

Advanced Signing for Recreational and Historical Sites

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In 1988 a pilot study was conducted to evaluate the effectiveness of advanced recreational signing. The central signing concept evaluated can best be described as decision point signing (DPS). This DPS concept provides information concerning a recreational or historical site far in advance of the site (40 to 60 mi) and often in advance of highway junctions. The purpose of this signing approach is to advise the traveler that he is approaching the site and provide time for him to decide whether to visit it. There are a number of unknowns associated with the DPS concept, including whether DPS has an effect, and which routes and sites should be considered for DPS. Because any sign along a highway represents a hazard to an errant motorist and costs about \$14 to \$16 per ft² installed, answers to the previous questions are important to the decision maker. The results of this pilot study provide insight into these questions. A brief review of signing and recreational studies associated with increasing tourism is provided in this paper. The results of the studies conducted at both Devils Tower and South Pass City are presented. Specific conclusions and recommendations are made concerning DPS for recreational and historical sites.

All highway signs are classified as regulatory, warning, or guide signs. In order for any sign to be effective, it must fulfill a need, command attention, convey a clear simple message, command respect, and be placed to allow adequate response time (1). Recreational signs are classified as guide signs and have a green or brown background with a white legend. Currently, no standard exists as to the effective distance for most advanced highway signs, but the *Manual on Uniform Traffic Control Devices* (MUTCD) (1) suggests using a distance of 1 or 2 mi for recreational guide signs. An ITE committee (2) reported that for advanced airport signing, a recommended signing range is 10–25 mi from the airport.

Increasing tourism is a major goal of most states and this has resulted in increased pressure on highway departments and departments of transportation to provide more tourist-oriented direction (TOD) signing. Vermont, Oregon, Minnesota, and Nebraska have reported major programs in this area (3–6). For example, a five-step tourism program was established in Nebraska (6). After the state's attractions and scenic routes were identified, an aggressive communications program was undertaken. This program involved creating a map emphasizing the attractions, establishing travel information centers, and installing signs with the name and logo of the attraction. Visitor centers were staffed with part-time college students who describe local surroundings to visitors, and additional signing was installed at these sites. Radio sta-

tions also provide travel and tourist information in spot announcements throughout the day. The last step involved television advertisements for use in and out of Nebraska. Unfortunately, no formal evaluation of the programs in Vermont, Oregon, Minnesota, or Nebraska was found in the literature, although all states indicated that they were pleased with the results of their program to increase tourism. The increased demand for roadside signing and the lack of knowledge concerning the effectiveness of signs precipitated the study reviewed in this paper. Although only a pilot study, it provides insight into the value of decision point signing (DPS) and associated visitor-use data.

STUDY RESULTS

Devils Tower is America's first national monument and is located in northeastern Wyoming, 30 mi north of I-90. South Pass City was a major gold mining town in the late 1860s and is located on the Oregon Trail in central Wyoming, 2 mi south of State Route 28. A total of 1,159 interviews were conducted at the two sites (see Table 1). Daily visitor use of Devils Tower during the 10-day interview period averaged 570 vehicles/day (vpd). Slightly over 83 percent of the motorists surveyed were traveling along I-90. It is estimated that about 9.4 percent of the I-90 motorists visited Devils Tower during the summer interview period. Almost 100 percent of the visitors to South Pass City were interviewed during the 10-day period. An estimated 2.8 percent of the Wyoming Route 28 motorists visited South Pass City during the interview period. The type and location of signs for the before-and-after study are shown in Figures 1–3.

Table 2 presents the sources of information that motorists indicated as influencing their decision to visit the site. Indicating more than one source of information was permitted. From the Devils Tower survey, an average of 2.3 sources per respondent was indicated. For South Pass City, the average number of sources indicated by respondents was 1.2.

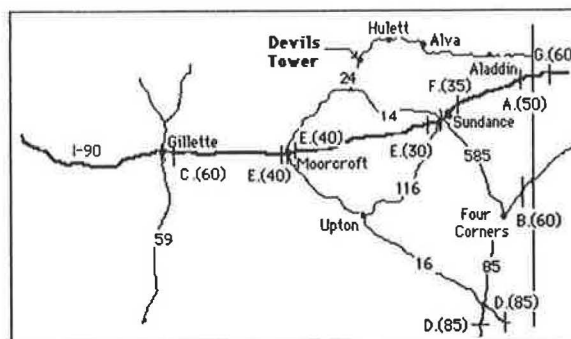
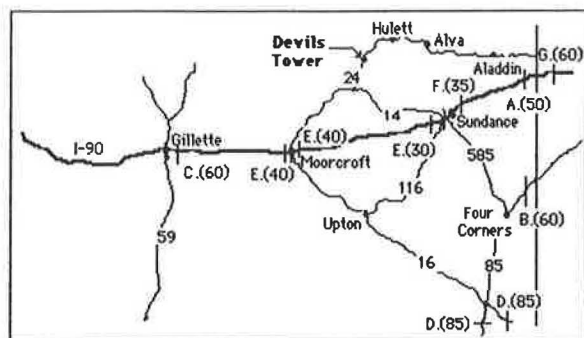
The role of informal information sources in repeat visitor use is readily apparent. A major difference between the two sites was the high percentage of out-of-state visitor use at Devils Tower compared with that at South Pass City (see Table 3). Of the visitors interviewed, 95 percent were from outside Wyoming compared with 56 percent of the visitors for South Pass City.

Concerning the value of advanced recreational signing, two questions associated with visitor use were of particular interest. Did the visitor plan to stop at the site and was a large percentage of the site's visitors retired persons? Table 4 pro-

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TABLE 1 SITE INTERVIEWS

| | Devlis Tower | South Pass City |
|------------------------------|--------------|-----------------|
| Before Advanced Signs | 360 | 229 |
| After Advanced Signs | 365 | 205 |
| Total | 725 | 434 |



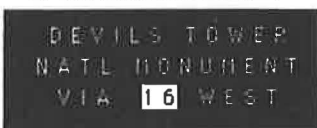
A. White letters & Brown background



B. White letters & Brown background



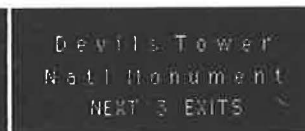
C. White letters & Brown background



D. White letters & Brown background



E. White letters & Brown background



F. White letters & Brown background



G. Devils Tower Advertisement Wyo Travel Comm & Local Interests

FIGURE 1 Devils Tower signing. Signs A, B, C, and D were covered during the first five-day period. A slash indicates where the sign was located. The letter indicates which sign was used at each location. The number in parentheses following the letter designates the distance in miles from the sign to Devils Tower. Signs A and C measure 6 ft × 16 ft. Sign B measures 5 ft × 10 ft. Sign D measures 5 ft × 9 ft.

FIGURE 2 Devils Tower signing. Signs E, F, and G were not covered during the study. A slash indicates where the sign was located. The letter indicates which sign was used at each location. The number in parentheses following the letter designates the distance from the sign to Devils Tower. Signs E and F measure 6 ft × 17 ft. No dimensions were available for Sign G, but it is larger than Signs E or F.

vides insight into both questions. Devils Tower was not a preplanned stop for 14.2 percent of the visitors interviewed. South Pass City was not a preplanned stop for 21.7 percent of the visitors interviewed. Before the study, it was thought that retired persons would be more prone to impulse visitation because they would have more leisure time. The data presented in Table 4 indicate that this group (retired persons) was not overrepresented at either site. However, a higher percentage of retired persons chose to visit either site after their vacation began than any other group.

Road signing was indicated by 9.4 percent of the motorists interviewed as an information source. Obviously road signing guides most motorists, but they were specifically asked whether the road signing influenced their decision to stop at the site.

Before-and-after data for both sites are presented in Table 5. The data indicate that signing influenced less than 5 percent of the visitors interviewed at Devils Tower and 10 percent at South Pass City. Of the 34 motorists influenced by the road signs to visit Devils Tower, only 1 was a resident of Wyoming. For South Pass City, 43 motorists indicated that signing influenced their visit, and 9 were from Wyoming. The addition of DPS appeared to provide an increase in visitor use at South Pass City.

Statistical analysis (chi square test) was performed on the data for both sites to determine whether the addition of DPS had an effect. The test results are presented in Table 6. When stop type (a stop at Devils Tower planned before or after the start of the vacation) and influence were compared, the two

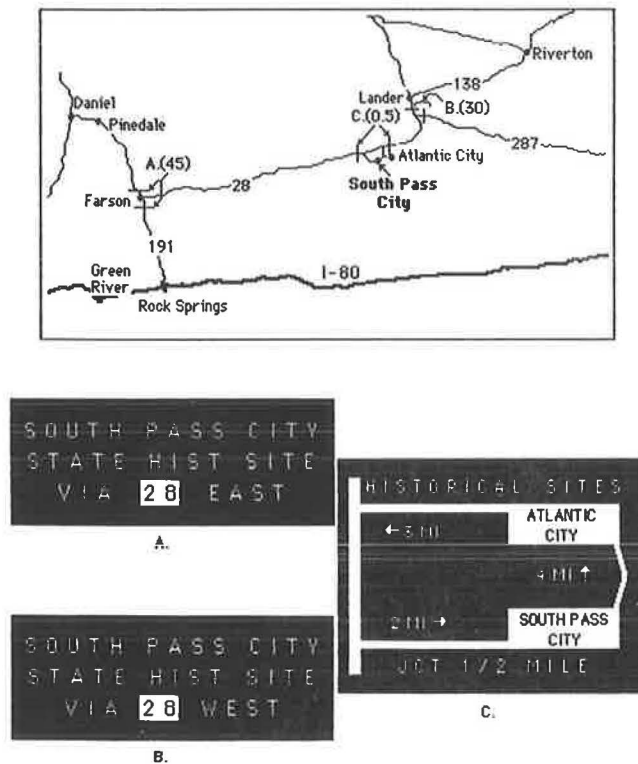


FIGURE 3 South Pass City signing. Signs A and B were covered or left uninstalled for the first five-day period. Sign C, the diagrammatic sign, was not covered. A slash mark indicates a sign location. The letter designation indicates the sign associated with the slash marks. Numbers in parentheses designate the distances in miles from the signs to South Pass City. Signs A and B measure 5 ft × 10 ft. Sign C measures 10 ft × 12 ft.

variables were highly dependent ($p = 0.0000$). Motorists influenced by the signs had not planned to visit Devils Tower before the start of their vacation and vice versa.

Although retired people visiting South Pass City made up only 8.5 percent of the motorists interviewed, 21.6 percent of this group indicated that they were influenced by road signing. The group and influence variables tested dependent for South Pass City, indicating that retired persons were more influenced by the signing than the other groups. Also, because the variables tested dependent after the four new decision point signs had been installed, these signs may have helped divert motorists to South Pass City.

MAJOR STUDY FINDINGS AND CONCLUSIONS

Promoting the many historical and recreational opportunities in Wyoming is a major goal of the state. In this effort to increase tourism, there are many approaches. Once a visitor is in Wyoming, lengthening the time of stay may occur because of increased impulse visitation resulting from additional signing for the opportunities that exist. In order to evaluate the effectiveness of increased signing, additional word message road signs were installed for both South Pass City and Devils Tower in advance of route junctions. These additional signs

were located from 40 to 60 mi in advance of the primary junction to each site. The concept of DPS is to provide information concerning this tourist attraction in the hope of diverting motorists to the site and thereby increasing their stay in Wyoming.

In this study of actual visitors to the two sites, over 60 percent of the motorists surveyed obtained information about the sites from brochures, the Travel Commission, a previous visit, or in the case of Devils Tower, the movie "Close Encounters of the Third Kind." Television, radio, newspapers, and magazines each contributed less than 1 percent as an information source for South Pass City. Except for magazines (8.4 percent), these same sources also contributed little as a primary information source for Devils Tower. Conversation with others (word of mouth) was an information source indicated by 31 percent of the surveyed motorists at Devils Tower and 17 percent of those surveyed at South Pass City. Road signs were chosen as an information source by 9 percent of the motorists at both sites.

A major question was whether the advanced recreational signs were observed by motorists. At Devils Tower, the two advanced signs on I-90 were observed by 82.6 percent (247 out of 299) of the surveyed motorists who drove by either sign. Advanced recreational signs on other routes were also observed by 82.7 percent (24 out of 29) of the surveyed motorists. It is important to recall that 83 percent of the surveyed motorists at Devils Tower were traveling on I-90. The advanced recreational signing observance for South Pass City was 67.5 percent (110 out of 163) of the surveyed motorists. Observance of the diagrammatic sign of South Pass City was much higher (97 percent, or 385 out of 396).

Signs influenced only 4.7 percent (34 out of 725) of the motorists surveyed to divert from their trips to Devils Tower. This percentage was about the same for the before (4.4 percent) and after (4.9 percent) portions of the study. Road signs influenced 10 percent (43 out of 434) of the South Pass City motorists to divert and visit that site. There was a 6.2 percent difference in sign influence between the before (7.0 percent) and after (13.2 percent) portions of the study. As a group, retired persons (8 out of 31, or 21.6 percent) were most influenced by the road signs.

Based on this study of South Pass City and Devils Tower, the following conclusions concerning DPS are drawn:

- Advanced recreational signing (DPS) using word messages appears to be ineffective in diverting motorists to visit historical sites.
- DPS (word message signs) at route junctions 40–60 mi from the site results in little if any increase in site visitation.
- If additional guide signing for historical and recreational sites is used, it should be focused on higher-volume routes immediately adjacent to the site.
- Because of the apparent value of the diagrammatic signs at South Pass City, additional study of this concept is recommended for advanced recreational signs.

RECOMMENDATIONS

Because this was only a pilot study for advanced recreational signing, a recommendation for future research includes sur-

TABLE 2 INFORMATION SOURCES INFLUENCING HISTORICAL SITE VISITATION

| Information Source | Devils Tower | South Pass City |
|--|--------------|-----------------|
| Radio | 1.5% | 0.2% |
| Television | 5.0% | 0.2% |
| Newspaper | 0.8% | 0.5% |
| Magazines | 8.4% | 0.0% |
| Road Map | 19.9% | 7.1% |
| Conversations | 31.4% | 17.1% |
| Books | 23.6% | 12.7% |
| Road Signs | 9.4% | 9.4% |
| Don't Remember | 0.0% | 0.0% |
| Other | 64.9% | 68.0% |
| Visited Site Before | 29.7% | 53.7% |
| Travel Commission/ Brochures | 11.0% | 9.0% |
| "Close Encounters Of The Third Kind" (the movie) | 20.5% | |
| AAA Travel Agency Information | 3.7% | 5.3% |

TABLE 3 RESIDENCE OF VISITORS INTERVIEWED

| | Devils Tower | South Pass City |
|-----------------|--------------|-----------------|
| Wyoming | 29 (4.0%) | 191 (44.0%) |
| Border State | 105 (14.5%) | 74 (17.1%) |
| Other State | 560 (77.2%) | 164 (37.8%) |
| Foreign Country | 31 (4.3%) | 5 (1.2%) |
| Total | 725 (100.0%) | 434 (100.0%) |

TABLE 4 PREPLANNED VACATION STOP AT THE HISTORICAL SITE

| <u>Devils Tower</u> | | |
|---------------------|---|--|
| | <u>Planned Stop Before Vacation Started</u> | <u>Planned Stop After Vacation Started</u> |
| Couple or Alone | 187 (25.8%) | 40 (5.5%) |
| Retired Persons | 51 (7.0%) | 19 (2.6%) |
| Family w/Children | 284 (39.2%) | 30 (4.2%) |
| Other | 100 (13.8%) | 14 (1.9%) |
| Total | 622 (85.8%) | 103 (14.2%) |

| <u>South Pass City</u> | | |
|------------------------|---|--|
| | <u>Planned Stop Before Vacation Started</u> | <u>Planned Stop After Vacation Started</u> |
| Couple or Alone | 110 (25.3%) | 39 (9.0%) |
| Retired Persons | 22 (5.1%) | 15 (3.5%) |
| Family w/Children | 141 (32.5%) | 31 (7.1%) |
| Other | 67 (15.4%) | 9 (2.1%) |
| Total | 340 (78.3%) | 94 (21.7%) |

TABLE 5 SIGNING INFLUENCING SITE VISIT

| <u>Devils Tower</u> | | | |
|---------------------|-------------------|------------------|--------------|
| <u>Influence</u> | <u>Before DPS</u> | <u>After DPS</u> | <u>Total</u> |
| None | 344 (95.6%) | 347 (95.1%) | 691 (95.3%) |
| Influenced | 16 (4.4%) | 18 (4.9%) | 34 (4.7%) |

| <u>South Pass City</u> | | | |
|------------------------|-------------------|------------------|--------------|
| <u>Influence</u> | <u>Before DPS</u> | <u>After DPS</u> | <u>Total</u> |
| None | 213 (93.0%) | 173 (86.8%) | 391 (90.1%) |
| Influenced | 16 (7.0%) | 27 (13.2%) | 43 (9.9%) |

TABLE 6 STATISTICAL ANALYSIS OF ROAD SIGN INFLUENCE

| Devils Tower | | | | |
|---------------------------|-------------------|------------|----------------|-----------------------------|
| <u>Variables</u> | <u>Chi Square</u> | <u>DOF</u> | <u>p-Value</u> | <u>Reject H₀</u> |
| Group by Influence | 6.72 | 3 | 0.0815 | No |
| Group by Influence Before | 3.44 | 3 | 0.3280 | No |
| Group by Influence After | 4.24 | 3 | 0.2369 | No |
| Stoptype by Influence | 169.09 | 1 | 0.0000 | Yes |

| South Pass City | | | | |
|------------------------------|-------------------|------------|----------------|-----------------------------|
| <u>Variables</u> | <u>Chi Square</u> | <u>DOF</u> | <u>p-Value</u> | <u>Reject H₀</u> |
| Group by Influence | 7.91 | 3 | 0.0479 | Yes |
| Group by Influence by Before | 2.10 | 3 | 0.5519 | No |
| Group by Influence by After | 10.68 | 3 | 0.0136 | Yes |
| Stoptype by Influence | 167.55 | 1 | 0.0000 | Yes |

Group: Couple or alone, retired persons, family, other.

Stoptype: Planned before trip or planned after trip.

Influence: Sign influence: yes, no.

veying motorists not visiting either site. It is important to know whether motorists not visiting either site are observing the signs. More research is also needed to understand the value of repetitive signing. If the diagrammatic signs are added, a placement between 1 and 10 mi in advance of the junction to the site is recommended for study. Recreational and historical sites should also be evaluated. Criteria need to be established to reflect which sites are candidates for advanced recreational signing.

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