United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. **Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).**

1. Name of Property

historic name Lassen Volcanic National Park Highway Historic District (Boundary Increase)

other names/site number Trails to Lassen Peak and Bumpass Hell

2. Location

street & number NPS Route 1/State Route 89 ☐ not for publication

city or town Lassen Volcanic National Park ☐ vicinity

state Mineral code CA county Shasta code 89 96063

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this ___ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property ___ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___ national ___ statewide ___local

Signature of certifying official — Date

Title — State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official — Date

Title — State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I, hereby, certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

Signature of the Keeper — Date of Action

5. Classification

Ownership of Property
(Check as many boxes as apply)

- [ ] private
- [ ] public - Local
- [ ] public - State
- [x] public - Federal

Category of Property
(Check only **one** box)

- [ ] building(s)
- [x] district
- [ ] site
- [ ] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
		buildings
		district
		site
2	0	structure
		object
2	0	**Total**

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing)

Lassen Volcanic National Park Highway

Number of contributing resources previously listed in the National Register

141

6. Function or Use

Historic Functions
(Enter categories from instructions)

Transportation
Recreation

Current Functions
(Enter categories from instructions)

Transportation
Recreation

7. Description

Architectural Classification
(Enter categories from instructions)

Other: NPS rustic

Materials
(Enter categories from instructions)

foundation:
walls:
roof:
other: earth; stone; wood

Narrative Description

(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

Summary Paragraph

National Register listing of the Lassen Volcanic National Park Highway Historic District followed from submittal of a registration form in 2004. It was based on a National Park Service cultural landscape inventory report completed in 2000 which followed from a Historic American Engineering Record project (HAER CA-270) aimed at documenting the highway in 1999. Both projects substantiated how two federal agencies (the NPS and the Bureau of Public Roads) worked to create a designed linear landscape that meets National Register criteria for listing. Specifically, the highway has a direct and significant association with NPS administration of Lassen Volcanic National Park and with development of tourism as an industry in northern California (criterion A), and for its expression as rustic architecture, especially that of the NPS (criterion C) during a period of significance extending from 1925 (when road construction began) until 1941 (when construction ceased). The purpose of this amended nomination is to add two trails built by the NPS in conjunction with the highway project and relate those structures to the historic contexts developed on the original form. Boundaries given on the original form are revised accordingly to include the Lassen Peak Trail and the Bumpass Hell Trail as part of the existing historic district.

Narrative Description

As a linear landscape that extends almost 30 miles between the park's southwest and northwest entrance stations, the Lassen Volcanic National Park Highway climbs to an elevation of 8,511 feet at the road's summit near Lassen Peak. It is a scenic highway used by visitors as the primary means to experience the park, an area containing rugged volcanic crags, active thermal features, subalpine forests, pumice fields, and montane meadows. The two most popular stops along this road are the trails to the top of Lassen Peak (10,457 feet) and to Bumpass Hell, where 16 acres represent the largest concentration of boiling pools, active fumeroles, and mud pots in the United States apart from those in Yellowstone National Park.

In much the same way as the road's alignment was designed to present interesting geological features and their setting to motorists, NPS engineers designed key trails for the safety, enjoyment, and edification of visitors. Trails direct and facilitate pedestrian circulation in both popular and remote areas where roads do not reach. Like roads, however, trails go through the same sequence of design and construction: location, clearing, grading, and surfacing. As structures, trails can possess a number of material qualities, or character-defining features. These may include alignment, width, gradient, curvature, tread surface, and components like retaining walls, revetments or fills, steps, benches, riprap, guardrails, switchbacks, signs, and bridges.

The Lassen Peak Trail climbs 2,000 feet in 2.5 miles from the trailhead parking lot to the mountain summit, whereas the first 1.3 miles of the Bumpass Hell Trail is part of a longer route which terminates at the Kings Creek Picnic Area. From a parking lot near the highway at 8,227 feet, the Bumpass Hell Trail gently ascends 150 feet to a panoramic overlook and then slowly drops toward the thermal basin (8,200 feet) but hikers encounter several stations along the way where they can see portions of the basin and rugged panoramas. The two trails are easily the most popular walking routes in the park and have been for decades.

Integrity Statement

Both trails were built by the NPS in tandem with contracted construction of the Lassen Volcanic National Park Highway. They retain integrity and contribute to the character of the district's historic landscape, as described on the original form. Landscape characteristics of the highway include natural systems and features, spatial organization, land use, topography, vegetation, circulation, and structures. Portions of both trails have been reconstructed by the NPS since the period of significance, along with negligible realignment. Changes on the Lassen Peak Trail have been dictated by the steep climb on loose cinder, particularly in the alpine zone, but most of them were confined to periodic reconstruction of retaining walls on or near switchbacks as part of stabilizing the route. The thermal basin of Bumpass Hell is by its nature unstable, so pieces of this route have been rebuilt and a small amount of realignment has occurred beyond the overlook for safety reasons.

There is some overlap with earlier trails accessing the base of Lassen Peak, though NPS engineer Ward P. Webber designed it to lead from trailhead parking at station 367 on the highway rather than use ridgelines located west and east of the mountain, as trails built prior to the highway's construction had done. Webber staked a standard width of four feet and maximum grade of 15 percent, but had to use 29 switchbacks above timberline. **(See continuation pages.)**

Narrative Description, continued

The latter is due to much of the trail being located above tree line, though the switchbacks vanish once the route reaches the less arduous summit area.

The Bumpass Hell Trail, by contrast, remains in the lightly timbered subalpine forest until its descent into the thermal basin where some re-routing is evident for safety reasons. Webber staked a new route in August 1931 during construction of a new parking area on the Lassen Volcanic National Park Highway near Lake Helen for the trailhead. The trail climbs a gentle ridge and is located higher up than an earlier route built by the U.S. Forest Service, which was widened by the NPS in 1928. In regard to their location, most of both trails conform to their original staked line. The exceptions are on a couple of switchbacks of the Lassen Peak Trail and the realignment done in the thermal basin beyond the Bumpass Hell Overlook. In sum, both trails follow the most expeditious route given their terminal points and topography, but are also connected to the highway since the two trailhead parking lots are the only ones identified as part of the original road design.

The design of both trails consists of the following components: curvature, gradients, width, height, drainage, and overlooks or vista points. The Lassen Peak Trail largely consists of spiral curves, almost all at grade. Its minimum width is four feet, some sections (usually at overlooks) reach eight feet; height is unlimited due to the presence of very little overstory. Often steep with a targeted maximum grade of 15 percent (some sections above timberline exceed that figure), the trail is sloped slightly outward to provide sheeting for drainage instead of using culverts, dips, water bars, or check dams. Numerous overlooks at the apex of curves and switchbacks are provided and widened in many places so that small groups can congregate and for passage in both directions. By contrast, the Bumpass Hell Trail consists of more elongated radial curves with only short sections at a steeper grade than the predominate range of between two and seven percent. Where the trail up Lassen Peak is a continual climb, the Bumpass Hell Trail utilizes a gentle rise over the first seven-tenths of a mile, then an abrupt climb, but descends slowly toward the thermal basin after a saddle is reached. Most of the trail remains at a width of four feet; height is ten feet where there are trees on each side of it. Sheeting is the dominate means of drainage, though some water bars are placed along the descent toward Bumpass Hell. An overlook denotes the high point of 8,380 feet, though numerous intended views and vistas (some open, others filtered through the trees) are available along the trail, especially on the sidehill sections.

In terms of natural systems and features, the setting of both trails is obviously volcanic. Lassen Peak is a large dome which sits above a high plateau erected during a long period of volcanic activity. Most of the rock along the trail is either andesite and dacite chunks on the loose slopes, but there is solid lava at the summit. Bumpass Hell is the vent area of a dacite dome called Bumpass Mountain (8,753 feet), but is linked to other hydrothermal localities in the park by an underground network of heated water. There is also glacial evidence along the trail in the form of deep scratches and polished surfaces. Plant associations on Lassen Peak and the Bumpass Hell vicinity are those of subalpine forests, dominated by red fir (*Abies magnifica*), though the presence of mountain hemlock (*Tsuga mertensiana*) and whitebark pine (*Pinus albicaulis*) indicate the upper

limits of conifers, particularly where the latter species occurs in dwarfed form on Lassen Peak. There are no permanent streams along either trail, so the need for drainage is confined to spring runoff of the snowpack or infrequent summer thunderstorms. The Lassen Peak Trail has a predominate southern aspect, while the Bumpass Hell Trail is located on a southwest slope until it reaches the main overlook and then shifts to an east/southeast aspect for its descent toward the thermal basin.

Materials used along these and other park trails consist of three types: earth, stone, and wood. Of them, native stone has been used in the most quantity, but in two ways. One took the form of dry-laid structures built without mortar which rely on friction to keep them together. Masonry structures, where mortar is used to stabilize retaining walls, subsequently replaced some of the original dry-laid walls. Earth was used for fill, and very much like roads, the ideal situation is where cuts and fills equate during the grading phase of construction. Wood plays a minor role in comparison to stone and earth on trails generally, with use largely limited to signs and sometimes for cribbing.

Workmanship relates to how the materials are used, with the most noticeable being retaining walls on the Lassen Peak Trail that are masonry structures. They are not original work, but represent the continuing efforts to stabilize the trail since its construction. The ten dry laid walls on the Lassen Peak Trail may be original, with some intended to stabilize the backslope (above grade) in a few cases, but most often the outslope (below grade) adjacent to the tread surface. The Bumpass Hell Trail lacks switchbacks, so retaining walls are not to be seen, but there is extensive benching on the outslopes to keep the tread relatively level over stretches of trail requiring sidehill excavation. Steps can be seen in sections of steeper or "adverse" grade than is average for the trail and there are water bars formed by placement of rock on its descent to the thermal basin. There is also some finishing along backslopes on this descent, where the cuts were taken back to fixed ratios to prevent damage from erosion, with some rounding evident at the tops.

Feeling, as applied to the two trails, is evident in how either route provides continuity with the experience intended by Webber and the NPS landscape architects. The Lassen Peak Trail still provides the same diversity of views and culminates with an unmatched prospect from the most southern high peak in the Cascade Range. It remains the only walking route to Lassen Peak, while continuing to meld the unsurfaced tread with an almost invisible trail corridor to blend this route with the setting. In a similar vein, the Bumpass Hell Trail gives hikers both prospect (a number of peaks such as Mount Diller can be seen in places) and refuge, the latter being frequent seculsion within a subalpine forest while viewing more open country beyond. Although it is not the only access to Bumpass Hell (a longer route by way of Cold Boiling Lake also reaches the thermal basin), this trail is by far the most popular. With so few changes discernable since its original construction, this route probably achieves the goal of becoming part of the setting better than any other frontcountry trail at Lassen Volcanic National Park.

Recreational use continues to represent the dominate association of these two trails, yet both were designed for heavy foot traffic and occasional stock use for administrative purposes. They exhibit the characteristics associated with NPS trail standards at the time of their construction, but are distinctly different from the narrower backcountry routes built primarily as access to backcountry lakes and present fewer spectacular vistas. Both were designated as national recreation trails by the Secretary of the Interior on March 20, 1981.

Contributing structures

Lassen Peak Trail

Located and designed by NPS engineer Ward Webber, this trail effectively replaced a route built to the summit by the U.S. Forest Service in 1914. Instead of a narrow, steep route intended for the purpose of accessing a fire lookout, the Lassen Peak Trail constructed by NPS crews during the 1930, 1931, and 1932 field seasons was meant to further the experience of visitors traveling on the Lassen Volcanic National Park Highway. The most prevalent built feature on this trail are retaining walls (some original), and there is little in the way of realignment due to constraints imposed by the mountain's topography.

Bumpass Hell Trail

Webber located the trail four years prior to construction, which was then supervised by NPS engineer George Reed in 1935. It replaced an earlier Forest Service trail leading to the thermal basin from Lake Helen, one that was widened and improved in 1928 by NPS crews as an interim step to permit hiking in conjunction with an eventual opening of the LVNP Highway. The 1935 realignment made the new route to Bumpass Hell only the second at Lassen completed to NPS standards for trail construction. Most features are original and retain integrity; realigned trail segments within the thermal basin have diminished what was a separate construction project in 1937.

Contributing small-scale features (excluded from resource count)

Dry-laid retaining walls

A majority of the ten dry-laid features on the Lassen Peak Trail either date from the historic period or are compatible with original work. All function to stabilize the trail or near switchbacks, but these features also meet the goal of blending into the landscape.

Stone steps

There are a series of steps on the Bumpass Hell Trail which provide for short ascents on steep sections of trail that date from the CCC reconstruction. The steps allow for a uniform rise on the tread in these sections

and represent varying the grade (in relation to more level trail segments) as part of following NPS standards of the period. The Lassen Peak Trail also includes steps, but it is unclear if they are part of the original design.

Noncontributing small-scale features (excluded from the resource count)

Masonry retaining walls

All 12 of the "wet" masonry features on the Lassen Peak Trail are nonhistoric, though some demonstrate the traditional NPS emphasis on specifying different sizes of stone, variations in color, a gradation of size from bottom to top, raking joints and keeping them small in proportion to the stone used. Most of the features simply replaced dry-laid walls in the same spot, and they still serve the same function of stabilizing the tread.

Signs and wayside exhibits

All of the signs on the Lassen Peak and Bumpass Hell trails are contemporary and post-date the period of significance. Wayside exhibits with stone masonry bases are also located on each trail, with none reflecting park design of the historic period, but they provide some continuity with NPS intent of the time that allowed for educational enrichment in conjunction with the recreational experience of visitors.

Comfort stations

Two portable restrooms located on the Lassen Peak Trail above the switchbacks in an area 0.6 miles from the summit were removed in the late 1990s, though some evidence of anchoring their bases remains. The fiberglass toilets were a successor to wooden privvies built at the same location in 1937. The latter were once more numerous, but the privvies were frequently replaced due to damage from storms and snow loads.

END OF SECTION 7—DESCRIPTION

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- [X] A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B Property is associated with the lives of persons significant in our past.
- [X] C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply)

Property is:

- [ ] A owed by a religious institution or used for religious purposes.
- [ ] B removed from its original location.
- [ ] C a birthplace or grave.
- [ ] D a cemetery.
- [ ] E a reconstructed building, object, or structure.
- [ ] F a commemorative property.
- [ ] G less than 50 years old or achieving significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

Recreation
Transportation

Period of Significance
1925-1941

Significant Dates
1930; 1935

Significant Person
(Complete only if Criterion B is marked above)

Cultural Affiliation

Architect/Builder
National Park Service (Ward Webber, et al)

Period of Significance (justification) See original form; also Historic Park Landscapes in National and State Parks multiple property listing by Linda Flint McClelland (August 8, 1995).

Criteria Consideratons (explanation, if necessary) N/A

Statement of Significance Summary Paragraph (provide a summary paragraph that includes level of signficance and applicable criteria)

See the original form, especially pages 24-40 in this section, for a summary of construction for the Lassen Volcanic National Park Highway and its historic contexts. That submission, however, lacked a description of the associated trails and thus could not address the significance of these structures. Development of a framework with which to assess the significance of trails as part of a designed historic landscape has led to the nomination of the Lassen Peak Trail and the Bumpass Hell Trail as contributing structures in the Lassen Volcanic National Park Highway Historic District. Their association with trail standards developed by National Park Service engineers supported the ways in which rustic architecture was used for designing facilities and landscape features in national parks during the interwar years.

Narrative Statement of Significance (provide at least **one** paragraph for each area of significance)

The two structures, along with other individual trail features pertaining to their original design and construction, are eligible under Criterion A due to the association of the Lassen Peak Trail and the Bumpass Hell Trail with the history and development of Lassen Volcanic National Park. Each trail was an extension of the park's circulation system that emanated from construction of the Lassen Volcanic National Park Highway, a road whose completion greatly expedited the growth of tourism in this part of northern California. As the highway became the main way in which visitors experienced the park, the trails provided a means to reach the two most popular attractions at Lassen.

Both trails are eligible under Criterion C as expressions of newly formulated standards of trail construction articulated by NPS officials within the larger framework of rustic architecture that governed development in national parks before World War II. Along with roads, trails are an area where engineers played a key role in NPS landscape design between 1916 and 1942 (the identified period of significance in previous multiple property documentation), though the accomplishments of landscape architects have generally received more notice.

Developmental history/additional historic context information (if appropriate)

A previous statement of historic contexts by Linda Flint McClelland included a section on trail construction, though few subsequent nominations pertaining to rustic architecture of the interwar period in national parks have included this part of building pedestrian circulation systems.[1] She describes the parallels with road building, even if trail construction generally required that engineers consult less often with landscape architects about alignment and impacts. Like roads, good location and design represented challenges for the engineers and trail builders, who often had to plan for use by both hikers and horses.

National Park Service trail standards have their origin in Yosemite Valley, where foreman Gabriel Sovulewski instituted some general procedures to govern location, construction, and maintenance by 1915.[2] The surge of visitor use in Yosemite and other national parks during the 1920s eventually led to formalizing how the trails projected to receive heavy traffic were to be built, especially as funding for NPS construction began to increase in 1928. Like the landscape architects, NPS engineers served western national parks like Lassen through field offices located in San Francisco and Portland. Associate engineer Ward P. Webber did the location work for a trail up Lassen Peak in the fall of 1929, as one of the final two contracts to build the Lassen Volcanic National Park Highway was well underway with rough grading nearby. Webber staked the trail route in conjunction with writing a report about its location, in much the same way as a highway engineer would start the process of road design.

Following Webber's line, a crew of ten men was hired by the NPS to begin building the Lassen Peak Trail in July 1930.[3] With an allotment of $10,000 to start grading before snowfall stopped work **(See Continuation Pages.)**

[1] McClelland, Historic Park Landscapes in National and State Parks, National Register of Historic Places Multiple Documentation Form, August 8, 1995, 85-88. See also McClelland, *Presenting Nature: The Historic Landscape Design of the National Park Service, 1916 to 1942* (Washington, DC: Government Printing Office, 1993), 76-77, 136-142.

[2] Sovulewski, *Proceedings of the National Park Conference held at Berkeley, California, March 11-13, 1915* (Washington, DC: Government Printing Office, 1915), 51-53.

[3] In contrast to roads, where the NPS and the Bureau of Public Roads signed an interbureau agreement in 1926 to share responsibilities associated with contracting the three phases of construction (grading, surfacing, and paving), the NPS retained complete control of building trails in areas under its jurisdiction; Director [Stephen T. Mather] to the Superintendents,undated memorandum [ca. 1926], RG 79, stack 150, 32:29:1, box 150, file 201-015 Trail Policy, NARA II, College Park, Maryland.

Additional historic context (continued)

ten weeks later, the aim was to be build a trail four feet wide with grades not to exceed 15 percent.[4] With the work only 50 percent complete (from the parking lot to timberline), the NPS allotted another $6,000 to continue work from July until October of 1931. A crew was also employed the following year, completing the very top of the Lassen Peak Trail near its summit, but otherwise doing post construction. The latter included rebuilding several dry laid retaining walls on the switchbacks, a task done periodically ever since, due to the trail's location on a predominately loose slope of talus and cinder.[5]

Building a trail to Bumpass Hell, by contrast, came largely in the form of reconstruction. The first part came in 1928, when the NPS spent $3,500 to widen "a narrow sidehill path" built by the Forest Service that led from Lake Helen to Bumpass Hell. The work included putting in a gutter line and some water breaks or dips for drainage. This work was driven by a need to put the trail into fair condition until increased use (expected at completion of the highway) necessitated relocation on an easier grade and a wider trail.[6] Dissatisfaction with the trail surfaced officially in July 1931, when landscape architect Merel Sager recommended relocation of the first section, one that descended into the head of Mill Creek Canyon only to climb back up toward Bumpass Hell. He also wanted a better approach to the thermal basin, especially now that a parking lot had been built for a new trailhead as part of highway construction. Webber staked a new line within a month, one leading from the highway to Bumpass Hell, then continuing past Cold Boiling Lake to Kings Creek Meadows. Sager judged the new trail location satisfactory from a landscape standpoint, suggesting only a minor change near Bumpass Hell where the line could be kept on the ridge instead of bringing it down the inside slope.[7] Funding for construction finally came in 1935, when a crew completed an almost total realignment from the new trailhead near Lake Helen to Bumpass Hell.[8] NPS officials could then label this trail and the one up Lassen Peak as the only two completed in the park that were "of standard construction."[9]

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[4] E.P. Leavitt, Superintendent, to F.A. Kittredge, Chief Engineer, March 10, 1936, p. 2, Lassen Volcanic National Park Administrative Files, Series III (hereafter LAVO-4983); "Lassen Peak Trail Building Underway," Stockton *Record*, August 22, 1930.

[5] Leavitt to Kittredge, pp. 2-3. The necessity to do continual maintenance was noted even during construction; Merel Sager, Report of Construction Work carried on under Force Account in Lassen Volcanic National Park during the 1930 Working Season, p. 7, LAVO-4983.

[6] Ibid.

[7] Sager to the Chief Landscape Architect [Thomas Vint], August 22, 1931, pp. 3-4, LAVO-4983.

[8] [George Reed], Final Construction Report on Bumpass Hell Trail Construction [1936], pp. 2-3, LAVO-4983.

[9] Leavitt to the [NPS] Director [Arno B. Cammerer], January 30, 1937, p.1, LAVO-4983.

What made construction of the two trails "standard" was tied to a combination of characteristics. One had to do with grade, where the engineer generally avoided going over 15 percent, yet also varied them at regular intervals. This was done both as a maintenance consideration (steady grades were more prone to washouts than if an incline lets water escape every few hundred feet) and as a way of providing relief to tired leg muscles.[10] Another involved looking at trails as a sort of miniature road, insofar as construction related to typical sections, where widths were specified within a prism that could be conceptualized in both plan view and profile. Typical sections showed both a backslope and an outslope, where quantities of earth moved as part of trail building could be calculated in cubic yards based on distance and slope angles. The engineer's aim was to lessen ongoing maintenance costs and the dangers posed by loose or continually eroding material. A technique called "benching" represented an important means to make a trail stable, as it involved cutting into the backslope, but also fillling beneath the tread (particularly at the shoulder) to make it level for a stipulated width, especially in sections requiring excavation. Benching usually included the need for dry laid stonework on the outslope of a trail, but such work on a backslope was done only at switchbacks and avoided altogether if the trail's alignment allowed for an elongated curve instead.[11]

As McClelland has noted, NPS landscape architects reviewed road and trail locations staked by engineers, particularly where large trees had to be removed or extensive retaining walls were needed.[12] Clearing and grubbing outside the trail prism was usually held to a minimum; ideally a foot or less laterally on either side of the tread and no more than 10 feet vertically, to accommodate a horse and rider on trails where stock was allowed. Four feet became the "standard" width on trails receiving heavy foot traffic and/or stock use, but many routes were also designed and built at six feet or even wider if the conditions warranted.[13] Conversely, where light traffic by hikers and/or stock was projected in the backcountry, standard trail width could be 30 inches.[14]

Although trail construction might include features like bridges or even tunnels, having the appropriate drainage devices and then making them work was more cental to success. Clearing the inside corner, or "gutter line" next to the backslope became the preferred method of channeling water away from where it could wash out fills or destroy tread through gullying. Where the trail was level enough to eliminate the need for

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[10] Sovulewski, p. 54. The same point was made on "Standards for Trail Construction," PG-5088,[NPS] Office of the Chief Engineer, October 1934, one sheet, Technical Information Center, Denver.

[11] "Standards for Trail Construction," October 1934, op. cit. Sections depicting sidehill excavation and trails built on talus make note of equating fill obtained from cuts on the backslope for the bench built on an outslope; T.A. Hamilton, Standards for Trail Construction, August 1939, one sheet, Technical Information Center, Denver.

[12] McClelland, Historic Landscape Design of the National Park Service, p. 88.

[13] Guy B. Arthur, Construction of Trails, Civilian Conservation Corps Project Training manual No. 7, February 1937, p. 13

[14] This held true for more remote routes, even where equestrian travel was anticipated; Frank A. Kittredge, Trail Requirements and Ideals in National Parks, December 3, 1941, p. 10, RG 79, stack 150, 32:29:1, box 150, file 201-015 Trail Policy.

cross drainage devices, "sheeting" across the tread represented the best way to avoid building dips or waterbreaks along the route.

An alignment with 29 switchbacks posed the biggest challenge for the NPS in maintaining the Lassen Peak Trail. Loose material on the talus slope could damage exposed sections that had retaining walls on the backslope, but footings might also be destroyed by water undermining them on trail located directly above a switchback. In response, engineers aimed at lowering the grade to ten percent within five feet of a switchback and then attempting to level the trail at the turn.[15] This proved to be problematic on the steepest sections on Lassen Peak, areas also well above tree line, so keeping the walls and tread in place became an ongoing task for trail maintenance crews.[16]

Construction of the Bumpass Hell Trail could serve as a better reflection of the trail standards formalized by the NPS in 1934, if only because it traversed largely forested subalpine terrain. The "standards" recognized many different kinds of challenges confronting anyone who built trails, and so functioned as guidance rather than prescription. (There was little need to formulate specifications since the NPS supervised trail building directly, rather than let contracts for the work, like those for highway construction through the Bureau of Public Roads). With the NPS taking on expanded responsibilities during the 1930s, such as directing work by the Civilian Conservation Corps in state parks, the standards from Kittredge's office also functioned as a starting point for NPS officials elsewhere to develop a training bulletin on trail construction much as they had for masonry, building log structures, and other types of projects. It appeared in 1937, just as the program started to experience slowly declining enrollment and funding.[17]

Funding for work relief projects at Lassen allowed crews to continue improving the park's trail system, at least through the summer. In 1936 they built a trail from the thermal basin to Kings Creek Meadows over a two mile stretch, but it needed less excavation and more grubbing of trees than the frontcountry route to Bumpass Hell.[18] By the end of the decade, Superintendent John C. Preston noted a marked increase in hiking, especially in the backcountry. Not only were the "wilderness trails" attractive, but they were improved and marked "on a standard to make them travelable, yet without the unsightly evidence of artificial construction."[19] He did not express a view about trail building during the summer of 1937 within the thermal basin, but trail projects in general at Lassen plummeted until after World War II.

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[15] As shown on "Standards for Trail Construction," October 1934, op. cit.
[16] Leavitt to Kittredge, March 10, 1936, p. 3, LAVO-4983.
[17] Guy B. Arthur, Construction of Trails, CCC Project Training Series No. 7, February 1937, Technical Information Center, Denver.
[18] George W. Reed, Final Construction Report, Bumpass Hell Trail Extension, 1937, LAVO-4983. A considerable amount of sidehill excavation, much of it accomplished by blasting, was required in order to make the initial section leading from the trailhead not exceed a six percent grade on its ascent to the first viewpoint; Reed, Final Construction Report [1936], op. cit., pp. 7-9.
[19] Preston, Lassen Volcanic National Park, annual report for the fiscal year ending June 30, 1938, pp. 1-2, LAVO-4983.

Visitation increased throughout the decade and for the season of 1939, Preston announced that the annual figure for Lassen had reached just over 100,000, its highest ever. With this rise came demand for amenities, and by 1936, the NPS undertook installation of two privvies at Bumpass Hell and six in three locations on Lassen Peak. The latter came as part of lessening the impact of visitors who hiked to the summit, a figure that topped 5,000 in 1935.[20] An almost concurrent expansion (to four) in the number of NPS naturalists hired to conduct the park's summer interpretive program allowed for guided hikes to be led up the flanks of Lassen Peak and to Bumpass Hell, beginning in 1937. The standard construction of both trails no doubt aided the popularity of these offerings, though the hike to Bumpass Hell was modified to stationing a ranger in the thermal basin partly to guard against visitor accidents.[21]

To place the design and construction of both trails into some kind of comparative context, they are perhaps most analogous to projects which occurred during the interwar period in Crater Lake National Park. Lassen is the smaller of the two in size and visitation, but the parks have many similarities in physical features, length of season, and size of staff. As at Lassen, the frontcountry trails at Crater Lake were staked by a NPS engineer, with the location work reviewed by a resident landscape architect and the chief park naturalist. Having the most affinity with the Lassen Peak Trail is probably one that connected the primary developed area (Rim Village) with Crater Lake. As he subsequently did at Lassen, Ward Webber located the Crater Wall Trail so that visitors could reach tour boats docked on the shoreline below. Webber supervised work on clearing and grading in 1927, had a crew of 12 men lengthen switchbacks and widen the tread to four feet over the following summer, but also build retaining walls and parapets at convenient intervals that year.[22] Much like Lassen Peak, many visitors needed to rest while climbing some 900 feet from the water to Rim Village, and ongoing maintenance was required on sections of trail due to the inherent instability of the inner caldera.[23]

Crater Lake had more frontcountry trails built to NPS standards during the interwar period than did Lassen, but none of them exceeded two and a half miles in length. The Garfield Peak Trail, at 1.7 miles long, likely has the most affinity to the Bumpass Hell Trail, in that both involved complete reconstruction and realignment of earlier routes pioneered during the decade following 1910. Its construction completed in 1931 retaining structures.[24] Like the Bumpass Hell Trail relative to the route up Lassen Peak, the Garfield Peak

[20] George W. Reed, Activities Report for the Year 1936, March 15, 1937, pp. 18-21; Reed, Report on 1935 Field Activities, p. 14, both LAVO-4983.

[21] Preston, Lassen Volcanic National Park, annual report for travel year ending September 30, 1939, p. 4, LAVO-4983. Staffing shortages after World War II led to a self-guiding nature trail being established there, one of three in the park by 1952.

[22] Webber, Report on Construction Activities in Crater Lake National Park, Season of 1928, January 25, 1929, cited in Harlan Unrau, *Administrative History, Crater Lake National Park, Oregon* (Denver: Government Printing Office, 1988), p. 476.

[23] Like the Lassen Peak Trail, the Crater Wall Trail needed considerable post-construction work over the next several seasons. Moving the boat tour operation to Cleetwood Cove in 1959 led to abandonment of the Crater Wall Trail.

[24] Merel S. Sager [Landscape Architect], Report to the Chief Landscape Architect through the Superintendent of Crater Lake National Park, September 16 – October 6, 1930, p. 3; William E. Robertson, Associate Engineer, Crater Lake National Park, Report on Construction Activities as of November 1, 1931, p. 4.

Trail was described as the next closest rival to the route from Rim Village to Crater Lake in terms of its popularity with visitors.[25]

More significant than any comparison with other national parks was how the two trails at Lassen fit into NPS landscape design during the 1920s and 30s, specifically as an expression of zoning. McClelland addressed this to some extent in her work, though the documentation on planning and construction of trails pales in comparison to that for the building of park roads during the period of significance from 1916 to 1942. Nevertheless, there is a basis for seeing trails as more than a minor adjunct to road construction, as structures arguably more important to linking visitors with nature and the idea of national parks than any other. Several days before the United States entered World War II, Kittredge addressed a NPS training conference in San Francisco on the topic of standards and the larger meaning of trails in the national parks. He made the point, as McClelland and others have, that from its beginnings in 1916, the NPS made determinations about which areas should be invaded by campgrounds, lodges, administrative facilities and roads, certain other areas only by trails, and still other areas should not be invaded at all.[26]

Within that construct, Kittredge made distinctions in the types of trails planned for specific places within a park. Determining whether a trail should be built solely for hikers or as one suitable for horses usually involved a tradeoff of providing the benefits of access for more people who would not otherwise attempt trails perceived as only for the physically fit and self-reliant. Kittredge pointed to the value of winning over the general public through building some trails to withstand heavy use, some that others might remain more primitive by comparison.[27] He pointed to the importance of location work, then summarized construction in terms of grades, drainage, width, reducing scars, providing signs, but also reducing uniformity in alignment through building short, steep sections to augment drainage and lessen maintenance costs.[28] Kittredge concluded by making a case for the importance of trails in national parks as a means for visitors to find inspiration more fully than from a road. Properly built trails, whether in the frontcountry or backcountry, constituted the best way to make new conservationists and prepare the next generation to carry on the work of protecting the national parks and the ideals associated with wilderness preservation.[29]

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[25] E.C. Solinsky, Superintendent, in *Report of the Director of the National Park Service for the Year 1930* (Washington, DC: Government Printing Office, 1930), p. 85.
[26] Kittredge, Trail Requirements and Ideals in National Parks," p. 2.
[27] Kittredge, p. 4.
[28] Kittredge, pp. 8-11.
[29] Kittredge, pp. 12-14.

Major Bibliographic References

See the original form for a list of publications and archival collections, but also note the following which appeared since listing of the Lassen Volcanic National Park Highway Historic District:

Eifert, Larry. *Lassen Volcanic National Park: Auto Tours, Trips, and Trails.* Port Townsend, Washington: Estuary Press, 2007.

The Administrative Files of Lassen Volcanic National Park (LAVO-4983) cited as central files and historic correspondence in section 9 of the original form are housed in National Park Service collections at Redwood National Park.

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets)

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67 has been Requested)
x previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey #_____
x recorded by Historic American Engineering Record # CA-270

Primary location of additional data:

___ State Historic Preservation Office
___ Other State agency
x Federal agency
___ Local government
___ University
___ Other
Name of repository:

Historic Resources Survey Number (if assigned): _____

10. Geographical Data

Acreage of Property ~4 acres
(Do not include previously listed resource acreage)

UTM References
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing
1	10	626700	4481320
2	10	626480	4483060
3	10	625960	4480340
4	10	626820	4479450

Verbal Boundary Description (describe the boundaries of the property)

The boundary increase of Lassen Volcanic National Park Highway Historic District encompasses all aspects of the immediately surrounding environment physically affected by construction of the Lassen Peak Trail and the Bumpass Hell Trail. This includes all land and features in a trail corridor no more than 12 feet wide, which includes the clearing needed for tread, cuts, fills, rest stations, drainage features, and retaining (parapet) walls. The Lassen Peak Trail boundary extends from the trailhead to the crater rim, whereas the Bumpass Hell Trail boundary goes from the trailhead to a main overlook near the thermal basin.

Boundary Justification (explain why the boundaries were selected)

This boundary conforms to the construction area referenced in historic-period documents.

11. Form Prepared By

name/title Stephen R. Mark, Historian
organization National Park Service date July 15, 2009
street & number P.O. Box 7 Telephone (541) 594-3094
city or town Crater Lake State OR zip code 97604
e-mail steve_mark@nps.gov

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.

  A **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

- **Continuation Sheets**

- **Additional items:** (Check with the SHPO or FPO for any additional items)

Photographs:

Submit clear and descriptive black and white photographs. The size of each image must be 1600x1200 pixels at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map.

Name of Property:

City or Vicinity:

County: **State:**
sdfsdf
Photographer:

Date Photographed:

Description of Photograph(s) and number:

1 of ___.