the visual intrusion that the existing highway bridge already presents.

3.6.1 Impacts of Alternatives

No impacts would occur to either Historical or Archaeological resources for the No-build Alternative.

The Build Alternatives ultimately replace one visual impact, the current bridge, with another to the historic resource, the C&NW Railroad Bridge. During the 2004 survey and subsequent NRHP nomination process, the viewshed impact of the current Missouri River Bridge to the C&NW Railroad Bridge was analyzed and determined to be negligible. A replacement bridge would have a similar effect on the viewshed as the height, scale, style, and the if location of the new bridge is similar to the existing bridge, this project will not substantially alter the visual intrusion that the existing highway bridge already presents.

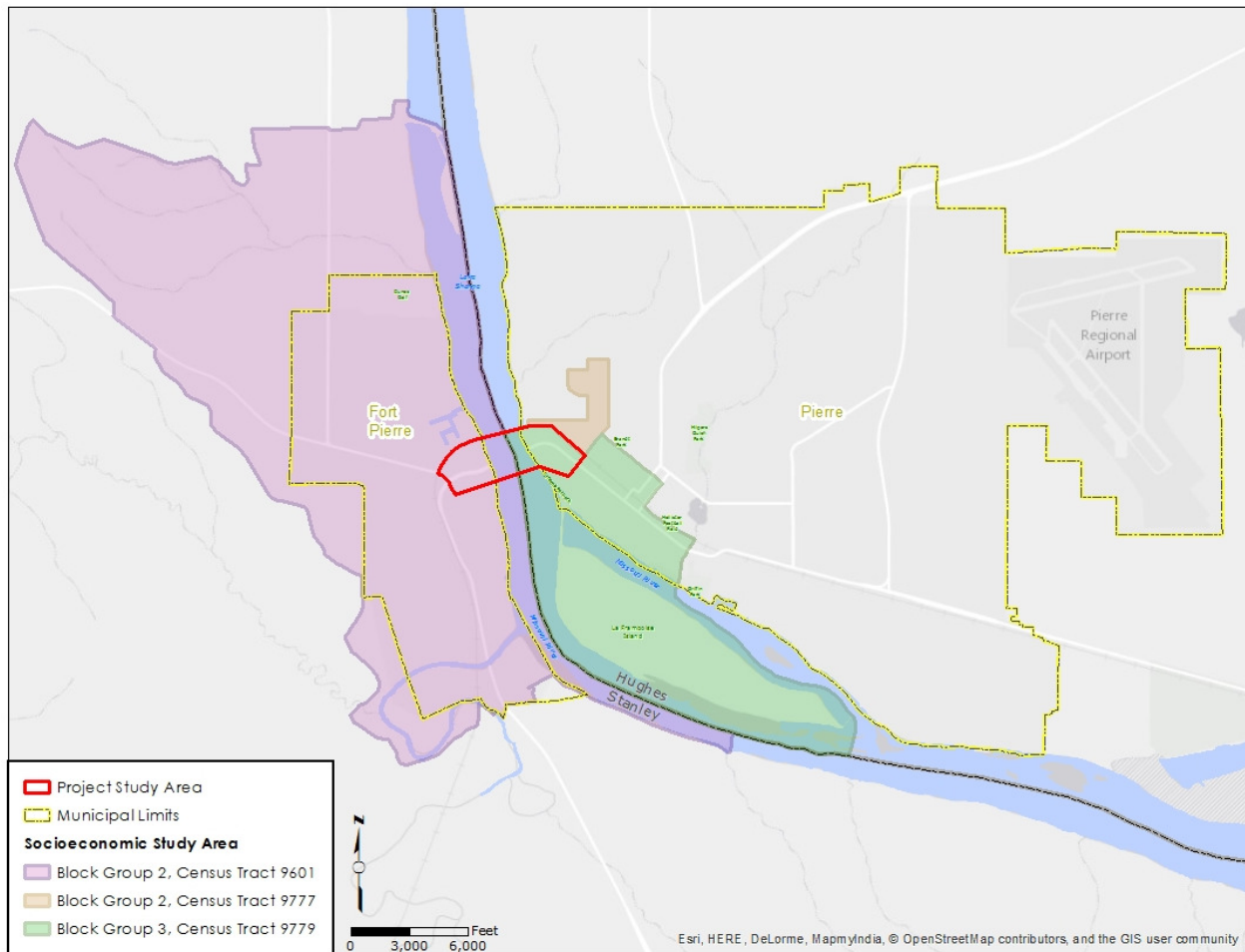
No archaeological impacts are expected for the Build Alternatives since no archaeological resources were discovered in the project area. However, if buried prehistoric or historic cultural materials are encountered during construction, work should cease in that area and SDDOT should be contacted immediately.

3.7 Economic Resources

This section includes an analysis of current socioeconomic conditions and demographic and economic trends in the vicinity of the bridge. The analyses utilize datasets (e.g., the U.S. Census Bureau) available at limited geographic extents. As such, a socioeconomic study area (see Figure 3-1) was selected based on the project study area described in Chapter 1 of this report. The socioeconomic study area includes the following U.S. Census Block Groups:

- Block Group 2, Census Tract 9601, Stanley County
- Block Group 2, Census Tract 9777, Hughes County
- Block Group 3, Census Tract 9779, Hughes County

Figure 3-1: Socioeconomic Study Area



Population

For this study, historical and projected population trends are best analyzed at the county level. The populations of Hughes and Stanley Counties drastically grew between 1880 and 1910 (see Table 3-3). Over the next century, the population of Hughes County continued to grow; whereas that of Stanley County peaked at 4,085 around 1960. Between 2000 and 2010, the populations of Hughes County and Stanley County increased by 3.3% and 7.0%, respectively. Both counties are projected to continue growing between 2010 and 2035 at an average annual rate of 0.5% (see Table 3-2).

Table 3-2: Projected Population

Year	Hughes County	Annual Rate	Stanley County	Annual Rate
2000	16,481		2,772	
2010	17,022	0.3%	2,966	0.7%
2015	17,639	0.7%	3,047	0.5%
2020	18,131	0.6%	3,113	0.4%
2025	18,518	0.4%	3,177	0.4%
2030	18,823	0.3%	3,253	0.5%
2035	19,049	0.2%	3,314	0.4%
2010-2035	+2027	0.5%	+348	0.5%

Source: South Dakota Department of Labor and Regulation, Labor Market Information Center Preliminary Population Projections for South Dakota and Counties, 2010-2035

https://dlr.sd.gov/lmic/menu_demographics.aspx

Accessed: October 29, 2014

The populations of Hughes County and Stanley County are intrinsically linked to the cities of Pierre and Fort Pierre, respectively. Generally, historic population growth and decline in each city mirrored that of the corresponding county (see Table 3-3). Between the late 1800s and 1990, the percentage of the counties' populations living in each city steadily increased to approximately 87% in Hughes County (Pierre) and 76% in Stanley County (Fort Pierre). The proportions have slightly decreased since 1990, but recent population trends and distribution at the city and county levels continue to correlate.

Table 3-3: Historical Population

Year	Hughes Co.	Pierre		Stanley Co.	Fort Pierre	
	Pop.	Pop.	% of Co.	Pop.	Pop.	% of Co.
1880	268	—	—	793	—	—
1890	5,044	3,235	64.14%	1,028	—	—
1900	3,684	2,306	62.6%	1,341	—	—
1910	6,271	3,656	58.3%	14,975	792	5.29%
1920	5,711	3,209	56.2%	2,908	805	27.7%
1930	7,009	3,659	52.2%	2,381	683	28.7%
1940	6,624	4,322	65.2%	1,959	764	39.0%
1950	8,111	5,715	70.5%	2,055	951	46.3%
1960	12,725	10,088	79.3%	4,085	2,649	64.8%
1970	11,632	9,699	83.4%	2,457	1,448	58.9%
1980	14,220	11,973	84.2%	2,533	1,789	70.6%
1990	14,817	12,906	87.1%	2,453	1,854	75.6%
2000	16,481	13,876	84.2%	2,772	1,991	71.8%
2010	17,022	13,646	80.17%	2,966	2,078	70.1%
2013 (est.)	17,053	13,984	82.0%	2,981	2,111	70.8%

Source: US Census Bureau; Decennial Censuses 1880-2010; American Community Survey 2013 1-year estimate

Income and Employment

According to data aggregated by the U.S. Census Longitudinal Employer-Household Dynamics program, in 2011 there were 4,806 total jobs in the socioeconomic study area. Of these jobs, 4,291 were considered “primary” jobs. A primary job is defined as the highest paying job for a worker with more than one place of employment (see Table 3-4). Primary industries represented in the area included Accommodation and Food Services (15.5% of jobs), Public Administration (13.0%), Educational Services (11.8%), and Retail Trade (11.7%).

Table 3-4: Socioeconomic Study Area Employment (Primary Jobs), 2011

		Study Area Employed Residents
Number		4,291
Study Area Industry	Accommodation & Food Services	15.5%
	Public Administration	13.0%
	Educational Services	11.8%
	Retail Trade	11.7%
Commute	Tract 9777 (Hughes Co.)	20.9%
	Tract 9778 (Hughes Co.)	19.8%
	Tract 9779 (Hughes Co.)	11.2%
	Tract 9601 (Stanley Co.)	9.2%
	Other Locations	39.0%

Source: U.S. Census Bureau. 2011. OnTheMap Application. Longitudinal-Employer Household Dynamics Program. <http://onthemap.ces.census.gov/>

Of the workers employed in the 4,291 primary jobs within the socioeconomic study area, approximately 41% lived in the Census Tracts (9601, 9777 and 9779) containing the socioeconomic study area’s block groups, and approximately 59% came from elsewhere. Approximately 77% of the socioeconomic study area jobs are located east of the river and a majority (approximately 60%) of workers employed in the socioeconomic study area live in Hughes County.

The socioeconomic study area is a net importer of workers. Approximately 1,136 (65.8%) employed residents work outside of the socioeconomic study area (See Table 3-5). Sixty-seven percent of these residents still worked nearby in Census Tracts 9601, 9777 and 9779; 33.0% worked in other locations. A majority of study area residents work in Public Administration (20.3%), Health Care and Social Assistance (13.6%), Retail Trade (11.6%), and Construction (9.5%). Roughly 590 employed study area residents worked in the study area.

Table 3-5: Study Area Employment (Employed Residents), 2011

		Study Area Employed Residents
Number		1,727
Study Area Industry	Public Administration	20.3%
	Health Care and Social Assistance	13.6%
	Retail Trade	11.6%
	Construction	9.5%
Commute	Tract 9779 (Hughes Co.)	31.3%
	Tract 9777 (Hughes Co.)	24.2%
	Tract 9601 (Stanley Co.)	11.5%
	Other Locations	33.0%

Source: U.S. Census Bureau. 2011. OnTheMap Application. Longitudinal-Employer Household Dynamics Program. <http://onthemap.ces.census.gov/>

While median income data for individuals were not available at the block group level, median household income and median family income values were available (see Table 3-6). The median household income within the socioeconomic study area was lower than that for Pierre, Fort Pierre and respective counties; however, there was considerable variability within the study area. The median household income immediately southeast of the bridge (Block Group 3, Tract 9779) was substantially lower than that for the study area and those for Pierre and Hughes County. However, the area northeast of the bridge (Block Group 2, Tract 9777) was home to households with median incomes higher than those in the Pierre and Hughes County. Median family incomes followed a similar trend, but with an overall median family income between the lowest (Fort Pierre) and highest (Hughes County) values.

Table 3-6: Study Area Median Income, 2012

	Median household income in the past 12 months*	Median family income in the past 12 months*
Study Area Block Groups	\$53,723	\$66,371
Block Group 2, Census Tract 9601, Stanley County	\$59,044	\$66,591
Block Group 2, Census Tract 9777, Hughes County	\$68,333	\$73,897
Block Group 3, Census Tract 9779, Hughes County	\$33,792	\$58,625
Hughes County	\$59,117	\$77,500
Stanley County	\$56,553	\$58,380
Fort Pierre	\$57,102	\$61,354
Pierre	\$56,125	\$76,637

* 2012 dollars (adjusted for inflation)

Source: US Census Bureau; 2012 American Community Survey 5-Year Estimates

3.7.1 Impacts of Alternatives

The No-build alternative would not impact population growth or economic resources.

As many residents within the socioeconomic study area use the bridge to commute or conduct business, maintaining access between Fort Pierre and Pierre was a key consideration in the alternatives analysis. Build Alternatives that did not meet this requirement were eliminated from further evaluation. The retained Build Alternatives maintain the vital access across the Missouri River during construction.

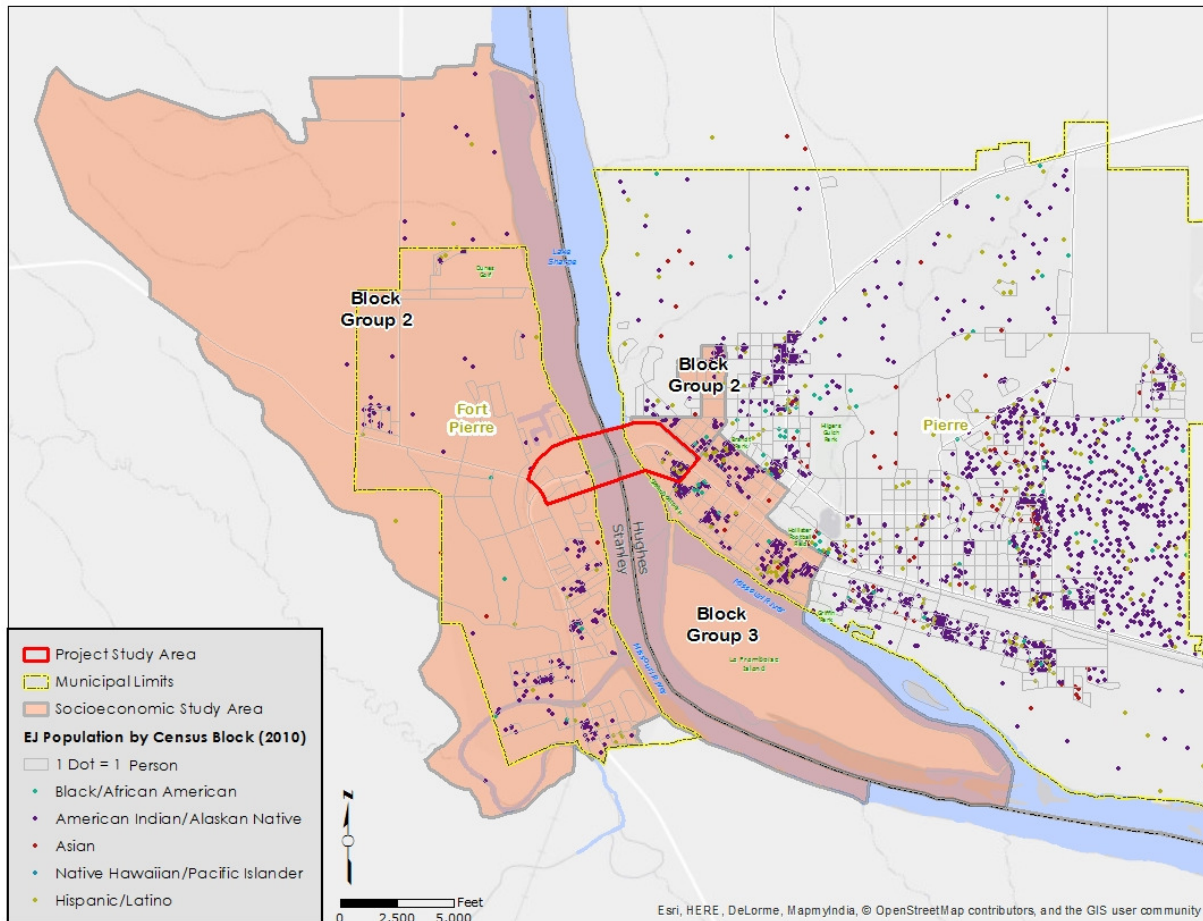
The Build Alternatives would impact the parking areas at the Ramkota hotel in Pierre; however, based on discussions with the business owner this impact is not anticipated to adversely affect this business, as the parking area can be reconfigured to restore parking spaces on the property.

During construction, residents, businesses and visitors would likely encounter temporary impacts to economic resources including nominally increased travel times for brief durations. However, access to vital resources will be maintained throughout construction; therefore impacts are expected to be minimal and short-lived.

3.8 Environmental Justice

As the basis of environmental justice policy, Title VI of the Civil Rights Act of 1964 and Executive Order 12898 require that agencies identify and address disproportionately high or adverse impacts projects may have on low-income and minority populations. The first step in evaluating the proportionality of impacts is to identify the location of sensitive populations, including those identifying as Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Hispanic or Latino, and low income populations.

Figure 3-2: Environmental Justice Populations



In 2012, approximately 84% of socioeconomic study area residents (as described in Section 3.7) self-identified as white (See Table 3-7). A majority of the population identifying as not white alone (16%) also identified as American Indian or Alaska Native alone (13.3% of the total population). According to 2010 Census data available at the block level, environmental justice populations were relatively evenly distributed throughout the socioeconomic study area (see Figure 3-2). Relatively few residents identifying as not white alone live within the project study area (adjacent to the bridge), with the exception of approximately 35 individuals in blocks framed by Sioux Avenue and W. Dakota Avenue (north-south) and S. Poplar Avenue and James Street (east-west). The neighborhood southeast of the project study area, between W. Dakota Avenue and W. Missouri Avenue, is also home to a number of Native American or Alaskan Native, Hispanic or Latino, and Black or African American residents.

Table 3-7: Race and Ethnicity Distribution, 2012

	Study Area Block Groups		Fort Pierre		Pierre	
	No.	%	No.	%	No.	%
Total Population	4,042	100.0%	2,172	100.0%	13,687	100.0%
Population of one race:	3,961	98.0%	2,100	96.7%	13,155	96.1%
White alone	3,399	84.1%	1,821	83.8%	11,486	83.9%
Black or African American alone	-	0.0%	0	0.0%	95	0.7%
American Indian and Alaska Native alone	537	13.3%	273	12.6%	1,254	9.2%
Asian alone	19	0.5%	0	0.0%	37	0.3%
Native Hawaiian and Other Pacific Islander alone	-	0.0%	0	0.0%	0	0.0%
Some other race alone	6	0.1%	6	0.3%	283	2.1%
Two or more races	81	2.0%	72	3.3%	532	3.9%
Hispanic or Latino	88	2.2%	41	1.9%	285	2.1%
Total population for whom poverty status is determined	3,986	100.0%	2,138	100.0%	12,847	100.0%
Below poverty level	606	15.2%	256	12.0%	1,386	10.8%

Source: US Census Bureau; 2012 American Community Survey 5-Year Estimates

Low-income populations are commonly identified as the percentage of the population living in poverty as defined by the U.S. Census Bureau³. In 2012, the poverty status was determined for 3,986 residents, 606 (15.2%) of who were determined to be below the poverty level in the study area block groups (see Table 3-7). More people in the study area live in poverty than is the case for either the City of Pierre as a whole (10.8%) or City of Fort Pierre (12.0%). In the study area, the lowest poverty rate is exhibited in Block Group 3, Tract 9779 (southeast of the bridge). At 30.7%, it is more than double that for the City of Pierre.

3.8.1 Impact of Alternatives

The No-build alternative would not disproportionately impact environmental justice populations within the socioeconomic study area.

None of the Build Alternatives would relocate persons protected by environmental justice policies, and no permanent impacts are anticipated that would disproportionately affect environmental justice populations. Removal of the Dakota Avenue ramp (from eastbound SD34) would alter access routes to neighborhoods with environmental justice populations; however, access would be maintained via James Street and travel times would not substantially increase.

During construction, residents and businesses, including environmental justice populations, would likely encounter temporary impacts to social and economic resources. However, vehicular and pedestrian access to these resources will be maintained throughout construction, and impacts are not expected to disproportionately burden minority or low-income populations.

³ <https://www.census.gov/hhes/www/poverty/methods/definitions.html>

3.9 Noise

Noise may be defined as unwanted sound. Sound is the sensation produced in the ears when the movement of an object creates fluctuations in air pressure. The perceived loudness of sound waves depends on the magnitude of the pressure fluctuations they generate. The unit of measure for sound pressure is the decibel (dB). Decibels are based on a logarithmic scale to accommodate the very large range of sound pressure fluctuations detectable by the human ear.

Measured noise levels do not necessarily correspond directly to our perception of “loudness”. For instance, a three (3) decibel increase represents a doubling of the sound pressure fluctuations on the logarithmic scale. However, this change is barely perceptible for humans. Furthermore, an increase in 10 decibels from a noise source is a tenfold increase in noise pressure, but is only perceived as a doubling in loudness by the human ear.

For highway traffic noise analysis, noise is predicted and evaluated in decibels weighted with the A-weighted frequency response filter; and is expressed in A-weighted decibels (dBA). Measurements in dBA account for the human ear’s reduced sensitivity to both low frequency and very-high frequency noises to better correlate with our subjective impression of loudness. Table 3.8 displays noise levels common to our everyday activities.

Table 3-8: Common Noise Levels

Activity/Distance	Noise Level (dBA)
Rock Band at 16 feet	110
Jet Flyover at 1,000 feet	105
Gas Lawn mower at 3 feet	95
Diesel truck at 50 feet	85
Diesel truck at 110 feet	80
Gas lawn mower at 100 feet	70
Normal speech at 3 feet	65
Birds chirping	50
Leaves rustling	40
Very quiet soft whisper	30
Threshold of hearing	0

FHWA and SDDOT have developed guidelines to identify projects that require a noise analysis. According to the Noise Analysis and Abatement Guidance/Policy (SDDOT, 2011), a noise analysis is required for any project that meets the Type-I definition. The definition for Type-I projects can be found in the federal rule 23 CFR 772.

A screening of the project area indicated there are no residences immediately adjacent to the proposed project. The nearest residence is approximately 600 feet from the proposed project, and separated from the project area by an active rail line. Other noise sensitive land uses adjacent to the project area included park facilities south of the existing bridge, and trails running beneath the bridge on both sides of the river.

3.9.1 Impacts of Alternatives

The No-build alternative would not impact noise levels in the project study area.

The Build Alternatives are not anticipated to substantially bring the traffic noise source closer to residences, or the nearby park facilities or trails. Trails would continue to run beneath the proposed bridge, with trail crossings placed at similar distances as from the existing bridge. The proposed bridge would also have the same number of traffic lanes and walking path as the existing bridge. Therefore, this project does not meet the definition of a Type-I project, and a noise detailed analysis was not required.

3.10 Relocations

No relocations of residences or business will occur from this project. However, some land will need to be acquired from a local business and a private property for this project.

3.10.1 Impacts of Alternatives

The No-build alternative would not require relocations or property acquisition.

The Build Alternatives would impact the parking areas at the Ramkota hotel in Pierre; however, this impact is not anticipated to affect the business at that property as no net loss of parking stalls is anticipated. In Fort Pierre, currently undeveloped private property would be acquired north of US14/US83/SD34.

All property acquisitions will conform with the Uniform Relocation Assistance and Real Property Acquisition Act (UA) of 1970, as amended by the Surface Transportation Assistance Act of 1987 and as codified in 49 CFR 24, effective April 1989. SDDOT's ROW Program is responsible for acquiring any property necessary for highway purposes and for acquisitions per the UA.

3.11 Wetlands and Other Waters of the U.S.

Land within the project study area contains extensive fill as a result of recent development. Wetlands in this area are generally associated with fill from the construction of railroad embankments, and excavations to manage storm water runoff. Existing storm water ponds within the study area likely represent excavation in historic fill. No undisturbed, natural wetlands remain within the Project Study Area.

A Section 404 permit and associated 401 Water Quality Certification would be required from USACE and the SDDENR for any impacts to wetlands and other waters of the U.S. During preliminary design of the Build Alternatives, impacts to wetland areas were avoided, but should be verified for any changes during final design. Once a full project plan is developed for the removal and construction of a new US 14 Missouri River bridge, it should be sent to USACE immediately to avoid possible delays regarding permitting.

Wetlands

Three wetlands were delineated (US Army Corps of Engineers 2010) within the Project Study Area (See Figure 3-3). Delineated wetlands #1 and #3 are associated with the storm water runoff system for Fort Pierre, and are located between the storm water outfalls and the Missouri River. The third delineated wetland (#2) is an excavated basin to manage runoff from the highway ROW, and is connected via a culvert to wetland #3. There were no identified wetlands within the project study area on the east bank of the Missouri River.

Figure 3-3: Delineated Wetlands in the Project Study Area



A portion of Discovery Island (sandbar island feature in the Missouri River) is located on the southeast fringe of the project study area and is within the Missouri River. Based on visual observations from the east bank of the Missouri river, vegetation, hydrology, and soil requirements of jurisdictional wetland would be met for the portions of Discovery Island that are continuously exposed and not inundated. Specific Characteristics of the delineated wetlands are in Table 3-9.

Table 3-9: Wetland Classification and Selected Information¹

Wetland ID	Classification		Area (acres)	Notes
	Circ. 39 ²	Cowardin ³		
1	Type 6	PSS1A	0.04	Stormwater culvert outfall, excavated wetland
2 ⁴	Type 3	PEM1Cr	0.17	Stormwater pond excavated in fill
3	Type 7	PFO6A	2.93	Stormwater conveyance, possible historic borrow pit for railroad embankment
Discovery Island	Type 1	PSS/EM/UBAh	3.46	Occasionally flooded sandbar.

¹ Wetlands examined in the field October 2013.

² Shaw, S.P. and C.P. Fredine. 1956. Wetlands of the United States – their extent and their value to waterfowl and other wildlife. U.S. Department of the Interior Fish and Wildlife Service Circular 39. U.S. Government Printing Office. Washing D.C.

³ Cowardin, L.M., V. Carter V., F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31. Washington, D.C.

⁴ Ibid

Other Waters of the U.S.

The Missouri River is listed as a Navigable Water by U.S. Army Corps of Engineers (USACE), and would be regulated as a Water of the United States under Section 10 of the Rivers and Harbors Act.⁴ A 404 permit will be required for the project to add fill material to the waters of the U.S. USACE does not consider the removal and replacement of an existing structure as environmentally offsetting. Both the demolition and the new construction would be evaluated as adding new material to the river, although the Build Alternatives include one less pier than the existing structure. Further, a permit would only be issued once the entire project plan and construction sequencing were reviewed and approved.

3.11.1 Impacts of Alternatives

No impacts to any delineated wetlands within the study area would occur for the No-build alternative.

Wetlands 1 and 3, and Discovery Island are distant from the proposed construction and are not expected to experience any direct or indirect impacts during demolition and removal of the existing bridge, or before, during, or after subsequent bridge construction. Wetland Number 2 is adjacent to the roadway in the north quadrant of the junction of US14/83/SD34 and Yellowstone Street (US14SD34/1806), but would not be impacted by the Build Alternatives. Requirements for Section 10, Section 404/401, and USCG permits would be determined and provided in later phases of the project.

3.12 Water Quality

The US14/US83/SD34 Bridge crosses over the Missouri River, which is fed by various rivers, streams, and small lakes and ponds. The water resources study area encompasses Lake Sharpe within the Missouri River; a reservoir bordered six miles to the north of the project site by the Oahe Dam, and extending approximately 68 miles downstream to the Big Bend Dam. The study area lies within the Lower Missouri River Basin.

All streams in the State of South Dakota which have sufficient quantities of water for a sufficient duration are assigned beneficial uses. According to the South Dakota Department of Environment and Natural Resources (SDDENR) 2010 Integrated Report for Surface Water Quality Assessment, the assigned beneficial uses for Lake Sharpe are cold water permanent fish life, commerce and industry, domestic water supply, fish and wildlife propagation, recreation, stock, immersion recreation, irrigation waters, and limited contact recreation.

3.12.1 Impacts of Alternatives

No change to existing water quality relative to roadway and bridge runoff will occur for the No-build alternative.

Bridge Approaches

Proposed Alternative Alignment N1/N1.1 results in a net decrease in impervious surface of approximately 2,500 SF (3%) on the Pierre Approach and a net decrease in impervious surface of approximately 2,000 (2%) on the Fort Pierre Approach. Stormwater management at the east and west bridge approaches is anticipated to include catch basins along the roadway connected to existing storm sewer infrastructure which drains to the Missouri River. Incorporation of new water quality infrastructure at the abutments would not be required as the impervious area is being reduced.

⁴ Section 10 Waterways

<http://www.nwo.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/2034/Article/2652/section-10-waterways.aspx> accessed February 2014.

Bridge Deck

Proposed Alternative Alignment N1/N1.1 results in a net increase of impervious surface of approximately 2,000 SF (4%) directly discharging to the Missouri River through multiple open deck drains located along the length of the bridge (similar to the existing condition). The minimal additional amount of runoff entering the river from the bridge deck is not anticipated to result in a change to the water quality of the Missouri River. Current Best Management Practices (BMP's) related to bridge deck stormwater runoff include the use of latest technology to minimize salt application on bridge decks, and increased bridge deck sweeping frequency in select locations along the deck.

BMP's such as sump catch basins on approach roadways and swales within green spaces on approach ROW should be considered where feasible during final design to protect water quality.

Dewatering during Construction

If dewatering is found to be necessary during construction, the effects on the water tables of aquifers would be localized and short term. Dewatering groundwater would be properly discharged to minimize erosion and facilitate infiltration back into the ground. Construction activities would adhere to local, state, and Federal water quality regulations. Methods would be implemented to minimize the spill of chemicals used in vehicles during construction activities such as petroleum, oils and lubricants. If discharge does occur, containment procedures such as banking or diking would be used to prevent entry of these materials into the waterway. Construction-related impacts for the Project are not considered to be significant due to planned compliance with the most recent SDDOT Construction Field Manual during construction.

3.13 Stormwater

3.13.1 Existing Conditions

Existing stormwater management in the study area includes curb and gutter, catch basins and storm sewer piping on the Fort Pierre and Pierre roadway approaches. Stormwater runoff enters the Missouri River via the storm sewer network including piping, ditches and swales in the project area. Stormwater management on the existing bridge is accomplished by the incorporation of deck drains placed along the length of the bridge which allow runoff to drain directly to the river below.

The proposed roadway approaches and bridge stormwater management system will be designed to accommodate 10 year storm frequency events without encumbering traffic lanes. At roadway low points, catch basins and piping will be designed to accommodate 50 year storm frequency events without encumbering traffic lanes.

3.13.2 Impacts of Alternatives

No change to existing storm water flows relative to roadway and bridge runoff will occur for the No-build alternative.

Bridge Approaches

Proposed Alternative Alignment N1/N1.1 results in a net decrease in impervious surface of approximately 2,500 SF (3%) on the Pierre Approach and a net decrease in impervious surface of approximately 2,000 (2%) on the Fort Pierre Approach. Stormwater management at the east end of the bridge is accomplished currently with curb and gutter, catch basins and storm sewer pipe. The proposed Pierre approach stormwater would be collected in the same manner using portions of the existing trunk storm sewer piping with new storm sewer leads constructed to catch basins located in the new curb

alignments. Overall stormwater volume and rates are anticipated to be slightly less than existing rates due to the reduction in impervious surface area.

Stormwater collection on the Fort Pierre approach would be accomplished with catch basins and storm sewer pipe in conjunction with swales and ditches in a similar manner to the current collection system. Overall stormwater volume and rates are anticipated to be slightly less than existing rates due to the reduction in impervious surface area.

Bridge Deck

Stormwater runoff from the existing bridge deck is routed directly to the Missouri River below through regularly spaced deck drains on the edge of the bridge roadway deck to facilitate drainage and ensure stormwater is efficiently routed away from traffic lanes and off the bridge deck. The proposed bridge design includes a similar approach to managing stormwater runoff from the bridge deck.

Catch basin spacing and deck drain locations will be determined in final design in accordance with design criteria for storm design event and allowable spread specified in the SouthDakota DOT Drainage Manual.

3.14 Floodplains

Federal agencies are required to avoid adverse impacts to floodplains associated with fill or other topographical changes associated with construction projects. The Federal Emergency Management Agency (FEMA) has jurisdiction over floodplain regulations. Federal regulations are typically enforced by local jurisdictions in conjunction with participation in the FEMA National Flood Insurance Program. The cities of Pierre and Fort Pierre participate in this program.

Missouri River flooding is now controlled by releases from the Oahe Dam located approximately 5 miles upstream of the project study area, and Big Bend Dam located approximately 79 river miles downstream. The immediate area is impacted by high water levels maintained by the Big Bend Dam, but is far enough upstream to maintain substantial flow and maintain islands and sand bars. The largest island nearest the project study area is La Framboise Island located 0.8 miles downstream of the bridge. Discovery Island is a periodically flooded sandbar located approximately 0.25 miles downstream of the current bridge location. The 100 year flood elevation in the vicinity of the bridge is 1428.61 (based on 60,000 cfs discharge from the Oahe Dam). The flood of record elevation is 1434.11.

The existing top of slope elevation on the Fort Pierre side of the river is approximately 1430. The existing top of riverbank on the Pierre side of the river is approximately elevation 1432. Both river embankments are currently above the 100 year flood elevation and are protected by rock riprap from erosion during high water events produced by Oahe Dam releases. Steamboat Park encompasses the eastern bank of the Missouri River within the project study area, and the western bank includes roadway and light industrial use, along with office space. A small woodland area is located on the western bank north of the bridge (immediately south of the RCP&E Railroad), and is currently used as a storm water conveyance.

3.14.1 Impacts of Alternatives

No change to available floodplain volume or floodway area would occur for the no-build alternative. The N1/N.1 Alternative alignment results in a slight increase in available floodway cross section area at the bridge as well as a slight increase in floodplain storage volume for flood events greater than the 100 year flood event. These improvements result from the proposed abutment design which incorporates a vertical face at the abutment vs. the sloped fill of the existing abutments. The top elevation of the

proposed shoreline rip-rap would remain approximately the same as the existing river embankment top elevation thus not adversely impacting 100 year flood event flows. All newly created and disturbed areas above the ordinary high water mark which are not riprapped shall be seeded or otherwise re-vegetated to protect against erosion.

The proposed bridge alternatives include one less pier in the river than the existing bridge. The proposed pier surface area at water level is very similar to existing pier area. The reduction of one pier should provide a slightly less encumbered floodway at the proposed bridge as compared to the existing bridge condition.

The N2/N2.1 alternative alignment would result in the same floodway improvements noted above for Alternative N1/N1.1. The N2/N2.1 alternative alignment would require fill for roadway embankment beyond the bridge abutment however the base of this fill would be generally several feet above the 100 year flood elevation. This additional embankment could be offset by removal of existing roadway approach embankment if desired to provide floodplain storage for flood events greater than the 100 year event.

As a part of the final design process the SDDOT may be required to complete, depending on the 10-year cycle of updated FEMA maps, a floodplain analysis and issue a “no-rise” certification that would be sent to FEMA (Region 8), Pierre and Fort Pierre. No adverse impacts to floodplain or floodway are anticipated to result from the proposed project, based on the proposed design for N1.1 or N2.1.

3.15 Vegetation, Fish & Wildlife

While located in a generally urbanized area, the project study area includes parkland with trees, forested areas, wetlands and open fields with grasses. Eagles, northern long-eared bats, and migratory birds may be present in the project study area. Eagles have been observed in the area and are known to feed and roost near water that attracts fish and birds that provide food sources. In addition, parkland and forested habitats adjacent to the railroad may provide roosting and resting locations. The bridge itself may potentially provide breeding sites for cliff swallows, and crevices and relatively enclosed areas associated with the bridge may provide roosting areas for the northern long-eared bat. However, because the US14/US83/SD34 Bridge is within an urbanized area of Fort Pierre and Pierre, it does not provide suitable habitat for wildlife, other than typical urban species. In addition, several bird species are migrants that avoid areas with considerable disturbance and limited habitat availability.

Bald Eagle

Bald eagles were removed from the endangered species list in 2007 based on recovery and climbing population numbers. However, this species is still federally protected. The Migratory Bird Treaty Act, and more specifically, the Bald and Golden Eagle Protection Act are the main vehicles of federal protection for bald eagles, their eggs, nests, and nesting habitat. In South Dakota, mated pairs return to nest and mate around December, usually incubating eggs by mid-February, and typically have one to two nestlings by the beginning of April. Eaglets leave the nest (fledge) sometime in June or July. Bald eagles are most sensitive to human disturbance during courtship and nest building early in the breeding season, but eggs and nestlings are still very vulnerable until young eagles are ready to leave the nest. Site visits should be conducted to search for existing stick nests as well as to evaluate wildlife habitat prior to construction. No bald eagle nests were observed in or near the study corridor during any site visits conducted to date.

Migratory Birds

Migratory birds are likely to use portions of the project study area for nesting, which occurs primarily between April 1st and July 15th. Migratory birds have the potential to nest on the ground within areas not regularly mowed as well as within trees, large shrubs and on bridge structures. It is expected that no migratory bird surveys will be necessary in non-suitable habitat. Therefore, surveys for migratory birds will occur in suitable areas that have not been mowed or cleared prior to April 1st to determine if there are current nests and to determine offsetting measures to compensate for impacts to migratory birds. Future coordination with the US Fish and Wildlife Service (USFWS) is recommended to identify impacts. Surveys will be conducted within the same year, but prior to construction start in order to capture the current conditions and address possible affects more concisely. If birds (e.g. cliff swallows, other species) are using the existing bridge for breeding, netting and other barriers would be installed during the non-breeding season to ensure that the existing bridge would not be used to support nesting activities during removal of the existing bridge.

Northern Long-eared Bats

Northern long-eared bats (NLEB) may use protected areas under bridges and crevices for roosting; however, they would abandon the bridges during their winter hibernation. The summer prior to construction, the presence of NLEB would be determined, and appropriate measures would be taken to meet the conditions of Programmatic Agreement between FHWA & FWS. If the presence of NLEB is indicated, all suitable roosting areas would be sealed using nets or a suitable barrier to ensure that NLEB would not be able to use these areas for roosting during removal of the existing bridge. It is expected that construction activities would preclude NLEB from using the new bridge during its construction.

Fish Habitat

Within the project study area, the Missouri River, also known as Lake Sharpe, is listed as non-supporting for cold water permanent fish life and propagation beneficial uses. Water temperature during the summer months tends to meet the criterion immediately south of the Oahe Dam, but are often much warmer further downstream. A significant thermocline does not typically develop in Lake Sharpe due to the well-mixed waters from short retention time in the reservoir, relative shallowness, and bottom withdrawal from Big Bend Dam. Because water temperatures during the summer months in Lake Sharpe depend on discharges from the Oahe Dam, the presence of cold water habitat can vary from year to year. Past records have indicated periods of time during the summer months when no cold water habitat exists and none of Lake Sharpe meets cold water temperature criterion.

3.15.1 Impacts of Alternatives

The No-Build Alternative would not impact any of the potential sites of the vegetation, fish and wildlife resources in the project study area.

While several trees along the US 14/US 83/SD 34 highway in Pierre are expected to be removed for the Build Alternatives, there are few examples of riparian forest trees within the project study area that could serve as suitable nesting habitat for the bald eagles. None of these suitable nesting trees are in the project footprint for the Build Alternatives and they will not be affected by new bridge construction or demolition of the existing bridge. There are no anticipated environmental impacts to bald eagles, but additional site visits will be conducted to update information for this possible resource and further coordination with SDDENR and USFWS will occur during final design.

Native vegetation would be planted along areas disturbed by the selected alternative to minimize the establishment of invasive plant species. The ROW should be maintained to prevent the spread of invasive species (e.g., spraying and mowing of invasive species).

Existing bridge demolition may impact roosting. Netting or demolition of the bridge outside of the nesting season would prevent habitat impacts to swallows and bats. Measures will be taken to minimize debris that may be impact fish caused by demolition and construction in the water

3.16 Threatened and Endangered Species

The USFWS Endangered Species database website was reviewed for federally-listed species in Stanley and Hughes counties, South Dakota, and for any designated critical habitat. The project study area was provided to the South Dakota Department of Game Fish and Parks (SDGFP), the South Dakota office of the USFWS, and the South Dakota Natural Heritage Inventory to determine if any state-listed species or species of concern were located within or near the project study area.

Due to the length of time between this EA and planned construction, beginning in 2023, letters soliciting formal Section 7 consultation and “affect” determinations are premature. SDDOT will solicit formal determination from SDGFP & USFWS, based on the recommendations in this document, this will include a reevaluation of the threatened and endangered species prior to final design activities.

3.16.1 Federally Listed Threatened and Endangered Species

Potentially occurring within Hughes and Stanley Counties, South Dakota, five birds, one fish, and one mammal species are federally listed as threatened, endangered, or candidate species. No federally-listed plants are known to exist within these counties.

- The Whooping Crane (*Grus Americana*, Endangered, State Endangered) is a large, extremely rare crane that breeds in Canada and winters on the Texas coast. It is a migrant through South Dakota and may be seen on sloughs, marshes, and fields on its migration through the state. It forages both on land and in shallow water.⁵
- The Piping Plover⁶ (*Charadrius melodus*, Threatened, State Threatened) is a small shorebird that arrives in the Northern Great Plains to breed around mid-April and fly south by mid to late August. They nest on sandbar islands and reservoir shorelines along the Missouri River and reservoirs in Montana, North Dakota, South Dakota, and Nebraska.⁷
- The Least Tern (*Sterna antillarum*, Endangered, State Endangered) feeds in shallow waters of rivers, streams, and lakes. Interior least terns nest in colonies on bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with rivers and reservoirs. Nesting locations are often at the higher elevations away from the water's edge. A few stretches of the Missouri River below Ft. Randall and Gavin's Point dams are the only river segments in South Dakota that still contain naturally occurring sandbar nesting habitat for least terns.⁸

⁵ NatureServe Species Profile Whooping Crane (<http://explorer.natureserve.org/servlet/NatureServe?searchName=Grus+americana> , accessed March 2014)

⁶ NatureServe Species Profile Piping Plover (<http://explorer.natureserve.org/servlet/NatureServe?searchName=Grus+americana> , accessed March 2014)

⁷ Aron, C. 2005. South Dakota Interior Least Tern (*Sterna antillarum* athalassos) and Piping Plover (*Charadrius melodus*) Management Plan. South Dakota Department of Game, Fish and Parks, Pierre, Wildlife Division Report No. 2005-02, 76 pp.

⁸ Aron, C. 2005. South Dakota Interior Least Tern (*Sterna antillarum* athalassos) and Piping Plover (*Charadrius melodus*) Management Plan. South Dakota Department of Game, Fish and Parks, Pierre, Wildlife Division Report No. 2005-02, 76 pp.

- The Redknot (*Calidris antillarum*, proposed threatened, not state listed) is a large shorebird that nests on the Arctic Tundra. It is a migrant in South Dakota, where it can be seen feeding in the shallows of wetlands and rivers.
- Sprague's Pipit (*Anthus spragueii*, Candidate, not state listed) is a small, sparrow-like summer resident and is known to breed in South Dakota. Sprague's pipit prefers shortgrass prairie and forages on the ground in search of seeds and insects.⁹
- The Pallid sturgeon (*Scaphirhynchus albus*, Endangered, State Endangered) is a large fish with populations that have undergone severe decline due to habitat modifications, commercial fishing, and possibly pollution. The pallid sturgeon is currently found in fragmented segments of free flowing river within historic range, as well as upstream portions of impoundments.¹⁰
- The northern long-eared Bat (*Myotis septentrionalis*, Proposed Endangered, not state listed) spends winter hibernating in large caves or mines with large passages and entrances, constant temperatures, and high humidity with no air currents. During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of trees. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds, and may roost in suitable cool, protected areas in bridges.¹¹
- Black footed ferret (*Mustela nigripes*, Endangered, State Endangered) is the only ferret native to North America. Black-footed ferrets are endangered because of disease, prairie dog eradication programs, and much of the prairie habitat on which the ferrets depend has been plowed for crops. They have been reintroduced in two sites in central South Dakota.¹²

3.16.2 State Listed Species

A South Dakota Natural Heritage Data request for all state-listed Threatened and Endangered species (flora and fauna) within the area of Fort Pierre and Pierre that were associated with the project study area for the Missouri River crossing identified one reptile, one raptor, and one mammal. No state listed plants are listed as being present with the project study area.

- The false map turtle (*Graptemys pseudogeographica*, State Threatened) inhabits slow moving rivers, river sloughs, oxbow lakes, lakes and reservoirs containing abundant aquatic vegetation and basking sites. It is active from April through October, spending much time basking on logs or rocks. South Dakota is on the northwestern edge of its range with locations being primarily associated with counties along the Missouri River. Numbers are decreasing, possibly due to several factors including water pollution, river channelization, impoundments, reduction of suitable nesting sites, siltation, and unlawful shooting, and limited availability of basking sites in the form of deadwood snags.¹³ The South Dakota Natural Heritage Inventory identified a

⁹ Jones, S. L. 2010. Sprague's Pipit (*Anthus spragueii*) conservation plan. U.S. Department of Interior, Fish and Wildlife Service, Washington, D.C

¹⁰ Aron, C. 2006. South Dakota Pallid Sturgeon (*Scaphirhynchus albus*) Management Plan. South Dakota Department of Game, Fish and Parks, Pierre, Wildlife Division Report No. 2006-01, 96 pp.

¹¹ NatureServe species report Northern Myotis (<http://explorer.natureserve.org/servlet/NatureServe?searchName=Myotis+septentrionalis> , accessed March 2014)

¹² NatureServe Species Profile Black Footed Ferret (<http://explorer.natureserve.org/servlet/NatureServe?searchName=Mustela+nigripes>, accessed March 2014)

¹³ USGS Northern Prairie Wildlife Research Center Species Profile False Map Turtle (<http://www.npwrc.usgs.gov/resource/wildlife/sdrare/species/grappseu.htm> , accessed March 2014).

population of false map turtles in Griffin Park where Hilger's Gulch has a confluence with the Missouri River. This location is approximately two miles downstream of the Project Area.

- The bald eagle (*Haliaeetus leucocephalus*, State Threatened) is associated with riparian habitat along coasts, rivers, and lakes. Winter roost sites typically consist of clusters of large cottonwoods and are usually in areas protected from harsh weather and human disturbance. The bald eagle was removed from the federal List of Endangered and Threatened Wildlife (Federal Register 72: 37346-37372) in 2008, but is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act¹⁴ and is a South Dakota State Threatened Species. Bald eagles have been observed in the project study area, but no nests have been observed during any field work performed to date.
- River otters (*Lontra Canadensis*, State Threatened) are active year-round and have few natural predators. Riparian vegetation along a wetland margin is a key habitat feature. Beaver bank dens, either active or abandoned, are important sites for temporary otter denning or resting. Water storage reservoirs often do not support river otter populations because of the annual draw down, the lack of vegetative cover for otters and prey species, and the absence of sites for denning and resting.¹⁵ River otters were observed in the project study area in 2003 and 2004, but no dens were observed.

3.16.3 Impacts of Alternatives

No impacts would occur to Threatened and Endangered Species for the No-build alternative.

For the Build Alternatives, potential impacts could occur to listed species present within the project study area, including those that may be listed before construction would begin. However, the US14/US83/SD34 Bridge is within developed areas of Fort Pierre (Stanley County) and Pierre (Hughes County), and does not provide suitable habitat for many of the listed species. In addition, several bird species are migrants that avoid areas with considerable disturbance and limited habitat availability. Netting or demolition of the bridge prior to nesting or roosting would prevent habitat impacts to bats. Further coordination with SDDENR and USFWS will occur during final design to determine whether species have been added to, or removed from the list of threatened and endangered species, whether they are likely present in the vicinity of the constructions limits of the preferred alternative, and whether they would be impacted by construction activities. The following describes species for which no impacts are expected under the Build Alternatives:

Federally Listed Species

- No project impacts are expected for the whooping crane and the red knot. The whooping crane is extremely rare. Both species are migrants and are known to avoid inhabited, urbanized areas that would be characteristic of the riverine habitat and both banks of the Missouri River within the project study area. Little shallow water is available that would support feeding during migration.
- Similarly, no impacts are expected for the least tern or piping plovers. The only potential habitat available for these wading birds would be the exposed sand bars of Discovery Island, which is outside of the project study area.

¹⁴ NatureServe Species Profile Bald Eagle
(<http://explorer.natureserve.org/servlet/NatureServe?searchName=Haliaeetus+leucocephalus> , accessed March 2014)

¹⁵ NatureServe Species Profile River Otter
(<http://explorer.natureserve.org/servlet/NatureServe?searchName=Lontra+canadensis> , accessed March 2014)

- At the present time, no impacts are expected for the pallid sturgeon. However, if potential adverse impacts to the pallid sturgeon are expected under a formal Section 7 consultation, a Biological Opinion may be necessary. Consultation with the USFWS is recommended during design to identify impacts and develop mitigation as necessary. Mitigation would include restricting demolition and construction activities in water from April 15 to June 1 to avoid impacts to Pallid Sturgeon spawning..
- No impacts are expected to the Sprague's pipit which is known to prefer native short grass prairie, which is entirely absent within the project study area.
- No impacts are expected for the NLEB because the conditions of Programmatic Agreement between FHWA & FWS require that if the presence of NLEB is indicated, all suitable roosting areas would be sealed using nets or a suitable barrier to ensure that NLEB would not be able to use these areas for roosting during removal of the existing bridge.
- No impacts are expected to the black-footed ferret, which depends on extensive prairie dog towns that are completely lacking within the project study area.

State Listed Species

Potential impacts to state listed species are similarly limited by lack of suitable habitat. While the South Dakota Heritage Inventory has listed observations of false map turtles and river otters within and near the project study area, no river otter dens and no breeding areas for the false map turtle are listed. Furthermore, stagnant water and highly vegetated aquatic habitats are lacking. River banks consist of riprap, and do not provide suitable den sites for river otters. Basking sites for false map turtles are limited.

3.17 4(f) / 6(f) and FHWA Coordination

Section 4(f) of the DOT Act states that federal highway projects avoid using and minimize harm to a significant publicly owned park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless there is no feasible and prudent alternative. New guidance regarding 4(f) resources was provided in the FHWA Section 4(f) Policy Paper, published in July 2012.

Section 6(f)(3) of the Land and Water Conservation Fund (LWCF) Act states that no property acquired or developed with assistance under this section shall, without the approval of the Secretary, be converted to other than public outdoor recreation uses.

The project area was reviewed to identify all parks, recreational areas, and wildlife and waterfowl refuges where Section 4(f) or Section 6(f) may apply. The following information summarizes the findings of potential effects to these resources. Consultation has occurred with the officials with jurisdiction over these resources and mitigation measures and agreement of temporary or *De Minimis* Section 4(f) findings have been reached. After consideration of all public comments received, following release of the EA, a formalized agreement with the officials with jurisdiction will be executed. The City of Pierre Ordinances (Chapter 5 – Property, Article 2 – Parks) describes properties owned and held by the City for use as Parks. The following ordinances relate to parks located within the project area.

Section 5-2-101 - E. Steamboat Memorial Park. That part of Outlots "E" and "F" to the City of Pierre, South Dakota, commencing at a point where the westerly line of William Street¹⁶, extended, intersects the southerly line of Missouri Avenue, thence southerly along the westerly

¹⁶ Williams Street was renamed Poplar Street. This ordinance describes an area to the west of US14-83 and is the property bounded by US14-83, Missouri Avenue, Poplar, and the Missouri River.

line of William Street, extended, to the Missouri River thence northerly along the said river to a point where the said River intersects the southerly line of the State Highway Right-of-Way, thence along the southerly line of the State Highway Right-Of-Way to its intersection with the southerly line of Missouri Avenue and continuing along the said southerly line of Missouri Avenue to place of beginning.

Section 5-2-101 - A. Hipple Park. The area between U.S. Highway 14-83, Dakota Avenue and James Street

Section 5-2-104 Additional city parks set aside for public use. - B. That part of Outlots F and G owned by the city of Pierre is hereby designated for park purposes.

The City of Fort Pierre has no designated parks within the Project Area.

One recreational facility is located within the project area consisting of multi-use paths. The paths are located along the river in both Pierre and Fort Pierre and are connected with a pathway on the south side of the bridge deck.

No 6(f) wildlife or waterfowl refuges are located within the project area.

Steamboat Park

Steamboat Park is situated south of the US83/US14/SD34 Missouri River Bridge, adjacent to the Missouri River. The park includes playground equipment, 2 picnic shelters, an amphitheater, bathrooms and green space. A recreational trail is available for walking, running, and biking along the Missouri River on the west side of the Park. This Park is also used to host special events during parades, and other local festivities.

LWCF project 46-00518, 05/07/1976 funds were used in Steamboat Park to construct a shelter, playground equipment, comfort station/storage building. Some of the features have since been removed however the described project area remains encumbered under the LWCF Act.

Section 4(f) applies to Steamboat Park because it is a significant publicly owned park. Connection of the path from the bridge to Steamboat Park, depending on the final design, may be a temporary use of park property. Use of the path will be maintained or a detour providing access will be provided during construction. This temporary use would be considered a De Minimis Section 4(f) impact as:

- the path construction would not affect any features, activities, or attributes of the park which qualifies the property for protection under Section 4(f)
- the new Americans with Disabilities Act (ADA) accessible path connection would be considered an enhancement to the park

Section 6(f) applies to project boundary established in the Land and Water Conservation funds (LWCF) Project Agreement #46-00518. Connection of the path from the bridge to Steamboat Park, depending on the final design, may be a temporary use of LWCF property. Use of the path will be maintained or a detour providing access will be provided during construction. A new, ADA accessible path connection would be considered an enhancement to the LWCF property and therefore would not require a conversion as it would remain as public outdoor recreational use.

Hipple Park

Hipple Park consists of green space in a triangular parcel between James Street, Dakota Avenue, and West Sioux Avenue. It is designated as Outlot “F” on the City of Pierre’s parcel map, and is zoned as an “Agricultural District”, although no agricultural features are present. Hipple Park includes the Mayor’s Grove of trees where markers are placed near the trees to honor former Pierre mayors. Mayor’s Grove is maintained by the Pierre City Arbor Committee and the Pierre Parks Superintendent. The area designated as Hipple Park is owned by the City and is designated as a park under City’s Ordinance, Section 5-2-101.

No 6(f) LWCF funds have been used in Hipple Park.

A publicly owned park, recreational area or wildlife or waterfowl refuge must be “a significant resource” for Section 4(f) to apply (23 CFR 774.11(c)). Hipple Park does not contain features, attributes or activities that would qualify this park for protection under Section 4(f) and therefore the City and FHWA do not consider this area as a significant park resource for the City of Pierre.

Section 4(f) does not apply to Hipple Park because it is not a significant park resource for the City of Pierre.

Section 6(f) does not apply to Hipple Park.

Outlot “F” between the Ramkota Hotel and the Missouri River

Outlot “F” is located between the Ramkota Hotel and the Missouri River. This area is owned by the City of Pierre. It is currently zoned as part of the “River Front and Park Districts” and is “designated for park purposes” under City Ordinance, Section 5-2-104. The area has been developed with recreational paths and a disc golf course. The City of Pierre has indicated it plans to add this site as an “official park” in the future, and may decide to do this before the bridge is built. In that case, a transportation corridor easement would be included to accommodate the future bridge area.

No 6(f) Land and Water Conservation funds have been used in the Outlot “F”.

Section 4(f) applies to Outlot “F” because it is designated for park use in the City’s ordinances. Development of the area with recreational paths and the disc golf course make this a significant park. Further, these are important, valuable, recreational features of the park which Section 4(f) is designed to protect. A sliver of Outlot “F” would be converted for highway use. Minor modifications to the existing sidewalks and possibly the disc golf course may be required.

Use of this Section 4(f) property would be considered a De Minimis Section 4(f) impact. This project will, at a minimum, replace these features with similar or better features at a time and in a location that results in no adverse effect to the recreational activities. In addition, the project will make additional property available for park use including an area under the new bridge abutment that will remain as Transportation ROW and is reserved for future transportation purposes. Some of the land, adjacent to the north side of Steamboat Park, will be vacated through the removal of the existing roadway and will become park land. This additional property will add to the square footage of park property.

Section 6(f) does not apply to Outlot “F”.

Paths

A recreational multi-use path is located within the project area, along the south side of the bridge which continues and connects to a network of paths along the Missouri River in both Pierre and Fort Pierre. It connects to the Lewis and Clark Bicentennial Trail which spans 26 miles between the Oahe Dam in Stanley County and Farm Island Recreation Area in Hughes County. No 6(f) LWCF funds have been used on the Trails.

Section 4(f) applies to the trails because they are used for recreational purposes. As long as access to and use of the trails can be maintained or a detour providing access during and after construction, minor changes to the trail system would be considered a De Minimis impact under Section 4(f).

Section 6(f) does not apply to the Trails.

The Lewis and Clark National Historic Trail

The Lewis and Clark National Historic Trail was established in 1978 as an amendment to the National Trails System Act. The Trail follows the Lewis and Clark Expedition route from Wood River, Illinois to the mouth of the Columbia River in Oregon and includes the route, remnants, campsites, and artifacts of the Lewis and Clark Expedition. In the project area, the waterway Trail follows the Missouri River, and the US83/US14/SD34 Bridge crosses over it. Adjacent to the project area, the state designated Lewis and Clark Trail auto route trail follows Highways 14/86/1806 on the Fort Pierre side and Highways 1804/34 on the Pierre side, and campsites are mapped along the route¹⁷ in Pierre and Fort Pierre.

Section 4(f) does not apply to the Trail. Only lands or sites adjacent to historic trails that are on or eligible for the NRHP are subject to Section 4(f). Otherwise (pursuant to Public Law 95-625), National Historic Trails are exempt from Section 4(f). In addition, in the correspondence with the National Park Service (NPS), since the proposed bridge is replacing an existing bridge, NPS does not foresee impacts to the Trail, but requests that consideration be given to the Trail regarding construction, design, and lighting to avoid impacts to the Trail visitors' experience.

Railroad Bridge

The former DM&E Railroad, now owned by RCP&E Railroad, is listed on the Federal Register of Historic Places.

¹⁷ <http://www.nps.gov/lecl/planyourvisit/directions.htm>

Figure 3-4: The Former DM&E Railroad Bridge



Section 4(f) would apply to the railroad as a historic resource, however impacts to this property are not anticipated and a finding of no adverse direct or indirect effects was submitted to the State Historic Preservation Office (SHPO).

Section 6(f) does not apply to the railroad.

Other properties in the project area were evaluated as historic resources, but not considered eligible for nomination on the Federal Register of Historic Places:

- Municipal Light and Power Building
- Warehouse on Charles Street
- House on South James Street
- Steamboat Park Pump House No. 2
- Steamboat Park Pump House No. 3
- Steamboat Park Pump House No. 5
- Museum Schoolhouse
- US 14/83/SD34 Highway Bridge

3.17.1 Impacts of Alternatives

The No-build alternative would not affect 4(f)/6(f) properties.

During the development of alternatives for the US83/US14/SD34 Missouri River Bridge EA, it was determined that portions of 4(f) parkland in the City of Pierre would be used for the placement of the

bridge, while excess ROW would remain, adjacent to the parks, resulting from the removal of the existing bridge. This excess ROW is located between Steamboat Park and Outlot “F” in the City of Pierre. Refinements to N1.1 resulted in the following uses and benefits to 4(f) resources, considered a *De Minimis* finding.

- 1.1 acres of ROW would be added to Steamboat Park, excess ROW resulting from the removal of the existing bridge.
- New, ADA accessible path connections to existing trails in Pierre and Fort Pierre would be considered an enhancement to the parks.
 - As long as access to and use of the trails can be maintained or a detour providing access during and after construction, minor changes to the trail system would be considered a *De Minimis* impact under Section 4(f).
- 0.9 acres in the south portion of Outlot “F” would be converted for highway use. Minor modifications to the existing sidewalks and possibly the disc golf course may be required.
- Transportation ROW, approximately 1.1 acres, adjacent to the north side of Steamboat Park, will be vacated through the removal of the existing roadway and will become park land. This additional property will result in a net gain to the total square footage of park property in the City of Pierre.
- Section 4(f) would apply to the railroad as a historic resource, however impacts to this property are not anticipated and a finding of no adverse direct or indirect effects was submitted to the SHPO.

Other features to Steamboat Park and trails were discussed during study coordination meetings, but are not part of this project. These features include the addition of 0.59 acres of open space between Steamboat and Hipple parks as a result of the removal of the Dakota Avenue Ramp, a paved cul-de-sac that would be gated to the north of the existing Steamboat Park parking area, and fishing piers under the bridge on the banks of the river. As part of the construction of the US14/US83/SD34 Bridge and roadway, the Dakota avenue pavement would be removed.

3.18 Regulated Materials

A limited environmental assessment was conducted to identify potential sites of environmental concern within and adjacent to the project study area. Potential sites of environmental concern are those properties identified to have current or former spills, leaks, or bulk storage of regulated materials as identified through public records and site reconnaissance. Such sites may pose additional liability, cleanups costs, and safety concerns during construction of the US14/US83/SD34 Bridge.

An Environmental Data Resources (EDR) Radius Map™ Report provides a summary of an environmental database search conducted on federal, state, and local records that identify properties that may present recognized environmental conditions (RECs) based on current or historical site operations. The project study area was used as the boundary for the database search, with standard search radii determined by the Environmental Protection Agency’s Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) and the American Society for Testing and Materials Standard Practice for Environmental Site Assessments (E 1527-13).

Eight sites were identified as potential sites of environmental concern. In addition, a listing of records from the Environmental Events/Spills and Tanks databases provided by the SDDENR Tank Section and Abandoned Tank Removal Program identified one more site within the Study Area. Table 3-10 summarizes the nine potential sites of environmental concern.

Table 3-10: Potential Sites of Environmental Concern within Study Area

Figure 3-A ID	EDR ID	Site Name	EDR Database	Reason for Environmental Concern	Field/Desktop Observations
1	1	Kerr McGee – Truck Tank Overfill	LUST, SPILL (multiple)	A release of 100 gallons of diesel fuel associated with a Leaking Underground Storage Tank (LUST), and four SPILL incidents of diesel fuel are associated with this site.	Field observations show that the site is currently occupied by a hotel. Historical maps accessed in Google Earth indicate a gas station was present as recently as 2009.
1	2	806 W Sioux Avenue	RGA LUST	Appears in a Recovered Government Archive (RGA) LUST database from 2005-2012.	See above.
1	3	806 W Sioux Ave	EDR US Hist Auto Stat	The address is listed as a historical automotive station in 1999.	See above.
1	4	310 James St	EDR US Hist Auto Stat	The address is listed as a historical automotive station from 1999-2007.	See above.
1	5	Roadway Express	UST	A total of 12 underground storage tanks are listed for this site, all of which have been removed.	See above.
1	6	808 W Sioux Avenue	RGA LUST	The site appears in a RGA LUST database from 2006-2012.	See above.
1	7	Kerr McGee / Pam Oil – Pump N Pak	LUST	A ‘No Further Action’ letter was issued for this LUST site on May 3, 2013.	See above.
1	9	808 West Sioux Avenue	RGA LUST	The site appears in a RGA LUST database for 2000-2003 and 2005-2012.	See above.
1	10	808 West Sioux Ave	RGA LUST	The site appears in a RGA LUST database from 2000-2003.	See above.
2	8	Discovery Center & 2011 Flood Event	LUST, RGA LUST	A fuel oil release associated with a LUST. The site appears in a RGA LUST database from 2005-2012.	Online imaging indicates this property is currently a science center and aquarium.
3	11	A.G.E. Corporation	RCRA-SQG, FINDS	Listed as a Resource Conservation and Recovery Act (RCRA) small quantity generator (SQG) of hazardous waste. The last reporting date is listed as 1997.	Both field and desktop observations indicate that this site is currently vacant.
4	12	Shels Gas Stop (CJ 66)	UST	Registered Underground Storage Tank (UST) site with four active tanks and five removed tanks.	Online imaging indicates that this site is currently a gas station.

Table 3-10: Potential Sites of Environmental Concern within Study Area

Figure 3-A ID	EDR ID	Site Name	EDR Database	Reason for Environmental Concern	Field/Desktop Observations
4	14	621 W Sioux Ave	EDR US Hist Auto Stat	Listed as a historical automotive station from 1999-2000.	See above.
4	15	CJ's 66	LUST, RGA LUST	A petroleum release was reported in 1989. The site appears in a RGA LUST database from 2001-2012.	See above.
5	13	Friman Oil & Gas Co Inc.	UST, AST	Listed as an Aboveground Storage Tank (AST) site with nine active ASTs ranging from 10,000 gallons to 110,000 gallons. One removed UST is listed.	Online imaging shows what appear to be several large ASTs currently present at this site.
6	16	Clean ATP – Days Inn	LUST, RGA LUST	A release from an underground storage tank was reported in 2002. The site appears in a RGA LUST database from 2008-2012.	Online imaging indicates this site is currently a Days Inn hotel.
7	19	DJ's C-Store Line Leak	LUST, RGA LUST	A petroleum release was reported in 2009. The site appears in a RGA LUST database from 2010-2012.	Online imaging indicates this site is currently a gas station.
7	20	507 W Sioux Ave	EDR US Hist Auto Stat	The address is listed as a historical automotive station from 2001-2009.	See above.
7	21	Friman Amoco – DJ's	LUST, RGA LUST	Two historical releases (petroleum in 1993, waste oil in 2008) from underground storage tanks are listed for this site. The site appears in a RGA LUST database from 2007-2012.	See above.
7	22	DJ's Amoco (Clark)	UST	The site is listed as having three active USTs and has had five USTs removed.	See above.
8	23	500 W Sioux Ave	EDR US Hist Auto Stat	The address is listed as a historical automotive station from 2011-2012.	Online imaging indicates this site is currently occupied by multi-tenant commercial structures and associated parking areas.
9	N/A ^a	Ramkota River Center	N/A ^a	The South Dakota Environmental Events/Spills database lists two spills for this site in 1989 and 2011.	Online imaging indicates that this site is currently a large hotel and conference center.

^a N/A=Not applicable because not captured in EDR database search.

In addition to these sites, a number of underground storage tank (UST) releases and removals are reported on the eastern and southeastern periphery of the project study area; however this does not preclude these adjacent sites from potentially impacting the project study area. Given the age of development of Pierre and Fort Pierre, it is recommended that additional historical resources (e.g., aerial photographs, Sanborn fire insurance maps, topographic maps) also be examined to identify any RECs that may predate the records searched and presented in the EDR Report.

The sites listed above were those identified through a limited investigation, and a more thorough examination of current and historical sources is recommended in final design to determine any additional sites of concern not identified by the sources discussed above.

3.18.1 Impacts of Alternatives

The No-Build Alternative would not impact any of the potential sites of environmental concern identified above.

The potential sites of environmental concern listed in Table 3-10 may require field screening for impacted media and subsequent management of any impacted media discovered during demolition or excavation activities. Further investigation is recommended in final design. Also, given that the project is located within an urban area, the SDDNR requested that their office be notified prior to construction.

3.19 Construction

The impacts of construction would primarily be temporary and limited to the period of construction. Details of construction impacts will be determined in final design. The following outlines the typical BMP's, guidelines and regulations that would be followed to minimize impacts during construction.

- Previously defined BMP's, in accordance with SDDOT construction manuals, would be used to mitigate construction-related noise impacts. Emissions caused by vehicle delays, construction vehicles, and related equipment and activities generating dust would be minimized to the extent possible by implementing smooth traffic-flow patterns and water sprinkling. Therefore, the project is not expected to change the attainment air quality status of the area.
- The amount of sedimentation from soil erosion would not increase substantially due to the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activities requirements that limit post construction erosion to preconstruction levels (typically achieved through reestablishment of vegetation, and structural devices such as berms and energy dissipation structures). BMPs would be implemented through the General Permit to minimize impacts to the Missouri River.
- Special construction measure should be taken to ensure that the total suspended solids standard of 30mg/L is not violated.
- All fill material should be free of substances in quantities, concentrations, or combinations which are toxic to life.
- All material identified as waste, material stockpiles, dredged or excavated materials, for either temporary or permanent disposal, should be placed in an upland site that is not a wetland, and measures should be taken to ensure the material cannot enter a watercourse through erosion or any other means.
- *The existing presence of lead paint on the bridge requires that the lead-based paint and related debris must be disposed of in accordance with all applicable federal, state and local laws governing such disposal. All necessary measures and precautions shall be taken to ensure worker*

safety for work involving lead particles. Removal of lead-based paint should occur before torch cutting, grinding, rivet busting, or other lead-emitting tasks. Removal operations will need to be planned accordingly, and employees informed of the hazards of lead exposure.

- Removal of vegetation should be confined to those areas absolutely necessary for construction. For any construction areas that would remain un-vegetated for an extended period of time, such as over the winter, temporary seeding would be required in accordance with the Storm Water Pollution Prevention Plan (SWPPP).
- A traffic control plan would be developed during final bridge and roadway design. As part of this process, the traffic control plan developed during final design would minimize the amount of disruption to traffic while ensuring the safety of motorists. Due to the construction an off-alignment replacement bridge, traffic detours are anticipated to be minimal. Arterial roadways would remain open or closed for short durations throughout construction. Therefore, the amount of traffic to be detoured for the Project is anticipated to be minimal. Due to the distance of the construction zone and limited detour routes in the area, minimal sensitive noise receptors (i.e. schools, residences) may be located adjacent to the routes. This factor as well as the anticipation of any detours to be for short duration, the impacts to sensitive receptors would be minor and short term. Regarding economic impacts due to traffic detours, businesses located within the project study area rely upon the traveling public, so detours are recommended to be short-term. Part of the alternatives selection criteria was to limit detours, so impacts to these businesses during construction are anticipated to be minimal.
- Equipment with point source emission may be required to have an air quality permit. Equipment should be evaluated to determine whether a permit is required by contacting the SDDNR Air Quality Program.
- As part of the construction of the US14/US83/SD34 Bridge and Roadway, the connection from the highway to on Dakota avenue roadway would be removed.

3.20 Cumulative Impacts

Cumulative impacts are the impacts on the environment, which result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR § 1508.7).

Reasonably foreseeable actions are those that are likely to occur and are based on reliable sources, such as documentation of local plans. The following sections describe the past, present, and reasonably foreseeable actions and impacts.

3.20.1 Past Actions

Explorers, including Lewis and Clark, first came to the region in the late 1700's and early 1800's to find the area inhabited by Sioux and Arikara Native American Tribes. Grasslands covered much of the area, and buffalo and beaver were plentiful in the region. The fur trade began in the area and along with arrival of the railroad in mid to late 1800's attracted settlers to the region. Once the railroad was complete, settlers caused the development of the land in Pierre & Fort Pierre, which were connected by a ferry at that time.

Construction of the Oahe Dam began in 1948 and has changed the flooding in the area, both preventing and controlling water, causing flooding when the release of water is necessary. A roadway truss bridge was built over the Missouri River in 1926, and was replaced in 1962 by the US14/US83/SD34 Bridge that

is used today. These infrastructure improvements were a result of the development that has occurred in the Fort Pierre and Pierre area.

According to the 2010 census, the population in Pierre was 13,646 and 2,078 in Fort Pierre. The project study area in Pierre has been developed over the years with businesses along Sioux Avenue, and also includes city parkland along the Missouri River and south Sioux Avenue. The city of Fort Pierre includes some development to the south of US14/US83/SD34, but also includes undeveloped, private land on both the north and south sides of the roadway.

3.20.2 Present Actions

In the project study area, Pierre has previously been developed with roadway, businesses, and community developments such as the Chamber of Commerce and Discovery Center, a science center and aquarium. Maintenance of these structures and redevelopment of the area has occurred in the area, including a new hotel and restaurant that opened on the north side of Sioux Avenue in 2012.

In Fort Pierre, areas within the project study area have been developed with roadway and businesses, although there is some open land readied for development. Water and sewer utilities have been extended to the north and south sides of US14/US83/SD34 that would facilitate future developments. Also, a paved cul-de-sac along the south side of US14/US83/SD34 provides an area to access biking and walking trails along the Missouri River.

3.20.3 Reasonably Foreseeable Future Actions

Continuing redevelopment in Pierre and development in Ft. Pierre can be expected in the next several years. A 28-acre residential and commercial development in Fort Pierre has been planned along Island Drive in Fort Pierre. Development of 28-acres of private, open space north of US14/US83/SD34 can be expected, with municipal sewer and water utilities accessible to the site. The City of Pierre is planning to replace water lines that run perpendicular to the US14/US83/SD34 roadway in Pierre in the next several years. The City of Pierre is planning to include the Outlot "F", located north of the bridge and along the Missouri River, as an official park and will add irrigation to the disc golf course. Enhancements to bicycle and pedestrian paths in both Pierre and Fort Pierre can be expected as there is much public support for these amenities.

3.20.4 Cumulative Impact Conclusion

The past actions related to settlement include development of open space, including grasslands, which converted permeable surfaces to impermeable surfaces in the developed urban areas. These past actions have resulted in impacts to water quality, wildlife, land use, and waters of the U.S. in the Project Study Area.

The impacts from the present and reasonable foreseeable future actions are, or will be minimized or mitigated as result of planning and coordination efforts of projects considering the regulatory environment that limits the impacts of the actions to water quality, air quality, etc. Impacts to wetlands, waters of the U.S., or threatened and endangered species habitats would be limited by federal regulations, which may include permits and/or mitigation requirements. Air quality is not expected to be impacted in the project area.

While the project study area in Pierre has previously been developed, which created impervious areas, Fort Pierre can be expected to further develop north and south of the US14/US83/SD34 roadway. Development within floodplains and parkland would be limited due to these areas serving as water storage areas to minimize future damage from flooding. Impacts to the designated floodplain would

require coordination with the local designated floodplain manager. Storm water and surface water impacts would be mitigated by storm water detention requirements for the impervious areas.

Beneficial impacts resulting from this project are expected to include better, ADA accessible bicycle and pedestrian paths, including a path that is wider than the existing path along the south side of the US14/US83/SD34 Bridge. Also, parkland in Pierre is expected to increase, and open space will connect Hipple and Steamboat Parks in Pierre with the removal of Dakota Avenue.

CHAPTER 4

ENVIRONMENTAL COMMITMENTS

This chapter includes a summary of the environmental commitments for the project that have been described throughout this document. These commitments will be carried forward into final design and construction for the project.

4.1 Summary of Environmental Commitments

- **Utilities:** Utilities that are located along, or within the US14/US83/SD34 roadway ROW of the existing bridge will be relocated if necessary during construction. Some utilities located within the ROW may require permanent easements. During the design phase of the project, SDDOT and FHWA will coordinate with utilities, municipalities, and the counties to avoid or minimize interruptions in service during construction.
- **Bicyclists and Pedestrians:** In addition, connections from the bicycle and pedestrian path on the bridge to the paths within the parks in Pierre and to the Lewis and Clark Bicentennial paths will be enhanced, including providing ADA access to the paths (see Section 3.16 4(f)/6(f) Resources for more information regarding the improvements to the trail system under the Build Alternatives). During construction, detours will be provided to maintain access to the bicycle and pedestrian paths within the project study area.
- **Historical & Archaeological:** If the project study area changes in final design, the area will be surveyed for cultural resources. If during construction, evidence of cultural resources is encountered, construction activities will immediately cease and SDDOT will be contacted to determine the appropriate course of action.
- **Economic Resources:** All property acquisitions will conform to the UA of 1970, as amended by the Surface Transportation Assistance Act of 1987 and as codified in 49 CFR 24, effective April 1989. SDDOT's ROW Program is responsible for acquiring any property necessary for highway purposes and for acquisitions per the UA.
- **Relocations:** No relocations of residences or business will occur from this project. However, some land will need to be acquired from a local business and a private property for this project. All property acquisitions will conform to UA of 1970, as amended by the Surface Transportation Assistance Act of 1987 and as codified in 49 CFR 24, effective April 1989. SDDOT's ROW Program is responsible for acquiring any property necessary for highway purposes and for acquisitions per the UA.
- **Wetlands and Other Waters of the U.S.:** While no wetlands will be filled for this project, if design changes require an impact to wetlands, a USACE Section 404 permit with 401 Water Quality Certification from SDDENR will be required. The Missouri River is listed as a Navigable Water by USACE, regulated as a Water of the United States under Section 10 of the Rivers and Harbors Act. Requirements for Section 10, Section 404/401, and USCG permits regarding the demolition and replacement of the bridge in the Missouri River will be determined and provided in later phases of the project.

If required by USACE, mitigation measures will be undertaken. A wetland mitigation plan will be prepared for the Section 404/401 permit application, and a mitigation plan will be developed and coordinated with the resource agencies. For wetlands found not under the jurisdiction of the USACE, FHWA regulations (23 CFR 777.9) will apply and mitigation for

permanent impacts to wetlands will be required. Mitigation will occur through on-site mitigation, off-site mitigation, or a mitigation bank.

Once a full project plan is developed for the removal and construction of a new Missouri River bridge, it should be sent to USACE immediately to avoid possible delays regarding permitting.

- **Water Quality:** BMP's such as sump catch basins on approach roadways, and swales within green spaces on approach ROW at select locations will be utilized where feasible during final design to provide water quality.

BMP's will be implemented through the NPDES General Permit for Storm Water Discharges Associated with Construction Activities to minimize impacts to the Missouri River. In addition, BMP's will ensure the water source protections areas are accounted for during the Project. Any groundwater wells will be confirmed during physical survey, and if impacted, will be properly capped and sealed. Any impacted wells and connections will be replaced for properties that were not fully acquired. It is anticipated that the Build Alternatives will not impact the water resources in the area due to the incorporation of BMPs into final design and construction.

- **Floodplain:** The floodplain as currently mapped would not be impacted by the proposed bridge. However as part of the final design process the SDDOT may be required to complete, depending on the 10-year cycle of updated FEMA maps, a floodplain analysis and issuance of a "no-rise" certification that will be sent to FEMA (Region 8), Pierre and Fort Pierre. The cities of Pierre and Fort Pierre participate in the FEMA National Flood Insurance Program.
- **Vegetation, Fish & Wildlife:** Existing bridge demolition may impact roosting. Netting or demolition of the bridge prior to nesting or roosting will prevent habitat impacts to swallows and bats. Fish may be impacted by debris caused by demolition and construction in the water. Construction activities in water are restricted from April 15 to June 1 to avoid impacts to fish spawning. If construction is planned within the nesting season, surveys for migratory birds should be conducted prior to construction. SDDOT will coordinate with the USFWS to determine appropriate offsetting measures for impacts to migratory birds after potential impacts have been identified. Surveys will be conducted within the same year, but prior to construction start in order to capture the current conditions and address possible affects more concisely. If birds (e.g. cliff swallows, other species) are using the existing bridge for breeding, netting and other barriers will be installed during the non-breeding season to ensure that the existing bridge will not be used to support nesting activities during removal of the existing bridge.
- **Threatened and Endangered Species:** Further coordination with SDDENR and USFWS will occur during final design to determine whether species have been added to, or removed from the list of threatened and endangered species, whether they are likely present in the vicinity of the constructions limits of the preferred alternative, and whether they will be impacted by construction activities. Due to the length of time between this EA and planned construction, planned to begin in 2023, letters soliciting formal Section 7 consultation and "affect" determinations are premature. SDDOT will solicit formal determination from SDGFP & USFWS, based on the recommendations in this document, including updates to listed species, closer to the planned construction activities. Prior to construction, surveys for the presence of Bald Eagles and Northern Long-eared Bats will be conducted.
- **4(f) / 6(f) Resources:** This project will, at a minimum, replace the park features with similar or better features at a time and in a location that results in no adverse effect to the recreational activities. In addition, the project will make property available for park use including an area

under the new bridge abutment that will remain as Transportation ROW, reserved for future transportation purposes. Some of the land, adjacent to the north side of Steamboat Park, will be vacated through the removal of the existing roadway and will become park land. ADA access to the paths within the parks will be provided. During construction, detours will be provided to maintain access to the bicycle and pedestrian paths within the project study area. Dakota Avenue pavement will be removed as part of this project. In addition, consideration will be given to the Lewis and Clark National Historic Trail regarding construction, design, and lighting to avoid impacts to the Trail visitors' experience.

- **Regulated Materials:** Further investigation will be conducted on regulated materials in final design. Also, given that the project is located within an urban area, the SDDENR requested that their office be notified prior to construction. Any areas of soil staining, buried drums, or UST's found during construction will be reported to and coordinated with SDDOT and SDDENR prior to working in the area.
- **Storm water:** The amount of sedimentation from soil erosion will not increase substantially due to the NPDES General Permit for Storm Water Discharges Associated with Construction Activities requirements that limit post construction erosion to preconstruction levels (typically achieved through reestablishment of vegetation, and structural devices such as berms and energy dissipation structures). BMP's will be implemented through the General Permit to minimize impacts to the Missouri River.
- **Construction:** See Section 3.19 Construction for additional BMP's required during construction.

CHAPTER 5

COMMENTS AND COORDINATION

This chapter describes the communication that has taken place and documents the comments received throughout the US14/US83/SD34 Bridge study, including with State and Federal resource agencies, local governments and communities, Tribes and stakeholders

5.1 Agency Coordination

Agency coordination on the US14/US83/SD34 Bridge has taken place throughout the study with several State, Federal and local agencies. An invitation to attend an agency scoping meeting on November 12th, 2013 and request for information regarding the project study area was sent to Federal, State, Tribes and local agencies. The following agencies were invited to attend (for a list of Tribes invited to the meeting, see Section 5.2, Tribal Coordination):

- US Fish & Wildlife Service (USFWS)
- US Army Corps of Engineers (Corps)*
- US Coast Guard (USCG)
- SD Department of Environment & Natural Resources (SDDENR)
- SD Department of Game, Fish & Parks (SDGFP)
- SD Division of Parks & Recreation
- State Historic Preservation Office
- Pierre Historic Preservation Commission
- City of Pierre, Department of Parks and Recreation
- City of Pierre Eng./Planning Services
- City of Fort Pierre
- Fort Pierre Parks and Recreation
- Hughes County Planning & Zoning*
- Stanley County Planning & Zoning

**Attendees of the Agency Scoping Meeting*

At the Agency Scoping meeting, background on the project and the bridge were discussed, along with the project study limits, schedule, and environmental considerations along both sides of river, including:

- Cultural resources and historic features
- Railroad bridge navigational constraint
- Parks in the area
- Bike trails along the existing highway bridge and the bike paths along the parks
- Utilities
- Wetlands
- Roadway Criteria
- Bridge criteria

Factors, including age and condition of the existing bridge, contributing to the purpose and need were discussed. The U.S. Army Corps of Engineers provided information regarding the jurisdiction of wetlands in the corridor.

Other coordination and communication that occurred with agencies during the course of the study are documented in the following table:

Table 5-1: Communication and Coordination

Agency	Date	Correspondence	Description of Comments and Correspondence	Response to Comments/Result
U.S. Fish and Wildlife				
	1/7/2014	Phone call regarding 6(f) funding	No USFWS 6(f) funding properties related to wildlife sanctuaries/refuge	Noted in the inventory of 6(f) properties.
	4/18/2014	Phone call regarding Pallid Sturgeon	<p>USFWS indicated that six (6) “old, remnant fish” were collected in Lake Sharp, and that these fish could be found anywhere in the reservoir, including the APE and the area below Oahe Dam; during the 2011 floods Pallid Sturgeons were found just below the dam.</p> <p>Indicated that existing bridge demolition not be by dynamite and that any sheet piling be vibrated instead of pounded in, as the noise can affect fish spawning. Wood would be preferred to corrugated metal; coffer dams could mitigate the impact to fish.</p> <p>Proposed project activities within open water is restricted from April 15 to June 1 in order to minimize impacts during spawning</p>	<p>Information included in the EA T&E discussion</p> <p>Environmental commitment to contact USFWS for bridge demolition and sheet piling installation during final design and/or construction; and construction activities in water restricted from April 15 to June 1.</p>
	4/24/2014	Email verifying T&E discussions	<p>Urban/industrial environment not suited to presence of the whooping crane, red knot, Spragues Pipit, or black footed ferret.</p> <p>Pallid sturgeon are found in Lake Sharpe, but generally not found as far north as Pierre/Ft. Pierre.</p> <p>May be potential foraging habitat for the least tern and the piping plover on sandbars in and near Discovery Island, but that this habitat is well removed from the</p>	<p>Environmental commitment was added to show that T&E coordination will be updated during an EA reevaluation to be conducted prior to final design, as the T&E lists will likely change, and to address northern long-eared bats and breeding birds during construction.</p>

Table 5-1: Communication and Coordination

Agency	Date	Correspondence	Description of Comments and Correspondence	Response to Comments/Result
			<p>proposed area of bridge construction.</p> <p>There is a potential for the northern long-eared bat to have roosts and breeding birds may use the existing bridge. Both breeding birds and northern long eared bats may need to be addressed during construction.</p> <p>The list of T&E species, most likely will change in the next ten years so it may be premature to address those species at this time.</p>	
	10/1/2014	Letter to USFWS regarding T&E Species	Letter requesting concurrence for SDDOT determinations of effect for T&E species in the project study area. USFWS returned a “No Action” contemplated at this time. Because the construction is years out, USFWS requested SDDOT to provide further coordination in final design.	Environmental commitment to request T&E information through a reevaluation of the NEPA document prior to final design, closer to construction timeframe, as the T&E lists will likely change, and to address northern long-eared bats and breeding birds during construction.
South Dakota Department of Environment and Natural Resources				
	1/14/2014	Hazardous Material Releases and Spill information (email)	Data received for Hazardous Materials in the project area. Caution that there may be unreported releases near the railroad.	Information included in the Hazardous Materials Report
	9/5/2014	Project coordination letters	Letters were sent requesting any additional information on the project. Response letter received on 10/28/2014 with no objections to the project, and included comments regarding commitments for Surface Water Quality, Hazardous Waste and Air Quality.	Discussion of construction concerns included in Section 3.18 Construction, and Environmental Commitments included in Chapter 5.

Table 5-1: Communication and Coordination

Agency	Date	Correspondence	Description of Comments and Correspondence	Response to Comments/Result
South Dakota Department of Game, Fish and Parks				
	2/18/2014	Request for State listed T&E Species	Fulfilled request for State T&E species, and noting that two species were observed in and near the APE, including the false map turtle (<i>Graptemys pseudogeographica</i>) and the northern river otter (<i>Lontra canadensis</i>)	Information included in EA T&E discussion
	4/2/2014	T&E Species information	SDGFP indicated that they had no issues with the project, the T&E data were based on sightings, but no dens or reproductive nests were indicated in the project study area. If a significant amount of time were to pass between this communication and construction, the SDGFP should be contacted for an updated assessment and for confirmation of the current database search.	Environmental commitment to request updated T&E information from SDGFP. T&E coordination will be completed during an EA reevaluation to be conducted prior to final design.,
	4/2/1014	Discussion on Pallid Sturgeon	SDGFP indicated that the reach of the Missouri above the Bad River was too cold and clear for favorable pallid sturgeon habitat because bottom water was generally discharged through the Oahe dam, which is immediately upstream of the project study area.	Information included in the EA T&E discussion. T&E coordination will be completed during an EA reevaluation to be conducted prior to final design.
	9/5/2014	Project Coordination Letter	Letter requesting any additional information on the project	No additional comments received.
	9/11/2014	Teleconference regarding 4(f)/6(f) properties	4(f)/6(f) documentation was presented and discussed	Minor revisions clarifying 4(f)/6(f) applicability to Hipple Park, Steamboat Parks and Outlot F were incorporated into the document based on the comments received. Park impacts are described as enhancements or De Minimus.

Table 5-1: Communication and Coordination

Agency	Date	Correspondence	Description of Comments and Correspondence	Response to Comments/Result
	10/23/2014	Meeting regarding the alternatives and options to remove Dakota Avenue	Discussion of further refinements of the alternatives near the parks, including the removal of Dakota Avenue. The group agreed that the impacts to 4(f) properties would be considered <i>De Minimis</i> .	Refinement of Alternative N1.1, including the retaining walls resulted in a net gain to City of Pierre parkland.
U.S. Coast Guard				
	10/22/2013	Letter with comments regarding the bridge and study.	Recommends discussion on impacts resulting from building coffer dams, sand islands, falsework bents, etc., for the demolition of the existing bridge as well as building the replacement bridge. Requests that the EA contain information on size and types of vessels using the waterway, comparing to past and present use.	Discussions took place regarding the construction of coffer dams, etc., as well as demolition of the existing bridge. Boat survey was performed and information was added to Chapter 2 of the EA including the past and future effect of the restrictions of the railroad bridge vertical clearance.
	11/14/2013	Letter regarding compliance with federal reviews for Section 106 Compliance	FHWA notified the USCG that FHWA was prepared to be the NHPA lead federal agency with respect to Section 106 consultation requirements.	No response received.
	3/13/2014	Letter from the USCG regarding the navigation and clearance of the bridge	Letter indicates the USCG accepts the vertical clearance to meet or exceed 30 feet above normal pool elevation, a horizontal clearance of 210 feet, and navigation to be shifted more to the center of the river. Should be approved by the USACE	Refinements made to accommodate the clearances. Approval by the USACE pending 404/Section 10 permit review.
U.S. Army Corps of Engineers				
	11/12/2013	Agency Scoping Meeting	<i>The USACE provided information regarding the jurisdiction of wetlands in the corridor.</i>	Information was included in the Wetland investigations for the study.

Table 5-1: Communication and Coordination

Agency	Date	Correspondence	Description of Comments and Correspondence	Response to Comments/Result
	9/12/2014	Phone call regarding permitting for the project	Discussion of Section 404/Section 10 (of the Rivers and Harbors Act of 1899) permitting process. USACE indicated they would not need to review the environmental document, but they would be engaged once the 404/Section 10 permitting process begins. Based on the wetland discussion regarding the project (and no wetland impacts), they do not expect any mitigation requirements.	Environmental commitment Information included in the EA for Section 404/Section 10 permitting.
	9/16/2014	Phone call regarding the EA and Least Environmentally Damaging Practicable Alternative (LEDPA) finding	USACE indicated information regarding the LEPDA would be submitted with the 404 permit application in later phases of the project.	Environmental Commitment to submit LEPDA with the 404 permit.
National Park Service				
	9/26/2014	Letter regarding the Lewis and Clark National Historic Trail	Letter describing the trail, campground and auto trail. Comments on the bridge include a request to minimize or mitigate design, lighting, and construction impacts to the trail, and consideration should be given to opportunities to improve recreational access near the trail.	Environmental commitment to minimize or mitigate design, lighting, and construction impacts to the trail, and access improvements to the trails within the project study area that connect to the Lewis and Clark Trail system.
City of Pierre				
	7/17/2014	Meeting with the City of Pierre to discuss alternatives and park use	The city of Pierre indicated no concern about the use of the parks, noted them as minimal. Trail detour routes during construction were discussed. The City is planning to add Outlot "F" officially to the parks system. The city indicated support for retaining walls. 6(f) impacts would be avoided. Concerns regarding a skewed intersection at Dakota Avenue were expressed.	Comments were noted. Refinements to alternatives were made.

Table 5-1: Communication and Coordination

Agency	Date	Correspondence	Description of Comments and Correspondence	Response to Comments/Result
	9/11/2014	Teleconference regarding 4(f)/6(f) properties	4(f)/6(f) documentation was presented and discussed.	Minor revisions clarifying 4(f)/6(f) applicability to Hipple Park, Steamboat Parks and Outlot F were incorporated into the document based on the comments received. Park impacts are described as enhancements or De Minimus.
	10/1/2014	Meeting with the City of Pierre regarding the alternatives and park use	Project team discussed the future of the Dakota Avenue ramp, including removal. Changes to the parking area and an additional cul-de-sac of pavement were discussed, along with other refinements.	Project Team noted the requests for refinements, including the removal of Dakota Avenue, and pavement addition in Steamboat park (funded by city). Sidewalks, medians, and green space, and a net gain to parkland in the City were also considerations for refinements.
	10/23/2014	Meeting regarding the alternatives and options to remove Dakota Avenue	Discussion of further refinements of the alternatives near the parks, including the removal of Dakota Avenue. The group agreed that the impacts to 4(f) properties would be considered <i>De Minimis</i> . Other improvements discussed, including a cul-de-sac in Steamboat park is considered "development by others", to be locally funded.	Refinement of Alternative N1.1, including the use of retaining walls resulted in a net gain to City of Pierre parkland.
City of Fort Pierre				
	6/10/2014	Email regarding Fort Pierre's Comprehensive Plan.	Received the Fort Pierre Comprehensive Plan.	Added language to the EA regarding Fort Pierre Comprehensive Plan.

Table 5-1: Communication and Coordination

Agency	Date	Correspondence	Description of Comments and Correspondence	Response to Comments/Result
	10/8/2014	Phone call regarding 4(f) properties and floodplain information	Discussed 10/1/2014 4(f) meeting, and 4(f) trails in Fort Pierre, as they are the under Fort Pierre’s jurisdiction. Discussed floodplains which are mapped every 10 years and due to be mapped in 2014, and again in 2024 before expected construction of the bridge. A floodplain analysis may be required along with a “no-rise” certification. Discussed utilities and developments in Fort Pierre.	Language was added to the EA regarding the “no-rise” certification and FEMA mapping, utilities and developments.
State Historical Preservation Office (SHPO)				
	Jan 21, 2016	Mailed Packet to SHPO	A letter concurring with “No Historic Properties Affected” for the cultural resources survey was received from SHPO on 2/12/2016.	Completed Section 106 requirements.

5.2 Tribal Coordination

The following Tribes were invited to scoping meeting and were requested to provide information regarding the project study area sent on 10/18/2013. No Tribes responded.

- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe
- Lower Brule Sioux Tribe
- Oglala Sioux Tribe
- Sisseton-Wahpeton Oyate
- Standing Rock Sioux Tribe
- Yankton Sioux Tribe
- Three Affiliated Tribes

Section 106 Consultation letters were sent to the following Tribes on 11/1/2013 regarding archaeological and cultural resources that were inventoried in the project study area. No Tribes responded.

- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe
- Lower Brule Sioux Tribe

- Oglala Sioux Tribe
- Sisseton-Wahpeton Oyate
- Standing Rock Sioux Tribe
- Yankton Sioux Tribe
- Three Affiliated Tribes

5.3 Public Involvement

5.3.1 Study Advisory Team (SAT)

The SAT is a technical team with members from SDDOT, FHWA and local communities. The team was formed to discuss bridge design, work through technical issues, and review information prior to being presented to the public. The SAT met seven times prior to the completion of the EA.

5.3.2 Community Advisory Committee (CAC)

The CAC is made up of community members and leaders as well as SDDOT and FHWA to assist the project team in focusing on the issues related to the bridge within the community. The CAC communicates information and collects comments from the community to influence the decisions regarding the study and the bridge. The CAC met five times prior to the completion of the EA.

5.3.3 Stakeholders

Meetings with stakeholders occurred throughout the course of the study to communicate the progress of the project and to collect comments regarding the study. Stakeholders included land owners, businesses, community service organizations, and local municipalities within the project study area.

5.3.4 Public Open House Meetings

Two public meetings took place during the Study. The first public open house meeting was held on November 12, 2013 and a total of 61 people signed in as attendees of the meeting. A presentation was given at the meeting covering the elements of the study, the environmental process, various bridge types and locations to be considered, the project schedule, and the role of the community in the process. Comments were solicited and received from the community that included support for a larger bike and pedestrian path for the bridge, wider shoulders on the bridge, concern regarding cost and aesthetics of the bridge, and support for locating the bridge in the existing location or north of the existing location.

The second public open house meeting was held on July 1, 2014 where a total of 51 attendees were recorded. A presentation was given at the open house covering the study activities, schedule and options on the following:

- Roadway and Bridge Locations
- Roadway and Bridge Cross Sections
- Bridge Types
- Bridge Architecture

Public comments were encouraged and an online survey was provided to collect opinions on various bridge options. A total of 344 survey responses were received. The options that received the most public support included:

Figure 5-1: Center median barrier with lighting on outside of bridge lanes

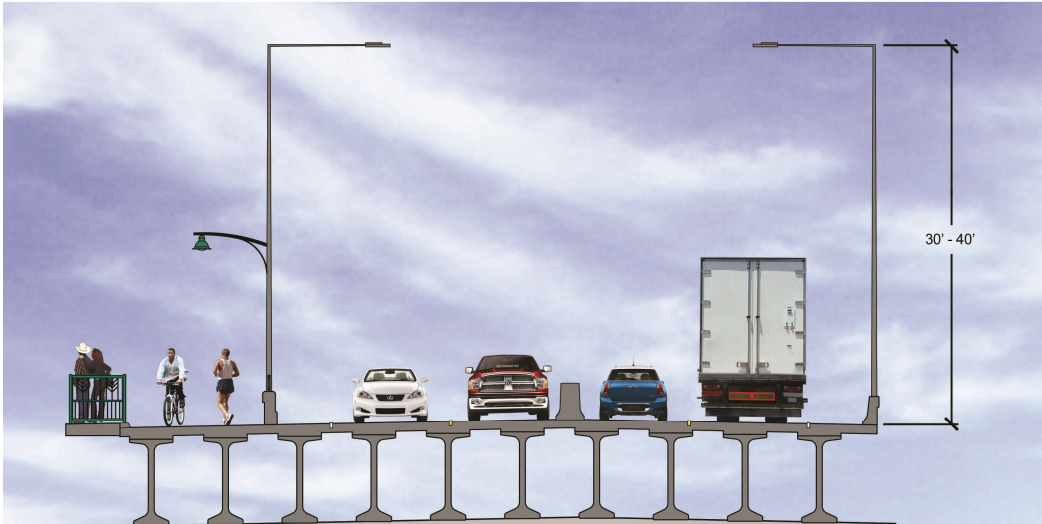


Figure 5-2: Parabolic bridge girder

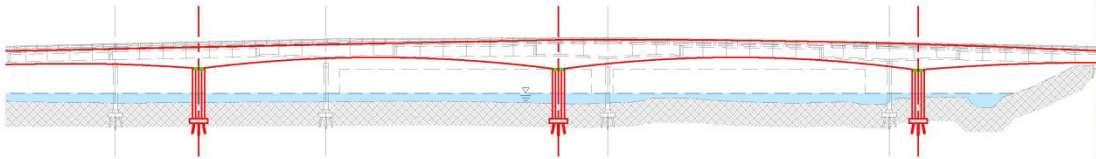


Figure 5-3: Bridge railing with star motif



Figure 5-4: Two column pier type



5.3.5 Future Public Involvement

A public Information meeting will be held following the release of this EA and 4(f) evaluation for public comment. The comments received will be accepted for 30 days following the release of the EA. If the EA is determined to be adequate with no significant impacts, a Finding of No Significant Impacts (FONSI) would be prepared and released by FHWA. All comments received will be included in the final administrative record and considered by the FHWA in determining whether or not the proposed alternative will have a significant impact on the environment.

Other future public involvement may occur during the design and construction phases of the project.

CHAPTER 6 - REFERENCES

All references are available upon request from the SDDOT office listed on the cover of this EA.

Technical Reports completed for this EA:

URS, April 2014. NH 0014(194)227, PCN 03WN, Sites of Environmental Concern, Missouri River Bridge: US14/US83/SD34 Bridge Replacement Study (Bridge No 33-100-118), Hughes and Stanley Counties, South Dakota

URS, February 2014. Wetland Delineation Report, Wetlands within the Missouri River Bridge: US14/US83/SD34 Study Area (Bridge No. 33-100-118), Hughes and Stanley Counties, South Dakota

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APPENDIX A:

Alternatives Eliminated from Consideration Prior to Second Public Meeting

Alternatives Eliminated from Consideration Prior to Second Public Meeting

Alternative	Description	Reasons Alternative was Eliminated from Consideration
N3	Proposed alignment 200' north, parallel to the existing bridge	-Visual change to the historic Railroad Bridge due to close proximity -Longer and more costly approach roadways
N5	Proposed alignment 200' north, non-parallel to the existing bridge	-Visual change and navigational limits due to close proximity to the historic Railroad Bridge -Increased cost due to longer bridge. -Longer and more costly approach roadways
N6	Proposed adjacent, non-parallel alignment to the north of the existing bridge	-Impacts the gas utility, requiring replacement of the gas line -Increased cost due to gas line replacement
M1	Proposed alignment of bridge on two separate structures: westbound lanes carried over the existing alignment, eastbound lanes carried on separate structure to the south, and connects to Dakota Avenue.	-Impacts to the gas utility, probable replacement of the gas line -Increased cost due to utility impacts and construction of two superstructures
M2	Proposed alignment of bridge on two separate structures: westbound lanes carried over the existing alignment, eastbound lanes carried on separate structure to the south with a modified western approach.	-Increased cost due to complex demolition of the existing bridge and construction of two structures -Community disruption due to detoured traffic during construction
S1	Proposed alignment south of the existing bridge, overlaps on the southwest corner of the existing bridge	-Creates a sharp curve on the eastern approach -Community disruption due to detoured traffic during construction -Increased cost due to complexity of demolition and construction
S2	Proposed alignment south of the existing bridge, south end would transform James Street.	-Creates a sharp curve on the eastern approach -Impacts to river navigation -Increased cost due to longer bridge
S3	Proposed alignment south of the existing bridge with changes to James Street and Dakota Avenue	-Creates a need for additional intersection -Impacts to river navigation -Increased cost due to longer bridge.
S4	Proposed alignment of bridge on two separate structures: westbound lanes carried over the existing alignment, eastbound lanes carried on separate structure to the south of the existing bridge.	-Requires demolition of existing bridge before construction -Community disruption due to detoured traffic during construction -Increased cost due to construction of two structures
S5	Proposed alignment south of the existing bridge: overlapping south half of existing alignment	-Creates a sharp curve on the eastern approach -Requires demolition of existing bridge before construction -Community disruption due to detoured traffic during construction
S6	Proposed alignment south of the existing bridge: overlapping south half of existing alignment, straightened western approach	-Creates a sharp curve on the eastern approach -Requires demolition of existing bridge before construction -Community disruption due to detoured traffic during construction
S7	Proposed alignment of bridge on two separate structures south of the existing bridge: westbound lanes carried over the existing alignment, eastbound lanes carried on separate structure to the south of the existing bridge.	-Requires demolition of existing bridge before construction -Community disruption due to detoured traffic during construction -Requires intersection upgrades at eastern approach -Increased cost due to construction of two structures