



South Dakota Interstate Rest Area Revitalization Plan

Developed by the
Departments of Tourism and Transportation
May 12, 2016



Transportation

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Introduction

As a result of the Governor's initiative to revitalize South Dakota's interstate rest areas, employees from the South Dakota Departments of Tourism and Transportation have met for the last five months to develop and propose a plan for improvements over the next three years and beyond. In addition to an initial three-to-five year improvement plan, a long-term vision for the state's welcome centers and rest areas was developed and is shared here:

"South Dakota's interstate rest areas and welcome centers provide a safe, clean, accessible, and functional place for travelers to rest and rejuvenate. They present a positive impression that is welcoming and delivers educational value for visitors which enhances and extends their stay in South Dakota. The facilities are modern and aesthetically pleasing, while being cost-effective."

The report that follows is representative of the ideas and recommendations of both departments and includes two main elements:

1. Investigation and analysis of current conditions and use of the interstate rest areas and information centers.
2. Recommendations and approximate costs associated with improvements proposed.

Investigation and Analysis

Definitions

- Interstate Rest Areas - Public facilities located along South Dakota's two interstates at which travelers can rest, use restrooms, stretch and rejuvenate. Services can include restrooms, vending machines, picnic shelters, pet exercise areas, truck and regular vehicle parking.
- Information Centers or Welcome Centers - Facilities located within the interstate rest areas. Information centers or welcome centers are staffed by seasonally employed travel counselors who offer additional traveler information about South Dakota's tourism offerings.

South Dakota is fortunate to have two interstates with rest areas along the corridors. Interstate 90 (I90) bisects the middle of the state, running west to east from Wyoming to the Minnesota border and Interstate 29 (I29), runs south to north on the eastern side of the state from Iowa to the North Dakota border. There are a total of twenty-one (21) rest areas along these interstate corridors with thirteen (13) operating as manned information centers during South Dakota's main summer tourism season. The original basic function of the rest areas, when constructed with the interstate, were to provide a safe resting place for travelers with services such as restrooms, picnic areas and parking. With the growth of South Dakota's tourism industry, information centers were added to provide travelers with information about our state and all it has to offer.

The interstate rest area and information center locations are noted as shown in the map below:

South Dakota Interstate Rest Areas



Current Condition and Use

The rest areas range in age from the newest one at Chamberlain, which is 17 years old, to the oldest ones at Valley Springs and Tilford (2), which are 43 years old. Conditions vary among the twenty-one rest areas as some have had minor upgrades since originally built.

In an effort to truly get a feel for the condition of the rest areas, the work group toured them on January 27-28, 2016, noting condition, care, maintenance and physical facility space needs, and parking. The group also discussed future use and/or potential. It was the general consensus most the rest areas serve the basic functions and are in decent condition although modernizing seemed to be a major theme.

From a Department of Tourism perspective, the rest area and information center locations at Spearfish, Chamberlain and Valley Springs along I90, and Homestead and Glacial Lakes along I29, are the highest priority. At manned travel counselor locations, visitors are personally welcomed to our state and provided with destination information that may enhance and extend their stay and guide them to other places of interest.

Main users of the rest areas are out-of-state visitors, South Dakota residents and truck haulers who travel along the interstate going from one side of the state to the other. Interstate traffic counts near the rest areas as well as traffic counts into the rest areas are shown below along with visitor counts. Visitor counts are defined by the number of people the travel counselors actually visit with during their stops at the rest areas with information centers.

South Dakota Interstate Rest Areas -Traffic Data

Interstate	Location Name	Direction	MRM/Exit	Average Annual Daily Traffic (AADT) 2014/2015 RA Counts	Average Daily Traffic (ADT) May/Oct 2014/2015 RA Counts	Percent Trucks Data from 2013 - 2016 (%)	2015 Interstate AADT/Truck near RA's EB/WB or NB/SB	Number of Visitors 2015
I90	Spearfish	EB	1	313	-	67%	2702/441	38336
	Tilford	EB	41.4	242/258	238/337	29%	9306/1340	27936
	Tilford	WB	41.5	253/253	303/333	31%	9079/1307	26561
	Wasta	EB	98.6	147	-	34%	3058/730	26700
	Wasta	WB	98.6	304	-	34%	3044/727	25776
	Belvidere	EB	165	265	-	39%	2972/776	-
	Belvidere	WB	166.6	294	-	40%	2991/781	-
	Presho	EB	218.4	311/353	454/474	40%	3274/913	-
	Presho	WB	221.3	346/384	508/482	45%	3372/941	79337
	Chamberlain	EB/WB	264	543/626	798/872	41%	7080/1742	121690
	White Lake	EB	301.2	279	-	44%	4038/985	-
	White Lake	WB	301.7	244	-	29%	4092/998	-
	Salem	EB	363.3	273/301	353/376	34%	5022/1100	54962
	Salem	WB	362.7	415/457	562/594	37%	5677/1243	70583
Valley Springs	WB	412.1	344/375	467/484	9%	6943/1243	68943	
I29	Homestead	NB	26.6	175	-	25%	6182/1440	96615
	Ward Road	NB/SB	121.8	358/376	442/443	29%	11372/2240	-
	Hidewood	NB	160.4	310	-	21%	3555/807	-
	Hidewood	SB	161.2	289	-	26%	3568/810	-
	Wilmot	NB/SB	213.8	164/175	217/218	23%	5077/1290	28960
	Glacial Lakes	SB	250.8	120	-	47%	2447/553	34351

Note: Counts shaded in the table were derived from the 2013 Interstate Rest Area Study and 2016 Rest Area Parking Analysis.

MRM –Mile Reference Marker

NB – Northbound SB – Southbound

EB – Eastbound WB – Westbound

ADT – Average Daily Traffic

AADT – Annual Average Daily Traffic

RA – Rest Area

Services Currently Available at Interstate Rest Areas

The interstate rest areas provide many services to the traveling public in a safe environment. Basic functions or services that are available at most interstate rest areas are noted below:

- Restroom Facilities
 - ✓ Men and Women Restrooms (All 21 locations)
 - ✓ Family Restroom (Chamberlain only)
 - ✓ Baby Changing Stations
- RV Dump and Potable Water Filling Stations
- Garbage Disposal
- Picnic Tables – ADA accessible
- Pop Vending Machines
- Newspaper Vending Machines
- 511/Weather Kiosks
- Pet Exercise Areas
- Tourist Information Centers (13 of the 21 rest area locations)
 - ✓ Business and attraction brochures are available
 - ✓ Manned with seasonal travel counselors who welcome visitors
 - ✓ SD Promotional T-Shirts (at 3 centers)
 - ✓ State travel maps are available
 - ✓ Cultural displays providing local educational value (Chamberlain)
 - ✓ Storage areas or sheds for caretakers and tourism staff
 - ✓ Short term visitor and truck parking
 - ✓ Pay phones
- Security camera systems that provide reassurance of a safe environment

Federal Regulations

Guidance for safety rest areas is outlined in the Code of Federal Regulations (CFR). Federal funding was used in constructing the interstate rest areas in South Dakota and as such these regulations are the basic guide for their use.

The following definitions are noted in CFR 23 Part 752.3:

- **Safety rest area:** A roadside facility safely removed from the traveled way with parking and such facilities for the motorist deemed necessary for his rest, relaxation, comfort and information needs.
- **Information centers:** Facilities located at safety rest areas which provide information of interest to the traveling public.

CFR 23 Part 752.5 Safety rest areas

- (a) *Safety rest areas should provide facilities reasonably necessary for the comfort, convenience, relaxation, and information needs of the motorist. Caretakers' quarters may be provided in conjunction with a safety rest area at such locations where accommodations are deemed necessary. All facilities within the rest area are to provide full consideration and accommodation for the handicapped.*
- (b) *The State may permit the placement of vending machines in existing or new safety rest areas located on the rights-of-way of the Interstate system for the purpose of dispensing such food, drink, or other articles as the State determines are appropriate and desirable, except that the dispensing by any means, of petroleum products or motor vehicle replacement parts shall not be allowed. Such vending machines shall be operated by the State.*

- (c) *The State may operate the vending machines directly or may contract with a vendor for the installation, operation, and maintenance of the vending machines. In permitting the placement of vending machines the State shall give priority to vending machines which are operated through the State licensing agency designated pursuant to section 2(a)(5) of the Randolph-Sheppard Act, U.S.C. 107(a)(5).*
- (d) *Access from the safety rest areas to adjacent publicly owned conservation and recreation areas may be permitted if access to these areas is only available through the rest area and if these areas or their usage does not adversely affect the facilities of the safety rest area.*
- (e) *The scenic quality of the site, its accessibility and adaptability, and the availability of utilities are the prime considerations in the selection of rest area sites. A statewide safety rest area system plan should be maintained. This plan should include development priorities to ensure safety rest areas will be constructed first at locations most needed by the motorist. Proposals for safety rest areas or similar facilities on Federal-aid highways in suburban or urban areas shall be special case and must be fully justified before being authorized by the FHWA Regional Administrator.*
- (f) *Facilities within newly constructed safety rest areas should meet the forecast needs of the design year. Expansion and modernization of older existing rest areas that do not provide adequate service should be considered.*
- (g) *No charge to the public may be made for goods and services at safety rest areas except for telephone and articles dispensed by vending machines.*
- [43 FR 19390, May 5, 1978, as amended at 48 FR 38611, Aug. 25, 1983]*

Rest Area Commercialization

The commercialization of rest areas has been a hot topic for transportation authorities for a number of years across the nation. For many states, the limited availability of open space and large number of travelers created an opportunity for revenue generation that was not allowed by Federal Highway Administration (FHWA). Through the federal **Moving Ahead for Progress in the 21st Century Act of 2012 (MAP-21)**, FHWA authorized states to conduct limited commercial activities at rest areas.

“Specifically, states may pursue innovative sources of financing, sponsorships, and partnerships to generate revenue to pay for the operation, maintenance, or construction of rest areas. Also, states may allow private interests to manage and operate rest areas, permit limited commercial activities, provide travel-related information, and advertise in a manner that is consistent with federal laws and regulations. The Act allows states to conduct over-the-counter sales of specified commercial items (e.g., specified tickets, travel-related information, and lottery machines) to customers using rest areas.”

However, the commercialization of rest areas is not in accordance with South Dakota Codified Law (SDCL). SDCL 31-8-16 states:

“Commercial establishment on right-of-way prohibited--Exception--Violation as misdemeanor. No automotive service station or other commercial establishment for serving motor vehicle users may be constructed or located within the right-of-way of, or on publicly owned or publicly leased land acquired or used for or in connection with, a controlled-access highway. This section does not apply to a vending facility allowed pursuant to § 31-29-83. A violation of this section is a Class 2 misdemeanor.”

Furthermore, SDCL 31-29-83 states:

“Commercial activities in rest areas or information centers prohibited--Exceptions. Nothing in §§ 31-29-61 to 31-29-83, inclusive, authorizes the state or any political subdivision to operate or maintain, directly or indirectly, any commercial activity in any safety rest area or information center. This section does not apply to a vending facility, vending soft drinks only, operated for the benefit of visually impaired vendors licensed by the Division of Service to the Blind and Visually Impaired or to a vending facility vending newspapers only. The Transportation Commission may promulgate rules pursuant to chapter 1-26 to establish a form upon which a newspaper vendor may apply for the placement of a vending machine; to establish provisions and standards for the location, operation, and maintenance of vending

machines so as not to interfere with the use of the rest area or information center by the traveling public; and to maintain the orderly appearance of the vending facility.”

If the above codified laws were modified to allow additional commercial activity at the State’s interstate rest areas, the State would still be confronted with the issue of property ownership type. Since the interstate system including rest areas was originally constructed prior to 1986, the state currently holds the majority of the property rights in highway use easement. The use of this property for non-highway use would likely not be in accordance with the ownership rights of the State.

Current status of the American’s with Disabilities Act (ADA) Compliance

The current status of South Dakota rest areas in regard to ADA compliance is actually quite good. ADA compliance assessments and maintenance efforts since 2006 have identified and addressed many deficiencies. Although the most significant deficiencies, such as bathroom stall widths, fixture heights and accessibility from parking areas into facilities has been systematically addressed over the last 10 years, there are several minor deficiencies remaining and enhancements to be made for ADA accommodations.

Meeting with Kristi Eisenbraun, Ms. Wheelchair SD 2016, to discuss the level of compliance and accommodation at our existing rest areas was a powerful and enlightening experience which had an impact on our assessment of potential ADA accessibility and accommodation. Our discussion led to an improved understanding of the need for enhanced accommodation through the addition of family rest rooms, installation of automatic door openers and commitment to address key accessibility concerns such as stall size, door orientation and hand rail placement to a degree which may exceed minimum standards.



Pictured from left to right: Katlyn Richter - Tourism, Brace Prouty - DOT, Kristi Eisenbraun, Ms. Wheelchair SD, Karla Engle – DOT, Nate Johnson – Tourism

Vendors

Soft Drink Vending Machines

“The federal **Randolph-Sheppard Act of 1936 (RSA)**, as amended, mandates that priority be given to individuals who are blind to operate concession and/or vending facilities on federal and federally funded property. The Act generally prohibits cash/credit card transactions, other than vending, at rest areas and welcome centers on the interstate highway system.”

CFR allows the State to place vending machines dispensing food, drinks, and or other articles the state determines appropriate and desirable in the rights-of-way of the interstate system. The State does not need to operate the vending machines directly. The State shall give priority to vending machines operated through the State licensing agency designated. SDCL limits any commercial activity to soft drink vending facilities operated for the benefit of visually impaired. In South Dakota, this program is administered by the Department of Human Services, Division of Service to the Blind and Visually Impaired.

Newspaper Vending Machines

The United States District Court for the District of South Dakota determined newspaper distribution in the rights-of-way of the interstate system is protected under the First Amendment. The DOT has developed administrative rules to allow permitting of a limited number of newspaper vending machines at each rest area.

Current Maintenance of Interstate Rest Areas

Operational maintenance of the interstate rest areas is accomplished through a combined effort by SDDOT maintenance forces, DOT maintenance contracts, and caretaker maintenance contracts. Through these efforts, the facilities are maintained year-round, keeping them functional and operational.

Caretaker maintenance contracts

The SDDOT issues a Request for Proposals (RFP) every two years for rest area maintenance contracts. The RFP includes a rest area Caretakers Manual developed by the SDDOT that identifies the minimum level of care and maintenance that needs to be addressed by the successful caretakers. The proposals submitted by the prospective caretaker identify a cost to perform those services, and any additional services that go above and beyond the minimum. The caretakers are chosen based on a combination of factors including cost, proposed level of service, and past performance.

It has been determined that the rest area Caretakers Manual should be updated and reprinted to ensure the minimum level of service to be provided is clear and concise. Work has already begun on this process.

Currently, fourteen (14) caretaker maintenance contracts are in place at a cost of approximately \$636,000 each year.

Rest Area Caretaker Maintenance Contracts		
Interstate	Rest Area Location	2015/2016 Contract Amount
I90	Spearfish - EB	\$72,783.33
	Tilford - EB/WB	\$84,883.26
	Wasta - EB/WB	\$92,581.50
	Belvidere - EB/WB	\$88,914.83
	Presho – EB/EB	\$88,447.26
	Chamberlain	\$119,500.00
	White Lake – EB/WB	\$90,000.00
	Salem – EB/WB	\$103,492.00
	Valley Springs	\$108,240.00
	I29	Homestead
Ward Road		\$73,334.00
Hidewood – NB/SB		\$91,800.00
Wilmot		\$88,229.46
Glacial Lakes		\$86,939.60
22 month Contract Total		\$1,273,469.24

Total Maintenance Costs of Interstate Rest Areas and Information Centers

Rest Area	FY 12 Costs	FY 13 Costs	FY 14 Costs	FY 15 Costs	FY 15 Caretaker Contract Costs (breakdown)	FY 15 Maintenance Costs (DOT labor, equipment and materials) (breakdown)	2015 Travel Counselor Wages (Tourism)
I-90							
Spearfish	\$90,064.02	\$95,002.51	\$86,875.95	\$78,537.58	\$39,700.00	\$38,837.58	\$13,480.10
Tilford WB	\$41,968.39	\$44,091.66	\$50,990.81	\$54,862.11	\$23,149.48	\$31,712.63	\$10,312.97
Tilford EB	\$62,554.71	\$56,826.57	\$66,202.71	\$68,183.96	\$23,149.98	\$45,033.98	\$10,312.97
Wasta WB	\$70,131.50	\$80,614.87	\$89,315.44	\$60,469.70	\$25,249.50	\$35,220.20	\$13,957.79
Wasta EB	\$71,305.42	\$69,052.03	\$79,939.67	\$93,986.21	\$25,249.50	\$68,736.71	\$13,957.79
Belvidere WB	\$42,385.02	\$46,359.53	\$47,007.42	\$54,049.35	\$24,249.50	\$29,799.85	
Belvidere EB	\$38,695.74	\$46,212.00	\$47,121.77	\$58,280.26	\$24,249.50	\$34,030.76	
Presho WB	\$65,177.11	\$59,856.75	\$71,402.24	\$62,652.90	\$24,121.98	\$38,530.92	\$14,071.89
Presho EB	\$77,617.95	\$54,092.53	\$67,453.74	\$59,278.21	\$24,121.98	\$35,156.23	
Chamberlain	\$163,915.64	\$112,146.98	\$134,756.32	\$128,226.92	\$65,181.82	\$63,045.10	\$25,422.74
White Lake WB	\$37,127.95	\$40,198.36	\$37,773.82	\$45,838.46	\$24,545.45	\$21,293.01	
White Lake EB	\$32,199.55	\$39,167.71	\$39,780.75	\$45,567.06	\$24,545.45	\$21,021.61	
Salem WB	\$74,344.22	\$69,264.99	\$84,472.30	\$72,703.51	\$28,225.09	\$44,478.42	\$14,258.34
Salem EB	\$79,187.91	\$59,370.83	\$82,855.10	\$71,464.91	\$28,225.09	\$43,239.82	\$14,258.34
Valley Springs	\$100,665.04	\$88,993.25	\$89,604.60	\$79,066.05	\$45,994.91	\$33,071.14	\$21,567.68
I-29							
Homestead	\$121,733.94	\$93,213.54	\$122,981.06	\$130,732.93	\$59,040.00	\$71,692.93	\$22,076.55
Ward Rd	\$81,804.94	\$81,049.17	\$78,699.98	\$82,960.31	\$40,000.36	\$42,959.95	
Hidewood SB	\$67,780.10	\$54,865.29	\$49,470.04	\$42,318.49	\$25,036.36	\$17,282.13	
Hidewood NB	\$109,887.37	\$66,778.84	\$52,655.50	\$44,522.22	\$25,036.36	\$19,485.86	
Whetstone Valley	\$88,423.61	\$81,552.64	\$100,063.59	\$95,188.28	\$48,125.16	\$47,063.12	\$14,802.25
Glacial Lakes	\$94,401.19	\$89,064.11	\$99,989.69	\$87,307.00	\$47,241.60	\$40,065.40	\$14,780.67
State Total	\$1,611,371.32	\$1,427,774.16	\$1,579,412.50	\$1,516,196.42	\$694,439.07	\$821,757.35	\$203,260.08

Current status of truck parking

The customer base for the rest areas throughout the state can be broken into travelers and truck haulers. The haulers are both intra and interstate haulers which represent approximately 25% of the rest area users and are generally longer duration users. With the implementation of the Federal Motor Carrier Safety Administration on/off duty requirements and the implementation of required Electronic Logging Devices (ELD's) haulers use rest areas as down time and, in many cases, plan their trips with a stop in South Dakota. Due to the State's low population density and limited availability of commercial stops along the interstate corridor, rest areas have and will continue to serve as a necessary resting location for truck haulers.

In 2013 and 2016, an analysis of truck parking and truck availability was conducted. Although these counts were taken for a relatively short duration, they indicated substantial usage and duration of use for haulers. Current truck parking capacity at most rest areas appears to be adequate with the potential need for expansion at some rest areas such as Wasta.

Truck Parking Capacity

Interstate	Facility	Truck Spaces Provided	Daytime Hours	Nighttime Hours	# Hours over Capacity	Year Collected
I90	Spearfish EB	25	5%	10%	0	2016
	Tilford EB	9	22%	44%	0	2013
	Tilford WB	9	13%	23%	0	2013
	Wasta EB	7	25%	40%	0	2016
	Wasta WB	7	25%	147%	11	2016
	Belvidere EB	10	17%	54%	0	2016
	Belvidere WB	10	11%	74%	3	2016
	Presho EB	16	21%	41%	0	2016
	Presho WB	13	32%	74%	1	2016
	Chamberlain EB/WB	16	21%	76%	1	2016
	White Lake EB	9	28%	78%	4	2016
	White Lake WB	9	28%	64%	0	2016
	Salem EB	16	22%	66%	0	2016
	Salem WB	16	25%	43%	0	2016
	Valley Springs WB	0	0%	0%	0	2013
	Valley Springs POE	7	32%	14%	0	2013
I29	Homestead NB/SB	27	11%	24%	0	2013
	Ward NB/SB	12	28%	86%	1	2016
	Hidewood NB	8	26%	64%	0	2013
	Hidewood SB	7	36%	49%	0	2013
	Wilmot NB/SB	9	6%	21%	0	2016
	Glacial Lakes SB	10	27%	33%	0	2016

Wide variations in the volume of haulers using the interstate system, and in turn the state's rest areas, are common. A few items that can influence hauler volumes are seasonal variations (e.g. harvest, logging), weather impacts in South Dakota or other major haul corridors, and cost effectiveness of over-the-road hauling. Although variations can be expected, it is not cost feasible to provide facilities to accommodate peaks.

The 2016 South Dakota Rest Area Parking Analysis shows there will be significant growth of truck traffic on the interstates in South Dakota through 2040. Consideration of the future parking capacity needs of haulers should be included in the scope any time significant work is put into a rest area.

Tourism seasonal staff

The interstate information centers are staffed with just over 70 seasonal part-time employees from mid-May through mid-September. Three of the information centers, Chamberlain, Valley Springs, and Homestead, remain open through October. Information center staff members are hired by the Missouri River Tourism Association as outlined in a consulting contract between Tourism and DOT, and the Missouri River Tourism Association. Staff are hired and supervised by Tourism and the cost of staff wages is shared equally between Tourism and DOT in accordance with the contract. The current consulting contract went into effect in April 2013, and will expire in April 2017. Presently, we are reviewing the scope of work and RFP process for future contracts to ensure the best quality service for travelers at the information centers.

Closures

Specific rest area closures were discussed with consideration given to the proximity of nearby facilities, both public and private, as well as actual usage data obtained by DOT and Tourism. The 2014 Interstate Rest Area Study's recommendations were reviewed noting age and physical needs, ADA compliance, plumbing, and available parking.

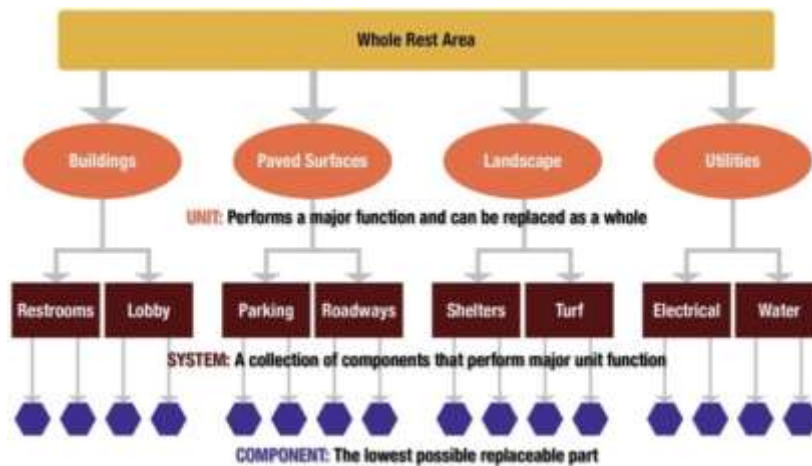
Federal funds were utilized to construct the original rest area facilities. A state may close an Interstate rest area or rest areas provided there is a well-documented evaluation demonstrating that the rest areas to remain are adequate in both number and size to satisfy the needs of the traveling public. Ability to provide for the needs of the public without any overcrowding, along with showing that the distances between the remaining rest areas are reasonable would be essential. In that regard, a spacing of an hour's driving time is considered to be reasonable.

Rest Area & Information Center Return on Investment Analysis (ROI)

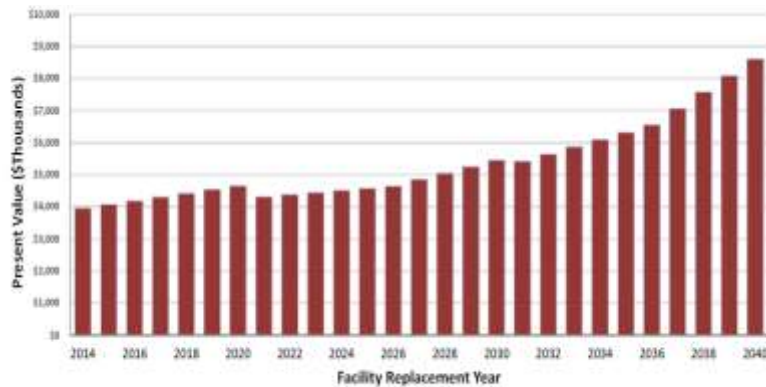
In order to meet the strategic intention of providing safe, clean, accessible and functional places for travelers to rest and rejuvenate, a realization of the role of the taxpayers/state and private industry must be analyzed. In general, the role of the state to provide these services to the traveling public is a function of the proximity of private industry along the interstate corridor. Due to the relatively low population density, development that has occurred over the last 60 years, and the more reliable vehicle fleet of today, the rest area plan developed during the Eisenhower requires a re-analysis.

Since the government's role is to fulfill the needs of the public where private industry is neither willing nor able to provide those services, it's critical that the investment made in these facilities provides for the highest return on investment for every dollar invested in it. The ROI for rest areas has been broken into two major areas: one being the facility and basic functions of the facility and the other being tourism benefits.

In 2014 a study was conducted on six (6) of the state's rest areas to develop a tool to aid the state in identifying the highest basic function (restrooms, roof, doors, etc.) return on investment for each rest areas. The analysis was based on a component condition assessment, anticipated component life, and interrelationships of components as noted in the figure below. The tool in essence provides an objective analysis of the basic functions of facility and aids in the decisions of preservation, rehabilitation and replacement.



Generally, the state has two options for continuing to provide the basic functions: Major rehabilitation in the near future, or replace the facility in the somewhat near future with both alternatives requiring continued preservation. From a return on investment standpoint, the highest benefit is to undergo a major rehabilitation in the near future. The graph below is general representation of the present value of utilizing a preservation plan for an individual rest area.



Note: Total present value of the preservation plan through 2040 is \$6.1 million, not including the value of a new facility.
Source: TSP and BBC Research & Consulting, 2014.

The ROI for the tourism benefit of rest areas and welcome centers is substantially more complex to calculate. Tourism is the second leading economic generator for the state and the methods and campaigns to not only maintain its growth but to grow it are not as directly quantifiable. It is difficult to measure visitor satisfaction and first impressions without doing a survey but we intuitively know it's important.

Remodel or reconstruction methods

Depending on the type of work to be done at the rest areas, a number of different contracting methods are available to complete these projects. Smaller, typical maintenance activities such as sidewalk replacement, roof repairs, etc. can be made with DOT maintenance contracts using the typical Design-Bid-Build (D-B-B) contracting method. Larger contracts including significant remodeling or reconstruction can also use that contracting method, however the timeframe required to complete projects like this can be lengthy. To reduce this delay, innovative contracting methods such as Design/Build (DB) or Construction Manager at Risk (CMAR) can be used. A complete reconstruction project can go from a 4-5 year time frame using conventional methods such as D-B-B to a 2-3 year time frame utilizing DB or CMAR. The Office of the State Engineer has been consulted on this topic and they have confirmed that they have the experience and expertise to pursue construction using innovative contracting methods to expedite rest area reconstruction.

Recommendations

Plan for immediate improvements

Representatives from the Departments of Transportation and Tourism have identified a number of repairs or improvements at the rest areas that can be accomplished immediately to improve the services for travelers. Deep cleaning, painting, trimming of bushes, upgrades of signs and posters, sidewalk repairs, increase in storage for caretakers and travel counselors, etc. can be done at a minimal cost that will help leave a lasting impression for our travelers. A meeting has been scheduled between DOT and Tourism employees, caretakers who handle routine maintenance and the traveler counselors to discuss these items, review roles and responsibilities, and review expectations for the upcoming summer tourism season.

Plan for overall revitalization of rest areas

It is the recommendation to transition from thirteen (13) information centers to five (5) Welcome Centers, one on each interstate border location and Chamberlain over time. In an effort to do this, we offer the following:

Reconstruction

Interstate rest area conditions at Valley Springs on I90 and the Minnesota border and Homestead on I29 near Vermillion are poor. While these rest areas are programmed in the DOT STIP in future years, we recommend expediting the reconstruction of these rest areas with Welcome Centers as early as 2018.

Reconstruction of the rest area and Welcome Center at Valley Springs will include the reconstruction of the Port of Entry as well. Coordination efforts will be needed between the Departments of Tourism, Public Safety and Transportation at this location.

As the rest area at Wilmot has a scenic view overlooking the Whetstone Valley, it is well suited for a Welcome Center. In order to accommodate this, additional space is needed to facilitate the needs of a Welcome Center. It is recommended that this work also be completed as early as 2018.

The Spearfish Welcome Center is of the lowest priority and is dependent on the development proposed by the City of Spearfish. We are recommending no action at this time. An estimate has been shown in 2021 for its replacement but anticipate this need will be at a later date.

Interstate Rest Area Reconstruction Recommendation Timeline						2016	2017	2018	2019	2020	2021
Interstate	Location Name	Direction	MRM/Exit	Age (years)	Recommendation						
I90	Spearfish	EB	1	39	Reconstruction - Welcome Center						\$ 4,500,000
	Valley Springs	WB	412.1	43	Reconstruction - Welcome Center			\$ 7,500,000			
I29	Homestead	NB	26.6	37	Reconstruction - Welcome Center			\$ 4,500,000			
	Wilmot	NB/SB	213.8	23	Addition/remodel - Welcome Center			\$ 3,000,000			
Total								\$ 15,000,000			\$ 4,500,000

Permanent Closure of Rest Areas

It is the recommendation to permanently close the rest areas on I90 at Tilford, eastbound and westbound, as well as those on I29 at Hidewood, northbound and southbound. These rest areas are also in poor condition based on the 2014 Interstate Rest Area Study and would need reconstruction soon if they were to remain open. These corridors have seen significant development over the course of the last 60 years. While the rest area facility would be eliminated, we recommend transitioning closure of the truck parking available at these locations. When the pavement condition deteriorates to the point of needed repair, the parking would be eliminated. It is not anticipated that this will be a major impact to haulers. Some of the recent development

can and will provide adequate services for haulers. From the hauler data recently collected, both Tilford and Hidewood currently experience relatively low parking numbers.

Rest areas provide a service to a wide variety of haulers and travelers within and through our state. To gain input to the closures, it is the recommendation to utilize a three pronged approach of media outlets, onsite notification, and DOT website. Although many steps need to take place before a closure could happen, we recommend starting this process immediately so closures coincide with the end of the current caretaker maintenance contracts in October 2016.

Interstate Rest Area Closure Recommendation Timeline											
Interstate	Location Name	Direction	MRR	Age (years)	Recommendation	2016	2017	2018	2019	2020	2021
I90	Tilford	EB	41.4	43	Closure	\$ 40,000					
I90	Tilford	WB	41.5	43	Closure	\$ 40,000					
I29	Hidewood	NB	160.4	46/25	Closure	\$ 40,000					
I29	Hidewood	SB	161.2	46/25	Closure	\$ 40,000					
Total						\$160,000					

With the elimination of these four (4) rest areas, a cost savings of \$210,000/year for maintenance costs will be recognized.

Permanent Elimination of Information Centers within Rest Areas

As rest areas are closed and Welcome Centers reconstructed, information centers will be eliminated over time. A table below shows anticipated elimination of information centers at various rest areas.

Location	Date
Tilford WB/EB	10/31/2016
Wasta WB/EB	10/31/2016
Presho WB	Fall 2019
Salem WB/EB	Fall 2019
Glacial Lakes SB	Fall 2019

With the elimination of the information centers at eight (8) locations, the state will realize a savings of approximately \$225,000/year in travel counselor wages. The Department of Tourism will be able to fund the travel counselor wages at the new Welcome Centers within their existing budget and the Department of Transportation will earmark those savings for future facility upgrades.

Major Remodeling Plan for Rest Areas

As reconstruction of the rest areas and welcome centers are completed at Valley Springs on I90, Homestead and Wilmot on I29, we recommend renovations occur at the Wasta, Belvidere, Presho, Salem and Glacial Lakes rest areas in the years noted below. Minor repairs or upgrades including security camera systems and ADA upgrades involving push button doors are also noted below for various rest areas.

Interstate Rest Area Remodel/Upgrade Recommendation Timeline						2016	2017	2018	2019	2020	2021
Interstate	Location Name	Direction	MRM/Exit	Age (years)	Recommendation						
190	Wasta	EB	98.6	20	Add family restroom, ADA upgrades, security camera system upgrades			\$ 82,000			
	Wasta	WB	98.6	20	Add family restroom, ADA upgrades, security camera system upgrades			\$ 82,000			
	Belvidere	EB	165	38/20	Evaluate for structural stability first, pursue remodel with new tiling in bathrooms, new lighting, ADA upgrades, security camera system upgrades		\$ 17,000				\$ 1,500,000
	Belvidere	WB	166.6	38/20	Evaluate for structural stability first, pursue remodel with new tiling in bathrooms, new lighting, ADA upgrades, security camera system upgrades		\$ 17,000			\$ 1,500,000	
	Presho	EB	218.4	48/23	Remodel to include new tiling in bathrooms, ADA Upgrades, new sinks, new lighting, security camera system upgrades					\$ 150,000	
	Presho	WB	221.3	48/23	Remodel to include new tiling in bathrooms, ADA upgrades- push button doors, etc., family bathroom, new sinks, new lighting, security camera system upgrades					\$ 150,000	
	Chamberlain	EB/WB	264	15	Existing Welcome Center	\$ 15,000	\$ 17,000				
	White Lake	EB	301.2	17	Ok as is except add ADA push button doors, security camera system upgrades Reevaluate for updating in 5-7 years.		\$ 37,000				
	White Lake	WB	301.7	17	Ok as is except add ADA push button doors, security camera system upgrades Reevaluate for updating in 5-7 years.		\$ 37,000				
	Salem	EB	363.3	25	Remodel to include new tiling in bathrooms, add family restroom, ADA Upgrades, new sinks, new lighting, basic remodel to bring up-to-date					\$ 150,000	
	Salem	WB	362.7	25	Remodel to include new tiling in bathrooms, add family restroom, ADA Upgrades, new sinks, new lighting, basic remodel to bring up-to-date					\$ 150,000	
129	Glacial Lakes	SB	250.8	38	Remodel to include adding family restroom, push button doors, security camera system upgrades.					\$ 65,000	
	Ward Road	NB/SB	121.8	25	Ok as is except add ADA push button doors, security camera system upgrades. Reevaluate for updating in 3-5 years.		\$ 37,000				
Total						\$ 15,000	\$ 162,000	\$ 164,000	\$ -	\$ 2,165,000	\$ 1,500,000

Summary of cost savings

As a result of the closure of four rest areas and elimination of eight information centers, a cost savings is realized. A total of \$435,000/year will be available to use in the remodels and upgrade needs of the remaining rest areas.

- Savings from closure of Tilford and Hidewood rest areas = \$210,000/year
- Savings from elimination of information centers/travel counselor wages = \$225,000/year

Total = \$435,000/year

Upgrade of Security Camera Systems at Interstate Rest Areas

SDDOT had planned to upgrade the security camera systems at the rest areas across the state over the course of approximately four years starting in FY16. There are currently 15 rest areas along I90 and 6 rest areas along I29 for a total of 21 security camera system upgrades. If the recommendation to close the rest areas at Tilford (2) on I90 between Sturgis and Rapid City and at Hidewood (2) on I29 between Brookings and Watertown is approved, seventeen (17) security camera system upgrades are needed. It also makes sense to upgrade the security camera systems at the Valley Springs Rest Area on I90 at the SD/MN border, at Homestead Rest Area on I29 near the SD/IA border and at Wilmot on I29 at the time of reconstruction in FY2018. With that noted the following security camera system upgrades are planned accordingly:

Proposed Security Camera Replacement Schedule

Interstate	Location	MRM	Year Planned (# Needed in FY2017)
I90	Spearfish EB	1	2017 (1)
	Tilford WB/EB	41	Close Rest Area
	Wasta EB/WB	99	Upgrade with remodel in 2018 (2)
	Belvidere WB/EB	165	2017 (2)
	Presho WB/EB	221	2017 (2)
	Chamberlain (Dual)	264	2017 (1)
	White Lake WB/EB	301	2017 (2)
	Salem WB/EB	363	2017 (2)
	Valley Springs WB	412	Upgrade with reconstruction in 2018
I29	Homestead (Dual)	27	Upgrade with reconstruction in 2018
	Ward Road (Dual)	122	2017 (1)
	Hidewood NB/SB	160	Close Rest Area
	Wilmot (Dual)	214	Upgrade with remodel in 2018
	Glacial Lakes SB	251	2017 (1)

Security camera systems planned will be the PTZ systems (similar to that used at the Sturgis Rally) at a cost of approximately \$17,000 for each location.

- Cameras needed at each location: 2 inside facility, 3 outside facility and 1 leaving rest area on on-ramp for 6 total at \$2,500 each or \$12,500 each location.
- Computer needed with new Milestone software which will include wiring, high internet speed lines and installation of systems: \$4,500 each location

Total in FY2017 = 12 locations x \$17,000 each = \$204,000

Public/private partnerships

Opportunities for public/private partnership at Welcome Center locations have been presented to the State of South Dakota in recent years at a few locations. Private business owners have expressed interest in creating a space within their businesses or visitor centers to accommodate travel counselors. Numerous pros and cons have been evaluated for these opportunities.

- **Homestead** - The owner of the truck stop along I29 at the junction of SD Highway 50 near Vermillion has proposed the opportunity to have the travel counselors currently employed at the information center/rest area at Homestead relocate to his truck stop business located on SD Highway 50. The recommendation from the work group is to avoid this option in private only situations as the long term lifespan of the business and existence of space for the travel counselors is at the mercy of the business owner. Additionally, the space would not be an ideal location to welcome visitors coming from the south on I29.
- **Spearfish** - The community of Spearfish is currently working with a private developer who has proposed a development northeast of Exit 10 along I90 that would include building a visitor center, art gallery, gift shop, etc. This site is currently the location of the Lawrence County Highway Department as well as a SDDOT maintenance shop. Housing the state's travel counselors here could be a potential valuable opportunity.
- **Minuteman Missile National Historic Site Visitor Center** - Personnel from the Minuteman Missile Site Visitor Center have approached the Department of Tourism to explore the opportunity of providing travel counselors at their new visitor center. The Department of Tourism is interested in the opportunity and would recommend removing travel counselors from the Wasta information center and relocate them to this location. Department of Transportation would no longer share the cost of supporting the travel counselor's wages as this visitor center is not located in any interstate right of way like the other rest areas/information centers.

Memorandum of Understanding (MOU) between Tourism and DOT

It is a recommendation to establish a memorandum of understanding (MOU) between the Departments of Tourism and Transportation with the intent to promote a shared vision of the interstate rest areas and welcome centers by clarifying the responsibilities of each department as they pertain to these facilities. The MOU would establish procedures for addressing the operational and maintenance needs of the rest areas and welcome centers and call for annual reviews of the overall goals for these facilities as agreed upon by the departments. Included in the review process will be consideration of the replacement/remodel schedule, repair protocols, and current standards of operation.

Develop South Dakota Interstate Rest Area Management Plan

In an effort to keep focus on improvements over time at our interstate rest areas, it is recommended that a South Dakota Interstate Rest Area Management Plan be developed. This plan would include more detail than as shown in this report as to use, existing condition, strategies for improvements and standards for long-term preservation of the rest areas as well as funding scenarios and mechanisms.

Develop, implement and utilize visitor survey results

Tourism will conduct a visitor study every three years at all dual purpose rest area/welcome center locations. The survey will be designed to collect data on how travelers are using our rest area/welcome centers, what current amenities they find most useful, what amenities they would like to see added, how frequently they use the facilities, how much time they spend at the facilities, and how satisfied they are with the facilities among other survey questions. This information will be utilized during the review process to ensure that the function of our rest

area/welcome centers is meeting the shared vision and goals of Tourism and Transportation in that they provide a safe, clean, rejuvenating and educational stop for travelers.

Alternative Options Considered

If we choose to retain the rest areas at Tilford on I90 and Hidewood on I29, they are at a point where they need to be reconstructed or rehabilitated which is supported by the recommendations in the 2014 Interstate Rest Area Study. The existing Tilford rest area property is constrained by the railroad on the east side and the terrain is not conducive to properly addressing ADA accessibility. A possible consideration would be to construct one rest area that serves both eastbound and westbound traffic on state owned property in the southwest quadrant of Exit 44. Cost estimates to reconstruct these rest areas is as follows:

- Tilford Rest Area – Reconstruct at Exit 44 - \$3,500,000
- Hidewood Rest Area – Rehabilitation of both NB and SB at \$1,500,000 each or reconstruction of both NB and SB at \$2,500,000 each

Another option considered was to eliminate the rest areas at White Lake on I90 due to their proximity to the Chamberlain Welcome Center as well as the elimination of the Glacial Lakes rest area on I29 at North Dakota border if the Welcome Center is constructed at Wilmot. Closure of the White Lake rest areas on I90 could be considered when they reach the end of their service life. Coordination with NDDOT and further investigation would be needed if we were to consider closing the Glacial Lake rest area I29

Appendices

- Quick Reference Chart – Recommendations (Closures, Reconstruction and Remodel/Upgrade)
- Photos of rest areas from tour
- 2014 Interstate Rest Area Study Summary
- 2014 Interstate Rest Area Parking Study Parking Analysis
- 2016 South Dakota Rest Area Parking Analysis
- Truck Stops in relation to Interstate Rest Areas
- Caretaker Manual
- Draft Visitor Survey
- Draft MOU between DOT and Tourism

Interstate Rest Area Closure Recommendation Timeline

Interstate	Location Name	Direction	MRM/Exit	Age (years)	Recommendation	2016	2017	2018	2019	2020	2021	Comments
190	Tilford	EB	41.4	43	Closure	\$ 40,000						190 mainline reconstruction - RA will be closed after Rally on this project. Consider adding demolition of RA facility to contract; Caretaker contract ends Oct 31, 2016 - Consider closing rest area facility at that time but leave parking available for trucks until pavement becomes poor. Transition to full closure.
190	Tilford	WB	41.5	43	Closure	\$ 40,000						190 mainline reconstruction - RA will be closed after Rally on this project. Consider adding demolition of RA facility to contract; Caretaker contract ends Oct 31, 2016 - Consider closing rest area facility at that time but leave parking available for trucks until pavement becomes poor. Transition to full closure.
129	Hidewood	NB	160.4	46/25	Closure	\$ 40,000						Caretaker contract ends Oct 31, 2016 - consider closing rest area facility at that time but leave parking available for trucks until pavement becomes poor. Transition to full closure. Pursue contract to demolish facility.
129	Hidewood	SB	161.2	46/25	Closure	\$ 40,000						Caretaker contract ends Oct 31, 2016 - consider closing rest area facility at that time but leave parking available for trucks until pavement becomes poor. Transition to full closure. Pursue contract to demolish facility.

Interstate Rest Area Reconstruction Recommendation Timeline

Interstate	Location Name	Direction	MRM/Exit	Age (years)	Recommendation	2016	2017	2018	2019	2020	2021	Comments
190	Spearfish	EB	1	39	Reconstruction - Welcome Center						\$ 4,500,000	Dependent on proposed City of Spearfish Visitor Center development, reevaluate in 3 years or as information becomes available with development in Spearfish - Lower priority for now.
	Valley Springs	WB	412.1	43	Reconstruction - Welcome Center			\$ 7,500,000				Programmed in STIP for FY20 - Consider/Pursue using CM At-Risk process through State Engineer's office to speed up reconstruction - Construct in FY18. Possible funding resources are State Construction funds or Building and Improvement funds as well (Cost is based on \$4,500,000 for Rest Area/Welcome center, \$2,500,000 for new POE facility including Scales, and an estimated \$500,000 for ROW)
129	Homestead	NB	26.6	37	Reconstruction - Welcome Center			\$ 4,500,000				Programmed in STIP for FY19. Consider/Pursue using CM At-Risk process through State Engineer's office to speed up reconstruction - Construct in FY17 and FY18. Possible funding resources are State Construction funds or Building and Improvement funds as well
	Wilmot	NB/SB	213.8	23	Addition/remodel - Welcome Center			\$ 3,000,000				Consider using CM At-Risk process through State Engineer's office to speed up addition - Construct in FY17 and FY18
						\$ 160,000	\$ -	\$ 15,000,000	\$ -	\$ -	\$ 4,500,000	

Color Key

	2014 Interstate Rest Area Study
	Recommend closure
	Fiscal Year Recommendation

Interstate Rest Area Remodel/Upgrade Recommendation Timeline

Interstate	Location Name	Direction	MRM/Exit	Age (years)	Recommendation	2016	2017	2018	2019	2020	2021	Comments
I90	Wasta	EB	98.6	20	Add family restroom, ADA upgrades, security camera system upgrades			\$ 82,000				Eliminate TIC - 10/31/2016
	Wasta	WB	98.6	20	Add family restroom, ADA upgrades, security camera system upgrades			\$ 82,000				Eliminate TIC - 10/31/2016
	Belvidere	EB	165	38/20	Evaluate for structural stability first, pursue remodel with new tiling in bathrooms, new lighting, ADA upgrades, security camera system upgrades		\$ 17,000				\$ 1,500,000	I90 mainline reconstruction - RA closed, resurfacing rest area parking lot.
	Belvidere	WB	166.6	38/20	Evaluate for structural stability first, pursue remodel with new tiling in bathrooms, new lighting, ADA upgrades, security camera system upgrades		\$ 17,000			\$ 1,500,000		I90 mainline reconstruction - RA closed, resurfacing rest area parking lot.
	Presho	EB	218.4	48/23	Remodel to include new tiling in bathrooms, ADA Upgrades, new sinks, new lighting, security camera system upgrades					\$ 150,000		Eliminate TIC - 10/31/2016
	Presho	WB	221.3	48/23	Remodel to include new tiling in bathrooms, ADA upgrades- push button doors, etc., family bathroom, new sinks, new lighting, security camera system upgrades					\$ 150,000		Eliminate TIC - 10/31/2016
	Chamberlain	EB/WB	264	15	Existing Welcome Center	\$ 15,000	\$ 17,000					Add concrete sidewalk repair work onto 3rd party contract working with statue installation at rest area which includes new sidewalk, etc. New statue is unveiled in September 2016.
	White Lake	EB	301.2	17	Ok as is except add ADA push button doors, security camera system upgrades Reevaluate for updating in 5-7 years.		\$ 37,000					
	White Lake	WB	301.7	17	Ok as is except add ADA push button doors, security camera system upgrades Reevaluate for updating in 5-7 years.		\$ 37,000					
	Salem	EB	363.3	25	Remodel to include new tiling in bathrooms, add family restroom, ADA Upgrades, new sinks, new lighting, basic remodel to bring up-to-date					\$ 150,000		Eliminate TIC - 10/31/2020
	Salem	WB	362.7	25	Remodel to include new tiling in bathrooms, add family restroom, ADA Upgrades, new sinks, new lighting, basic remodel to bring up-to-date					\$ 150,000		Eliminate TIC - 10/31/2020
I29	Glacial Lakes	SB	250.8	38	Remodel to include adding family restroom, push button doors, security camera system upgrades.					\$ 65,000		Eliminate TIC - 10/31/2020
	Ward Road	NB/SB	121.8	25	Ok as is except add ADA push button doors, security camera system upgrades. Reevaluate for updating in 3-5 years.		\$ 37,000					
						\$ 15,000	\$ 162,000	\$ 164,000	\$ -	\$ 2,165,000	\$ 1,500,000	
Totals						\$ 175,000	\$ 162,000	\$ 15,164,000	\$ -	\$ 2,165,000	\$ 6,000,000	

Homestead



Homestead



Ward Road



Ward Road



Hidewood



Hidewood



Wilmot



Wilmot



Wilmot



Glacial Lakes



Glacial Lakes



Glacial Lakes



Spearfish



Spearfish



Tilford



Tilford



Tilford



Wasta



Wasta



Belvidere



Belvidere



Belvidere



Presho



Presho



Presho



Chamberlain



Chamberlain



Chamberlain



White Lake



White Lake



White Lake



Salem



Salem



Salem



Valley Springs



Valley Springs



Valley Springs



The Interstate Rest Areas Study: Along the I-29 and I-90 Corridors



September 2014



submitted to:



submitted by:



in association with:



**SOUTH DAKOTA DEPARTMENT
OF TRANSPORTATION
REST AREA STUDY:
ALONG THE I-29 AND I-90 CORRIDORS
FINAL REPORT**

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I. INTRODUCTION

A. *Study Background*

Much is being asked of the 20 Interstate rest areas and 4 ports of entry (POEs) along Interstate highways in South Dakota. Constantly in service, these havens provide safe places to nap, picnic, and play. They offer traveler information, bathroom facilities, snack vending, tourism services, overnight truck parking, and more. The South Dakota Department of Transportation (SDDOT) devotes significant time and resources to its rest areas through routine maintenance and regular investments in enhancements to services and infrastructure.

Though the network of Interstate rest areas is a tremendous asset to South Dakota residents and visitors, the system is under pressure. Many rest area parking lots strain under increasing truck parking demand as drivers require sleep and truck freight traffic continues to trend upward. Most rest areas possess infrastructure first built in the 1970s, which requires maintenance and upgrades to continue to serve the traveling public. Some rest area pedestrian pathways, buildings, and restroom facilities need upgrades to conform to the Americans with Disabilities Act (ADA) and provide accessibility for all visitors.

To direct investments in the system, SDDOT has undertaken the Interstate Rest Areas Study: Along the I-29 and I-90 Corridors (Rest Areas Study), a comprehensive analysis of seven rest areas along Interstates 90 and 29 in South Dakota.

B. *Study Purpose and Objectives*

The purpose of the study is to assess rest area conditions, provide a plan for preserving the ability of these rest areas to continue to meet demand, and determine when to stop investing funds into preservation and channel monies toward constructing a new facility.

The objectives of this project are to:

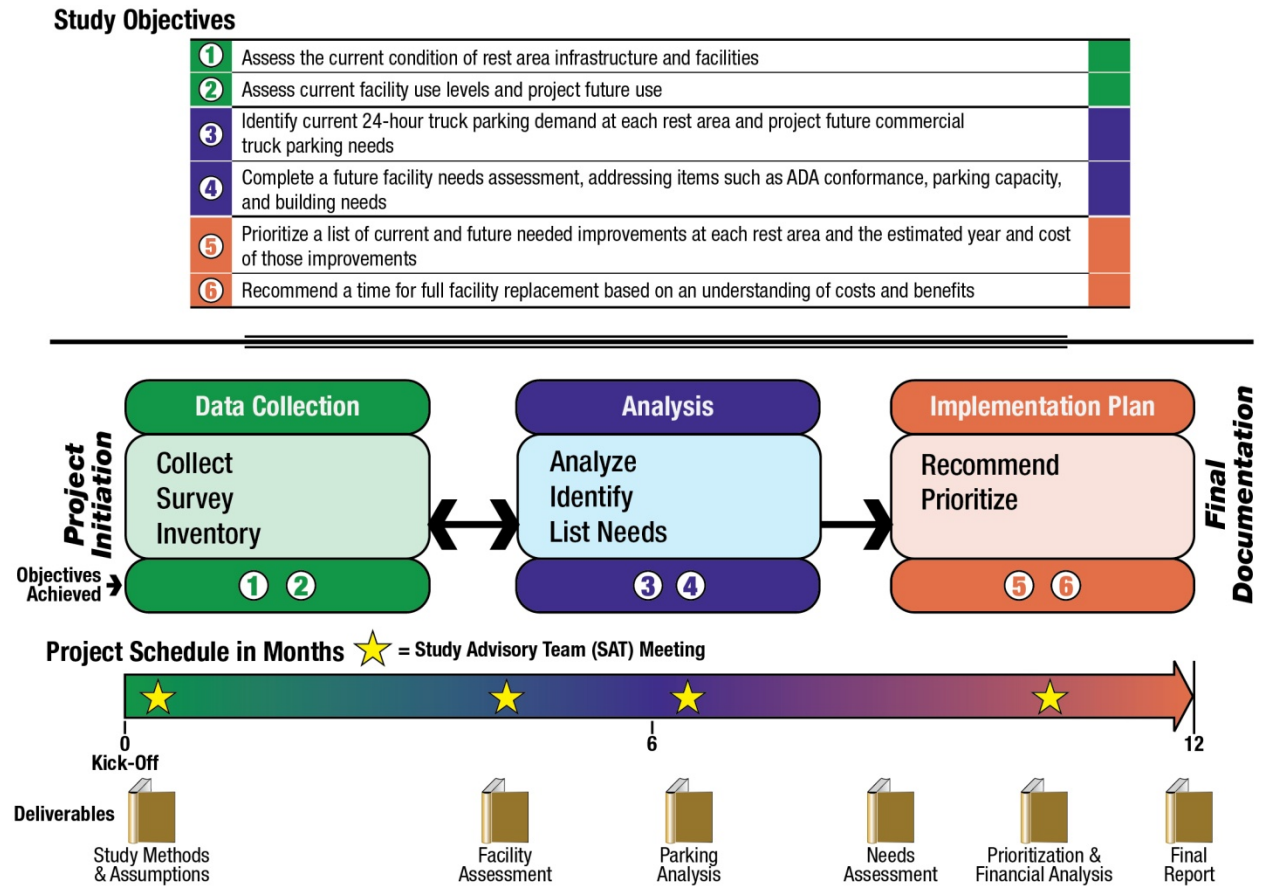
1. Assess the current condition of rest area infrastructure and facilities
2. Assess current facility use levels and project future use
3. Identify current 24-hour truck parking demand at each rest area and project future commercial truck parking needs
4. Complete a future facility needs assessment, addressing items such as ADA conformance, parking capacity, and building needs
5. Prioritize a list of current and future needed improvements at each rest area and the estimated year and cost of those improvements
6. Recommend a time for full facility replacement based on an understanding of costs and benefits

C. Study Process

Work Flow and Schedule

The project team designed a work flow and a schedule to meet the six study objectives, and the result is depicted on **Figure 1**. The project began in summer 2013 with the development of the Methods and Assumptions Document. Data collection efforts included site visits, interviews with SDDOT maintenance staff, and traffic/parking data collection at each rest area. The gathered data were used to develop an analysis of needs. Improvements were identified and prioritized in the Implementation Plan stage. Four meetings with the Study Advisory Team were used to support each step and to ensure that objectives were met.

Figure 1. Study Work Flow



Six project deliverables depicted on **Figure 1** support the project objectives. They are described as follows:

Study Methods and Assumptions – The Federal Highway Administration (FHWA) requires the Methods and Assumptions Document for all planning projects. The document, which was approved by FHWA and SDDOT staff, includes basic study information (study area, schedule, etc.) and the parameters to be used to govern the study’s analytical components. Such parameters include analysis time periods, seasonal factors, forecasting methodology, data collection plan, and measures of effectiveness to be used. **Appendix A** contains the approved Methods and Assumptions Document for the Rest Areas Study.



Facility Assessment – A detailed facility assessment was completed for each rest area. Each assessment describes the facility design, operations, and building systems, including items such as sidewalks, parking areas, lighting, signage, landscaping, restroom capacity, utilities, picnic shelters, building shell and structure, mechanical and plumbing systems, electrical, interior finishes, and communications/IT equipment.

Upon describing these characteristics, the assessment provides an evaluation of rest area conditions using:

- Site visit and visual check
- Interview with maintenance personnel
- Code conformity review
- ADA compliance survey

Per the request of SDDOT staff, the assessment information was compiled into Auditmate format and the complete ADA Checklist for Readily Achievable Barrier Removal.

Appendix B presents the Facility Assessment.

Parking Analysis – The parking analysis provided, for each rest area, a count of current parking spaces for trucks and passenger vehicles, a 24-hour profile of current parking demand for both passenger vehicles and trucks, and forecasted growth in parking occupancy to the Year 2040. The analysis identified rest areas where additional spaces would be needed to meet demand and provided a preliminary layout for future parking expansion.

Appendix C contains the Parking Analysis.

Needs Assessment – The Needs Assessments for each rest area provide a synopsis of improvements needed to keep the rest area functioning to the Year 2040. The parking demand forecasts included in the Parking Analysis are used to develop future user forecasts, which translate to loading for the restrooms and other site infrastructure. Condition information from the Facility Assessments is used to determine the nature and timing of improvements, which are placed into 5-year increments from the Year 2020 through 2040 based on urgency of need. The Needs Assessment provides conceptual cost information for all improvements.

Appendix D provides the Needs Assessment.

Prioritization and Financial Analysis – This deliverable applies a financial view to the needs and improvements identified in the Needs Assessment, resulting in a series of recommendations to SDDOT regarding how to channel resources toward maintenance and replacement. The analysis offers a series of recommendations about timing of facility replacement.

Appendix E includes the Prioritization and Financial Analysis.

Final Report – The Final Report summarizes the key conclusions and recommendations from the project deliverables and provides a document SDDOT can use as a reference moving forward. All of the project deliverables are referenced in the Final Report and included as appendices.



Project Governance

The project Study Advisory Team (SAT) was formed before the project kickoff in June 2013. The SAT consists of consultant staff and SDDOT staff from a variety of departments, including Project Development, Research, Road Design, Administration, and Traffic Engineering. A representative of FHWA was also included on the SAT. Each SDDOT region containing at least one of the rest area locations (Aberdeen, Mitchell, and Rapid City) was also represented on the SAT.

D. Study Rest Areas

The study addresses infrastructure and parking needs at each of seven locations and identifies actions needed to preserve rest area functionality into the future. These seven include a portion of the 24 total rest areas and POEs along Interstates in South Dakota. These locations were identified for study due to known needs or issues related to aging or deficient site infrastructure and/or heavy demand for parking.

The rest areas studied include:

1. Valley Springs Westbound I-90
2. Valley Springs Port of Entry (POE) Westbound I-90
3. Homestead Northbound/Southbound I-29
4. Hidewood Northbound I-29
5. Hidewood Southbound I-29
6. Tilford Eastbound I-90
7. Tilford Westbound I-90

Figure 2 provides a layout of rest areas in relation to the state boundary.

- 1 Valley Springs Westbound I-90
- 2 Valley Springs Port-of-Entry Westbound I-90
- 3 Homestead Northbound / Southbound I-29
- 4 Hidewood Northbound I-29
- 5 Hidewood Southbound I-29
- 6 Tilford Eastbound I-90
- 7 Tilford Westbound I-90



LEGEND

-  Studied Rest Areas
-  Private Truck Stop Locations
-  Other Rest Areas / Ports of Entry

Figure 2. Studied Rest Areas



II. EXISTING CONDITIONS

A. *Data Collection*

The data collection effort consisted of the following activities:

Facility Assessments – Facility assessments were completed in the fall of 2013. On-site visual reviews and meetings were held with responsible SDDOT maintenance staff, after which a thorough review of the existing infrastructure was completed to determine the condition of various infrastructure components. After this review, a second field visit was made to each rest area to complete an ADA assessment and survey. The project team completed AuditMate-compatible data sheets and ADA checklists for each rest area.

Figures 3 through 9 provide aerial depictions of each rest area and identify basic rest area characteristics.

Parking Demand – Video cameras posted at each rest area were used to gather parking data. The number of trucks and passenger vehicles was recorded at 5-minute intervals to create a profile of current parking demand at each rest area.

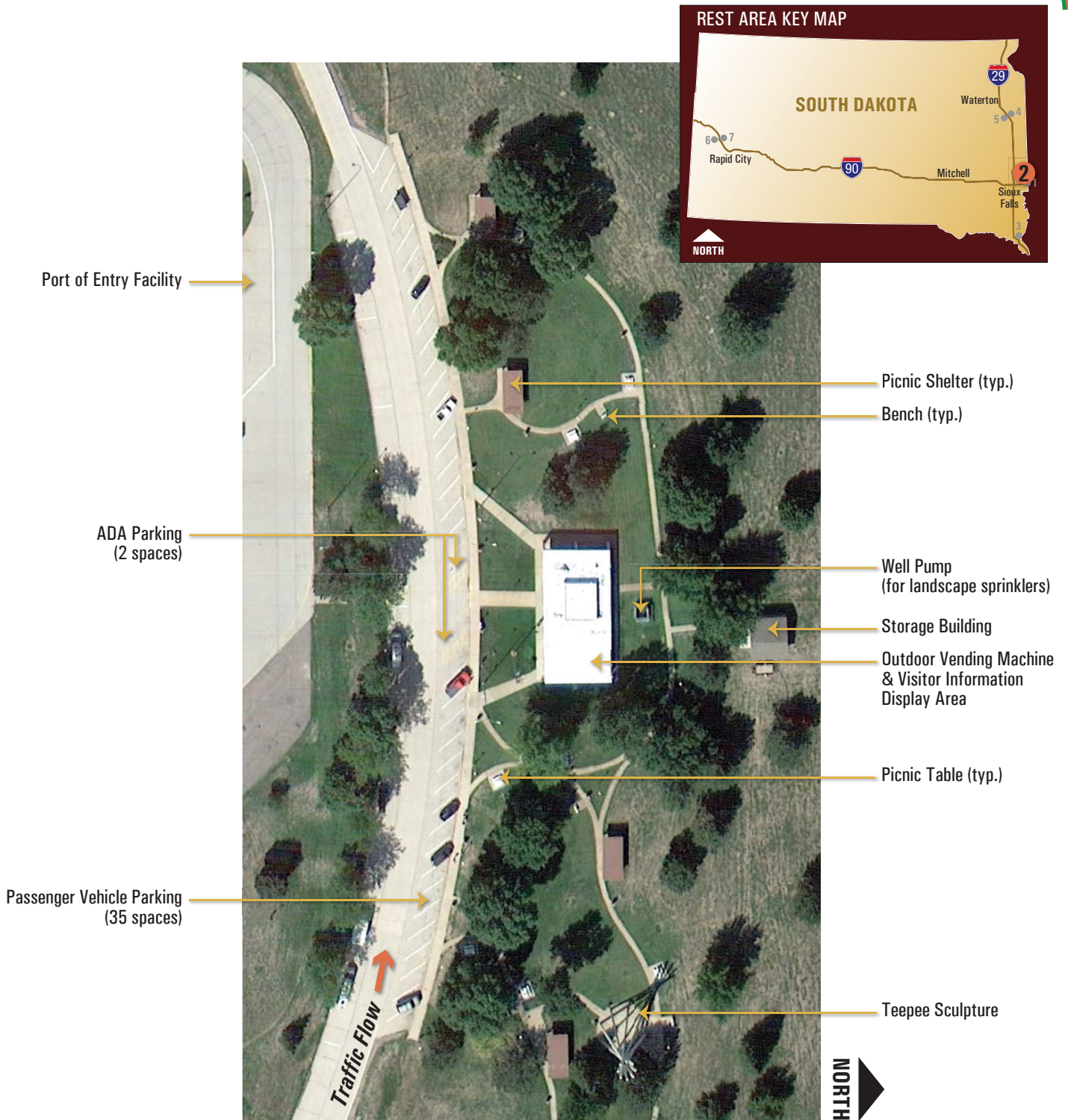


Figure 3. Valley Springs Rest Area Site Layout



Figure 4. Valley Springs Port of Entry Site Layout



Figure 5. Homestead Rest Area Site Layout

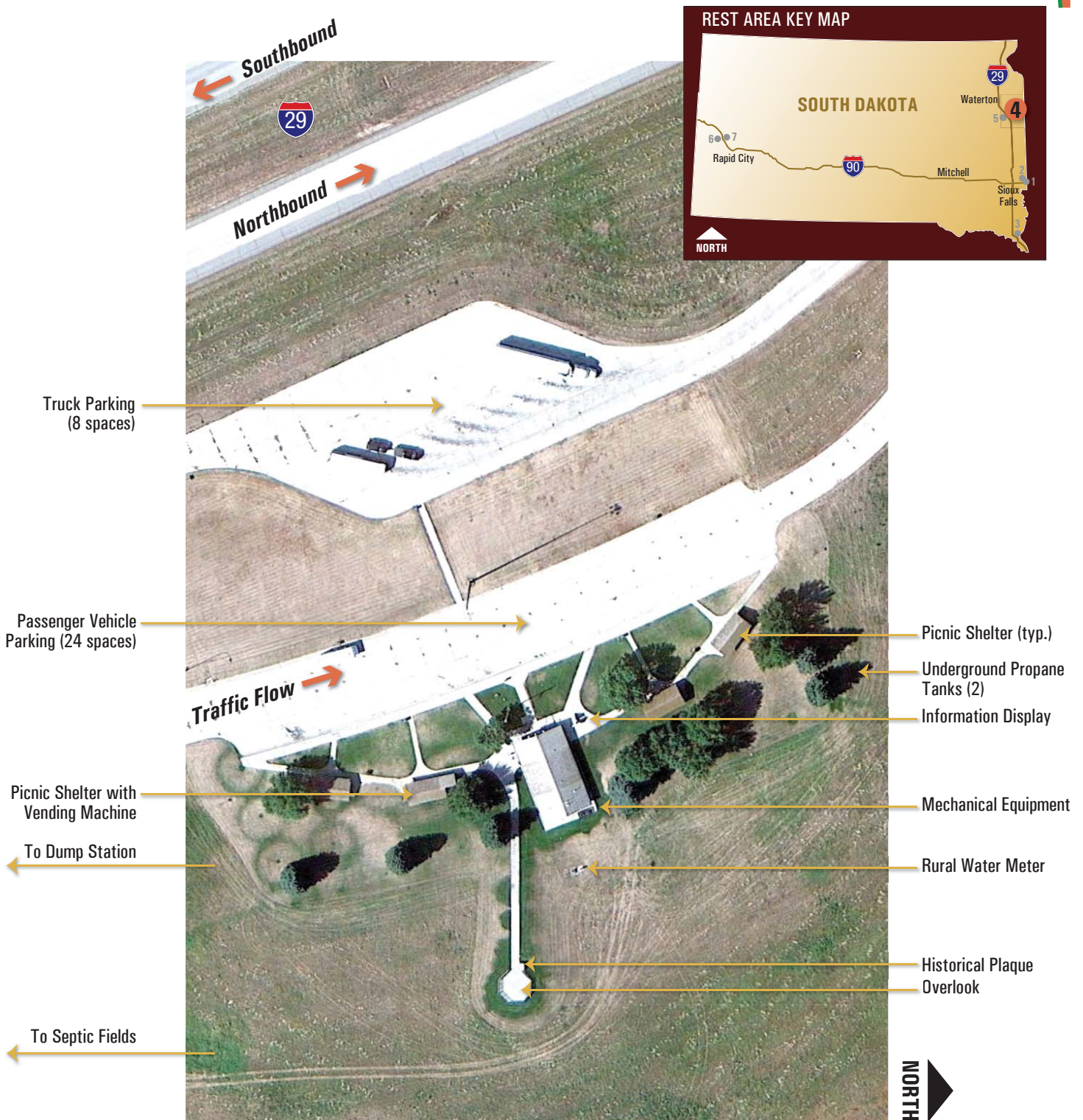


Figure 6. Hidewood Northbound Rest Area Site Layout

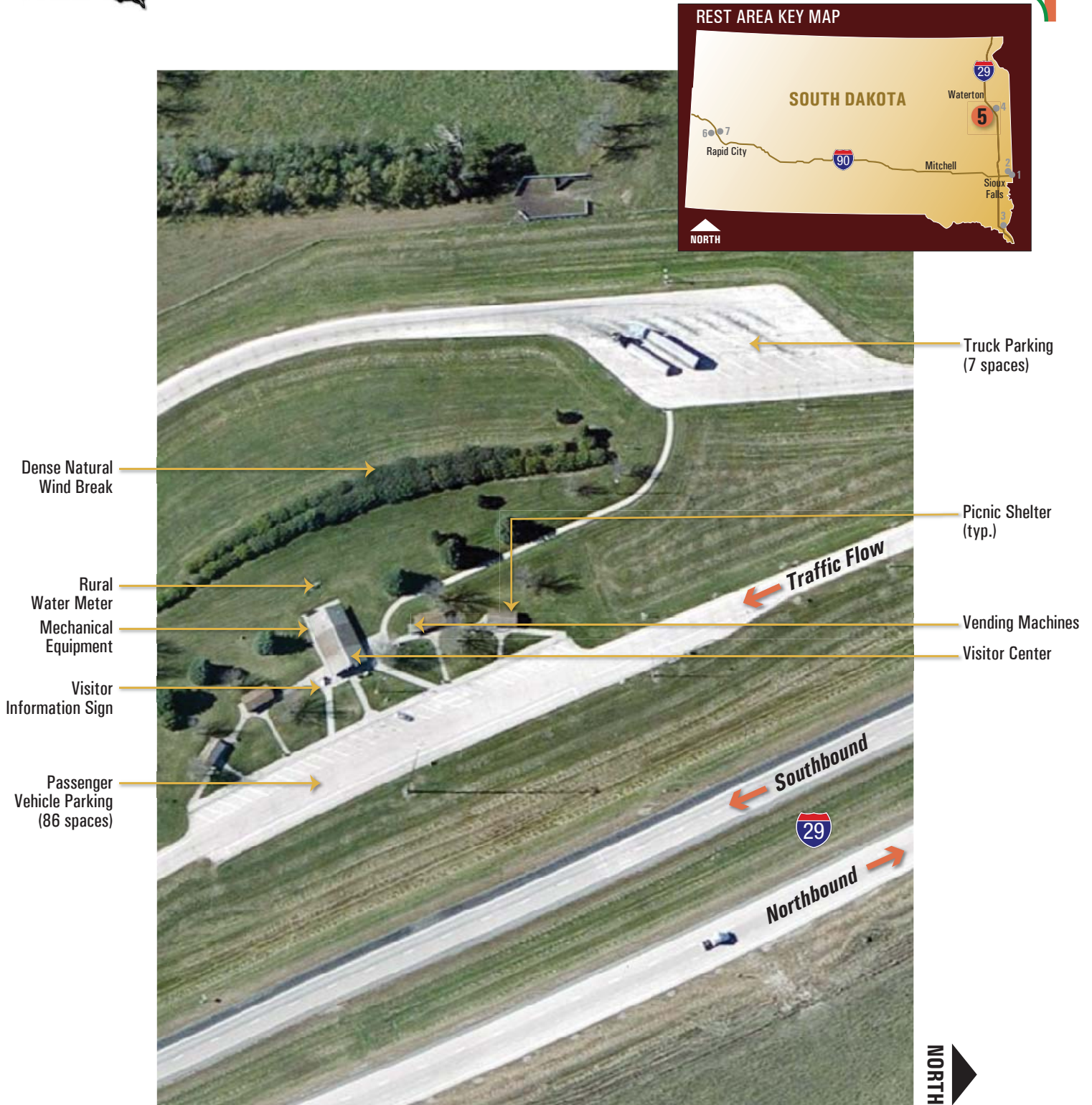


Figure 7. Hidewood Southbound Rest Area Site Layout

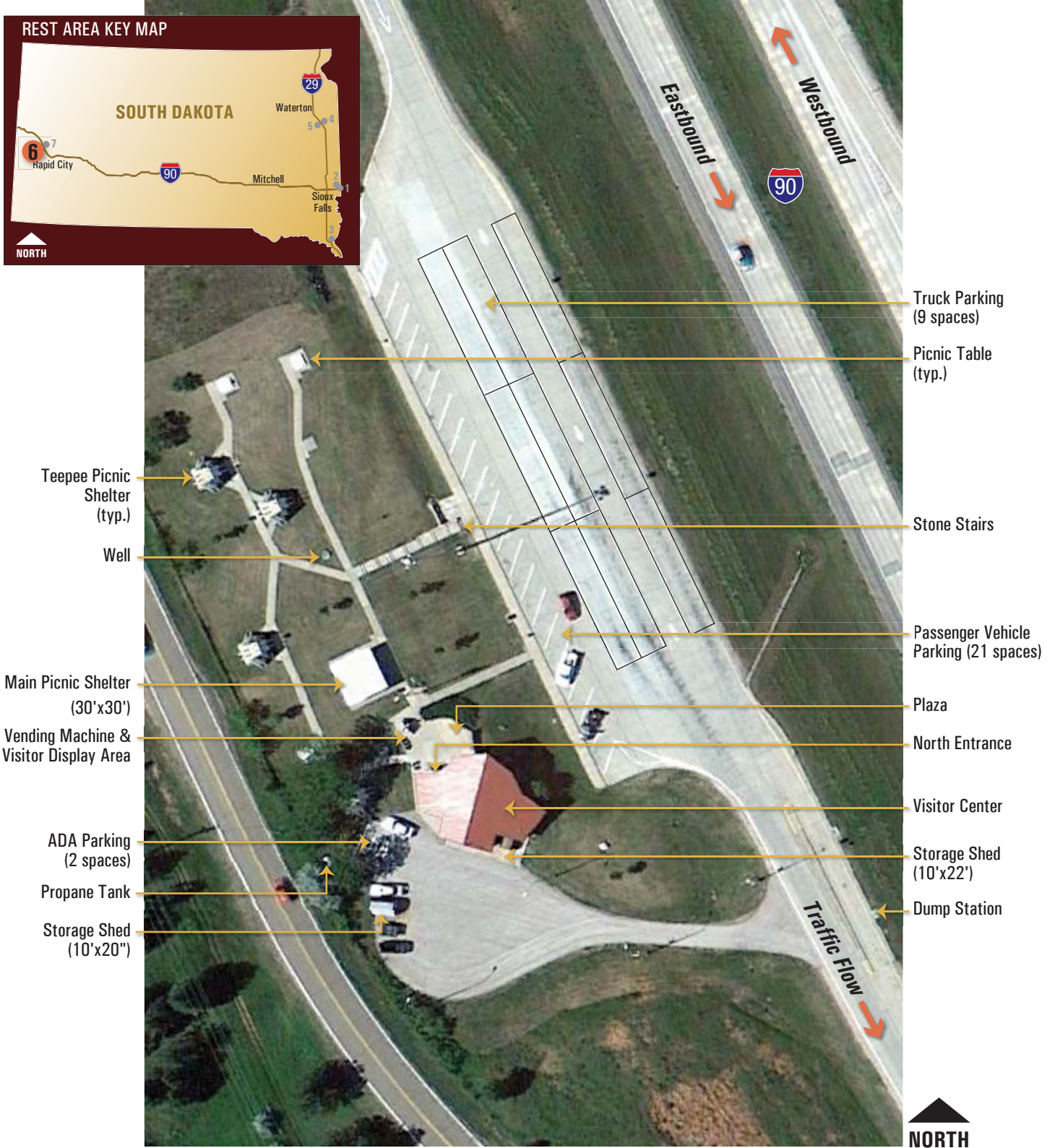


Figure 8. Tilford Eastbound Rest Area Site Layout



Figure 9. Tilford Westbound Rest Area Site Layout

B. Rest Area Facility Conditions

SDDOT requested that a comprehensive assessment be performed to sharpen awareness of issues that may be hindering the function of the rest areas. In response, the project team conducted a detailed inventory and conditions assessment of each rest area. Elements captured in the assessment included the following:

- Basic rest area amenities: vending, information, artwork
- Structures
- Landscape amenities such as benches and shelters
- Utilities: water, wastewater, electric, telephone, gas
- Building systems: architectural, plumbing, mechanical, electrical
- Site infrastructure: parking areas, sidewalks, paths
- Paved areas
- Restrooms: access, stalls, lavatories, toilets, sinks, signage
- Building Code conformity
- Accessibility per ADA requirements

Table 1 describes the deficiencies found to be unique to each rest area and held in common among the rest areas. This information was compiled from the Facility Assessments in **Appendix B**. Deficiencies included non-compliant electrical outlets, lack of a family restroom, aging components, pavement deficiencies, cramped restroom and lobby spaces, and deteriorating or non-functional heating, ventilation, and air conditioning systems. As shown, all of the rest areas possess ADA deficiencies, having been constructed before the legislation was passed in 1990. Identified ADA deficiencies included door closing rates, counter heights, toilet placement, and public telephone location.

In summary, these deficiencies indicate that various investments need to be made in repair and rehabilitation, ADA upgrades, and Code compliance efforts for the rest areas to continue to function in an acceptable fashion.

Table 1. Rest Area Deficiencies

Rest Area	Location	Year Built	Deficiencies	Deficiencies in Common
Valley Springs	I-90 Westbound MRM 412	1973	<ul style="list-style-type: none"> Does not meet current Building Code for outlets, lacks a ventilation system, has storage areas that do not meet minimum clearance Leaking sanitary lagoons Many components beyond, at, or near the limit of service life Inadequate air conditioning unit Deteriorating heater 	<ul style="list-style-type: none"> Facility does not meet ADA standards for many components, including accessible parking spaces, signage, pathway slopes, information displays, door handle clearance, door width, door closure time, picnic bench dimensions, restroom counter heights and stall and fixture dimensions, public telephone location/provision Some pavement deficiencies No family restroom
Valley Springs POE	I-90 Westbound MRM 412	1984	<ul style="list-style-type: none"> Insufficient space in building for POE functions Confusion results from shared POE/public rest area access Scale system can freeze in wintry conditions Undesirable outdoor inspection area Need for more electrical outlets per Building Code Ceiling exhaust fans do not meet Code Inadequate heating and cooling systems for occupants Leaking sanitary lagoons Many components beyond, at, or near the limit of service life 	
Homestead	NB/SB I-29 MRM 26	1977	<ul style="list-style-type: none"> Trash demand exceeding capacity Inoperable exhaust ventilation for basement equipment room Occasional clogging of lagoons Exit ramp to SD 50 can be slippery during wintry conditions 	
Hidewood Northbound	NB I-29 MRM 160	1980	<ul style="list-style-type: none"> Noticeably small restrooms Cedar roofs in poor condition Some components are beyond, at, or near the limit of service life 	
Hidewood Southbound	SB I-29 MRM 160	1980	<ul style="list-style-type: none"> Cedar structure roofs in poor condition Small and narrow restrooms Truckers forced into a lengthy walk to the building 	

Rest Area	Location	Year Built	Deficiencies	Deficiencies in Common
Tilford Eastbound	EB I-90 MRM 41	1973	<ul style="list-style-type: none"> Does not meet current Building Code for outlets, lacks a ventilation system, has storage areas that do not meet minimum clearance Inadequate storage space for tourist information center Unpleasant odors emanating from rest area open lagoons Difficult pedestrian access up 10-15' to the building from the parking lot 	<ul style="list-style-type: none"> Facility does not meet ADA standards for many components, including accessible parking spaces, signage, pathway slopes, information displays, door handle clearance, door width, door closure time, picnic bench dimensions, restroom counter heights and stall and fixture dimensions, public telephone location/provision Some pavement deficiencies No family restroom
Tilford Westbound	WB I-90 MRM 41	1973	<ul style="list-style-type: none"> Does not meet current Building Code for outlets, lacks ventilation system, storage areas do not meet minimum clearance Inadequate storage space for tourist information center Building not winterized or insulated Difficult pedestrian access down 5' to the building from the parking lot Unpleasant odors emanating from rest area open lagoons Water piping insulation in poor condition Furnace and AC unit in need of replacement 	

C. Parking Conditions

Parking capacity is a precious resource at the Interstate rest areas. The seven rest areas provide a total of 67 truck parking spaces and 166 passenger vehicle spaces, for an average of 10 truck and 24 passenger vehicle spaces. **Table 2** summarizes the available parking capacity at each rest area.

Table 2. Current Rest Area Parking Capacity

Rest Area	Truck Parking Spaces	Passenger Vehicle Spaces
Valley Springs	0	37
Valley Springs POE	7	4 (POE staff)
Homestead	27	33
Hidewood Northbound	8	24
Hidewood Southbound	7	26
Tilford Eastbound	9	21
Tilford Westbound	9	21

To gain an understanding of how this capacity is currently being used, the project team conducted 24-hour parking occupancy counts at each rest area during the week of September 16 through September 20, 2013. Video cameras were used to capture parking conditions for a 24-hour block of time in both the passenger vehicle and truck parking areas. Trucks are defined as semi-truck and trailer, while passenger vehicles represent all other vehicle types.

After compiling the parking data at each rest area, several factors were analyzed to quantify how the parking lots operate during the study period.

Total Parked Vehicles – Over the full 24-hour period, the results show that the Valley Springs Westbound Rest Area serves the most passenger vehicles during the study period. The two Hidewood Rest Areas accommodate a similar number of parked trucks during the 24-hour period, which exceeds truck visits at the other facilities.

Parking Duration – The average duration of both passenger vehicles and trucks over the 24-hour collection period was calculated. In general, passenger vehicles are parked at rest areas for less time than trucks. The time vehicles are parked increases during the nighttime hours, especially for trucks. The duration of truck parking during the nighttime increases to between 2 to 15 times that of daytime operations.

Parking Occupancy – The average number of occupied spaces (parking occupancy) for both passenger vehicles and trucks at each facility was analyzed to determine the adequacy of the existing parking facilities.

Figure 10 depicts the truck parking spaces and demand. As shown, truck parking capacity meets average and maximum demand at each rest area, though the maximum number recorded at both Hidewood Rest Areas nearly reaches the capacity.

Figure 10. Current Truck Parking Spaces and Demand

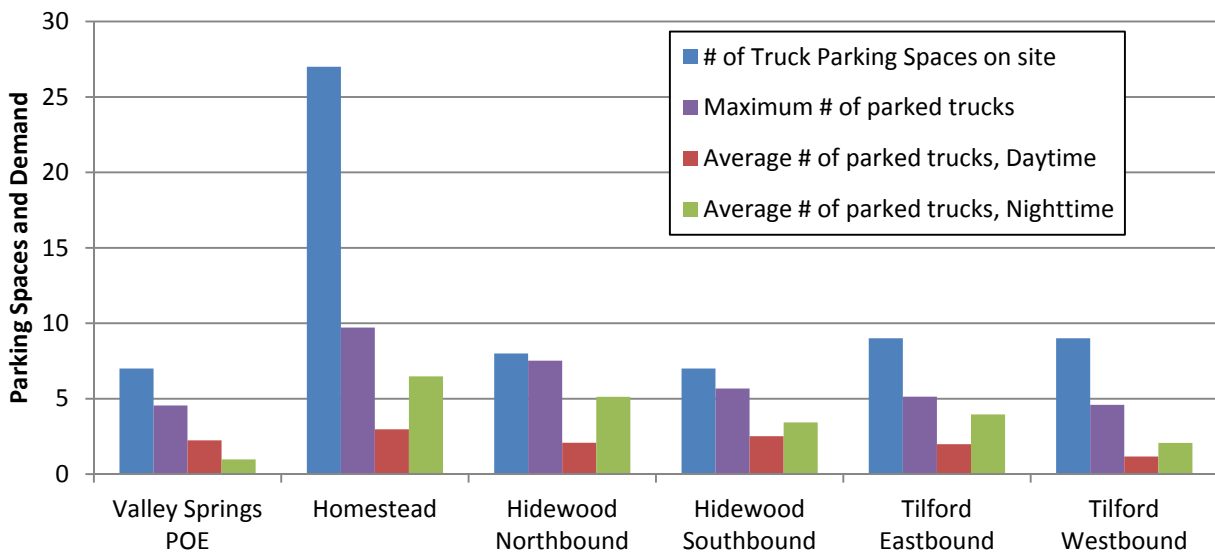
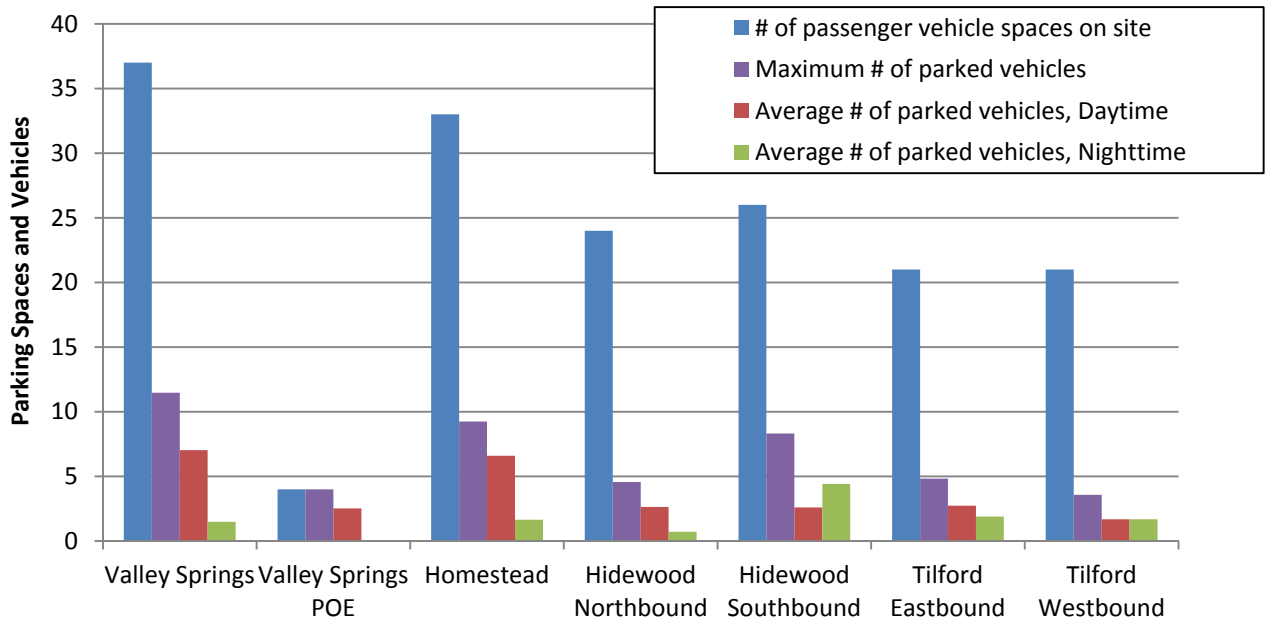


Figure 11 depicts the passenger vehicle parking spaces and occupancy. As shown, passenger vehicle parking capacity easily meets average and maximum demand at each rest area.

Figure 11. Current Passenger Vehicle Parking Spaces and Demand



As stated previously, parking at some rest areas was shown to operate at or near the capacity threshold during portions of the day. In addition, parking conditions at each facility vary throughout the day and experience unique trends. The Parking Analysis in **Appendix C** describes these trends in detail.

III. FUTURE USE FORECASTS

The potential for future increase in rest area demand must be considered to adequately evaluate the need for improvements. Anticipated future increase in interstate traffic flows, both passenger vehicles and trucks, will place additional strain on parking supply. Additional visitors will stretch the capabilities of restrooms, lobbies, walkways, utilities, and site amenities. The project team developed future use forecasts to account for these impacts.

A. Parking Forecasts

Two separate actions were taken to forecast future parking demand:

1. The truck and passenger vehicle parking counts were adjusted to reflect seasonal increases in traffic experienced in South Dakota.

Parking conditions at rest areas throughout South Dakota can fluctuate based on the time of year (higher in the summer, lower in the winter) due to tourist-related traffic and the weather. To account for these changes in travel patterns during a typical year, September 2013 parking counts at each rest area were adjusted to reflect peak conditions. Historical traffic counts at rest area automated traffic records (ATRs) or the mainline counts nearest the facility were used to adjust the existing parking counts to peak conditions. Seasonal adjustment factors varied from 1.1 to 1.6, with the greatest difference at the Tilford Rest Areas adjacent to the tourist-heavy Black Hills.

2. The seasonally adjusted conditions were projected to the future planning year, 2040.

Different methodologies were used for projecting passenger vehicle and truck traffic parking. For the passenger parking estimates, the *Highway Needs and Project Analysis Report* (SDDOT, 2013) and the *South Dakota Decennial Interstate Corridor Study* (Felsburg Holt & Ullevig, 2010) were consulted. Growth rates in interstate traffic were used to estimate passenger parking demand at each facility. Information from the FHWA Freight Analysis Framework (FAF) was used to develop long-term truck parking estimates at each rest area. The FAF includes long-term truck volume projections for each section of interstate and key state highways throughout the nation. These truck traffic projections were used to develop the long-term truck parking estimates at each rest area.

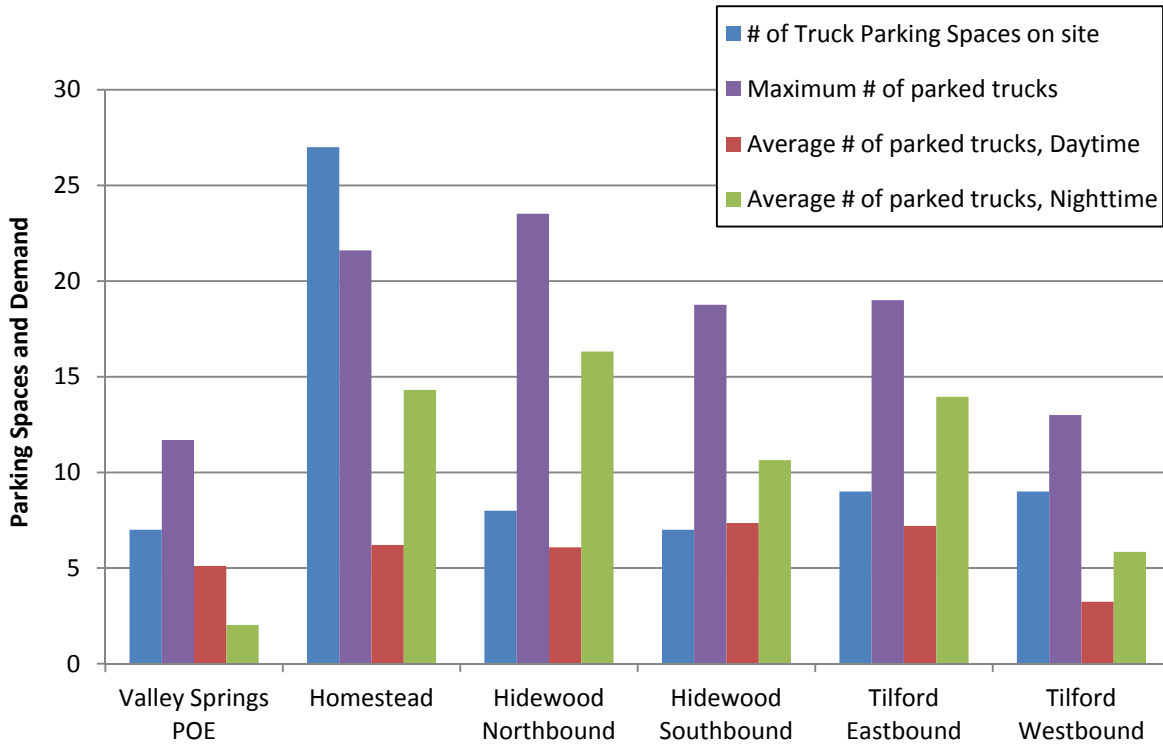
Table 3 summarizes the results.

Table 3. Parking Growth Rates and Factors

Rest Area	Annual Growth Rate (2013–2040 Factor)	
	Trucks	Passenger Vehicles
Valley Springs Westbound & POE	2.96% (2.2)	2.16% (1.78)
Homestead	2.64% (2.0)	1.38% (1.45)
Hidewood Northbound	3.87% (2.8)	1.32% (1.42)
Hidewood Southbound	3.87% (2.8)	1.32% (1.42)
Tilford Eastbound	3.08% (2.2)	0.89% (1.27)
Tilford Westbound	3.08% (2.2)	0.89% (1.27)

The growth factors were applied to the existing parking occupancy count results to determine long-term parking demand and to identify locations where expansion would be needed. **Figure 12** depicts the truck parking spaces and demand.

Figure 12. Forecast 2040 Truck Parking Spaces and Demand



As shown, truck parking capacity is exceeded by maximum demand at all locations but Homestead. **Table 4** lists the additional needed spaces.

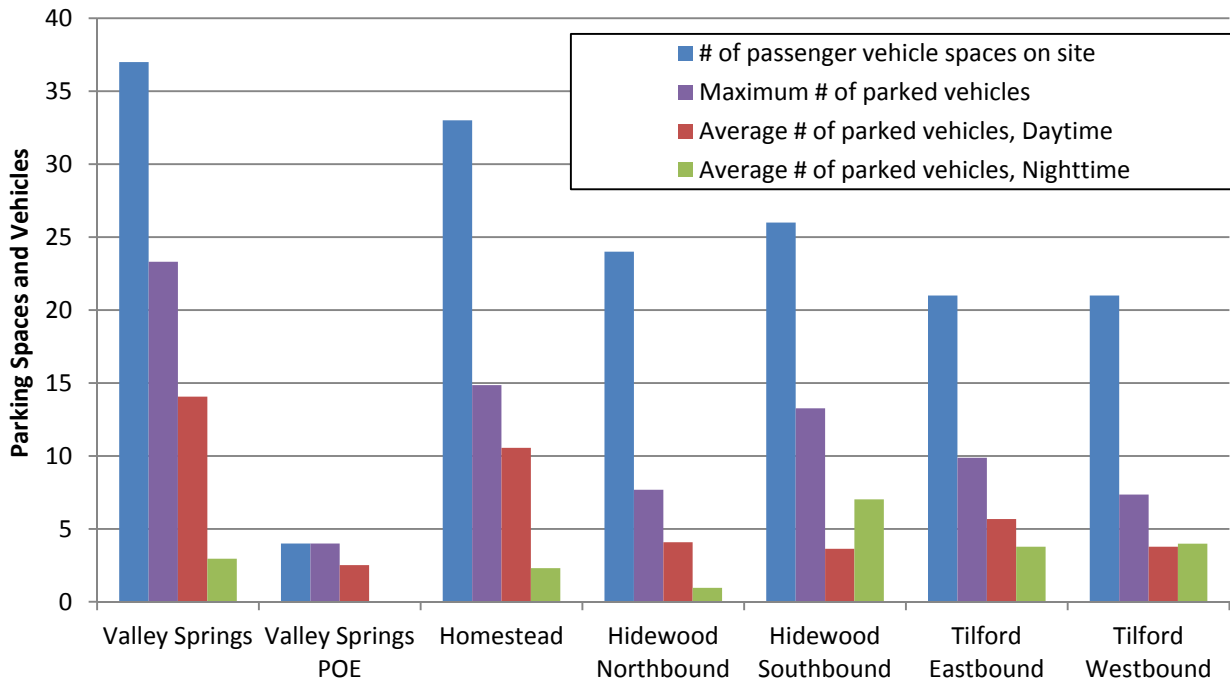
Table 4. Additional Truck Parking Needs

Rest Area	Number of Truck Parking Spaces		
	Current	Additional Needed	Total Needed
Valley Springs POE ¹	7	5	12
Hidewood Northbound	8	16	24
Hidewood Southbound	7	12	19
Tilford Eastbound	9	10	19
Tilford Westbound	9	4	13

¹Based on discussions with SDDOT, in the future POEs throughout the State may be equipped with electronic pass capabilities, resulting in up to 60 percent of all truck traffic bypassing POEs. Therefore, a second 2040 projection was added assuming electronic metering is installed at the POE. Based on the expected 60 percent reduction in truck traffic requiring inspection, the existing POE would be able to handle the projected parking demand through year 2040.

Figure 13 shows the passenger vehicle parking spaces and occupancy. As shown, passenger vehicle parking capacity by 2040 continues to meet average and maximum demand at each rest area.

Figure 13. Forecast 2040 Passenger Vehicle Parking Spaces and Demand



B. Rest Area Visitor Forecasts

The project team used the current and forecasted parking demand as a basis for current and future user demand, which was used to assess the ability of rest area buildings and site infrastructure to accommodate visitor growth. Several assumptions were made to translate vehicles parked into visitor totals, described as follows:

Vehicle Occupancy – In the memorandum *1992 Safety Rest Area Usage Survey Reports* (Minnesota Department of Transportation, 1992), a user survey of motorists at the Marion Rest Area in Minnesota identified an average of 2.3 persons per vehicle. This average was used as an estimate for the occupants per passenger vehicle. In addition, it was assumed that the number of male and female occupants per vehicle would be equal.

Truck Occupancy – Truck occupancy is anticipated to be fewer than passenger vehicles, as most trucks have only a single driver. For purposes of this analysis, a 1.5 persons per vehicle occupancy rate was used for truck parking, which accounts for the presence of tandem truck drivers. Currently, around 93 percent of truck drivers are male, but the number of female drivers is expected to increase in the future (<http://gobytrucknews.com/female-truckers-growing-in-number/>). To remain conservative, an 80/20 mix of male to female users was applied to the truck parking to account for an increase in female truck drivers.



Using these assumptions, the number of parked trucks and vehicles per peak season day was translated into visitor numbers for each rest area. **Table 5** summarizes the results.

Table 5. Daily Visitor Summary

Rest Area	Current Visitors Per Day			2040 Visitors Per Day		
	Trucks	Passenger Vehicles	Total	Trucks	Passenger Vehicles	Total
Valley Springs ¹	84	812	896	185	1,436	1,621
Homestead	90	266	356	182	388	570
Hidewood Northbound	136	504	640	384	715	1,099
Hidewood Southbound	153	430	583	429	612	1,041
Tilford Eastbound	123	294	417	270	375	645
Tilford Westbound	108	239	347	260	304	564

¹Includes visitors from trucks parked at adjacent Valley Springs Port of Entry

Peak period use of the facilities was derived from hourly parking occupancy rates contained in the Parking Analysis. Peak use was compared with the available number of stalls in the men’s and women’s restrooms at each rest area, and expansion needs were noted where capacity would not be sufficient to meet Year 2040 demand. All restrooms and lagoons were found to be sufficient to meet current visitor demand, and capacity in the women’s restrooms is adequate to the Year 2040. However, some men’s restrooms would need expansion by the Year 2040 to meet increased demand. The restrooms at the Hidewood Rest Areas would need two to three additional stalls and one additional stall at the Tilford Rest Areas. **Table 6** summarizes the restroom expansion and lagoon capacity needs by rest area.

Table 6. 2040 Restroom and Lagoon Expansion Needs by Rest Area

Rest Area	Men’s	Women’s	Lagoon Capacity
Valley Springs ¹	OK	OK	Adequate to 2040
Homestead	OK	OK	Adequate to 2030
Hidewood Northbound	2 additional stalls ²	OK	Adequate to 2030
Hidewood Southbound	3 additional stalls ²	OK	Adequate to 2030
Tilford Eastbound	1 additional stall ²	OK	Adequate to 2040
Tilford Westbound	1 additional stall ²	OK	Adequate to 2040

¹Includes visitors from trucks parked at adjacent Valley Springs Port of Entry
²Assumes loss of one existing stall to ADA consolidation

IV. FUTURE NEEDS

In its Long Range Transportation Plan, SDDOT has articulated its goal to “Preserve and maintain South Dakota’s transportation system.” Consistent with this objective, the project team developed recommendations with a focus on rest area preservation rather than expansion and enhancement. Expansion and enhancement may be accomplished by reconstructing a rest area when it has reached breakdown in basic preservation functions and cannot be cost-effectively repaired.

The Parking Analysis, Site Assessments, and forecasts were used to develop a picture of future needs at each rest area, resulting in a list of the minimum investments needed over the next 25 years to:

- Provide Code conformity
- Achieve ADA compliance
- Provide adequate parking space for trucks and passenger vehicles
- Provide sufficient restroom capacity for visitors
- Preserve building system functionality, including
 - Plumbing
 - Mechanical
 - Electrical
- Preserve acceptable site conditions, including
 - Pavement
 - Structures (including out-buildings, picnic shelters, and sculptural elements)
 - Lagoons
 - Lighting
- Provide routine maintenance and upkeep

The project team developed a plan for accomplishing these items, grouping investments into 5-year increments based on the level of urgency to maintaining rest area function. This includes an assessment of when the facility should be fully reconstructed due to the inability of any rest area to continue to meet minimum functionality without costly repairs.

The findings are described as follows by future horizon year, as a preservation plan for each rest area through the Year 2040. The items described are detailed and expanded upon in the detailed Needs Assessments provided in **Appendix D**.

A. Valley Springs

A significant amount of work on the Valley Springs Rest Area is necessary in the near future to bring the facility into code and ADA compliance and provide minimum functionality. Upon completion of this renovation, the rest area will require routine maintenance and some pavement work until full reconstruction is needed.

The following sections generally describe improvements to the facility in 5-year increments starting in year 2020 through year 2040:

Year 2020: The facility was constructed in 1973 and is in need of a significant renovation to provide ADA upgrades and to refurbish the aged infrastructure. It is recommended that this work be accomplished by the Year 2020. With this renovation, the service life of the facility can be extended to 2040 when it will be nearing capacity and ready for replacement. The following summarize the 2020 horizon improvements:

- Code Improvements (IBC 2012): Provide GFI outlets, new mechanical system, standard storage areas, and accessible drinking fountain
- ADA Improvements: Address parking lot grade issues, picnic seating, narrow doors, counter heights, restroom interior clearances, accessible restroom stalls, heights of dispensers, etc.
- Site Systems: Regular lagoon upgrade, replace irrigation system, repair pavement deficiencies, replace lighting fixtures, inspect structures, and refurbish picnic shelters
- Main Building and Building Systems: Renovate main building with exterior and interior upgrades to walls, windows, doors, roofing, and cabinetry. Upgrade storage garage
 - Plumbing System: Replace aging components, including water heater, piping, lavatory sinks
 - Mechanical System: Provide new mechanical system for main building to comply with Code
 - Electrical System: Replace circuit breaker panels, replace electric hand dryers, and upgrade CCTV system for remote monitoring

Year 2025: Major improvements are not anticipated from year 2020 through year 2025. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2030: Provide additional concrete pavement panel replacement (10 percent). Replace 20 percent of the sidewalks. Replace all asphalt shoulders.

Year 2035: Major improvements are not anticipated from year 2030 through year 2035. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2040: At this time, the facility will have reached the service life limits for both the facility and the site infrastructure. The facility will also reach capacity and require an expansion as well as for parking. Given the extent of the projected renovation, plus the costs of the addition, a new expanded 40-year replacement facility will be of better value at this time extending the useful life goal to 2080.

B. Valley Springs Port of Entry

The POE is unique among the seven rest areas studied because it performs an administrative function and does not serve the general public as a rest area. SDDOT is seeking to reconstruct the Valley Springs POE to enhance its administrative function by providing a similar facility to the newly reconstructed POE recently completed near Sisseton, South Dakota, along southbound I-29. The existing POE is too small to meet current and future needs, does not provide an electronic pass system, and needs an enclosed inspection station.

The project team assessed the ability of the current site to accommodate an updated POE, and found that while it is physically feasible to expand and update the POE on the current site, an upgraded POE would still need to share vehicular access with the adjacent rest area, and sanitary service may require pumping. For these reasons, consideration should also be given to finding an alternative facility location for the upgraded POE.

Though it is anticipated that the facility will be reconstructed, the project team completed a preservation plan to provide POE services should the reconstruction project be delayed or deemed infeasible.

The following sections generally describe improvements to the facility in 5-year increments starting in year 2020 through year 2040:

Year 2020: The facility infrastructure has been so heavily used it is essentially ready for a total renovation, plus an addition. The following list of deficiencies will need to be addressed to restore the facility to long-term viability:

- Code Improvements (IBC 2012): Provide GFI outlets, new HVAC system, standard storage areas, and dual water cooler drinking fountain
- ADA Improvements: Designate accessible parking space and upgrade ramp, doors, restrooms, and counters
- Site Systems: Repair deteriorating pavement and replace outdoor lighting fixtures
- Main Building and Building Systems: Renovate building with exterior and interior upgrades to walls, windows, doors, roofing, and cabinetry
 - Plumbing System: Replace aging components, including water heater and piping insulation
 - Mechanical System: Replace restroom fan and provide a new HVAC system
 - Electrical System: Replace interior lighting fixtures, circuit breaker panel, and CCTV system; and provide closed circuit alarm with central monitoring

Year 2025: Major improvements are not anticipated from year 2020 through year 2025. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2030: Provide additional concrete pavement panel replacement, and replace asphalt paving/shoulders.

Year 2035: Major improvements are not anticipated from year 2030 through year 2035. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2040: At this time, the facility will have reached the service life limits for much of the site infrastructure and truck parking will likely require expansion.

C. *Homestead*

A significant amount of work on the Homestead Rest Area is necessary in the near future to bring the facility into code and ADA compliance and provide minimum functionality. Upon completion of this renovation, the rest area will require routine maintenance and some pavement work until full reconstruction is needed.

The following sections generally describe improvements to the facility in 5-year increments starting in year 2020 through year 2040:

Year 2020: The facility was constructed in 1977 and is in need of a significant renovation to provide ADA upgrades and to refurbish the aged infrastructure. As the facility has sufficient capacity, a complete renovation will be more feasible than ongoing maintenance repairs. With this renovation, it is believed that the service life of the facility can be extended to 2040. The following summarizes the 2020 horizon improvements:

- Code Improvements (IBC 2012): Provide GFI outlets, standard storage areas, and additional standard drinking fountain
- ADA Improvements: Provide ramps of correct slope, revise parking signing and striping, modify picnic bench, replace main doors, add accessible restroom stalls and replace phone
- Site Systems: Repair deteriorating pavement, modify main trash lid, replace irrigation system, replace exterior lighting, repair picnic shelters and teepee structure, update landscaping
- Main Building and Building Systems: Completely renovate building with exterior and interior upgrades to walls, windows, doors, and roofing
 - Plumbing System: Renovate piping and fixtures; replace water closets, lavatories, and pipe insulation
 - Mechanical System: Refurbish and replace elements of the mechanical system, including pumps, return air registers, electric heaters, and exhaust fans
 - Electrical System: Replace interior lighting fixtures, circuit breaker panels, CCTV system, and electric hand dryers; enhance internet services and replace alarm

Year 2025: Major improvements are not anticipated from year 2020 through year 2025. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2030: Provide concrete pavement panel replacement and replace portions of the walkways.

Year 2035: Major improvements are not anticipated from year 2035 through year 2040. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2040: By 2040, the site and facility as a whole will have reached age and capacity limitations. Given the extent of renovation projected, plus the costs of a needed addition to support another generation of growth, a new expanded 40-year replacement facility will be of better value at this time extending the useful life goal to 2080. The site infrastructure will need to be expanded and completely overhauled as well (that is, paving, lighting, landscape, shelters, garage, etc.) to also extend service life to 2080.

D. *Hidewood Northbound*

The preservation plan provides for facility and site renovation work sufficient enough to extend the service life of the building to 2030, when the rest area will be approaching the end of its service life and will have begun to exceed capacity limitations. At this time, the building will be ready for an expansion and a complete renovation. Given the scale of work, it will be as or more feasible to provide a new expanded 40-year building. At this same time (2030), it is also recommended to provide a 10-year upgrade of the existing site infrastructure until a full replacement of paving and site amenities will be required in the future (2040).

The following sections generally describe improvements to the facility in 5-year increments starting in year 2020 through year 2040:

Year 2020: The facility was constructed in 1980, renovated in 1992, and requires additional improvements to meet ADA standards and to refurbish components of the aging infrastructure. With this renovation, it is anticipated that the service life of the facility can be extended to 2030.

- Code Improvements (IBC 2012): Provide GFI outlets and additional outlets
- ADA Improvements: Provide parking signs and striping, modify bench, replace entrance door, replace signs, provide phone, reset dispensers, provide accessible stalls
- Parking: Expand truck parking to 24 spaces (detailed in Parking Analysis, **Appendix C**)
- Site Systems: Replace roofing on shelters, replace irrigation system, repair pavement, replace lighting
- Main Building and Building Systems: Replace roof and repair roof deck, trim, and gutters
 - Plumbing System: Replace flush valves with up-to-date units
 - Mechanical System: Replace furnaces with high-efficiency models
 - Electrical System: Replace interior lighting and electric hand dryers; inspect and update power system as needed

Year 2025: Major improvements are not anticipated from year 2020 through year 2025. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2030: Make maintenance improvements to site infrastructure, including pavement, sewage lagoon relining, and renovation of picnic shelters. For the building, a major renovation and expansion of the facility will be needed at a minimum; however, a total replacement facility will be of better value. Total replacement of the building is recommended.

Year 2035: Major improvements are not anticipated from year 2035 through year 2040. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2040: Major improvements are not anticipated for the building from year 2035 through year 2040. Annual maintenance would allow the building to meet demand through the 5-year horizon. A major overhaul of the site infrastructure will be required.

E. *Hidewood Southbound*

The preservation plan provides for facility and site renovation work sufficient enough to extend the service life of the building to 2030, when the rest area will be approaching the end of its service life and will have begun to exceed capacity limitations. At this time, the building will be ready for an expansion and a complete renovation. Given the scale of work, it will be as or more feasible to provide a new expanded 40-year building. At this same time (2030), it is also recommended to provide a 10-year upgrade of the existing site infrastructure until a full replacement of paving and site amenities will be required in the future (2040).

The following sections generally describe improvements to the facility in 5-year increments starting in year 2020 through year 2040:

Year 2020: The facility was constructed in 1980, renovated in 1992, and requires additional improvements to meet ADA standards and to refurbish components of the aging infrastructure. With this renovation, it is anticipated that the service life of the facility can be extended to 2030.

- Code Improvements (IBC 2012): Provide GFI outlets and additional outlets
- ADA Improvements: Provide parking signs and striping, modify bench, replace entrance door, replace signs, provide phone, reset dispensers, provide accessible stalls
- Parking: Expand truck parking to 19 spaces (detailed in Parking Analysis, **Appendix C**)
- Site Systems: Replace roofing on shelters, replace irrigation system, repair pavement, and replace lighting
- Main Building and Building Systems: Replace roof and make repairs to roof deck, trim, and gutters
 - Plumbing System: Replace flush valves with up-to-date units
 - Mechanical System: Replace furnaces with high-efficiency models
 - Electrical System: Replace interior lighting and electric hand dryers; inspect and update power system as needed

Year 2025: Major improvements are not anticipated from year 2020 through year 2025. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2030: Make maintenance improvements to site infrastructure, including pavement, sewage lagoon relining, and renovation of picnic shelters. For the building, a major renovation and expansion of the facility will be needed at a minimum; however, a total replacement facility will be of better value. Total replacement of the building is recommended.

Year 2035: Major improvements are not anticipated from year 2035 through year 2040. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2040: Major improvements are not anticipated for the building from year 2035 through year 2040. Annual maintenance would allow the building to meet demand through the 5-year horizon. A major overhaul of the site infrastructure will be required.

F. Tilford Eastbound

The facility, at a minimum, will need immediate ADA improvements, component updates, a new lighting system, and other upgrades. Given the extent of work immediately required, a general renovation is recommended as soon as possible. By providing a complete renovation, the service life of the facility will be extended to 2040, when the facility will be ready for replacement with a new and larger facility.

The following sections generally describe improvements to the facility in 5-year increments starting in year 2020 through year 2040:

Year 2020: The facility was constructed in 1973 and is in need of a renovation to address ADA deficiencies and to upgrade and refurbish components of the aging infrastructure. With this renovation, the service life of the facility can be extended to 2040 when it will be nearing capacity and will be ready for replacement.

- Code Improvements (IBC 2012): Provide GFI outlets, standard storage areas, and accessible drinking fountain; replace information counters
- ADA Improvements: Address parking lot grade issues, improve signage, modify bench, replace main doors and interior signage, provide new public phone, rest dispensers, provide accessible stalls, modify counters, widen door between information area and storage, provide accessible restroom stalls
- Site Systems: Regular lagoon upgrade, replace irrigation system, replace water pump, repair pavement deficiencies, replace lighting fixtures, inspect structures, and refurbish picnic shelters
- Parking: Expand truck parking to 18 spaces
- Main Building and Building Systems: Replace failing information booth gate system, renovate building including exterior and interior walls, roofing, insulation, windows, doors and flooring
 - Plumbing System: Renovate plumbing (piping and fixtures), replace water closets and urinals, replace sinks, and provide protected bottle filler
 - Mechanical System: Operate exhaust air continuously, install energy recovery units, and replace outdoor AC unit and exhaust fan
 - Electrical System: Replace interior lighting and replace/inspect power system, hand dryers, and CCTV system

Year 2025: Major improvements are not anticipated from year 2020 through year 2025. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2030: Repair pavement deficiencies; replace ramp, parking, and pedestrian lighting

Year 2035: Major improvements are not anticipated from year 2035 through year 2040. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2040: By 2040, the facility will have reached the service life limits for both the facility and the site infrastructure. The facility will also be reaching capacity and require an expansion of both the building and the parking areas. Given the extent of renovation projected, plus the costs of the addition, a new expanded 40-year replacement facility will be of better value at this time providing a new useful life goal to 2080.

G. Tilford Westbound

The facility, at a minimum, will need immediate ADA improvements, component updates, a new lighting system, and other upgrades. Given the extent of work immediately required, a general renovation is recommended as soon as possible. By providing a complete renovation, the service life of the facility will be extended to 2040, when the facility will be ready for replacement with a new and larger facility.

The following sections generally describe improvements to the facility in 5-year increments starting in year 2020 through year 2040:

Year 2020: The facility was constructed in 1973 and is in need of a significant renovation to provide ADA upgrades and to refurbish the mostly original infrastructure. With this renovation, the service life of the facility can be extended to 2040 when it will be nearing capacity and will be ready for replacement.

- Code Improvements (IBC 2012): Provide GFI outlets, standard storage areas, and accessible drinking fountain; replace information counters
- ADA Improvements: Address parking lot grade issues, improve signage, modify bench, replace main doors and interior signage, provide new public phone, provide rest dispensers, provide accessible stalls, modify counters, widen the door between the information area and storage, provide accessible restroom stalls
- Site Systems: Regular lagoon upgrade, replace irrigation system and water pump, repair pavement deficiencies, replace lighting fixtures, inspect structures, and refurbish picnic shelters
- Parking: Expand truck parking to 13 spaces
- Main Building and Building Systems: Replace failing information booth gate system, renovate building including exterior and interior walls, roofing, insulation, windows, doors and flooring
 - Plumbing System: Replace water closets and urinals, replace sinks, provide protected bottle filler
 - Mechanical System: Operate exhaust air continuously, install energy recovery units, replace outdoor AC unit and exhaust fan
 - Electrical System: Replace interior lighting and replace/inspect power system, hand dryers, and CCTV system

Year 2025: Major improvements are not anticipated from year 2020 through year 2025. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2030: Repair pavement deficiencies and replace ramp, parking, and pedestrian lighting

Year 2035: Major improvements are not anticipated from year 2035 through year 2040. Annual maintenance allows the facility to meet demand through the 5-year horizon.

Year 2040: By 2040, the facility will have reached the service life limits for both the facility and the site infrastructure. The facility will also be reaching capacity and require an expansion of both the building and the parking areas. Given the extent of renovation projected, plus the costs of the addition, a new expanded 40-year replacement facility will be of better value at this time providing a new useful life goal to 2080.



H. Preservation Cost Estimates

The project team developed estimated costs associated with the preservation plans for each rest area, as shown in **Table 7**.

Table 7. Cost of Preservation by Rest Area

Rest Area	Five-year Horizon Costs, Year of Expenditure Dollars				
	2013–2020	2020–2025	2025–2030	2030–2035	2035–2040
Valley Springs	\$1.45 M	\$325,000	\$668,000	\$502,000	\$12.30 M
Homestead	\$1.52 M	\$335,000	\$532,000	\$410,000	\$12.13 M
Hidewood Northbound	\$1.20 M	\$345,000	\$2.6 M	\$531,000	\$ 9.75 M
Hidewood Southbound	\$1.06 M	\$345,000	\$2.6 M	\$531,000	\$ 9.75 M
Tilford Eastbound	\$1.93 M	\$304,000	\$932,000	\$469,000	\$12.26 M
Tilford Westbound	\$2.24 M	\$304,000	\$798,000	\$469,000	\$12.26 M
TOTALS	\$9.40 M	\$1.96 M	\$8.13 M	\$2.91 M	\$68.45 M

V. BENEFIT COST AND PRIORITIZATION

SDDOT currently faces critical decisions regarding future maintenance for many facilities within the rest area system. Rest areas across the state are beginning to reach the end of their useful lives and SDDOT must either reconstruct the facilities or continue making essential repairs to extend the facilities' lifespans. This decision is complicated by limited funds and the fact that SDDOT does not use bonds to fund capital investments.

The project team developed an analytical framework to approach this multifaceted problem. The framework uses priorities set by SDDOT to integrate the engineering and architectural studies conducted with financial and prioritization analysis based on costs and benefits of alternative investment strategies. This section describes the strategic facilities management approach used by the project team. It also includes the financial analysis and future recommendations.

A. Strategic Facilities Management Approach

Strategic facilities management is a planning process that allows planners to make complex decisions about the development, expansion, and maintenance of their capital investments. This complicated process often requires making decisions based on multiple variables and uncertainties. To simplify the decision process, facility managers need to develop concise goals and priorities that can then be translated into construction and maintenance objectives and eventually into concrete strategies and actions.

The Planning Process

Whether the analysis is for a chemical plant, a university, or a rest area, the same general steps can help guide maintenance decisions toward a successful outcome.

Step 1. Document clear high-level goals and objectives. Planners must make important decisions about their priorities. This is often a vision of what the organization should look like after a certain time period. If clear goals are not well established, it is difficult to make consistent decisions throughout the complex decision making process.

Step 2. Evaluate current conditions. To determine what must be done to achieve the goals established in Step 1, there must be a detailed understanding of the current situation. This includes a complete inventory of sites, capital costs, labor costs, and other inputs that are critical to success.

Step 3. Analyze capital needs. Once the current conditions have been examined, "gap analysis" can be conducted. "Gap analysis" simply means that there is a clear understanding of the difference between the current situation and future needs. This will reveal the concrete construction and maintenance needs that can then be prioritized according to their ability to contribute to the high-level objectives. These needs then can be conceptualized in a facility life plan, or a strategic schedule to maintain each unit throughout its expected useful life.

Step 4. Conduct financial and risk analysis. Unfortunately, it is unrealistic to assume that the entire gap can be covered under a typical budget. Therefore, the established needs must be balanced against monetary realities. This step typically involves return on investment (ROI), net present value (NPV), and internal rate of return (IRR) analysis. Life cycle and whole life cost analysis can also assist in this decision making process. This will enable planners to better understand the costs of all the maintenance items. These costs can be compared to the benefit of the investment and then can be used to make a cost/benefit rating for all the alternatives and needs.

Step 5. Recommendations and alternatives. Based on the analysis from the previous steps, planners can recommend a strategic action plan. It is important to develop various alternative scenarios that are all consistent with the high level objectives. This creates flexibility so that effective decisions can be made even as conditions change.

SDDOT and the consultant team have completed these steps through the Rest Areas Study.

The Maintenance Decision

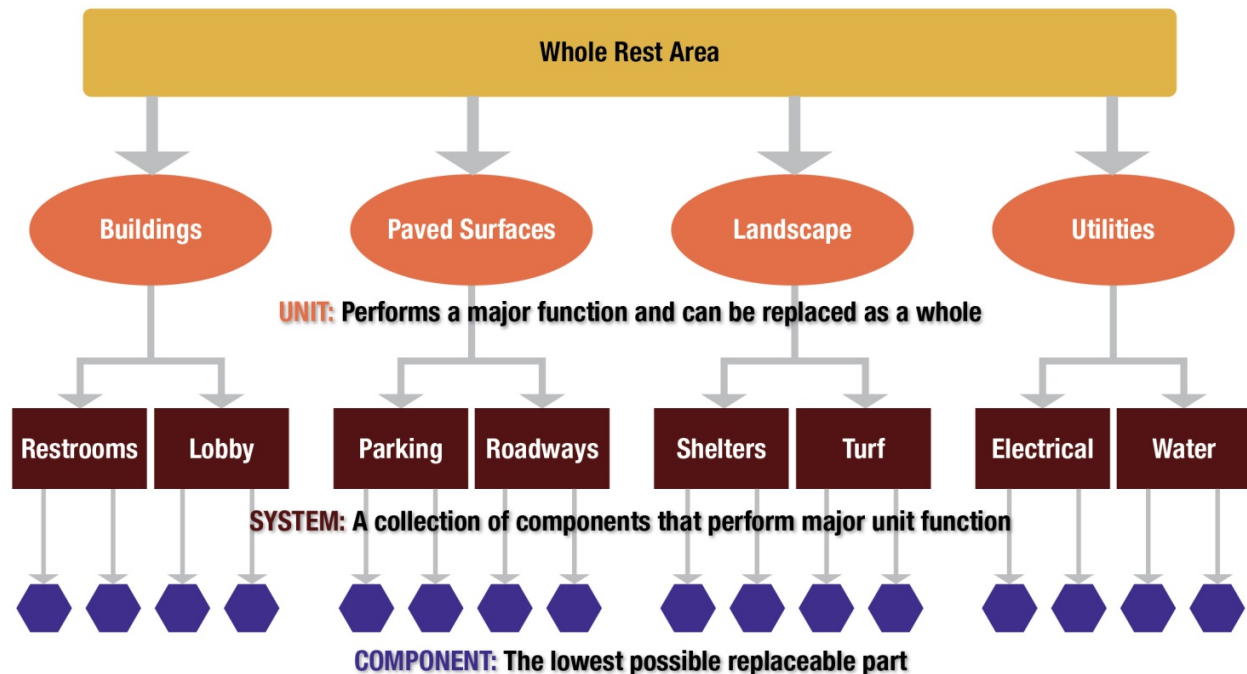
While the steps above can help planners navigate the decision making process, it can still be difficult to accurately evaluate every specific maintenance item and building system. Maintenance is a complex process that addresses a wide range of actual and potential system failures. A failure is said to occur when a part can no longer meet its designated function. Failures can either be partial, meaning impacts are isolated, or complete, meaning there are facility wide consequences. All failures are addressed in one or two ways; there are either preventive steps that are conducted before the failure occurs or corrective steps that are a response to an active failure.

A facility system is made up of complex attributes that all work together to achieve a certain objective. To make efficient decisions, it helps to approach the problem by dividing the larger facility into more manageable parts that can be evaluated independently.

The Hierarchy of Parts

A rest area can be broken down into groups of parts organized by function. **Figure 14** illustrates this hierarchy, in wherein a rest area is made up of units, systems, and components.

Figure 14. Hierarchy of Parts



Source: Strategic Maintenance Planning, Anthony Kelly

The repair or replace decision. Once this hierarchy has been established, it can be used to develop a facility life plan. Over time, every part of the facility will deteriorate to the point where it must be either repaired or replaced. While this is a common problem, it is not necessarily an easy decision. Strategic planners propose that there are typically three ways to respond to the repair/replace decision: Always repair, always replace, or wait until the decision making failure happens.

The best course of action depends on the failure mode, or the manner in which the part fails. Items higher on the hierarchy have more potential failure modes because there are larger combinations of ways for the part to fail. Evaluating parts based on where they are in the hierarchy can aid in decision making because it consolidates all of the possible failure modes into comprehensive elements. It can also indicate what approach might be best suited for the part, depending on where it is in the hierarchy. For higher level units with many potential failure modes, it is often best to wait until the failure causing event occurs. Complete replacement is likely expensive and can often be addressed by making repairs to lower level parts as warranted. However, if there is a high probability of multiple failure modes, it may be best to completely replace the part in question. For lower level, less complex, components, it is usually helpful to look at statistical failure rates. Components that are likely to fail are often most efficient to replace before failure.

However, no matter where the part is within the hierarchy, for decisions to maximize efficiency, the continued cost of repair must be less than the cost of replacement. Preventative maintenance tends to be less expensive at one point in time; however, costs increase as more repairs must be made. Eventually it will be less expensive to replace the item than to make repeated repairs.

The project team used the above strategic facility maintenance process to determine a favorable year for facility replacements for seven rest areas in the SDDOT system. The team also established a prioritization method that will help SDDOT make future facility maintenance decisions.

B. Rest Area Study Process

The Needs Assessment in **Appendix D** includes the detailed analysis for individual components and systems at each facility and the preservation plan cost estimates. The financial analysis to support SDDOT in making efficient maintenance decisions is described as follows.

As major building systems in rest area facilities deteriorate, SDDOT must decide to either rebuild the facilities or delay reconstruction by preserving major systems in the aging facilities. Most individual maintenance problems do not warrant complete replacement; however, there are two situations when investing in a new facility is preferable to conducting continual repairs. The first is when a single catastrophic facility failure occurs that would be more expensive to fix independently than it would be to build a new facility. The second, and more likely situation, is that during a given time horizon, continually repairing a facility will become more expensive than building a new facility. When this occurs, it is no longer financially efficient to continue maintaining the facility.

The project team established facility replacement recommendations for each rest area in the study by comparing potential costs of various repair plans for each facility. Each repair plan includes annual maintenance, repairs, and construction of a new facility. The plans differ depending on when the facility is rebuilt, which, in turn, affects the total cost of each plan. When SDDOT delays reconstruction, facilities deteriorate and require more expensive maintenance



and repairs. This cost of continual preservation for each rest area was calculated in the Needs Assessment. Alternatively, as soon as a facility is rebuilt, maintenance and repair costs are significantly lower; although these costs will increase again as the facility ages.

For each rest area facility, the project team calculated the present value of 26 repair plans. Each repair plan simulates rebuilding the rest area in a different year between 2014 and 2040. Appropriate repair and maintenance costs are applied in accordance with the age of the facility. For example, if SDDOT rebuilds a facility in 2014, maintenance costs will be very low initially, but the facility will require additional repairs as the facility ages. Alternatively, if SDDOT does not replace the facility until 2030, then SDDOT must pay to preserve the facility for the next 16 years as well as the cost of reconstruction in 2030. This plan also includes the diminished annual maintenance costs after a new facility is constructed. If SDDOT delays reconstructing the facility until 2040, the facility will require expensive preservation for 25 years before it is rebuilt. This plan includes both the preservation and new facility costs but does not benefit from the diminished annual maintenance costs after the new facility is constructed.

C. Repair Plan Calculations

While each rest area is unique and will require different repairs over time, the study model includes calculations for each repair plan based on several general assumptions. **Table 8** summarizes the assumptions included in the model.

Table 8. Assumptions for Facility Reinvestment Model

Assumption		
Present value calculations		
Escalation rate	4.43%	per year
Discount rate	4.43%	per year
Annual increase in preservation plan costs	12%	per year
Cost of preservation through 2040*	\$5.8-\$7.0	million
New facility cost†	\$3.15	million
Maintenance costs		
Annual maintenance on a new facility	\$10,000	per year
Periodic reinvestments (percent of new facility cost)	8%	every 10 years
	15%	every 20 years

Note: *Preservation plans differ between rest areas.

†New facility cost for the Valley Springs POE is approximately \$2.7 million

Source: SDDOT, TSP, FHU, and BBC Research and Consulting, 2014.

These assumptions were based on various conversations with the SAT. It is estimated that preservation costs for deteriorating facilities increase approximately 12 percent per year. Further, it is estimated that a new facility, sized to future capacity, would cost approximately \$3.1 million in 2014 dollars to construct. For the Valley Springs POE facility, the replacement cost would be approximately \$2.7 million. Given SDDOT’s current practice to use identical discount and cost escalation rates, these values stay constant across the time horizon.



General maintenance is \$10,000 per year for a new facility, which is approximately 25 percent of current annual facility maintenance costs. Because the new facilities will eventually deteriorate with age, it is assumed that periodically the facilities will require larger reinvestments. These reinvestment costs represent repairs made on larger parts, such as the lagoon, parking lot, or lighting system. This model assumes that 8 percent of cost of a new facility will be reinvested every 10 years and 20 percent will be invested every 20 years.

The preservation plans included estimated costs of preserving the rest areas to the Year 2040, in 5-year intervals. The present value of these plans ranges from \$5.8 million to \$7 million over 26 years. To complete the financial analysis, it was assumed that the costs occur evenly over the 5-year intervals. In practice, the costs are likely concentrated in specific years according to the actual repairs. Therefore, the results presented do not necessarily show the precise costs for each given year. Instead, they suggest a general estimate of costs during that time period.

D. Results

Using the methodology described above, the project team calculated the present value of all potential repair plans for every rest area in the study. Results for Hidewood North Rest Area are discussed below as an example, with complete results included in **Appendix E**.

Given the age and condition of all facilities in the study, SDDOT can minimize costs by reconstructing new facilities as soon as possible. Preserving existing facilities is expensive and SDDOT would financially benefit by investing in new facilities immediately. However, due to budget constraints, it is not feasible to suggest rebuilding all facilities at this time. Instead, these financial analyses enable SDDOT to consider the costs of deferring significant investments.

The most efficient repair plan minimizes the present value of future annual facility expenditures. **Figure 15** summarizes the total present value for the various repair plans for Hidewood North.

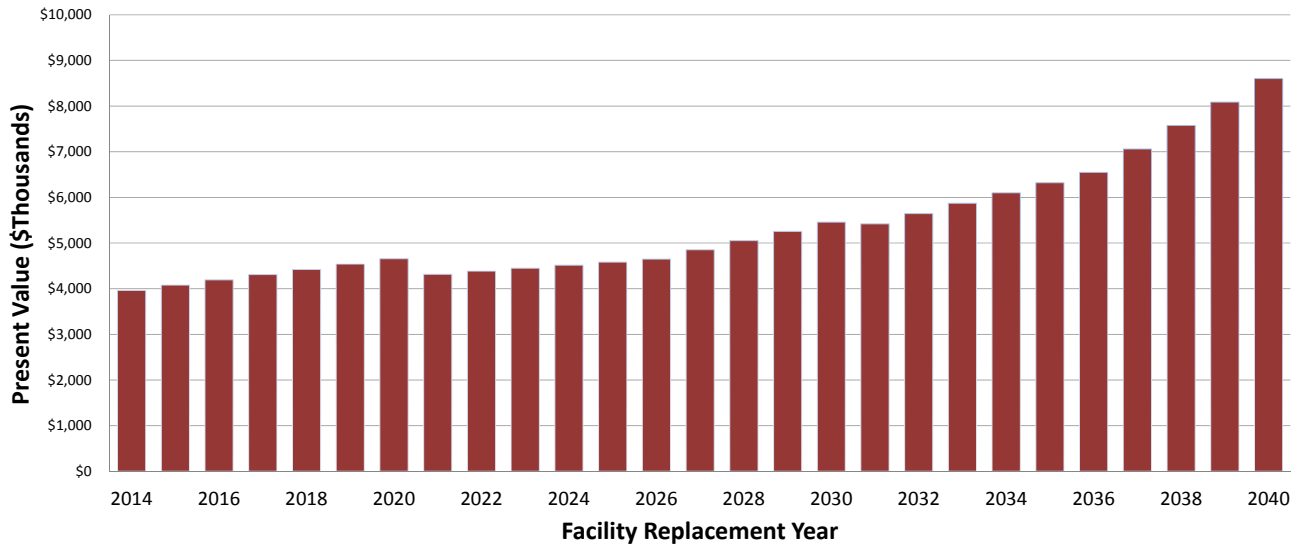
Each column represents a different repair plan, depending on when the rest area will be rebuilt. The first column on the left labeled “2014” shows the total value of rest area construction and maintenance costs if the facility is rebuilt in 2014. Each subsequent column represents the costs of preserving the facility until the designated year, rebuilding the facility, and annual maintenance after reconstruction.

As evident in **Figure 15**, costs can be minimized by immediately rebuilding the rest area facility. Like many rest areas in SDDOT’s system, Hidewood North is approaching the end of its useful life. The present value analysis recommends rebuilding it as soon as possible because preservation becomes increasingly expensive over time. It will cost SDDOT approximately \$4 million more over 26 years to rebuild Hidewood North in 2040 than to rebuild it in 2014.

Although costs increase when SDDOT delays rebuilding the facility, the analysis suggests that, on the margin, preserving the rest area until approximately 2030 does not add significant amounts to the total costs. However, it is not advisable to delay rebuilding the facility beyond 2030 because preservation costs begin to increase at a faster rate.

The preservation plan provides a cost-effective method for SDDOT to delay rebuilding facilities. For Hidewood North, the plan can extend the useful life of the facility until 2030 without adding prohibitive costs. However, this preservation window eventually closes and SDDOT must rebuild the facility or incur markedly higher costs.

Figure 15. Present Value of Repair Plans – Hidewood North



Note: Total present value of the preservation plan through 2040 is \$6.1 million, not including the value of a new facility.
 Source: TSP and BBC Research & Consulting. 2014.

E. Cost-Benefit Prioritization

For rest areas, public benefit is derived from services provided to users. Useful metrics to analyze the benefits from various rest areas are total visitors and visitor hours. Using visitor hours rather than total visitors prioritizes truck usage because truckers are more likely to take long breaks at rest area. The project team calculated projected total visitor hours for all rest areas. These values were based on visitor projections and parking duration estimates described in Section 3 of the report.

Visitation calculations were then compared to projected costs of preservation through 2040 and the present value of a new facility. **Table 15** and **Table 16** show these calculations.

Rest areas with lower investment costs per visitor hour are facilities where the recommended investments serve the most people. Therefore, these facilities produce the most public benefit for the money spent on repairs. **Table 9** presents the present value of the preservation plans through 2040, and **Table 10** shows the investment per visitor hour for a new facility at each rest area. These values can help SDDOT prioritize facility replacements.

Table 9. Preservation Investment per Visitor Hour

	Total Visitor Hours 2015-2040	Preservation Costs through 2040	Preservation Investment per Visitor Hour
Hidewood South	3,917,353	\$5,795,306	\$1.48
Hidewood North	3,739,290	\$6,103,503	\$1.63
Valley Springs RA	3,289,353	\$6,202,527	\$1.89
Tilford East	2,607,355	\$7,043,987	\$2.70
Tilford West	2,374,695	\$7,719,043	\$3.25
Homestead	1,963,344	\$6,897,049	\$3.51
Valley Springs POE	1,348,173	\$6,103,503	\$4.53



Table 10. New Facility Investment per Visitor Hour

	Total Visitor Hours 2015-2040	Present Value of a New Facility	New Facility Investment per Visitor Hour
Hidewood South	3,917,353	\$3,153,786	\$0.81
Hidewood North	3,739,290	\$3,153,786	\$0.84
Valley Springs RA	3,289,353	\$3,153,786	\$0.96
Tilford West	2,374,695	\$3,153,786	\$1.33
Tilford East	2,607,355	\$3,153,786	\$1.21
Homestead	1,963,344	\$3,153,786	\$1.61
Valley Springs POE	1,348,173	\$2,506,320	\$1.86

While the Valley Springs POE ranks poorly in this analysis, it is difficult to compare it to other facilities because it meets a different function and need. Prioritization for the POE facility requires independent consideration.

Using these metrics, SDDOT should replace the Hidewood South Rest Area first because it will provide the most value to future visitors. Preservation and reconstruction of rest areas at Hidewood North and Valley Springs should also be high priorities for SDDOT. The rest areas at Tilford East and Tilford West serve fewer visitor hours and have higher costs than other facilities, making them less valuable investments. When compared to other rest areas in this study, the Homestead rest area is the most expensive to preserve and is the least used by visitors.

F. Other Priority Considerations

This study analyzed rest areas on the facility level. It may be necessary to make crucial repairs at various locations regardless of facility investment per visitor figures. If disregarded, these maintenance items could result in total facility failure and may need to be remedied before that occurs.

There may also be repairs that are most efficient to coordinate among rest areas. Once equipment has been rented and crews have been hired, it could potentially be financially efficient to combine maintenance work at multiple locations. This may be particularly applicable for projects such as repaving parking lots.

This study considers facilities individually, not as part of an entire rest area system. When analyzed as part of the system, it may become evident that certain rest areas are either more or less significant. For example, it may be more important to invest in a facility that is comparatively isolated where there are no other functional rest options than to repair a heavily used facility that is in closer proximity to other rest areas or potential stops.

G. Final Recommendations

Results from the architectural and financial analysis indicate that current facilities in SDDOT’s rest area system are rapidly deteriorating and are becoming increasingly expensive to preserve. As funds become available, the department should prioritize reconstructing the facilities according to the ranking shown in **Table 10**. Replacing the rest areas as soon as possible will minimize total costs over the next 25 years, as well as better serve visitor needs.



The Interstate Rest Areas Study: Along the I-29 and I-90 Corridors

To operate within the annual budget, rest area reconstruction will likely need to take place over time. Making essential repairs, outlined in the Needs Assessment, can help preserve the existing facilities until they can be rebuilt. These repair plans can extend the lifespan of the facilities by between 20 and 25 years, depending on the rest area, without significantly increasing total costs. This should provide SDDOT time to make the necessary facility replacements without incurring prohibitively high costs; however all rest areas should be replaced as soon as possible, and certainly before the preservation window closes.



VI. SUMMARY OF FINDINGS AND RECOMMENDATIONS

SDDOT has completed a study of seven rest areas along Interstates 90 and 29 in South Dakota. The purpose of the study is to assess rest area conditions, provide a plan for preserving the ability of these rest areas to continue to meet demand, and determine when to stop investing funds into preservation and channel monies toward constructing a new facility. The seven rest areas include six traditional general public rest areas and one POE:

- Valley Springs Westbound I-90
- Valley Springs Port of Entry Westbound I-90
- Homestead Northbound/Southbound I-29
- Hidewood Northbound I-29
- Hidewood Southbound I-29
- Tilford Eastbound I-90
- Tilford Westbound I-90

The Rest Areas Study included a data collection effort focused on identifying current rest area performance and condition, addressing parking capacity and building and infrastructure condition. The data collection efforts identified many issues and deficiencies, ranging from truck parking demand nearing capacity to non-ADA compliant restrooms. Forecasted future increases in parking and visitor demand revealed additional deficiencies in need of correction.

The project team collaborated with a Study Advisory Team (SAT) made up of SDDOT representatives to consider the issues identified and develop a plan for investing in the rest areas to preserve their functionality. The plan includes a list of needs at each rest area, projects necessary to meet those needs between the Years 2013 and 2040, and the costs associated with accomplishing the work grouped into 5-year increments.

Strategic facilities management methods were applied to evaluate the rest area preservation plans from a financial perspective, weighing the costs and benefits associated with the decision to continue to preserve the rest areas or replace them. Study results indicate that current facilities in SDDOT’s rest area system are rapidly deteriorating and are becoming increasingly expensive to preserve. As funds become available, the department should prioritize reconstructing the facilities according to the ranking shown below, based on dollars invested per visitor hour:

- | | |
|-----------------------------|----------------------|
| 1. Hidewood Southbound | 4. Tilford Westbound |
| 2. Hidewood Northbound | 5. Tilford Eastbound |
| 3. Valley Springs Westbound | 6. Homestead |

Replacing the rest areas as soon as possible will minimize total costs over the next 25 years, as well as better serve visitor needs.

To operate within the annual budget, rest area reconstruction will likely need to occur time. Making the essential repairs outlined in the Needs Assessment can help preserve the existing facilities until they can be rebuilt. These repair plans can extend the lifespan of the facilities by between 20 and 25 years, depending on the rest area, without significantly increasing total costs. This should provide SDDOT time to make the necessary facility replacements without incurring prohibitively high costs; however all rest areas should be replaced as soon as possible, and certainly before the preservation window closes.



The Interstate Rest Areas Study: Along the I-29 and I-90 Corridors

March 14, 2014
REVISED July 19, 2014

MEMORANDUM

TO: Brad Remmich
SDDOT Transportation Planner

FROM: Jeremy Hahn, PE, PTOE
Lyle DeVries, PE, PTOE

SUBJECT: SDDOT Interstate Rest Area Study
Technical Memorandum #3 – Parking Conditions Summary
FHU Reference No. 113039-01

In support of the Interstate Rest Areas Study, included is an analysis of parking conditions at each rest area. The purpose of the analysis is to quantify existing passenger vehicle and truck parking conditions, project parking conditions to a future long term horizon, and determine if parking capacity would need to be expanded to meet the future parking needs. Future parking conditions can also be used to project long term overall use levels at each rest area facility. The following sections of the memorandum detail the existing conditions including the parking inventory, the future parking conditions methodology and the parking expansion potential needed to meet anticipated demand.

EXISTING CONDITIONS

The seven rest areas studied in this report are located throughout South Dakota on both Interstate 29 and Interstate 90. A vicinity map showing the location of the seven rest areas is shown on the following graphic:



A brief description of the access and parking conditions at each site are summarized in the following bullets, and detailed descriptions of each site are contained in the Facility Assessment Reports (previously provided):

- **Hidewood Northbound** - The rest area is accessed directly from Interstate 29 (I-29), with passenger vehicle and truck parking areas separated just upstream of the I-29 gore point. The truck parking area provides eight angled head-in parking spaces, which allows trucks to enter and exit without having to reverse or make complex turning movements. The passenger vehicle parking area provides 24 angle parking spaces with direct access to the rest area facilities. The rest area also provides a parallel parking lane throughout the entire length of the passenger vehicle parking lot for RV / camper / trailer parking.
- **Hidewood Southbound** - The rest area is accessed directly from Interstate 29, with passenger vehicle and truck parking areas separated just upstream of the I-29 gore point. The truck parking area provides seven angled head-in parking spaces and is located approximately 450 feet north of the rest area facilities. The passenger vehicle parking area provides 26 angle parking spaces, and a parallel parking lane throughout the entire length of the passenger vehicle parking lot for RV / camper / trailer parking.
- **Homestead** - Access to the rest area is provided off South Dakota Highway 50 (SD-50), serving both directions of I-29 traffic at Exit 26. The access road loops around the rest area, with a combined passenger vehicle and truck parking area located on the eastern side of the facility. The rest area provides a total of 33 passenger vehicle parking spaces and 27 truck parking spaces, which could also be used by RV / camper / trailers. The truck parking area is angled head-in parking, allowing for efficient entry and exiting of large vehicles.
- **Valley Springs Westbound** - The rest area, which is shared with the Port of Entry (POE), serves passenger vehicle and RV / campers and trailer traffic with direct access to Interstate 90 (I-90). The parking area provides 37 angled parking spaces with direct access to the rest area facilities. In addition, a parallel parking lane is provided on the south side of the lot for larger passenger vehicles (RV / camper / trailer).
- **Valley Springs POE** - Access to the POE is provided directly from I-90 and shared with the adjacent rest area, and truck traffic is separated from passenger vehicle traffic just west of the I-90 gore point. In South Dakota, the POE ensures that motor carriers paperwork, permits and necessary shipping documents are in order. In addition, the POE provides scales to make certain that trucks and trailers meet current South Dakota weight limits. The POE provides seven truck parking spaces, used mainly for short term parking needs or for inspection purposes. In addition, the facility provides four parking spaces for passenger vehicles which are dedicated to South Dakota Highway Patrol personnel.
- **Tilford Eastbound & Westbound** - Each rest area is accessed directly from I-90 and provides similar site layouts. Both parking areas provide both passenger vehicle and truck parking, with direct access from the parking areas to the facilities and visitor center. Each of the two rest areas provide a total of 21 angled passenger vehicle parking spaces and nine parallel truck parking spaces which are also used by larger passenger vehicles (RV / camper / trailer).

Parking Counts

Parking counts at each rest area were conducted during the week of September 16th through the 20th 2013. Video cameras were utilized to capture parking conditions for a 24-hour block of time in both the passenger and truck parking areas. Multiple cameras were positioned in each parking area to ensure all individual parking spaces could be viewed during the 24-hour block of time. The video files were viewed and parking data was collected every five minutes, separated by passenger vehicle and truck parking activity. In addition, locations of illegal parking, for instance trucks parked in passenger vehicle spaces, were quantified at each location. For purposes of this report, trucks are defined as semi-truck and trailer, while passenger vehicles represent all other vehicle types.

Parking Analysis

After compiling the parking data at each rest area, several factors were analyzed to quantify how the facilities operate during the study period. The number of vehicles that parked at each facility during the 24-hour period, summarized in **Table 1**, outlines the overall usage of each rest area. Of note, the estimates are not adjusted for seasonal use.

Table 1. Parked Vehicle Summary

Facility	Total Parked Passenger Vehicles	Total Parked Trucks
Hidewood Northbound	199	83
Hidewood Southbound	170	93
Homestead	104	54
Valley Springs Westbound*	308	
Valley Springs POE	10**	49
Tilford Eastbound	80	51
Tilford Westbound	87	54

*No dedicated truck parking at the rest area.

**Passenger vehicle parking dedicated to South Dakota Highway Patrol staff.

The results show that the Valley Springs Westbound Rest Area serves the most passenger vehicle parking of the seven observed sites during the study period. The 308 total visits is more than double the visits to the Homestead and Tilford Rest Areas. The two Hidewood Rest Areas had a similar amount of truck visits during the 24-hour period, which exceeded truck visits at the other facilities. Each of the other rest areas showed a similar number of parked trucks during the 24-hour period. Of note, the POE serves significantly more truck traffic than shown, as only a small portion of that traffic is required to park for extended periods of time.

The average parking occupancy for both passenger vehicles and trucks at each facility was analyzed to determine the adequacy of the existing parking facilities. The results were segregated by average daytime (7:00am to 6:00pm) and nighttime (7:00pm to 6:00am) parking occupancy to determine if vehicular parking needs differ throughout a typical day at these facilities. The results of the analyses are summarized in **Table 2**.

Table 2. Average Parking Occupancy Summary

Facility	Average Parking Occupancy			
	Daytime Hours		Nighttime Hours	
	Passenger Veh.	Trucks	Passenger Veh.	Trucks
Hidewood Northbound	11%	26%	3%	64%
Hidewood Southbound	10%	36%	17%	49%
Homestead	20%	11%	5%	24%
Valley Springs Westbound**	19%		4%	
Valley Springs POE	63%*	32%	0%	14%
Tilford Eastbound	13%	22%	9%	44%
Tilford Westbound	8%	13%	8%	23%

*Passenger vehicle parking dedicated to South Dakota Highway Patrol staff.

**No dedicated truck parking at the rest area.

The results of the analyses show, on average, during both the daytime and nighttime hours each rest area provides adequate capacity to handle the current parking demand. Average passenger vehicle occupancy was generally less than 20% at most facilities. In addition, demand for passenger vehicle parking reduced during the nighttime hours in most locations. The opposite is true of truck parking, which experiences increased demand during the nighttime hours. The exception is the POE, which operates only during the day and is typically not viewed as a desirable overnight parking location for truck drivers. Of note, during various hours of the day the demand for parking exceeds capacity in several locations. A detailed description of these issues are quantified in following sections of the report.

The duration in which vehicles are parked at each facility is a key metric to determine the average time vehicles are parked. At rest areas, parking duration varies based on the user. Typically passenger vehicles park at rest areas for short term needs (bathroom stops, brief rests), while trucks tend to park for longer periods of time for extended rest. The average duration of both passenger vehicles in trucks over the 24-hour collection period was calculated and summarized in **Table 3**.

Table 3. Average Parking Duration Summary

Facility	Average Parking Duration			
	Daytime Hours		Nighttime Hours	
	Passenger Veh.	Trucks	Passenger Veh.	Trucks
Hidewood Northbound	11 minutes	32 minutes	10 minutes	98 minutes
Hidewood Southbound	14 minutes	24 minutes	90 minutes	110 minutes
Homestead	187 minutes	57 minutes	52 minutes	293 minutes
Valley Springs Westbound**	30 minutes		23 minutes	
Valley Springs POE		44 minutes		720 minutes
Tilford Eastbound	29 minutes	41 minutes	67 minutes	288 minutes
Tilford Westbound	16 minutes	21 minutes	52 minutes	83 minutes

**No dedicated truck parking at the rest area.

In general, passenger vehicles are parked at rest areas for less time than trucks. The time vehicles are parked increases during the nighttime hours, especially so for truck traffic that experiences a significant increase in the amount of time a vehicle is parked. The duration of truck

parking during the nighttime increases between 2-15 times higher as compared to daytime operations.

The Homestead Rest Area also showed passenger vehicles parked longer than trucks during the daytime peak period. A review of the video showed that both visitor center employees and vehicles dedicated to on-site maintenance contributed to the higher duration. There were also two passenger vehicles that were parked for 18 consecutive hours, which contributed to the passenger vehicle duration calculations.

As stated previously, parking at some rest areas were shown to operate at or near the capacity threshold during portions of the day. In addition, parking conditions at each facility vary throughout the day and experience unique trends. To quantify these trends, the following bullets summarize conditions at each facility:

- **Hidewood Northbound** - Passenger vehicle parking occupancy operates well below the capacity threshold throughout the study period. During daylight hours, the maximum observed occupancy was 19%, which occurred during 12:00PM. Passenger vehicle parking during the nighttime hours was reduced significantly, as compared to the daytime peak. Truck parking occupancy was much higher, with several hours during the nighttime peak operating near or at the capacity threshold (90% or higher occupancy). In addition, video showed that four trucks parked in the passenger vehicle lot throughout the day and stayed anywhere from 15-minutes to over one hour. A summary of the hourly parking occupancy at the Hidewood Northbound Rest Area is shown on **Figure 1**.
- **Hidewood Southbound** - Passenger vehicle parking occupancy trends were opposite the Hidewood Northbound facility as occupancy was higher during the nighttime hours than the daytime. Parking occupancy peaked at 32% at 1:00AM, while the daytime peak was 13% from 9:00AM through 10:00AM. Truck parking occupancy operated near the capacity threshold during several nighttime hours and from 1:00PM through 3:00PM during the daytime. In addition, approximately ten trucks were shown to be parking in the passenger vehicle lot throughout the day. The vast majority stopped for less than twenty minutes, but two did stay overnight between five to ten hours. A summary of the hourly parking occupancy at the Hidewood Southbound Rest Area is provided in **Figure 2**.
- **Homestead** - The rest area provides the greatest total passenger vehicle and truck parking spaces of the seven sites studied in this report. Parking occupancies for both users were well below the capacity threshold throughout the 24-hour period. Passenger vehicle occupancy peaked during the daytime hours (28% at 12:00PM), while truck parking peaked during the nighttime (36% at 5:00AM). Parking conditions at the Homestead Rest Area are shown on **Figure 3**.
- **Valley Springs Westbound** - The rest area served the most number of parked vehicles of the seven sites observed for this study. Since the average time vehicles were parked was 30 minutes or less (see **Table 3**), parking occupancy operated well below the capacity threshold even with the higher volume of visitors. Occupancy also peaked mid-day, and significantly dropped off during the nighttime hours. Parking occupancy for the Valley Springs Westbound Rest Area is shown on **Figure 4**.

- **Valley Springs POE** - The facility, dedicated to the inspection of trucks and their operators, provides both passenger vehicle and truck parking. Passenger vehicle parking is dedicated to the South Dakota Highway Patrol and is fully occupied throughout the hours of operation. As opposed to a typical rest area, truck parking peaked during the daytime hours primarily due to inspections by Highway Patrol staff. Once the facility was closed, truck parking decreased with one vehicle parked throughout the entire nighttime peak. It is not anticipated that the truck was being operated at the time of the count, and remained parked either due to a violation or mechanical failure. Parking conditions at the Valley Springs POE are shown on **Figure 5**.
- **Tilford Eastbound** - Passenger vehicle parking peaked during the daytime hours (23% at 11:00AM) and operated well below the capacity threshold throughout the entire 24-hour period. Similar to other rest areas, truck parking peaked during the nighttime hours (57% at 1:00AM) and operated below the capacity threshold. As stated previously, the rest area provides nine parallel truck parking spaces, requiring trucks to complete complex turning movements to enter / exit parking spaces. Although truck parking occupancy was within capacity, the layout of the parking spaces could contribute to trucks either bypassing the site or driving through without parking due to the complex turning movements that would be required. A summary of the parking occupancy counts at the Tilford Eastbound Rest Area is shown on **Figure 6**.
- **Tilford Westbound** - Both passenger vehicle and truck parking demand remained within capacity during the study period. Truck parking peaked during the nighttime hours (51% at 1:00AM) and operated the remainder of the 24-hour period well under the capacity threshold. Of note, security video was used to supplement video data during the 3:00AM through 8:00AM time frame, which was not viewable. A summary of the parking occupancy counts at the Tilford Westbound Rest Area is shown on **Figure 7**.

FUTURE CONDITIONS

Future Use Projection Methodology

Determining how many vehicles will be parked in the facilities in the future is a key consideration in determining the adequacy of the on-site infrastructure. To determine future use projections, two separate steps were taken. First, the parking counts were adjusted to reflect seasonal increases in traffic experienced in South Dakota. The seasonally adjusted conditions were then projected to the future planning year. The following outlines the methodology used to develop these projections.

South Dakota is a popular tourist destination, particularly during the summer months, with destinations such as Mount Rushmore, the Badlands and the annual Sturgis Motorcycle Rally. Parking conditions at rest areas throughout South Dakota area can fluctuate based on the time of year (higher in the summer, lower in the winter) due to tourist related traffic and the weather. To account for these changes in travel patterns during a typical year, September 2013 parking counts at each rest area were adjusted to reflect peak conditions. Historical traffic counts at rest area automated traffic records (ATR's) or the mainline counts nearest the facility were used to adjust the existing parking counts to peak conditions. **Table 4** summarizes the seasonal factors at each rest area.

Table 4. Seasonal Adjustment Factors

Rest Area	Seasonal Adjustment Factor
Hidewood Northbound	1.1
Hidewood Southbound	1.1
Homestead	1.12
Valley Springs Westbound & POE	1.14
Tilford Eastbound	1.6
Tilford Westbound	1.6

After the base parking counts were adjusted to the peak condition, the adjusted counts were projected forward to the future year, assumed to be year 2040. Different methodologies were used for projecting passenger vehicle and truck traffic parking. For the passenger parking estimates, the *Highway Needs and Project Analysis Report*, South Dakota Department of Transportation, 2013 and the *South Dakota Decennial Interstate Corridor Study*, Felsburg Holt & Ullevig, 2010 were consulted. Growth rates in interstate traffic were used as tools to estimate passenger parking demand at each facility.

Each report was reviewed independently and the results compiled to develop the most conservative estimate of future use. The Needs Report provided current and 20-year traffic estimates on Interstate segments throughout the state. Growth rates on the interstate segments adjacent to each rest area contained in the Needs Report showed a consistent 0.72% increase per year, equating to a 16% increase in vehicular traffic between 2013 and 2040. The Decennial Interstate Corridor Study also provided growth rates on each section of interstate adjacent to the rest areas, which were based on information from SDDOT, population growth by county and historical forecasts through Metropolitan Planning Organizations (MPO). The rates in the Decennial Interstate Corridor Study varied on each Interstate corridor, and provided long term growth factors between 20% to 56%. Based on a comparison of various rates, the growth factors from the Decennial Interstate Corridor Study were used to determine long term (year 2040) passenger vehicle parking at each rest area. **Table 5** summarizes the results.

Table 5. Passenger Vehicle Parking Growth Factors

Rest Area	Yearly Growth Rate	2040 Growth Factor
Hidewood Northbound	1.32%	1.42
Hidewood Southbound	1.32%	1.42
Homestead	1.38%	1.45
Valley Springs Westbound & POE	2.16%	1.78
Tilford Eastbound	0.89%	1.27
Tilford Westbound	0.89%	1.27

Federal Highway Administration Freight Analysis Framework (FAF) (http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/) was used to develop long term truck parking estimates at each rest area. The FAF compiles data from various sources to develop a comprehensive national picture of freight movement among states and major metropolitan areas. As part of the freight movement estimates, long term truck volume projections are developed for each section of interstate and key state highways throughout the nation. These truck traffic projections were utilized to develop the long term truck parking estimates at each rest area. Truck traffic projections (year 2040) adjacent to each rest area were compared to existing FAF estimates to develop long term growth rates. **Table 6** summarizes the truck parking growth factors used in this report.

Table 6. Truck Parking Growth Factors

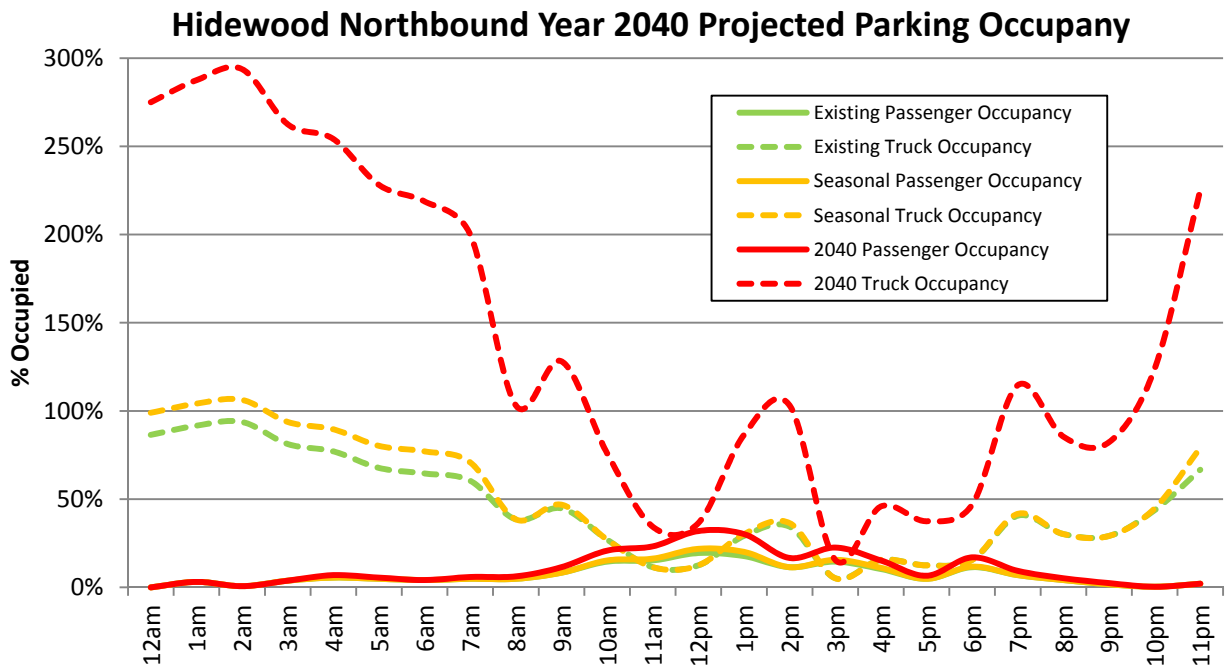
Rest Area	Yearly Growth Rate	Growth Factor
Hidewood Northbound	3.87%	2.8
Hidewood Southbound	3.87%	2.8
Homestead	2.64%	2.0
Valley Springs Westbound & POE	2.96%	2.2
Tilford Eastbound	3.08%	2.2
Tilford Westbound	3.08%	2.2

Note that truck growth is expected to exceed passenger vehicle growth through year 2014. Seasonal factors and the passenger vehicle or truck growth factors were applied to the existing parking counts to develop long term parking estimates. Future parking projections provide a conservative estimate of demand, as they represent future year peak season conditions. These long term parking estimates provide the basis determining the future use of each facility.

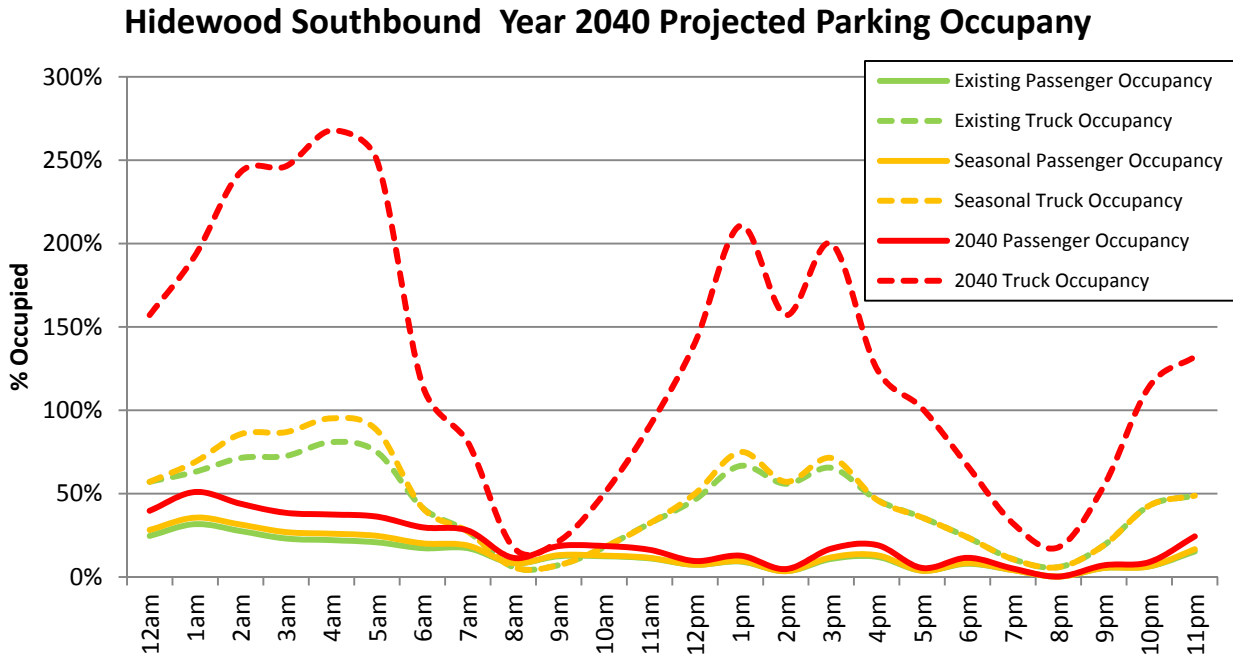
Rest Area Impact

The long term facility use estimates were applied to the existing parking occupancy count results (summarized in **Figure 1** through **Figure 7**) to determine long term parking demand. It was assumed that hourly variation in parking use remained constant through year 2040. Parking demand at each rest area is summarized in the following bullets.

- Hidewood Northbound** - The future use estimates show that the passenger vehicle parking will be adequately served by the existing allotment of parking spaces. Hourly passenger vehicle parking occupancy is projected to be less than 50% during all hours of the day. September 2013 truck parking at the rest area operates just under the existing capacity, and would operate over capacity when adjusting for seasonal peaks, To meet future year truck parking demand, the rest area would need to provide nearly 200% more truck parking spaces. A summary of the projected parking occupancy is shown on the following graph:

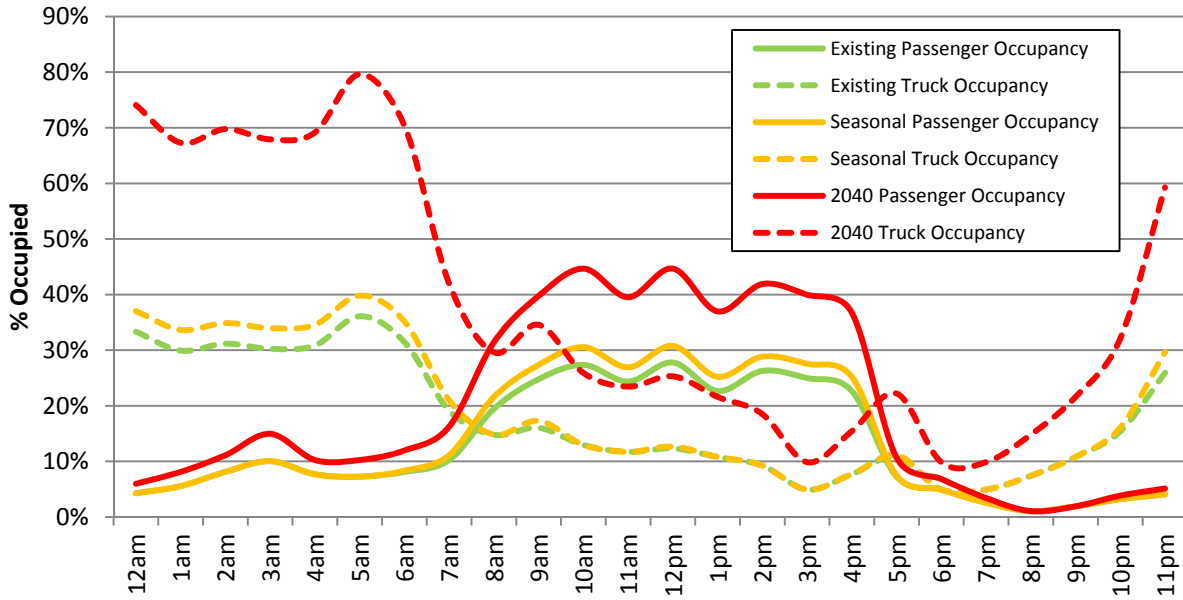


- Hidewood Southbound** - Similar to the Northbound location, passenger vehicle parking will be adequately served by the existing allotment of parking spaces at the Southbound Rest Area. Hourly passenger vehicle parking occupancy would operate at or below 50% occupancy during the day. To meet future year truck parking demand, the rest area would need to provide a 175% increase in truck parking spaces to meet both nighttime and daytime peaks. A summary of the projected parking occupancy is shown on the following graph:



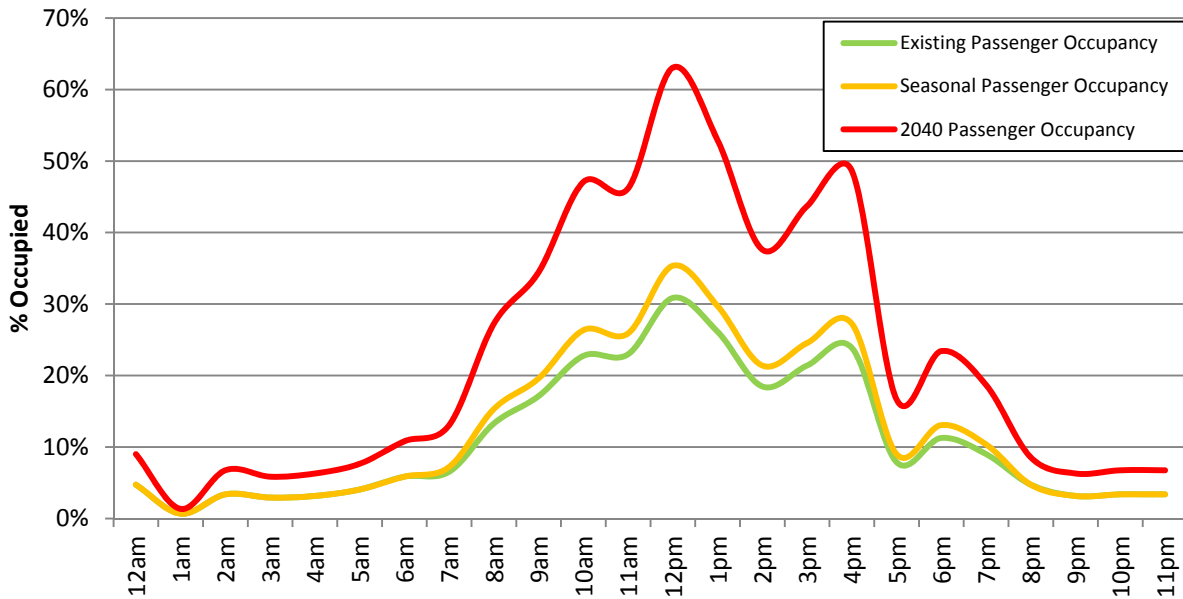
- **Homestead** - The existing inventory of both passenger vehicle and truck parking spaces is anticipated to meet projected year 2040 demand. The rest area currently provides the highest number of both passenger vehicle and truck parking spaces. A summary of the projected parking occupancy is shown on the following graph:

Homestead Year 2040 Projected Parking Occupancy



- **Valley Springs Westbound** - As stated previously, the Valley Springs Rest Area has the highest number of visitors on a daily basis. Including both seasonal and future growth, it is anticipated that the existing parking capacity would be adequate to serve the future year 2040 demand. Parking occupancy is anticipated to operate well below the capacity threshold throughout the majority of a typical day. A summary of the projected parking occupancy is shown on the following graph:

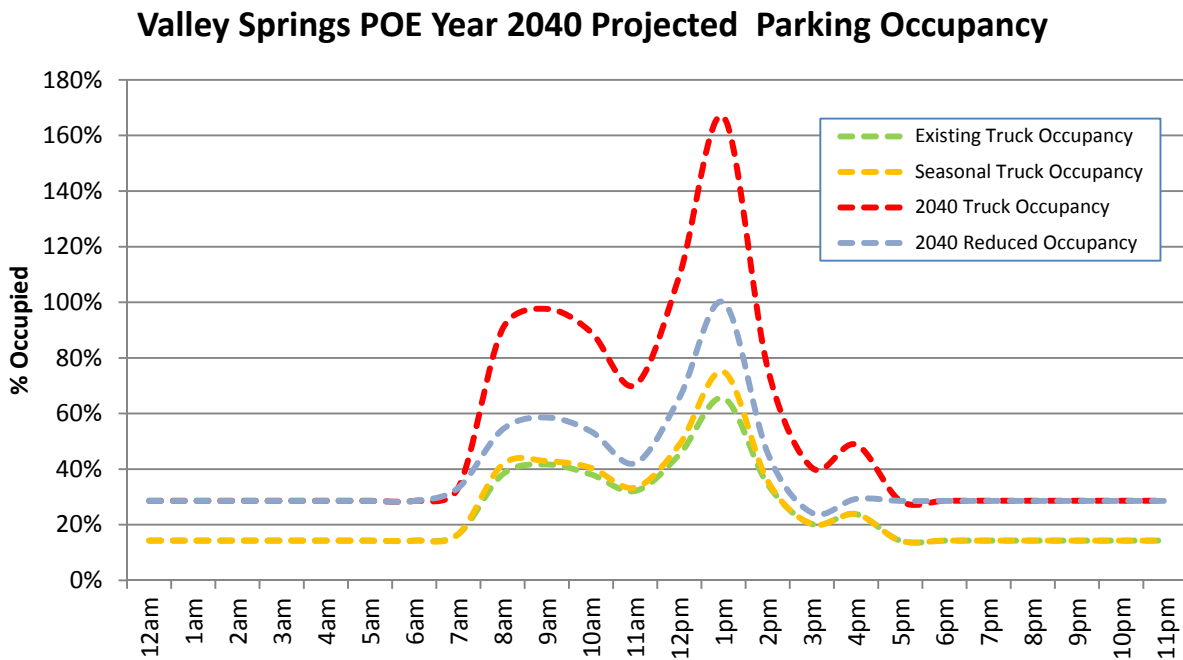
Valley Springs Year 2040 Projected Parking Occupancy



- Valley Springs POE** - The existing passenger vehicle parking is dedicated to South Dakota Highway Patrol staff, is not anticipated to grow, and therefore will not need to be expanded in the future (not shown on graph). Between now and the year 2040, truck traffic utilizing the POE is anticipated to increase by over 200%. Both the facility and the parking dedicated to the operation will need to be expanded to meet that need. However, future demand is only anticipated to significantly increase during the daytime hours when the facility is open, as truck operators prefer not to park overnight at the facility.

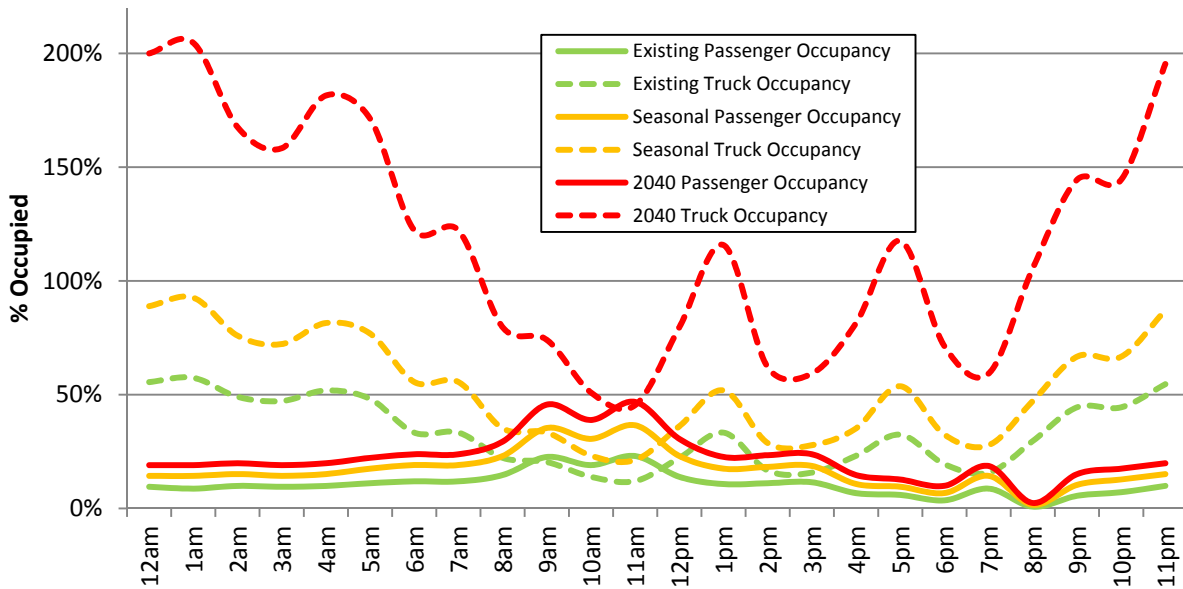
Based on discussions with SDDOT, in the future POE's throughout the State may be equipped with electronic metering capabilities. Drivewyze and license plate recognition software would be installed, and its estimated that as much as 60% of all truck traffic would be able to bypass the POE's throughout the state. Therefore, a second 2040 projection was added assuming electronic metering is installed at the POE. Based on the expected 60% reduction in truck traffic requiring inspection, the existing POE would be able to handle the projected parking demand through year 2040.

A summary of the projected parking occupancy is shown on the following graph:



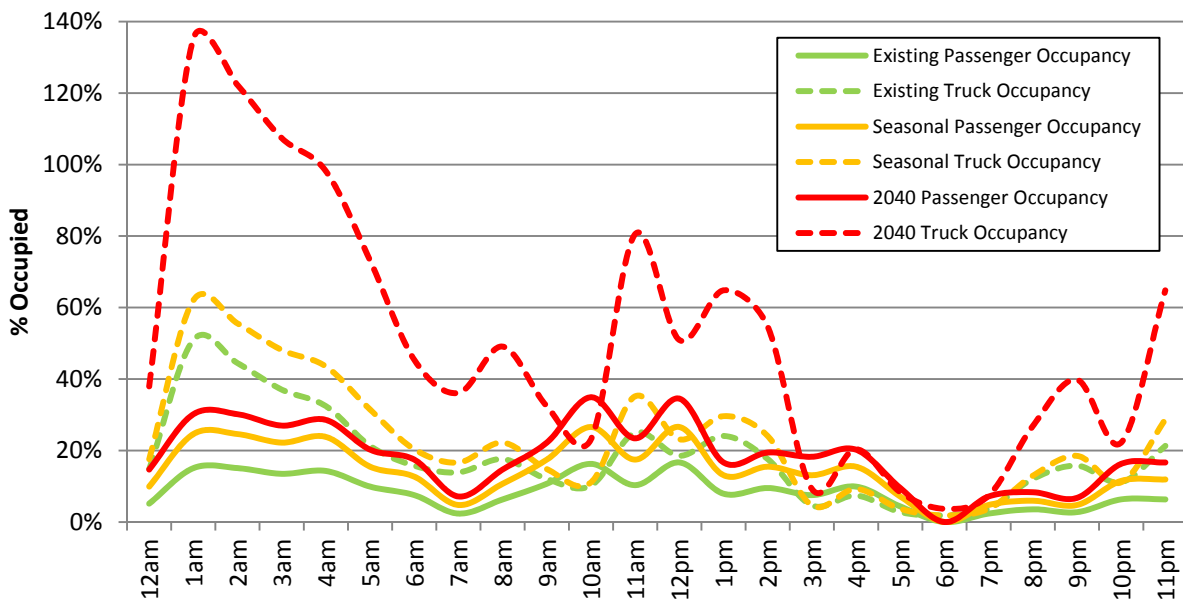
- Tilford Eastbound** - Passenger vehicle parking capacity is anticipated to meet long term demand, as the lot is anticipated to be less than 50% occupied through year 2040. Truck parking capacity would need to more than double current allotment to handle the future demand. A summary of the projected parking occupancy is shown on the following graph:

Tilford Eastbound Year 2040 Projected Parking Occupancy



- Tilford Westbound** - Similar to the Eastbound location, passenger vehicle parking will be adequately served by the existing allotment of parking spaces at the Westbound Rest Area. Also, truck parking is would need to increase almost 40% to meet future demand. A summary of the projected parking occupancy is shown on the following graph:

Tilford Westbound Year 2040 Projected Parking Occupancy



NEEDS ASSESSMENT

The results of the future use projections show at each rest area existing passenger car parking capacity would be adequate to handle future demand. Although visits are expected to increase through year 2040, the each facility provide adequate capacity to handle both daytime and nighttime passenger vehicle demand.

Truck parking capacity will need to be expanded at most rest areas in the future. Based on FHWA models, truck traffic will significantly increase through year 2040 on the Interstates in South Dakota, affecting parking. Hours of Service (HOS) regulations further drive the need for parking. The HOS regulations limit the total amount of time that a truck driver can operate the vehicle, and also specifies how much consecutive off-duty time is required prior to driving again. Once drivers reach their off-duty time, monitored electronically in most cabs, they are required to immediately find a place to stop regardless of the time of day or location. In addition, trucks park for a longer duration requiring additional parking to meet demand for a longer period of time. The following bullets summarize the expansion potential at each facility to meet future demand:

- **Hidewood Northbound** - Future estimates show parking would need to increase by 16 spaces, tripling existing capacity. The parking area currently provides eight head-in angled parking spots. The area directly north and south of the existing truck parking lot provides adequate room to expand the facility. It is anticipated that 17-21 truck parking spaces could be added with minimal impact to the existing infrastructure. **Figure 8** depicts the expansion potential for the facility.
- **Hidewood Southbound** - It is anticipated that the rest area would need to provide approximately 175% more truck parking spaces to meet demand. Similar to the Northbound Rest Area, the area north and south of the existing seven space parking facility could be expanded with minimal impact to the existing infrastructure. An estimated 14-27 additional parking spaces could be added, exceeding future demand. **Figure 9** shows the expansion potential for the facility.
- **Homestead** - As stated previously, the existing passenger vehicle and truck parking capacity is anticipated to meet future demand at this location. However, if demand does exceed projections in the future, the existing facility does provide area for expansion of the truck parking in the future. An additional five to ten angled truck parking spaces could be added along the western side of the site, and would require removal of existing trees to accommodate the additional pavement. **Figure 10** shows the expansion potential for the facility.
- **Valley Springs Westbound & POE** - It is anticipated that truck parking capacity would need to be expanded by almost 80% to meet future demand, only if electronic metering equipment is not installed. In addition, the POE facility may require expansion to fulfill its mission of inspecting trucks and their operators entering South Dakota. Compared to other POE's within South Dakota, the Valley Springs location is smaller and does not provide a covered inspection area. With improvements to the passenger vehicle and truck parking egress points onto Interstate 90, the POE facility could be expanded to include up to 100% of additional area that could be designated for either parking or vehicular inspection. **Figure 11** shows the expansion potential for the facility.

- Tilford Eastbound** - It is anticipated that truck parking would need to more than double to meet future demand. Given the location of the site, right-of-way and topography limits, the expansion potential of the rest area is limited. One alternative to increasing truck parking capacity would be to redesign the parking area to provide head-in angled truck parking, similar to the Homestead Rest Area. The parking lot would need to be expanded to the east, closer to the Interstate 90 corridor, and could provide a total of 16-18 truck parking spaces. It is recognized that the parking lot would interfere with the clear zone of the Interstate corridor, but barrier (guardrail, jersey barrier, etc.) could be added to meet clear zone criteria. **Figure 12** shows the expansion potential for the facility.
- Tilford Westbound** - Truck parking would need to be expanded by more than 40% to meet future demand. Similar to the Eastbound location, the Westbound Rest Area provides limited areas for expansion. Redesigning the parking lot to provide head-in angled truck parking could provide as many as 21 truck parking spaces, a 130% increase in capacity. The proximity of the expanded parking lot to the Interstate 90 corridor would require installation of barrier to meet clear zone criteria. **Figure 13** shows the expansion potential for the facility.

Table 7 provides an overview of truck parking needs to accommodate growth to the Year 2040 at each rest area. No expansion of truck parking is needed at the Homestead rest area.

Table 7. Truck Parking Growth Factors

Rest Area	Number of Truck Parking Spaces		
	Current	Additional Needed	Total Needed
Hidewood Northbound	8	16	24
Hidewood Southbound	7	12	19
Valley Springs POE ¹	7	5	12
Tilford Eastbound	9	10	19
Tilford Westbound	9	4	13

¹Based on discussions with SDDOT, in the future POEs throughout the State may be equipped with electronic pass capabilities, resulting in up to 60 percent of all truck traffic bypassing POEs. Therefore, a second 2040 projection was added assuming electronic metering is installed at the POE. Based on the expected 60 percent reduction in truck traffic requiring inspection, the existing POE would be able to handle the projected parking demand through year 2040.

PRIVATE FACILITY IMPACT

The influence of private truck stops in South Dakota has a direct impact on truck parking needs at rest areas throughout the state. Discussions were held with Myron Rau at the South Dakota Trucking Association (SDTA) to quantify the private truck stop influence on parking demand. The following bullets summarize the discussions:

- In general, truck drivers prefer to park for long durations at private truck stops due to the services that are provided (gas, fuel, security). These facilities are typically full every night and are now operating near capacity during the daytime hours as well. During adverse weather conditions, these facilities are highly desirable as they provide sustenance when roads are closed for significant amounts of time.
- Rest areas are typically regarded as a second tier for longer term truck parking needs, but are favored by some drivers as a primary parking location. The SDTA has not fielded many complaints from drivers regarding the existing capacity at the rest areas in the past.
- Hours of service (HOS) rules will drive the need for truck parking in the future. Due to electronic monitoring equipment, now standard in most trucks, once drivers hit the maximum driving time they must immediately stop for extended periods of rest regardless of their current location. Rest areas may play a more important role for truck parking if hours of service rules continue to become more restrictive.
- Due to the current restrictions on drive time and mandatory rest, drivers often plan their stops days in advance. Providing drivers with real-time parking availability at rest areas would be beneficial for truck drivers both when planning their trip and in the hours leading up to their stop.

Through the discussions, it is clear that the private truck stops provide a significant benefit to truck parking needs throughout the state. Without the additional parking capacity provided by these facilities, rest area truck parking would be operating well over the capacity threshold. For reference, **Figure 14** shows private truck stop locations throughout South Dakota. These locations were obtained from databases maintained by *The Truckers Friend, National Truck Stop Directory*, 2014.

The construction of new private truck stops and / or the expansion of existing facilities has the potential to reduce the need for truck parking at rest areas. However, with truck parking expected to more than double in some parts of South Dakota by year 2040, private facilities may not be able to meet the demand. It is anticipated that rest areas will continue to play a significant role in truck parking well into the future.

CONCLUSION AND RECOMMENDATIONS

In support of the Interstate Rest Areas Study, an analysis of parking conditions at each rest area facility was completed. The purpose of the analysis was to quantify existing passenger vehicle and truck parking conditions at each facility, project parking conditions to a future long term horizon, and determine if each facility would need to be expanded to meet the future parking needs.

The existing parking counts (summarized in **Figure 1** through **Figure 7**) show that each facility provides adequate passenger parking capacity to meet current daytime and nighttime demand.

The counts also show that truck parking at some rest areas operates at or near the capacity threshold during portions of the 24-hour count.

Year 2040 use projections at each rest area were reached by adjusting existing parking counts to peak season conditions, and applying growth factors from several data sources including the *Highway Needs and Project Analysis Report*, South Dakota Department of Transportation, 2013, the *South Dakota Decennial Interstate Corridor Study*, Felsburg Holt & Ullevig, 2010 and the Federal Highway Administration Freight Analysis Framework (FAF). Results of the future year projections show that most rest areas will need to be expanded in the future to meet anticipated truck parking demands.

Each rest area facility was studied to determine the potential for expansion. Based on the analysis, it is anticipated the each facility can be expanded to meet future demand with minimal impacts to existing infrastructure.

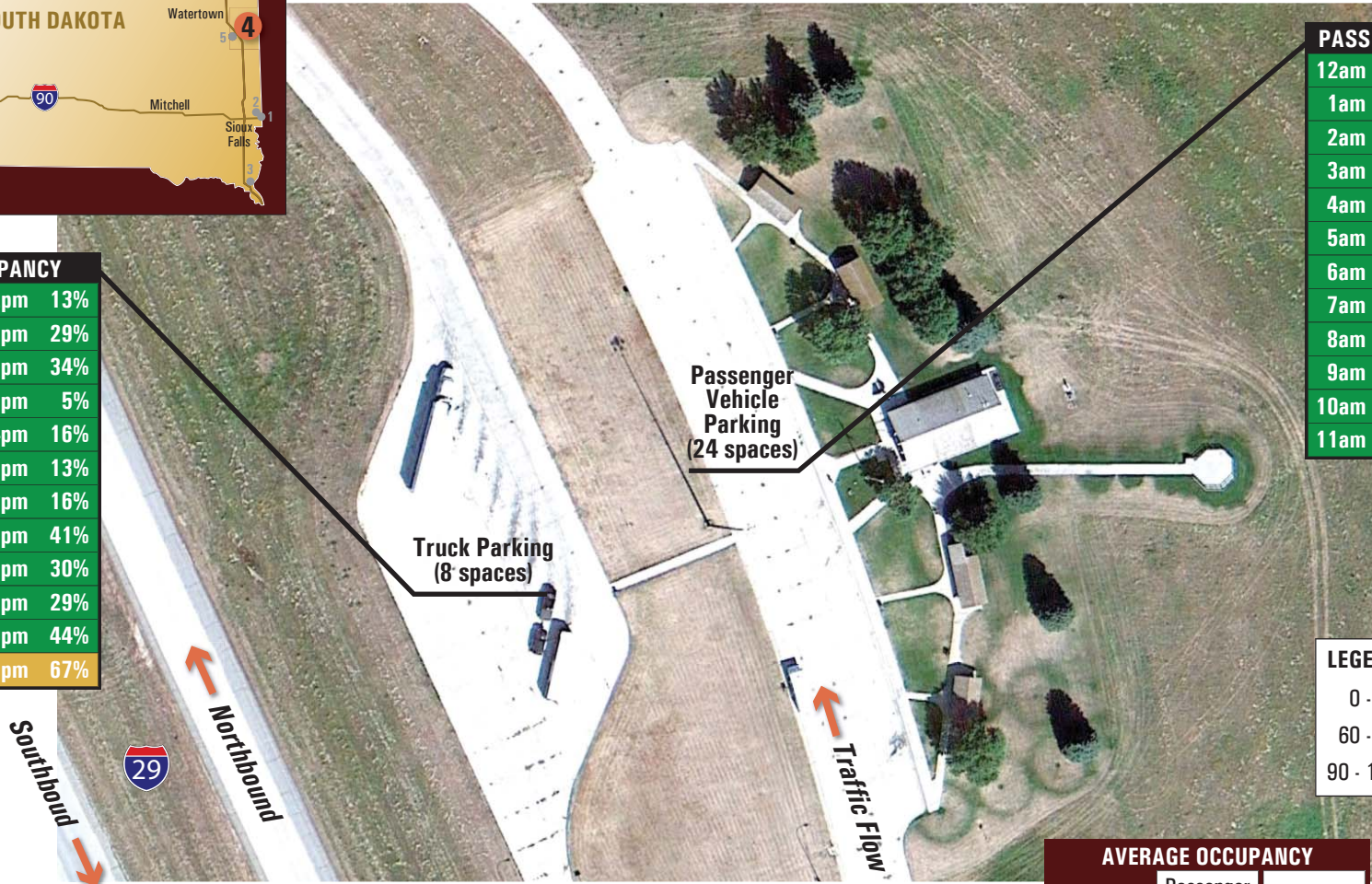


TRUCK OCCUPANCY




12am	86%	12pm	13%
1am	92%	1pm	29%
2am	94%	2pm	34%
3am	81%	3pm	5%
4am	77%	4pm	16%
5am	68%	5pm	13%
6am	65%	6pm	16%
7am	60%	7pm	41%
8am	39%	8pm	30%
9am	45%	9pm	29%
10am	27%	10pm	44%
11am	11%	11pm	67%

PASSENGER OCCUPANCY

12am	0%	12pm	19%
1am	3%	1pm	18%
2am	1%	2pm	11%
3am	4%	3pm	15%
4am	6%	4pm	10%
5am	5%	5pm	5%
6am	4%	6pm	11%
7am	5%	7pm	7%
8am	5%	8pm	4%
9am	8%	9pm	2%
10am	15%	10pm	0%
11am	15%	11pm	2%



LEGEND

0 - 59%	Occupied	
60 - 89%	Occupied	
90 - 100%	Occupied	

AVERAGE OCCUPANCY

	Passenger Vehicles	Trucks
Daytime	11%	26%
Nighttime	3%	64%



Figure 1. Hidewood Northbound Rest Area Parking Occupancy

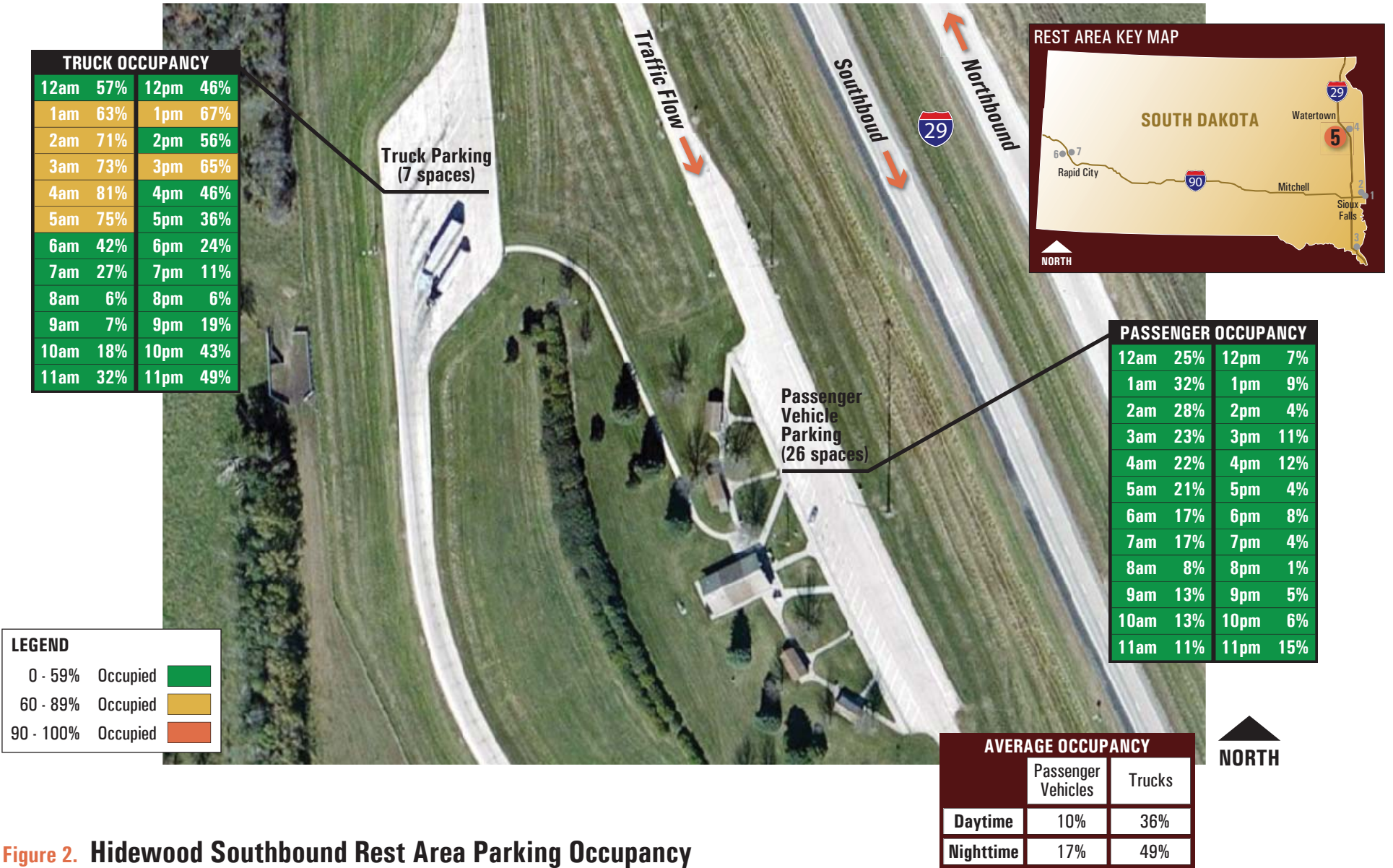





Figure 2. Hidewood Southbound Rest Area Parking Occupancy

REST AREA KEY MAP



PASSENGER OCCUPANCY		
12am	4%	12pm 28%
1am	6%	1pm 23%
2am	8%	2pm 26%
3am	10%	3pm 25%
4am	8%	4pm 23%
5am	7%	5pm 7%
6am	8%	6pm 5%
7am	10%	7pm 3%
8am	19%	8pm 1%
9am	25%	9pm 2%
10am	27%	10pm 3%
11am	24%	11pm 4%

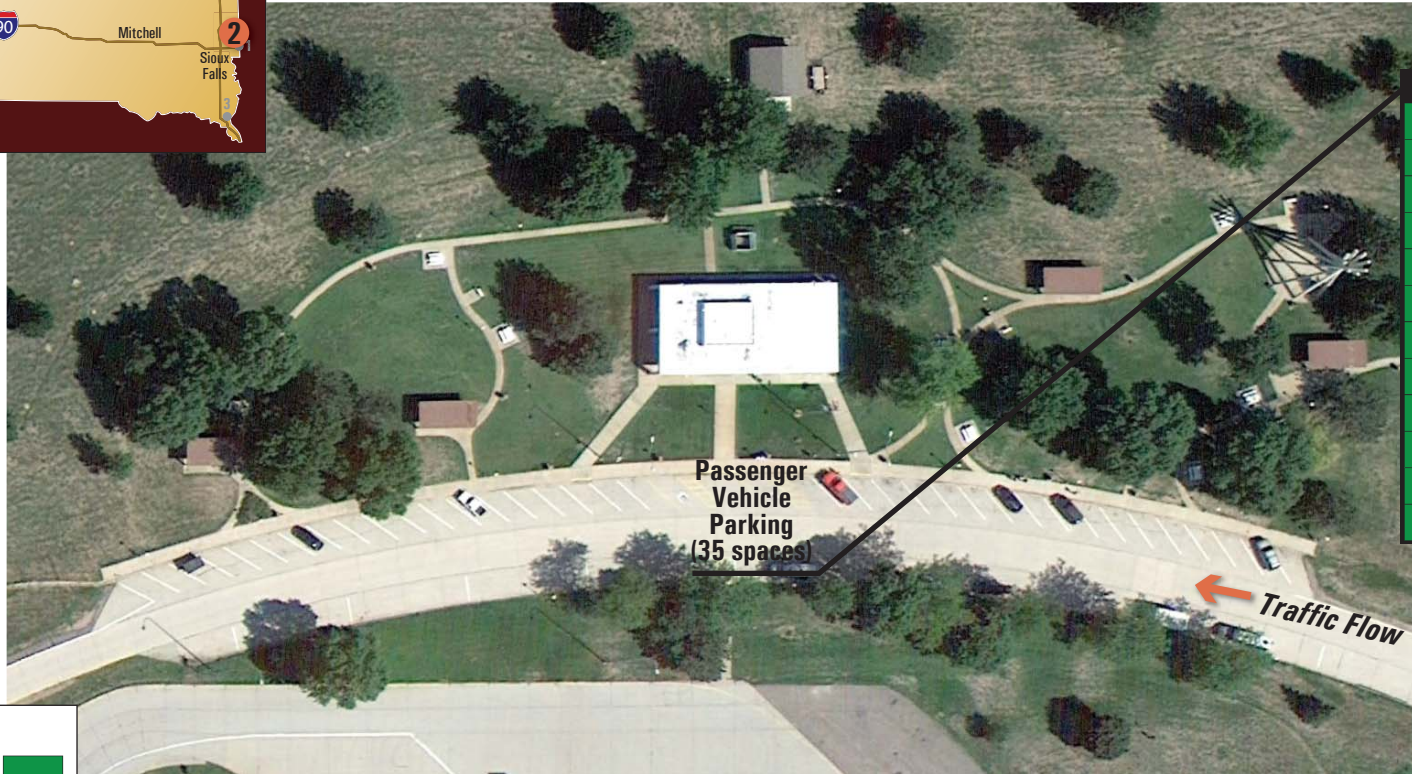
TRUCK OCCUPANCY			
12am	33%	12pm	12%
1am	30%	1pm	11%
2am	31%	2pm	9%
3am	30%	3pm	5%
4am	31%	4pm	8%
5am	36%	5pm	11%
6am	31%	6pm	5%
7am	19%	7pm	5%
8am	15%	8pm	7%
9am	16%	9pm	11%
10am	13%	10pm	15%
11am	12%	11pm	26%

LEGEND		
0 - 59%	Occupied	
60 - 89%	Occupied	
90 - 100%	Occupied	




AVERAGE OCCUPANCY		
	Passenger Vehicles	Trucks
Daytime	20%	11%
Nighttime	5%	24%

Figure 3. Homestead Rest Area Parking Occupancy

REST AREA KEY MAP

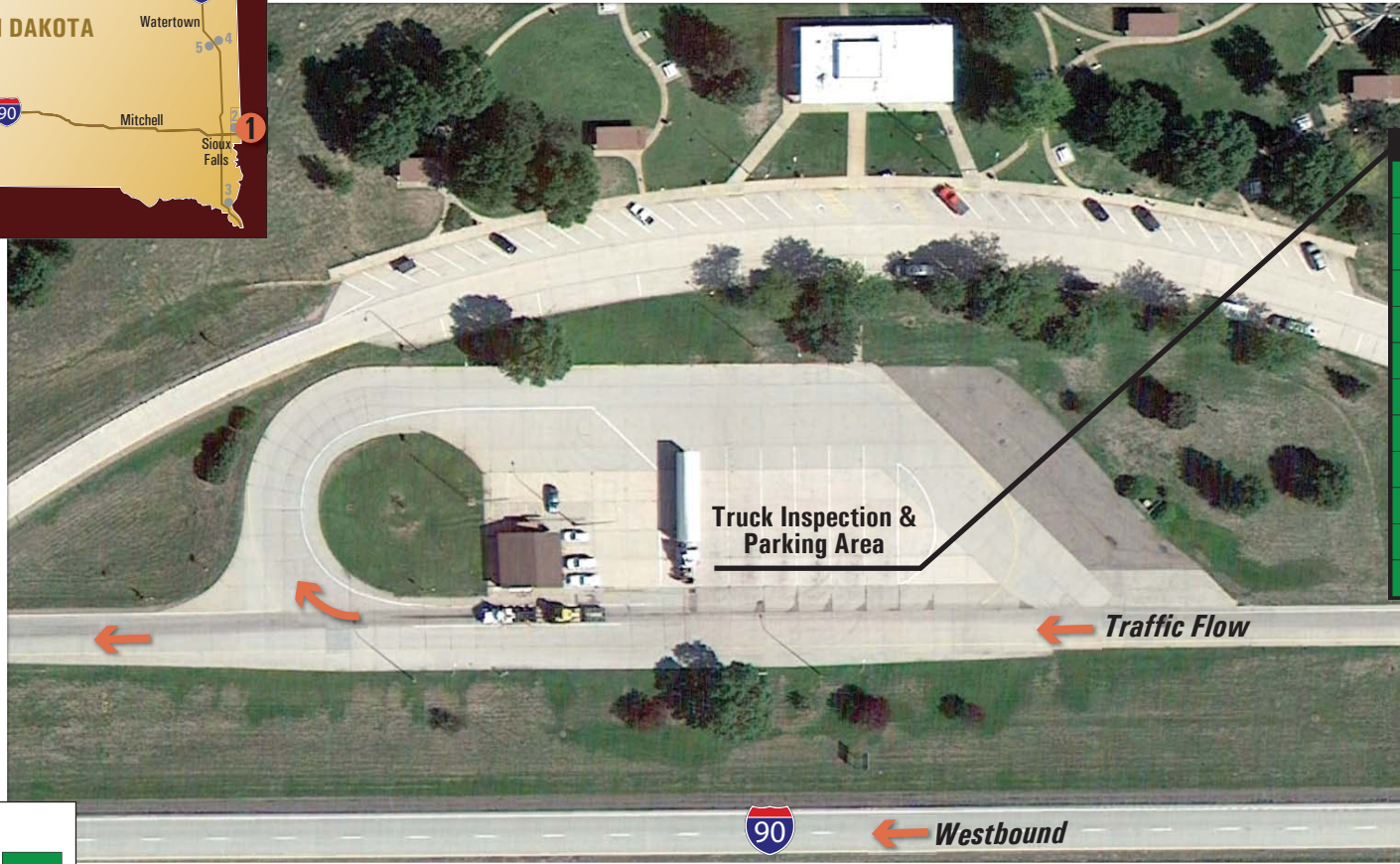


PASSENGER OCCUPANCY			
12am	5%	12pm	31%
1am	1%	1pm	26%
2am	3%	2pm	18%
3am	3%	3pm	21%
4am	3%	4pm	24%
5am	4%	5pm	8%
6am	6%	6pm	11%
7am	7%	7pm	9%
8am	13%	8pm	5%
9am	17%	9pm	3%
10am	23%	10pm	3%
11am	23%	11pm	3%

LEGEND		
0 - 59%	Occupied	
60 - 89%	Occupied	
90 - 100%	Occupied	

AVERAGE OCCUPANCY	
	Passenger Vehicles
Daytime	19%
Nighttime	4%




Figure 4. Valley Springs Westbound Rest Area Parking Occupancy



TRUCK OCCUPANCY

12am	14%	12pm	45%
1am	14%	1pm	65%
2am	14%	2pm	35%
3am	14%	3pm	20%
4am	14%	4pm	24%
5am	14%	5pm	14%
6am	14%	6pm	14%
7am	17%	7pm	14%
8am	38%	8pm	14%
9am	42%	9pm	14%
10am	38%	10pm	14%
11am	32%	11pm	14%

LEGEND

0 - 59%	Occupied	
60 - 89%	Occupied	
90 - 100%	Occupied	

AVERAGE OCCUPANCY

	Trucks
Daytime	32%
Nighttime	14%

Figure 5. Valley Springs Port of Entry Site Parking Occupancy

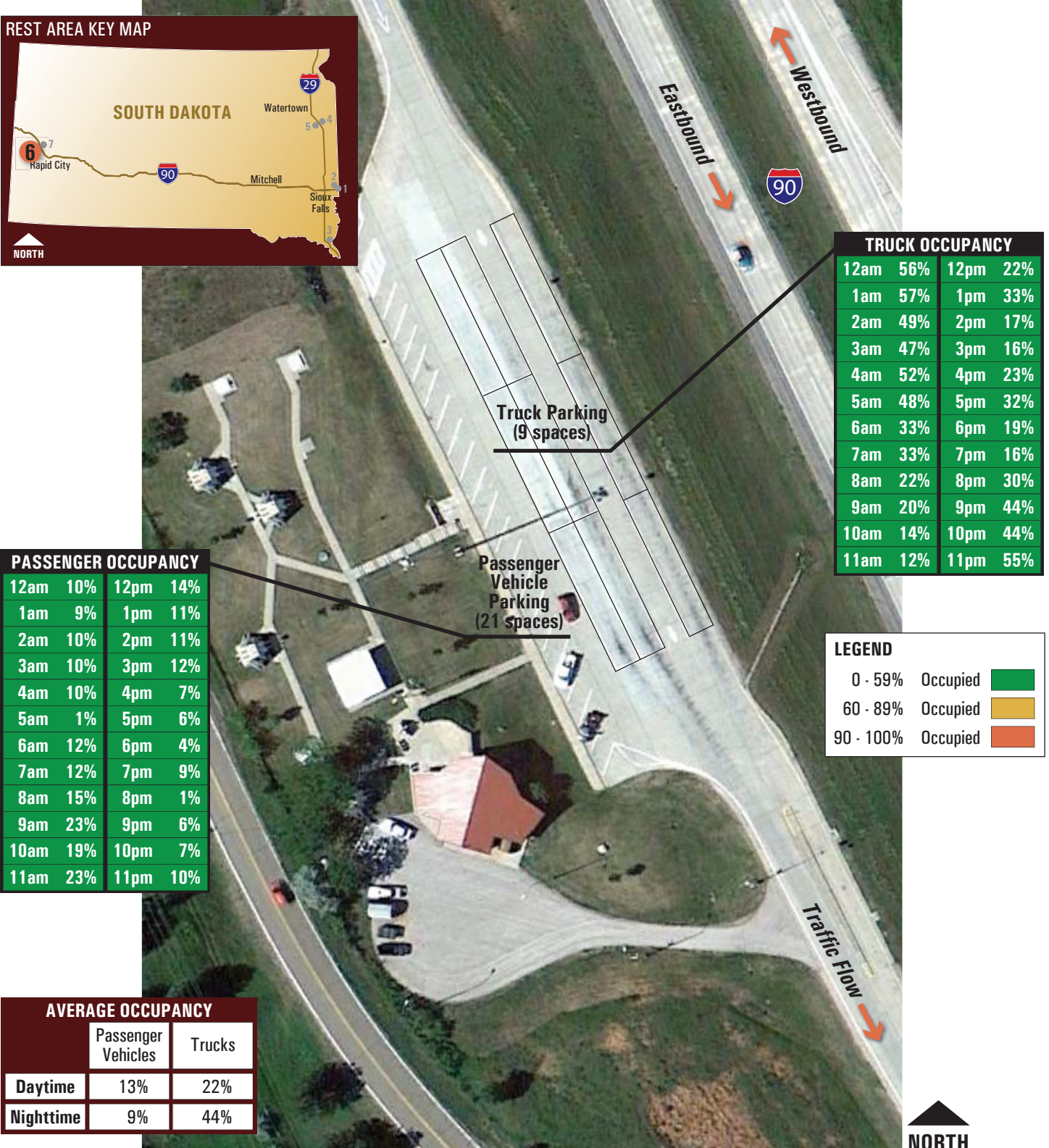


Figure 6. Tilford Eastbound Rest Area Parking Occupancy

LEGEND

0 - 59%	Occupied	
60 - 89%	Occupied	
90 - 100%	Occupied	

TRUCK OCCUPANCY

12am	15%	12pm	19%
1am	51%	1pm	24%
2am	44%	2pm	18%
3am	37%	3pm	5%
4am	32%	4pm	7%
5am	21%	5pm	3%
6am	16%	6pm	2%
7am	14%	7pm	4%
8am	18%	8pm	12%
9am	12%	9pm	16%
10am	10%	10pm	11%
11am	25%	11pm	21%

PASSENGER OCCUPANCY

12am	5%	12pm	17%
1am	15%	1pm	8%
2am	15%	2pm	10%
3am	13%	3pm	8%
4am	14%	4pm	10%
5am	10%	5pm	4%
6am	8%	6pm	0%
7am	2%	7pm	2%
8am	6%	8pm	4%
9am	11%	9pm	3%
10am	16%	10pm	6%
11am	10%	11pm	6%



AVERAGE OCCUPANCY

	Passenger Vehicles	Trucks
Daytime	8%	13%
Nighttime	8%	23%

Figure 7. Tilford Westbound Rest Area Parking Occupancy

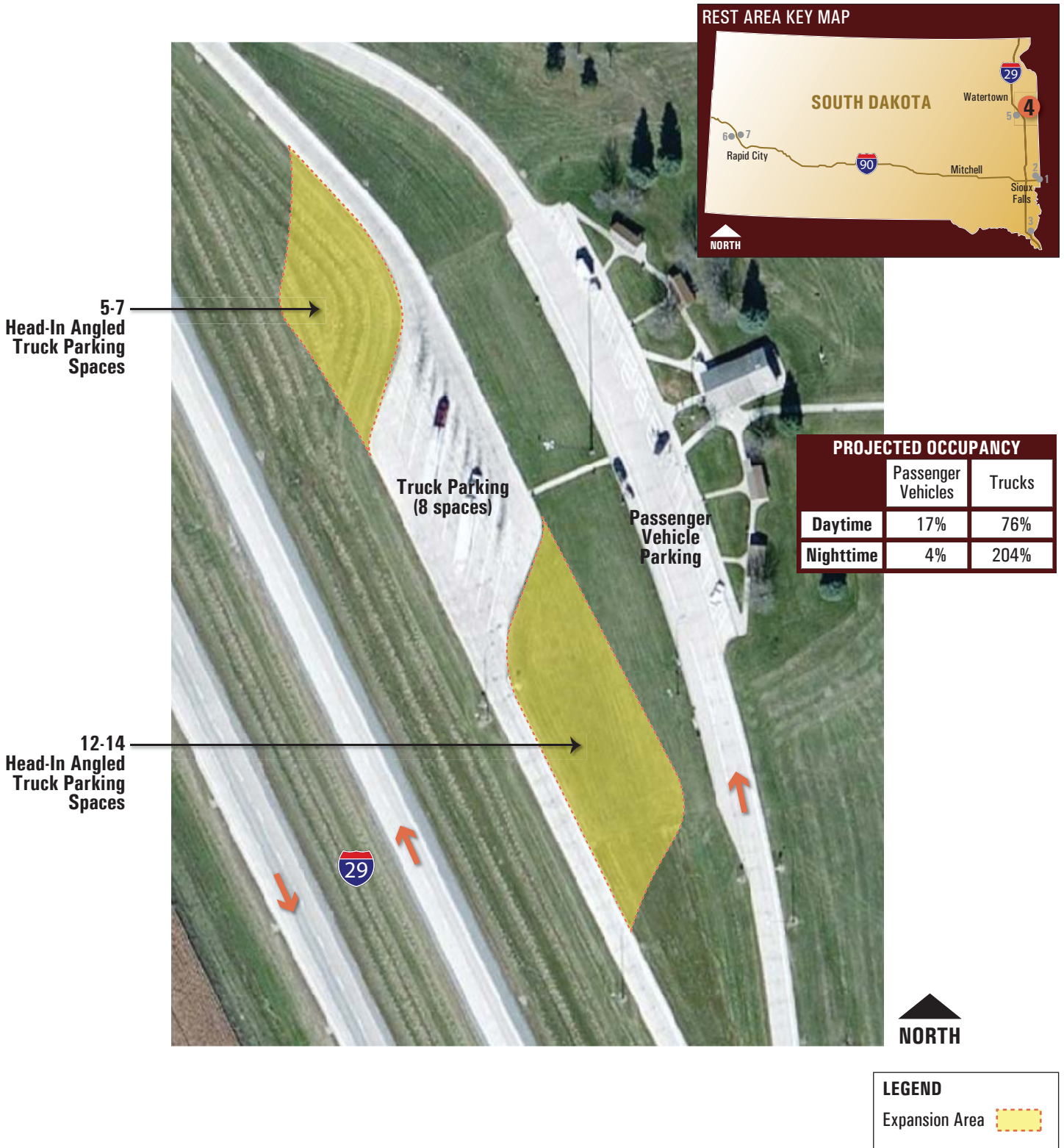
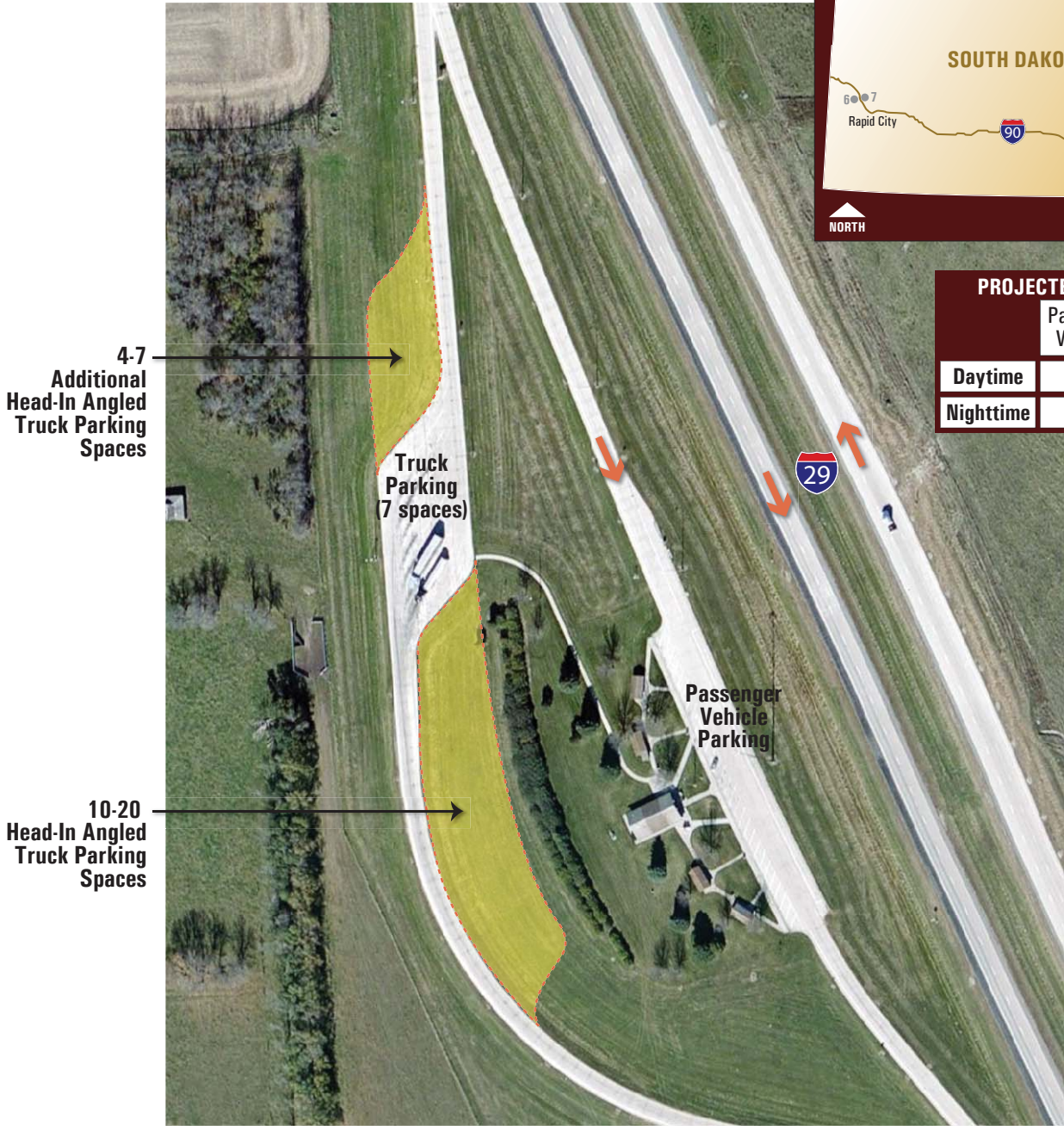


Figure 8. Hidewood Northbound Rest Area Future Expansion Potential



PROJECTED OCCUPANCY		
	Passenger Vehicles	Trucks
Daytime	14%	105%
Nighttime	27%	152%

LEGEND	
Expansion Area	

Figure 9 . Hidewood Southbound Rest Area Future Expansion Potential



LEGEND
Expansion Area 

PROJECTED OCCUPANCY		
	Passenger Vehicles	Trucks
Daytime	32%	23%
Nighttime	7%	53%

Figure 10. Homestead Rest Area Future Expansion Potential



New Roadway

Area for Expansion for POE Facility



LEGEND

Expansion Area 

Figure 11. Valley Springs Sites Future Expansion Potential

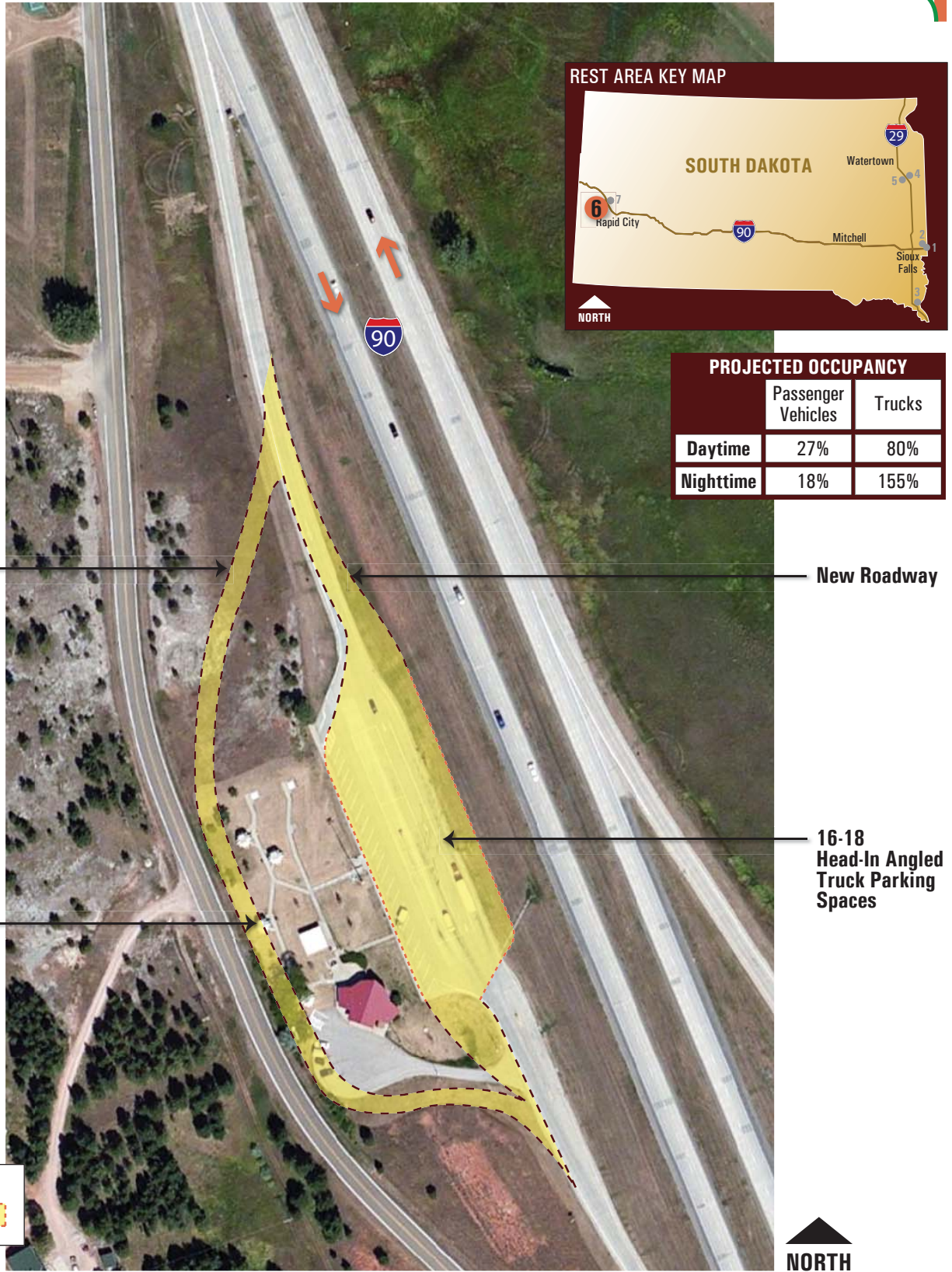


Figure 12. Tilford Eastbound Rest Area Future Expansion Potential



Figure 13. Tilford Westbound Rest Area Future Expansion Potential



LEGEND
● Existing Rest Areas

Figure 14. Private Truck Stop Locations



March 21, 2016

MEMORANDUM

TO: Brad Remmich
SDDOT Transportation Specialist

FROM: Shea Suski
Lyle DeVries, PE, PTOE

SUBJECT: South Dakota Rest Area Parking Analysis
FHU Reference No. 16-035-01

ATTACHMENT: Method & Assumptions Document

This memorandum details data collection and analysis of truck parking at 15 rest areas along Interstates 29 (I-29) and 90 (I-90) in South Dakota using the methodology developed as part of the 2014 “The Interstate Rest Areas Study: Along the I-29 and I-90 Corridors” report. The purpose of this effort is to document entry and exit traffic counts by vehicle type (light vs heavy), quantify existing truck parking conditions, project parking conditions to a future long term horizon, and determine if truck parking capacity would need to be expanded to meet the future needs. Future parking conditions can also be used to project long term overall use levels at each rest area facility. The following sections of the memorandum detail the existing conditions including traffic counts, parking inventory, and future parking conditions methodology and findings. A Methods & Assumptions document is also attached with additional information.

EXISTING CONDITIONS

The 15 rest areas in this memorandum are located throughout South Dakota on both I-29 and I-90. A vicinity map showing the location of these rest areas is provided on the following graphic:



Brief descriptions of the access and parking conditions at each site, ordered from west to east along I-90 and south to north along I-29, are summarized below. Aerials of each rest area are presented in **Figures 1** through **15** later in this memo.

- **Spearfish I-90 Eastbound (1)** - The rest area is accessed directly from I-90 and consists of the traditional one-way separated entry and exit ramp design. It provides a single parking surface made up of passenger vehicle and truck parking spaces. The truck parking area provides 16 angled head-in parking spaces, which allows trucks to enter and exit without having to reverse or make complex turning movements. The rest area also has a significant amount of unmarked paved area prior to reaching the truck parking spaces. There is no accompanying westbound I-90 rest area.
- **Wasta I-90 Eastbound (2)** - The rest area is accessed directly from I-90 and has a unique two-way traffic flow design. Entering vehicles curve back against the highway directional flow to park. To exit, vehicles proceed to a cul-de-sac to turn around and proceed back through the rest area to the exit ramp. The parking area consists of a paved area with designated passenger vehicle and truck parking spaces. The truck parking area provides seven angled head-in parking spaces.
- **Wasta I-90 Westbound (3)** - The rest area is accessed directly from I-90 and consists of the traditional one-way separated entry and exit ramp design. Parking supply consists of a single parking surface lot made up of passenger vehicle and truck parking spaces. The truck parking area provides seven angled head-in parking spaces.
- **Belvidere I-90 Eastbound (4) & Westbound (5)** - These rest areas are accessed directly from I-90 and both incorporate the same design consisting of the traditional one-way separated entry and exit ramp design. They each provide of a single parking area made up of passenger vehicle and truck parking spaces. The truck parking at each rest area is a unique design consisting of an estimated 10 spaces made up of striped boxes (4) and a shoulder, both parallel to I-90 and perpendicular to the rest area facilities and passenger vehicle parking. The design may require difficult parking maneuvers depending on the occupancy at a given time.
- **Vivian I-90 Eastbound (6) & Westbound (7)** - These rest areas are accessed directly from I-90 and both have the same design consisting of the traditional one-way separated entry and exit ramp design. Each provides a parking lot comprised of passenger vehicle and truck parking. The truck parking at the eastbound rest area provides 16 angled head-in parking spaces, while the westbound rest area provides 13 angled head-in parking spaces.
- **Chamberlain I-90 Eastbound/Westbound (8)** - The rest area is accessed directly from I-90 and serves both eastbound and westbound traffic via an interchange. Entry ramps merge prior to entering the rest area, and exit ramps split after vehicles leave the rest area. The rest area also hosts a state highway patrol outpost. Although the rest area consists of a single parking lot in a clamshell shape, a split upon entry to the parking area separates trucks and campers from passenger vehicles. There are four parking space types: passenger vehicle, highway patrol (signed), camper, and truck. The truck parking area provides 16 angled head-in parking spaces.

- **White Lake I-90 Eastbound (9) & Westbound (10)** - These rest areas are accessed directly from I-90 and both have the same design consisting of the traditional one-way separated entry and exit ramp design. They provide a parking area made up of passenger vehicle and truck parking spaces. The truck parking at both rest areas provides nine angled head-in parking spaces.
- **Salem I-90 Eastbound (11) & Westbound (12)** - These rest areas are accessed directly from I-90 and both have the same design consisting of the traditional one-way separated entry and exit ramp design. Each provides a parking lot made up of passenger vehicle and truck parking spaces. The truck parking at both rest areas provides 16 angled head-in parking spaces.
- **Ward I-29 Northbound/Southbound (13)** - Access to the rest area is provided by County Highway B / 223rd Street east of I-29, serving both directions of I-29 traffic at Exit 121. The access is two-way and forms an intersection at County Highway B / 223rd Street, splitting into a one-way loop around the rest area. Entering traffic is split halfway in, sending passenger vehicles into the interior of the circular rest area and trucks to the outer perimeter. There are no striped truck parking spaces, but the outer access road widens and provides shoulder parking for an estimated 12 trucks along about half the length of the access road. All traffic merges just prior to exiting the rest area.
- **Whetstone Valley I-29 Northbound/Southbound (14)** - Access to the rest area is provided by South Dakota State Highway 15 (SD-15) east of I-29, serving both directions of I-29 traffic at Exit 213. The access is two-way and forms an intersection at SD-15, splitting into a one-way loop around the rest area. Parking is split into two lots shortly after entering, one for passenger vehicles and one for trucks. The truck parking area provides nine angled head-in parking spaces. All traffic merges just prior to exiting the rest area.
- **Glacial Lakes I-29 Southbound (15)** - The rest area is accessed directly from I-29 and consists of the traditional one-way separated entry and exit ramp design. It includes a single parking lot made up of passenger vehicle and truck parking spaces. The truck parking area provides ten angled head-in parking spaces. There is no accompanying northbound I-29 rest area.

Rest Area Observations

Rest area observations were conducted over a 24-hour period spanning late Wednesday, February 3rd to late Thursday, February 4th, 2016. Multiple video cameras were positioned in each rest area to ensure the entrance, the exit, and all truck parking spots could be viewed during the 24-hour block of time. The video files were viewed to extract entering/exiting traffic counts along with truck parking counts and duration, which were compiled every five minutes. In addition, locations of illegal parking, such as trucks parked in passenger vehicle spaces, were quantified at each location.

Traffic Counts

Recorded traffic counts were divided into two categories: light and heavy vehicles. Light vehicles were classified as vehicles in Federal Highway Administration's (FHWA) 13-Category Vehicle Classification categories 1-3, while heavy vehicles were classified as vehicles falling within categories 4-13. The 24-hour totals and percent heavy vehicles by entering and exiting traffic is summarized in **Table 1**.

Table 1. 24-Hour Entering and Exiting Traffic Counts and Classifications

Facility	Entering		Exiting	
	Count	% Heavy Vehicle	Count	% Heavy Vehicle
Spearfish I-90E*	210	67%	212	67%
Wasta I-90E	99	34%	101	35%
Wasta I-90W	204	34%	210	36%
Belvidere I-90E	178	39%	176	37%
Belvidere I-90W	197	40%	190	39%
Vivian I-90E	157	40%	154	38%
Vivian I-90W	200	45%	199	45%
Chamberlain I-90E/W**	175	41%	178	42%
White Lake I-90E	187	44%	187	45%
White Lake I-90W	164	29%	162	28%
Salem I-90E	256	34%	255	32%
Salem I-90W	248	37%	241	37%
Ward I-29 N/S	276	29%	273	27%
Whetstone Valley I-29N/S	111	23%	108	25%
Glacial Lakes I-29S	97	47%	97	47%

*South Dakota Highway Patrol and other vehicles appeared to be conducting mobile port of entry operations at this rest area from 9am-3pm, resulting in a higher percent of heavy vehicles.

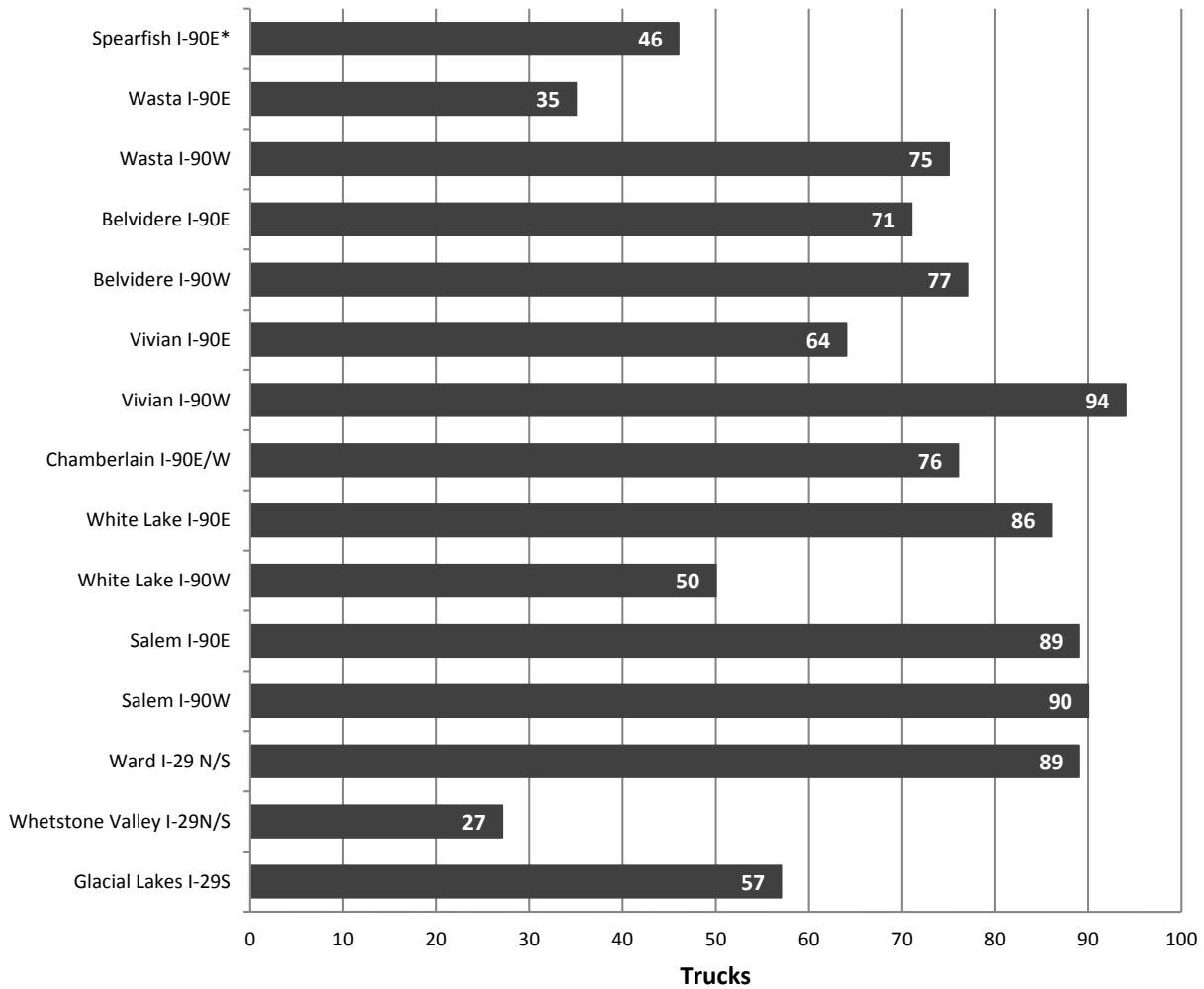
**Contains a South Dakota Highway Patrol outpost.

The data show that the Ward rest area serving both directions of I-29 had the most traffic, with majority passenger vehicles. Both directions of Salem rest areas along I-90 just west of Sioux Falls also had significant entering and exiting traffic. The Spearfish rest area had the highest percentage of trucks; however, this was due to a mobile port of entry operation being conducted during the middle of the day. The next highest percentage was at Glacial Lakes I-29 Southbound; however, this location had the lowest amount of overall traffic. In general, rest area traffic consisted of about 30-50 percent trucks.

Parking Analysis

After compiling the truck parking data at each rest area, several factors were analyzed to quantify how the facilities operated during the study period. The total number of trucks that parked at each facility during the 24-hour period is summarized in **Graph 1**, outlining the overall usage of each rest area. Of note, these estimates are not adjusted for seasonal use.

Graph 1. 24-Hour Truck Parking Totals



*South Dakota Highway Patrol and other vehicles appeared to be conducting mobile port of entry operations at this rest area from 9am-3pm, resulting in a higher percent of heavy vehicles.

The average truck parking occupancy at each facility was analyzed to determine the adequacy of the existing parking facilities. The results were segregated by average daytime (7:00am to 6:00pm) and nighttime (7:00pm to 6:00am) parking occupancy to determine if truck parking needs differ throughout a typical day at these facilities. The results of the analyses are summarized in **Table 2**.

Table 2. Average Truck Parking Occupancy Summary

Facility	Truck Spaces Provided	Daytime Hours	Nighttime Hours
Spearfish I-90E	25	5%	10%
Wasta I-90E	7	25%	40%
Wasta I-90W	7	25%	147%
Belvidere I-90E	10*	17%	54%
Belvidere I-90W	10*	11%	74%
Vivian I-90E	16	21%	41%
Vivian I-90W	13	32%	74%
Chamberlain I-90E/W	16	21%	76%
White Lake I-90E	9	28%	78%
White Lake I-90W	9	28%	64%
Salem I-90E	16	22%	66%
Salem I-90W	16	25%	43%
Ward I-29 N/S	12**	28%	86%
Whetstone Valley I-29N/S	9	6%	21%
Glacial Lakes I-29S	10	27%	33%

*Some striped spaces, total estimated by SDDOT using a standard truck parking space length.

**No striped spaces, total estimated by SDDOT using a standard truck parking space length.

On average, truck parking capacity is sufficient for both daytime and nighttime periods. However, as **Figures 1** through **15** show, capacity is currently being exceeded at some rest areas and approached at many others (at certain nighttime hours). Daytime utilization is lower than nighttime utilization at every rest area, peaking at 32 percent at the Vivian I-90 Westbound rest area. Utilization was typically between 50 and 75 percent during the nighttime hours, with the Wasta I-90 Westbound rest area significantly over capacity. **Figures 1** through **15** provide aerials of each rest area, the number of truck parking spaces available, and recorded hourly truck occupancy.

Rest areas that currently experience at least one hour at or over capacity include:

- Wasta I-90 Westbound
- Belvidere I-90 Westbound
- Vivian I-90 Westbound
- Chamberlain I-90 Eastbound/Westbound
- White Lake I-90 Eastbound
- Ward I-29 Northbound/Southbound

Congested hours typically are in the middle of the night as truckers are resting.



TRUCK OCCUPANCY			
12am	12%	12pm	12%
1am	12%	1pm	4%
2am	14%	2pm	3%
3am	13%	3pm	1%
4am	12%	4pm	4%
5am	9%	5pm	3%
6am	7%	6pm	1%
7am	4%	7pm	0%
8am	1%	8pm	9%
9am	1%	9pm	10%
10am	11%	10pm	12%
11am	13%	11pm	12%

LEGEND	
0 - 59% Occupied	
60 - 89% Occupied	
90 - 100% Occupied	
>100% Occupied	

AVERAGE OCCUPANCY	
	Trucks
Daytime	5%
Nighttime	10%

Figure 1
Spearfish I-90 Eastbound



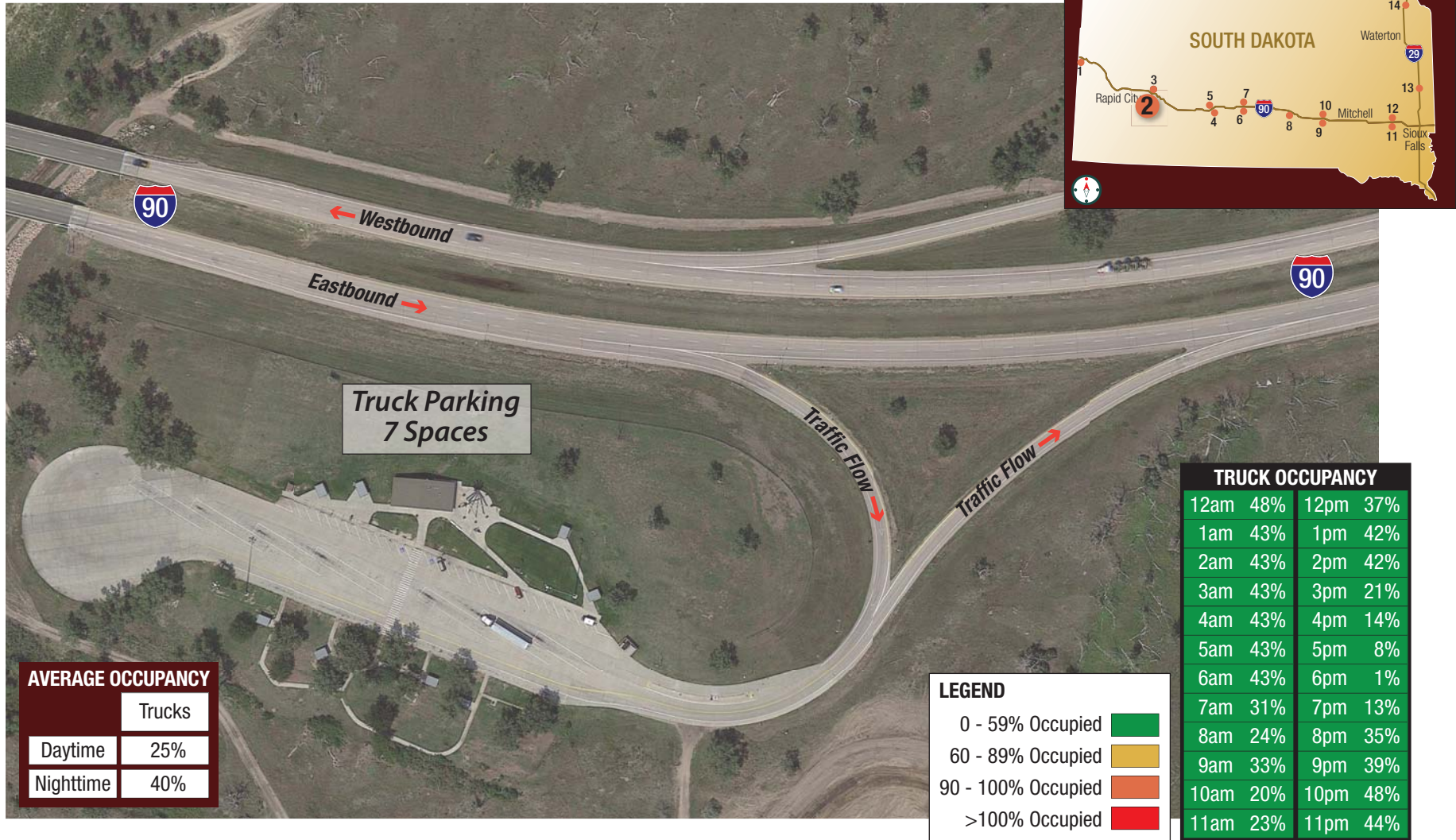


Figure 2
Wasta I-90 Eastbound



REST AREA KEY MAP



AVERAGE OCCUPANCY

	Trucks
Daytime	25%
Nighttime	147%

LEGEND

- 0 - 59% Occupied ■
- 60 - 89% Occupied ■
- 90 - 100% Occupied ■
- >100% Occupied ■

TRUCK OCCUPANCY			
12am	165%	12pm	10%
1am	173%	1pm	7%
2am	171%	2pm	18%
3am	168%	3pm	30%
4am	164%	4pm	15%
5am	179%	5pm	35%
6am	130%	6pm	10%
7am	77%	7pm	24%
8am	44%	8pm	123%
9am	21%	9pm	142%
10am	18%	10pm	162%
11am	19%	11pm	160%

Figure 3
Wasta I-90 Westbound



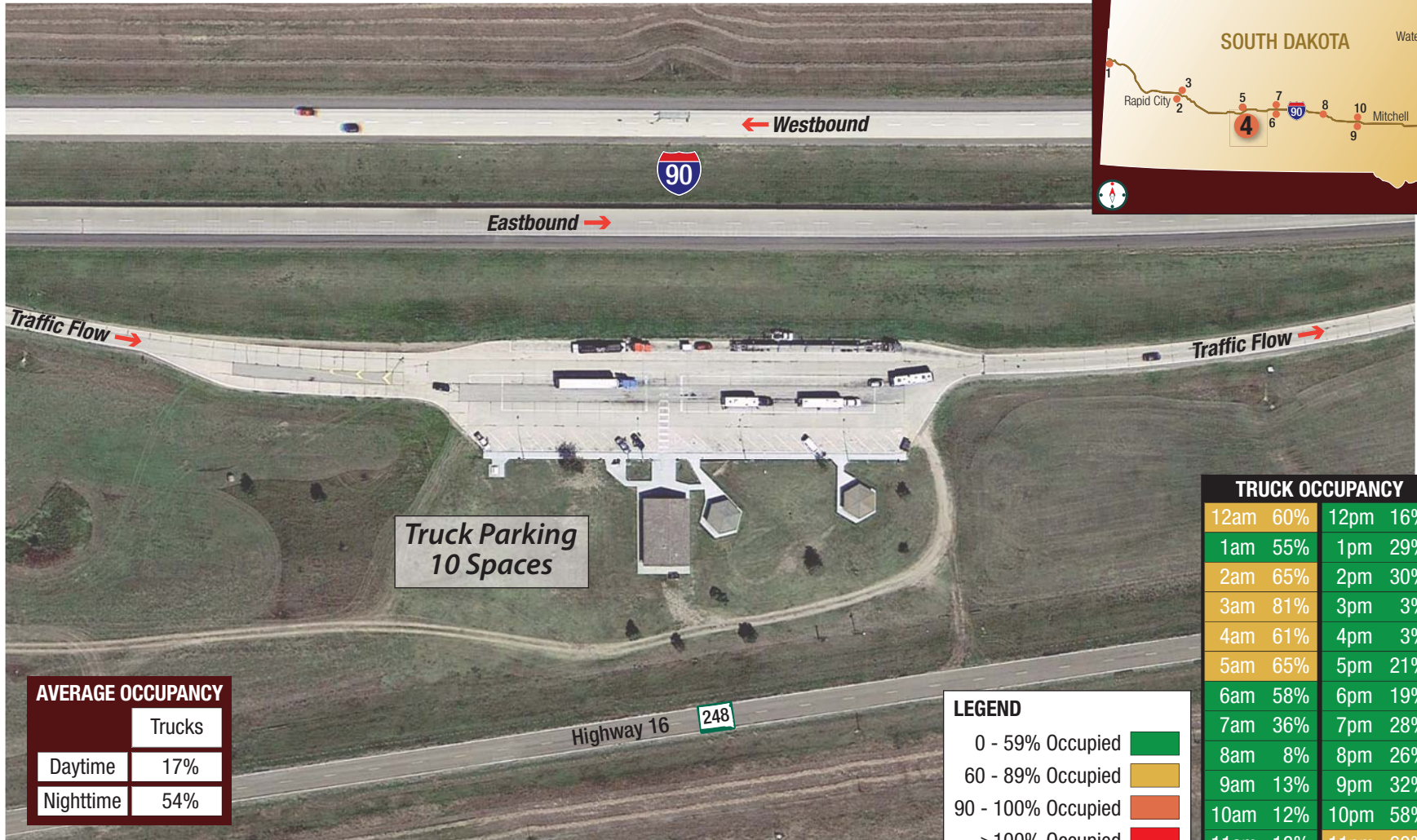
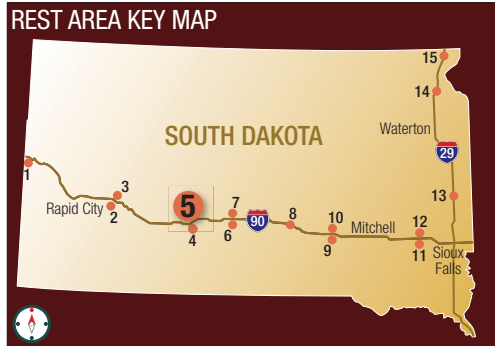


Figure 4
Belvidere I-90 Eastbound



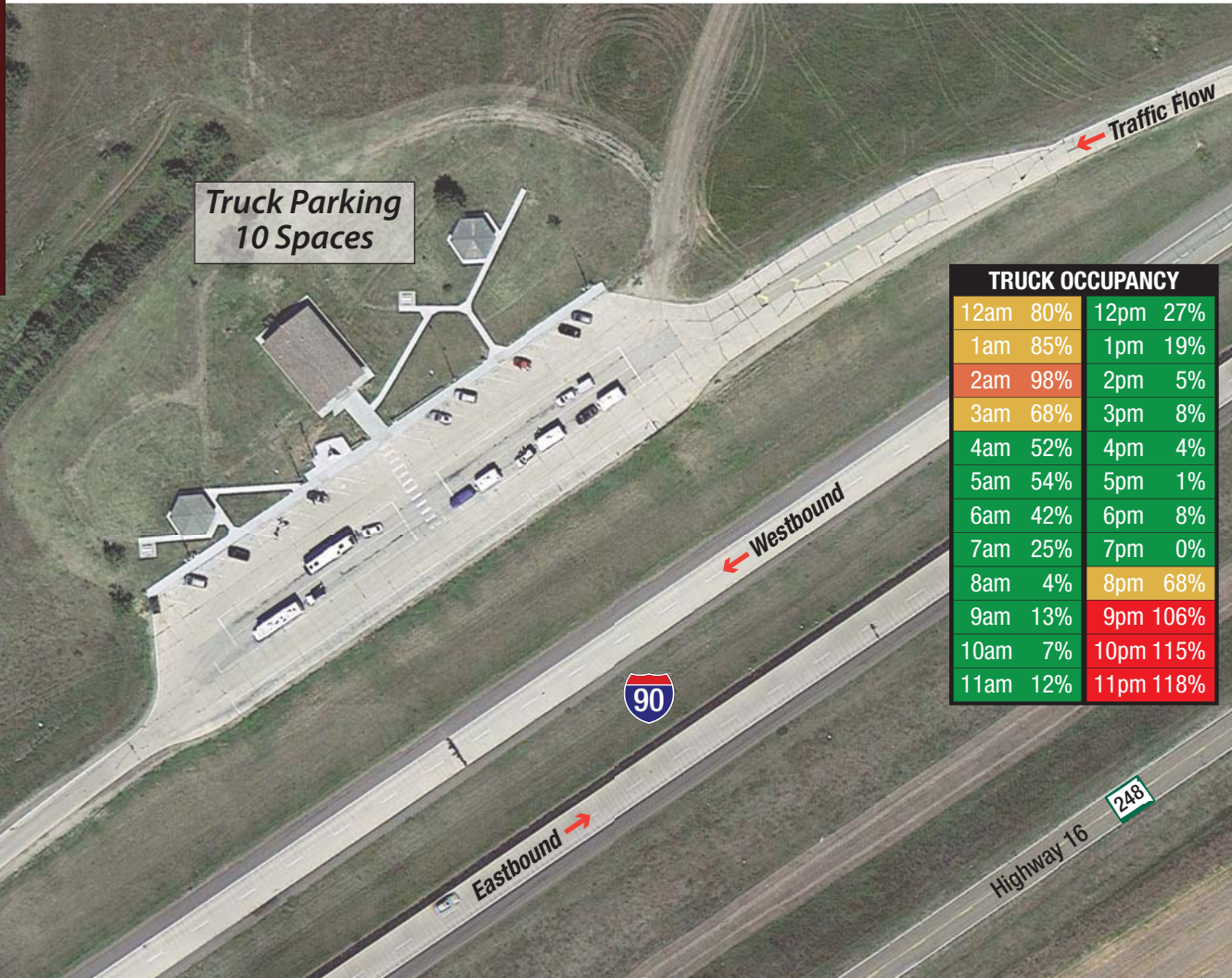


LEGEND

0 - 59% Occupied	
60 - 89% Occupied	
90 - 100% Occupied	
>100% Occupied	

AVERAGE OCCUPANCY

	Trucks
Daytime	11%
Nighttime	74%



TRUCK OCCUPANCY

12am	80%	12pm	27%
1am	85%	1pm	19%
2am	98%	2pm	5%
3am	68%	3pm	8%
4am	52%	4pm	4%
5am	54%	5pm	1%
6am	42%	6pm	8%
7am	25%	7pm	0%
8am	4%	8pm	68%
9am	13%	9pm	106%
10am	7%	10pm	115%
11am	12%	11pm	118%

Figure 5
Belvidere I-90 Westbound



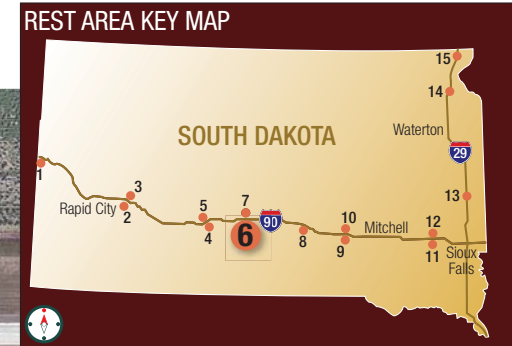
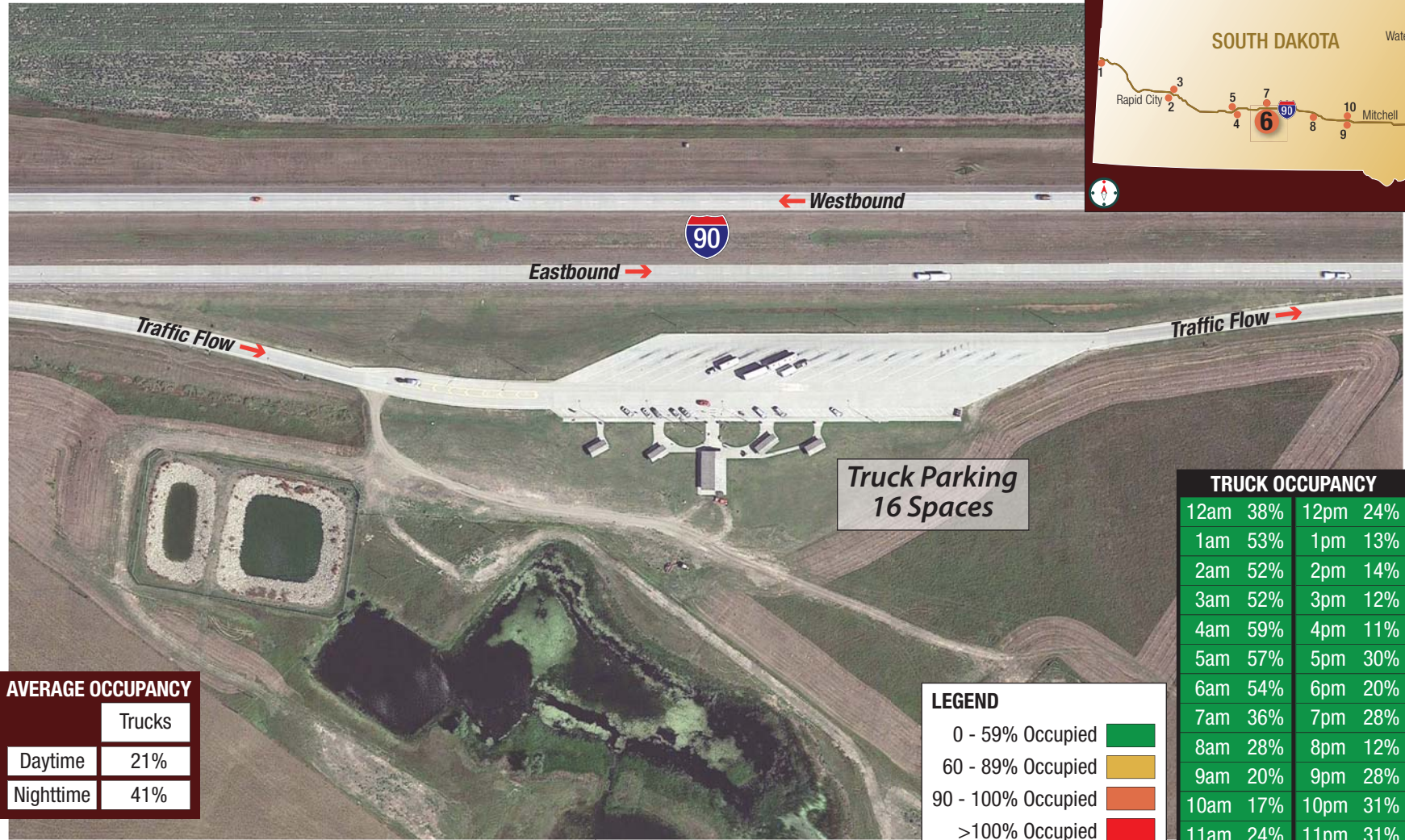


Figure 6

Vivian I-90 Eastbound



TRUCK OCCUPANCY			
12am	91%	12pm	19%
1am	100%	1pm	15%
2am	99%	2pm	29%
3am	94%	3pm	22%
4am	106%	4pm	19%
5am	85%	5pm	21%
6am	72%	6pm	39%
7am	70%	7pm	47%
8am	54%	8pm	18%
9am	47%	9pm	37%
10am	22%	10pm	50%
11am	22%	11pm	87%

LEGEND	
0 - 59% Occupied	■
60 - 89% Occupied	■
90 - 100% Occupied	■
>100% Occupied	■

**Truck Parking
13 Spaces**



AVERAGE OCCUPANCY	
	Trucks
Daytime	32%
Nighttime	74%

Figure 7

Vivian I-90 Westbound



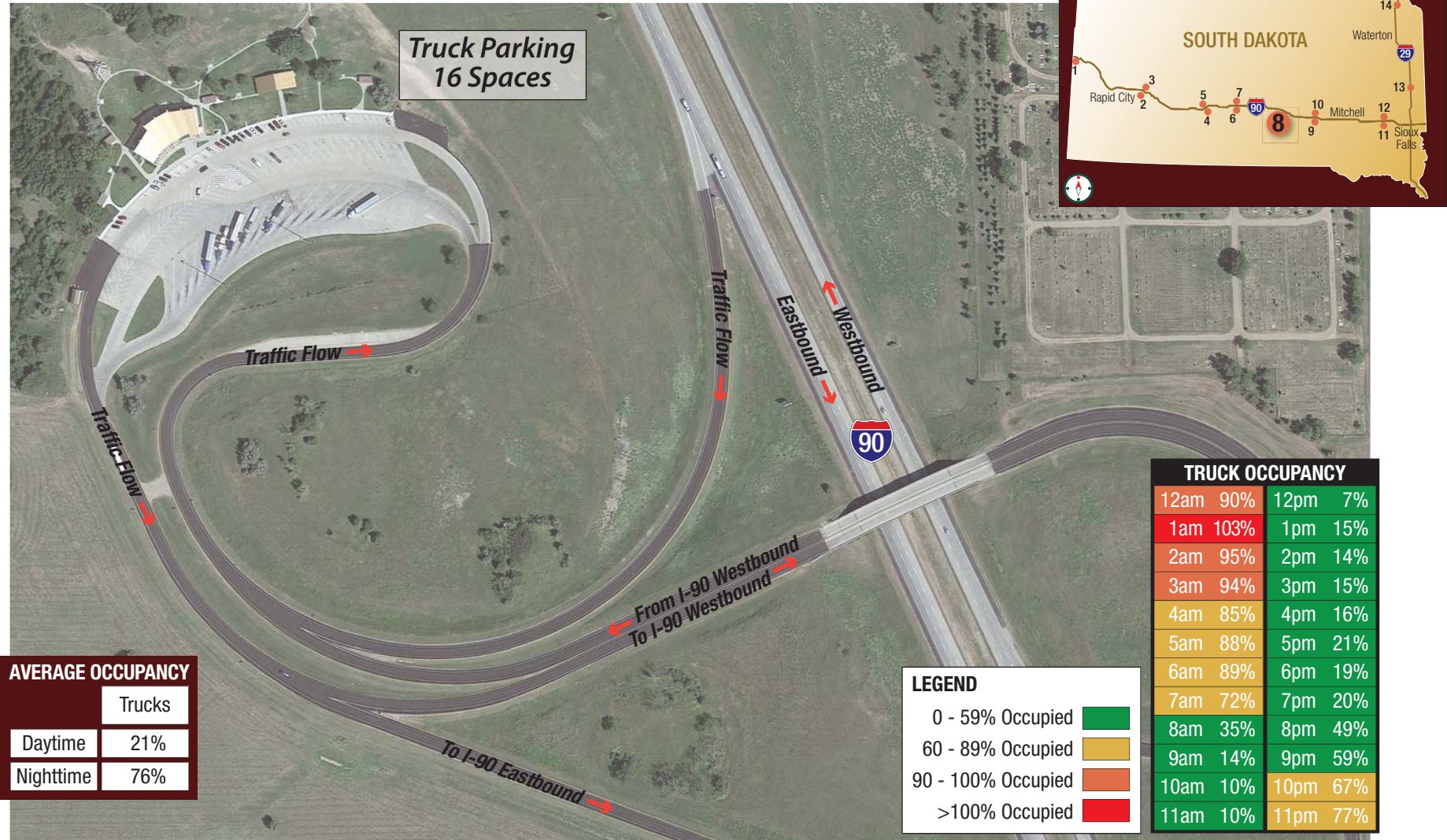


Figure 8
Chamberlain I-90 Eastbound/Westbound



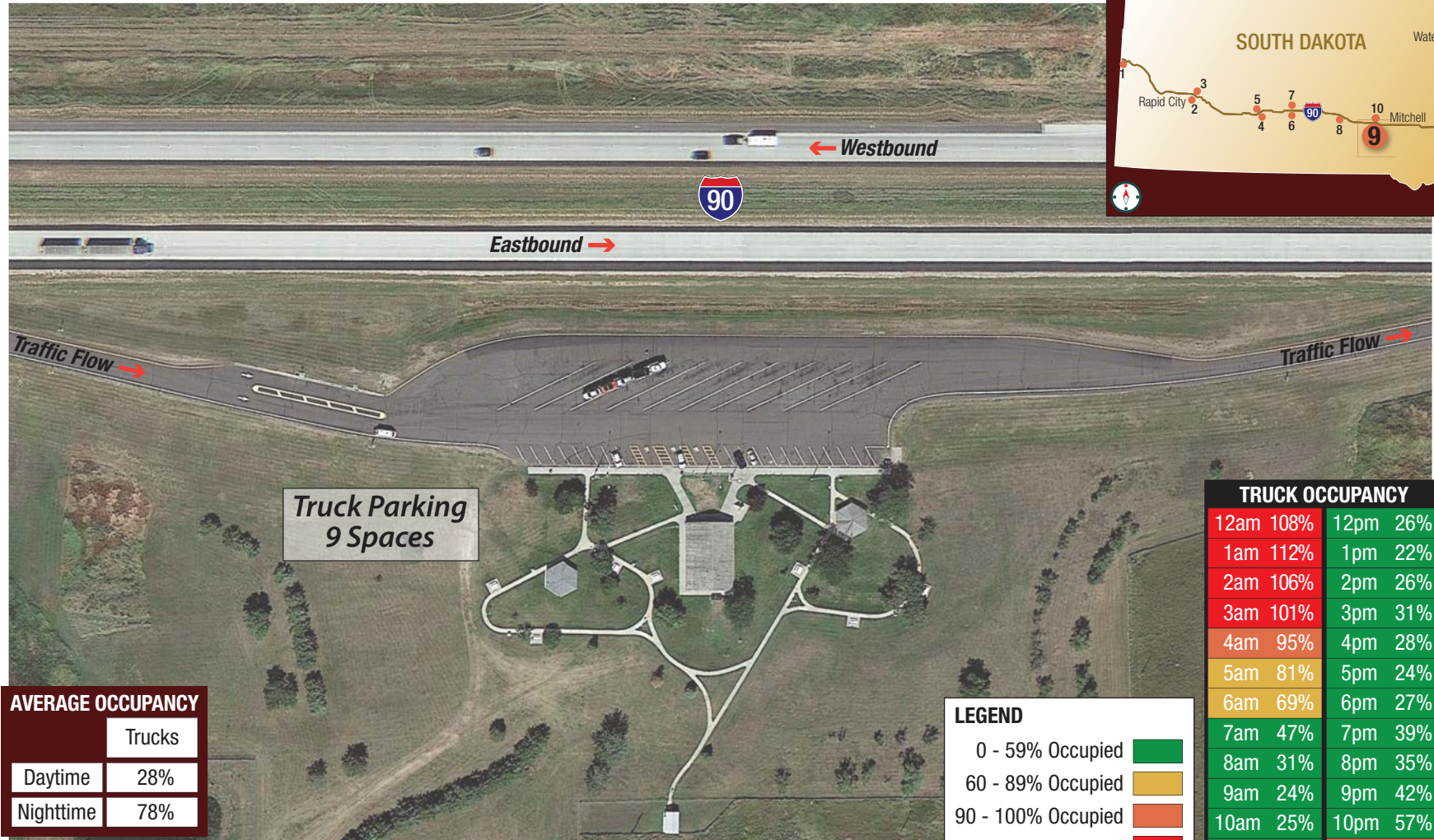
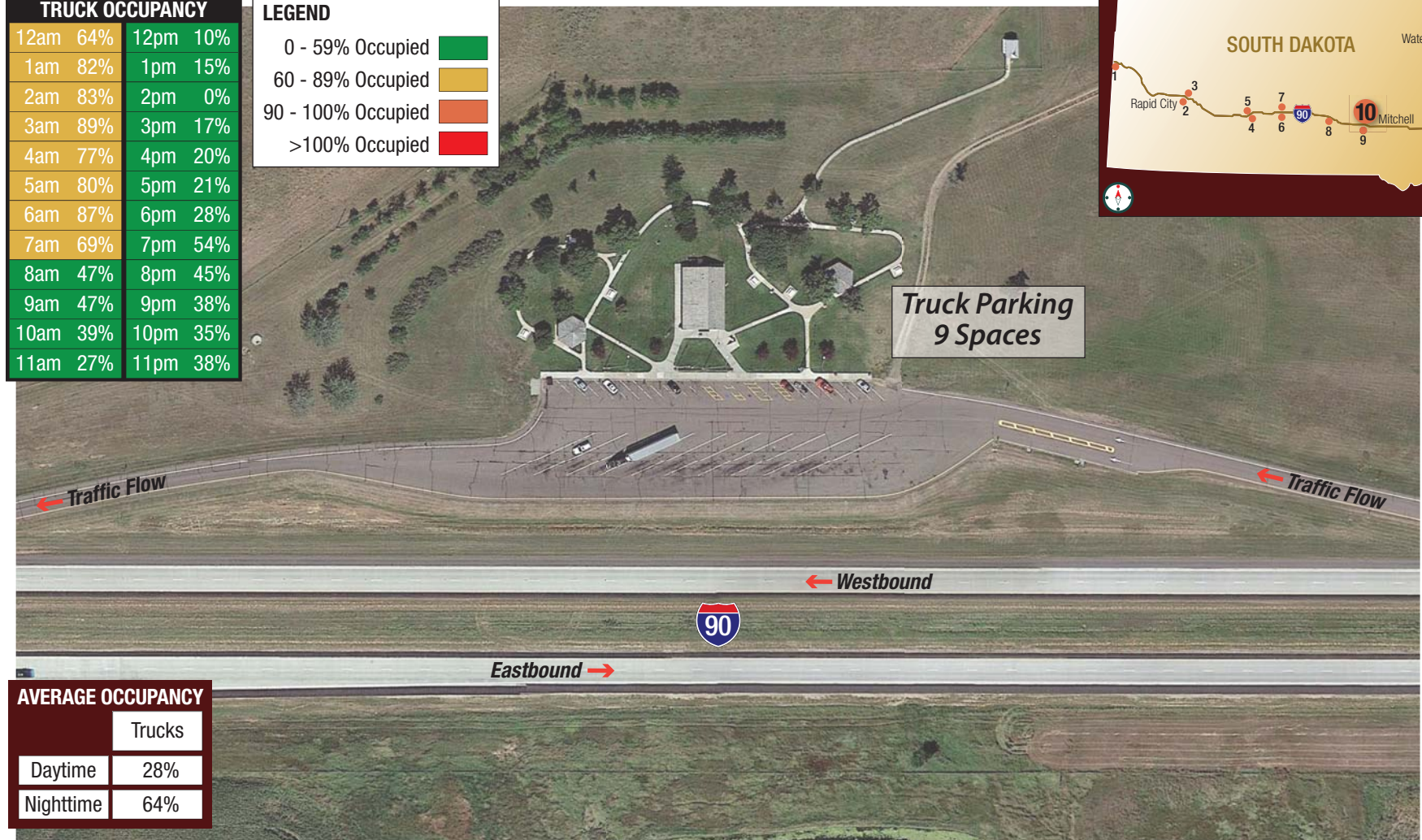
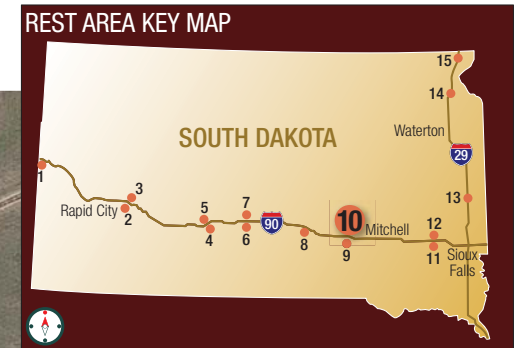


Figure 9
White Lake I-90 Eastbound



TRUCK OCCUPANCY			
12am	64%	12pm	10%
1am	82%	1pm	15%
2am	83%	2pm	0%
3am	89%	3pm	17%
4am	77%	4pm	20%
5am	80%	5pm	21%
6am	87%	6pm	28%
7am	69%	7pm	54%
8am	47%	8pm	45%
9am	47%	9pm	38%
10am	39%	10pm	35%
11am	27%	11pm	38%

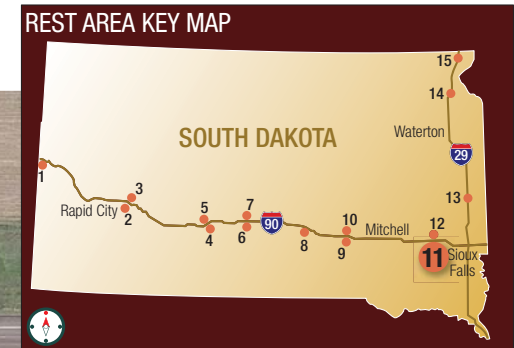
LEGEND	
0 - 59% Occupied	■
60 - 89% Occupied	■
90 - 100% Occupied	■
>100% Occupied	■



AVERAGE OCCUPANCY	
	Trucks
Daytime	28%
Nighttime	64%

Figure 10
White Lake I-90 Westbound





AVERAGE OCCUPANCY	
	Trucks
Daytime	22%
Nighttime	66%

LEGEND	
0 - 59% Occupied	
60 - 89% Occupied	
90 - 100% Occupied	
>100% Occupied	

TRUCK OCCUPANCY			
12am	85%	12pm	14%
1am	89%	1pm	5%
2am	83%	2pm	14%
3am	78%	3pm	14%
4am	78%	4pm	12%
5am	78%	5pm	6%
6am	88%	6pm	18%
7am	79%	7pm	31%
8am	47%	8pm	26%
9am	19%	9pm	31%
10am	18%	10pm	51%
11am	16%	11pm	73%

Figure 11
Salem I-90 Eastbound



REST AREA KEY MAP



**Truck Parking
16 Spaces**

LEGEND

0 - 59% Occupied	■
60 - 89% Occupied	■
90 - 100% Occupied	■
>100% Occupied	■

TRUCK OCCUPANCY

12am	43%	12pm	18%
1am	52%	1pm	16%
2am	59%	2pm	34%
3am	60%	3pm	22%
4am	58%	4pm	14%
5am	49%	5pm	5%
6am	41%	6pm	16%
7am	29%	7pm	28%
8am	24%	8pm	16%
9am	46%	9pm	26%
10am	39%	10pm	40%
11am	32%	11pm	39%



AVERAGE OCCUPANCY

	Trucks
Daytime	25%
Nighttime	43%

Figure 12
Salem I-90 Westbound



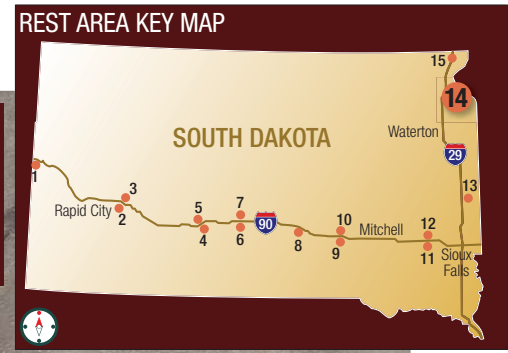


Figure 13
Ward I-29 Northbound/Southbound





AVERAGE OCCUPANCY	
	Trucks
Daytime	6%
Nighttime	21%



LEGEND

- 0 - 59% Occupied
- 60 - 89% Occupied
- 90 - 100% Occupied
- >100% Occupied

TRUCK OCCUPANCY			
12am	33%	12pm	13%
1am	32%	1pm	8%
2am	31%	2pm	0%
3am	34%	3pm	0%
4am	22%	4pm	0%
5am	19%	5pm	4%
6am	7%	6pm	1%
7am	0%	7pm	1%
8am	13%	8pm	5%
9am	16%	9pm	11%
10am	6%	10pm	23%
11am	6%	11pm	33%

Figure 14
Whetstone Valley I-29 Northbound/Southbound



TRUCK OCCUPANCY			
12am	40%	12pm	14%
1am	43%	1pm	25%
2am	45%	2pm	37%
3am	42%	3pm	18%
4am	43%	4pm	30%
5am	50%	5pm	36%
6am	45%	6pm	13%
7am	48%	7pm	5%
8am	39%	8pm	2%
9am	23%	9pm	10%
10am	19%	10pm	28%
11am	17%	11pm	45%

LEGEND	
0 - 59% Occupied	
60 - 89% Occupied	
90 - 100% Occupied	
>100% Occupied	

AVERAGE OCCUPANCY	
	Trucks
Daytime	27%
Nighttime	33%

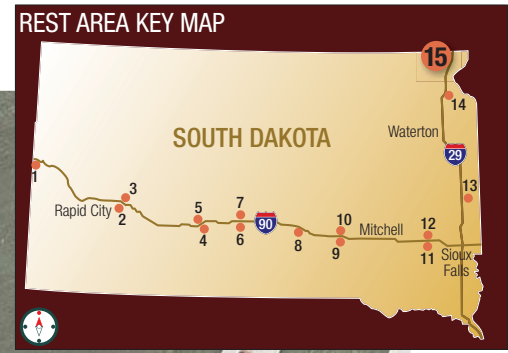
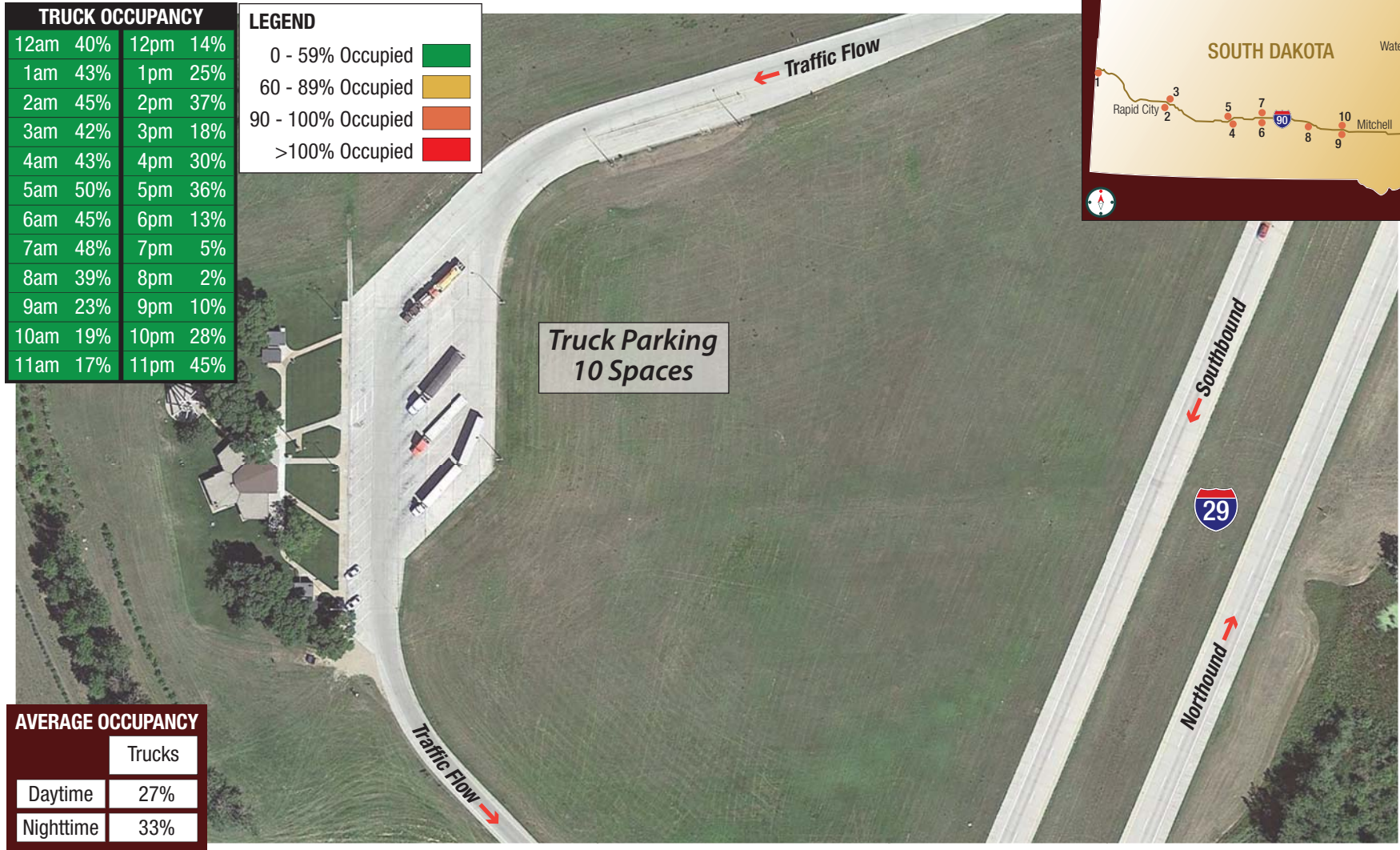


Figure 15
Glacial Lakes I-29 Southbound



The time duration over which trucks are parked at each facility is a key metric to further evaluate the adequacy of truck parking. Trucks tend to park for longer periods of time for extended rest compared to passenger vehicles. The average time duration of parked trucks over the 24-hour collection period was calculated and is summarized in **Table 3**. As expected, parking durations during the nighttime hours are longer than during the daytime hours.

Table 3. Average Truck Parking Duration Summary

Facility	Daytime Hours	Nighttime Hours
Spearfish I-90E*	25 minutes	181 minutes (3 hours, 1 minute)
Wasta I-90E	69 minutes (1 hour, 9 minutes)	294 minutes (4 hours, 54 minutes)
Wasta I-90W	50 minutes	288 minutes (4 hours, 48 minutes)
Belvidere I-90E	27 minutes	177 minutes (2 hours, 57 minutes)
Belvidere I-90W	13 minutes	243 minutes (4 hours, 3 minutes)
Vivian I-90E	55 minutes	268 minutes (4 hours, 28 minutes)
Vivian I-90W	63 minutes (1 hour, 3 minutes)	204 minutes (3 hours, 24 minutes)
Chamberlain I-90E/W	55 minutes	274 minutes (4 hours, 34 minutes)
White Lake I-90E	77 minutes (1 hour, 17 minutes)	193 minutes (3 hours, 13 minutes)
White Lake I-90W	62 minutes (1 hour, 2 minutes)	167 minutes (2 hours, 47 minutes)
Salem I-90E	44 minutes	271 minutes (4 hours, 31 minutes)
Salem I-90W	73 minutes (1 hour, 13 minutes)	152 minutes (2 hours, 32 minutes)
Ward I-29 N/S	56 minutes	217 minutes (3 hours, 37 minutes)
Whetstone Valley I-29N/S	18 minutes	152 minutes (2 hours, 32 minutes)
Glacial Lakes I-29S	41 minutes	143 minutes (2 hours, 23 minutes)

*South Dakota Highway Patrol and other vehicles appeared to be conducting mobile port of entry operations at this rest area from 9am-3pm, possibly resulting in a lower daytime parking duration.

FUTURE CONDITIONS

Future Use Projection Methodology

Forecasting how many trucks will be parked in the facilities in the future is a key consideration in determining the adequacy of the on-site infrastructure. To determine future use projections, two separate steps were taken. First, the truck parking counts were adjusted to reflect seasonal differences in truck traffic experienced in South Dakota. The seasonally adjusted conditions were then projected to 2040. The following outlines the methodology used to develop these projections (a Methods & Assumptions document is also attached).

South Dakota is a popular tourist destination, particularly during the summer months, with destinations such as Mount Rushmore, the Badlands, and other attractions. Parking conditions at rest areas throughout South Dakota area can fluctuate based on the time of year (higher in the summer, lower in the winter) due to tourism and the weather. These fluctuations can impact truck traffic as well, as an increase in tourism means a higher demand for goods and summer months produce agricultural goods needing transport. The day of the week can also cause variances in truck traffic. It might seem that truck traffic would always be highest during the weekday; however, a certain route could see higher traffic on weekends (including Fridays).

As described in the attached Methods & Assumptions document, historical truck traffic counts at automated traffic records (ATR's) along both Interstates and input from SDDOT staff were used to adjust the February 2016 truck parking counts to represent the month of June. July and August are typically the peak months; however, it was decided July and August should be avoided due to the influence of the Sturgis Motorcycle Rally. Both I-90 and I-29 factors used the weekday adjustment to fall in line with when the counts were taken. The final seasonal adjustment factors used are 1.34 for I-90 rest areas and 1.11 for all rest areas along I-29.

After the base truck parking counts were adjusted to the June condition, the adjusted counts were projected forward to the future year, assumed to be year 2040. The most current FHWA's Freight Analysis Framework (FAF³) was used to develop long term truck parking estimates at each rest area. The FAF compiles data from various sources to develop a comprehensive national picture of freight movement among states and major metropolitan areas. As part of the freight movement estimates, long term truck volume projections are developed for each section of interstate and key state highways throughout the nation.

These truck traffic projections were utilized to develop the long term truck parking estimates at each rest area. Truck traffic projections (year 2040) adjacent to each rest area were compared to existing FAF estimates to develop long term growth rates. **Table 4** summarizes the truck parking growth factors used for each rest area. It is worth noting that these factors are aggressive, ranging from nearly two to four times current activity levels. Rest areas along I-29 generally have the highest growth factors compared to those along I-90.

Table 4. Truck Parking Growth Factors

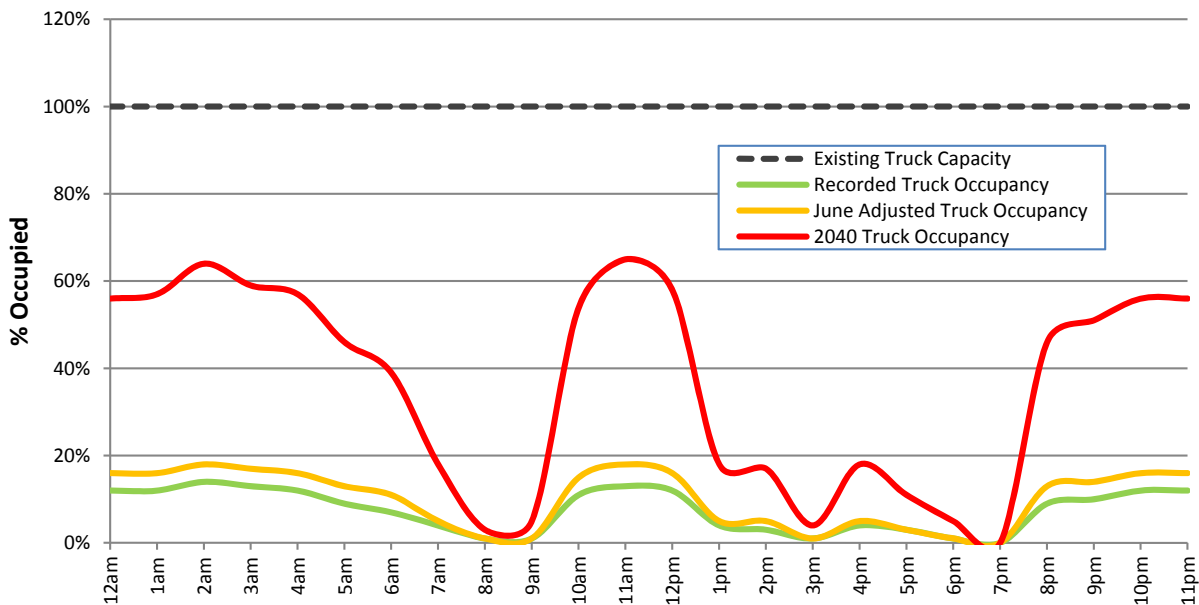
Rest Area Locations	Yearly Growth Rate	Growth Factor
Spearfish	5.41%	3.5
Wasta	2.49%	1.8
Belvidere	2.51%	1.8
Vivian	2.37%	1.8
Chamberlain	2.41%	1.8
White Lake	2.35%	1.7
Salem	2.41%	1.8
Ward	4.11%	2.6
Whetstone Valley	5.09%	3.3
Glacial Lakes	5.73%	3.8

Future Use Projections

Future truck parking projections provide a conservative estimate of demand, as they represent future year June conditions. These long term truck parking estimates provide the basis for determining the future use of each facility. It was assumed that hourly variation in truck parking use remained constant through year 2040.

The results of this analysis show that all rest areas, except for Spearfish I-90 Eastbound, will experience at least one hour during a typical weekday over capacity by the year 2040. Some rest areas not over capacity during the February 2016 observation are also over capacity when seasonally adjusted. Truck parking demand at each rest area is summarized against existing capacity in **Charts 1 through 15**.

Chart 1. Spearfish I-90 Eastbound Year 2040 Projected Parking Occupancy



*South Dakota Highway Patrol and other vehicles appeared to be conducting mobile port of entry operations at this rest area from 9am-3pm, resulting in a higher rate of parked heavy vehicles during those hours.

Chart 2. Wasta I-90 Eastbound Year 2040 Projected Parking Occupancy

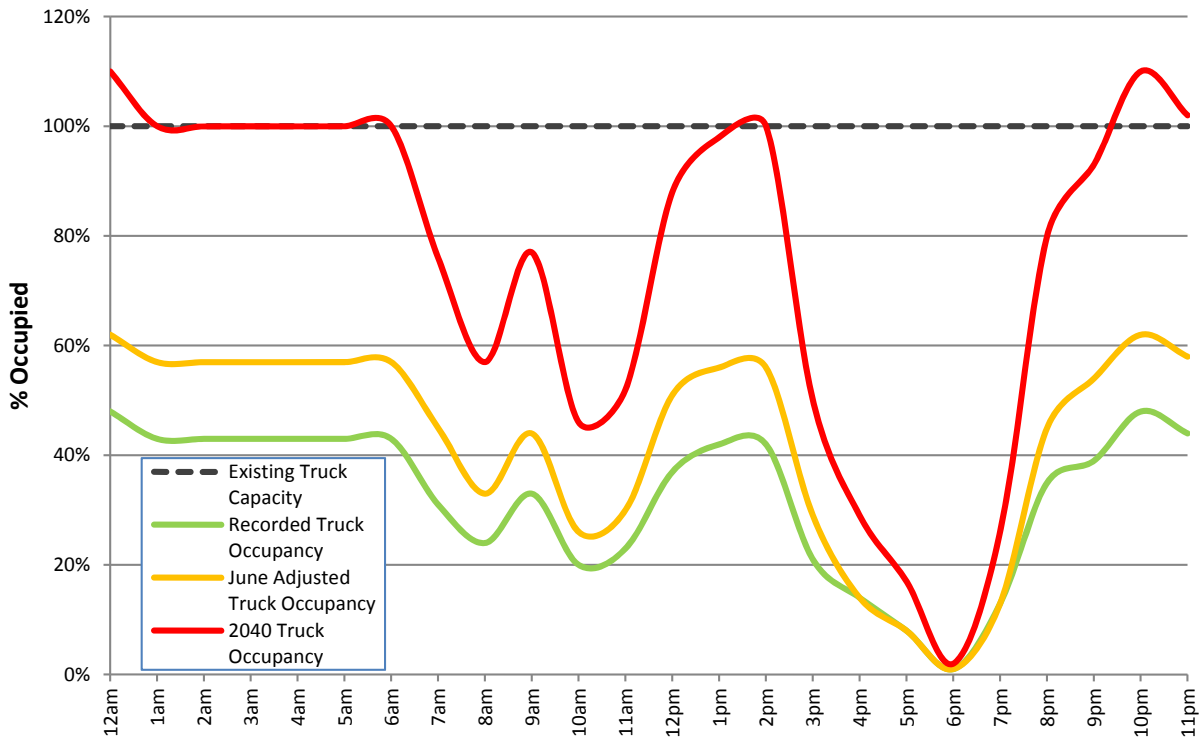


Chart 3. Wasta I-90 Westbound Year 2040 Projected Parking Occupancy

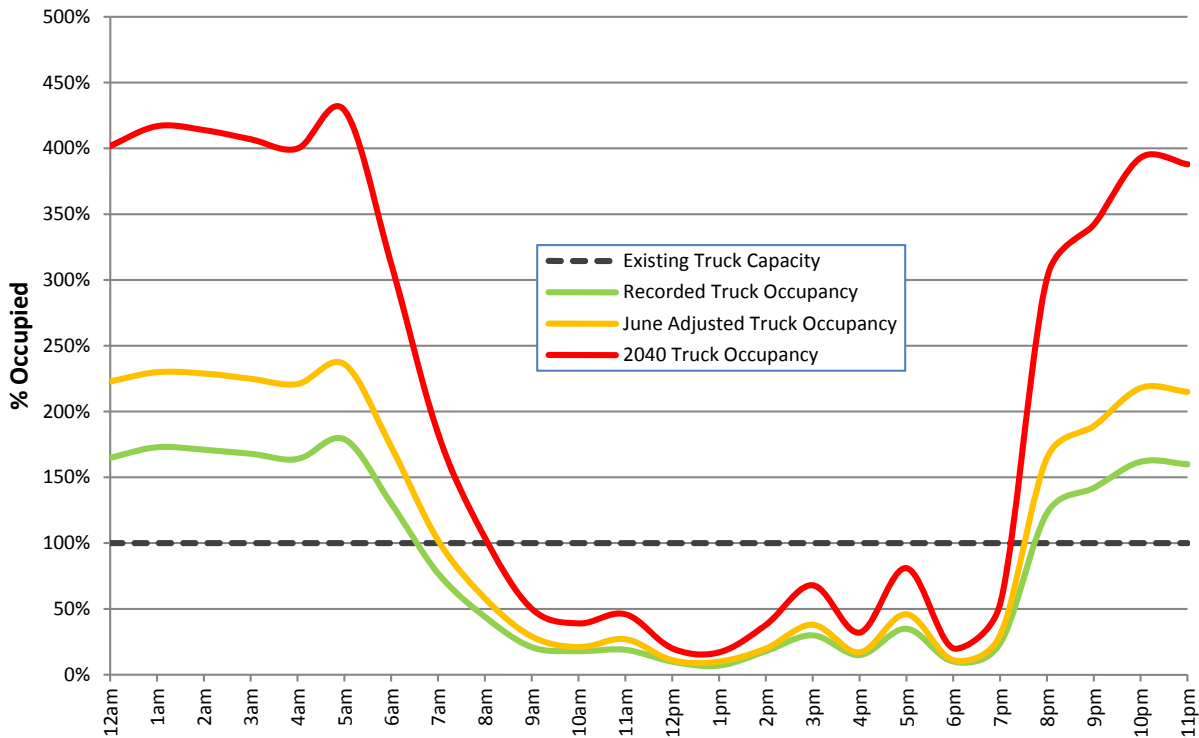


Chart 4. Belvidere I-90 Eastbound Year 2040 Projected Parking Occupancy

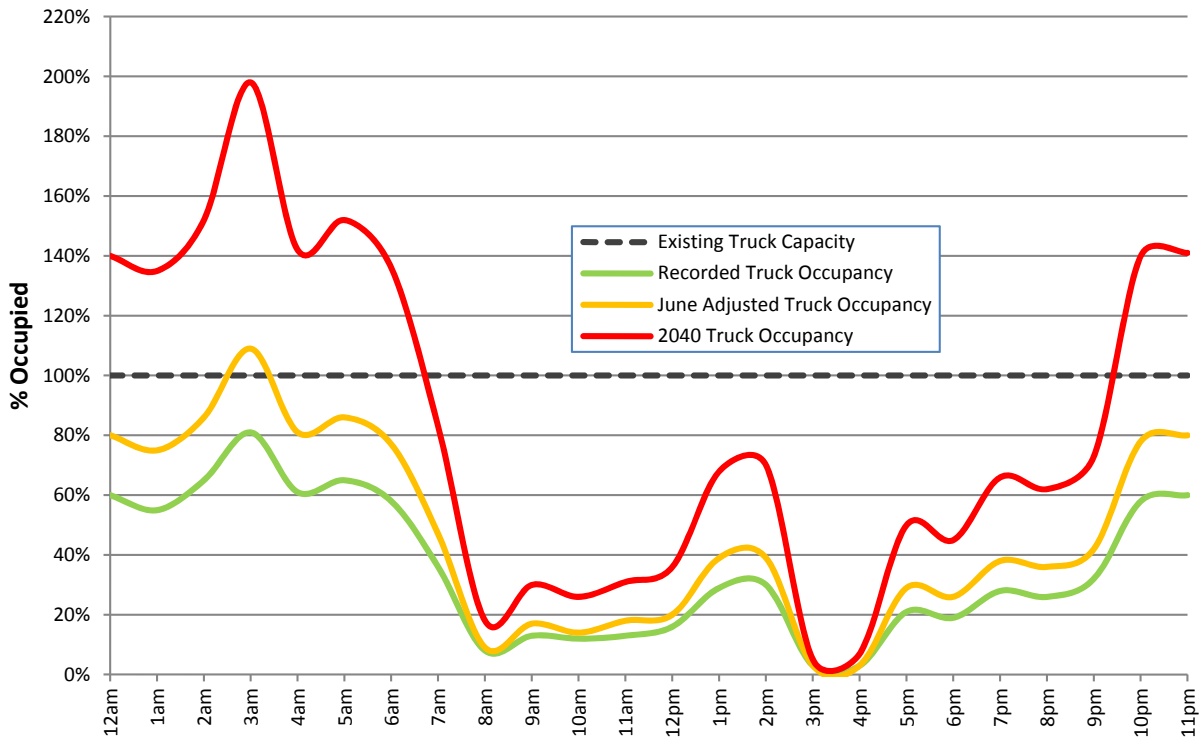


Chart 5. Belvidere I-90 Westbound Year 2040 Projected Parking Occupancy

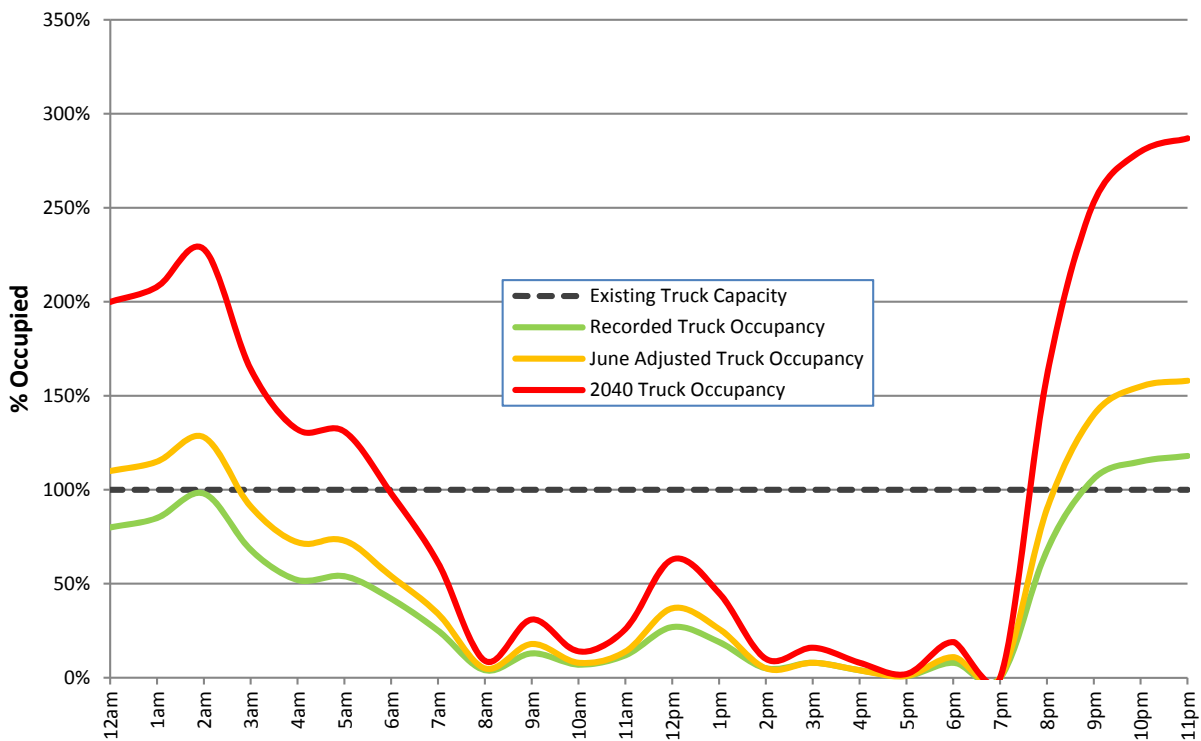


Chart 6. Vivian I-90 Eastbound Year 2040 Projected Parking Occupancy

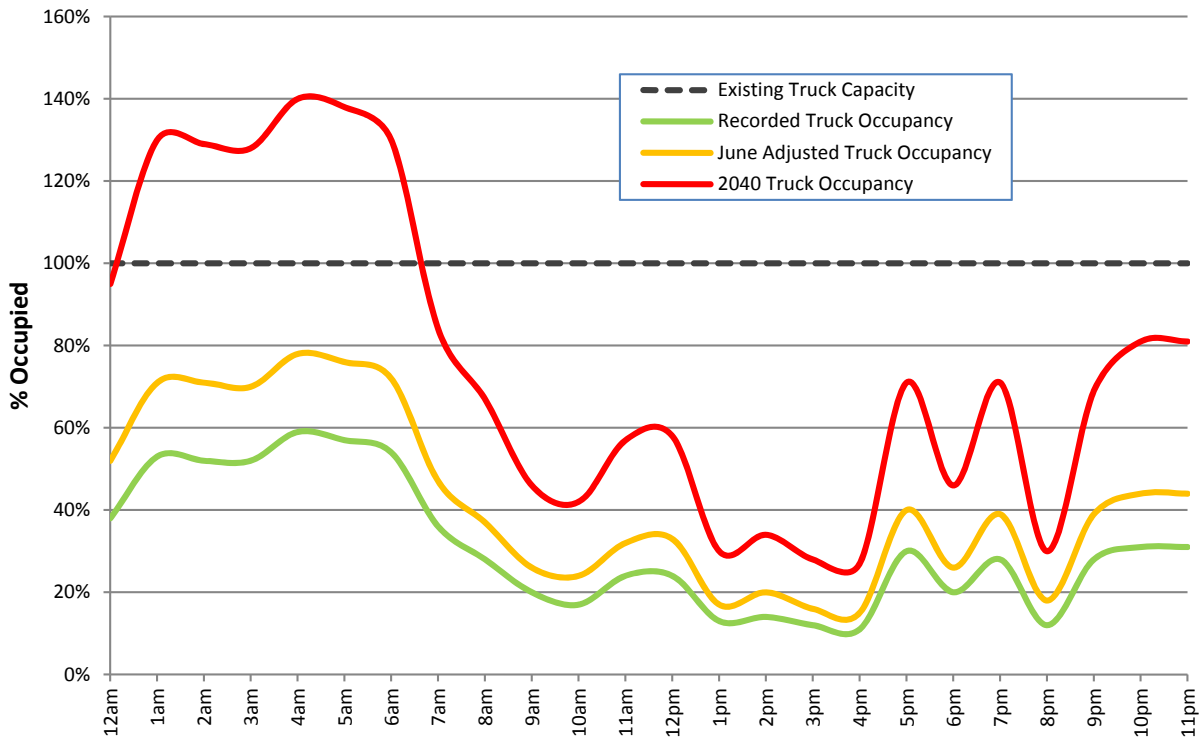


Chart 7. Vivian I-90 Westbound Year 2040 Projected Parking Occupancy

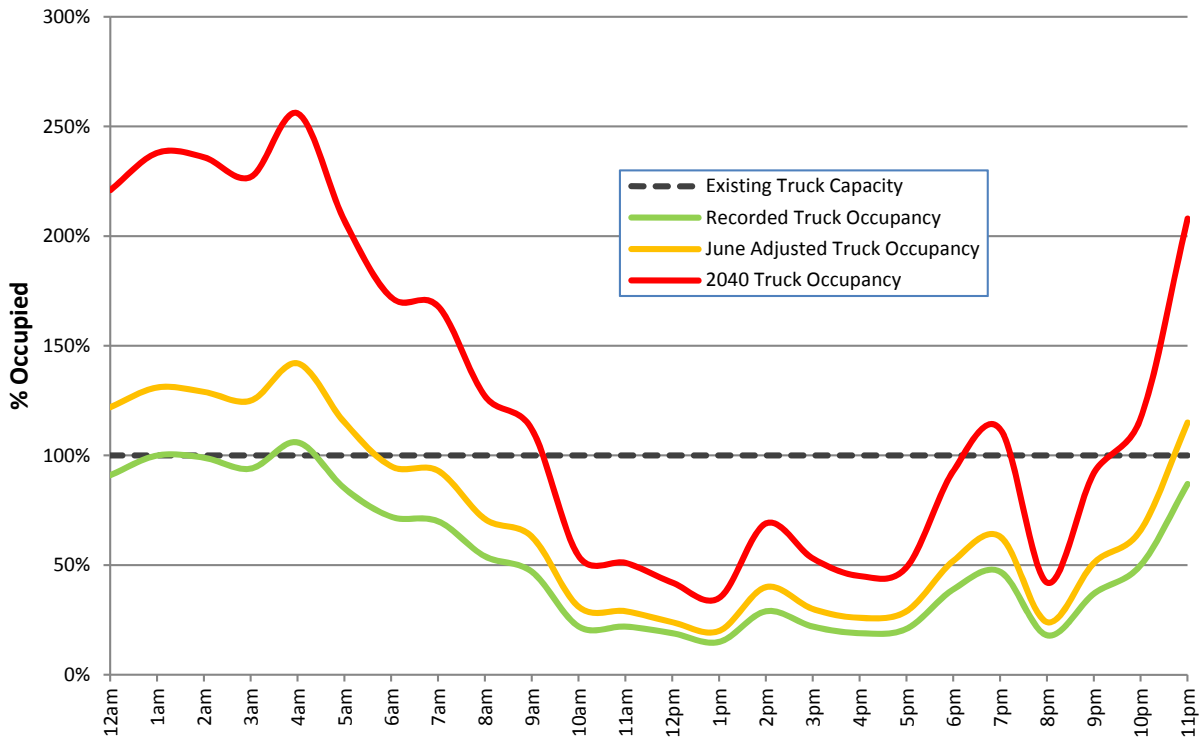


Chart 8. Chamberlain I-90 Eastbound & Westbound Year 2040 Projected Parking Occupancy

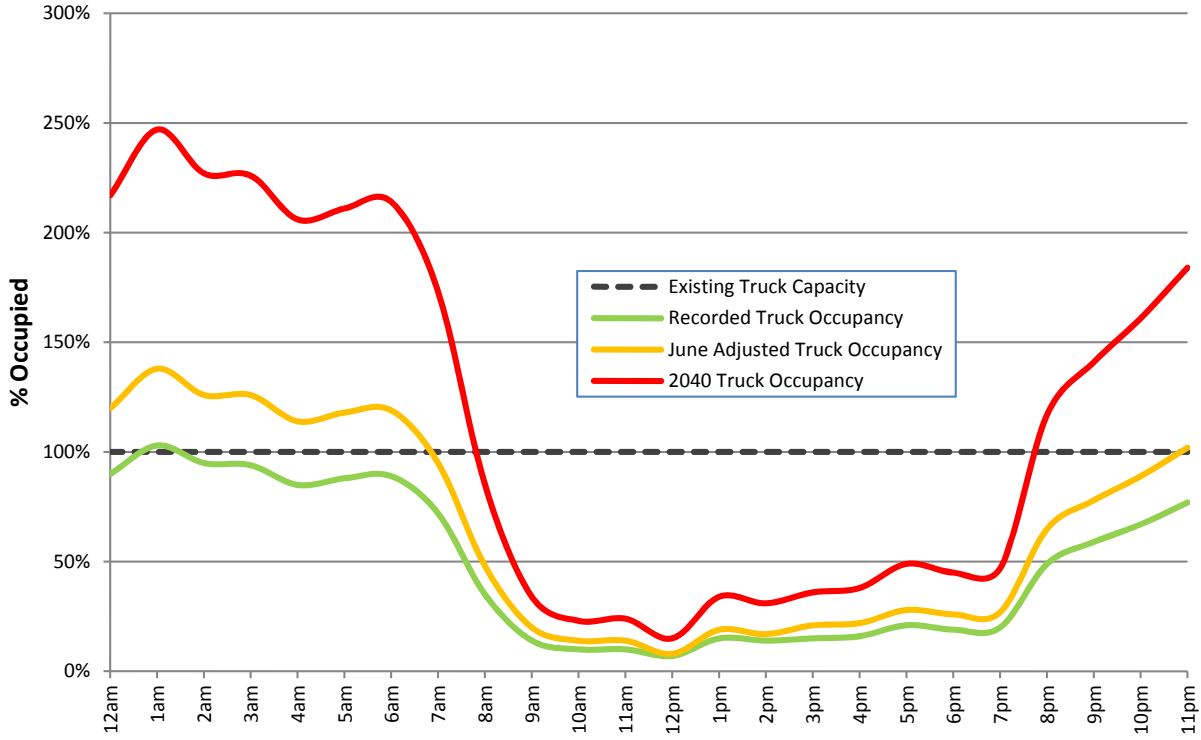


Chart 9. White Lake I-90 Eastbound Year 2040 Projected Parking Occupancy

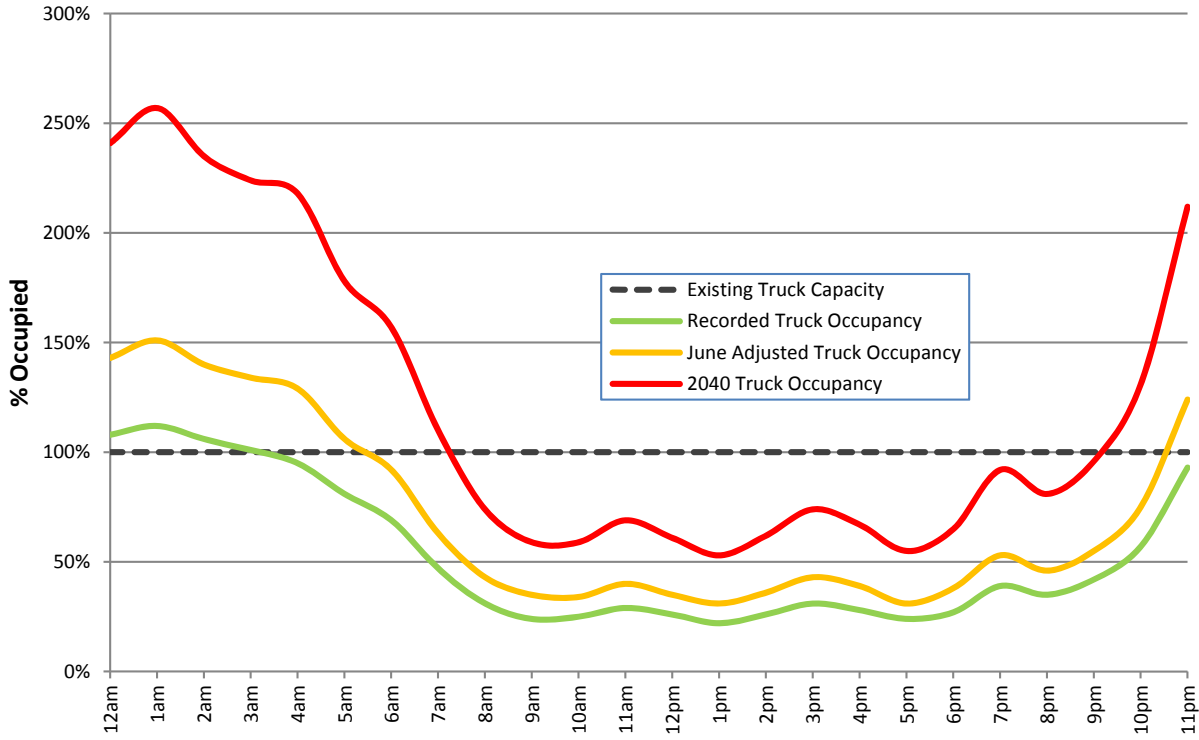


Chart 10. White Lake I-90 Westbound Year 2040 Projected Parking Occupancy

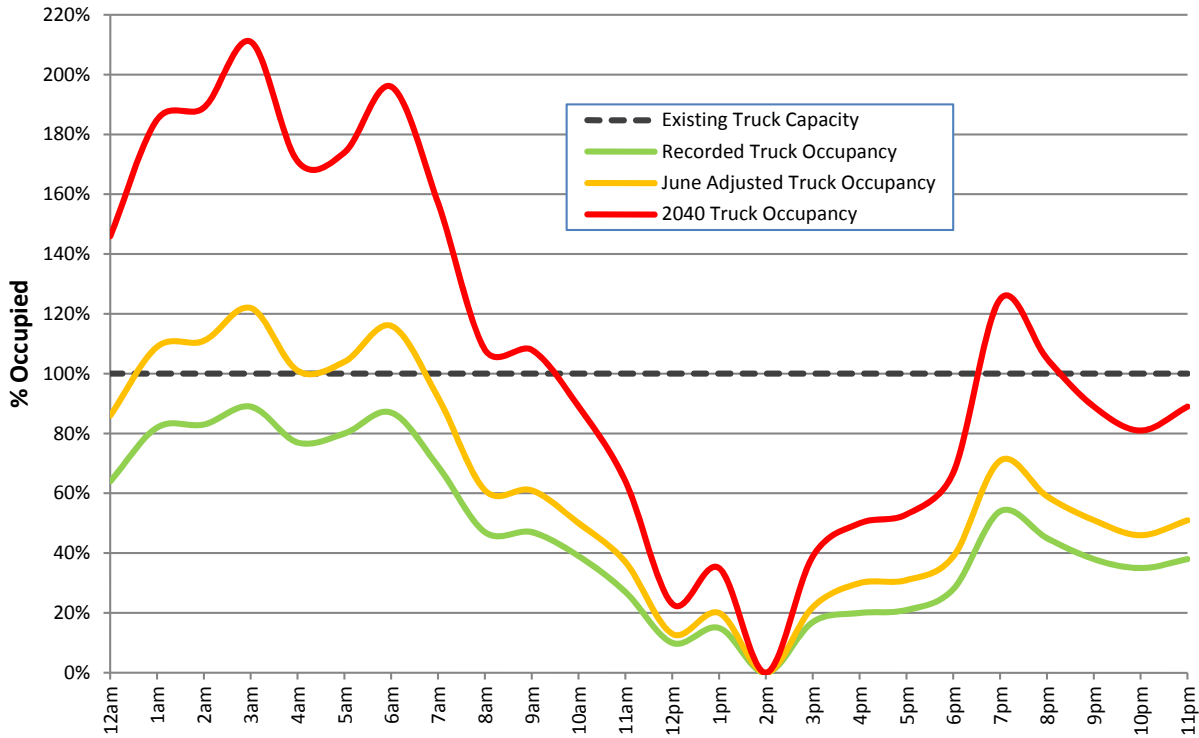


Chart 11. Salem I-90 Eastbound Year 2040 Projected Parking Occupancy

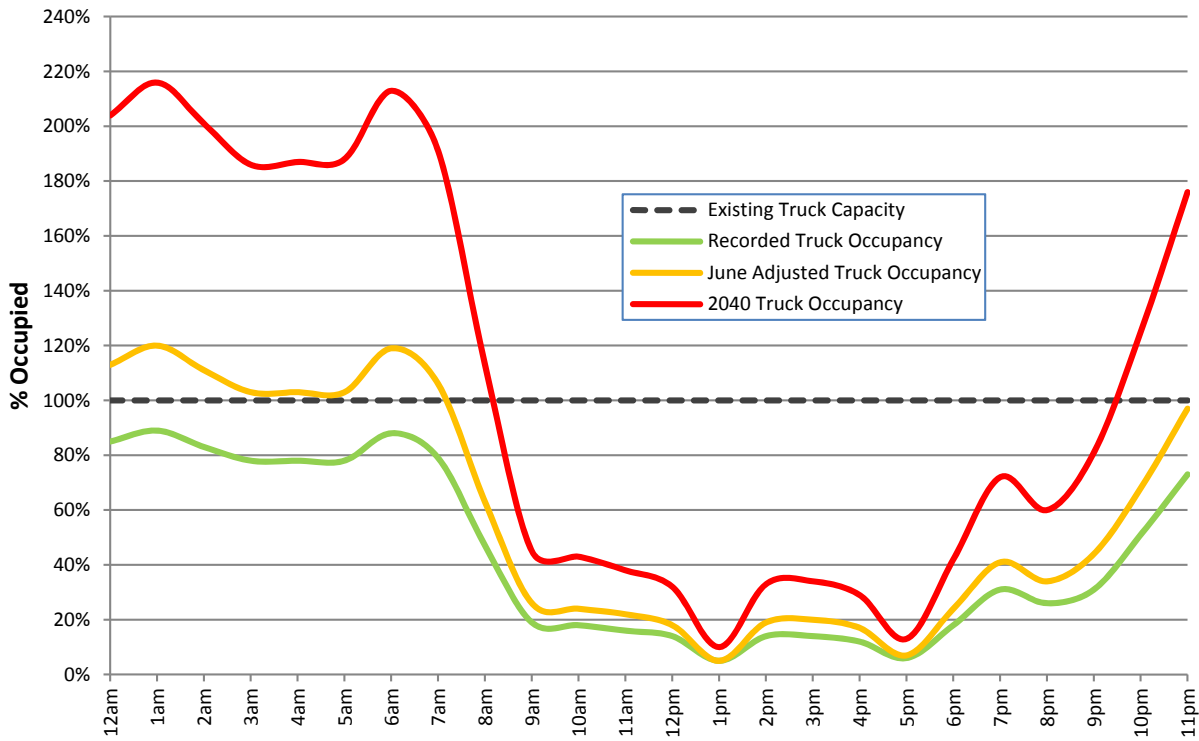


Chart 12. Salem I-90 Westbound Year 2040 Projected Parking Occupancy

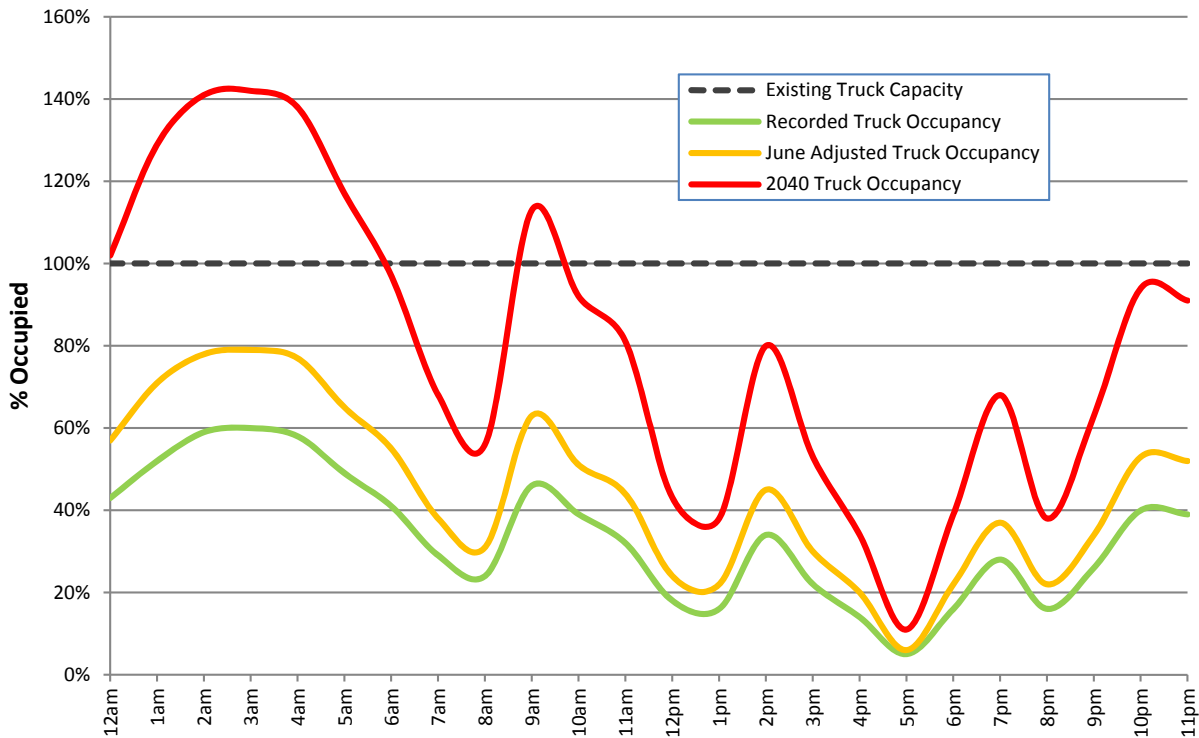


Chart 13. Ward I-29 Northbound & Southbound Year 2040 Projected Parking Occupancy

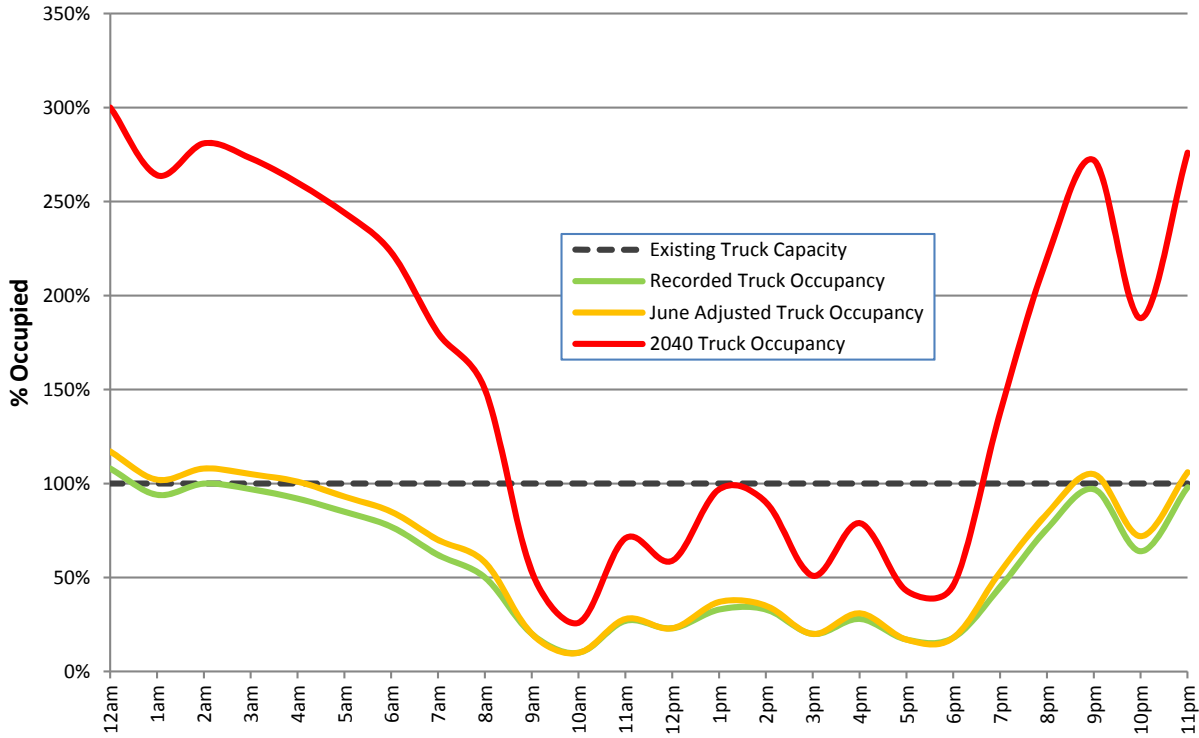


Chart 14. Whetstone Valley I-29 Northbound & Southbound Year 2040 Projected Parking Occupancy

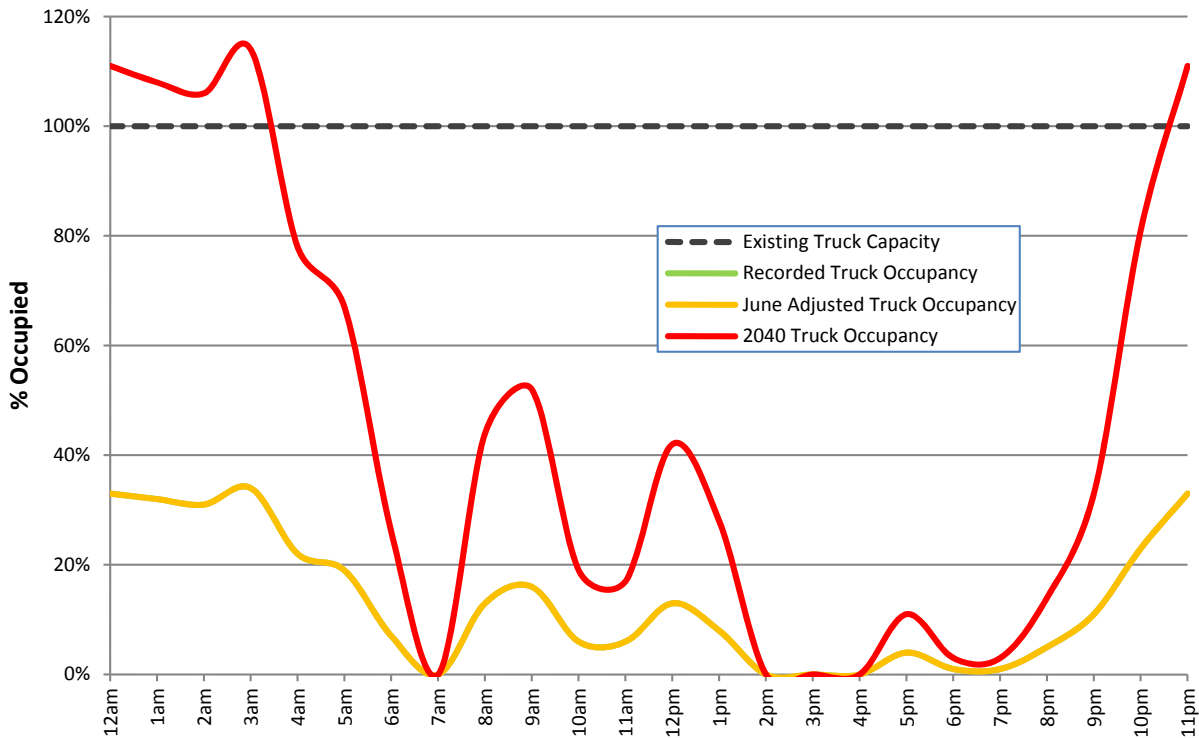
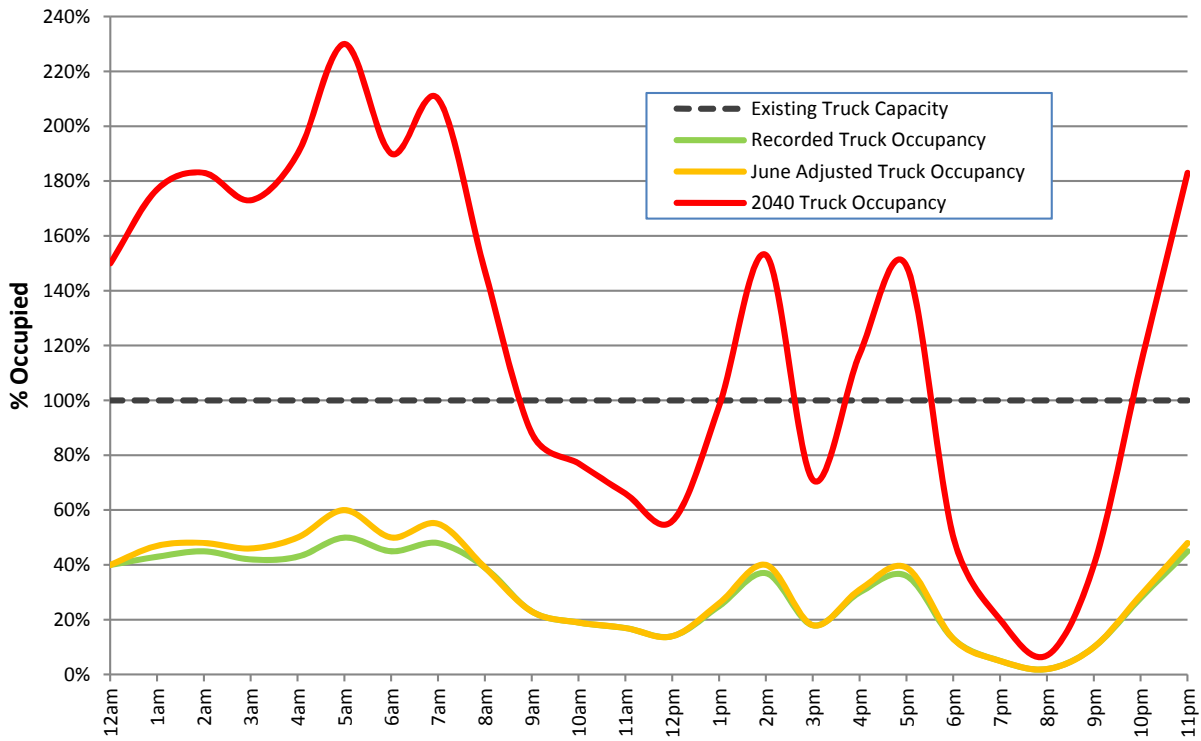


Chart 15. Glacial Lakes I-29 Southbound Year 2040 Projected Parking Occupancy



Future Needs

According to the methodology used for this study, truck parking capacity will need to be expanded at 14 of the 15 studied rest areas in the future. Based on FHWA models, truck traffic will significantly increase through year 2040 on the interstates in South Dakota, affecting parking. Hours of Service (HOS) regulations further drive the need for parking. The HOS regulations limit the total amount of time that a truck driver can operate the vehicle, and also specifies how much consecutive off-duty time is required prior to driving again. Once drivers reach their off-duty time, monitored electronically in most cabs, they are required to immediately find a place to stop regardless of the time of day or location. In addition, trucks park for a longer duration requiring additional parking to meet demand for a longer period of time.

Table 5 provides an overview of truck parking needs to accommodate growth to the Year 2040 at each rest area.

Table 5. Truck Parking Capacities and Future Needs

Facility	Current Spaces	Additional Needed	Total Needed in 2040
Spearfish I-90E	25	-	25
Wasta I-90E	7	6	13
Wasta I-90W	7	24	31
Belvidere I-90E	10*	12	22
Belvidere I-90W	10*	21	31
Vivian I-90E	16	7	23
Vivian I-90W	13	23	36
Chamberlain I-90E/W	16	27	43
White Lake I-90E	9	17	26
White Lake I-90W	9	13	22
Salem I-90E	16	20	36
Salem I-90W	16	7	23
Ward I-29 N/S	12**	24	36
Whetstone Valley I-29N/S	9	4	13
Glacial Lakes I-29S	10	17	27

*Some striped spaces, total estimated by SDDOT using a standard truck parking space length.

**No striped spaces, total estimated by SDDOT using a standard truck parking space length.

Some rest areas are projected to need substantially more truck parking than is currently available. Some projections could be on the high end given randomly occurring conditions present during the observation period; however, demand will still be greater than current capacity. Because funding and right-of-way might not be sufficient to accommodate anticipated truck parking needs at some or all rest area locations, it is suggested that the SDDOT work with local communities and private truck stop developers to offer more private stop options throughout the state, particularly along the I-90 corridor.

SDDOT REST AREA TRUCK PARKING STUDY

SOUTH DAKOTA

**METHOD AND ASSUMPTIONS
DOCUMENT**

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February 2016


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I STAKEHOLDER ACCEPTANCE

The undersigned parties concur with the Methods and Assumptions for the SDDOT Rest Area Study as presented in this document.

FHWA



Signature

SDDOT



Signature

Planning/Civil Rights specialist

Title

Transportation Specialist II

Title

3/16/16

Date

3-15-16

Date

Participation of the Study Team and/or signing of this document does not constitute approval of the SDDOT Rest Area Truck Parking Study's Final Report or conclusions.

All members of the Study Team will accept this document as a guide and reference as the study progresses through the various stages of development. If there are any agreed upon changes to the assumptions in this document a revision will be created, endorsed and signed by all the signatories.

II INTRODUCTION AND PROJECT DESCRIPTION

A. Background Information

South Dakota's Interstate rest areas face a number of current challenges and trends anticipated to continue into the future, and this study is to look at the parking needs at South Dakota's Rest Areas

B. Location

The fifteen specific rest areas that will be analyzed in this study are located along the Interstate 90 and Interstate 29 corridors and represent the rest areas not studied in 2014. These rest areas include:

- Spearfish (I-90 eastbound at MRM 1)
- Wasta Eastbound (I-90 EB at MRM 98)
- Wasta Westbound (I-90 WB at MRM 99)
- Belvidere Eastbound (I-90 EB at MRM 165)
- Belvidere Westbound (I-90 WB at MRM 166)
- Vivian Eastbound (I-90 EB at MRM 218)
- Vivian Westbound (I-90 WB at MRM 221)
- Chamberlain Eastbound/Westbound (I-90 EB/WB at MRM 264)
- White Lake Eastbound (I-90 EB at MRM 300)
- White Lake Westbound (I-90 WB at MRM 301)
- Salem Eastbound (I-90 EB at MRM 362)
- Salem Westbound (I-90 WB at MRM 362)
- Ward Northbound/Southbound (I-29 NB/SB at MRM121)
- Whetstone Valley Northbound/Southbound (I-29 NB/SB at MRM 213)
- Glacial Lakes Southbound (I-29 SB at MRM 250)

C. Purpose

The purpose of this study is to determine SDDOT Rest Area current and future truck parking needs.

D. Schedule

It is anticipated that the project can be completed in three months from notice to proceed. The following illustrates the schedule in detail:

- Notice to proceed - January 30, 2016
- Traffic data collection - Early February 2016
- Analysis and projections - Mid-February to March 2016
- Draft Document - Mid-March 2016
- Final Document - End of March 2016

E. Facility Impact

The fifteen rest areas will be studied in detail during a 24 hour period. During that time it is anticipated that day-to-day operations will not be impacted significantly, and each facility will remain open and functioning to the traveling public during the data collection process.

F. Team Members

The following table summarizes the key members of the project team:

Felsburg Holt and Ullevig	
Lyle DeVries – Principal in Charge	Shea Suski – Transportation Planner III
South Dakota Department of Transportation	
Brad Remmich – Project Manager	
FHWA	
Mark Hoines	
All Traffic Data	
Eric Boivin – Project Manager	

III STUDY AREA

The study area for each rest area is generally bound by property / right-of-way line and at the pavement cut separating the rest area from the adjacent transportation network. This includes, but is not limited to the parking areas.

The following list summarizes the list of rest areas that are included in the study area:

- Spearfish (I-90 eastbound at MRM 1)
- Wasta Eastbound (I-90 EB at MRM 98)
- Wasta Westbound (I-90 WB at MRM 99)
- Belvidere Eastbound (I-90 EB at MRM 165)
- Belvidere Westbound (I-90 WB at MRM 166)
- Vivian Eastbound (I-90 EB at MRM 218)
- Vivian Westbound (I-90 WB at MRM 221)
- Chamberlain Eastbound/Westbound (I-90 EB/WB at MRM 264)
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- White Lake Westbound (I-90 EB at MRM 301)
- Salem Eastbound (I-90 EB at MRM 362)
- Salem Westbound (I-90 WB at MRM 362)
- Ward Northbound/Southbound (I-29 NB/SB at MRM121)
- Whetstone Valley Northbound/Southbound (I-29 NB/SB at MRM 213)
- Glacial Lakes Southbound (I-29 SB at MRM 250)

IV ANALYSIS PERIODS

The data collection will be done on a typical weekday in early February 2016.

The study will review existing conditions (year 2016) and year 2040 (24 years) will be set to define the long term impacts and facility enhancements at each rest area.

V DATA COLLECTION

The data collection includes the traffic and parking count. On a weekday agreed to by the project team (anticipated to occur the 1st or 2nd week of February 2016), video collection data will be placed at each rest area by ATD staff and will be run for a 24-hour period. The video will capture both heavy vehicle parking counts, as well as ingress / egress volumes by classification.

SDDOT staff has calculated and provided seasonal adjustment factors for truck volumes based upon Automatic Traffic Recorder (ATR) stations along the Interstate system. Observed heavy vehicle counts conducted in February will be adjusted to the month of June using the following seasonal adjustment factors:

Rest Area Location	To get from:	To:	Multiply by:
I-29	February Weekday	June Weekday	1.11
I-90	February Weekday	June Weekday	1.34

VI TRAFFIC OPERATIONS ANALYSIS

The same truck parking operations analysis identified in the September 2014 SDDOT Study, "The Interstate Rest Areas Study: Along the I-29 and I-90 Corridors", will be used for this study.

VII TRAVEL FORECAST

Future heavy vehicle parking demand at the rest areas will be determined using the same methodology used in the 2014 SDDOT Study, which used truck growth rates on adjacent interstate segments from the Federal Highway Administration (FHWA) Freight Analysis Framework (FAF). The current SDDOT growth factors for each rest area are as follows:

Spearfish – 1.85 Growth Factor	Wasta – 1.475 Growth Factor
Belvidere – 1.200 Growth Factor	Vivian – 1.275 Growth Factor
Chamberlain – 1.200 Growth Factor	White Lake – 1.275 Growth Factor
Salem – 1.475 Growth Factor	Ward – 1.050 Growth Factor
Whetstone Valley – 1.375 Growth Factor	Glacial Lakes – 1.375 Growth Factor

VIII SAFETY ISSUES

Safety will not be analyzed with this study.

IX MEASURES OF EFFECTIVENESS (MOE)

The following outline the specific MOE's that will be utilized in the project:

- Parking – Truck parking capacity will be quantified to determine the current and future needs using growth factors and seasonal truck adjustment factors.

X FHWA INTERSTATE ACCESS MODIFICATION POLICY POINTS

Additional access will not be gained onto either I-29 or I-90.

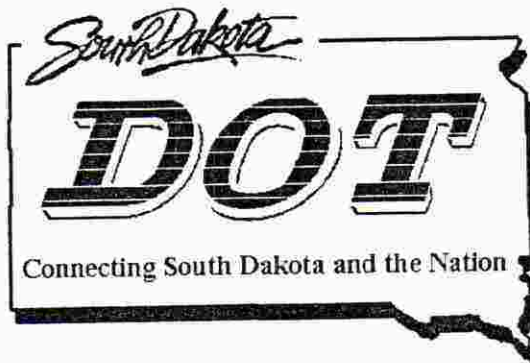
XI DEVIATIONS / JUSTIFICATIONS

We do not anticipate any deviations from stated standards.

Truck Stops in relation to Interstate Rest Areas

Interstate	Location Name	Direction	MRM/Exit	Miles Between Rest Areas
I90	Spearfish	EB	1	
	Tilford	EB	41.4	40.4
	Tilford	WB	41.5	
	Piedmont - Truckstop	EB&WB	46	
	Rapid City - Windmill/Pilot Truckstop	EB&WB	55	
	Rapid City - Flying J	EB&WB	61	
	Rapid City - Love's	EB&WB	67B	
	I90 Pullouts	EB&WB	69	
	Wasta	EB	98.6	57.2
	Wasta	WB	98.6	
	I90 Pullout	EB	129	
	Minuteman Missile Site Visitors Center	EB/WB	131	
	I90 Pullout	WB	138	
	Kadoka - Sincliar Truckstop	EB&WB	150	
	Belvidere	EB	165	66.4
	Belvidere	WB	166.6	
	1880 Town	EB&WB	170	
	I90 Pullouts	EB&WB	188	
	Murdo - Pilot Truckstop	EB/WB	192	
	I90 Pullouts	EB&WB	194	
	Vivian - Truckstop	EB&WB	211	
	Presho	EB	218.4	53.4
	Presho	WB	221.3	
	Oacoma - Truckstop	EB&WB	260	
	Chamberlain	EB/WB	264	45.6
	Kimball - Truckstop	EB&WB	284	
	I90 Pullouts	EB&WB	293	
White Lake	EB	301.2	37.2	
White Lake	WB	301.7		
Mitchell - Truckstop	EB&WB	332		
I90 Pullouts	EB&WB	337		
Salem	EB	363.3	62.1	
Salem	WB	362.7		
Sioux Falls - Truckstop	EB&WB	400		
Valley Springs	WB	412.1	48.8	
I29	Vermillion - Truckstop	NB&SB	26	
	Homestead	NB	26.6	
	Madison - Truckstop	NB&SB	109	
	Ward Road	NB/SB	121.8	95.2
	Hidewood	NB	160.4	38.6
	Hidewood	SB	161.2	
	Watertown - Truckstop	NB&SB	178	
	Wilmot	NB/SB	213.8	53.4
Glacial Lakes	SB	250.8	37.0	

SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION



2014

CARETAKERS MANUAL
FOR
INTERSTATE REST AREAS

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I. PURPOSE

Rest areas were developed and are maintained for a specific purpose and are as important to the highway system as any other component of the highway.

The primary purpose of the rest area is safety – to provide a safe, clean pleasant area for the traveling public to stop, rest and refresh themselves. There are many secondary benefits of rest areas, but, the most important factor is that lives are being saved because the traveler is refreshed and alert.

The rest area caretaker, although he is usually not a state employee, will greatly influence the public's view of our State and of State employees. It is important that the caretaker and his employees have a good appearance and be courteous to the public at all times.

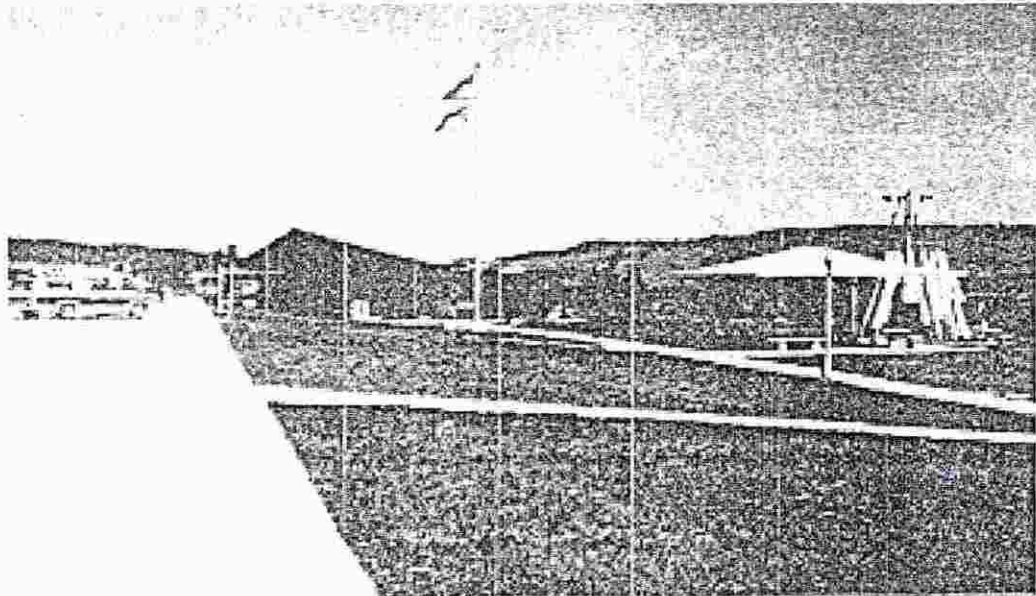
The caretaker and his employees will be asked numerous questions about local attractions, eating and sleeping accommodations, etc. These questions should be answered to the best of the caretaker's ability. If a Tourist Information Center is located at the rest area, all questions from the public should be referred to them and the caretakers and his employees should not linger in the lobby and Information Center.

The purpose of this manual is to help identify the work he is responsible for and to help establish procedures and priorities that will enable them to maintain the rest area in a manner that will reflect favorably on the State.

II. GENERAL

- A. All buildings and grounds shall be kept clean and neat. Surfaces shall be kept sound and properly finished, all electrical, mechanical and safety equipment shall be properly maintained and serviced.
- B. Operating and service manuals, wiring and schematic diagrams, parts catalogs, and working drawings shall be readily available for all major pieces of equipment and systems.
- C. Spare replacement parts for all essential pieces of equipment and fixtures shall be kept in stock either at the rest area or at the Region warehouse.
- D. The caretaker shall inspect the entire rest area each day for non-operational, hazardous or unsightly conditions. Corrective measures should be initiated as necessary.
- E. Any cases of vandalism or unlawful activities shall be reported to the local law enforcement and the Department of Transportation (DOT) representative as soon as possible.
- F. All wiring and plumbing must be done to conform to all current State codes.

III. CARETAKERS RESPONSIBILITES



A. Buildings

1. Cleaning Procedures

All cleaning within the building should be done by 9 a.m. especially during the peak tourist season. The lobby and Tourist Information Center should be mopped and dry prior to 8 am..

NOTE: Cleaning of rest rooms shall be considered as the item of highest priority. It is recommended that the caretaker clean the restroom of the opposite sex first. This should cause less inconvenience to the traveling public because of lighter traffic at that time. In order to clean restrooms during busy times it may be helpful to place "Temporary Men's" and "Temporary Women's" signs in the rest room entryways. When a male attendant is cleaning the women's room, it can be temporarily identified as the men's room and the men's room can be temporarily identified as the women's room. When a female caretaker is cleaning the men's room, the reverse of this procedure can be used.

a) Doors, windows, walls, partitions, etc.

1) Shall be cleaned weekly or more frequently as needed.

(2) Spot clean more frequently, as needed.

- (3) Graffiti (inscriptions or drawings) should be removed as soon as possible.
- (4) Wax and polish as necessary.
- (5) Repainting will be done when necessary.

b) Floors

- (1) Shall be wet mopped using a disinfectant each day.
- (2) Damp mopping will be done as necessary to keep the floor clean.
- (3) Floor drains shall be kept clean and free of obstructions and corrosion.
- (4) Floors may require stripping and resealing as directed by the Department.

c) Toilet stools, sinks, urinals, mirrors, counters, drinking fountains, hand dryers, soap and paper towel dispensers:

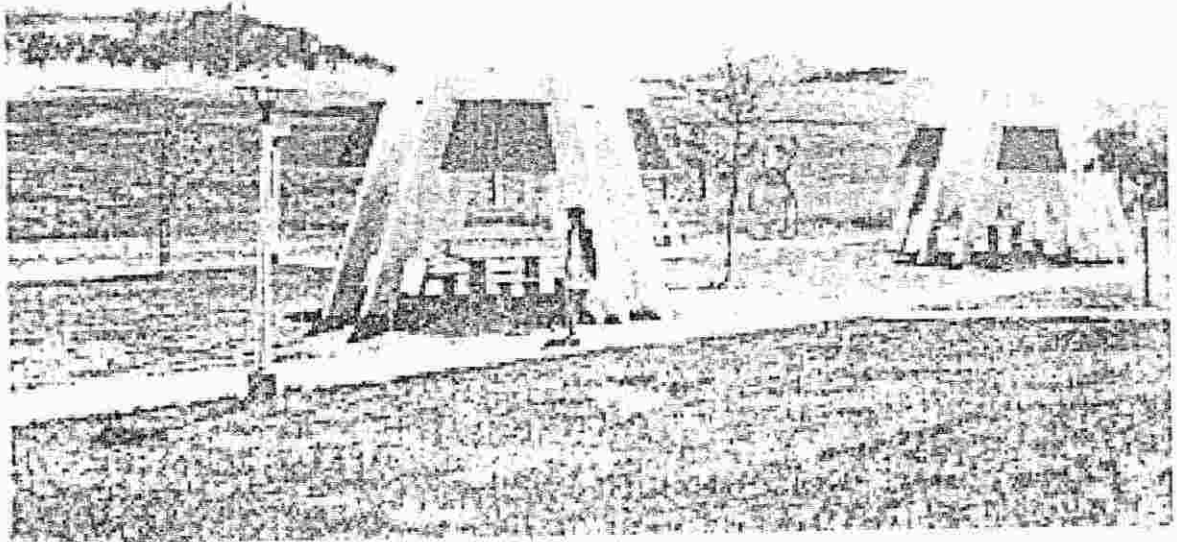
- (1) Clean and disinfect daily.
- (2) Spot clean whenever conditions warrant.
- (3) Check daily to make sure all drains are clean and operational.
- (4) Rest room waste containers shall be emptied, disinfected and relined daily or more often if necessary.
- (5) Fill soap, paper towel and toilet paper dispensers daily or more often if necessary.

B. Grounds

1. Lawn Grass Areas

a) Mowing

- (1) The grass in the rest area should be kept mowed and trimmed. It should be mowed before the average height reaches 4 inches and shall not be mowed shorter than 2 inches.
- (2) Litter shall be picked up before mowing.
- (3) Grass around posts, signs, etc., that cannot be mowed shall be trimmed each mowing.



b) Watering

- (1) One inch of water at any one application should be sufficient. The rate of application should be checked periodically to make sure the correct amount is being applied.
- (2) The sprinkler system should be checked periodically to make sure all heads are working correctly and that there are no breaks in the system. The caretaker shall adjust the heads to provide proper coverage.
- (3) Watering in picnic areas and near walkways should be scheduled so it does not interfere with rest area users. Late evening or early morning hours are recommended for watering these areas.

NOTE: When the water at the rest area is not suitable for watering, the Region will provide guidelines for watering and lawn care.

- (4) The first sign that a lawn needs watering is the loss of resilience in the blades; the next sign is a smokiness or dull dark gray-green color in the grass. Finally the grass will turn brown and may die.

c) Fertilizing

- (1) To maintain a healthy lawn, it is necessary to apply fertilizer. Normally two to three applications a year should be sufficient.
- (2) The Region should be contacted before fertilizing to secure information on the type and rate of

application. The Region will furnish the caretaker with fertilizer necessary for the rest area.

- (3) The Region may elect to have the fertilizing and weeding done by State Forces or by professional contractor.

d) Seeding and Sodding

- (1) Thin spots and bare areas should be worked up and reseeded to maintain a uniform stand of grass.
- (2) The Region should be contacted to secure information on the type of seed to be used and the proper rate of application. Large areas will be seeded by the Region.

e) Weed Control

- (1) Hand cutting, pulling, spot spraying and mowing shall be done as necessary by the contractor to control weeds.
- (2) Routine spraying should be done in the spring and fall as directed by the Region to control noxious weeds. Herbicides for weed control will be furnished by the Region.
- (3) The Region may, at its discretion, hire professional pesticide applicators or do the spraying with State forces.

f) Pest Control

- (1) If insects become a problem, steps shall be taken to eliminate them.
- (2) If other pests, such as pocket gophers, birds or other animals become a problem, it will be necessary to take measures to correct the problem.
- (3) The Region shall be notified before any potentially dangerous pesticides or control measures are used for pest control.
- (4) If the situation continues to be a problem, the Region may be contacted for assistance.

2. Native Grass Area

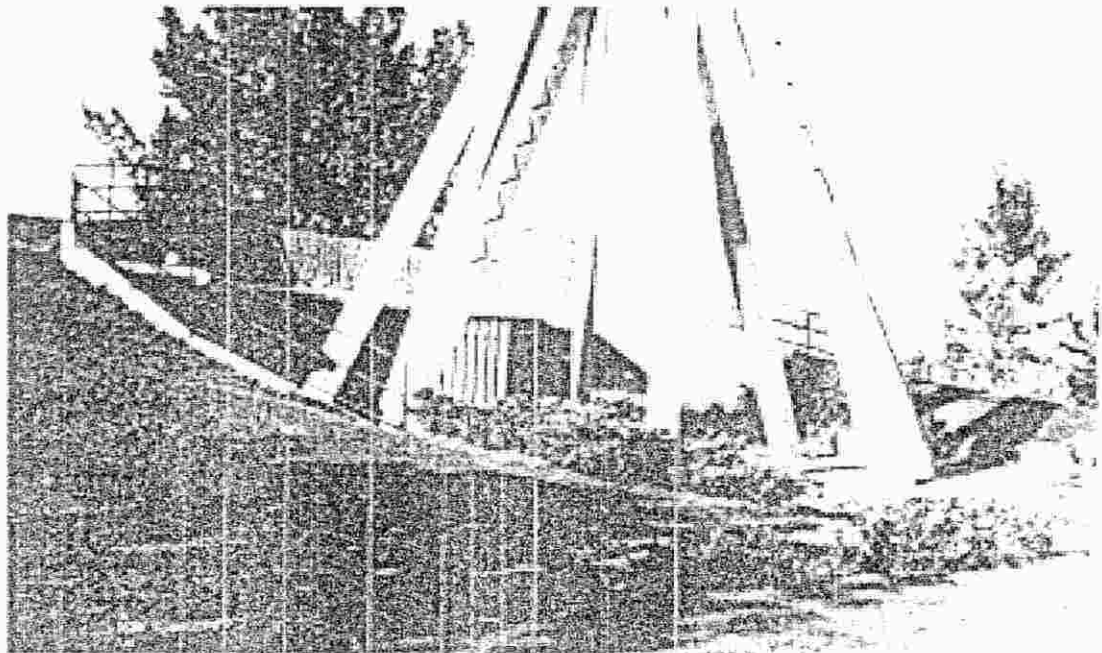
a) Mowing

- (1) The Region shall designate the areas to be mowed.

- (2) Grass shall be mowed when the average height reaches 10 and it shall not be mowed shorter than 4 inches.
- (3) The contractor will be responsible for mowing and litter pickup in the area between the rest area and the interstate, unless informed otherwise.

b) Weed Control

- (1) Hand cutting, pulling and selective spraying shall be done as necessary to control weeds.
- (2) Noxious weeds will be sprayed in the spring and fall. The Region will furnish the herbicide to be used.
- (3) Care should be taken so desirable vegetation, flowers, shrubs, trees, etc., are not damaged by spraying.
- (4) The Region may, at its discretion, hire professional pesticide applicators or do the spraying with State forces.



3. Trees and Shrubs

a) Cultivation

- (1) Cultivation of tree belts shall be done as necessary to eliminate vegetation but, a minimum of three times during the growing season.

- (2) Individual trees and shrubs shall be cultivated to maintain an area 6 feet in diameter that is free of vegetation. The outer edge of the cultivated area should be diked to hold water.
- (3) Cultivation shall continue until the Region determines that the practice will no longer be necessary.

b) Watering

- (1) The watering of tree belts will not be required.
- (2) Individual trees and shrubs that are located within the lawn sprinkler area will normally not need to be watered separately.
- (3) Individual trees and shrubs located outside the lawn sprinkler area shall be watered as necessary to keep them healthy. During wet seasons they may require no additional water, during dry periods they should be watered heavily approximately every two weeks. Watering should continue for 5 or 6 years after planting.

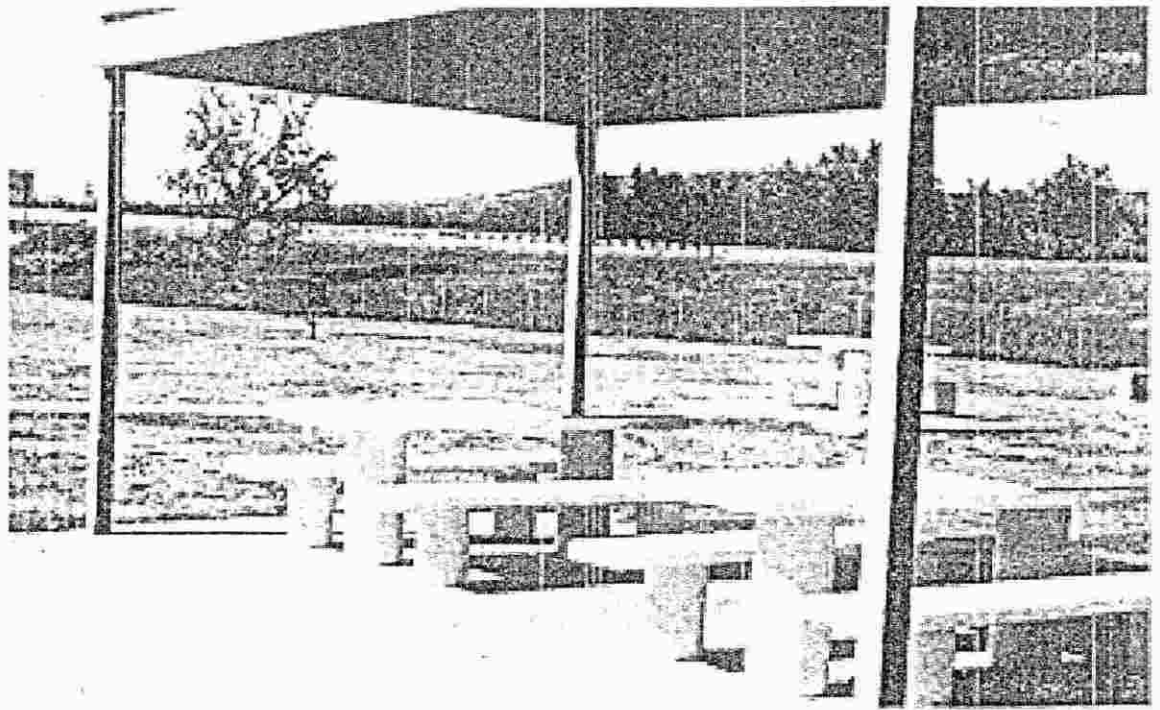
4. Walks, Parking Areas and Drives

a) Walks

- (1) Walks shall be swept as necessary to keep them neat and clean.
- (2) Snow and ice shall be removed from walks as soon as weather conditions permit. Chemicals such as salt or calcium chloride may be used to remove ice and snow-pack but, care should be exercised so the walk surface or adjacent vegetation is not damaged.
- (3) Vegetation, accumulated dirt and debris shall be removed from cracks in the sidewalks as needed.

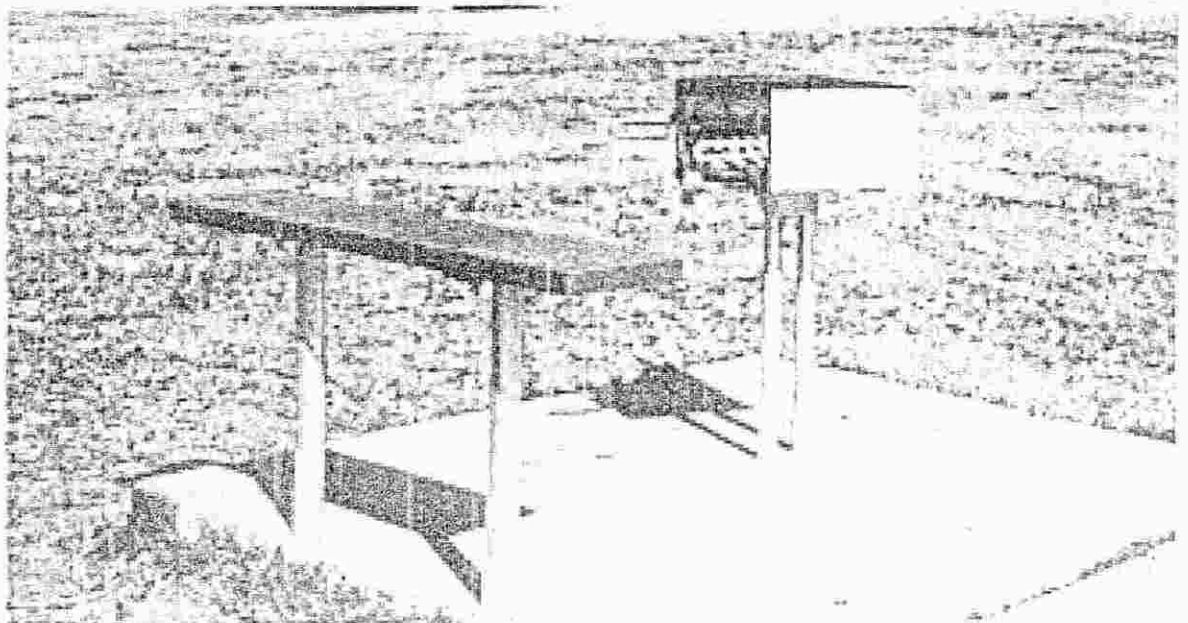
b) Parking Areas and Drives

- (1) Parking areas and drives shall be cleaned as necessary to remove litter and prevent unsightly conditions.
- (2) The Department will remove snow and ice from the parking areas and drives as soon as possible after a storm abates.

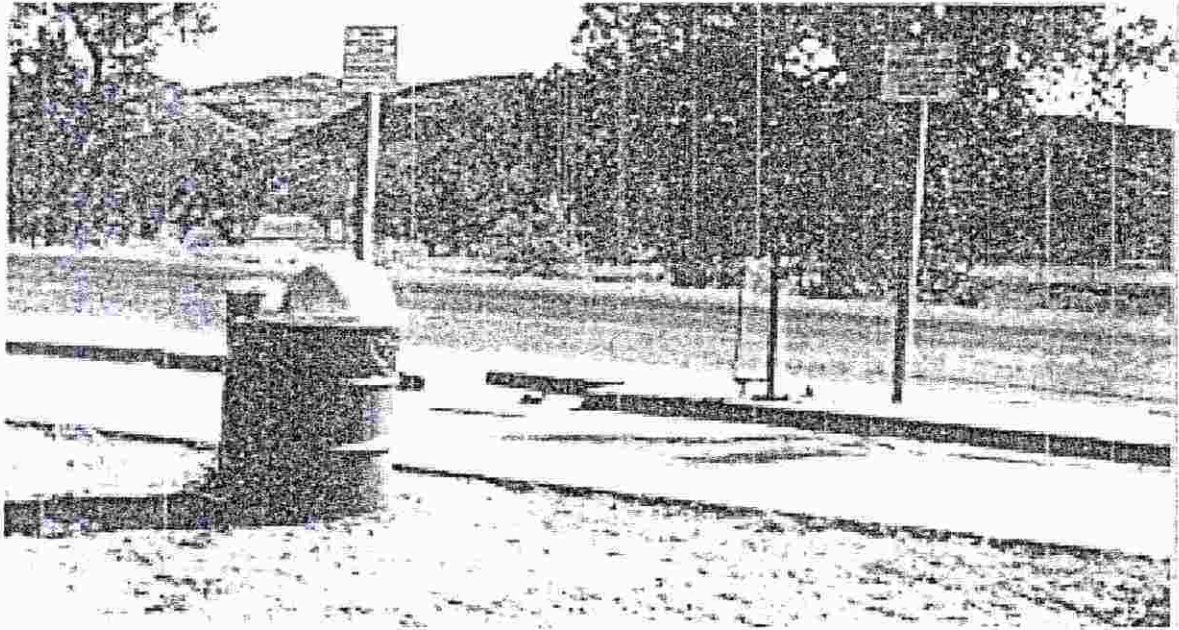


5. Picnic Shelters

- a) Picnic table and shelters should be inspected daily for unsafe, unsightly or unsanitary conditions, such as broken glass, structural defects, graffiti, food spills, stains, etc. Any of these conditions should be corrected immediately.
- b) During peak traffic seasons, top of picnic table, cooking tables, benches and picnic table pad may require cleaning several times a day. During off season they should be cleaned as necessary with a minimum of once per week during time when picnic tables are being used.



- c) Clean grills and cooking tables at least once a week and more frequently if necessary during peak traffic seasons. Clean as necessary during the off season.
- d) Cleaning and painting of tables, benches, shelters, cooking tables and grills will be done as needed.



6. Trash Containers

- a) Trash containers shall be emptied daily or more frequently if necessary, but in any event, they should be emptied before they are full. Damaged containers shall be repaired or replaced.
- b) Plastic liners shall be used in all trash containers and fly tight covers shall be in place and be operational at all times.
- c) Trash containers will be cleaned, disinfected and deodorized as necessary.
- d) Trash and other refuse shall be disposed of in compliance with State Environmental Protection Agency regulations.
- e) Trash container lids should be kept painted and waxed as needed.

7. Pet Exercise Area

- a) Inspect and correct any unsanitary conditions daily.
- b) Pet ties will be in place and functional.

8. Sewage Lagoons

- a) The caretaker shall make periodic inspections of the sewage lagoons to make sure that proper water levels are being maintained.
- b) The lagoon shall be kept free of algae growth and vegetation (cattails), that will restrict the oxidation process.
- c) Dikes shall be kept watertight. The caretaker will inspect the dikes to make sure that muskrats or other burrowing animals are not causing damage.
- d) Our lagoons are designated as "No Discharge" facilities, therefore, any discharge from the lagoon must be reported to the Region as soon as possible.
- e) The lagoon's performance must meet the State Department of Health and Environmental Protection Agency Standards.
- f) If the caretaker encounters any problem with the sewage lagoon or its operation he should contact the Region for assistance.

9. Trailer Waste Station

- a) Check daily during periods when the station is operational for unsafe, unsanitary or unsightly conditions and correct any problems as soon as possible.
- b) Foot valves, wash rack valves, hoses and nozzles shall be checked and kept operational.

IV. INSPECTIONS AND DUTIES

A. Daily

The caretaker shall make the following inspections and accomplish the following on a daily basis (7 days a week):

1. Inspect, clean and disinfect rest rooms and fixtures. This is the highest priority daily item and should be accomplished the first thing in the morning.
2. Inspect mechanical equipment such as hand dryers, pumps, fans, heaters, etc., and repair as needed.
3. Inspect interior and exterior lighting, replace broken or defective bulbs, tubes, switches, etc., as necessary.
4. Inspect and fill paper towel, soap, toilet paper, air freshener and pesticide dispensers and empty trash and sanitary napkin disposal units.
5. Inspect drains, pipes and valves for proper operation, blockage, leaks or corrosion. Repair as necessary.
6. Inspect chlorinator, if present. Sufficient liquid level and correct pump operation is mandatory.
7. Any vandalism shall be reported to the Region and to local law enforcement officials. Care should be taken so no evidence is destroyed before it is investigated by law enforcement personnel.
8. Reports and daily records shall be kept as required by the State.
9. Flags shall be inspected daily to make sure they are in good condition. Flags should be replaced when they become frayed, torn or discolored. All used flags should be disposed of according to the proper flag etiquette. When directed the flags should be displayed at half- staff. The state shall provide flags as necessary.
10. The grounds and picnic areas shall be inspected for litter and other debris and cleaned as necessary.

B. Weekly

1. Water sprinkler systems shall be checked for proper coverage, leaks and broken or damaged heads. Repairs shall be made as needed.
2. Inspect trees, tree belts and shrubs during the growing season for insects or disease, dead branches, need for cultivation and take corrective action as necessary.

3. The entire area shall be inspected for trash and debris and spot cleaned if necessary.
4. Inspect the sewage lagoon for proper operating level and for any discharge. The Region should be notified of any problems.
5. Remove any tumble weeds and other debris from the lagoon.
6. During the summer, check for mosquito larvae in the lagoon and treat if necessary.

C. Monthly

1. Drinking water samples shall be taken each month and submitted to the State Department of Health. Instructions for taking samples shall be strictly adhered to.

NOTE: Rest Areas on rural water systems are not required to submit samples.

2. Check the sewage lagoon for any vegetation growth and treat with an approved vegetation control herbicide if necessary.
3. Mow the sewage lagoon dikes when necessary, probably in the spring and the fall.

D. Semi-Annually

NOTE: It is recommended that these inspections be made during the first week of April and October of each year.

The following items shall be inspected by the caretaker and a DOT representative. Items that are the caretaker's responsibility will be corrected by him. The DOT representative will notify the proper State forces of the need for corrective action.

1. Caretakers Responsibilities
 - a) Panels and case display.
 - b) Metal surfaces, (to be free of rust and corrosion, loose, broken or missing elements). Painted surfaces are to be free of peeling, chips, blisters, etc.
 - c) Glass (shall be clean and free of broken or cracked elements with no missing glazing compound or clay).
 - d) Outdoor watering systems shall be turned off and blown out or drained seasonally.

- e) Floors will be stripped and resealed as directed by the Region. The region will furnish the sealer for the floor.
- f) Snow fence may be installed to prevent drifting near the rest area. The State will furnish the snow fence.

2. State's Responsibilities

- a) Perimeter fence and gates
- b) Lagoon fence and gates
- c) Easement fence and gates
- d) Culverts, drop inlets and manholes
- e) Ditches and channels
- f) Retaining walls and rip rap
- g) Walks, curbs, pads and paths (settling, cracking, spalling, etc.)
- h) Flag poles
- i) Snow removal from ramps and parking areas
- j) Concrete masonry, (to be free of cracks, spalls, stains and broken elements, with no settlement)

SDCL 20-13, Title VI of the Civil Rights Act of 1964, the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 require that the Department of Transportation provide services to all persons without regard to race, color, creed, religion, sex, disability, ancestry or national origin.

Information Center Survey

How are visitors using our welcome centers/rest areas? What amenities/information is most useful to them? What expectations do visitors have? To what extent are our travel counselors able to influence visitors?

Travelers will have two options for receiving the survey, either as a hard copy with prepaid postage, or as an email.

Ideal sample size: 1,100 respondents. Survey can possibly be incentivized to encourage participation.

Questions:

Survey ID#

1. Date of visit
2. What is your home zip code/country
3. Including you, how many people are in your traveling party?
4. How many nights will you spend in South Dakota on this trip?
5. Email (optional)
 - a. Email Opt-In
6. What is the main purpose for your visit to South Dakota on this trip? (select one)
 - a. Leisure
 - b. Business
 - c. Personal
 - d. Friends & Family
 - e. Event
 - f. Other (please explain)
7. Please indicate which region(s) of South Dakota you plan on visiting. (check all that apply)
 - a. Northeast
 - b. Southeast
 - c. Missouri River
 - d. Norther Black Hills
 - e. Southern Black Hills
 - f. Other (please explain)
8. What are your main areas of interest in South Dakota? (check all that apply)
 - a. Historical Attractions
 - b. Family Attractions
 - c. Museums
 - d. Scenic Byways
 - e. National and State Parks
 - f. Trails, Hiking, Biking
 - g. Camping
 - h. Shopping
 - i. Festivals/Events
 - j. Wineries/Breweries
 - k. Fishing/Hunting
 - l. Boating/Swimming
 - m. Agricultural Attractions

- n. Native American Sites
 - o. Casino Gaming
 - p. Culinary
 - q. Other (please explain)
9. What motivated you to stop at the South Dakota state welcome center/rest area? (check all that apply)
- a. Next closest stop
 - b. Faster/more convenient than an interchange
 - c. Needed a driving break
 - d. Site looked interesting from the road
 - e. Wanted to collect information at the welcome center
 - f. Safety concern
 - g. Restroom
 - h. Other (please explain)
10. How did you learn about the South Dakota state welcome centers? (select one)
- a. Not aware that the rest area had a welcome center until you walked in
 - b. Saw a sign along the interstate and decided to stop (unplanned)
 - c. Found the location online or elsewhere and made a planned stop
 - d. Other (please explain)
11. While you were at the South Dakota state welcome center, did you or any member of your party do any of the following? (Check all that apply)
- a. Use the restroom
 - b. Use the picnic area and grounds
 - c. Visit with a welcome center employee
 - d. Find information on things to see and do in South Dakota
 - e. Other (please explain)
12. Following is a list of amenities offered at our South Dakota state welcome centers. Considering this visit, please rate each amenity on a five point scale (where 5 is excellent, 3 is average, and 1 is poor). Select one rating for each.
- a. Convenience of parking
 - b. Helpfulness of staff
 - c. Cleanliness of restrooms
 - d. Condition of building and grounds
 - e. Volume and variety of visitor information available
 - f. Road signage and wayfinding to help you locate the welcome center
 - g. (Add comments section)
13. What amenities are most important to you in a welcome center/rest area? (check all that apply)
- a. Internet/Wi-Fi
 - b. Vending services
 - c. Coffee
 - d. Family restrooms
 - e. Playground
 - f. Picnic area
 - g. Dog walking area
 - h. Emergency phone
 - i. RV/bus/truck parking
 - j. Road safety & weather information

- k. 24-hour surveillance
 - l. Sitting area
 - m. Cultural/historical displays
 - n. Other (please explain)
14. When were all of your activity plans finalized? (select one)
- a. All before your trip
 - b. Most before your trip
 - c. Some before and some during your trip
 - d. Most during your trip
 - e. All during your trip
15. Did you extend your stay or add stops to your schedule in South Dakota based on information you found at the South Dakota state welcome center?
- a. Yes
 - b. No
16. If yes, how much longer did you stay in South Dakota? (select one)
- a. Whole Day
 - b. One Night
 - c. Two Nights
 - d. Three Nights
 - e. Four Nights
 - f. Five Nights
 - g. Other (please explain)
17. How likely are you to visit South Dakota in the future based on the information you obtained at the South Dakota state welcome center? (select one)
- a. Very Likely
 - b. Somewhat Likely
 - c. Somewhat Unlikely
 - d. Very Unlikely
18. On this trip, how many different South Dakota state welcome centers/rest areas have you stopped at, or plan on stopping at?
19. Approximately how much time did you spend at the South Dakota state welcome centers/rest areas?
20. Using a 10-point scale, where 1 is "Not Satisfied at All" and 10 is "Extremely Satisfied", please rate how satisfied you are with South Dakota's rest areas and welcome centers.
- | | | | | | | | | | | |
|-----------------------------|---|----------------------------|---|---|---|---|---|---|----|------------|
| <u>Not at all satisfied</u> | | <u>Extremely satisfied</u> | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Don't know |
21. Overall, how would you rate your first impression of the rest area/welcome center?
- a. Excellent
 - b. Good
 - c. Fair
 - d. Poor
 - e. Don't know

MEMORANDUM OF UNDERSTANDING
BETWEEN
SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
AND
SOUTH DAKOTA DEPARTMENT OF TOURISM

This Memorandum of Understanding (MOU) is made by and between the South Dakota Department of Transportation, referred to in this MOU as "DOT," and the South Dakota Department of Tourism, referred to in this MOU as "TOURISM."

INTRODUCTION AND PURPOSE: The DOT and TOURISM have agreed that it is in the best interest of both parties to address roles and responsibilities of the Interstate rest Areas/welcome centers located along the I-29 and I-90 corridors. The purpose of this MOU is to document mutual agreement of both parties and clarify a shared vision, goals, repair protocol, replacement schedule, and operation and maintenance responsibilities of the Interstate rest areas/welcome centers.

1. Representatives from DOT and TOURISM shall meet annually to review and update this MOU and the rest area/welcome center vision statement.
2. The meeting will consist of representatives in lead roles from both DOT and TOURISM whose authority extends directly to the operation and maintenance of the Interstate rest areas/welcome centers.
3. The DOT and TOURISM will be responsible for ensuring that the standards set forth in the vision statement and this MOU are being met in a timely manner, and that all key personnel are aware of the actions required to meet these standards.
4. The functionality of rest areas/welcome centers will be reviewed annually. A service life will be determined for each, and any major reconstruction or remodeling needed will be planned and budgeted. Any recommendations for closure will be drafted.
5. Facility maintenance needs will be reviewed on an ongoing basis. Any services required will be budgeted and scheduled in a reasonable timeframe.
6. ADA accessibility and compliance at rest areas/welcome centers will be reviewed annually.
7. Welcome Center's hours of operation, staffing needs, consulting contract, and wages will be reviewed annually.
8. Representatives from DOT and TOURISM will meet twice annually on site at each welcome center with caretakers and welcome center supervisors before and after each season to discuss operations, roles, responsibilities, expectations, caretaker manual, reporting processes, and any issues.
9. Periodic studies will be conducted to ensure that the needs of rest area/welcome center patrons are being met.
10. The DOT will be responsible for:
 - a. Financing and coordination of replacement, repair, and maintenance of fixed objects including but not limited to building, parking, utilities, heating & cooling systems, storage facilities.
 - b. Installation of counters, kiosks, permanent signs, display cases or racks, or any other item attached to fixed object used by TOURISM. Cost share of such items shall be reviewed and agreed upon at the annual coordination meeting.
 - c. Welcome Center construction costs over and above what is required of a functional rest area, and which do not serve a dual purpose, will be funded through _____.

11. TOURISM will be responsible for:

- a. Financing and coordination of replacement repair, and maintenance of all mobile items and tourist displays that are specific to the use for the welcome centers.
- b. Cost share of items that are permanently attached to fixed objects used by TOURISM.

The parties signify their agreement by signatures affixed below.

State of South Dakota
Department of Tourism

State of South Dakota
Department of Transportation

By: _____

By: _____

Its: Secretary

Its: Secretary

Date: _____

Date: _____

Approved as to Form:

Special Assistant Attorney General