MONTANA
REST AREA PLAN

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1 BACKGROUND

In an effort to address the long-term needs and comfort of roadway travelers, the Planning Division of the Montana Department of Transportation (MDT) first developed a rest area plan in 1985. This document was intended to guide MDT's long-term rest area location, rehabilitation and abandonment decisions. Although the 1985 Plan was modified to reflect changing conditions and priorities, it no longer adequately supported decisions related to long-range policy issues. Hence, this document represents the comprehensive effort that was undertaken to update the 1985 *Long-range Rest Area Plan*.

A three-phase approach was taken in developing the updated *Rest Area Plan*.

Phase I. A field inventory of rest area facilities was conducted to determine substandard conditions, necessary improvements, and required maintenance. MDT Maintenance Division personnel performed this initial work.

Phase II. A survey of rest area users was conducted to determine their opinions, needs and expectations related to rest areas in Montana. The user survey was the first element of public involvement for the *Rest Area Plan* update. Researchers at the Western Transportation Institute (WTI), Montana State University were contracted to perform this second phase.

Phase III. Information collected through the field inventory (Phase I) and the user survey (Phase II) was used directly to support the recommendations included in this updated *Rest Area Plan*, developed as part of Phase III. In further support of these recommendations, information was collected through a national survey, including selected Canadian provinces, several Rest Area Advisory Committee (RAAC) meetings, a formal literature review, meetings with MDT district offices and Steering Committee and other outreach efforts.

The methodology used in conducting each of these three phases is described in more detail below. The desired outcome of these efforts was a long-term, comprehensive *Rest Area Plan* that would assist MDT in establishing future priorities, allocating resources, and developing policies related to Montana's rest areas for the next twenty years.

According to the American Association of State Highway and Transportation Officials (AASHTO), the primary benefit of rest areas is improved highway safety. Improvements in

safety are attributed to reductions in driver fatigue and fewer vehicles on the shoulder of highways.

In fact, it has been estimated that a 10-minute stop every hour would significantly reduce the incidence of fatigue-related accidents. It has also been estimated that the presence of properly spaced rest areas would significantly reduce the number of shoulder stops. Moreover, the absence of rest areas on rural interstate highways would result in a 52 percent increase of shoulder-related accidents. Furthermore, based on responses from motorists at 13 rest areas in 5 states, it was estimated that driver-fatigue accident rates were reduced by 3.7 percent by the presence of rest areas. This reduction directly contributes to a national savings of over 200 million dollars per year (King, 1989).

1.1 HISTORICAL OVERVIEW

Nationally, the inception of roadside rest areas came from a provision of the Federal-aid Highway Act of 1938, which stated that "the States, with the aid of Federal funds, may include…such sanitary and other facilities as may be deemed necessary to provide for the suitable accommodations of the public." While this act marked the birth of roadside rest areas in the U.S., rest area growth did not really begin until passage of the Interstate Highway Act of 1956. It did not gain momentum until passage of the Highway Beautification Act of 1965 and the establishment of the Highway Trust Fund (Fowler, Straughan, and Perry, 1987).

In Montana, rest area development closely paralleled highway development. Rest areas were constructed along the highways often while the highways themselves were being constructed. Early rest area spacing was inconsistent; some interstate rest areas were only 20 miles apart, while others had distances of over 80 miles. The primary roadway system generally offered fewer, farther spaced rest areas than the interstate system.

In 1985 and later in 1989, attempts were made to improve the planning of rest areas in Montana. Specifically, efforts were made to provide long-term guidance for future construction, maintenance, and abandonment decisions for both interstate and primary systems in Montana. Attention to spacing and rest area usage was considered when developing the recommendations.

Early investigations revealed that the number of rest areas then available in Montana on both the interstate and primary systems was inadequate. Target spacing goals were defined: 70 miles between facilities for primaries with over 750 vehicles per day average daily traffic (ADT) or 100 miles if the ADT was 1,000 vehicles per day or greater.

In 1989, the initial investigation into what has become known as the City Park Rest Area (CPRA) Program occurred. Legislative appropriations, acquired in 1991 and 1995, provided six and later eight local communities with up to $100,000 to improve city parks so they could be used as rest areas. A 10-year agreement between the community and MDT placed maintenance and operations responsibility with the community. These initial CPRA contracts are due to expire in 2001 and 2002.

1.2 PLAN DEVELOPMENT PROCESS

As suggested by AASHTO, a critical element in developing a successful rest area program is a comprehensive rest area planning process. The goals of this suggested planning process are to (1) identify rest area needs, (2) determine the impacts generated by these rest area needs, and (3) develop solutions to address the previously identified rest area needs and potential impacts (AASHTO 1998). This project's three-phased approach resulted in a clear identification of both actual and perceived rest area needs, the potential impacts generated by these needs and recommendations for improving Montana's rest area program.

1.2.1 Phase I – Field Inventory

In Phase I, Maintenance Division personnel from MDT examined 12 of Montana's existing interstate rest areas. A copy of the field inventory form is provided in Appendix A. The focus of this inventory was on the condition and availability of existing rest area facilities and amenities. The specific items examined included the following:

- general impressions, including lighting, mowing and weed control, trash containers and litter, and fences;
- parking lots and ramps, including wheel-chair ramps, Americans With Disabilities Act (ADA) signing, rest area signing, pavement condition, and paint striping;

- outside areas, including walkways, tables, and shelters;
- building siding and roofing;
- janitorial room facilities;
- water facilities;
- restroom facilities, including signing, floors, walls, fixtures, toilets, windows, lighting, odor, supplies, and overall condition;
- information availability, including condition and type (i.e., posted maps, emergency information, and tourist information); and
- miscellaneous items, including telephones, pet areas, graffiti and vandalism.

The same individual conducted 11 of the 12 inventories during April 1998; another individual from MDT Maintenance Division completed the 12th inventory in July 1998. The relative consistency in survey administrators and inventory timing served to minimize bias in condition rating resulting from differences in administrators or across time. For this inventory, items were ranked on a scale from zero to four, where zero represented an unacceptable condition and four represented an excellent condition.

The information collected as part of the field inventory that related to the condition and availability of various rest area facilities and amenities was used to support the recommendations pertaining to rest area design, operation and maintenance. Further, these field observations enhanced the results of the user survey by allowing for direct comparisons in some cases. For instance, assessments of rest area condition made by the service provider (i.e., MDT) could be compared to assessments made by the traveling public.

1.2.2 Phase II – User Survey

The user survey methodology consisted of three tasks: (1) designing the survey instrument and methodology, (2) administering the survey at select locations and (3) analyzing the survey results.

Using MDT's draft *Montana Rest Area User Survey* as the basis, the final survey instrument (provided in Appendix B) contained four sections:

- rest area usage questions that included reason for stopping and familiarity with rest areas in Montana or other states;
- opinion-based questions that related to rest area condition, amenities and locations;
- travel-related questions that included length of trip, type of vehicle, size of party, purpose of trip, and so forth; and
- demographic data, including gender, age, marital status, residence, education and income range of the respondents.

In addition, the surveys were coded to indicate the specific rest area location where the survey was administered and the date on which it was administered (Blomquist and Carson, 1998).

The survey was designed as a mail-back survey; however, respondents were given the option of completing the survey on-site. Sixteen pre-determined representative rest area locations served as survey sites. Target survey distribution among the 16 sites was weighted on the basis of vicinity traffic volumes, because facility usage rates were not readily available. Surveys were administered at each site on two consecutive days for up to an eight-hour period each day. Survey administration periods were reduced if the target survey distribution goal was attained the first day or early in the second day. All surveys were administered between August 9th and August 29th of 1998 using a total survey crew of eight individuals who were sent in pairs to the various rest areas. The survey dates and target survey distributions are provided in Table 1 (Blomquist and Carson, 1998).

Choice-based sampling methods were used to assess the opinions of current rest area users. In a true choice-based sample, survey respondents would be chosen at random from the set of all rest area users. However, given project time constraints and potentially low numbers of rest area users at some of the survey sites, all rest area users were approached and asked to fill out a survey in order to obtain a sufficient sample size (Blomquist and Carson, 1998).

Table 1. Survey Locations, Dates and Target Distributions

Survey Location	Survey Date	Target Survey Distribution
Armington	8/28 and 8/29	75
Bad Route	8/16 and 8/17	93
Bearmouth	8/11 and 8/12	264
Bridger	8/13 and 8/14	109
Culbertson	8/17 and 8/18	111
Dearborn	8/24 and 8/25	123
Emigrant	8/9 and 8/10	67
Flowing Wells	8/21 and 22	18
Greycliff	8/11 and 8/12	244
Homestake	8/9 and 8/10	233
Hysham	8/19 and 8/20	126
Quartz Flats	8/13 and 8/14	213
Red Rock	8/13 and 8/14	85
Sweetgrass	8/26 and 8/27	70
Troy	8/10 and 8/11	119
Vandalia	8/19 and 8/20	50
Statewide	8/9 through 8/29	2000

Omitted from this sample were individuals who do not currently use rest areas but may begin to use rest areas if improvements are made to conditions, different locations are established, or additional amenities are provided. In addition, the surveys were administered only during the daytime in the interest of survey personnel safety, thereby excluding the opinions of nighttime rest area users. Rather than jeopardizing the safety of survey personnel or risking low response rates due to low nighttime rest areas usage, questions related to nighttime usage and concerns were included in the survey instrument. Every effort was made to solicit opinions from a wide range of rest area user groups, including recreational travelers, commercial vehicle operators, business travelers and others. This diversity of opinion was felt to be important to ensure that MDT has the opportunity to address the needs and expectations of all of its customers, rather than just a portion of travelers using rest area facilities (Blomquist and Carson, 1998).

After the administration of the survey, descriptive statistics were produced and summarized in both graphical and tabular form. In all cases, summary statistics were reported as a statewide average, as well as for each of the individual rest area sites. By maintaining summary statistics for each of the individual rest areas, the variability in opinion-based responses (i.e., level of satisfaction) can be explored more effectively (Blomquist and Carson, 1998).

On a statewide basis, the majority of user survey respondents was male (53.55 percent), married (73.53 percent), and resided outside of Montana (67.96 percent). The highest proportion had an annual income between $10,000 and $30,000 (46.55 percent), was between the ages of 46 and 65 (42.98 percent), and had attended collage (31.35 percent). The purpose of the majority of the trips was for vacation or recreation (69.31 percent), and trip lengths were consistently over 1,000 miles (63.55 percent). Similarly, the greatest percentage of the respondents had traveled over 1,000 miles at the time they were surveyed (45.83 percent). The average annual driving distance was reported as 25,590 miles, with an annual average of 21.26 trips of 100 miles in length. There was an average of 2.73 people per traveling party (Blomquist and Carson, 1998).

Advanced statistical modeling techniques were used to determine significant relationships between general travel-related and demographic characteristic data and various rest area usages and opinion-based responses related to rest area conditions, amenities and locations. Specifically, statistically significant relationships were determined using ordered probability regression models and logistic regression models. For further discussion on this aspect of the user survey, the reader is referred to the *Rest Area User Survey Final Report* (Blomquist and Carson, 1998).

1.2.3 Phase III – Plan Development

As noted previously, information collected through the field inventory and the user survey was used to support the recommendations included in this updated *Rest Area Plan*, developed as part of Phase III. In further support of these recommendations, information was collected through a national survey, including selected Canadian provinces, several RAAC meetings, a formal literature review, meetings with MDT district offices and Steering Committee, and other outreach efforts. These efforts are described in more detail below.

National Survey. A national survey was conducted to solicit information on rest area programs and facilities in other states and Canadian provinces. This non-statistical survey was faxed to knowledgeable rest area representatives in the United States and Canada. Rest area representatives were contacted beforehand to verify that they were the appropriate person to respond to the inquiry and to determine their interest in completing the survey. Those participating were asked to return the survey via fax.

The survey instrument contained five primary sections related to rest areas: (1) operation, (2) maintenance, (3) design, (4) planning and (5) funding (see Appendix C). Rest area operational questions centered on hours of operation; combined operation with other facilities (i.e., weigh stations and visitor centers); year-round operation; staffing; utilization by non-profit service organizations for fundraising activities; and partnership agreements for operation (i.e., public/public and public/private partnerships).

Rest area maintenance topics included the characterization of maintenance programs (i.e., proactive versus reactive); sources of maintenance staff (i.e., in-house versus contracted); frequency of preventative maintenance inspections; regularly inspected items; standard periods for private maintenance contracts; methods of oversight to ensure fulfillment of private maintenance contracts; and the frequency of several general maintenance activities (i.e., building maintenance and management, site irrigation and snow removal).

Rest area design questions were directed toward current and desirable rest area spacing standards; qualifications of an acceptable rest area alternative; types of successful water supply/wastewater treatment systems being used; new services or amenities being implemented or considered for implementation; current and future means of offering tourist-related information; accessibility for persons with disabilities; availability of and resistance to vending machines; and the existence of RV sewage dumps.

With respect to rest area planning, representatives were asked about the existence of a rest area plan in their home state or province. Rest area funding questions centered on sources of funding for the construction of new rest areas, sources of funding for the maintenance or rehabilitation of rest areas, budgets available for rest area construction, and budgets available for maintenance or rehabilitation on a yearly basis.

A total of 48 surveys were distributed to 45 states and three Canadian provinces. Thirty-four completed surveys were returned for a response rate of approximately 71 percent. Descriptive statistics were produced and summarized in tabular form. Written comments on the survey instrument provided further insight into other state and provincial rest area programs.

Rest Area Advisory Committee Meetings. Key to the development of the updated *Rest Area Plan* was the formation of a Rest Area Advisory Committee (RAAC), which was a joint undertaking of MDT and WTI. Committee members were carefully selected to provide broad-based representation of both rest area users and rest area service providers. The final RAAC membership included:

- Fred Patten, State President, American Association of Retired Persons (AARP);
- Sue Akey, American Automobile Association of America (AAA);
- Ellen Baumler, Sign Coordinator, Montana Historical Society (MHS);
- Brian Cavey, Montana Motor Carriers Association (MMCA);
- Victor Bjornberg, Travel Montana;
- Tim McCauley, State Association of United Ways of Montana;
- Keith McFarlane, State President, Good Sam Club;
- Clint Blackwood, Executive Director, Montana Lewis & Clark Bicentennial Commission; and
- Connie Kenney, Executive Director, Butte-Silverbow Chamber of Commerce.

Three separate RAAC meetings were held throughout the plan development process. The meetings took place in October 1998, November 1998, and February 1999. Meeting agendas were designed to allow for maximum discussion and input from the various RAAC members. Topics addressed during the course of the three meetings included: rest area spacing, winter closures, current maintenance contracts, RV dumps, statutory limitations, city park rest areas, and historical and interpretive signs. The feedback from RAAC members was used to supplement the results of the field inventory, user survey, and the national survey.

Literature Review. A review of pertinent rest area literature was an additional step in the plan development process. The usefulness of this review was limited for a number of reasons. First, much of the literature uncovered in the search focused on a single, narrow rest area issue, such as commercialization, energy sources, or water and wastewater systems. Very few documents considered either comprehensive rest area issues or long-term issues. Second, much of the literature was produced during the 1970s when interest in rest areas was most prevalent. The dated nature of this literature severely restricted its value for current rest area design, analysis and planning efforts.

With these limitations in mind, three types of literature were selected for review: (1) overviews of various general rest area issues, (2) site-specific rest area studies and (3) rest area development reference guides. General rest area issues related to location and development, design, maintenance and operation, funding and revenue generation, environmental impact, and economic benefits.

A number of states, including Arizona, California, Colorado, Montana, Nebraska, Oregon, Texas, Utah and Virginia, have performed rest area studies to improve various aspects of rest area provision. Table 2 lists the various statewide studies and the issues that were the focus of the respective studies. As noted in Table 2, the perspective of these studies ranges from narrow (i.e., single amenity feasibility analyses) to broad (i.e., statewide reports on most, if not all, aspects of current rest area provision). Findings from the literature review supported the recommendations contained in nearly every section of this document.

In addition to the literature describing general rest area issues and site-specific evaluations, two reference documents related to rest areas have been produced at the national level and are worthy of mention here. Issues addressed by these two reference documents are summarized in Table 3.

The Federal Highway Administration (FHWA) completed a manual in 1981 to serve as a reference for rest area planners in need of guidance on determining the most successful and timely design procedures. This document was produced near the end of a major rest area building boom in the 1970s. At that time, the success or failure of various systems and designs of newly completed rest areas were just beginning to be observed (Reierson and Adams, 1981).

Table 2. Site-specific Studies Included in the Literature Review

Study Sponsor	Study Date	Location/Development	Design	Maintenance and Operation	Funding and Revenue Generation	Environmental Impacts	Benefits
Arizona Department of Transportation	January 1982		✔	✔			
California Department of Transportation	1990		✔	✔	✔ [1]		✔ [3]
Colorado Department of Transportation	1997	✔	✔	✔	✔		
Idaho Transportation Department	June 1993	✔	✔				
Montana Department of Transportation	September 1990		✔	✔	✔	✔	
Nebraska Department of Transportation	1987	✔	✔				
Oregon Department of Transportation	February 1988	✔	✔	✔			
Texas Department of Highways and Public Transportation	1986-1987	✔	✔	✔		✔	
Utah Department of Transportation	May 1990	✔	✔	✔			
Virginia Department of Transportation	1986-1987	✔	✔	✔	✔ [2]		

[1] Commercialization
[2] Vending machines
[3] Economic benefits

Table 3. Rest Area Reference Documents Included in the Literature Review

Study Sponsor	Study Date	Location/Development	Design	Maintenance and Operation	Funding/Revenue Generation	Environmental Impacts	Benefits
USDOT, FHWA	1981	✔	✔	✔	✔ [1]	✔	
AASHTO	1998	✔	✔	✔	✔ [1, 2]	✔	

[1] Commercialization
[2] Vending machines

MDT District Offices. The department met with each of the five districts to discuss rest area issues in their respective district and to get input on site-specific recommendations to be included in the *Rest Area Plan*. Meetings were held in July 1999 at Butte, Miles City, the Gold Creek eastbound rest area, Helena and Billings.

MDT Steering Committee. A steering committee of MDT administrators was formed to provide oversight and recommendations into the development of the Plan and staff recommendations to the Transportation Commission. A draft version of the plan, which reflected input received through the public outreach effort, was sent to committee members prior to a meeting held in September 1999. The purpose of the meeting was to get the committee's endorsement of the proposed policy and site-specific recommendations and priorities. Members of the Steering Committee were: D. John Blacker, Maintenance Administrator; Jim Currie, Deputy Director; David A. Galt-Administrator, Motor Carrier Services Division; Gary A. Gilmore, P.E., Administrator-Highways and Engineering Division; Michael P. Johnson, District Administrator-Great Falls; Larry Murolo, Chief-Facilities Bureau, Maintenance Division, and Patricia Saindon, Administrator-Transportation Planning Division. Dick Turner, Chief, Multi-Modal Planning Bureau and Jan Vogel, Planner were the staff representatives from the Transportation Planning Division.

Other Public Outreach Efforts. Other public involvement efforts carried out by MDT included postcards, *Newsline (*newsletter), press releases, MDT's Internet homepage, and a toll-free phone number to enable citizens to comment on the Plan.

The 1999 AASHTO publication *A Guide for Development of Rest Areas on Major Arterials and Freeways* provides an extensive update of the FHWA manual described previously and covers virtually every issue in rest area design. The intent of this reference document is to assist states in creating a successful rest area program, including the provision of essential services. Major areas of focus include: (1) planning and program development; (2) upgrading existing facilities; (3) location of new facilities; (4) design, including aesthetics; (5) site design and development; (6) site details; (7) security; (8) water supply and wastewater treatment; (9) landscape development; (10) erosion control and utilities; and (11) maintenance and operations plans. This reference document served as a valuable guide in the development of MDT's *Rest Area Plan*.

1.3 PLAN COMPONENTS

As noted previously, the desired outcome of the three-phased project was a long-term, comprehensive *Rest Area Plan* that would successfully guide MDT in establishing future priorities, allocating resources, and developing policies related to Montana's rest areas for the next twenty years. To accomplish the overall objective of the study, this document contains recommendations related to each of the following rest area issues: location and development, design, operation, and maintenance. In addition, statutory and policy considerations, environmental considerations, funding requirements and sources, public and stakeholder involvement, and recommendations regarding new rest area locations are discussed.

This information should directly benefit MDT by providing for a higher degree of public input into transportation planning and decision-making, facilitating decision-making with respect to future priorities, and providing justification for the commitment and allocation of rest area resources and funds. In addition, benefits in terms of increased highway safety and economic contributions resulting from an enhanced system of rest areas in the State may be realized.

2 LOCATION AND DEVELOPMENT

Two primary rest area location and development issues concern rest area spacing and site requirements. With respect to rest area spacing, more frequent rest areas certainly provide better service to the motoring public, but the number of rest areas will be largely affected by budgetary constraints. Further, if a rest area is located in close proximity to a community that provides similar services, the rest area may be viewed by the motoring public as duplicative in nature.

Once general spacing guidelines are established a suitable rest area site must be selected. To be considered a candidate site, the location must have the following features: adequate acreage; a source of good quality water; electric power; sewage and septic systems (or the ability to develop such systems); a buffer zone between the rest area and any nearby communities; and access to emergency services (Fowler, Straughan and Perry, 1987).

2.1 GENERAL FACILITY SPACING

Recommendation

2.1.1. *The ideal spacing between rest areas, including major resting locations, should be approximately one hour of travel time.*

Both AASHTO and the RAAC suggest the ideal spacing between rest areas is approximately one hour of travel time (AASHTO, 1999). This distance was recommended, as well, in a study conducted by the Texas Department of Highways and Public Transportation (TDHPT) in 1987. Alternatively, the posted speed limit can be used as a rough approximation of the desired mileage between rest areas (AASHTO, 1999). In keeping with these published guidelines, it is recommended that the spacing goal for rest areas be equal to approximately one hour of travel time. This estimation should be made under favorable travel conditions. When respondents to the user survey were asked to assess the current locations of rest areas in Montana, a rating of good to excellent was noted by roughly 90 percent of the sample. Somewhat surprisingly, however,

survey respondents also expressed the opinion that there were an inadequate number of rest areas throughout the State (Blomquist and Carson, 1998). As shown in Table 4, responses to the national survey regarding preferred rest area spacing indicated that 54 miles, or roughly one hour of travel time between rest stops, was the optimum spacing. Additional results of the national survey revealed that current spacing between rest areas in participating states and Canadian provinces is roughly 53 miles apart. The closeness of the responses in terms of actual spacing versus desired spacing of rest areas among the participating states and provinces is noteworthy.

Table 4. National Survey Results Regarding Rest Area Spacing

Question:	**Response (%)**
What is your current and desirable average rest area spacing?	
Current: miles	52.84
Minimum	25.00
Maximum	140.00
Current: hours	1.09
Minimum	0.50
Maximum	3.00
Desirable: miles	54.26
Minimum	20.00
Maximum	95.00
Desirable: hours	1.08
Minimum	0.50
Maximum	1.50

In an effort to quantify Montana's current rest area spacing situation, eight of Montana's most heavily used through routes were analyzed. Six of these routes were east-west in direction, and two were north-south routes. Specifically, the east-west routes included I 90, I 94, US 2, US 12, US 212, and Montana 200. The north-south routes used in the analysis included I 15 and US 191. Three separate analyses were performed, as described in the paragraphs to follow. It should be noted that the distances between rest areas that were incorporated into these analyses were calculated from declared mileage figures found on an Official State Highway map. The distance

from a State border to the nearest rest area was included only if that distance was greater than fifteen miles.

The first analysis considered all of the official rest areas on the designated routes. For this analysis, rest areas scheduled for abandonment or that have been abandoned (Gold Creek, Barretts, Homestake, and Locate) were not considered. On the other hand, those rest areas that have been proposed as additions (North 19th - Bozeman, Pompeys Pillar, Lincoln, junction I 90 and US 212, and Winnett), or that are planned under the City Park Rest Area Program (Wolf Point, Cut Bank [built summer of '99] and Roundup) were included in the analysis. Figure 1 indicates the current locations of rest areas in Montana. Proposed rest areas and those identified for abandonment can be found on the more detailed map contained in Appendix G.

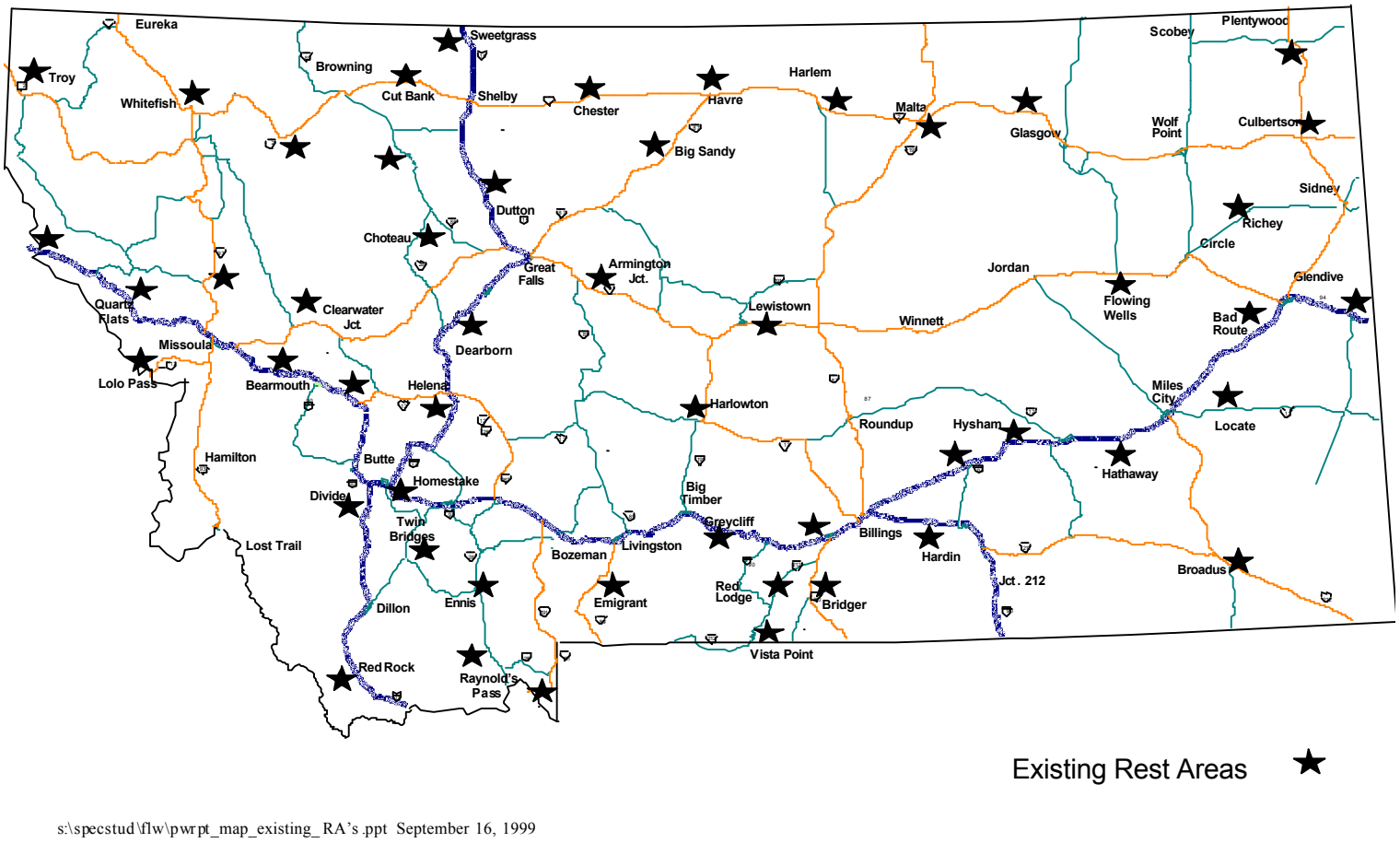
Ennis - Before

Ennis - New City Park Rest Area

70's Picnic Shelter at Bearmouth

Ouartz Flats Interstate Picnic Shelter

Picnic Shelter at Clearwater Junction



s:\specstud\flw\pwrpt_map_existing_RA's.ppt September 16, 1999

Figure 1: Montana's Current Rest Area Locations

The third analysis incorporated other potential places of rest along with the official rest areas. Such additional locations were primarily towns along the route being reviewed. Population was not the sole factor in determining if a town was a potential place of rest; rather, the relative size of a given community compared to the route being served was the most important consideration. On Montana 200, for example, smaller communities (such as Circle and Jordan) were determined to have potential resting opportunities. However, Frenchtown on I 90 and Terry on I 94 were not included as potential resting places, even though they are similar in size to Circle and Jordan.

2.1.1 Spacing of Official Rest Areas Only

The initial analysis of current rest area spacing within Montana assumed that only official rest areas would be considered acceptable stopping locations by the traveling public. While this assumption is apt to be flawed, it does allow for a determination of actual rest area spacing on some of Montana's more heavily used routes. This knowledge is useful in determining where additional facilities may need to be constructed or, conversely, where there currently may be an excessive number of rest areas.

Descriptive statistics of the data evaluated under the previously mentioned criteria are shown in Table 5. As expected, rest area spacing on Montana's Interstate highways is generally better than on the non-Interstate roadways. Average spacing on the Interstates ranged from about 40 miles (on I 94) to nearly 70 miles (on I 90). Although these figures are consistent with the recommendations for optimum spacing, a number of the Phase II user survey respondents felt that the number of rest areas in Montana was inadequate (Blomquist and Carson 1998). Moreover, the closure of the Homestake rest area due to a failure of its sewage treatment system, and the planned closure of the Gold Creek rest area result in a distance of 165 miles between official rest areas on I 90 (i.e., Bearmouth and Bozeman). (Note, Bozeman rest area under construction summer of '99.) This represents the greatest distance between any two rest areas on the Interstate

Table 5: Current Rest Area Spacing on Selected Montana Routes

	Route							
	I 15	I 90	I 94	US 2	US 12	US 191	US 212	MT 200
Mean Distance	65.8 mi.	69.3 mi.	41.7 mi.	59.3 mi.	120.0 mi.	88.0 mi.	61.0 mi.	88.1 mi.
Standard Deviation	17.27	41.61	23.37	43.72	56.20	33.32	29.94	48.01
Minimum Distance	33 mi.	34 mi.	19 mi.	17 mi.	67 mi.	54 mi.	34 mi.	40 mi.
Maximum Distance	81 mi.	165 mi.	80 mi.	183 mi.	211 mi.	133 mi.	107 mi.	187 mi.

highways included in the analysis. Despite the number of towns along this stretch of roadway, the excessive length between official rest areas needs to be addressed. Currently, MDT is investigating the Butte area for a new rest area location. Assuming a suitable location is found the distance between rest areas could be cut approximately in half.

The average distance between rest areas on the non-Interstate highways included in the analysis ranged from about 60 miles (on US 2) to about 120 miles (on US 12). On each of these facilities, the maximum distances between rest areas exceeded 100 miles, with some routes having multiple instances of spacing that exceeded this distance. Comparing these values to the AASHTO recommendations, the average distance between rest areas appears to be higher than ideal on most of the non-Interstate highways reviewed. Moreover, all of the roadways in the analysis (i.e., both Interstate and non-Interstate) have segments that clearly exceed the AASHTO recommendation of one hour between rest areas.

2.1.2 Spacing of Rest Areas After Seasonal Closures

Economic constraints and seasonal reductions in tourist traffic traditionally have led to closures at many of Montana's rest areas. On the Interstate highway system, 8 of the 20 current and planned facilities are subject to seasonal closure. This calculation excludes facilities that are to be abandoned and, further, assumes that new rest areas will remain open year-round. Only four of the 32 facilities on non-Interstate highways remain available to the motoring public during the winter months. It should be noted that many of the closed facilities are City Park Rest Areas. The evaluation of official rest areas after seasonal closures, which excluded towns and other potential stopping locations, revealed that the spacing of official rest areas on Interstate highways is noticeably better than on non-Interstate routes in Montana (Table 6). On I 15, however, the mean spacing is nearly 100 miles, with a maximum distance between rest areas of 207 miles. This equates to a travel time of nearly three hours under favorable driving conditions. Maximum distances between rest areas on the other two Interstates routes included in the analysis are 132 miles and 165 miles on I 94 and I 90, respectively. Assuming a 75-mile per hour travel speed, the associated travel times between these particular rest areas greatly exceed the one-hour recommendation described previously.

After seasonal closures, rest area spacing on non-Interstate routes appears inadequate (Table 6). The most favorable mean spacing between rest areas was calculated as slightly over 100 miles on US 212. For the remaining US highways in the analysis, the mean spacing varied from 220 miles to 326 miles. For US 2, US 12 and, US 191, only one rest area on each currently remains open during the winter months (Culbertson on US 2, Lolo Pass on US 12, and Armington Junction on Montana 200, respectively). On US 212 and US 191, only two rest areas are open all year

(Broadus and West Yellowstone, respectively). As stated, towns were not included in the analysis as alternative resting places. It should be noted, as well, that overlap with one of the Interstate systems often provides a rest area for the non-Interstate travelers during the winter season.

Table 6: Current Rest Area Spacing on Selected Montana Routes after Seasonal Closures

	Route							
	I 15	I 90	I 94	US 2	US 12	US 191	US 212	MT 200
Mean Distance	98.8 mi.	80.0 mi.	62.5 mi.	326.0 mi.	300.0 mi.	220 mi.	101.7 mi.	235.0 mi.
Standard Deviation	75.21	41.44	47.05	428.51	309.71	182.43	42.25	102.13
Minimum Distance	33 mi.	44 mi.	29 mi.	23 mi.	81 mi.	91 mi.	57 mi.	136 mi.
Maximum Distance	207 mi.	165 mi.	132 mi.	629 mi.	519 mi.	349 mi.	141 mi.	340 mi.

2.1.3 Spacing of Rest Areas and Other Resting Locations

The third method of evaluating the distances between rest stops included official rest areas and other locations, primarily towns, which would allow travelers a place to stop and rest. For purposes of this phase of the analysis, the term resting locations will be used to describe all such facilities. It is believed that this method of analysis provides a clearer picture of what is truly available to those using Montana's highways. Interestingly, however, respondents from a large number of the states and Canadian provinces included in the national survey did not consider acceptable alternatives to rest areas as a way to fulfill spacing requirements. Of those who did, the most common alternative noted was a travel facility or community of adequate size that provides basic services (e.g., restrooms, restaurants, and so forth), and that is located in close proximity to a freeway off-ramp. Furthermore, an alternative facility should remain open 24-hours a day, and allow easy access for all classes of vehicles.

On the Interstate system, the mean spacing for resting locations ranged from a low of 26 miles on I 94 to a high of 40 miles on I 90 (Table 7). The maximum distance between locations varied only slightly from 51 to 55 miles for the three Interstate roadways. When this information is compared to the one-hour AASHTO recommendation, it appears that the spacing between resting locations on Montana's Interstate system currently is more than adequate.

Table 7: Current Spacing between Resting Locations on Selected Montana Routes

	Route							
	I 15	I 90	I 94	US 2	US 12	US 191	US 212	MT 200
Mean Distance	32.9 mi.	39.6 mi.	27.8mi.	46.6 mi.	50.0 mi.	44.0 mi.	50.8 mi.	53.4 mi.
Standard Deviation	12.27	10.23	10.92	22.14	27.21	18.48	29.36	25.09
Minimum Distance	14 mi.	15 mi.	15 mi.	15 mi.	12 mi.	9 mi.	27 mi.	23 mi.
Maximum Distance	54 mi.	51 mi.	51 mi.	89 mi.	101 mi.	70 mi.	107 mi.	99 mi.

The data for non-Interstate highways, as with the Interstate analysis, was vastly improved by including alternative resting locations in the calculations. All of the roadways in the analysis had average distances between resting opportunities of 50 miles or less. Maximum distances between resting opportunities on the non-Interstate highways, however, ranged from 70 miles on US 191 to 107 miles on US 212. In general, a comparison of these data to the AASHTO spacing guidelines is favorable, although some noticeable deficiencies exist.

On the mountainous western Montana, the extended distances between resting locations become even more problematic when the speeds at which drivers typically can travel are considered. In this region, alignment changes are more common than in eastern Montana. Furthermore, the greater number of tourists during the summer months visiting Montana's Yellowstone and Glacier National Parks tend to create longer travel times in western Montana than in eastern Montana. The increased travel times, coupled with the greater distances between resting locations, may create uncomfortable or unsafe conditions for travelers in western Montana.

2.2 SITE SELECTION

Recommendations

2.2.1 *Use the criteria outlined in the Site Evaluation Form (Figure 2) to select rest area sites.*

2.2.2 *As aging Interstate facilities are replaced, consider building single rest areas at interchanges near communities for safety considerations, and to reduce overall construction and maintenance costs.*

This section describes the factors to be considered in selecting sites for new rest areas, or for upgrading existing rest area facilities. General site selection should be consistent with the current *Rest Area Plan* map (Appendix G) which is based on the previously described rest area spacing, including abandonment and new construction activities. A Site Evaluation Form (Figure 2), based on current AASHTO guidelines, is provided to further facilitate the site selection process. As discussed later in this section, the use of this form is recommended.

2.2.1 New Facilities

Site Considerations. In addition to the spacing recommendations discussed previously, decisions concerning the location and development of new rest area facilities should be based on the following criteria:

- consistency with the *Rest Area Plan;*
- utility availability, including access to a potable water source, wastewater disposal, telephone and electrical service;
- quality of site (i.e., maximizes tourism potential, minimizes effects of harsh climatic conditions and facilitates development of scenic views and historical, cultural or natural features);
- potential environmental impacts on natural resources like endangered species, wetlands or archeological sites;

- corridor geometry (i.e., the horizontal and vertical alignment necessary to facilitate easy access for all types of vehicles);
- right-of-way opportunities to ease the purchase of desired parcels of land from private owners;
- community acceptance, based primarily on proximity of the site to area businesses and its perceived effect on the local economy (AASHTO, 1999);
- availability of caretaker services in the area; and
- site to serve as emergency parking in areas known to have extreme winter driving conditions (i.e., mountain passes, high wind areas, and visibility problems).

Median-located rest areas are not recommended. Large trucks and RVs would be encouraged to travel in the faster moving lane of traffic to access the facility. Further, left-hand exits are not as common and may cause unsafe, last minute maneuvers to access the facility (AASHTO, 1999).

Bearmouth Rest Area

Typical 70's Interstate Rest Areas

Columbus Rest Area

Figure 2. Rest Area Site Evaluation Form

Site Evaluation Form

District _____ Date _____
Facility: ? Rest Area ? Information Center
? City Park Rest Area ? Weigh Station
Location _____
Right-of-way Opportunity: Publicly Owned Land _____ Privately Owned Land _____
Spacing From Previous Rest Area to Next Rest Area on Route _____
Traffic Direction _____ Milepost No. _____
Traffic Volume Estimate (directional)
ADT, Present _____
ADT, Design Year _____
Estimated Number of People Using Rest Area Facilities Daily _____

Utility Availability
Feasibility of Connection to Municipal Water, Power, Sewer & Telephone Lines _____
Independent Water Resources and Treatment Requirements _____
Feasibility of Independent Wastewater Disposal System _____
Electric Power Source _____
Telephone Service _____

Physical Characteristics
Soil Characteristics _____
Ground Water Information Elevation _____
Topography (flat, rolling, hilly, etc.) _____
Existing Vegetation (i.e., tree cover) _____
Water Features (i.e., creeks, rivers, lakes, etc.) _____
Special Features _____
Historic Features _____
Setting (rural or urban) _____
Views and/or Vistas _____
Prevailing Winds _____
Potential Development of Adjacent Properties _____
Proximity to Environmentally Sensitive Area _____

Geometric Considerations
Vertical Profile _____
Horizontal Alignment _____
Acceleration Ramp _____
Deceleration Ramp _____
Sight Distance_____
Approximate Acreage to be Acquired _____
Other Considerations
Availability of caretaker services in the area _____
Site to serve as emergency parking in areas known to have extreme winter driving conditions (i.e., mountain passes, high wind areas, visibility problems) _____

In Montana, where tourism is of vital importance to the economy of many regions, a prospective rest area site must be judged on the basis of how interesting and appealing the location can be to passing motorists. This location is inclusive of not only scenic vistas and natural features in view from the rest area, but also unique attractions and communities that offer tourist activities in the vicinity of the rest area. Whenever possible, sites should be selected to capitalize on Montana's tourist activities and attractions.

In addition to maximizing tourism potential, a quality site must have an acceptable climate so motorists can enjoy their visit and to ease maintenance and operational requirements in winter months. Sites in Montana must be located so they have adequate tree cover to provide shade and, most importantly, protection from the wind. Ideally, sites should be placed in areas where snowfall amounts are manageable, to increase the possibility of year-round operation.

Finally, a quality site must have natural features to allow for development, as needed. The soils must be suitable for construction, as well as disposal of wastewater, and the topography must not unduly restrict desired building design or configuration. In certain situations, a special design may have to be adapted for mountainous or hilly sites to account for reduced construction area and steeper slopes.

The remoteness of most of Montana's rest areas increases the importance of utility availability in the site selection process. Aside from city park rest areas, it is not always feasible for Montana's rest areas to be connected to municipal systems, which is the preferred alternative; instead, they must be self-sufficient in many operations. Thus, finding a means to obtain potable water and dispose of wastewater is, perhaps, the most important consideration in the site selection process. Geological testing must be conducted at all potential sites to determine the existence of water-bearing soils for safe drinking water and the potential for implementing various forms of wastewater disposal.

Other than providing sources of potable water and a means for wastewater disposal, prospective sites must be capable of receiving telephone and electric service**.** Fortunately, as improvements have been made in satellite communications (i.e., cellular phones) and on-site power generation (i.e., photovoltaic solar cells), these requirements have become less restrictive.

Corridor geometry must also be taken into account when selecting a site. The geometry of the mainline must allow a smooth transition onto the rest area grounds for all types of vehicles. Typically, given adequate room for a rest area and level terrain, this should not present much of a hindrance to site selection. When a site is in mountainous terrain or near an interchange, special care must be taken to ensure adequate sight distance to allow vehicles to safely exit the highway and re-enter the roadway following their rest stop. The geometry of the site must allow suitable horizontal and vertical alignment for speed and directional maneuvers, with a minimum gap of 1 to 2 km between interchange and rest area ramps.

Site selection also should be influenced by possible environmental impacts. Montana's rest areas should reinforce the State's image as environmentally friendly. Every attempt should be made to locate a rest area so as to minimize its environmental impacts. Despite their potential appeal to tourists and other roadway users, rest area sites located near waterfowl or wildlife refuges, historical or archeological sites, wetlands or endangered species habitats, public parks or recreation areas must be thoroughly evaluated in terms of their potential noise, air, or groundwater pollution. Environmental considerations are discussed in greater detail in Section 6 of this document.

Right-of-way opportunities and community acceptance are also factors to be taken into account when selecting a site. The possibility of using State-owned land should be given primary consideration for obtaining right-of-way for a new rest area. If State-owned land is not available, a study should be conducted along the route to determine the optimum arrangement whereby land can be purchased. Exercising eminent domain should be done only when other feasible options have been exhausted so that the State can maintain a positive image and avoid undue conflict with local property owners. By the same token, community businesses situated near a proposed rest area site should be consulted to discuss any perceived concerns or negative impacts resulting from the construction of a rest area.

Site Selection Process. The first step in the site selection process for a new rest area should be a consultation of pre-set spacing guidelines to select a roadway corridor. Following the selection of the corridor, overhead photographs and topographic maps should be consulted to compile a strip map of prospective sites. Each of these sites will require a thorough on-site evaluation. At the same time, the possibility of creating a city park rest area within a community in the corridor should be explored if the planned rest area is not on the Interstate system.

A thorough on-site reconnaissance and review should be conducted at each site selected in step one. A site evaluation form based on current AASHTO guidelines (see Figure 2) should be completed in detail, allowing prospective sites to be ranked according to the selection criteria outlined previously in this chapter. Specifically, these criteria include consistency with the *Rest Area Plan*, utility availability, quality of site, environmental impacts, corridor geometry, right-of-way opportunities, community acceptance, spacing guidelines, and other considerations.

2.2.2 Reconstructing Existing Facilities

Several rest areas within Montana's highway system are currently programmed for reconstruction and many more may require reconstruction in the future. The location of these facilities should be re-evaluated before the renovation process begins. Factors that need to be considered include:

- conformity with current desired spacing guidelines along the roadway;
- location on a highway section with an adequate geometry for safe horizontal and vertical sight distances, acceleration/deceleration lanes and access to the roadway;
- effect of reconstruction on traffic volumes and highway capacity;
- growth of development around the rest area; and
- changes in peak-hour volumes and AADT that may require changes in parking capacity and services provided.

New sites for the possible relocation of an existing rest area should be compared with the present location (AASHTO, 1999).

Non-Interstate Rest Area at Clearwater Junction - built in 1998

2.3 COMBINED OPERATION

Recommendations

2.3.1. *Continue combined operation of existing facilities (i.e., weigh stations).*

2.3.2. *Pursue public/public partnerships for visitor information center development (i.e., the Montana Department of Fish, Wildlife and Parks; the Montana Department of Transportation; Travel Montana; US Forest Service; Bureau of Land Management; National Parks Service; Bureau of Reclamation; Corps of Engineers; Tribal Government; Other States, etc.).*

2.3.3. *Private involvement should be pursued only when other funding sources have been exhausted.*

2.3.4. *Pursue funding through the State Legislature to continue the City Park Rest Area (CPRA) Program.*

- *Provide financial assistance to CPRA recipients for rest area maintenance and operation.*
- *Remove the "state" rest area signs from communities no longer participating in the CPRA program.*
- *Provide financial assistance for new CPRA rest area sites..*

2.3.5. *Commercial advertising in rest areas, such as individual businesses placing advertising materials, signs and billboards to promote their services, should not be allowed.*

2.3.6. *MDT will, with prior approval based on pre-determined guidelines, allow local area chambers, service organizations and/or tourism groups to use rest area Information Boards to display a list of area services of interest to the traveling public.*

- *It shall be the responsibility of the applicable interest group to maintain the information and keep it current.*
- *Eligible services include listing names of lodging accommodations, restaurants, vehicle services, emergency road services, RV dump stations, travel attractions, etc.*

Combined operation, or the development of joint facilities, can include the construction of rest areas in conjunction with visitor information centers, weigh stations, or city parks (i.e., the City Park Rest Area Program). Potentially, a joint facility could also include a traveler services rest area (i.e., a commercialized rest area). Each of these facilities requires special allowances for site location and development.

2.3.1 Joint Rest Area/Visitor Information Center Facilities

Although few joint development facilities have been incorporated into Montana's rest area system in the past, Montana and an increasing number of other states across the nation are now developing such facilities. Over 85 percent of the officials who responded to the national survey reported the existence of combined rest area facilities with visitor information centers in their state or Canadian province (Table 8). On the other hand, very few states and provinces reportedly have combined rest area facilities with truck weigh stations, inspection stations or police stations.

Table 8. National Survey Results Regarding Combined Rest Area Operations

Question:	**Response (%)**
Are your rest areas combined with other facilities such as:	
Truck weigh stations?	8.82
Inspection stations?	2.94
Police stations?	5.88
Information centers?	85.29
Other	8.82

Given Montana's growing tourism industry, it seems worthwhile to include visitor information centers with rest areas at additional locations in the future. Currently, state-designated visitor information centers have been established at the Wibaux, Broadus, and West Yellowstone rest areas and visitor information centers are planned at future rest areas at Lolo Pass, Pompeys Pillar and at the junction of I 90 and US 212. Also under consideration, as an alternative to the site at Jct. I 90 and US 212, is a site at Garryowen/Crow Agency. This site offers partnership opportunities between MDT, the National Park Service, the Crow Tribe, and possibly Travel Montana.

Possible locations for new joint visitor information center facilities are the south entrance of I 15, the west entrance of I 90, the east and west entrances of US 2, and the north and south entrances of US 93. Specifically, the following locations are recommended for consideration:

- At the south entrance of I 15 from Idaho, inclusion of a visitor information center should be considered at the Red Rock rest area, which is open year-round. Dillon, which already has a state-funded visitor information center, is another alternative.

- A visitor information center at the west entrance of I 90 from Idaho could be included in the planned upgrade of the Dena Mora rest area. Another possibility would be to include the visitor information center at the Quartz Flats rest area, which is a newer facility, has a good deal of space, and is open year-round.

- The Troy rest area on US 2 is a relatively new site at an intersection of primary routes, and has a MCS scale station. This location would be an ideal choice for a visitor information center.

- Other visitor information centers being considered include one at Lolo Pass, serving the west entrance of US 12, and Pompeys Pillar on I 94 in south-central Montana.

2.3.2 Joint Rest Area/Weigh Station Facilities

The location of joint rest area/weigh station facilities may deviate from the one-hour spacing recommendation in order to be at or near State borders and route intersections. At these locations, special attention must be paid to the geometric layout of site entrances and exits to make sure the facility can provide easy access for high volumes of large trucks. Queue lengths will need to be sufficient to ensure that vehicles do not back up onto the highway. Several joint rest area/weigh station facilities are currently in operation at major highway intersections (i.e., Armington Junction, Culbertson, Broadus, Clearwater Junction and Troy).

2.3.3 City Park Rest Areas

Theoretically, a city park rest area is preferable to a stand-alone, State-operated rest area primarily due to decreased construction, operation, and maintenance costs, but also because of auxiliary benefits to the community in which it is located. Constructing a city park rest area should be the number one option for rest areas on 2-lane highways as long as (1) a suitable community lies within the designated corridor, (2) the site is responsive to the recommended rest area spacing criteria (i.e., in areas where the maximum rest area spacing criteria is exceeded), and (3) an existing park is available and can be accessed directly from the highway.

As previously mentioned, the first legislative appropriation for the CPRA Program was made in 1991; a second appropriation was made in 1995. Twelve facilities were constructed under these appropriations and two more are under contract (Wolf Point and Roundup). Ten-year agreements

were signed with the participating communities. These agreements allowed MDT to authorize a monetary contribution up to $100,000 to each participating community to improve local facilities and make them suitable for use as a rest area. MDT also committed to install and maintain signing on the serviced highway(s). In return, each participating community agreed to coordinate and oversee construction, provide any funding that was needed above the State's contribution, and operate and maintain the rest area for the agreement period.

With a number of the current CPRA agreements nearing the end of their contract periods, MDT will need to renegotiate agreements with the participating communities or let the agreements lapse with those that have not proven successful. As part of the negotiation process, MDT should consider providing assistance for rest area maintenance and operation. Maintenance of signing on the serviced highways should be included in the assistance calculations. The communities should be responsible for providing for the maintenance and operations personnel for the rest areas. Scheduling decisions for the facility should be made jointly by MDT and the community.

Areas in the state where maximum rest area spacing guidelines are not met could potentially be addressed by new CPRA agreements. Funding for any new CPRAs would require legislative appropriations for this purpose. The original contract period for a new CPRA should not exceed 10 years. Funding for construction from MDT may need to be increased from the original $100,000 to reflect increased construction costs since the previous agreements were made.

2.3.4 Commercialized Rest Areas

Commercial services could be included in rest areas to reduce construction and operation costs for the State when other funding sources have been exhausted. However, federal statutes forbid the inclusion of private enterprise on Interstate rights-of-way, except in the form of vending machines operated by the State with proceeds going to Randolph Sheppard agencies (i.e., State Association for the Blind). Montana law currently prohibits commercial activity in any form (i.e., vending machines, commercial advertising signs, etc.) at rest areas. Therefore, commercialized facilities would have to be located off the Interstate right-of-way, possibly near a rural interchange where there are no other existing services, and changes to the state law would have to occur for commercialization to occur at any of the rest areas in Montana.

Although it is difficult to identify exactly what commercial activity is, the department believes local area chambers, service organizations or tourism groups using rest area information boards to list services of interest to the traveling public does not constitute commercialization. Therefore, the department will cooperate with interested parties in making space available at rest areas to display a list of area services free of charge with the understanding that it's the responsibility of the interest group to keep the information up to date. Eligible services include listing names of lodging accommodations, restaurants, vehicle services, emergency road services, RV dump stations, travel attractions, etc.

When asked whether private businesses should be allowed to develop at rest areas, a majority of the user survey respondents at each rest area site answered negatively (66.31 percent). Of those who did support private development at rest areas, most favored gasoline and other automotive services (18.46 percent) or fast food restaurants (17.99 percent).

The feasibility of establishing private commercial services at rest areas was examined in a study conducted in 1990 by the California Department of Transportation (Caltrans). The results of this study led to the creation of Traveler Services Rest Areas (TSRAs), which provide both fee-based commercial services and free rest area services. Caltrans' initial plans called for six TSRAs to be established. Caltrans provided the land and $500,000 to a private partner, who built the TSRAs and will operate and maintain the facilities for 35 years. After that time, the TSRAs become the property of the State of California. Two obstacles challenged implementation of the TSRAs: (1) federal law prohibits commercial services on Interstates and (2) local business owners feared additional competition and opposed the development of the facilities. Caltrans addressed the first challenge by locating the TSRAs off of Interstate right-of-way, but near roadway interchanges. The second obstacle was overcome by increasing local input and cooperation in the TSRA development process. It was reported that including commercial services in new rest areas could significantly reduce the costs of construction, operation, and maintenance. In addition, the presence of a full-time security guard provided by the private partner was suggested as a way to reduce criminal activities at rest areas (Kress and Dornbusch, 1990).

Due to the Federal and State laws on this issue and public resistance to commercialization of rest areas, this concept has limited applicability in Montana.

3 DESIGN

The design of rest areas can be divided into two broad categories, general facility design and building design. General facility design considers the orientation of a suitable site, with two basic orientations (i.e., inward and outward) commonly used for rest areas. Other features in general facilities design include the number of parking stalls for all vehicle types, site landscaping (including the number of picnic tables and trashcans to be provided), vegetation, and safety barriers that may be required at some locations. The layout of the site, the design of pavements for the ramps and parking lots, the design of sidewalks and their geometry, signing requirements for both vehicles and pedestrians, and utility systems (i.e., water, sewer, and electrical systems) also are aspects of the general facility design. A more detailed discussion of the statutory and policy considerations that affect the design and operation of rest areas are provided in Section 6 of this document.

The building design can be subdivided into external and internal components. External items include the siding and roofing material choices, and the lighting around buildings. The internal component of building design involves such things as the selection of interior finishing materials and fixtures, the number and placement of restroom stalls, determination of various amenities to be provided, and the design of cleaning and heating systems.

For all design components, compliance with the Americans with Disabilities Act (ADA) specifications is required. In particular, ADA specifications heavily influence the design of the parking arrangement, the restroom stalls, and amenities, such as sinks and picnic tables. Moreover, it is important that ongoing monitoring of facilities occur to assure they are maintaining ADA compliance. Eighty-five percent of the officials who responded to the national survey stated their rest areas are compliant with current ADA requirements. An additional 15 percent of the respondents felt their facilities complied with at least some of the ADA requirements.

3.1 GENERAL FACILITY DESIGN

Recommendations

3.1.1. *Design geometrics following AASHTO's Green Book and the Montana Road Design Manual.*

3.1.2. *Incorporate A Sites in areas identified by MDT's Motor Carrier Services Division.*

3.1.3. *Use AASHTO equations to determine the number of parking stalls, picnic tables and trashcans.*

3.1.4. *Use municipal water and sewer systems, where possible.*

3.1.5. *Follow standard MDT thickness designs for sidewalks, ramps and parking areas.*

3.1.6. *To ensure non-profit service organizations using rest areas for fund raising activities do not impede pedestrian traffic flow to the rest rooms, consider installing a cement pad with an electrical outlet near the building to aid in reducing congestion.*

3.1.1 Orientation

An inward oriented facility, depicted in Figure 3, separates the parking locations for different vehicle types. Commercial vehicles, RVs, and vehicles with trailers are directed to park in an area with longer stalls, typically situated on one side of the building and major use area. This parking area generally will be further from the highway so as to provide greater deceleration and acceleration ramps. Passenger vehicles are parked in a separate area with appropriately sized stalls on the other side of the major use area. By placing the building and major use area between the two parking areas, all motorists are within a short distances of the building and other facilities, which is the primary advantages of this design. An inward orientation also assists in dispersing pedestrians, which helps protect vegetation from overuse (AASHTO, 1999). The disadvantage of the inward orientation, however, is that site requirements often are greater than with an outward orientation.

An outward oriented facility (Figure 4) provides parking stalls for all vehicle types between the highway and the building and major use area. A number of advantages have been attributed to

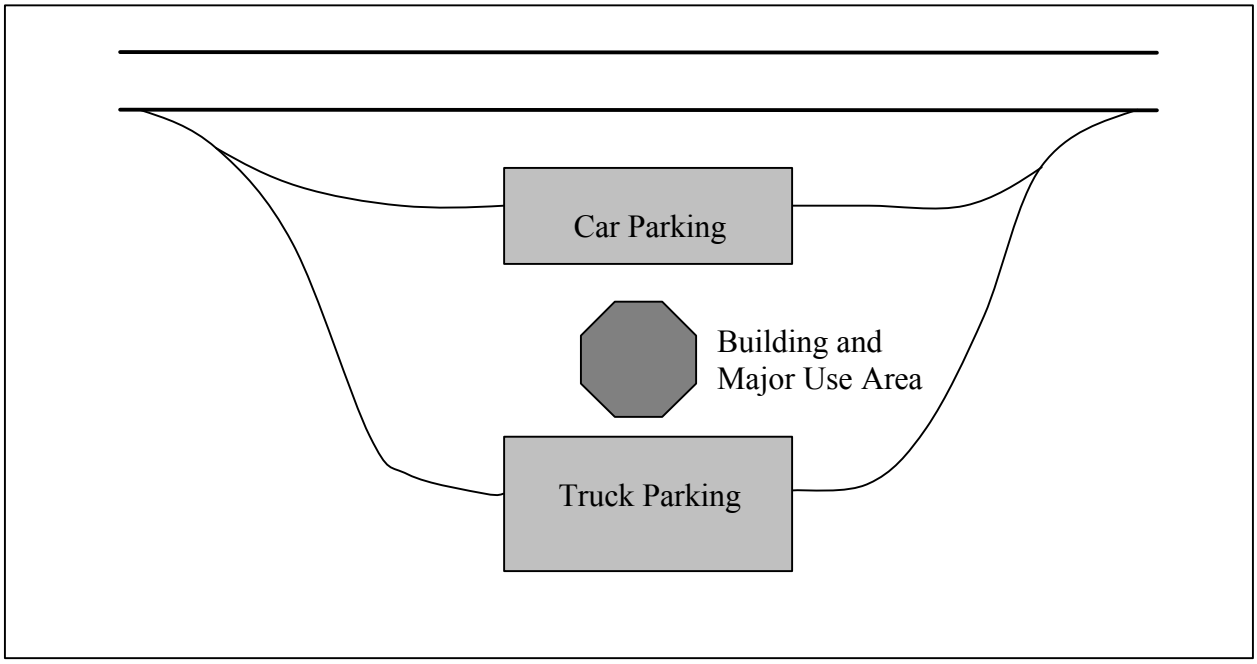


Figure 3: Inward Oriented Design

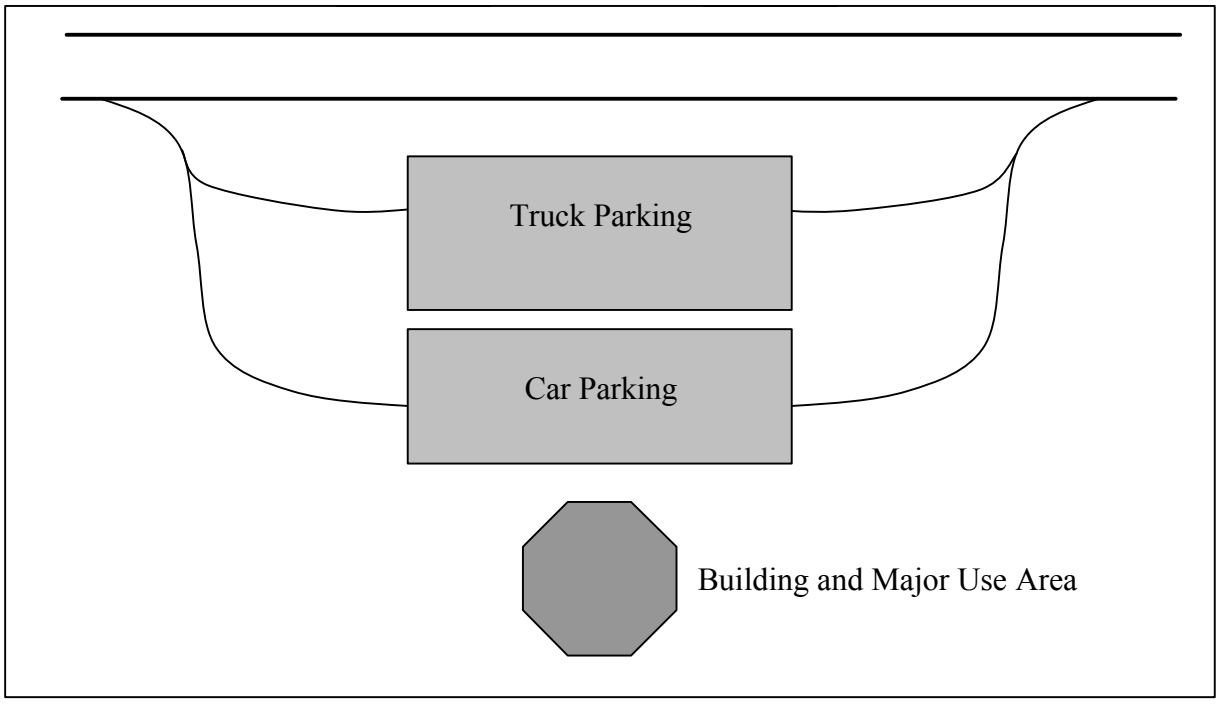


Figure 4: Outward Oriented Design

this configuration. Among the reported advantages are the potential for site expansion, minimized road crossings, flexible development opportunities, and smaller site requirements (AASHTO, 1999). MDT most commonly uses the outward orientation design; however, there are instances where the inward oriented design is better suited.

3.1.2 Geometrics

The geometrics of the rest area include the deceleration and acceleration ramps, the vehicular paths into and out of the rest area's parking facilities, the layout of sidewalks, and pedestrian islands, if required. The design of these items must follow the *Montana Road Design Manual* and AASHTO's *The Green Book*.

The majority of the exit and entrance ramps on Montana's Interstate highway system are of the tangent tapered design. The use of this ramp design for future rest areas is encouraged to maintain consistency with drivers' current expectations. AASHTO recommends that exit and entry ramps provide enough of a buffer between the highway and the rest area to discourage parking in the shoulders by those wishing to use the rest area. The preferred separation is 50 meters, with a minimum of 10 meters between the highway and the parking facilities of the rest area (AASHTO, 1999).

3.1.3 Parking

Regardless of the orientation chosen, the number and layout of the parking lots will need to be determined, and the same methods for calculating the number of parking stalls can be used. Distinctions will have to be made between passenger and longer vehicles, but for both vehicle types, the number of required parking stalls required will be based on traffic projections for the highway being serviced for the design period. Consequently, the number of stalls estimated will only be as good as the traffic projections. The AASHTO process for estimating the number of parking stalls was published in 1998 and it is recommended that this procedure be followed in Montana. The process for parking stall estimation is summarized in Table 9. It should be noted that when user survey respondents were asked to rank the importance of 35 different rest area features, sufficient automobile parking received the seventh highest average ranking.

Table 9: AASHTO Rest Area Design Calculations – Parking Lots

Project Location_____ Name_____		Design Year_____	
Calculations		**Factors**	**Totals**
Traffic Data	A = One-way Design Year ADT		
	B = Ratio of Design Hourly Volume to ADT		
	B1 Cars, generally = 0.15	% x A =	
	B2 Truck, when ADT < 12,500 = 0.15, when ADT > 12,500 = 0.10	% x A =	
	C = Traffic Composition in percent (from counts or estimates below)		
	C1 Cars (generally 75 – 89% of total traffic)	% x B1 =	
	C2 Cars with trailers or RV's (generally 4 – 9% of total traffic)	% x B1 =	
	C3 Trucks (generally 7 – 16% of total traffic)	% x B2 =	
	D = Vehicles per hour stopping at rest area		
	D1 –	% x C1 =	
	(a) Near commercial or metro area, 9%		
	(b) Typical rural route, 12%		
	(c) Information and Welcome Centers, 9 – 15%		
	D2 Cars with trailers, 9 – 15%	% x C2 =	
	D3 Trucks, 9 –15%	% x C3 =	
Parking Spaces	M = Total Parking Spaces		
	*M1 Cars – Based on average 15 min. stops = 0.45	0.45 x D1 =	
	*M2 Cars with trailers – Based on average 15 min. stops = 0.45	0.45 x D2 =	
	*M3 Trucks – Based on average 20 min. stops = 0.60	0.60 x D3 =	
	*Based on the Peak Factor (PF) (Average day of summer months + Average day of year) + VHS (Vehicles per hour per parking space PF/VHS) = 1.8 + VHS = M		

3.1.4 Water and Sewer Systems

The design of water and sewage systems will be determined in large part by the site selected for the rest area. If the site has access to local municipal systems, piping to transport fresh water and waste material will need to be designed. The simplicity of this option, compared to a self-contained system, warrants a recommendation for the use of the local municipal system. Rest areas that are a part of the City Park Rest Area Program currently use municipal water and sewage treatment. The negative aspects of rest areas using municipal systems are the possibility of

introducing deleterious materials into the waste treatment system, and the costs for the use of these systems.

If municipal systems are not available or if they are deemed to be a poor economic choice, a self-contained system will need to be designed. A source of potable water, as defined by the Safe Drinking Water Act, will need to be located. In general, groundwater will be the appropriate water source in Montana. The ease with which a suitable water supply can be found, however, will vary in different geographical areas within the State. Required flows will be dependent on the maximum number of patrons anticipated at a given rest area site. If substandard flows are all that can be located, on-site storage of potable water will have to be included in the design to accommodate periods when the groundwater source cannot provide an adequate supply.

An on-site sewage treatment system will have to be designed, as well, if a municipal system is not available. For most of Montana, a septic tank and a drain field will likely be the system of choice. To design such a system, engineers will need data on the in situ properties of the soils around a proposed rest area location and estimations of the number of rest area users.

When officials were asked on the national survey about the types of water supply and wastewater treatment systems used in their state or province's rest areas, 76 percent of those who responded to the survey reported using municipal systems and 65 percent reported using septic-tank absorption fields (Table 10). These were by far the two most frequently reported systems being utilized. Others systems used by a significant proportion of the participating states and provinces, listed in descending order, include: facultative-pond systems; package or mechanical systems; composting toilet systems; and evapotranspiration-bed systems. Wells, intermittent sand filters, and outhouses were reported, as well, but were used in very few states or provinces. Survey respondents were asked, as well, to identify which water supply/wastewater treatment systems have been the most successful for them. Municipal systems were noted by 65 percent of the respondents, with 32 percent of the respondents selecting septic-tank absorption fields as the most successful type of system.

The Montana Department of Highways conducted a rest area study in 1990. This study was narrowly focused, considering only the feasibility and associated costs of providing RV waste dumps at Montana's rest areas. Previous attempts to include RV waste dumps at rest areas

Table 10. National Survey Results Regarding Water Supply and Wastewater Treatment Systems

Question:	Response (%)
Which of the following water supply/wastewater treatment systems do you currently use for your rest areas?	
Municipal systems	76.47
Septic-tank absorption fields	64.71
Facultative-pond systems	35.29
Package or mechanical systems	35.29
Land-treatment systems	0.00
Evapotranspiration-bed systems	17.65
Recycle/reuse systems	0.00
Greywater systems	0.00
Composting toilet systems	20.59
Other	26.47
Which water supply/wastewater treatment systems have been most successful for you?	
Municipal systems	64.71
Septic-tank absorption fields	32.35
Facultative-pond systems	14.71
Package or mechanical systems	14.71
Land-treatment systems	0.00
Evapotranspiration-bed system	11.76
Recycle/reuse systems	0.00
Greywater systems	0.00
Composting toilet systems	5.88
Other	8.82

were abandoned because of high maintenance costs resulting from misuse. The issue was re-examined, however, due to increased requests from RV owners and groups to include waste dumps at all rest areas and other government-maintained facilities. In all, 11 rest areas around the State were examined to determine what types of waste disposal systems were possible and to identify the best locations for RV waste dumps. Septic tanks with drain-fields were found to be superior over other systems for separating waste treatment from the overall rest area wastewater system. With this option, the failure of the RV dump station would not shut down the water system for the overall facility. Other systems were found to be more costly, also. The study recommended charging a usage fee for all Montana-registered RVs, which would offset all operational and maintenance costs associated with the dump stations. RV owners generally

supported the implementation of a usage fee, but also wanted a mechanism to capture usage fees from out-of-state RV owners using the waste dumps (Robert Peccia and Associates, 1990). Historical problems with their use in Montana, along with current national reports showing concerns over their use (Fowler, 1987 and AASHTO, 1999), suggest that RV dumps may be a poor choice for this State. Moreover, respondents to the user survey indicated that RV dumps were a low priority with current rest area patrons in this State.

The national survey attempted to examine the issue of RV dumps, as well. At present, RV dump stations are not offered at any of the rest areas in 44 percent of the states and provinces represented in the survey (Table 11). Conversely, only three percent of the respondents reported the availability of RV dumps at all of the rest areas in their state or province. Of the states and provinces which currently offer RV dumps, only about 32 percent are increasing or maintaining the availability of this service. Approximately 35 percent are decreasing the availability of RV dumps, or abandoning the systems altogether.

The two main reasons given for decreasing the availability of or abandoning RV dumps are the high maintenance costs and the constant dumping of hazardous or illegal waste products. It appears that, despite the requests of RV owners, RV dumps are being phased out as a service provided at rest areas throughout most of Canada and the United States. Consequently, the inclusion of RV dumps at future rest areas in Montana is not recommended.

Table 11. National Survey Results Regarding RV Dump Stations

Question:	**Response (%)**
Are recreational vehicle sewage dump stations available at your rest areas?	
None	44.12
Some	52.94
All	2.94
With respect to recreational vehicle sewage dump stations, are you:	
Increasing availability?	14.71
Maintaining availability?	17.65
Decreasing availability?	23.53
Abandoning?	11.76

3.1.5 Aesthetics

Landscaping. A variety of items are included in the landscape design for rest areas. The grading needs around the site, drainage design for both storms and seasonal runoff, the types and location of vegetation, the number of picnic tables and trashcans, and any safety barriers that may be needed to protect pedestrians from natural or manmade dangers will all need to be designed. No attempt is made in this document to specify or recommend a standard landscape design for all future rest areas. It is anticipated that each site will possess unique features that will require an individual, site-specific design. Therefore, this Plan is simply a tool that can be utilized when new rest areas are being designed, or existing facilities are being renovated**.**

The design of the grading around a rest area should attempt to use, or at least mimic, the natural slopes of the site, unless safety concerns overrule the use of natural slopes. The grade should assist in directing storm or seasonal runoff away from structures and travel ways. Slope design will need to consider whether pedestrian traffic is acceptable or if it is to be discouraged. For those areas that will allow pedestrian usage, 4:1 slopes or flatter are deemed acceptable. If pedestrian traffic is to be discouraged, 3:1 or steeper slopes are encouraged (AASHTO, 1999).

The use of natural drainage is an advantageous setup. In general, natural drainage tends to be cheaper, initially, than other alternatives, plus it requires less maintenance than a manmade design. Ditches within major use areas should be avoided. Where ditches are to be constructed, they should be less than 1.5 m in depth, if hydraulically possible (AASHTO, 1999). If hydraulic flows or a steep grade warrant it, the use of riprap should be considered to protect against erosion. An alternative to riprap is special vegetation planted within the ditch to reduce erosion by reinforcing the slopes and dispensing hydraulic energy.

Many potential rest area locations in Montana will have natural features that will present a danger to those utilizing the site. Cliffs, steep slopes, and swift rivers, for example, will require additional signing and, perhaps, barriers to keep people away from dangerous situations. The decision to use any of these measures should be made on a case-by-case basis. In general, the use of barriers is encouraged to supplement signs warning of natural hazards. When possible, barriers should be constructed of local materials that will help them harmonize with the surroundings. In

wooded areas, such as western Montana, wooden railings or fences may be considered. If the facility is located in a rocky area, a rock wall could be an appropriate choice.

The number of picnic tables and trashcans needed at a rest area should be calculated using current AASHTO estimation procedures (Table 12). It is noteworthy that trashcans had the highest average ranking among 35 potential rest area services or amenities on the user survey. In areas of the State that have bear populations, bear-proof trash receptacles will be needed. For picnic tables, the heights need to be compatible with Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG). The results of the user survey indicated that respondents preferred sheltered picnic tables over an open design. If properly designed, sheltered picnic areas can offer refuge from wind and precipitation.

When designing new rest areas or reconstructing existing ones in high traffic areas, MDT should consider better accommodating non-profit service organizations using rest areas for fund raising activities (serving snacks and beverages for donations). For example, to ensure areas used by non-profit service organizations do not impede pedestrian traffic flow to the rest rooms, and for safety reasons, installing a cement pad with an electrical outlet near the building and conveniently accessible to all users would aid in reducing congestion.

Signing. A variety of signs will be needed at rest areas. Signing will be used to direct travelers to the rest area, channel them to their appropriate parking spaces, and inform them of the various services offered within the rest area. Signs should be designed in accordance with the guidelines set forth in the *Manual on Uniform Traffic Control Devices* (MUTCD) and the ADAAG. Adherence to these standards will ensure proper signing for all travelers and purposes.

Table 12: AASHTO Rest Area Design Calculations

Project Location_____ **Name**_____			**Design Year**_____
	Calculations		
Restroom Stalls	T = (A)(UV)(B)(PF)(P) / (UHF) or T = A x 1.3 x 0.15 x 1.8 x P / 30 W = T x 0.60 M = T x 0.40	T = Total toilet and urinals A = One-way design year ADT UV = 1.3 rest room users per vehicle B = 0.15 = Ratio of design hourly volume to ADT PF = 1.8 = Peak factor P = Total % of traffic stopping at rest area UHF = 30 = Rest room users per hour per fixture based on 2 min. cycle W = Number of women's toilets M = Total number of men's toilets & urinals	T = A x P x 0.0117 W = M =
Water Usage	PDH = Peak Hourly Demand [ADT x DH x PF x P x UV x (13.25 l per user)] + employee flow or [ADT x 0.15 x 1.8 x P x 1.3 x 3.5] + employee flow The Peak Hourly Demand Rate in liters per minute (LPM) can be computed by dividing the product obtained in the above formula by 60 minutes per hour.		(ADT x 1.2285) + empl. Flow =
Site Facilities	PT = Picnic tables R = Waste receptacles		0.40 x M = 0.30 x M =

3.1.6 Pavement and Sidewalk Design

The design of the pavement sections for a rest area should follow the same procedures currently used by MDT for the design of highway sections. The design process will determine the thickness of the various sections of materials used at the site. Standard material characterizations by the Materials Bureau in Helena or from a district laboratory will need to be performed. In addition, current traffic counts, along with traffic projections for the years of expected service, will need to be produced. The projections will be used to establish the equivalent single axle loading (ESAL) for the design period. With this information, pavement engineers will be able to properly determine the thickness to be used during the construction of the pavement.

Asphalt concrete over a crushed aggregate base is the best choice for the paved ramps, parking lots, and connections between the two. This is the standard material currently utilized by MDT. Familiarity with asphalt concrete and the economic benefits associated with this choice, including a significantly lower initial cost when compared to Portland cement, warrant its use for these rest area features.

Decisions on the materials to be used for the sidewalks may be more site-specific. For the majority of rest area locations, Portland cement concrete (PCC) may represent the best choice in materials. This is especially true for the primary walkways at a rest area. For secondary walkways, however, other alternatives (such as wood chips or gravel) may be utilized. Use of these alternative materials should be limited to low-volume areas where the benefits of their reduced costs are not offset by life-cycle maintenance costs. Non-paved paths within Montana's rest areas may include trails to water bodies or those designated for self-guided tours.

For paved pathways, the minimum thickness specified in MDT's *Revised Detail Drawings*, 1996 Edition, or in a newer edition is recommended for use at rest areas. PCC sidewalks are to be at least 100 mm thick over a base of at least 60 mm of crushed gravel. For areas where vehicles may need to cross the sidewalk, PCC thickness is to be increased to 150 mm (MDT, 1997). An additional requirement is that pedestrian walkways be at least 1.525 meters wide (AASHTO, 1999).

3.2 BUILDING DESIGN

The building design for rest areas is divided into exterior and interior segments. Items that will be considered in exterior design include the siding, roofing material, and outdoor lighting. In general, the exterior of new rest area buildings can be designed to satisfy local needs, or to harmonize with an area's geography and topography. Such efforts will help to create a unique setting at each rest area site.

The design of the interior of the building will include such considerations as the number of restroom stalls and the type and number of amenities offered. Compliance with ADA requirements is essential. In Montana, three standard building designs have been developed which are meant to accommodate all of the traffic volumes and usage patterns observed in Montana. The user survey confirmed that most users like MDT's newer rest areas, such as the ones at Armington Jct., Broadus, Clearwater Jct., Culbertson, Troy, and Wibaux. However, two additional designs were developed which incorporate user suggestions and provide the department additional alternatives.

The most visible change will be the exterior appearance of the new rest areas. One design, which is being used at the Bozeman rest area on I 90, was developed for high-volume rest areas located near cities, and will incorporate large windows and natural exterior materials. The second and most innovative design is planned for rural areas where compatibility with the surrounding area and low utility and maintenance costs are primary goals. The first use of this design will be at Sweetgrass on I 15.

These standard designs should provide for consistency in the floor plans of future rest areas and should simplify and hasten the design process, both for the construction of new sites and the renovation of current sites when new buildings are required.

Bozeman Rest Area Design

Sweet Grass Rest Area Design

3.2.1 Exterior Building Design

Recommendations

3.2.1. *Standardize building designs for different traffic levels and settings.*

3.2.2. *Choose siding and roofing materials that blend with the natural setting.*

3.2.3. *Provide better exterior lighting and visibility in parking lots and along pathways.*

Exterior building design involves the selection of materials that help minimize maintenance requirements while enhancing the visual appeal of the rest area. Traditional materials used at rest areas in Montana include wood and masonry for siding, and steel, wood, or asphalt shingles. Results of the Phase I maintenance survey indicate that all of these materials seem to be performing acceptably in Montana. It is recommended that the materials selected for roofing and siding help the building blend with its surroundings. This will provide a less obtrusive site, thus increasing its appeal to travelers.

Exterior lighting contributes to the safety and security of rest area users. When asked to rate the importance of 35 rest area amenities, the second highest average ranking was recorded for parking lot and pathway lighting, which emphasizes their importance to rest area patrons.

3.2.2 Interior Building Design

Recommendations

3.2.4. *Calculate the number of restroom stalls based on AASHTO standards.*

3.2.5. *Provide common entrances.*

3.2.6. *Use porcelain fixtures and glass mirrors.*

3.2.7. *Keep mounting bolts hidden from public view.*

3.2.8. *Mount toilets on the wall, instead of the floor.*

3.2.9. *Provide unisex ADA-compliant rest rooms.*

3.2.10. *Use six-inch or larger tiles for the floor and four-inch or larger tiles for walls.*

3.2.11. *Use watertight light fixtures mounted for ease of changing bulbs, but above the reach of vandals.*

3.2.12. *Include high-pressure washing capabilities for deep cleaning of restrooms.*

3.2.13. *Include natural lighting for the breezeway and restrooms.*

The general layout of the interior of all of Montana's future rest areas should be satisfied by the three standard designs previously mentioned. Determining which design to use at a given location should be based on the anticipated volumes the rest area will have to accommodate. Exceptions to this will be allowed on a case-by-case basis.

The number of restroom stalls for each of these designs should be based on projected traffic and usage volumes, and calculated according to the AASHTO equations previously presented in Table 12. A sufficient number of restroom stalls received the fourth highest average rating in terms of importance among a list of 35 different rest area amenities on the user survey.

A common public entry to the buildings at a rest area should be a part of the design. The common entry will allow families to remain together when they enter or leave the facilities. This arrangement should increase feelings of security for patrons.

Montana traditionally has chosen materials for their durability and deterrence to vandalism. Consequently, stainless steel sinks, toilets, and urinals are found at virtually all rest areas around the State. The heavy use of stainless steel has resulted in restrooms with an institutional appearance. Porcelain sinks, toilets, and urinals generally are more appealing, and glass mirrors are preferred. Therefore, it is recommended that the fixtures on new or remodeled buildings be made of these materials. The fixtures should be mounted with bolts that extend through the walls

to make removal more difficult for vandals. Also, the toilets should be mounted to the walls, instead of the floor, to facilitate cleaning under and around them.

Partitions between stalls have traditionally been made of stainless steel too. A more appealing restroom would result from the use of other materials. Thus, it is recommended that partitions are made of a textured and painted corrosion-resistant metal, and mounted with adequate clearance under them to facilitate daily cleaning of the floors. For restrooms found within a series of single-use rooms, concrete or masonry walls should be used to separate the rooms. These walls should be painted with a non-porous paint or, preferably, covered with tile. Painted surfaces would be prime targets for graffiti, and unless non-porous paint is used, it would be virtually impossible to remove unwanted marks or graffiti without repainting (Bigger and Bigger, 1999). The same type of wall covering should be used for ADA-compliant restrooms.

Unisex restrooms that satisfy ADA requirements can accommodate individuals who need extra assistance, as well as provide a facility for the general public to use when routine cleaning operations are being conducted. It should be noted that officials who responded to the national survey included companion restroom facilities for continued public availability during cleaning as an important new amenity or service.

Maintenance needs should be taken into consideration when selecting materials for the walls and the floors. Tile floors and walls that are bound with a semi- or non-permeable grout are recommended. The more permeable the grout, the more prone the material is to the harboring of unpleasant odors (Bigger and Bigger, 1999). Six-inch or larger tiles for the floor and four-inch or larger tiles for the walls have been suggested (CDOT, 1997).

Interior lighting should be designed to satisfy two needs. First, nighttime safety is often related to the quality of the lighting at a given location, so no dark areas can be allowed inside restrooms. Secondly, a maintenance-friendly design could alleviate extra work or potential hazards for personnel. Lights, for example, should be placed high enough to require a ladder to change the bulbs, but low enough that a stepladder will suffice.

A periodic deep cleaning of restroom interiors should be part of a complete maintenance program. In all likelihood, such thorough cleaning will include high-pressure washing of the walls and

floors. Therefore, waterproof fixtures will be needed to protect electrical connections from the pressurized water used during these activities.

Natural lighting sources should also be considered for rest areas. Skylights and windows can increase the appeal of the interior and the feelings of security inside buildings. The orientation of windows is important in order to minimize the possibility of solar gain in the summer, which could make the building unbearably hot. To prevent this situation, south-facing windows should be avoided.

3.3 SERVICES AND AMENITIES

Recommendations

3.3.1. *Provide basic amenities at all rest areas, including:*

- *sufficient telephones, with TTY accessibility where available;*
- *weather, road condition, traffic condition information;*
- *trashcans;*
- *drinking fountains; and*
- *soap and hot water.*

3.3.2. *Consider the installation of computerized information systems at existing rest areas during renovation work and new rest areas on a case-by-case basis. Information accessibility by persons with disabilities should be a consideration in the design of the computerized system.*

3.3.3 *Initiate a project to update non-electronic Information Boards at existing rest areas to provide more accurate and timely traveler information.*

3.3.4 *Coordinate with Travel Montana, USFS, Montana Historical Society, Montana Lewis & Clark Bicentennial Commission, Montana Tourism and Recreation Initiative (MTRI) Focus Teams, etc. to identify appropriate themes for interpretation, content and sign design. To maintain consistency, this design will also be used to provide guidance for similar information and interpretation systems at new rest areas.*

3.3.5 *Continue to keep open the existing parking areas (former rest areas) for safety considerations, and where needed, place vault toilets for convenience and sanitary reasons. Also consider keeping the parking areas open when a rest area is abandoned.*

Public telephones, drinking fountains, and informational sources should be located within the breezeway. When user survey respondents were asked to rank the importance of 35 various rest area amenities, the availability of trashcans received the highest mean rating among the list of choices, while drinking fountains had the sixth highest average ranking in the list of amenities. The availability of sufficient telephones received the tenth highest average ranking on the survey. US West installed two TTY pay phones at the Columbus rest area and two at the Dearborn rest area; their goal is to install a total of 29 TTY pay phones at rest areas throughout the state. The increased use of cellular telephones may lessen the dependence on pay telephones at the rest areas but also speaks to the need to provide local emergency contact information. In terms of other aesthetic features, building/shelter design and grounds/landscaping received relatively high ratings as well, but were not among the top ten choices.

The mean rating of the importance of information regarding weather, road, and traffic conditions was ninth out of 35 amenities on the user survey. In terms of information sources, the user survey found that the preferred methods of receiving travel information were those that provided paper copies. Pamphlets and newspapers were favored by 40 percent of the respondents, and bulletin boards were preferred by 34 percent of the rest area users. The user survey found computerized kiosks/information systems were preferred less often than other information sources. Moreover, the older survey respondents were the least likely to favor kiosks as a means of obtaining traveler information (Blomquist and Carson, 1998). Although current rest area users do not readily accept this technology, it is believed that acceptance and an eventual preference for computerized kiosks/information systems will develop over time.

Roughly one-third of the officials who responded to the national survey stated that kiosks currently are being used in rest areas in their state or province (Table 13). However, when asked how they plan to provide travel information in the future, the largest percentage of respondents indicated the use of kiosks/computerized information centers as a future source of tourist-related information.

Computerized kiosks/information systems have the advantage of offering MDT an information source that can be updated easily to provide timely information to travelers. Furthermore, if a print function is provided, users can take a paper copy of pertinent information with them when they leave the facility. It is recommended, therefore, that the installation of computerized

kiosks/information systems be considered at existing rest areas during renovation work and new rest areas on a case-by-case basis. Information accessibility by persons with disabilities should be a consideration in the computerized system design.

If computerized kiosks/information systems are provided at rest areas, their unique maintenance requirements need to be addressed. Kiosks maintenance will be both hardware- and software-related. Hardware items will include computer processors, printers, monitors, and modems.

Table 13. National Survey Results Regarding Provision of Tourist-Related Information

Question:	**Response (%)**
How do you currently offer tourist-related information?	
Pamphlets/Newspapers	61.76
Audio Announcements	0.00
Bulletin Boards	55.88
Kiosks/Computerized Information Centers	32.35
Other	26.47
How do you plan to offer tourist-related information in the future?	
Pamphlets/Newspapers	50.00
Audio Announcements	0.00
Bulletin Boards	50.00
Kiosks/Computerized Information Centers	58.82
Other	23.53

Each of these items should reside in its own module to facilitate the replacement of defective items. As upgrades to the computer system are made, a modular arrangement will also allow for the upgrading of a single or multiple components, without having to purchase a completely new system.

To simplify software upgrades, all kiosks should be equipped with a modem to enable remote communication with the main system computer. Software maintenance will involve the updating of State and local information and the upgrading of computer software as newer generations become available. Coordination with local Chambers of Commerce, local organizations, private sector entities, Travel Montana, and other tourism agencies should help ensure the completeness and the accuracy of the information provided. Cost sharing of the system may be possible as well if coordination between agencies is fostered. A statewide or district-wide contract could be used to provide software support.

Results of the user survey indicate that patrons would like paper towels at rest areas. In almost all of the locations surveyed, at least 50 percent of the respondents indicated that this item was very important. Despite user preference for paper towels, electric dryers may be a superior choice, especially at remote rest area locations. Costs and manpower associated with the removal and transportation of paper waste may be prohibitive.

Additional amenities that survey respondents felt were important included the availability of soap and hot water. If feasible, these items should be included at all new rest areas. To reduce the potential for vandalism, soap reservoirs should not be accessible from inside the restroom. It is important that the temperature setting on the hot water heater that serves the sinks be low enough to avoid unintentional burns. If hotter water is needed for cleaning purposes, a separate hot water heater should be connected to the high-pressure water system described previously.

Typical 1970's Information Board

Troy

Wibaux

1990's Information Boards

4 OPERATION

Rest area operation is affected by both the managing entity's philosophy on rest areas (e.g., minimal services to allow for rest and recovery versus full service informational center) and budget or resource limitations. Rest area operation takes into consideration such things as staffing and hours of operation, security, seasonal operation, combined operation, use by non-profit service organizations, and services and amenities.

4.1 STAFFING AND HOURS OF OPERATION

Recommendations

4.1.1. *Continue 24-hour a day operation at all rest areas statewide.*

4.1.2. *Rest area staffing is recommended at joint use facilities only (e.g., visitor information centers or weigh stations) where staffing is either: (1) provided by a separate agency, such as a Chamber of Commerce; or (2) not fully dedicated to rest area activities (e.g., performing weigh station duties full-time, but available for emergency assistance to rest area users).*

Based on the results of both the national survey and the user survey, 24-hour a day operation at all rest areas in Montana is recommended. Over 90 percent of the respondents to the national survey reported keeping their rest areas open 24 hours a day. This figure can represent a standard for basic levels of service. Furthermore, it is felt to be especially important to keep rest areas open throughout the night when motorist fatigue is apt to be a bigger problem than during daylight hours. An expressed desire for improved rest area access by Montana rest areas users further supports this recommendation.

When state and provincial officials were asked about rest area staffing, roughly two-thirds reported employing full or part-time staff in at least some of their rest areas. Staff was present at many of these sites because the rest areas also serve as visitor information centers. Many states and provinces reportedly have rest area staff present during peak seasons only. Some officials

noted that attempts have been made to increase staffing levels and presence, while others have reportedly tried to reduce current staffing levels. It appears, therefore, that differences of opinion exist in terms of the importance of staffing rest areas.

Interestingly, rest area users in Montana ranked a rest area attendant as "not at all" important at all but three sites. Even at these locations, a sizeable proportion of respondents ranked a rest area attendant as only "somewhat" important. These findings add further support to the recommendation to staff rest areas only under special circumstances, such as to assist with activities at joint facilities.

4.2 SECURITY

Recommendations

4.2.1. *Safety-related criminal activity at rest areas should be reviewed; modifications to rest area lighting and building design should be considered a priority at rest areas with a high incidence of crime.*

4.2.2. *Coordinate with the Montana Highway Patrol, local law enforcement, and/or private security firms to increase the presence of law enforcement at rest areas.*

When asked to rate their perceptions of general safety and security at rest areas in the State, the two largest proportions of respondents answered "good" or "very good" (35.97 percent and 25.96 percent, respectively). When a similar question pertaining to nighttime safety and security was posed, the largest percentage of respondents (32.45 percent) reported feeling only "somewhat" safe and secure at the various rest areas after dark. This perceived level of safety should be contrasted with actual occurrences of criminal behavior, if any, reported at rest areas. If a problem is found to exist at a particular site, rest area lighting and building design should be re-examined in light of the crime reports. In severe cases, rest area patrols or limited staffing should be considered.

A study conducted by the Texas State Department of Highways and Public Transportation (TxDOT, 1987) included several recommendations pertaining to the safe operation of rest areas:

- make sure all building interiors and pathways are brightly lit as a defense against attacks;
- construct essentially square or rectangular restroom building units with no recessed or hidden corners, and with a mechanical room between dual men's and women's rest rooms;

In addition to the actions outlined above, coordination with the Montana Highway Patrol, local law enforcement agencies, and/or private security firms is recommended to provide for an adequate law enforcement presence in the form of patrols at rest areas. This may be particularly important at the more remote rest area sites that do not experience a high number of visitors.

4.3 SEASONAL OPERATION

Recommendations

4.3.1 *Existing rest area sites that are currently closed during the winter season should be gradually upgraded to allow for year-round use and should remain open year-round as resources allow.*

4.3.2 *New rest area construction should be designed to allow for year-round use and should remain open year-round as resources allow.*

When asked about year-round access, the vast majority of state and provincial officials (88 percent) reported keeping their rest areas, at least those on high volume roads, open all year. Those who did not keep any rest areas open were located in the Canadian provinces and Alaska, where low volumes and severe weather make year-round operation economically unfeasible.

The vast majority of user survey respondents rated general rest area accessibility, which included issues related to year-round access, parking, and so forth, as "good" (33.30 percent), "very good" (27.76 percent), or "excellent" (25.13 percent). However, requests for year-round access were received at nine of the 16 rest area sites used in the survey. Most often, the desire for year-round access reportedly was based on safety concerns. Furthermore, out of a list of 35 rest area

amenities, the mean ratings for year-round access to restroom facilities and year-round access to parking facilities were among the top five in terms of average rankings of importance by user survey respondents.

4.4 USE BY NON-PROFIT SERVICE ORGANIZATIONS

Recommendation

4.4.1. Continue offering rest areas for use by non-profit service organizations.

Rest area officials in the national survey were asked their opinion regarding non-profit organizations utilizing rest areas for fund raising activities. Approximately 70 percent reported such activities were not allowed in their state or province. Those who permitted service organizations to use rest areas often limited fundraising to specific times (e.g., free coffee stops for donations on long weekends or holidays). In contrast, Montana policy has allowed various groups, such as senior citizens, to serve a wide array of snacks and beverages for donations throughout the operational season. It was somewhat surprising, however, that respondents to the user survey rated free coffee or snacks provided by service organizations as "not at all" important at virtually all sites included in the survey.

I 90 Rest Area at Quartz Flats

5 MAINTENANCE

Recommendations

5.1.1. *Use private contractors or MDT forces for routine maintenance, whichever provides the necessary service level at the lowest cost.*

5.1.2. *Establish a preventative maintenance program to plan for and address maintenance needs, such as re-roofing, painting, professional cleaning, etc.*

Rest area maintenance allows rest areas to remain open, clean and functional for the public. Rest area maintenance can be performed by State Department of Transportation personnel or can be contracted out to private services. Regardless of who performs the maintenance operations, the specific tasks and responsibilities associated with rest area maintenance and a corresponding schedule for routine and periodic preventative maintenance activities should be defined. Additionally, a well-conceived maintenance plan will specify appropriate means of dealing with more serious maintenance issues that might arise. A major repair is defined as "…a rest area-related repair which the department and the contractor agree is not included within the services described and/or listed in this contract" (MDT, 1999). A failure of a furnace, for example, would be a "major" repair that would require the services of a separate entity. It is believed that no change in the current maintenance contracts is warranted in terms of major repairs.

Maintenance operations can be broken down into routine interior maintenance, exterior maintenance, and maintenance of mechanical and electrical systems. Routine exterior maintenance at a rest area will involve the grounds, amenities, and building(s). Interior maintenance will include daily cleanings and scheduled, periodic deep cleanings. The maintenance of the mechanical and electrical systems will cover the plumbing, water and sewage, and heating systems, as well as underground sprinklers and lighting features.

Currently, MDT uses private contractors to handle daily maintenance activities at rest areas. The maintenance contracts are awarded based on an evaluation of the maintenance proposals submitted in response to MDT's request for proposals (RFP). According to the terms expressed in the RFP, the contractors must agree to perform the following activities on a daily basis: clean and disinfect the facilities, re-supply paper products, remove graffiti, remove snow and ice, and collect and dispose of litter. Less frequently, they are required to water and mow the grounds, prune trees and shrubs, fertilize, and control weeds. Contractors also are allowed to perform "…any other maintenance the contractor, acting in his/her professional discretion, feels is necessary for the sanitary and safe operation of the rest area" (MDT, 1999).

The updated rest area inspection reports used by the department for MDT forces and caretakers are provided in Appendices E and F.

5.1 INTERIOR MAINTENANCE

An evaluation of rest area maintenance activities includes data from the field inventory (Phase I) and the rest area user survey (Phase II). As described previously, MDT Maintenance Division personnel conducted the field inventories in which maintenance-related items were ranked on a scale from zero to four, where zero represented an unacceptable condition and four represented an excellent condition.

5.1.1 Cleaning

Current maintenance contracts cover daily cleaning of the interiors of restrooms, as well as maintenance of rest area grounds. This practice should continue. The maintenance contracts stipulate that walls, floors, paper dispensers, stalls, and fixtures be cleaned daily (MDT, 1999). Light fixtures should be checked daily, as well, with burnt-out bulbs replaced immediately. This should be a part of the daily restocking of all rest area supplies. It should be noted that criticisms regarding restroom cleanliness were expressed at 75 percent of the rest areas in the user survey. It is recommended that performance reviews of the contracted service agencies be increased to improve the cleanliness of restrooms and other facilities.

Regardless of the diligence with which contractors perform their daily cleaning duties, the need for periodic, more extensive cleanings will exist. This type of cleaning is equally important to the overall upkeep of the facility and to enhance the impression rest areas make on their patrons. The cost of this maintenance activity will not be trivial. At least once a year, every rest area should have its interior deep cleaned. Those rest areas that are closed seasonally should have this cleaning done prior to their annual opening. Rest areas that remain open year-round should be deep cleaned in the spring of each year before Memorial Day. For the most heavily used facilities, a second cleaning session may be warranted in the fall after Labor Day. Following the deep cleanings, an annual inspection of the interior should be made. Any deficiencies that are found should then be corrected before the peak use period of the summer. Paint should be touched up or redone as required.

A couple of options exist for the administration of the extensive cleaning duties. Annual (or semi-annual) deep cleaning of the rest area could be made an additional requirement of the current rest area maintenance contracts. If so, the contracted services agencies should have the option of subcontracting this activity. Another option would be to issue a single, separate contract to cover the extensive cleaning of all the rest areas within the State or a district. This may prove to be more cost effective, given that the cost per site might decrease if numerous rest areas were handled by a single entity. For both of these options, the contractor performing the cleanings would supply any non-permanent equipment, as well as the supplies, needed for the operation. As a third option, MDT Maintenance personnel could perform the extensive cleanings. MDT would supply all of the equipment and supplies under this option. To minimize the expense associated with the procurement of equipment and the training of personnel for the cleanings, a single team could be formed to do all of the rest areas in the State or a district.

5.1.2 Supplies

In comparing the findings from the field inventory and user survey, discrepancies are noted in terms of the availability of restroom supplies. In the field inventory, supplies were found to be in good stock (with a rating of 3.1 out of a possible 4.0) at the 12 rest areas examined. Data from the user survey, however, indicated deficiencies in restroom supplies at 14 of the 16 surveyed

sites. In particular, respondents reported a lack of toilet paper, toilet seat covers, and paper towels (Blomquist and Carson 1998).

Differences in terms of supply shortages may be explained by the timing of the data collection efforts (i.e., Phase I was conducted in April; Phase II was conducted in August). With increased tourist activity, rest area usage and the corresponding demand for restroom supplies is assumed to be greater in August than in April. Regardless, increased volume does not justify a lack of available supplies; rather, it suggests that a change in maintenance policy may be required. The shortage in supplies may result from several factors. Current rest area maintenance contracts dictate daily stocking of supplies, such as toilet paper (MDT, 1999). This schedule may not be adequate, particularly during peak travel periods. If so, then changes in the maintenance contracts for rest areas that experience higher usage during Montana's tourist season may be warranted. Two maintenance visits per day at those areas experiencing high volumes could reduce instances when supplies are exhausted. An increase in the frequency of routine maintenance visits, however, will increase the annual cost of maintenance contracts. Therefore, MDT will have to determine if the potential for increased satisfaction among rest area patrons justifies the additional costs.

Supply shortages may be the result of inadequate storage space, also. Estimates of the demand for specific items during peak periods should be compared to the available space allotted for the respective supplies. If necessary, additional space for items whose supplies are frequently exhausted should be provided. The cost of additional storage facilities to insure the availability of supplies should be less than the costs associated with increasing the number of visits by maintenance contractors, particularly when calculated over the service life of the facility.

5.1.3 Out of Service Facilities

A review of the data from the user survey indicated that out-of-order facilities are a common problem at existing rest areas. At over three-fourths of the rest areas surveyed, complaints were received regarding inoperable facilities, including the toilet or urinal, the sink, the drinking fountain, and the telephone. Moreover, two or more facilities reportedly were out-of-order at almost half of the locations where problems were experienced (Blomquist and Carson, 1998).

These findings are in contrast to the results of the field inventory, which rated the working order of the rest area facilities satisfactorily ("3" out of a possible "4"). Nearly all of the individual facilities were found to be in acceptable condition, with ratings ranging from 2.6 to 3.2. Exceptions to this were the phone (1.9), the drinking fountain (1.8), and outside water taps (0.5). The low ratings for the drinking fountain and outside water taps may be explained, at least in part, by the April dates of the inventory. In many areas of the State, potential damage to the plumbing system caused by frozen pipes dictates that the water system be turned off at this time of year. Thus, the unsatisfactory ratings are believed to reflect the seasonal unavailability of these services.

Again, much of the discrepancy in findings between the two data collection efforts may reflect the timeframe during which the surveys were conducted. The likelihood that facilities would be out-of-order would be greatest near the end of the peak tourist season, which was when the user survey was conducted. The field inventories conducted in April assessed the condition of the facilities before the start of the high traffic volumes in summer. It is recommended, however, that the current maintenance contracts be reviewed to address the service problems reported by rest area patrons.

The field inventory also noted that phones at four of the surveyed locations were out-of-order and, furthermore, emergency information was unavailable. The lack of emergency information at any of the surveyed rest areas is unacceptable. In the future, the absence of emergency information will need to be addressed as soon as the situation presents itself. Rest area service contractors should be required to report deficiencies in the availability of this information to the MDT district office.

5.2 EXTERIOR MAINTENANCE

The exterior grounds maintenance operations at Montana rest areas will vary with the seasons. During winter months, snow removal will demand the majority of maintenance personnel's outside efforts. Consistent with current Montana practices, snow removal should be performed on a daily basis with the responsibility divided between MDT for removal of snow from the ramps and parking areas, and the private contractor for snow removal from the sidewalks.

Sidewalk deicing is another activity that should be performed whenever ice is present. Also, litter should be removed from the rest areas on a continual basis.

During more temperate periods, mowing, fertilizing, pruning, and weed control efforts will be required. The frequency of many of these activities will vary according to the geographic region in which the rest area is located. Mowing of the grounds should be handled on a regular basis and potential contractors are required to include a schedule for mowing in their proposal.

Before Memorial Day, which is traditionally considered the start of the tourist season, an application of weed controlling herbicide and enriching fertilizer should be made. A second application may be warranted in the fall in some locations. Weeding of the grounds should continue throughout the growing season, as needed, and pruning of trees and shrubs should be done annually in the spring.

Rest areas with underground sprinkler systems will need to be maintained. In particular, the system will need to be winterized in the fall to protect it from freezing and made ready for service in the spring.

Maintenance of the structures found at a rest area will help to maximize their service life. Painted structures, for example, should be repainted on a regular schedule. To provide the best impression, painting should be done annually in the spring. Less frequent intervals should be used if annual painting of structures is cost prohibitive.

The roofs of structures should be inspected annually and repaired, as needed. The inspection should look for loose or missing shingles and remove any debris that may be present. At the same time, gutters and eaves should be cleaned.

Minor vandalism to the structures at a rest area should be repaired daily, if possible. Graffiti, for instance, should be removed as quickly as possible. The physical destruction of rest area components may require additional time or services for repair. As mentioned previously, contingencies for major maintenance needs of this type should be included in the overall maintenance plan.

5.3 NATIONAL SURVEY RESULTS REGARDING MAINTENANCE ISSUES

In addition to the information reviewed from the field inventory and the user survey, officials who responded to the national survey were asked several questions regarding maintenance issues (Table 14). These data provide an interesting look at how other states and several Canadian provinces handle maintenance issues at their rest areas.

Table 14: National Survey Results Regarding Rest Area Maintenance Issues

Question:	Response (%)
Would you characterize your rest area maintenance program as:	
Preventative (i.e., routine)?	76.47
Reactive?	35.29
Other	17.65
Are your rest areas maintained utilizing:	
Highway maintenance crews?	58.82
Other public crews?	17.65
Private contractors?	79.41
Other	26.47
If private contractors are used, what is your standard contract period?	
Average (years)	1.42
Minimum (years)	1.00
Maximum (years)	3.00

Most officials (76 percent) characterized their rest area maintenance programs as preventative (i.e., routine) in nature. One-third of the respondents also selected the term reactive to describe their maintenance programs. (Note: Respondents could choose more than one answer to these questions, which is why the percentages do not sum to 100.) The maintenance programs in most of the states and provinces represented in the survey conduct cleaning and general building and grounds maintenance activities on a routine (preventative) basis, but must be reactive when unforeseen problems arise. Breakdowns, for example, are almost impossible to detect beforehand given that continual inspections are neither economical nor feasible.

Private contractors are reportedly used in 79 percent of the states and provinces represented in the survey. Highway maintenance crews were reportedly used in 59 percent of the states and provinces. Other types of maintenance staff mentioned in the survey include private individuals, adopt-a-rest area program volunteers, prison laborers and sheltered workshop members.

The frequency of inspections performed at each rest area for preventative maintenance range from several times a day to once every three years. Typically, inspections are performed three to four times a week. Regularly inspected items include restroom floors, wastebaskets, trash receptacles, building surfaces, walls, light fixtures, doors, restroom fixtures, windows, outside walk areas and entrances, grounds, and vending machines. In most states and provinces, attempts are made to perform several random, unannounced inspections throughout the contract period to determine whether or not private contractors are meeting the provisions of their contracts.

When queried about the standard contract period for private maintenance contractors, rest area officials typically responded one year or season. The average of 1.42 years resulted from some states using contract periods of two or three years.

Officials also were asked about how frequently certain major maintenance activities are conducted. The most frequent response was “as needed” for all the activities specified in the survey. Other common responses included “daily” for building maintenance and management; “weekly in season” for mowing and turf management; “once a season” for fertilizer and pesticide applications, as well as for vegetation maintenance and pruning; and “rarely” for snow removal and pavement care.

Non-Interstate Rest Area at Emigrant - built 1989

6 ADDITIONAL CONSIDERATIONS

This section contains information on the following topics: statutory and policy considerations, environmental considerations, funding requirements and sources, public and stakeholder involvement, and projections and re-evaluation suggestions.

6.1 STATUTORY AND POLICY CONSIDERATIONS

Numerous federal and state statutes are applicable to rest areas. The most prominent federal codes are:

- United States Code, Title 23 – Highways (23 USC).
- Code of Federal Regulations, Title 23 – Highway (23 CFR).
- National Environmental Policy Act (NEPA): 42 USC, 4321-4347; 23 CFR 771 as amended.
- Environmental Impact and Related Procedures, 40 CFR 1500-1508 CEQ Regulations.
- National Historic Preservation Act of 1966 as amended: 16 USC.
- Americans with Disabilities Act (ADA) of 1991.
- Clean Water Act.
- Safe Drinking Water Act.
- Council of American Building Officials (CABO)/American National Standards Institute (ANSI).
- National, state, and local building codes.
- Federal Register, Vol. 60, No. 154: Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federally Landscaped Grounds.

6.1.1 United States Code, Title 23 – Highways (23 USC).

Title 23 USC discusses rules related to the use of federal aid funds on State-sponsored highway projects. It deals with issues such as acquisition of rights-of-way, emergency relief, maintenance, and the letting of contracts.

Section 111 states that "…the State will not permit automotive service stations or other commercial establishments for serving motor vehicle users to be constructed or located on the rights-of-way of the Interstate System." Vending machines are allowed at rest areas, but operation and/or profits must be offered to qualified Randolph-Sheppard agencies (i.e., State Association for the Blind). Motorists' call boxes may be placed in the right-of-way.

6.1.2 Code of Federal Regulations, Title 23 – Highway (23 CFR).

23 CFR reiterates many of the stipulations expressed in 23 USC regarding the placement and operation of vending machines. Namely, it specifies that the State can operate vending machines directly or contract for their installation, operation and maintenance. States are required to give a preference to the operation of vending machines under the guidelines of the Randolph-Sheppard Act, U.S.C. 107(a)(5). Charges for goods and services are not allowed, except for the use of telephones and vending machines.

6.1.3 National Environmental Policy Act (NEPA): 42 USC,4321-4347; 23 CFR 771

NEPA has three main provisions: (1) Title I, Section 101, which declares a national environmental policy, (2) Section 102(C) of Title I, which indicates when an environmental impact statement is required (see Section 6.1), and (3) Title II, which establishes the Council on Environmental Quality.

The general intent of NEPA is "…to encourage productive and enjoyable harmony between man and his environment; to...prevent or eliminate damage to the environment and biosphere." This Act is intended to insure that any future developments do not adversely affect the environment. To accomplish this goal, categorical exclusions, environmental impact statements, and/or environmental assessment/finding of no significant impact rules must be followed before the design and construction of a new facility.

6.1.4 National Historic Preservation Act of 1966 as amended: 16 USC.

The National Historic Preservation Act was passed to help prevent the loss of irreplaceable historic properties for archeological, cultural and historical preservation. The Act authorized the Secretary of the Interior to maintain a National Register of Historic Places. The Register lists sites, districts, buildings, structures, and objects of significance in American history, architecture, archeology, engineering or culture. Any new development that may affect a registered property must be reported to the State Historic Preservation Officer (SHPO). Any proposed rest area that would affect such a site would have to be reported and cleared with the SHPO.

6.1.5 Americans with Disabilities Act (ADA) of 1991.

The ADA was passed to establish clear and comprehensive rules prohibiting discrimination on the basis of a disability. The Act establishes accessibility guidelines for buildings and facilities. Some of the guidelines that pertain to rest areas are: dimensions of parking spaces, curb ramp slopes, accessible routes, drinking fountains, picnic tables, toilet stalls, lavatory clearances, and mounting heights for telephones. Each of these guidelines needs to be incorporated into the design of a rest area to accommodate all people. Specific allowances in the design of these structures are set forth in ADA guidelines.

6.1.6 Clean Water Act.

The Clean Water Act states, "Any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates..." The intent of the Clean Water Act was to control the effluent discharged from any structure that could enter a waterway. New rest areas will need to comply with this Act.

6.1.7 Safe Drinking Water Act (SDWA).

The SDWA was passed in 1974. Its primary purpose was to establish quality standards for drinking water, require the monitoring of public water systems and guard against groundwater

contamination from injection wells. As of June 19, 1986, all pipes and other plumbing used for human consumption are required to be lead-free.

6.1.8 Council of American Building Officials (CABO)/American National Standards Institute (ANSI).

Since 1972, the CABO has served as the umbrella organization for several building code groups. In 1997, agreement was reached to incorporate CABO as the International Code Council (ICC) in order to establish a single set of comprehensive and coordinated national building codes. In the future, ICC will offer a complete set of construction codes that all new buildings must follow.

6.1.9 National, State, and Local Building Codes.

There are a variety of national, state, and local building regulations that must be followed when designing any new structure. These guidelines vary in different regions and states. In Montana, the Unified Building Code governs the adequacy of building designs. These regulations address such issues as snow loads, parking spaces, and insulation requirements.

6.1.10 Federal Register, Vol. 60, No. 154: Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federally Landscaped Grounds.

This memorandum was established to improve landscaping practices on federal lands and federally funded projects. The memorandum stresses five principles: (1) use native plants for landscaping; (2) use or promote construction that minimizes adverse effects on the natural environment; (3) seek to prevent pollution; (4) use water- and energy-efficient practices; and (5) create outdoor demonstration projects.

6.2 ENVIRONMENTAL CONSIDERATIONS

Recommendations

6.2.1. *Follow guidelines of National Environmental Policy Act, Clean Water Act, and Safe Drinking Water Act.*

6.2.2. *Where possible, use municipal water and sewer systems.*

6.2.3. *Do not include RV dumps at rest areas.*

6.2.4. *Investigate ways to control noise and air pollution resulting from idling engines.*

6.2.5. Offer recycling services that are economically appropriate for the site.

Environmental issues within rest areas most often are associated with waste dump and wastewater treatment facility design to ensure both groundwater and surface water bodies (i.e., rivers, lakes and creeks) remain unpolluted. Air and noise pollution are also potential environmental problems that must be addressed in rest area design practices and regulations. The steps Montana should implement to ensure an environmentally sound rest area system include the following:

- fulfill the requirements of the National Environmental Policy Act to document any significant environmental impacts at a proposed site and the systematic approach used to alleviate them;
- design and operate a wastewater treatment system that has no negative effects on the condition of ground and surface water bodies, with strict adherence to federal Clean Water and Safe Drinking Water Acts and State of Montana Water Non-Degradation Act;
- address issues relating to air and noise pollution from idling engines in the general facility design stage; and
- provide facilities to promote recycling of certain products.

6.2.1 National Environmental Policy Act (NEPA)

NEPA requires all projects receiving federal funding to consider environmental impacts before construction. This means one of three environmental documents must be prepared for all proposed new rest areas or major reconstruction projects. These documents are as follows:

- Categorical Exclusion (CE): Required to demonstrate that a project has no significant environmental impacts resulting from construction.
- Environmental Impact Statement (EIS): Required when the project involves significant environmental impacts and includes requisite mitigation measures.
- Environmental Assessment/Finding of No Significant Impact (EA/FONSI): EA is required in projects where the significance of environmental impacts is unclear. Results of the EA must be followed in preparation of a FONSI or EIS.

These requirements are not specific to Montana rest area construction, but their importance as a step in rest area construction warrants their inclusion in this document. The final step in this process is to gain approval of the CE, FONSI or EIS through public hearings and from FHWA before a final design can begin (AASHTO, 1999).

6.2.2 Wastewater Treatment Systems

Wastewater treatment system design may be the single, most important rest area design consideration in Montana, where connection to municipal sewer systems generally is not possible outside of city park rest areas. Thus, the vast majority of the rest areas in the State will be forced to implement some other self-sufficient design. The primary alternative to municipal system connection, based on the experience in other states and provinces, is septic tank absorption fields. Unfortunately, these are not always possible due to the inability of some soils to accommodate drain fields. Regardless of which wastewater treatment system is used, strict adherence to the provisions of the Clean Water Act as it pertains to the discharge of waste into navigable waterways, and the Safe Drinking Water Act is required.

6.2.3 RV Waste Dumps

The decision whether or not to include RV waste dumps in rest areas has previously been determined in Montana. Following investigation, it was recommended that MDT not provide

RV waste dumps at rest areas. Similarly, officials responding to the national survey reported having repeated problems with illegal chemical dumping at their rest areas, which has resulted in the elimination of many RV dumpsites and the complete abandonment of many waste dump programs. Also, the majority of rest areas patrons who participated in the user survey did not consider RV dumps an important amenity. The findings of these two surveys suggest that RV dumps should remain a service provided mainly at RV parks, service stations, and truck stops, as opposed to being considered for inclusion at new rest areas.

6.2.4 Air and Noise Pollution from Idling Engines

The negative impacts on the surrounding environment from idling engines are hard to quantify. Yet, when truck drivers keep their engines idling for extended periods of time so they can operate their heaters while resting or sleeping, the noise and smell can seriously affect other rest area users. The best ways to mitigate these impacts are to separate car and truck parking lots, or form a barrier of trees or shrubs to reduce the effect of noise and air pollution. Implementation of a trucker awareness program to address this problem is encouraged. Pamphlets distributed to trucking companies or signs at rest areas that encourage truckers to be considerate of other rest area users and not run their engines for extended periods of time while stopped might be used to convey the information. A complete ban on idling engines will not be enforced as such a restriction might prevent truckers from using rest areas entirely, which could have serious safety implications.

6.2.5 Recycling Services

Montana currently promotes the practice of recycling by providing aluminum only trash receptacles at many rest areas. To further promote recycling efforts in the future, the provision of glass, plastic and newspaper-only receptacles is encouraged, where practicable. A well-publicized and visible recycling program at Montana's rest areas would enhance the State's image as environmentally conscious.

6.3 FUNDING REQUIREMENTS AND SOURCES

Recommendations

6.3.1. *Review funding requirements biannually*.

6.3.2. *Explore new funding sources*.

The funding requirements of a statewide rest area system incorporate numerous components. Planning, design, construction, rehabilitation, maintenance and operations all have individual funding needs. Funding sources for the various components are often component-specific.

Rest area-related funding and revenue generation allow the construction of new rest areas, as well as support the addition of new amenities and ongoing rest area maintenance and operation costs. Common funding or revenue generating mechanisms include rest area usage fees collected on-site, or off-site fees associated with vehicle licensing or registration (i.e., charging a supplemental fee for RV registration and licensing to support the provision of RV dump stations). Vending machines at rest areas also could provide some supplemental revenue, despite a federal directive that dictates that all vending machine operation and/or profit on Interstate and federal-aid highways be offered to qualifying Randolph-Sheppard agencies (i.e., State Associations for the Blind). States can share vending machine profit with the Randolph-Sheppard agency if said agency rejects its operating rights and the State chooses to install/operate/maintain the vending machines on its own.

A more innovative funding mechanism, and one that would be particularly useful in supporting the development of new rest areas, is commercialization. Rest area commercialization ranges from full commercialization of services to sponsorship of signs and other informational material or the provision of phone-ahead reservation systems. A 1990 document produced by AASHTO contains a summary of the issues and legal requirements associated with the commercialization process.

6.3.1 Federal Funding Sources

United States Code, Title 23 provides funds for rest area construction and rehabilitation. Rest areas on National Highway System (NHS) and Interstate System roadways are eligible for these funds. Rest areas on other systems are eligible for funding under the Surface Transportation Program (STP). In addition, Interstate maintenance funds may be used to rehabilitate existing rest areas found on the Interstate System (AASHTO, 1999).

6.3.2 Funding Sources within Montana

The State gasoline tax is the sole source of maintenance funds for rest areas within Montana. Currently, the annual maintenance budget is approximately $1 million. Construction expenses for rest areas are currently covered through a combination of state and federal funds (13 percent and 87 percent, respectively). No predetermined budget exists for construction; rather, construction funding decisions are made year to year.

Cooperative funding agreements with other federal, state and local agencies show promise and should continue to be pursued. The CPRA Program provides an example of such a cooperative funding agreement. Legislative appropriations were acquired in 1991 and 1995 and provided local communities with up to $100,000 to improve city parks so they could be used as a rest area. A 10-year agreement between the community and MDT placed maintenance and operations responsibility with the community. The 1991 funding allowed for the establishment of six city park rest areas; 1995 provided additional eight facilities. All of these reside on 2-lane highways. These initial contracts are due to expire in 2001 and 2002.

As a final option, user fees for various rest area services may be considered when all other funding sources have been exhausted. Statewide, 36 percent of the respondents to the user survey indicated their willingness to pay a fee to finance improvements to rest areas. Fees ranging from $0.25 to $1.00 were considered acceptable by the largest proportion of respondents (17 percent) (Blomquist and Carson, 1998). It may be advisable to consider a user fee to help pay for the costs of offering computerized kiosks at rest areas. As discussed previously, a majority of respondents to the user survey indicated that they would like a hard copy of the

information to take with them. This service may be offered to patrons by including a print function with kiosks. A small fee ($0.10 – $0.25) for each printed copy would help defray the

Table 15: National Survey Results Regarding Rest Area Funding Issues

Question:	Response (%)
What sources of funding have you used or do you plan to use for funding the construction of new rest areas?	
Interstate	
National Highway System (NHS) Funds	61.76
Other	32.35
Non-interstate	
State Gas Tax	44.12
Other State Funds	38.24
Local Funds	0.00
Private Funds	0.00
Other	17.65
What sources of funding have you used or do you plan to use for funding the maintenance or rehabilitation of new rest areas?	
Interstate	
Interstate Maintenance (IM) Funds	41.18
National Highway System (NHS) Funds	26.47
Surface Transportation Program (STP) Funds	11.76
Highway Beautification Funds	11.76
Scenic Highway Funds	2.94
Motorist Safety Funds	5.88
Transportation Enhancement Funds	17.65
Other	29.41
Non-interstate	
State Gas Tax	44.12
Other State Funds	32.35
Local Funds	0.00
Private Funds	0.00
Other	14.71

cost of this service and, perhaps, help fund upgrades to the system. This arrangement would not preclude anyone from viewing the information they desire free-of-charge. Rather, it would charge only those who choose to have a printed copy of the information to take with them.

6.3.3 National Survey Results Regarding Rest Area Funding Issues

The means by which other states and Canadian provinces fund rest area construction and maintenance are summarized in Table 15. The average annual rest area construction budget among participating states and provinces was $6,500,000 and the average annual budget for maintenance and rehabilitation of rest areas was $4,403,478.

6.4 PUBLIC AND STAKEHOLDER INVOLVEMENT

Recommendations

6.4.1. *Receive feedback from rest area patrons through the use of surveys.*

6.4.2. *Continue to consult with other agencies, interest groups, and advisory committees on rest area issues.*

To help ensure the evolution and successful implementation of the *Rest Area Plan,* continued input from stakeholders and the public must be sought. This can be accomplished in a number of ways, as described below.

A telephone survey of Montana residents in all five transportation districts was conducted in 1997 to determine public perception regarding the condition of Montana's highway infrastructure. Rest areas were one of the areas of inquiry on this Public Involvement Survey. Findings from the 1997 survey were similar to those of the user survey in terms of rest area issues (Baldridge, 1997). Future telephone surveys could be used to evaluate how Montana residents perceive changes in rest area services and so forth.

To expand input to include both Montana residents and residents from other states or countries, the survey instrument from Phase II of this effort could be re-administered in its current or a modified form. Modifications should reflect a desire or a need for specific information. Future

user surveys could be conducted at regular intervals so that changes in public opinion can be assessed over time.

One of the charges of the Phase III effort was the formation of a Rest Area Advisory Committee (RAAC), which includes a broad cross-section of rest area stakeholders. As representatives of rest area patrons, in general, these individuals can continue to provide feedback from their respective areas to facilitate and enhance the evolution of this document.

6.5 RE-EVALUATION OF USER NEEDS AND NEW REST AREA FACILITIES

Recommendations

6.5.1. *Review Rest Area Plan annually and update, as needed.*

6.5.2. *Identify and address rest area user needs annually.*

6.5.3. *Re-evaluate the need for new or reconstructed rest areas annually.*

6.5.1 Review and Revise Rest Area Plan

One of the goals of this document was to create a dynamic tool that could evolve with the changing needs and goals of rest areas in Montana. Re-evaluations of this Plan will be required to provide for the continual evolution of the document. At the very least, an annual review should be performed, which should focus on perceived deficiencies of the system. An objective analysis of how past deficiencies have been addressed should be included. The documentation of successes and shortcomings will assist future efforts by providing examples of fruitful and ineffectual exercises. Subsequently, the prioritization of rest area needs can guide the allocation of resources for the following year's activities.

6.5.2 Re-evaluation of Rest Area Needs

Less frequently, a comprehensive review should be made of the statewide rest area system. This review should incorporate the input of both rest area users and stakeholders. Potential means of gathering this input were described previously in this section. For instance, respondents to the user survey expressed a number of deficiencies and problems with Montana's rest areas. Specific areas where improvements could be made include: the overall cleanliness of the facility; the operability of the toilet/urinal, sink, drinking fountain, and/or telephone; and the availability of supplies, including toilet paper, toilet seat covers, soap, paper towels and hot water. As was indicated in the Maintenance section of this document, timelier repair of inoperable items should be attempted. The lack of supplies and the inclusion of additional amenities (paper towels, soap and hot water) were also addressed elsewhere in this document.

6.5.3 Future Rest Area Plans

Another area to consider is the periodic review of rest area spacing to determine appropriate locations for new rest area sites, the placement of new rest areas to replace aging facilities, and potential closures.

Many of the rest areas were built during construction of the Interstate System (mid 1970's), and a number of them have reached or are near their useful life expectancy. Also, there is inconsistency in the spacing between rest areas, which result in some being too close together while others are spaced too far apart.

Since it can take several years to plan for and obtain funding for constructing a rest area, it's important to have guidelines in place early in the planning process. The *Rest Area Plan* will be the catalyst to help guide the department's rest area policy decisions and will aid in setting future priorities over the next twenty years.

Based on input received from the rest area user survey, the general public, the RAAC and MDT, the department has proposed site-specific rest area recommendations (see *Rest Area Plan* map - Appendix G). These recommendations are subject to change depending on evolving needs and goals of rest areas in Montana. Project selection will be in accordance with the department's performance programming process.

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8 APPENDICES

APPENDIX A: FIELD INVENTORY FORM

APPENDIX B: USER SURVEY INSTRUMENT

APPENDIX C: NATIONAL SURVEY INSTRUMENT

APPENDIX D: COMMENTS PROVIDED BY NATIONAL SURVEY RESPONDENTS

APPENDIX E: REST AREA INSPECTION REPORT (MDT)

APPENDIX F: REST AREA INSPECTION REPORT (CARETAKER)

APPENDIX G: MONTANA REST AREA PLANNING MAP