Little Bighorn Battlefield
National Monument

National Park Service
U.S. Department of the Interior

Alternative Transportation Feasibility Study

VOLUME II
OPTIONS AND CRITERIA FOR EVALUATION

NOVEMBER 2012

LITTLE BIGHORN BATTLEFIELD NATIONAL MONUMENT

Alternative Transportation Feasibility Study

PMIS 163914

Options and Criteria for Evaluation Report

October 15, 2012

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1. INTRODUCTION

Little Bighorn Battlefield National Monument (the park) is facing substantial transportation challenges. In recent years, the park has received over 300,000 visitors a year,[1] most of whom came to the park during the summer months from June to August. During the peak visitor season, parking lots adjacent to the visitor center are frequently full, while other parking areas may still be underutilized, such as the Stone House parking lot. Parking unavailability is a particularly significant problem for oversized vehicles, which include recreational vehicles, trailers, and buses typically over 25-feet in length, because there are too few spots for the number of vehicles. Vehicles frequently keep circulating in the visitor center parking area looking for a parking spot, aggravating vehicle-to-vehicle and vehicle-to-pedestrian conflicts in this area. Turning radii in the parking areas are too small for large vehicles to maneuver, and there is no safe location for bus loading and unloading.

The 5.2-mile long tour road (from the entrance station to Reno-Benteen Battlefield), which traverses the sensitive battlefield landscape, was built in the mid-1900s and is the only roadway that connects the two park units – Custer Battlefield and Reno-Benteen Battlefield. With a pavement width of 17- to 20-feet (typically about 18-feet wide) and no shoulder,[2] the tour road is narrow and difficult for two-way traffic consisting of many large size vehicles. Although no collisions have been reported on the tour road, minor accidents have been observed, such as side mirrors being broken by a passing vehicle in the opposite direction and vehicles veering off the pavement while passing.[3] The roadbed and pavement surface were not designed to withstand the current traffic load of oversized vehicles, resulting in excessive deterioration and requiring frequent maintenance. Over the last several decades, layers of pavement have been built up above the shoulder, creating steep drop-offs.

Parking and roadway issues, as well as other challenges such as an outdated and undersized visitor center, have caused negative impacts to visitor experience and present increasing difficulties for the National Park Service (NPS) to protect precious cultural and natural resources in the park. Since completion of the 1986 General Management Plan (updated in 1995),[4] many efforts have been made to evaluate parking congestion and other transportation challenges facing the park and study potential solutions. Although a number of options have been proposed, including relocating the visitor center and museum collection to a site out of the current park boundary, expanding parking lots for oversized vehicles, and widening the tour road; most of them have not been implemented due to political and economic reasons. As a result, the park continues to face increasing transportation and related challenges.

Most recently in 2010, the National Park Service conducted a public engagement process on management issues during which the public was invited to share thoughts on four management issues that have significantly impacted the park for the past three decades, including the following:[5]

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1. *National Park Service visitor database*, NPS Public Use Statistics Office, http://www.nature.nps.gov/stats/park.cfm?parkid=310, website accessed October 2011.
2. *Traffic Safety Study – Little Bighorn Battlefield National Monument.* Robert Peccia & Associates for National Park Service. October 1998.
3. *Existing Traffic and Parking Conditions and Implications for Transportation Alternatives: Little Bighorn Battlefield National Monument*, Jonathan Upchurch, December 16, 2010.
4. *Final General Management and Development Concept Plans*. Little Bighorn Battlefield National Monument. Original August 1986, Updated May 1995.
5. *Public Engagement on Management Issues and Next Steps Brochure*. Little Bighorn Battlefield National Monument. March 2011.

- The park's inadequate and undersized visitor center
- Insufficient museum collection storage
- Narrow and failing roads and insufficient parking
- Significant portions of the battlefield remaining unprotected and inaccessible

As a result of this extensive public engagement process, the National Park Service recommended several "next steps" to address the identified management issues. One of the next steps to be undertaken in 2011 was to commence this alternative transportation feasibility study (ATFS) to help the park staff determine mid-term and long-term solutions to transportation challenges.[6]

Starting in late September of 2011, the study team conducted extensive data collection, literature review, and transportation system analysis to evaluate parking and traffic circulations in the park. A multi-day workshop in a charrette setting was held at the park in October 2011. During the workshop, members from the park, NPS Intermountain Region (IMR), NPS Denver Service Center (DSC), and URS study team observed site conditions first-hand, reviewed results from existing condition analysis, identified detailed transportation issues, established preliminary goals and objectives, and discussed potential transportation solutions.

Following the early study activities, the study team developed a preliminary range of transportation options; established a set of criteria for the purposes of initial and detailed screening, respectively; and conducted technical analysis and evaluation of options using a two-step screening process – initial screening and detailed screening. In May 2012, a one-day workshop to evaluate transportation options was held at the park. During the workshop the study team presented information on previous study activities and results from the initial screening, described transportation options that were being carried forward through the detailed screening, and discussed analytical steps needed for the detailed screening. Workshop participants, including members from the park, IMR, DSC, and URS went through the detailed screening process and discussed next steps of the study.

These study activities and results are documented in the previous study deliverables, including an Existing Conditions memorandum (Appendix A), a Synthesis of Project Kickoff Workshop Results memorandum (Appendix B), and a Synthesized Results of Evaluation of Options Workshop memorandum (Appendix C).

Draft versions of this report – Options and Criteria for Evaluation – have been submitted for NPS review. NPS comments on the draft versions are incorporated in this report. It should be noted that the first draft report only includes information on the initial set of transportation options, initial screening process, and initial screening results, while this report contains the same initial options and screening information (Sections 2 and 3), as well as the detailed screening process and results (Section 4).

This report, building upon previous study efforts of the ATFS including the aforementioned deliverables, documents the following:

- The study process and methodology of formulating and evaluating transportation improvement options, including alternative transportation options
- Description of the initial range of options resulting from the options development process
- A set of initial screening criteria that were used to evaluate the initial range of options

6. *Critical Issues and Opportunities for the 21st Century.* Little Bighorn Battlefield National Monument. October 2010.

- Description of the initial screening process
- Results from the initial screening, including definition of the options that survived the initial screening and were carried forward to the detailed screening
- Description of the detailed screening process and continued evolution of the options
- Results from the detailed screening
- Discussion of next steps

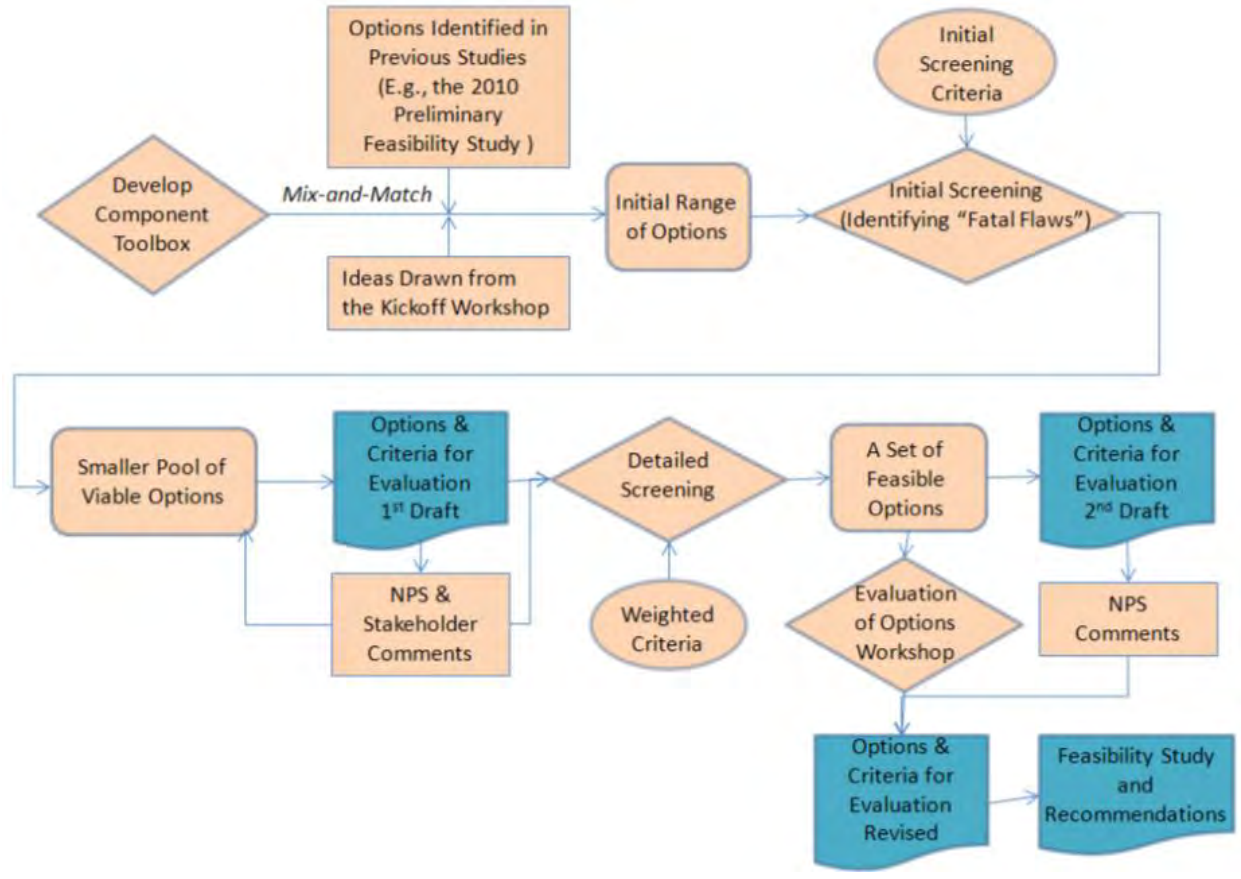
2. OPTIONS DEVELOPMENT

This section discusses the overall process of development and evaluation of transportation options, presents a comprehensive toolbox from which transportation improvement measures can be mixed-and-matched to formulate an initial range of options, and describes the resulting initial range of options that are potentially capable of addressing transportation issues in the park.

2.1 PROCESS

This ATFS includes an iterative process of identifying, evaluating, and refining transportation options, as illustrated by the flow chart in Figure 2-1. The three-phase process includes: (1) formulating a broad range of initial options, (2) an initial screening to yield a smaller pool of viable options, and (3) a detailed screening using a set of weighted criteria to identify a refined set of feasible, detailed options.

Figure 2-1: Options Development and Evaluation Flow Chart



Source: URS Corporation

The URS study team began by exploring a wide range of transportation options, some of which were discussed with the NPS team at the project Kick-off Workshop in October 2011, while others were drawn from past studies, including the 2010 Preliminary Feasibility Study. Input of potential options and ideas from previous studies and planning efforts is summarized in Table 2-1, which lists previously identified transportation options by source.

The wide range of transportation options formulated from previous studies and planning efforts, early study activities of the ATFS including the Kickoff Workshop/Charrette, and a "toolbox" developed for the ATFS (as described in the following sub-section), was synthesized into an initial set of distinctive options. These initial options were then screened against general criteria derived from the project goals and objectives in order to narrow the scope of options to a relatively short list of viable options, as described in Section 3.

Taking into consideration such factors as infrastructure requirements, operations and maintenance, general impacts to visitor experience and resources, general impacts to park staff and management, and total costs, the study team conducted a detailed evaluation of the viable options that had passed the initial screening. A set of weighted criteria, including both qualitative and quantitative parameters, were established and used throughout the detailed screening process. In May 2012, the study team conducted a workshop at the park, with participants from the park, DSC, and IMR to systematically evaluate the options by applying the weighted criteria. Since the workshop, the study team has been continuously refining and evaluating the transportation options and incorporating input and comments from the NPS staff.

2.2 OPTIONS TOOLBOX

As input to formulating and refining transportation options, the study team developed a "toolbox" of specific transportation improvement measures ("tools") that, by mixing-and-matching together, have the potential to achieve the goals and objectives of this ATFS as discussed in Section 3. These improvement measures were drawn from previous studies for the park, relevant project experience, and ideas generated in the October 2011 workshop. The toolbox was used to help formulate both the initial set of options and viable options that passed the initial screening and were carried forward for detailed screening. The tools are summarized in Table 2-2 and organized around the following categories:

- Management tools such as Intelligent Transportation System (ITS), Travel Demand Management (TDM), and special event management. These tools typically incur relatively low cost and are particularly useful for short-term or mid-term improvements.
- Infrastructure tools including construction projects of roadway, parking, and related facilities.
- Alternative travel mode tools (excluding transit and private automobiles) in and adjacent to the park, such as facilities for bicyclists, pedestrians (hikers), and other viable travel modes.
- Transit tools including infrastructure and operations components and ownership, funding and marketing.

Table 2-1: Previously-Identified Transportation Options

October 2011 ATFS Project Kickoff Workshop Charrette
▪ Multimodal One-Way Loop Accommodating Transit, OVs, PVs, Bicyclists, Hikers, and Other Modes ▪ Multimodal Two-Way Tour Road with Detached Multi-use Path ▪ Multimodal Two-Way Tour Road for Transit, Bicyclists, and Other Modes ▪ Mandatory Transit Two-Way Tour Road (no OVs/PVs during peak) ▪ Relatively minor structural/management improvements without a transit element
2010 Preliminary Feasibility Study – Alternative Transportation (Draft)
Main Ideas:(1) ▪ Expanding Existing Parking Lots & Widen Road (4R Project) ▪ Offsite Oversized Vehicle Parking & Shuttle (Seasonal Oversized Vehicle Restrictions possible) ▪ Oversized Vehicle Demand Management (No-Build) ▪ Close Tour Road (from Entrance Station to Reno-Benteen) to Motorized Vehicles ▪ One-Way Loop Road (from GMP) *Less or Not Feasible Options:*(1) ▪ No Action ▪ Permit System (visitors make reservations in advance, limiting number of visitors in the park) ▪ Private Vehicle Restrictions on Tour Road
2010 Existing Traffic and Parking Conditions and Implications for Transportation Alternatives
▪ Shuttle bus system operating from mid-June through the third week of August, a period of approximately 10 weeks ▪ Designated towed vehicle drop-off area or lot
2005 Environmental Assessment / Assessment of Effect: Rehabilitate Tour Road
▪ No Action ▪ Preferred Alternative: Road-Widening (24-ft) to have two 11-foot lanes with 1-foot shoulders and parking lot expansion/reconfiguration ▪ Road-Widening (22-ft) to have two 10-foot travel lanes and 1-foot shoulders and parking lot expansion/reconfiguration
1998 Traffic Safety Study
▪ Vehicle Length Restrictions on Tour Road ▪ Reservation System ▪ Remote Parking (at the junction of MT 342 & US 212) with a Visitor Transportation System ▪ Short-Term Recommendations (minor road/parking changes)
1986/1995 General Management Plan
▪ Tour Road Extension from Reno-Benteen Battlefield to I-90 (forming a one-way loop with two alternative locations for Visitor/Administration Facility) ▪ Tour Bus / Transit Service on the New One-Way Loop Road

Notes: OV – oversized vehicles. PV – private vehicles. 4R – resurfacing, restoration, rehabilitation, and reconstruction. GMP – General Management Plan. MT 342 – Montana State Highway 342 (Park access road). US 212 – US Highway 212.

(1) "Main Ideas" and "Less or Not Feasible" are the categories listed in the Draft 2010 Preliminary Feasibility Study.

Table 2-2: Options Development - Toolbox

Intelligent Transportation System (ITS)	Travel Demand Management (TDM)	Special Event Management
▪ Dynamic Message Signs (DMS) ▪ Pre-Trip Planning: Internet, TV/radio, 511 phone ▪ En-route Planning: wireless devices, Highway Advisory Radio (HAR), in-vehicle signing, electronic yellow pages ▪ Advanced Parking: availability and directions ▪ Electronic Payment & Pricing ▪ Transit Management: AVL/CAD, Dynamic Routing/Scheduling, in-vehicle surveillance	▪ Real-Time Traveler Information ▪ Parking Pricing (meters, hourly/fixed fee) ▪ Parking Restrictions: duration, vehicle type ▪ Fringe Parking (offsite) ▪ Variable admission fee ▪ Fee incentives for transit riders ▪ Cell phone audio tour ▪ Foldable signs (to direct to additional parking, remote lot, etc.)	▪ Temporary parking (on and offsite) ▪ Transit scheduling: higher frequency of bus departure, longer service period, on-demand, Para-transit, etc. to accommodate high visitation and/or unusual visiting patterns ▪ Alternate transit route(s): temporary routes such as transporting visitors between Billings/Hardin and the visitor center ▪ Volunteers assisting traffic & parking guidance ▪ Mobilizing community/commercial vehicles
Alternate Infrastructure Improvement	**Capital Improvement - Roads**	**Capital Improvement - Parking**
▪ Expanding OV parking near VC ▪ Multiple turn-around locations along Tour Road ▪ Reconfiguring Reno-Benteen parking lot ▪ Wayside parking spaces for OVs between VC and Reno-Benteen ▪ Signing & Striping: regulatory, warning, guidance, wayfinding	▪ One-way loop tour road via I-90 frontage road ▪ One-way loop tour road via US 212 north and east of the park ▪ Resurfacing, restoring, rehabilitating, reconstructing, and/or widening Tour Road ▪ Restrictions to certain vehicle types ▪ Seasonal/special events/time of day restrictions ▪ Prohibiting all private vehicl es on Tour Road	▪ Reconfiguration, signing, striping ▪ Expanding existing parking lots ▪ Drop lot for towed vehicles ▪ New parking lot(s) in the park ▪ Offsite parking at the old casino ▪ Offsite parking at US 212 & MT 342 junction ▪ Offsite parking at Garryowen area ▪ Other offsite parking locations ▪ Temporary parking for peak days/hours ▪ Restrictions to certain vehicle types ▪ Seasonal/special events/time of day restrictions ▪ Pricing (meters, hourly/flat fees, etc.)

Table 2-2 Options Development – Toolbox, continued

Alternative Travel Mode - Bicycles	Alternative Travel Mode - Hikers
▪ Bike lane on the tour road ▪ Multi-use path along tour road ▪ Paved shoulder along tour road ▪ Shared lane on tour road ▪ Bike access to Park ▪ Allowing bikes on trails	▪ Trail connections ▪ Multi-use path along the tour road ▪ Sidewalks along the tour road ▪ Additional trails (paved, gravel, or dirt) ▪ Pedestrian access to park
Transit	
Infrastructure and Operational Components	**Ownership, Funding, and Marketing**
▪ Vehicle Type: shuttle, van, tour bus, rubber-tired or guided-way tram ▪ Fuel Type: diesel, gasoline, compressed natural gas (CNG), propane, liquefied petroleum gas (LPG), hybrid, electric ▪ Routes: single vs. multiple, seasonal alternate, offsite to VC to Reno-Benteen ▪ Schedule: year-around, seasonal, special events, frequency/headways, weekly/daily variation, dwell times ▪ Service Type: guided tour, shuttle, commercial tour buses ▪ Facilities: staging, maintenance, fuel storage/supply, washing, ticket/operations office ▪ Choice of mode: mandatory vs. voluntary ▪ Options for mandatory transit: time of day vs. all day, peak days vs. seasonal vs. year-round, OVs vs. all vehicles, entire Park vs. part of Tour Road	▪ NPS owns, maintains, and operates transit ▪ Owned by NPS, O&M by concessionaire ▪ Concessionaire provides all transit vehicles, facilities, and O&M via contract with NPS ▪ Park adds a Transportation Fee onto the entrance fee ▪ Partnership for funding and marketing with: ▪ Montana DOT ▪ Billings and/or other municipalities ▪ Crow Tribe and other stakeholders ▪ Custer Battlefield Preservation Committee ▪ Interested local/regional businesses

Source: URS Corporation.

Notes: ITS – Intelligent Transportation System. TDM – Travel Demand Management. HAR – Highway Advisory Radio. AVL – Automatic Vehicle Location. CAD – Computer Aided Dispatch. OV – Oversized Vehicles. VC – Visitor Center. PT – Personal Transporter. O&M – Option and Maintenance. MT 342 – Montana State Highway 342 (Park access road). DOT – Department of Transportation

2.3 INITIAL RANGE OF OPTIONS

This section presents 13 options that were developed for the initial screening. The purpose was to determine "fatal flaws" and identify which options would be developed and evaluated in greater detail. The initial options are grouped into the following categories: construction, no-build, and transit. These initial options are summarized in Table 2-3 and then described in narrative and graphic descriptions, which are brief and general but intended to provide sufficient base information for the initial screening process to determine viability.

Table 2-3: Initial Transportation Options

Option	Description
CONSTRUCTION OPTIONS	
1) Repair Existing Road and Parking Reconfiguration	Reconstruct the road to a consistent width and correct structural deficiencies. Reconfigure parking lots without enlarging footprint.
2) Widen Road and Expand Existing Parking Lots	"4R" project – Tour road widened to 24-feet and parking expansion/reconfiguration at the visitor center and Reno-Benteen
3) One-Way Loop with Access from I-90 Frontage Road	Park tour road extension from Reno-Benteen Battlefield south and west to I-90 to form a one-way loop with two alternatives for Visitor/Admin Facility
4) One-Way Loop with Access from U.S. 212	Park Tour Road Extension north from Reno-Benteen Battlefield to U.S. 212 to form a one-way loop
5) Detached Multimodal Trail Paralleling Tour Road	Add a detached multi-use trail for hikers/bicycles along the entire Tour Road
6) Alternative Infrastructure Improvements	Additional vehicle turnarounds at key locations on the tour road; installation of information kiosks and enhanced wayside pullouts with OV parking between VC and Reno-Benteen; parking reconfiguration at the visitor center and Reno-Benteen; drop-off lot for towed vehicles
NO-BUILD OPTIONS	
7) Management Improvements	Implement special event management strategies. Enhance cell phone audio tours. Relocate employee parking to increase visitor parking spaces at VC area. Improve signing, striping, and wayfinding system.
8) Seasonal Reservation/ Permit System	Visitors reserve an entry permit by phone, website, etc. prior to visiting the park during the summer months or predetermined peak periods
9) Permanently close Tour Road to ALL Motorized Vehicles and Maintain it as a Trail	Close the tour road between the entrance station and Reno-Benteen to all visiting motorized vehicles and maintain it as a trail
TRANSIT OPTIONS	
10) Voluntary Transit	Seasonally provide guided or unguided shuttle, tour bus, and other transit service for visitors; likely require offsite parking and staging; could include a drop-off lot for towed vehicles
11) Mandatory Peak/Special Events/Seasonal Transit	During peak hours, peak days, special events, or seasonally, close road to all private vehicles after the VC; provide a tour shuttle for visitors; likely require offsite parking and staging during peak periods and could include a drop-off lot for towed vehicles

Table 2-3: Initial Transportation Options, continued

Option	Description
12) Mandatory OV Transit	Seasonally close road to oversized vehicles after the VC and have a mandatory parking/drop-off lot for OVs/towed vehicles; provide a tour shuttle for visitors with OVs; likely require offsite OV parking and parking shuttle at peak periods
13) Mandatory Transit for All	Close road to private vehicles after the VC; provide a tour shuttle for visitors; require offsite parking and staging

Source: URS Corporation.

Notes: 4R – Resurfacing, Restoration, Rehabilitation, and Reconstruction. VC – Visitor Center. OV – Oversized Vehicle.

Construction Options

1) Repair Existing Road and Parking Reconfiguration

This option would repair the existing Tour Road and reconfigure the existing parking lots in the visitor center area without increasing the paved footprint of the parking lots.

Construction work on the tour road includes minor widening of the tour road, where necessary, to a consistent 20-foot pavement width; restoring the pavement structure and correcting structural deficiencies; applying new or recycled layer(s) of pavement material to restore or enhance the ride quality; and improving drainage where necessary.

Parking reconfiguration would be accomplished within the existing parking area footprint through signing, striping/restriping, and possibly modifying landscape and driveways for more efficient parking patterns.

2) Widen Road and Expand Existing Parking Lots

This is a construction project to resurface, restore, rehabilitate, and reconstruct (4R project) the tour road, as well as expand the parking lots at the visitor center area and Reno-Benteen Battlefield.

This option (Figure 2-2) is described as Option A in the *2010 Preliminary Feasibility Study* and was the preferred alternative in the *2005 Environmental Assessment / Assessment of Effect: Rehabilitate Tour Road* for Little Bighorn Battlefield National Monument. This option would widen the tour road to 24-feet to accommodate safe passing for oversized vehicles and to correct structural deficiencies in the road. The tour road cross-section would consist of two 11-foot travel lanes with one-foot shoulders. Parking at the visitor center and Reno-Benteen Battlefield would be modified and expanded to include bus pull-outs, motorcycle parking, better accommodations for oversized vehicles, and improved traffic flow (Figure 2-3).

This option would not preclude transit; the widened road could support future shuttle service with larger transit vehicles and the improved visitor center parking lot could serve as a staging area for transit.

Figure 2-2: Expand Existing Parking Lots & Widen Road

Reproduced from *2010 Preliminary Feasibility Study – Alternative Transportation (Draft)*

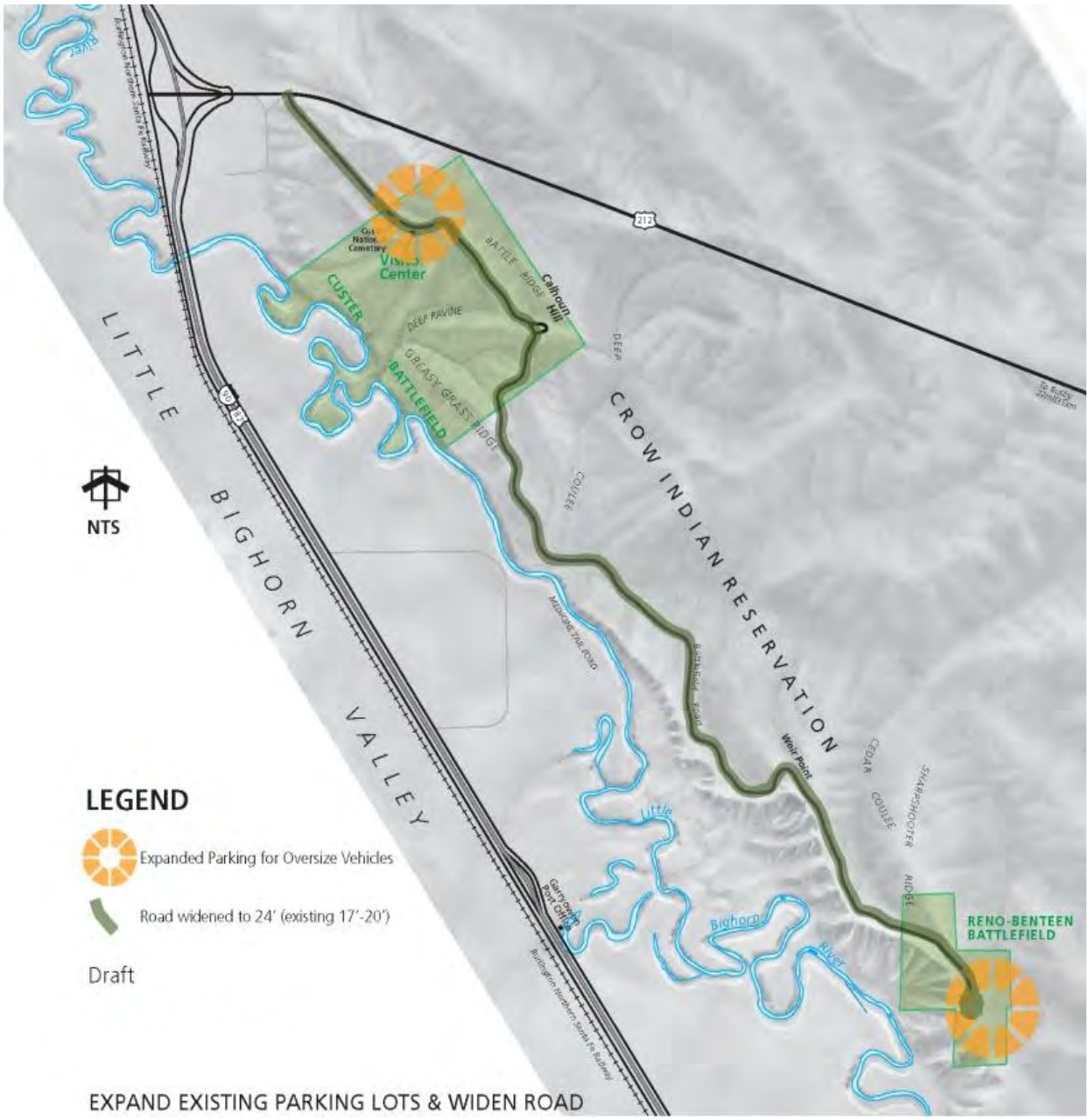
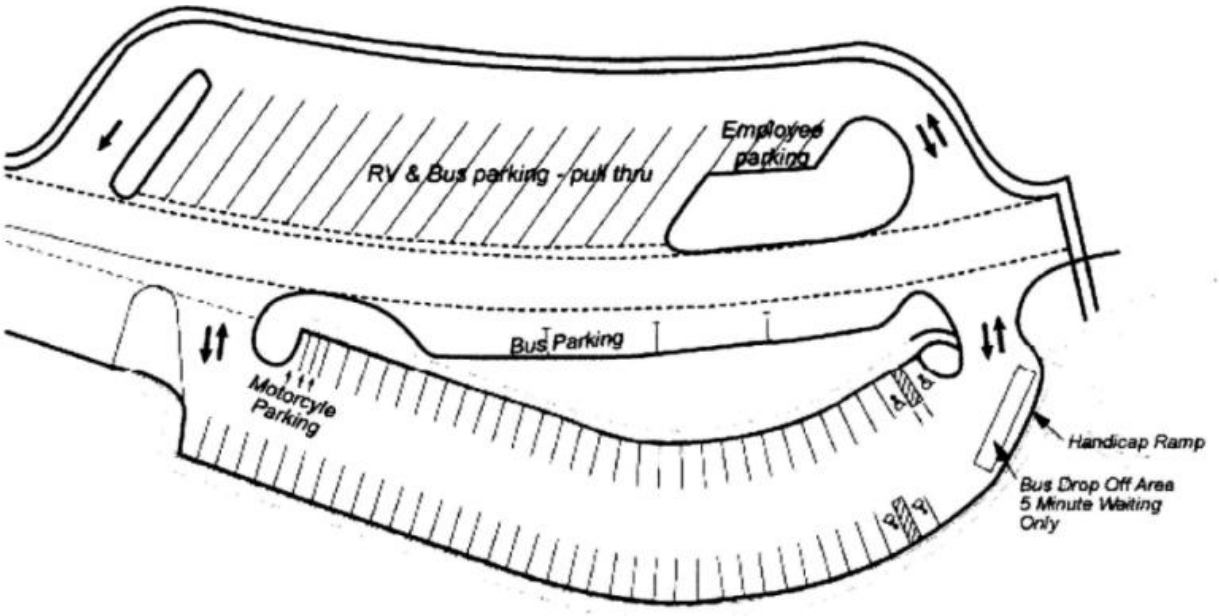


Figure 2-3: Proposed Visitor Center Parking Improvements

Reproduced from *2005 Environmental Assessment/Assessment of Effect: Rehabilitate Tour Road*



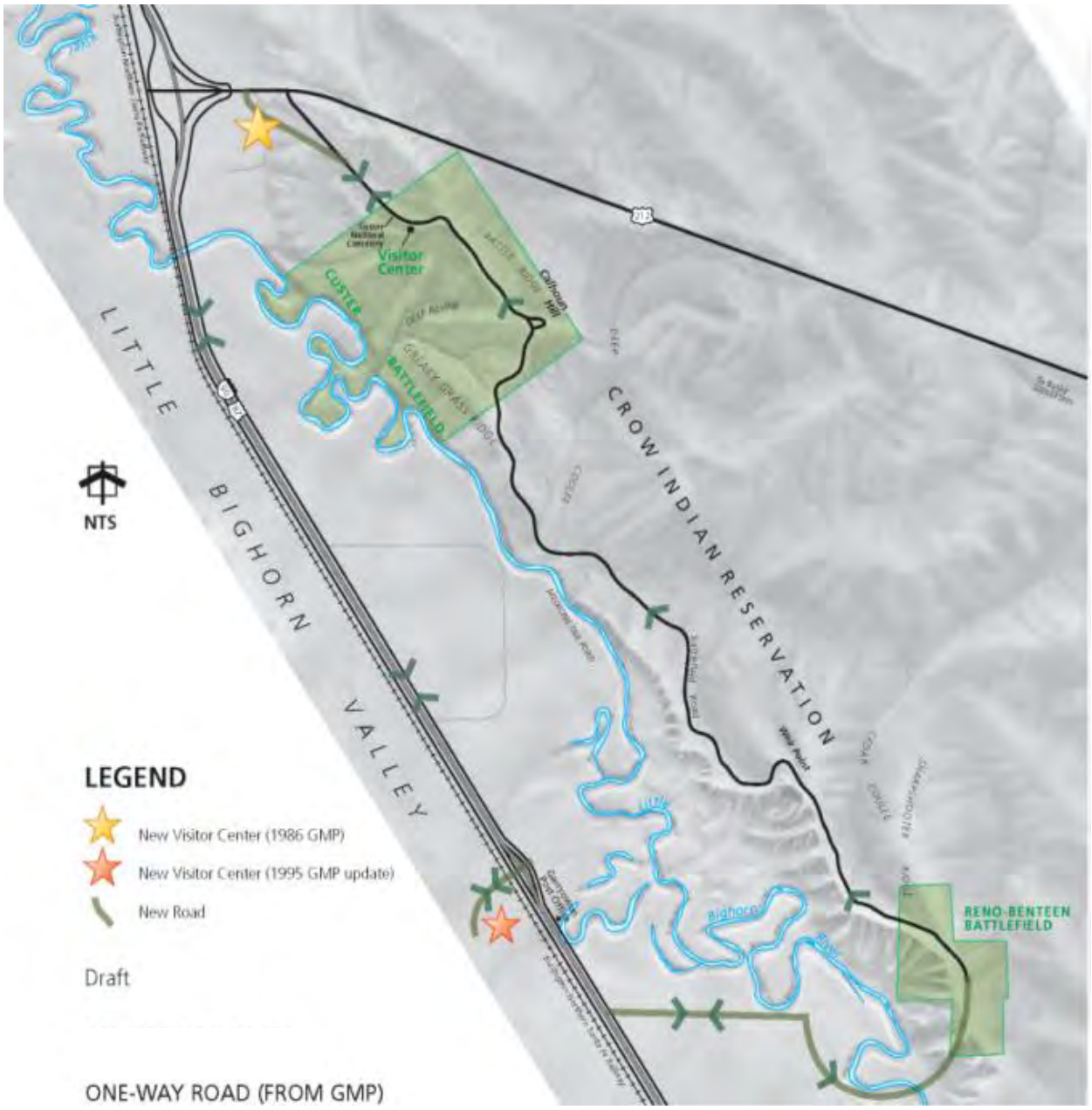
3) One-Way Tour Loop with Access from I-90 Frontage Road

This option (Figure 2-4) includes converting the existing tour road to one-way only and a proposed tour road extension from Reno-Benteen Battlefield south and west to the I-90 frontage road, forming a counter-clockwise one-way tour loop. This one-way loop would allow visitors to experience the historic sites in the chronological sequence of the battle. The tour road extension would require a bridge over Little Bighorn River and was originally envisioned in conjunction with a new visitor orientation/ administration facility and parking area. Additional parking has also been proposed west of the Little Bighorn River, at the beginning of the one-way tour road segment.

This option was first presented in the 1995 General Management Plan Update and again in the 2010 Preliminary Feasibility Study as Option E. It was also revisited during the ATFS Project Kick-off Workshop in October 2011 (Appendix B). This option would include transit service on the tour road and the new one-way traffic circulation would improve traffic safety. Additionally, the one-way conversion might free up right-of-way for other multi-modal improvements in the future.

Figure 2-4: One-Way Loop Tour Road via I-90 Frontage Road (from GMP)

Reproduced from *2010 Preliminary Feasibility Study – Alternative Transportation (Draft)*

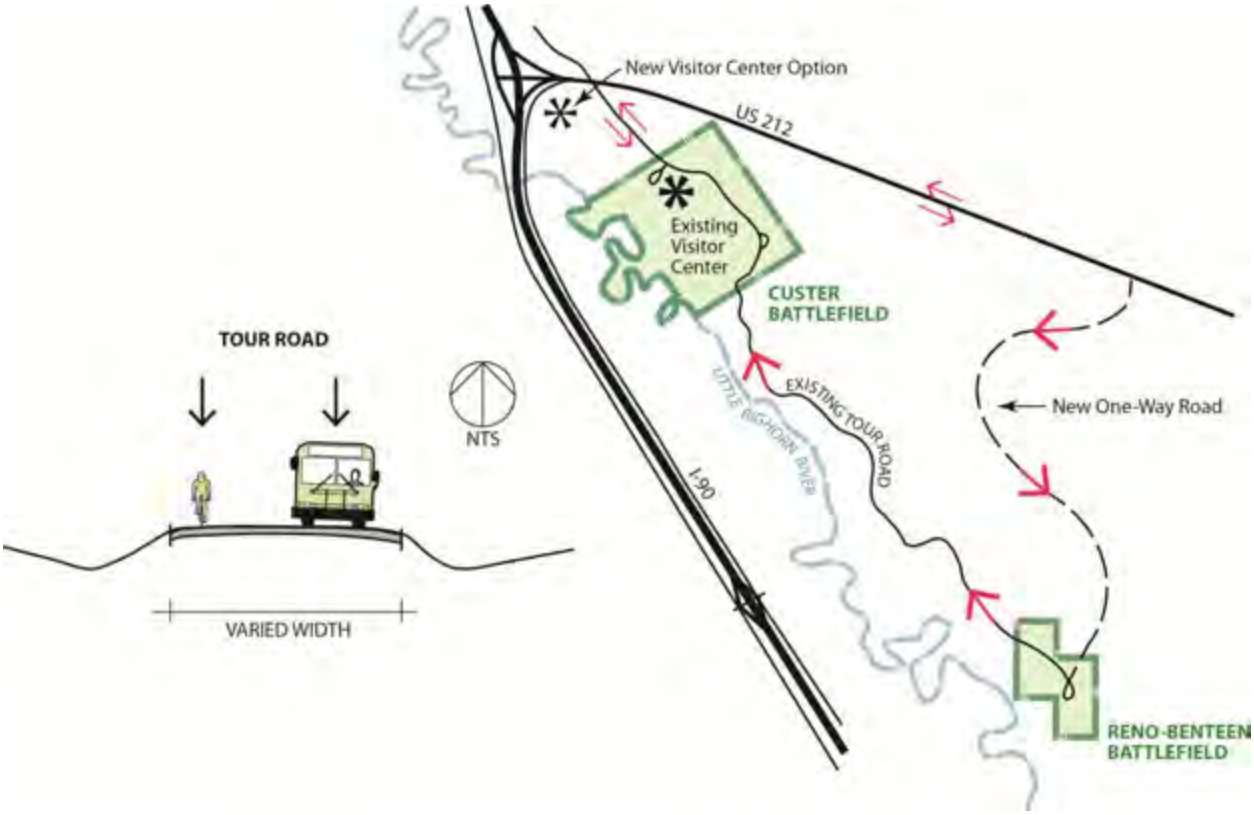


4) One-Way Tour Loop with Access from U.S. 212

This option (Figure 2-5) includes a proposed tour road extension from Reno-Benteen Battlefield north to U.S. 212, forming a clockwise one-way tour loop. Like the previous option, the one-way tour road would allow visitors to experience the historic sites in the chronological sequence of the battle; however, this extension would avoid the costs and impacts associated with a new bridge over the Little Bighorn River. New parking would likely be required at the beginning of the one-way segment.

This option was discussed at the ATFS Project Kick-off Workshop in October 2011. Like the previous option, the road extension and traffic modifications to one-way circulation could include transit service and would improve traffic safety. Additionally, the one-way conversion might free up right-of-way for other multi-modal improvements, particularly to accommodate non-motorized travel modes, in the future.

Figure 2-5: One-Way Loop Tour Road via U.S. 212



Source: URS Corporation.

5) Detached Multi-use Trail Paralleling Tour Road

This option (Figure 2-6) proposes a detached multi-use trail for non-motorized travel modes along the entire Tour Road. This trail would be 10- to 12-feet wide and could be paved, gravel, or unpaved. Discussed at the ATFS Project Kick-off Workshop in October 2011, this option would significantly improve access and safety for non-motorized travel modes.

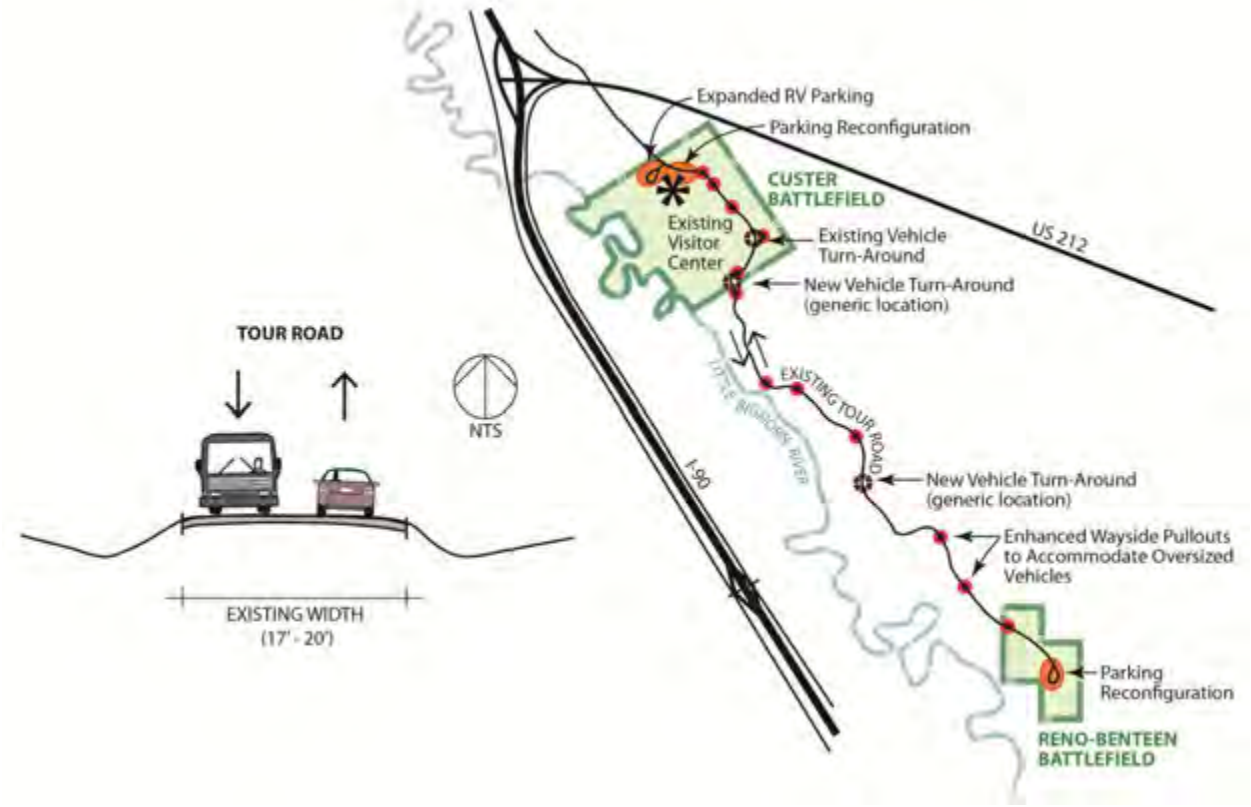
Figure 2-6: Detached Multi-use Trail

Source: URS Corporation.

6) Alternate Infrastructure Improvements

This option (Figure 2-7) is a collection of various lower-impact/lower-cost infrastructure improvements meant to enhance visitor experience and protect cultural and natural resources in and adjacent to the park. Improvements under this option, many of which were discussed at the ATFS Project Kick-off Workshop in October 2011, include vehicle turnarounds at key locations on the tour road, enhanced or additional wayside pullouts with oversized vehicle parking, and expansion/ reconfiguration of oversized vehicle parking in a less sensitive area east of the visitor center (Figure 2-8). A drop-off lot for large vehicles towing fifth wheels or RVs towing cars could be incorporated into the parking changes east of the visitor center or could be located offsite. These improvements could be made in conjunction with expansion of the trail network for hikers and other non-motorized travel modes. It should be noted that the parking layout shown in Figure 2-8 is only for illustration purpose, not actual design.

Figure 2-7: Alternate Infrastructure Improvements



Source: URS Corporation.

Figure 2-8: New Oversized Vehicle Parking (October 2011 Project Kickoff Workshop)

Source: URS Corporation.

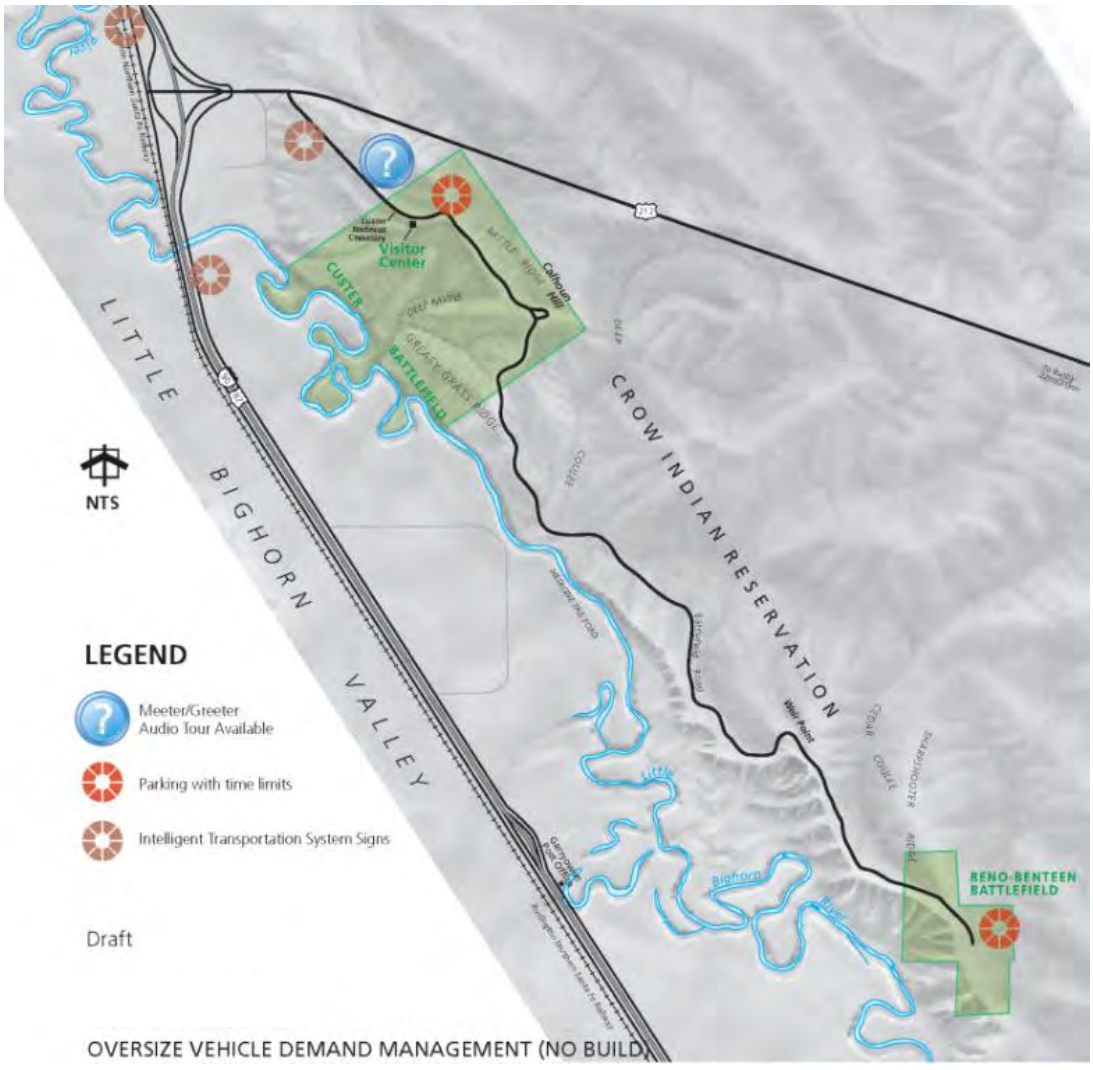
No-Build Options

7) Management Improvements

This option is a collection of lower-cost and lower-impact operational changes to enhance visitor experience. Many of these changes were suggested in the *2010 Preliminary Feasibility Study – Alternative Transportation* as Option C (Figure 2-9). This option utilizes existing facilities but seeks to improve communications with visitors and to smooth parking. Intelligent Transportation System (ITS) signs would be added along I-90, at the entrance to the park, and inside the park. A seasonal "meeter/greeter" would assist visitors with parking logistics and promote use of the park's tour road audio tour at peak times when parking is unavailable at the visitor center. Additionally, the visitor center parking area could be signed with time limits to encourage turnover. It should be noted that enforcement of time restrictions in the parking area could be difficult and require extra efforts of park staff, but these restrictions have the potential to substantially mitigate congestions and conflicts in the parking area.

Figure 2-9: Oversized Vehicle Demand Management

Reproduced from *2010 Preliminary Feasibility Study – Alternative Transportation (Draft)*

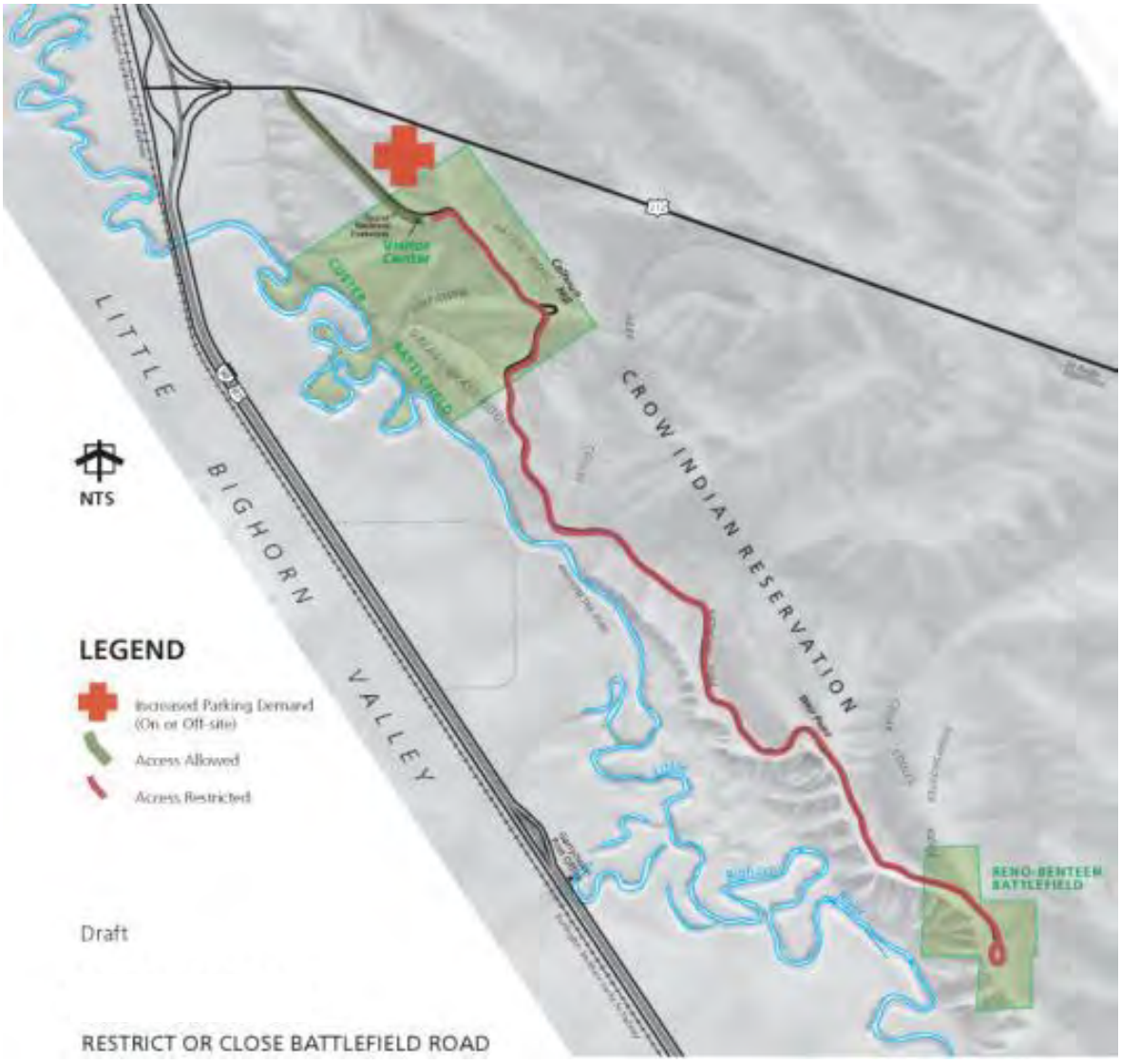


8) Seasonal Reservation / Permit System

This option (Figure 2-10) would seasonally restrict access to the park and require that visitors reserve an entry permit ahead of time. This option was first identified in the *1998 Traffic Safety Study* and was mentioned in the *2010 Preliminary Feasibility Study – Alternative Transportation* as a less feasible option. This option would not preclude transit service. Alternative modes such as transit, bicycles, and hiking could be incentivized by not requiring an access permit or reservation.

Figure 2-10: Restrict or Close Tour Road

Reproduced from *2010 Preliminary Feasibility Study – Alternative Transportation (Draft)*



9) Permanently Close Tour Road to All Motorized Vehicles

This option would close the road to motorized vehicles after the visitor center and maintain it as a trail instead. This option was mentioned in the *2010 Preliminary Feasibility Study – Alternative Transportation* as a more restrictive version of then Option D. This option would open the tour road right-of-way to non-motorized travel modes and would encourage cycling and hiking. Depending on demand, this option may require additional visitor center and/or offsite parking.

Transit Options

10) Peak Period/Special Events/Seasonal Voluntary Transit

This option would provide a voluntary seasonal shuttle/tour bus service for visitors to see the sights along the tour road. This option would likely require offsite parking and a parking shuttle to transport visitors into the park. It could also include a drop-off lot for towed vehicles. This option may improve safety for bicyclists riding in mixed traffic by potentially reducing the number of private vehicles on the tour road. Like the other transit options, this option could encourage walking and bicycle trips by providing return transportation on shuttle buses equipped with bicycle racks.

11) Peak Period/Special Events/Seasonal Mandatory Transit for All Visitors

This option would close the tour road to all private vehicles after the visitor center during peak hours, peak days, or certain seasons. Parking and tour shuttles would provide access to the tour road and offsite parking location(s). This option would effectively reduce or eliminate traffic and parking congestion in the park, improve safety for bicyclists and hikers utilizing the tour road, and reduce impacts to resources. Like the other transit options, the shuttle could encourage walking and bicycle trips by providing return transportation on shuttle buses equipped with bicycle racks. This option could also include a drop-off lot for towed vehicles.

12) Peak Period/Special Events/Seasonal Mandatory Transit for Visitors with Oversized Vehicles

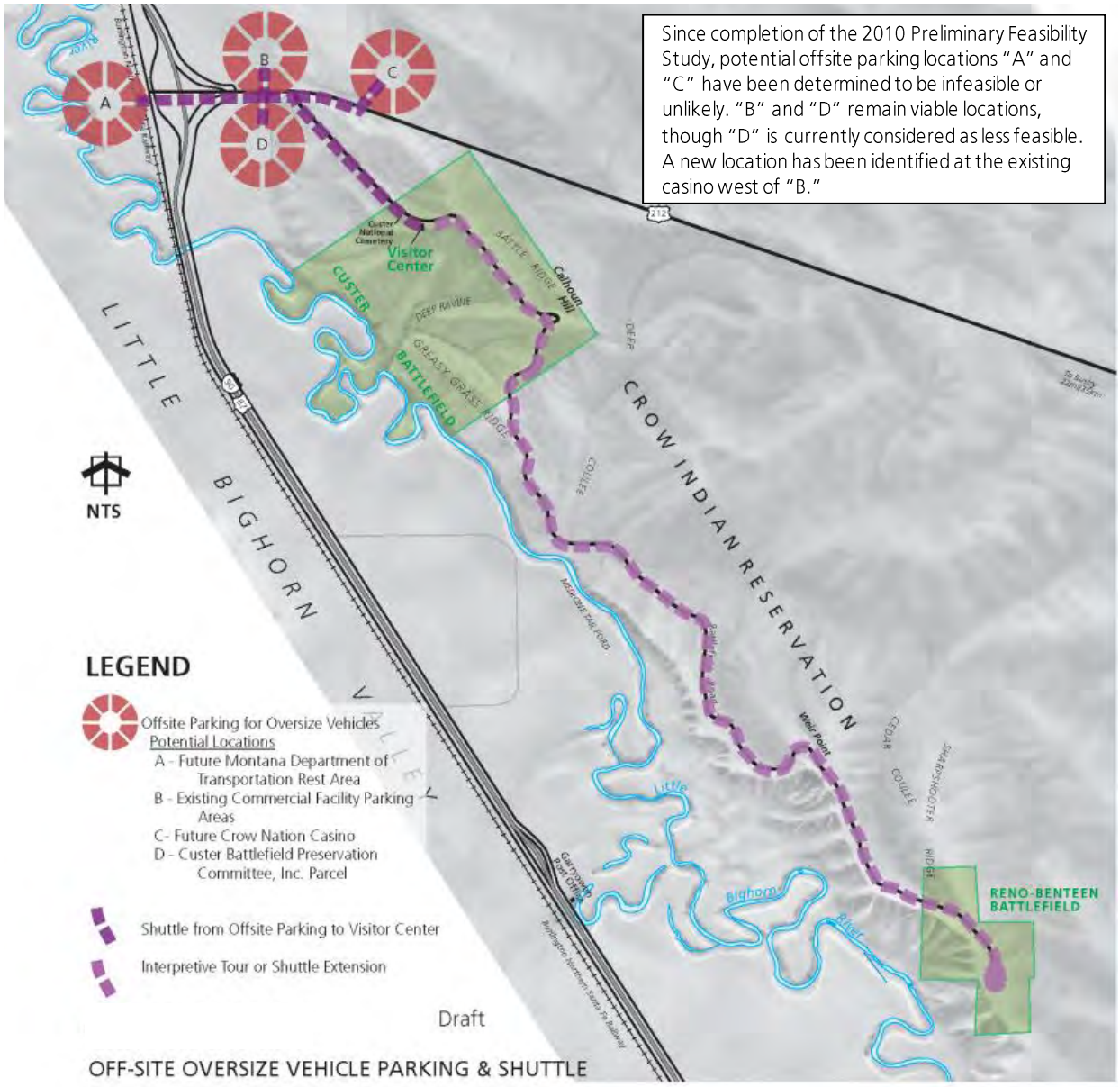
This option would seasonally close the tour road to all oversized vehicles after the visitor center and a tour shuttle would provide access to the tour road. This option would likely require a mandatory drop-off lot for towed vehicles, an offsite oversized vehicle parking lot, and a parking shuttle. By prohibiting oversized vehicles on the tour road, this option would improve traffic safety for all visitors utilizing the roadway. Like the other transit options, the shuttle could encourage walking and bicycle trips by providing return transportation on transit vehicles equipped with bicycle racks.

The original ideas of this transit option were first explored in the *1998 Traffic Safety Study* and revisited in subsequent studies. The *2010 Preliminary Feasibility Study – Alternative Transportation* explored transit in conjunction with offsite oversized vehicle parking and possibly seasonal oversized vehicle restrictions on the tour road (from Entrance Station to Reno-Benteen) as Option B (Figure 2-11**).** The October 2011 Project Kickoff Workshop explored similar concepts but considered road access restrictions for all private vehicles during peak times/days.

The service time period of each of the above three transit options (10, 11, and 12) can be varied to operate during the peak season – typically from Memorial Day to Labor Day; a few weeks during the summer months when the park encounters parking and traffic congestion; or only during some special events such as the Memorial Day weekend, the park's anniversary (June 25), the Sturgis Motorcycle Rally, and Labor Day.

Figure 2-11: Offsite Oversized Vehicle Parking & Shuttle

Reproduced from *2010 Preliminary Feasibility Study – Alternative Transportation (Draft)*

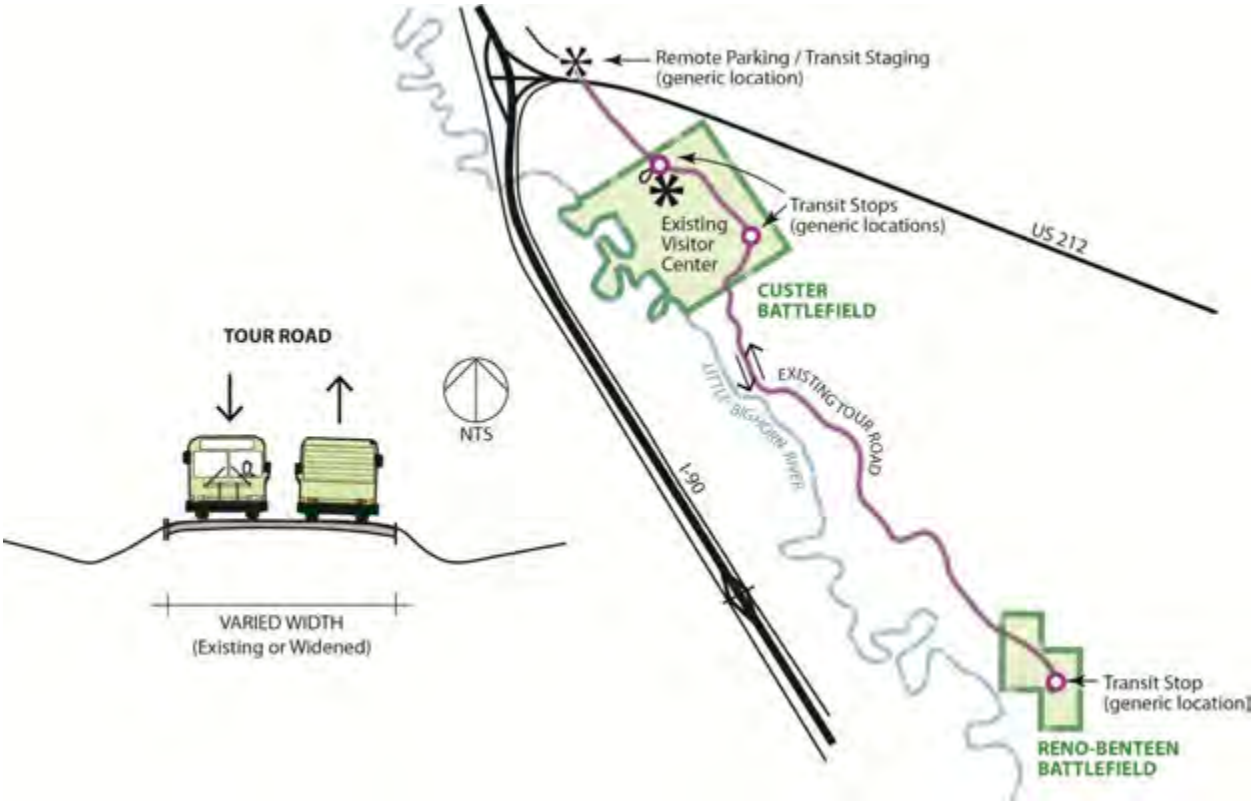


13) All-time Mandatory Transit for All Visitors with Motorized Vehicles

This transit option (Figure 2-12) would close the tour road to ***all*** motorized vehicles after the visitor center throughout the year. A tour shuttle would provide access to the tour road between the visitor center and Reno-Benteen. This option would likely require offsite vehicle parking and a parking shuttle as well. This option would significantly improve access and safety for alternative travel modes utilizing the roadway including bicyclists, hikers, etc. due to motorized vehicles being prohibited on the tour road. Like the other transit options, the shuttle could encourage walking and cycling trips by providing return transportation on vehicles equipped with bicycle racks.

Similar mandatory transit options were explored in the *1998 Traffic Safety Study* and revisited in subsequent studies. The *2010 Preliminary Feasibility Study – Alternative Transportation* suggested that restricting all private vehicles on the tour road would be a less feasible option. The October 2011 Project Kickoff Workshop did not distinguish between oversized and regular-size private vehicles and considered various transit and multi-modal scenarios which would restrict motorized vehicle access.

Figure 2-12: Transit Option



Source: URS Corporation.