United States Department of the Interior
National Park Service

National Register of Historic Places
Date Listed 8-12-2019
NRIS No. 5610000 4255
Oregon SHPO

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 Army Corps of Engineers Road System

other names/site number Crater Lake Rim Road, Pinnacles Road, Sentinel Rock Trail

Name of Multiple Property Listing N/A

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

2. Location

street & number Crater Lake National Park ☐ not for publication

city or town Crater Lake ☒ vicinity

state Oregon code OR county Klamath code 35 zip code 97604

3. State/Federal Agency Certification

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

I hereby certify that this **X** 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** **X** **statewide** ___ **local**

Applicable National Register Criteria: **X** **A** ___ **B** **X** **C** ___ **D**

Signature of certifying official/Title: Deputy State Historic Preservation Officer Date

State or Federal agency/bureau or Tribal Government

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

Christine Curran 8.23.19

Signature of commenting official Date

Deputy State Historic Preservation Officer Oregon State Historic Preservation Office

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

Army Corps of Engineers Road System Historic District (Crater Lake National Park)
Name of Property

Klamath Co., Oregon
County and State

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
11		site
12	10	structure
1	0	object
24	10	**Total**

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions.)

Transportation: road-related (vehicular)
Transportation: pedestrian-related
Recreation and culture

Current Functions
(Enter categories from instructions.)

Transportation: pedestrian-related
Recreation and culture

7. Description

Architectural Classification
(Enter categories from instructions.)

N/A

Materials
(Enter categories from instructions.)

foundation: N/A
walls: N/A
roof: N/A
other: EARTH: Packed earth
STONE: Andesite

Narrative Description

(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity).

Summary Paragraph

The U.S. Army Corps of Engineers Road System (ACERS) includes Rim Road and three approach routes. ACERS is a linear property located entirely within Crater Lake National Park, in most cases within a mile of the previously listed Rim Drive Historic District (in 2008; NRIS 08000041). The National Park Service conducted an archaeological inventory project in 2015-16 so that features associated with the ACERS could be documented in the Oregon SHPO database, whether formally evaluated for listing on the National Register of Historic Places or as unevaluated, but documented, sites and isolates. This nomination focuses on the engineered qualities of the first road circuit around Crater Lake (Rim Road), a route currently used by park visitors and staff as an 11.8 mile trail, with the remaining 23.6 miles either overtopped by Rim Drive or obliterated in short sections via landscape treatments during the 1930s (9.3 miles), or abandoned altogether (14.3 miles). Crater Lake Rim Road is the most coherent part of the ACERS and lies between 6,000 and 7,850 feet in elevation in its original alignment, with a large number of the original overlooks to Crater Lake still evident. Elsewhere the 16 foot wide roadway winds through old growth forest of mountain hemlock, lodgepole pine, Shasta red fir, and whitebark pine. Abandoned portions of Rim Road contain these species in the roadbed, but vegetation has not erased its horizontal and vertical alignments or the associated engineered qualities over a total distance of 35.4 miles.

Only one of the approach routes (the first Pinnacles Road) to the Rim Road circuit exhibits some integrity of location, design, setting, materials, workmanship, feeling and association where 1.1 miles of a possible 3.2 are contributing to the ACERS. The Medford and Fort Klamath approach roads are either fully overtopped by Oregon Highway 62 and the Munson Valley Road, or virtually indiscernible due to their proximity to the Fort Klamath-Rogue River Wagon Road (initially opened in 1865) and/or early wagon routes built by park employees in 1905. Realignments and other changes to approach roads by the Bureau of Public Roads began in 1924 and have resulted in widening routes pioneered by the Corps of Engineers, with almost none of the engineered qualities extant, apart from general alignments. The purpose of this nomination is to describe the design and construction of the ACERS where evidence of it still exists, and relate them to the historic contexts of park development and highway engineering. The historic district comprises eleven contributing archaeological sites associated with construction activities of U.S. Army Corps of Engineers, twelve contributing structures including eleven road segments and one trail, one contributing object (the remains of construction equipment used in the creation of the resource), and ten non-contributing structures, all of which are segments of the resource where subsequent road construction buried or destroyed the original structures.

Narrative Description

The U.S. Army Corps of Engineers Road System Historic District is located in Oregon's Cascade Range, about 75 miles northeast of Medford and 60 miles north/northwest of Klamath Falls. Built by the Corps of Engineers from 1913 to 1918 with funding from annual appropriations provided by Congress, Crater Lake Rim Road lay at the center of Crater Lake National Park's vehicular circulation system during its summer tourist season for roughly two decades prior to construction of Rim Drive by the Bureau of Public Roads and the National Park Service through a series of contracts starting in 1931. Unlike Rim Drive, which begins west of Rim Village, Rim Road started at Lost Creek, in the park's southeast quadrant, because the engineers had to first construct a new approach route to access the Pinnacles in order to utilize rail transportation of equipment and supplies through the station nearest the park at Kirk,

Oregon. Building the Crater Lake Rim Road proceeded in two directions from Lost Creek, until grading operations closed an irregular loop in 1918. At that juncture, park visitors had access to a circuit road served by three approach routes.

Three somewhat distinct subalpine plant communities are encountered along the Crater Lake Rim Road, mostly in response to elevation and the rugged mountain topography that provides a range of microclimates. The first is a mountain hemlock and Shasta red fir community that dominates much of the west and north rim from the current Park Headquarters (mile 8, as measured from Lost Creek) to Mazama Rock (mile 23). This can include a number of shrubs and wildflowers seen in wetter areas. The south and east portions of the rim are drier from the Palisades (mile 24) to Vidae Ridge (mile 6), especially where Rim Road is located, and lodgepole pine or forbs adapted to almost sterile pumice soils are more evident. Shrubs such as ceanothus and manzanita are often found there, as are some lone ponderosa pines where sun exposure is the greatest. The highest elevations of the Crater Lake Rim Road cross the Watchman and Hillman Peak (mile 13 to 16), as well as Cloudcap (mile 28), which are almost exclusively the habitat of whitebark pine interspersed with some mountain hemlock and the hardiest of sedges.

Challenges posed by high mountain topography include the relatively steep gradients required for Rim Road to traverse the western slopes of the Watchman and Hillman, get around Anderson Point, but also ascend Cloudcap from the south, and reach Rim Village from Munson Valley. Rim Road generally follows a higher line on the western (foot of Watchman near Lightning Spring to Devils Backbone) and eastern (Skell Head to Kerr Notch) sides of the caldera than does Rim Drive. This is to minimize excavation and the quantities of material to have otherwise been moved by wood-burning steam shovels, teams of horses, and hand labor. Engineers aimed to equalize cuts and fills during the grading phase of road construction, a goal that lessened both the costs associated with moving earth and the resulting landscape scars. Where crews needed to "borrow" additional base material for fills or revetments, they made some efforts to hide pits and quarries from the casual view of motorists. Given their technological limitations, the Corps built below the line of what later became Rim Drive, most notably in the south and southeast (below Vidae Falls via Lost Creek to Kerr Notch) as well as the northwest and north (in what is now the Grouse Hill Segment—or Resource 8—of Rim Road. The alignment of a 35 mile loop can thus be broadly attributed to the engineers having two overarching concerns: provide access to scenic features (notably views of Crater Lake from the rim), but just as importantly, stay within budget given their technological limitations.

The existing road surface is somewhat variable: there are segments where a pumice (earth) base is plainly evident, but others where seeding from surrounding trees has taken over and fallen rocks impede foot traffic. In others, fragments of oil mixed with earth can be found, pointing to attempts by the NPS in the late 1920s to minimize dust, whereas in one or two places cross drainage devices have since failed and seasonal snowmelt destroyed small portions of the road surface. Rutting has been minimized by NPS road or trail maintenance in some segments, especially where they remain in active use. In others, there has been overtopping by Rim Drive, usually accompanied by efforts made during the 1930s to obliterate the ends over short stretches (where they could be seen by motorists on Rim Drive) as part of "naturalizing" the landscape. Of the 38.6 miles in the nominated portion of the ACERS (Rim Road plus the Pinnacles Road), overtopping and obliteration dominate eight miles in ten non-contributing road segments in this nomination; another three miles have lessened integrity within the 12 contributing segments of the ACERS, but the remaining 27 miles clearly exhibits those engineered qualities associated with the ACERS and its period of significance (1910-19).

For the purposes of assessing the nominated portion of the ACERS as constructed, the National Park Service has defined the seven aspects of integrity in relation to trails, roads, and highways. The first is

location, or where the historic property was constructed. It means here that a trail, road, or highway remains largely within or follows its original alignment. *Design* is the combination of elements that create the form, plan, space, structure, and style of a property. Its integrity refers here to the retention of character-defining features or characteristics chosen during the planning, creation, and/or construction of the historic property. The physical environment of a historic property is its *setting*. This refers to retention of the same general character that was present during the property's period of significance with minimal intrusions and includes the surrounding landscape. *Materials* are the physical elements that were combined or deposited during a particular period of time and in a discernible pattern or configuration to form a historic property. Certain materials (such as packed earth or stone) may be designated character-defining features that are central the function or use of the property. The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory is *workmanship*. It includes the labor, skill, or craft (such as grading, for example) expressed within the trail or roadway, or its component parts (cross drainage, revetments). *Feeling* is a property's aesthetic expression, or historic sense of a particular period of time. This can be expressed in terms of how certain elements that convey significance, such as the road prism itself, have been retained. Finally, *association* is the direct link between the historic event or person and a historic property. It includes specific physical components that convey the property's historic character, and should date from the trail or roadway's period of significance.[1]

While retention of feeling or association alone are not generally sufficient to support the eligibility of a property for listing on the National Register, they are nonetheless important to the ACERS. They are also evident throughout the 11 associated archaeological sites referenced as specific contributing resources (2, 6-7, 9, 13-14, 16, and 19-21) of the Crater Lake Rim Road, along with one object (resource 10), and present (resource 23) on one approach route (Pinnacles Road). A fairly wide variety of artifacts have been found and documented as sites and isolates along Rim Road and the Pinnacles Road during the 2015-16 archaeological survey by NPS personnel. The most common find along these roads involves phone line, sometimes with porcelain insulators either attached or in nearby trees. Rolls and spindles of this wire have also been found in a few areas adjacent to the Rim Road. Cans and bottles—sometimes evident in concentrations where remnants of camps were documented—are present, as are pieces of machinery in a few places along the road shoulders or even in the roadbed. Less evident are the remnants of water tanks and sprinkling systems, but corrugated iron culverts used for cross drainage under the road bed can be seen in more than half of the contributing segments. The most unusual finds include several remaining log plank culverts near Sand Creek in Kerr Valley, a water system below Anderson Point, remnants from a rock crushing operation on Dutton Ridge, and an almost fully intact arm of a 1914 Thew steam shovel in the vicinity of Grouse Hill.

ARMY CORPS OF ENGINEERS ROAD SYSTEM SEGMENTS

For the purpose of this nomination, the ACERS (that is, the Rim Road, old Pinnacles Road, and Sentinel Rock Trail as well as associated sites and features) have been divided into 12 contributing and 10 non-contributing segments of varying lengths. The nominated historic district consists of a linear, engineered roadway designed for the use of automobiles—all of which went through a sequence of reconnaissance, location study, and finalized survey before clearing operations began along the roadway. Construction largely consisted of rough and finish grading, placement of cross drainage devices (temporary bridges and culverts), revetment work in several locations, and limited surfacing—a phase not fully undertaken by the Corps or NPS of the time due to lack of funding. The 12 contributing segments of this road system reflect nascent engineering practice for automobile touring, in particular the road system's

[1] The definitions appear in: United States Department of the Interior, National Park Service, *National Historic Trail Feasibility Study: Old Spanish Trail* (Washington, DC: Government Printing Office, 2001).

curvature, gradient, width, as well as both horizontal and vertical alignment. In contrast to Rim Drive and the approach routes that succeeded the ACERS, most pullouts along the earlier Rim Road are not formalized to any great degree, and landscape architects contributed none of the components. Moreover, as vehicles became faster and heavier by the late 1920s, the shortcomings of a system built a decade earlier became apparent. Not only was the ACERS unsurfaced, its width barely permitted traffic in both directions. The maximum gradients on the Rim Road were somewhat steeper, with less elongation of curves so that turning proved to be tighter with only limited superelevation (banking) along them, mainly due to a lower design speed and construction costs.

Like Rim Drive, the earlier Crater Lake Rim Road remained in use for only three or four months each year because of winter snowfall. This helped to minimize alterations of the roadway as originally designed, but park visitation went from roughly 13,000 in 1918 (when the Rim Road circuit opened) to more than 170,000 when construction on Rim Drive began in 1931. As previously mentioned, Rim Drive overtops Rim Road in some places, most notably along the caldera's western, northeast, and southeast edges. These places usually coincide with most of the "old road obliteration" efforts by the NPS landscape architects of the 1930s in their push to erase traces of the Rim Road that might be seen by passing motorists. Nevertheless, the 12 contributing segments (structures) of Rim Road total 29.1 miles in comparison to its original length of 35.4 miles, with more than 26 miles readily identified as such, either in its current use as a trail, or as an abandoned roadway. Considerably less of the ACERS still exists in the form of abandoned segments along approach routes originally called the Medford Road (none), Fort Klamath Road (less than a half mile is certain), and the Pinnacles Road (about one mile). Most of these routes were widened, with some realignment in subsequent projects orchestrated by the Bureau of Public Roads and its successor, the Federal Highway Administration. Only the remaining portion of the Pinnacles Road built in 1913 possesses sufficient integrity, such that it can be easily related to the Crater Lake Rim Road as a manifestation of the design intent behind the ACERS. A trail (0.3 mile) to Sentinel Rock is included in the ACERS, despite being constructed in 1915 by park rangers, since this route remains as a part of the circulation system orchestrated by the Corps during the period of significance. Another route, an automobile "trail" lightly graded by the NPS during 1919 in accordance with earlier plans from the Corps, is not included since all but the smallest traces of it were removed as part of NPS road obliteration efforts during the late 1930s.

Character-defining features

The ACERS at Crater Lake National Park is a good example of an early vehicular circulation system that is both designed and built according to the rapidly evolving standards of a period when automobiles became crucial to the expanding popularity of national parks and outdoor recreation in general. It continues to display the distinctive characteristics of road construction at a time when methods were limited to hand tools, horse-drawn plows and scrapers, along with blasting and wood-burning steam shovels for heavier excavation. The contributing segments possess all seven aspects of integrity (location, design, materials, setting, feeling, association, and workmanship), despite short stretches of non-contributing roadway being included in some of these segments. What separates Rim Drive (finished, for the most part, in 1941) or the current Pinnacles Road (completed in 1936) from the ACERS is that the former are both surfaced and paved with a roadway measuring between 22 and 24 feet wide. In all cases, the contributing roadway of the ACERS is 16 feet shoulder to shoulder, and consists of earth graded surface with evidence of cross-drainage devices or a functioning ditch line. Maximum grades do not exceed 10 percent and average considerably less than that figure. The various types of curvature are still recognizable to a civil engineer, and are, at times, seen alongside a modest amount of superelevation or revetment. These basic character-defining features of Rim Road and its approach routes did not change during the system's period of significance, even though automobile roads

elsewhere in Oregon evolved greatly during the 1920s, with many of them reflecting the standards used to build Rim Drive and its new approach routes.

Integrity of location has been maintained along the contributing segments of the ACERS, and the natural landscape characteristics that dictated the design and construction of the Rim Road or the approach routes remain intact. All segments are located on federal land and administered by the NPS. The system's best indicators of design are width, composition, location, and facets of engineering practice of the time that are missing from the earlier wagon roads. These include cuts, fills, cross-drainage devices, retaining walls and revetments composed of native rock such as andesite, in addition to road shoulders so that typical sections are both discernible and uniform. Where they differ from Rim Drive is that all are products of hand labor, horsepower, excavation by wood-burning steam shovels, or blasting. The builders of Rim Drive, by contrast, utilized some hand labor and limited horsepower, along with some dynamite, but enjoyed the advantages of petroleum-fueled bulldozers, excavators, and dump trucks to move earth. The landscape component on Rim Drive is far more pronounced, as is dry-laid stonework and masonry. Engineers from the Bureau of Public Roads (BPR) benefitted from road standards in place by the 1920s and previous experience with building automobile roads, as compared to what the Corps of Engineers could reference from railroads and wagon roads a decade or so earlier.

Rim Drive followed Crater Lake Rim Road wherever possible to minimize impact on the larger setting of Crater Lake. This was also the case (and even more so) when it came time to rebuild the three approach routes. BPR divergence from the constructed lines of the ACERS, however, can also be explained by a trinity of new engineering considerations regarding traffic volume and maintaining a design speed, advancements in equipment, and about five times the funding—even when adjusted for inflation.[2] More money allowed for the landscaping components of Rim Drive, as well as the ability of BPR to confidently contract the work in grading, surfacing, and most of the paving. Even with a total of ten non-contributing segments (eight on Rim Road, two on the Pinnacles Road), the overlays to the ACERS (where two eras of road construction follow the same alignment) account for only 8.4 of the 38.6 total miles. If non-contributing portions of the 12 contributing segments (a total of 3 miles) are factored into the total calculation, the portion of the ACERS unequivocally displaying all aspects of integrity totals approximately 27 miles.

Assessments of a transportation property are, by their nature, relative—but some thresholds can be established for early automobile roads and highways built from 1900 to 1940, even where much of the roadway lies in an abandoned state. On the upper end, or level 1, are properties where the road is fully intact or nearly intact, with no apparent significant alterations. Much like Rim Drive, a level 1 road from this period retains physical evidence that connects its period of use with its historic context and period of significance. The nominated portion of the ACERS (Crater Lake Rim Road and the Pinnacles Road), however, best fits a level 2 threshold, where they remain relatively intact, with minor alterations created through natural erosion, vegetative encroachment, or forms of land use (such as subsequent road construction) that are inconsistent with the character or context of the property, yet retain all seven aspects of integrity to a greater or lesser degree. Below it are level 3 properties, which retain a fair amount of integrity but have experienced a moderate degree of change in relation to the seven aspects of integrity to where they are marginal candidates for listing on the National Register of Historic Places. Level 4 properties have been so compromised by natural forces or alteration through modern use, such that they are poor candidates for listing on the National Register. Level 5 properties are where the road has major alterations resulting in limited physical evidence, with its setting modified to a point where it generally does not reflect a period of significance; this is where most of the Fort Klamath Road (as one

[2] Stephen R. Mark and Jerry Watson, *Rim Drive Cultural Landscape Report, Crater Lake National Park, Oregon* (Seattle: Government Printing Office, 2009), 14-27.

approach route of the ACERS) is likely situated. Lastly, level 6 properties are characterized by a total lack of integrity, often through complete obliteration or significant to their setting, even if the general alignment is retained; the Medford Road of the ACERS likely occupies this position.[3]

As part of the larger district, eight of the associated sites are contributing resources because they illustrate the staging points in building road segments during each of the six construction seasons. The Corps numbered these seasonal camps, but also moved them as grading operations (the most labor intensive part of road construction) proceeded so that most had multiple locations through the life of the project. In reference to the nominated portion of the ACERS, Camp 1 had two locations (Wheeler Creek Crossing and Lost Creek Headwaters), while Camp 5 occupied three sites (Snow Spring, Cloudcap, and Wineglass), and Camp 6 was also situated in three places (Lightning Spring, Devils Backbone, and Grouse Hill) depending on the year. All of these sites were ephemeral, but contain scattered artifacts to a greater or lesser degree. As a site type, these eight contributing resources are the most consistent with camps established outside the park for railroad logging on the national forests during the period of significance in terms of their form and function. Instead of building railroad grades and moving the rails once logging had finished, however, the associated camps of the ACERS were connected by telephone and lay in close proximity to a graded road for automobiles. Two other associated sites (Water Station and Last Water) were also connected by telephone and situated directly on the Crater Lake Rim Road, a relatively short distance from the more transitory camps, but supplied water initially for construction crews. They remained in use by visitors for somewhat longer, into the early 1920s. A rock quarry and crusher on Dutton Ridge existed until 1923, even if efforts to use it for surfacing the Crater Lake Rim Road largely failed. All 11 contributing sites shared the common characteristic of being documented, albeit briefly, in annual reports submitted to the Corps by project engineers George Goodwin and William G. Carroll.

One contributing object (recorded by archaeologists as a feature amid a small scatter of other artifacts) also remains in place along the Crater Lake Rim Road, an arm from a wood-burning Thew steam shovel. It is situated along the final stretch of grading by the Corps, which occurred in 1918, abandoned with no reasons given by either the Corps or National Park Service. It is both large and distinctive, in that the arm links an operator working from a rotating cab with the bucket, which can excavate both rock and earth. The steel arm also is an obvious link to a type of road construction dependent on steam, horse power, and hand labor instead of petroleum-powered heavy equipment that began to dominate this industry during the 1930s.

CONTRIBUTING RESOURCES: Crater Lake Rim Road, Pinnacles Road, Sentinel Rock Trail

The contributing resources of Rim Road are numbered consecutively and proceed in a clockwise direction from Lost Creek around the rim of Crater Lake and back to Lost Creek, where the Pinnacles Road runs southeast to the park's former east entrance. These are numbered sequentially from 1 to 24, no matter whether they are a contributing road or trail segment (structure), site, or object.

Resource 1

Structure:	Grayback Segment, Crater Lake Rim Road
Location:	Lost Creek to Castle Crest (mile 0.0 to 7.5)
Designer:	U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder:	U.S. Army Corps of Engineers through day labor

[3] The thresholds are adapted from those developed by the California Department of Transportation, *A Historic Context and Methodology for Evaluating Trails, Roads, and Highways in California* (Sacramento: Caltrans, 2016), 165-69, accessible at http://www.dot.ca.gov/ser/guidance.htm#highway

Owner: USDI-NPS

Starting from the junction with the Pinnacles Road at Lost Creek, the Rim Road proceeds west. The roadway measures 16 feet in width shoulder to shoulder, with the constructed corridor being approximately 30 feet, or at roughly the clearing limits. Along the first five miles of this segment the Rim Road can be driven, though at present this is limited to administrative use only, and public use is limited to that of a bicycle or hiking. The road consists of native earth and is mostly surrounded by coniferous forests of true fir and mountain hemlock, though southern exposures below Dutton Ridge are dominated by large shrubs (ceanothus or manzanita). Stands of lodgepole pine are interspersed throughout the road segment, which ranges in elevation between 6,000 and 6,700 feet. Built in 1913-14, this portion of Rim Road is briefly overtopped at the Vidae Falls Picnic Area, but is noncontributing for only 100 feet. The initial part of the Crater Peak Trail utilizes the graded Crater Lake Rim Road for a half mile as it crosses Vidae Creek and climbs toward Tututni Pass. Rim Road is buried by fill from Rim Drive near the top of Vidae Ridge, but this obliteration by Rim Drive lasts for only a quarter mile, then the Rim Road diverges to the north of Rim Drive for a half mile. It returns to Rim Drive to be overtopped for another quarter mile before diverging again to the north for another 1.25 miles, then finally disappears in a cut bank over Rim Drive, a half mile south of the Castle Crest Wildflower Garden. Overall, this segment has retained all seven aspects of integrity and is one of the finest contributing segments in the proposed historic district. From Lost Creek the legal locations are T31S, R7½E, sections 18 and 19 of the Crater Lake East 7.5' USGS topographical quadrangle; continuing west to T31S, R6E, sections 23 and 24 of the Maklaks Crater 7.5' topographical quadrangle; then west to T31S, R6E, sections 14, 15, and 16 of the Crater Lake East topographic quadrangle. All segments of the Crater Lake Rim Road are located in Klamath County. For a map of this segment, see Additional Documentation, page 56.

Resource 2

Site:	Dutton Ridge Rock Crusher and Quarry, Site 35KL4389
Location:	T31S, R6E, Section 24, NW ¼ NE ¼ SW ¼; Maklaks Crater 7.5' [redacted]
Designer:	U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder:	U.S. Army Corps of Engineers (day labor)
Owner:	USDI-NPS

Crews graded a narrow (six feet wide) spur road of roughly 200 feet from Crater Lake Rim Road to the site in 1914, something intended only for access by construction crews. Snow destroyed the rock crushing plant in 1923, but this site still includes the historic period engineered access road, a small quarry, and remnants of the crusher—something represented by milled wood, along with an abundance of steel tie rods and fixtures. The site's documented role in the construction project is tied to what the Corps planned to accomplish at Crater Lake if Congress had made funds available, namely the surfacing and paving of Rim Road. One of their priorities included addressing the particularly soft base prevalent between the crossing of Wheeler Creek and an overlook (Tongue Point) located above Sun Creek Valley. The crusher and quarry site lies at the toe of Dutton Ridge, at the base of its southern flank before ridgeline continues in a southeastern direction as Grayback Ridge, with a rocky outcropping of andesite boulders and bedrock plainly evident. Artifacts consist of mostly metal of varying sizes (125 of the 145 counted) and are distributed uniformly throughout the site, with an exception being tie rods (used to keep the crusher box in place) located generally at the base of Dutton Ridge. Other material includes milled wood of two types, along with a small number of cans and amethyst glass fragments. Some crushed rock is evident as revetment for the access road at the crusher site.

Resource 3

Structure: Munson Valley Segment, Crater Lake Rim Road
Location: Engineers Headquarters (Munson Valley) to Crater Lake Lodge (mile 8.0 to 10.00)
Designer: U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

Built in 1913-14, this segment is 2 miles in length. It is 16 feet wide, shoulder to shoulder, it consists of three parts. The first one is a quarter mile of contributing Crater Lake Rim Road, which mostly corresponds to about half of a modern spur trail connecting the current Park Headquarters complex with the Castle Crest Wildflower Garden, though it begins alongside Rim Drive just north of the parking lot for the Garden trail loop. Along the spur trail, this part of Rim Road is obscured by seeded lodgepole pine and mountain hemlock, which grow to an identifiably uniform height along it at roughly 6,400 feet elevation. The second part of Rim Road, which is non-contributing, runs for roughly a quarter mile and has largely been overtopped by the circulation system at Park Headquarters built during the period of significance for the listed Munson Valley Historic District (1926-41; NRIS #88002632). The only vestige of the Engineers Camp that remains at Park Headquarters is a feature called the Lady of the Woods, an unfinished sculpture carved from part of a boulder in October 1917 by E.R. Bush, the last doctor assigned to the ACERS project due to a wartime shortage of qualified physicians. Its dimensions are roughly 30 inches by 20 inches and the focal point of a trail leading from a "plaza" built for parking in 1934. There is, however, remarkably little left from the headquarters camp and its occupation by the Corps from 1913 to 1918, or even by the NPS before 1926.

The current road connection between Park Headquarters and Rim Village is the Munson Valley Road, a route moved to its current alignment between 1925 and 1929, so that the earlier Crater Lake Rim Road remains visible as a fairly uniform line of trees located north of the Administration Building. The contributing roadbed can be followed for another half mile, much of it just below the current Munson Valley Road to a point where it crosses the latter just west of Munson Creek's headwaters. From there the Rim Road remains evident and runs almost due north across Munson Ridge to the Rim Dormitory (a building completed in 1974 and leased to the park concessionaire), located south/southwest of Crater Lake Lodge. A service route of 0.2 mile connecting the dormitory with the hotel is the Crater Lake Rim Road and constitutes the only portion that is paved away from noncontributing segments where Rim Drive has overtopped it. Where the Rim Road meets hotel parking constructed in the 1930s, it is at 7,100 feet elevation and just inside the listed Rim Village Historic District (NRIS #97001155).

Vegetation along the lower part of this segment is characterized by an overstory of lodgepole pine, mountain hemlock, or true fir, whereas the upper part has some scattered whitebark pine in the highest and most exposed areas. The latter are also populated by sedge species that grow next to pumice fields found below Garfield Peak and south of Crater Lake Lodge. Aside from the short paved portion, Rim Road consists of graded earth and has some of its cross drainage (culverts) exposed. Overall, this segment retains all seven aspects of integrity, and it contributes to the significance of the proposed historic district. Starting on the spur trail, its legal location is T31S, R5½E, sections 9, 8, and 5 of the Crater Lake West 7.5' USGS topographic quadrangle. See Additional Documentation, page 57.

Resource 4

Structure: East of Discovery Point Segment, Crater Lake Rim Road
Location: A point location one mile west of Crater Lake Lodge to 0.1 mile east of Discovery Point parking area on Rim Drive (mile 11.0 to 11.5)
Designer: U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

This segment of the Crater Lake Rim Road is 0.5 mile in length and was built in 1915. It extends from the end of the adjacent non-contributing segment (Resource 26) and goes to a point on Rim Drive located 0.1 mile east of the current Discovery Point Parking Area. This segment consists of three parts, with the first (at 0.2 mile) being the longest stretch of Rim Road that diverges away from Rim Drive in this segment, first proceeding north, then west, in a relatively flat area overlooking Crater Lake. Despite light soil and the ravages of time, there is little here to hide Rim Road from modern-day motorists and hikers. Although this part of Rim Road also maintains its original width and alignment, a short noncontributing piece follows to the west, where Rim Drive has overtopped Rim Road, but is then followed by an even shorter contributing piece of 0.1 mile in length. Although there are sporadic stands of subalpine trees along this segment, the landscape is better characterized by intermittent sedges and some barren pumice, with views to Crater Lake and mountains beyond. In an overall sense, this road segment retains all seven aspects of integrity despite being the shortest contributing segment of Crater Lake Rim Road. The legal location is T31S, R5½E, section 6 of the Crater Lake West 7.5' USGS topographic quadrangle. See Additional Documentation, page 57.

Resource 5

Structure: Watchman Segment, Crater Lake Rim Road
Location: Lightning Spring to Devils Backbone (mile 12.5 to 16.5)
Designer: U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

This segment begins 0.4 mile south of a picnic area added to Rim Drive in 1958. At the picnic area, the Crater Lake Rim Road is evident as a foot trail and continues on a higher line than Rim Drive in order to get around the Watchman, then Hillman Peak, reaching the Devils Backbone. Graded in 1915-16, this road segment consists of three parts, with the prevailing direction being north. There are two swings westward as part of its traverse around the Watchman and Hillman sections. From the south, the segment begins with two "elbows" representing Rim Road, each of them just over 0.1 mile in extent, situated to either side of Rim Drive. Both pieces of road possess original width and alignment, but the next part is non-contributing, as Rim Road is overtopped by Rim Drive for 0.2 mile before it diverges at the picnic area. At that point Rim Road veers away from Rim Drive to the foot of Watchman, where construction ceased in 1915, but not before making a dramatic "S" curve that provides a view of Crater Lake more than a thousand feet below and makes Wizard Island clearly visible. This part of Rim Road and the section graded in 1916 to Devils Backbone are currently used as a pedestrian route called the Rim Trail.

From the foot of Watchman, the Crater Lake Rim Road climbs at a steady grade—first west, then northeast—toward the Watchman Overlook on Rim Drive. Much of the 2.9 miles graded in 1916 is on an engineered rock base or revetment, something that begins on the southwestern slope of Watchman and continues across the back side of Hillman Peak, then slowly descends to the Devils Backbone. All the while Crater Lake Rim Road lies above Rim Drive, usually amid forest of either whitebark pine or mountain hemlock, but with some open andesitic slopes at elevations between 7,500 and 8,000 feet. In

all, the segment is one of the most spectacular in the park and retains all seven aspects of integrity, while contributing to the significance of the proposed historic district. Its legal location is T30S, R5E, sections 25, 24, and 13, along with T30S, R5½ E, sections 19 and 20 on the Crater Lake West 7.5' USGS topographic quadrangle. See Additional Documentation, page 58.

Resource 6

Site:	Lightning Spring Camp #6, Site 35KL4390
Location:	T30S, R5E, Section 25, NE ¼, SE ¼, SW ¼, Crater Lake West 7.5' [redacted]
Designer:	None
Builder:	U.S. Army Corps of Engineers (day labor)
Owner:	USDI-NPS

This is a multi-component site that contains historic material from crews hired to grade the Rim Road in 1915 and 1916, though a portion of the larger site was also occupied by contractors during the building of Rim Drive in the 1930s. A preponderance of artifacts are, however, associated with the earlier camp and scattered over a wider area than ones from the 1930s. They include tobacco tins, glass fragments from bottles and window panes, nails, phone line, cans, one inch waterline, and culturally-modified trees. The site is accessed by a faint track from the fire road, (something now used as a trail leading from Rim Drive) and served as a construction camp for most of the 1915 and 1916 road-building seasons. It lies on a gently sloping bench mostly of pumice and a scattering of trees, situated on a flank of The Watchman, but below Rim Drive and above Lightning Spring. The artifact count comes to almost 900, consisting of bottles, cans, ceramics, glass and metal fragments, milled wood, and faunal remains in an area of some 5,000 square meters. Dates of artifacts suggest two periods of occupation with some mixing of both eras throughout portions of the site. At its northern end is a concentration of artifacts stemming from occupation by crews hired for grading the Crater Lake Rim Road in 1915-16, whereas other concentrations further south in the site indicate the presence of contracted crews associated with building Rim Drive during the 1930s, with only limited material tied to the earlier period.

Resource 7

Site:	Devils Backbone Camp/Camp #6, Site 35KL4391
Location:	T30S, R5½E, Section 20, NW ¼, NW ¼ , SW ¼, Crater Lake West 7.5' [redacted]
Designer:	None
Builder:	U.S. Army Corps of Engineers (day labor)
Owner:	USDI-NPS

Like the Lightning Spring site, this former construction camp is located below Rim Drive and thus not contiguous to Rim Road. It is also a multi-component site, with historic period artifacts having almost the same degree of diversity as at the Lightning Spring camp. Crews building Crater Lake Rim Road and their artifacts related to 1916 and 1917 are, however, more geographically separated from the later occupation by contractors who worked on Rim Drive. Both periods of occupation in this locality depended upon water systems that originated from springs located inside the caldera, something which is indicated by remnant metal pipe sections found from both period camps. The site occupied in 1917 and 1918 shows three concentrations of artifacts over small areas at the fringe of a mature mountain hemlock stand as it gives way to open pumice field. The total number of artifacts counted comes to just over 60, consisting of cans, glass, ceramics, and metal. Like the Lightning Spring camp, water was piped to the site. At Devils Backbone, a spring inside the caldera supplied water that was pumped 150 feet to the rim, where it traveled by gravity to the camp through one inch line.

Resource 8

Structure: Grouse Hill Segment, Crater Lake Rim Road
Location: North Junction to Pumice Point (mile 17.0 to 21.3)
Designer: U.S. Army Corps of Engineers (William G. Carroll, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

This segment was built in 1917 and 1918, but most of the first two miles from North Junction is currently used as a pedestrian trail before the last piece of the Rim Trail veers due north and then terminates at its junction with the Pacific Crest Trail. Starting at the forest edge in open pumice fields, the Crater Lake Rim Road eventually becomes enveloped in a predominately mountain hemlock-Shasta red fir forest by the time it leaves the Rim Trail and then goes around the base of Llao Rock. It stays well below Rim Drive until crossing the modern road circuit atop Pumice Point.

There are five parts to this road segment, beginning with one that runs as an unbroken line for 3.3 miles. At its eastern end, this first piece of Crater Lake Rim Road eventually climbs to where fill from Rim Drive buries Rim Road for 0.1 mile. The noncontributing section quickly gives way to a contributing one of 0.4 mile that starts below Rim Drive, then crosses it and becomes a short parallel piece that lies above the modern roadway. Another noncontributing section of Rim Road (0.2 mile) lies beneath Rim Drive between Steel Bay and Pumice Point, but the overtopping gives way to a contributing section as Rim Road forms a "V" shape on the crest of Pumice Point. Although this segment of Crater Lake Rim Road runs through a thick forest of mountain hemlock and lodgepole pine since leaving the pumice fields, it concludes by reemerging above Crater Lake, thus providing a first view of the lake since Rim Road left the Devils Backbone in Resource 7. Overall, this road segment retains the seven aspects of integrity and contributes to the significance of the proposed historic district. Its legal location is T30S, R5½E, sections 17, 8, and 9, on the Crater Lake West 7.5' USGS topographical quadrangle, but also T30S, R5½E, sections 9 and 10, on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 59.

Resource 9

Site: Grouse Hill Shelter Cabin, Site 35KL4392
Location: T30S, R 5½E, Section 10, NW ¼, SW ¼, SW ¼, Crater Lake East 7.5' [redacted]
Designer: U.S. Army Corps of Engineers (William G. Carroll, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

A narrow, but faint, access track links Crater Lake Rim Road with the site, where the Corps built a shelter cabin to store supplies in the fall of 1917. Outlines of the cabin are still in evidence and indicate its dimensions, as do associated glass fragments, cook stove parts, and scattered pieces of metal. The metal comprises 100 of the 125 artifacts counted on the surface within an area of 600 square meters. It also includes a wide but shallow borrow pit of rectangular shape that lies adjacent to remnants of the cabin and is associated with nearby construction of the Rim Road, which continued from here in 1918. With crews working from this shelter cabin and one built above Wineglass, enough grading occurred that summer to finally close the loop of Crater Lake Rim Road by October. The site is located on the gently sloping base of Grouse Hill in a dense forest of mountain hemlock that contains an understory of flowering plants and sedges.

Resource 10

Object: Thew steam shovel arm, Site 35KL4393
Location: T30S, R5½E, Section 10, SW ¼, SW ¼, SW ¼, Crater Lake East 7.5' [redacted]
Designer: None
Builder: None
Owner: USDI-NPS

The large steel arm of a 1914 wood-burning steam shovel, which lies adjacent to Crater Lake Rim Road, constitutes a contributing object to the historic district. This arm represents the largest single artifact found anywhere on the ACERS and exhibits an obvious association to the Corps of Engineers and the crews hired to do road grading. It is surrounded by several unrelated metal fragments and cans in a relatively open mountain hemlock forest. The arm lies a quarter mile below the closest access point on Rim Drive. It is located on the gently sloping saddle between Llao Rock and Grouse Hill on soils composed of ash, pumice, and cinders. Somewhat further north and parallel to Crater Lake Rim Road is a section of phone line used to link construction camps established by the Corps, but it lies on the ground for a considerable distance.

Resource 11

Structure: Cleetwood Segment, Crater Lake Rim Road
Location: Rugged Crest to Palisade Point (mile 22.6 to 23.7)
Designer: U.S. Army Corps of Engineers (William G. Carroll, et al.)
Builder: U.S. Army Corps of Engineers, National Park Service (day labor)
Owner: USDI-NPS

Rough graded by the Corps in 1918, with additional finish grading by the NPS the following year, this segment begins just north and slightly downslope of the Cleetwood Cove Parking Area. From the west, Crater Lake Rim Road forms something of an arc turning back toward Rim Drive, covering 0.3 mile until it is overtopped by the paved road circuit. A noncontributing piece of 0.5 mile then goes past Mazama Rock, Rim Road but eventually veers away from Rim Drive, as it turns south/southwest. A contributing part of Rim Road then climbs gently away from Rim Drive for 0.3 mile, but only partway to a crest on Palisade Point. The mountain hemlock-Shasta red fir forest is thick in places over the entire road segment, though some rock formations are also particularly noticeable. In an overall sense, even with the noncontributing piece, the road segment retains all seven aspects of integrity, and thus contributes to the significance of the proposed historic district. The segment's legal location is T30S, R5½E, sections 12 and 13 on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 60.

Resource 12

Structure: Wineglass Segment, Crater Lake Rim Road
Location: Roundtop to Grotto Cove Segment (mile 24.5 to 25.6)
Designer: U.S. Army Corps of Engineers (William G. Carroll, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

Consisting of three parts, this segment is 1.1 mile in length. Beginning from the top of a cut above Rim Drive, a contributing piece of Crater Lake Rim Road runs east, then south for 0.5 mile on a relatively level part of Roundtop, though there is a borrow pit and some other evidence of later construction associated with Rim Drive that can be seen along it. The contributing segment consists of an earthen road 16 feet shoulder to shoulder, with an average elevation of 6,750 feet. It is located in one of the driest parts of the rim, with the intermittent bare pumice patches framed by an overstory of mountain

hemlock or lodgepole pine. What was rough graded in 1918 is not evident in a noncontributing piece that follows, where Rim Drive overtops Rim Road for 0.3 mile. A contributing section of 0.3 mile then concludes the segment, but is split into two halves, with one below Rim Drive and one above it along a sinuous route containing evidence of superelevation on the lower part of Rim Road. Collectively, however, this segment retains all seven aspects of integrity and thus contributes to the significance of the proposed historic district. Its legal location is T30S, R6E, sections 18 and 19, on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 60.

Resource 13

Site:	Water Station, Site 35KL4394
Location:	T30S, R6E, Section 19, NW ¼, NE ¼, NW ¼, Crater Lake East 7.5' [redacted]
Designer:	U.S. Army Corps of Engineers (William G. Carroll, et al.)
Builder	U.S. Army Corps of Engineers (day labor)
Owner:	USDI-NPS

Remnants of a water system at this site harken back to attempts by the Corps in 1918 to pump from the lakeshore in order to serve a nearby construction camp. The engineers also wanted to provide a station to sprinkle the road surface (as a dust palliative), in addition to serving the needs of motorists for coolant or potable water. The station is situated perpendicular to the shoulder of Crater Lake Rim Road and consists of an earthen base where the remains of a wooden platform of milled lumber is located. This station is downslope of a wooden structure once used to hold a steel tank presumably connected to one inch steel waterline. The initial attempt to pump from Crater Lake failed, necessitating some difficult freighting of water by team and tank wagon 7.5 miles over Cloudcap, but smaller pumps succeeded in 1918 and the site remained in use for the first few years of NPS administration. A map from that period indicated that visitors could also use an emergency telephone at or near the site.

Resource 14

Site:	Wineglass Camp/Camp #5, Site 35KL4395
Location:	T30S, R6E, Section 19, NE ¼, NE ¼, NW ¼, Crater Lake East 7.5" [redacted]
Designer:	None
Builder:	U.S. Army Corps of Engineers (day labor)
Owner:	USDI-NPS

Downslope of the water station are remnants of a small camp established at the end of the 1917 construction season for hired men and teams. The Corps used this camp of roughly 100 square meters to stage material for the 1918 season and be the base for crews working to close the Rim Road circuit from the east. While there is no concentration of artifacts at this site, metal fragments and glass are scattered over a small area along with nails; other evidence includes a cut stump and a rock feature. Despite the camp name, it is located on a flank of Roundtop having a gentle slope in an area of mountain hemlock and lodgepole pine, but with no understory apart sparse sedges.

Resource 15

Structure:	Cloudcap Segment, Rim Road
Location:	Grotto Cove to Pumice Castle Overlook (mile 26.3 to 29.4)
Designer:	U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder:	U.S. Army Corps of Engineers (day labor)
Owner:	USDI-NPS

Crews graded Crater Lake Rim Road from Sentinel Rock to the top of Cloudcap in 1915, but then resumed work toward Wineglass in 1917, with this segment consisting of five parts over a total distance

of 3.1 miles. It also features some of the most spectacular views from any road or trail in the park, partly because the varied curvature makes the views constantly shift over the highest terrain traversed by the Rim Road. From the north, the mountain hemlock-Shasta red fir stands provide an overstory at just over 7,000 feet elevation, as a contributing piece of Rim Road diverges from Rim Drive between Grotto Cove and Skell Head for 0.3 mile. Road obliteration efforts by the NPS during the 1930s at the Skell Head Overlook made the next section (0.3 mile) of Rim Road disappear under pavement. Just beyond the Skell Head Overlook on Rim Drive, however, Rim Road ascends the north slope of Cloudcap for 1.2 miles, running past a wet meadow, then two well-preserved abandoned overlooks, and into a dry forest of mountain hemlock and true fir, before emerging among the lodgepole and whitebark pines as the road approaches 8,000 feet in elevation. Another noncontributing piece of 0.4 mile, one that is either banksloped to obliterate the view from the Cloudcap Spur Road built in 1935-36 (a route that is really part of Rim Drive) or overtopped at the modern overlook on Cloudcap, follows. Rim Road appears once more away from pavement in the whitebark pine forest, then descends on the south side of Cloudcap, along Redcloud Cliff, for 0.9 mile, where instead of culverts, a ditch on the inside slope allows drainage of the abandoned road. Rim Road retains all seven aspects of integrity over the entire segment and thus contributes to the significance of the historic district. Its legal location is T30S, R6E, sections 30 and 31, on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 61.

Resource 16

Site:	Cloudcap Camp, Site #35KL4160
Location:	T31S, R6E, Section 12, NE ¼, NW ¼, SE ¼, Crater Lake East 7.5' [redacted]
Designer:	None
Builder:	U.S. Army Corps of Engineers (camp), National Park Service (fire lookout)
Owner:	USDI-NPS

At more than 8,000 feet in elevation, this is an oblong site located in a mature forest of whitebark pine having little understory vegetation apart from wood rushes. The site lies on the eastern rim of Crater Lake, east of Redcloud Cliff and west of Cloudcap's summit. It is perpendicular and only a short distance from the paved Cloudcap Road, which is really a spur of Rim Drive. Although the site is located along Crater Lake Rim Road, which is perpendicular to the paved spur, NPS landscape architects did an exceptional job in removing traces of the older route from the gaze of modern park visitors, so that almost all of them stay to the pavement and parapet wall that marks a popular overlook on Rim Drive.

There is evidence of two kinds of occupation at this site, with the first being that of an early fire lookout, as indicated by milled wood nailed as something of a ladder to the trunk of two culturally modified whitebark pines. A metal hook of some eight inches in length is also attached to a nearby tree limb with wire, indicating something of an informal approach to fire detection at this site until replaced by a cupola-style fire lookout on Mount Scott two miles to the east/southeast in 1926. About 300 feet due south of the two trees, and closer to Crater Lake Rim Road is a large, but somewhat dispersed concentration of historic period artifacts, mostly in the form of cans dating to the period of World War I. Initially occupied by the road crews in 1915 and then again at the start of the 1917 season, virtually all of the evidence connected with the construction camp is in the form of more than 200 cans, along with some metal fragments. Crater Lake Rim Road lies directly below the dump, though a few whitebark pines and wood rushes provide partial screening.

Resource 17

Structure: Sentinel Rock Trail, Crater Lake Rim Road
Location: Victor View parking overlook on Rim Drive to top of Sentinel Rock (0.3 mile)
Designer: None
Builder: U.S. Department of the Interior (rangers at Crater Lake National Park)
Owner: USDI-NPS

Built at the behest of Stephen T. Mather (who at that time served as an assistant to the Secretary of the Interior, then later as first director of the National Park Service) by park rangers in late 1915, this pedestrian route is 0.3 mile in length. Mather arrived at the overlook where the Corps completed grading of Rim Road the previous season, and walked along a ridgeline to Sentinel Rock, declaring it the finest place to see Crater Lake and its caldera. The trail starts from the subsequently landscaped "Victor View," a noncontributing parking overlook on Rim Drive, where it skirts a stand of trees and emerges on a bare slope consisting of "popcorn" pumice, then gently descends along the ridgeline to terminate at Sentinel Rock, which is located high over the lake with views on all sides. Sentinel Rock derived its name from being one of two points used for triangulating boat positions during the U.S. Geological Survey sounding project on Crater Lake in 1886. The other point is Watchman, located directly across the lake to form a baseline, so that the position of the boat "Cleetwood" could be established where depth measurements were taken on Crater Lake. Averaging four feet wide, and consisting of little more than tread, the trail retains all seven aspects of integrity and thus contributes to the significance of the proposed historic district. The segment's legal location is T30S, R5½E, section 36, and T30S, R6E, section 31, on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 61.

Resource 18

Structure: Kerr Valley Segment, Rim Road
Location: Reflection Point to Lost Creek (mile 29.9 to 35.4)
Designer: U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

Built in 1913-14, this segment of the Crater Lake Rim Road extends 5.5 miles, and lies above Rim Drive until Kerr Notch. At that point Rim Road drops below a fill slope from the 1930s to reemerge below Rim Drive and run through Kerr Valley along Sand Creek. Rim Road remains east of the Pinnacles Road completed in 1936, and finishes the circuit at Lost Creek. The grading along this segment starts just south of Reflection Point, diverging from Rim Drive and taking an almost due south line for a mile or so, with the roadbed filled at times with younger mountain hemlock or Shasta red fir, but then drops a little to traverse the south end of Anderson Point. From there it continues high along the ridge (thus avoiding the largest cut on Rim Drive) and at one point is supported by a dry laid retaining wall for 50 yards or so, something the Corps called "revetment," though the portion of above grade (a dry stacked "guard wall") was removed during the construction of Rim Drive below the section in 1937. Volunteer tree growth makes traversing this abandoned section of Rim Road difficult on foot, but the typical section (average width and vertical alignment) is evident throughout and can be plainly seen for the remaining mile to Kerr Notch, disappearing only where it crosses into the landscaped parking overlook built adjacent to Rim Drive in 1935.

Where the Rim Road continues below Rim Drive and Kerr Notch, it drops through Kerr Valley then runs by a rock crushing operation begun in 1940 and overlaps a fire road opened in 1933 for almost a mile, but with little or no loss of integrity. The Rim Road continues south/southeast, diverging from the fire road near where some remnant wooden plank culverts were intended to supply cross drainage in 1913.

The remaining 1.5 miles of the segment run along the west bank of Sand Creek, much of it through a thick forest of lodgepole pine, mountain hemlock, or Shasta red fir, but the riparian vegetation is often sparse, or consists only of some wood rush or willows. The road segment ends at a point where it touches the modern Pinnacles Road across from the entrance to Lost Creek Campground. Rim Road retains all seven aspects of integrity over the entire segment and thus contributes to the significance of the proposed historic district. Proceeding south, the segment's legal location is T31S, R6E, section 1; T31S, R7½E, section 6; T31S, R6E, section 12; T31S, R7½E, sections 7 and 18, with all of it on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 62.

Resource 19

Site: Snow Spring/Camp #5 (SHPO form #18229)
Location: T31S, R6E, Section 1, SE ¼, SW ¼, NE ¼, Crater Lake East 7.5' [redacted]
Designer: None
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

This site is reached by a faint and rather narrow track leading from Crater Lake Rim Road to the broad upper portion of Anderson Point, where the spring is located. This section of Rim Road (between Reflection Point and Anderson Point) has been abandoned, but graded roadway and culverts are easily seen. The narrow access to the camp meanders, and in places is overgrown with small trees. It leads to a historic period camp from 1914 on flatter ground, so that the small number of artifacts are somewhat dispersed and consist of metal fragments along with a culturally modified tree with phone line. Use of the site as a construction camp was likely confined to late 1914 and the early season of 1915, with its importance as a water source superseded by a better system located closer to Rim Road developed downslope by the Corps later in 1915. Located within a mature stand of mountain hemlock and lodgepole pine, the camp is situated on a gently sloping bench above a steeply pitched hillside extending toward Kerr Valley below it. Snow Spring is found on a south facing steep slope just below the camp.

Resource 20

Site: Last Water (SHPO form #18230)
Location: T31S, R6E, Section 1, SE ¼, SW ¼, NE ¼, Crater Lake East 7.5' [redacted]
Designer: U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

Located almost directly downslope of Snow Spring, but adjacent to Crater Lake Rim Road, the site developed during the 1915 season is situated almost midway between Kerr Notch and the road summit of Anderson Point. Unlike Snow Spring, however, it has a southwestern aspect and is situated 300 feet below the construction camp of 1914. Last Water is not only easier to reach by automobile or wagon than Snow Spring, but was developed to yield a considerably volume of water than its predecessor, enough to where it remained in use for the first few years of NPS administration at Crater Lake National Park. The site is overgrown with a dog hair thicket of immature conifers, with some sedges, mosses, and forbs growing around the riparian area of this unnamed spring. Beyond the spring is a waterline that leads toward Rim Road, with remnants of the roadside station indicated by pipe sections, irrigation valves, spigots, and pieces of a water delivery system consisting of milled lumber and metal cable. These are associated with use not only by private automobiles from the end of 1915, but also by tank wagons for serving construction camps located further along Rim Road in 1917 and 1918.

Resource 21

Site: Lost Creek Headwaters Camp, Site 35KL3876
Location: T31S, R7½E, Section 18, NE ¼, NE ¼, SW ¼, Crater Lake East 7.5' [redacted]
Designer: None
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

Located a full half mile west of Crater Lake Rim Road, this camp was occupied for much of the 1913 construction season and is situated near the headwaters of Lost Creek. It is located in a subalpine forest of lodgepole pine, Shasta red fir, and mountain hemlock with only some scattered sedges away from the incised riparian zone. The headwaters of Lost Creek emerge from a spring located on a steep hillside north of this site, one established by the Corps in July 1913 and used for the remainder of that construction season. Its size and complexity over approximately a half acre reflects the period of road construction just prior to the split in forces hired by the Corps that began construction west of the site in 1914 toward Munson Valley, and those building road north and east of Lost Creek toward Cloudcap that same season. The historic period artifacts are numerous, with several concentrations over a fairly wide, but flat, area. Metal cans and their associated fragments are in the largest numbers (around 1000 or more) so far found in the park, and are largely separate from other types of artifacts. There is also limited evidence of later occupation, either as a spike camp of the Civilian Conservation Corps during the 1930s, or as camp for contractors working on the newer alignment of the Pinnacles Road over the same period. This site was referenced by the Corps as Camp #1, a somewhat fluid designation that it retained after the initial camp was moved from where the first Pinnacles Road crossed Wheeler Creek in the early summer of 1913.

Resource 22

Structure: Pinnacle Valley Segment, Pinnacles Road
Location: Sand Creek Rim to Wheeler Creek Crossing (mile 36.9 to 37.9)
Designer: U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

Measuring one mile in length, the Pinnacles Road of 1913 parallels its successor, though it remains closer to the rim of Sand Creek. Both routes eventually move away from that drainage toward a crossing of Wheeler Creek, though the older road is distinguished from the newer by remaining unsurfaced and 16 feet from shoulder to shoulder. There is also scant evidence of old road obliteration anywhere along this segment, but motorists see little of the older Pinnacles route due to the abundant stands of lodgepole pine that separate the two. Simple as they are, the road segments from 1913 retain all seven aspects of integrity and thus contribute to the significance of the proposed historic district. The legal location is T31S, R7½E, sections 29 and 28, on the Maklaks Crater 7.5' USGS topographic quadrangle. See Additional Documentation, page 63.

Resource 23

Site: Wheeler Creek Campground/Camp #1, Site 35KL4398
Location: T31S, R7½E, Section 29, SE ¼, NE ¼, SW ¼, Maklaks Crater 7.5' [redacted]
Designer: None
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

This site includes two types of historic period occupation, first as a construction camp for crews hired by the Corps to grade the Pinnacles Road in June and July of 1913, and subsequently as a designated campground for park visitors until 1920 or so. No evidence of a water system or individual campsites exists, with artifacts largely consisting of metal and glass fragments. Located along the first alluvial bench near the old road crossing of Wheeler Creek, vegetation largely consists of scattered thickets of lodgepole pine, with an understory of sedges away from the riparian area.

Resource 24
Structure: East Entrance Segment, Pinnacles Road
Location: Pinnacles Overlook to Park Boundary (mile 38.2 to 38.6)
Designer: U.S. Army Corps of Engineers (George Goodwin, et al.)
Builder: U.S. Army Corps of Engineers (day labor)
Owner: USDI-NPS

This segment of 0.2 mile runs from the Pinnacles Overlook to the park boundary (old east entrance), as marked by a stone masonry "motif"(or support) for an entrance sign. Much of the roadbed initially graded by the Corps has been filled by volunteer lodgepole pines in places, but a portion of it has been re-purposed as a pedestrian and cyclist trail that leads to the adjacent Fremont Winema National Forest. From the roadbed there are some short spur trails that date from 1991, all of which feature views of Wheeler Creek Canyon in the foreground and Mount Scott in the distance. In addition to the lodgepole pine, the vegetation along this segment includes rubber rabbitbrush, ceanothus, and bitterbrush. Despite the route graded in 1913 having been somewhat impacted by the Pinnacles Road of the 1930s that utilized the same alignment, its location, design, setting, materials, workmanship, feeling and association are still evident. Closure of the through route in 1956 led to removal of later surfacing material and pavement along this segment, so it contributes to the significance of the proposed historic district. The segment's legal location is T31S, R7½E, sections 28 and 33 of the Maklaks Crater 7.5' USGS topographic quadrangle. See Additional Documentation, page 63.

NONCONTRIBUTING RESOURCES

Eight of the ten noncontributing road segments occur on the Rim Road, where they have been completely subsumed by the wider corridor of Rim Drive, which is also surfaced and paved so that the earlier route is not discernible. These are numbered consecutively, beginning at Lost Creek and proceeding in a clockwise direction until the loop formed by Rim Road closes at Lost Creek, so that the sequence alternates with contributing road segments. From Lost Creek the Pinnacles Road proceeds southeast to the park boundary at the old east entrance, so that the numbering sequence again alternates with contributing road segments.

Resource 25
Structure: Rim Drive Overlay Segment #1, Rim Road
Location: East Rim Drive cut on Castle Crest to trailhead parking area (mile 7.5 to 8.0)
Designer: Bureau of Public Roads (BPR), NPS
Builder: various contractors, 1937-1941
Owner: USDI-NPS

This segment is about 0.5 miles in length, extending from the cut bank over Rim Drive to a point on that route between the NPS housing area known as Steel Circle and a spur trail connecting Park Headquarters with the Castle Crest Wildflower Garden. Rim Road lies underneath Rim Drive, entirely buried by construction of the latter circuit route, and no features are known to exist within this segment that can be associated with Rim Road apart from the general alignment. It is therefore noncontributing

to the eligibility of the proposed historic district. The legal location of this road segment is T31S, R6E, section 16 of the Crater Lake East 7.5' topographic quadrangle. See Additional Documentation, page 57.

Resource 26

Structure: Rim Drive Overlay Segment #2, Rim Road
Location: Crater Lake Lodge to a point one mile west on Rim Drive (mile 10.0 to 11.0)
Designer: BPR, NPS
Builder: various contractors, 1925-1935
Owner: USDI-NPS

This segment is 1.0 mile in length, extending from Crater Lake Lodge on the east edge of Rim Village to a point located a half mile west of where Rim Drive proceeds from its junction with the Munson Valley Road. The first half mile of Rim Road through Rim Village is overlain by a much wider roadway where space for two lanes of opposing traffic is flanked by perpendicular parking stalls, then a walkway running parallel to the roadway on both sides. Away from Rim Village, the Rim Road is overtopped by a paved and surfaced Rim Drive that is 22 feet wide shoulder to shoulder for another half mile. No features are known to exist within this segment that can be associated with Rim Road, apart from general alignment, so this segment is noncontributing to the proposed historic district. The segment's legal location is T31S, R5½E, sections 5 and 6 of the Crater Lake West 7.5' USGS topographic quadrangle. See Additional Documentation, page 57.

Resource 27

Structure: Rim Drive Overlay Segment #3, Rim Road
Location: East of Discovery Point Parking Area to Lightning Spring (mile 11.5 to 12.5)
Designer: BPR, NPS
Builder: various contractors, 1931-35
Owner: USDI-NPS

This segment is 1.0 mile in length, with its eastern end near Discovery Point Parking Area and running north/northwest along the same alignment as Rim Drive. Apart from the general alignment, however, no features associated with Rim Road are known to exist along this segment. Like the previous overlay, Rim Drive has a 22 foot surfaced roadway (though it is even wider at the two paved overlooks located 0.4 mile apart from each other) and no features associated with Rim Road are known to exist, so this segment is noncontributing to the proposed historic district. Proceeding from the Discovery Point Parking Area, the segment's legal location is T30S, R5E, sections 36 and 25 of the Crater Lake West 7.5' USGS topographic quadrangle. See Additional Documentation, page 57.

Resource 28

Structure: Rim Drive Overlay Segment #4, Rim Road
Location: Devils Backbone to North Junction (mile 16.5 to 17.0)
Designer: BPR, NPS
Builder: various contractors, 1931-35
Owner: USDI-NPS

This segment is 0.5 mile in length, with its southern end lying just beyond the unpaved parking area for the Devils Backbone on Rim Drive and then running northeast along the same alignment as Rim Drive to the North Junction. No features aside from the general alignment are known to exist along this segment, and therefore it is noncontributing to the proposed historic district. Its legal location is T30S,

R5½E, section 20, on the Crater Lake West 7.5' USGS topographic quadrangle. See Additional Documentation page 58.

Resource 29

Structure: Rim Drive Overlay Segment #5, Rim Road
Location: Pumice Point to Cleetwood Cove Parking Area (mile 21.3 to 22.6)
Designer: BPR, NPS
Builder: various contractors, 1934-38
Owner: USDI-NPS

This segment is 1.3 miles in length, with its western end lying just beyond the crest on Pumice Point and running almost due east along Rim Drive until it drops to a point below the pave road and then behind the Cleetwood Cove Parking Area. No features associated with Rim Road are known to exist along this segment, apart from the general alignment, so it is therefore noncontributing to the proposed historic district. The segment's legal location is T30S, R5½E, section 14 of the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation page 59.

Resource 30

Structure: Rim Drive Overlay Segment #6, Rim Road
Location: Palisade Point to Roundtop (mile 23.7 to 24.5)
Designer: BPR, NPS
Builder: various contractors, 1934-38
Owner: USDI-NPS

This segment is 0.8 mile in length, starting from where Rim Drive overtops Rim Road near Palisade Point, then proceeding in a predominately southeast direction toward the Palisades and Roundtop. Much of the corridor represents the shortest distance between the rim and Crater Lake (550 feet) of any around the caldera, but no features associated with Rim Road are known to exist anywhere in this segment, apart from its general alignment, so it is therefore noncontributing to the proposed historic district. The segment's legal location is T30S, R5½E, section 13, and T30S, R6E, section 18 of the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 60.

Resource 31

Structure: Rim Drive Overlay Segment #7, Rim Road
Location: Grotto Cove to a point 0.3 mile from Skell Head (mile 25.6 to 26.3)
Designer: BPR, NPS
Builder: various contractors, 1934-38
Owner: USDI-NPS

This segment is 0.7 mile in length, starting from where Rim Drive overtops Rim Road on the north end of a tangent above Grotto Cove. Running south/southeast, the segment extends to a point where the road corridor of Rim Drive shifts back to the southwest on its approach to Skell Head. No features associated with Rim Road are known to exist along this segment, aside from the general alignment (this part of Rim Drive is surfaced and paved with a 24 foot roadway), so it does not contribute to the proposed historic district. The segment's legal location is T30S, R6E, section 19, on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 60.

Resource 32
Structure: Rim Drive Overlay Segment #8, Rim Road
Location: Pumice Castle Overlook to Reflection Point Overlook (mile 29.4 to 29.9)
Designer: BPR, NPS
Builder: various contractors, 1934-38
Owner: USDI-NPS

This segment is 0.5 mile in length, starting from where Rim Drive overtops Rim Road just east of the Pumice Castle ("Cottage Rocks") Overlook and continues southwest to the overlooks at Victor View and Reflection Point, with the latter being the last of three such viewpoints and parking areas that appear in quick succession. Road obliteration efforts by the NPS in the 1930s completely removed evidence of the older route, even if this part of Rim Drive followed the general alignment of Rim Road. No features of the latter are known to exist in the 24 foot roadway of Rim Drive and the landscape treatments completed in 1938. Although the start of the Sentinel Rock Trail, Resource 17, starts from Victor View, the road segment is noncontributing to the proposed historic district. Its legal location is T30S, R6E, section 31, on the Crater Lake East 7.5' USGS topographic quadrangle. See Additional Documentation, page 61.

Resource 33
Structure: [New] Pinnacles Road Overlay Segment #1, Pinnacles Road
Location: Lost Creek to a point above Sand Creek at benchmark 5664' (mile 35.4 to 36.9)
Designer: BPR, NPS
Builder: various contractors, 1932-36
Owner: USDI-NPS

This segment is 1.5 miles in length, starting from the current Lost Creek Campground and following the first Pinnacles Road route above Sand Creek, which is overtopped by the somewhat wider 22 foot roadway that was surfaced and paved in 1935. The only divergence between the "new" and old road alignment measures less than 0.1 mile and consists of a short "elbow" located 0.8 mile southeast of Lost Creek. Apart from this small section and the general alignment of the newer road that overtops its predecessor, there is virtually no evidence of the Pinnacles Road graded by the Corps in 1913, so this segment is thus noncontributing to the proposed historic district. Its legal location is T31S, R7½E, sections 20 and 29, on the Maklaks Crater 7.5' topographic quadrangle. See Additional Documentation, page 63.

Resource 34
Structure: [New] Pinnacles Road Overlay Segment #2, Pinnacles Road
Location: Wheeler Creek crossing to Pinnacles Overlook (mile 37.9 to 38.4)
Designer: BPR, NPS
Builder: various contractors, 1929-30
Owner: USDI-NPS

This segment is 0.5 mile in length, starting from where the Pinnacles Road of the 1930s overtops the older route of 1913 about a half mile southeast of the Wheeler Creek crossing, and terminating at an overlook where the current paved road ends. It consists of a route that has a surfaced width of 22 feet, such that two nine-foot travel lanes have been paved, leading to a short loop developed for parking so that motorists can better return north from the main Pinnacles Overlook. Apart from the general alignment, (which extends from about halfway between the Wheeler Creek crossing and the Pinnacles

Overlook) this segment is noncontributing because the overtopping has removed almost all evidence associated with grading the first Pinnacles Road. Its legal location is T31S, R7½E, sections 29 and 28, on the Maklaks Crater 7.5' topographic quadrangle. See Additional Documentation, page 63.

Army Corps of Engineers Road System Historic District (Crater Lake National Park)
Name of Property

Klamath Co., Oregon
County and State

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 Owned 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.)

Engineering
Recreation
Transportation

Period of Significance
1910-19

Significant Dates
1913-18, Construction Period of ACERS

Significant Person
(Complete only if Criterion B is marked above.)
N/A

Cultural Affiliation (if applicable)
N/A

Architect/Builder
U.S. Army Corps of Engineers (George Goodwin, William G. Carroll, Alex Sparrow, William H. Peters)

Period of Significance (justification)
The period of significance includes the first location surveys for the road system in 1910-11, which formed the basis for estimates and annual appropriations for the project, which continued through 1919, when it ended. The period corresponds to the earliest period of planning, design, and construction of engineered roads for automobiles.

Criteria Considerations (explanation, if necessary) N/A

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations).

The Army Corps of Engineers Road System (ACERS) in Crater Lake National Park is significant statewide under National Register Criterion A for its association with transportation and outdoor recreation in Oregon's only national park. Crater Lake Rim Road and the ACERS is also significant under National Register Criterion C for its association with the earliest period of highway engineering in Oregon, as a pivotal example of a road that adhered to contemporary standards (albeit rapidly evolving ones) for grade, curvature, drainage, and slope treatments. As the first federal highway project in Oregon, the ACERS at Crater Lake was completed through the grading phase of construction and constitutes a linear cultural landscape. The period of significance includes the first location surveys for the road system in 1910-11, which formed the basis for estimates and annual appropriations for the project, which continued through 1919. It is also the only extant road project attributed to the U.S. Army Corps of Engineers in Oregon and a starting point for subsequent vehicular circulation systems designed and built by the Bureau of Public Roads and the National Park Service in Crater Lake National Park.

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

The ACERS supplies an early example of scenic highway development in Oregon, but mainly in the sense that it demonstrates engineering practice from a period between that of wagon roads and later routes built to a specific design speed for automobiles. Laborers hired by the Army Corps of Engineers completed the grading of a road circuit around the rim of Crater Lake in October 1918, but financing for the project lapsed without completion of the surfacing and paving phases. Rim Road and its contemporary approach routes (the Pinnacles, Fort Klamath, and Medford roads within Crater Lake National Park) preceded other public roads built in Oregon with federal funds provided under the acts passed by Congress in 1916 and 1921. These other road projects called for matches with state and county funds rather than a direct appropriation as at Crater Lake, and the roads designed and constructed by the Corps at the park followed precedents for road systems at Yellowstone and Mount Rainier national parks. Unlike the projects in those two areas, however, the Corps at Crater Lake only built roads intended for automobile travel and placed its primary emphasis on the Rim Road, a circuit route that accounted for 35.4 miles of the 57 miles of park roads opened for visitor use in 1919.

Although contemporary with the Columbia River Highway (a portion of the latter, a section on the Oregon side of the Columbia Gorge, has earned National Historic Landmark status), the Rim Road and its approach routes were funded by year to year appropriations from Congress. This resulted in what the Corps calculated to be only 44 percent of the entire project (something based on what a location survey from 1910 estimated was needed). Despite the 22 miles of approach roads in the park having been mostly overtopped or realigned (only several isolated segments remain as abandoned roadway), the Rim Road is still largely intact after having been superseded by Rim Drive beginning in the 1930s. Part of Rim Road remains in use as hiking trails, while most of what was abandoned can still be traversed on foot. Twelve structures (11 road segments of varying lengths, along with one associated trail from 1915), along with 12 archaeological sites are thus eligible under Criterion A. The 24 contributing resources are significant for their association with the history and development of Crater Lake National Park, linked primarily with automobile transportation, but also outdoor recreation stemming from providing this type of access, and conservation that is associated with the national park designation.

Crater Lake Rim Road and one piece of the Pinnacles Road, an approach route, are also significant under Criterion C in the area of highway engineering as an excellent example of functional design elements related to the evolution of scenic highways aimed at promoting automobile tourism on federal lands. Much of what

later became known as design standards remained in flux over the decade following 1910 in response to the rapid evolution of automobiles and a massive increase in their numbers. Engineering practice at this point quickly responded to cars becoming heavier and faster while horse-powered means of transportation retreated. Although Rim Road reflects a design that had automobiles as the dominant force at Crater Lake, there are aspects of design along it that derive from building wagon roads. The latter includes a relatively narrow width (16 feet from shoulder to shoulder) and shorter length of curves, higher average gradients than along its successor, Rim Drive, as well as smaller pullouts and parking areas for viewing the lake. The nomination also includes archaeological remains of construction camps and associated sites since they are named in the reports by project engineers George E. Goodwin and William G. Carroll.

Even if Rim Road shows far fewer landscaped and naturalistic elements and features than is the case on Rim Drive, the older circuit still represents an attempt to blend a transportation corridor with the larger park setting. Conscious design with nature--particularly that practiced in parks, forests, cemeteries, and estates--stretches back several centuries and includes integration of roads with their setting. Techniques for this type of sublimation could be practiced on a wider scale starting in the middle of the nineteenth century with the use of horse-drawn grading equipment producing scenic roads suitable for carriages and wagons, and then continued throughout the twentieth century as hydraulically powered machines proved their staying power to allow car or truck travel at a fraction of the cost formerly associated with road construction. Utility, economy, and safety increased when roads fit their setting, while ambitious engineers often called upon European precedents for overlooks, bridges, tunnels, and revetments as they began to design road alignments suitable for increasingly popular national parks and other scenic landscapes. In many respects, the Corps played a key role during the first two decades of the twentieth century by establishing precedents for later highway practice, then gave way to the Bureau of Public Roads (forerunner of the Federal Highway Administration) and various state highway departments as expanded funding for roads allowed another generation of engineers (and increasingly, landscape architects) to make changes in alignments and correct safety problems now evident in the wake of faster, heavier, and more numerous motor vehicles.

Roads in the early development of Crater Lake National Park

Campaigns to establish Crater Lake and other national parks generally started with having some type of road access to, or near, central features deemed by their supporters to be worthy of that status. The most notable supporter of Crater Lake's establishment, William Gladstone Steel, initially reached the future national park by stage in 1885. He then lobbied Congress and federal officials for the next 17 years, until a bill establishing Crater Lake National Park became law on May 22, 1902.[4] Park establishment did two things: one simply confirmed what a land withdrawal by President Grover Cleveland had begun in February 1886—that of reserving what had been public domain as a national park. This "organic" act also allowed Congress to open the federal purse to finance new or improved infrastructure for the park, including roads.

The first road through what became the park had a primary purpose of allowing teams of horses and their freight wagons to better reach Fort Klamath from the Rogue River Valley. Built by a small detachment of soldiers from the fort in August 1865, the road connected a preexisting route along the Rogue River at the confluence of Union Creek, replacing an earlier and more difficult traverse of the Cascade Range on the northern slopes of Mount McLouglin.[5] In both cases these roads initially consisted of cutting small trees and other vegetation away from a travel corridor so as to make the passage of freight wagons easier. The "Fort

[4] Rick Harmon, *Crater Lake National Park: A History* (Corvallis: Oregon State University Press, 2002), 78-83. See also Stephen R. Mark and C. Michael Hall, "John Muir and William Gladstone Steel: activists and the establishment of Yosemite and Crater Lake National Parks," in Warwick Frost and C. Michael Hall (eds.), *Tourism and National Parks: International perspectives on development, histories and change* (London: Routledge, 2009), 88-101.

[5] Jeff LaLande, Jacksonville-to-Fort Klamath Military Wagon Road, nomination to the National Register of Historic Places, listed May 15, 1979, NRIS #79002068.

Klamath to Rogue River" wagon road of 1865 also provided the few sightseers attracted by recent "discovery" of Crater Lake with a means to reach it. The road construction party's commanding officer, Franklin B. Sprague, generated some regional publicity by writing several columns about Crater Lake for a newspaper in Jacksonville, some 80 miles away.[6]

Tourism involving Crater Lake slowly gained momentum over the following four decades due to photography (the first scenic views of it were taken by Peter Britt of Jacksonville in 1874), but it helped greatly that the main railroad line between San Francisco and Portland reached the Rogue Valley in 1884. Steel and other publicists spread the word about Crater Lake beyond southwestern Oregon, but actual visits involved at least a week of travel by wagon from the Rogue Valley on rough roads that might be free of snow for only ten weeks each summer and had nothing that approached regular maintenance. Even the simplest grading equipment such as horse-drawn scrapers did not exist in southern Oregon until the 1870s, but it took establishing the national park in 1902 before bridges and some semblance of a graded road bed appeared anywhere along the two approaches to Crater Lake. By 1906, however, much of the small annual appropriation made to support Crater Lake National Park had been devoted to realigning portions of the 1865 route so that horses and wagons could better reach the rim. Meanwhile, a second rail line for southern Oregon—one that park supporters thought could bring potential visitors even closer to Crater Lake—began to take shape from Weed, California, and slowly approached Klamath Falls, Oregon. After reaching a landing on Lower Klamath Lake near the interstate boundary by the summer of 1907, arrival of the railroad in Klamath Falls came two years later and triggered a real estate boom in that nascent city. The Southern Pacific began extending its tracks northward shortly thereafter, reaching a small depot called "Kirk" located about 13 miles north of Chiloquin in 1911, where work halted for another 15 years.[7]

Even though this put a rail stop roughly ten miles from the park's eastern boundary near the "Pinnacles" on Wheeler Creek, no road link from Kirk to the park had yet been established. Park visitation in the pre-automobile era remained stagnant at well under annual totals of 2,000.[8] When a car finally reached the rim on its own power in August 1907, the event rated as a news item in the Rogue Valley and the even more sparsely settled Klamath Basin.[9] Driving a car to the rim also coincided with Steel starting the first concession operation at the park—something centered on providing boat tours as well as food service and tents for campers—in addition to the appearance of several high-profile visitors such as railroad magnate Edward Harriman, Secretary of the Interior James R. Garfield, and Oregon governor (and later, senator) George Chamberlain. Although automobiles were officially prohibited from national parks of that time by the Department of the Interior (an exception was at Mount Rainier), no one at Crater Lake took the ban seriously. Park superintendent W.F. Arant joined with Steel and other park supporters to do what they could to encourage motorized travel to Crater Lake. Boosters in gateway communities such as Medford and Klamath Falls saw the potential of Crater Lake as a drawing card for both tourism and new residents, if only road access (both within and outside the park) could be improved.

Car ownership caught on quickly in Oregon as it did elsewhere, with the first automobile registration by the state occurring in 1905—the same year that the Portland Automobile Club organized as the predecessor to a statewide organization subsequently affiliated with the American Automobile Association (AAA). Finance represented the biggest obstacle for good roads in Oregon, as the counties controlled both construction and

[6] Stephen R. Mark, "Captain Sprague's Big Adventure," *Journal of the Shaw Historical Library* 26 (2012), 3-15.
[7] Mark, "A Sluggish Sort of Eden: Dreams and Decline in Fort Klamath, Oregon," *Journal of the Shaw Historical Library* 21 (2007), 77. What led to the hiatus in building the railroad to connect Klamath Falls with Eugene was a federal antitrust suit against the SPRR initially filed in 1908, which eventually brought about a stock divestiture before laying track finally resumed.
[8] All but the years 1904-06 are unavailable, with these seasons being estimates in the range of 1,400 to 1,800.
[9] Linda W. Greene, *Historic Resource Study, Crater Lake National Park, Oregon* (Denver: USDI-NPS, 1984), 131. Charles True of Medford is generally given credit for the feat; Bill Miller, 'Pumice Hill is first to go,' Medford *Mail Tribune*, August 7, 2011.

maintenance, usually paid through property taxes. A widespread reluctance to sell bonds for the survey and construction of highways suitable for year-round operation of cars and trucks worked to slow or stop completely measurable progress toward any sort of a state highway system, so that Oregon became the laggard in comparison to California and Washington. When, for example, the legislature moved to appropriate $100,000 to build a highway from Medford to Crater Lake in February 1909 (an amount to be augmented by Jackson and Klamath counties by agreeing to allot another $50,000 each to the project), the act was struck down by the state supreme court. The judges ruled that the road was designed to benefit Klamath and Jackson counties in particular and not the state in general, and for this reason the act contravened portions of Oregon's constitution.[10]

While the governor and legislators continued their public deliberations over how to get Oregon "out of the mud," Steel changed tack. Jackson County supporters of an approach road to Crater Lake moved to raise about $30,000 by private subscription to improve the road on their side, so that some improvement work outside park boundaries could commence in 1911 aided by Governor Oswald West's declaration that the road between Medford and Crater Lake constituted a loosely designated "state highway" and thus invoked his power to send convicts from Salem to work on it.[11] Steel had previously induced a business associate to take over the park concession company and begin construction of a hotel at the rim during the summer of 1909. He also took his case to George Chamberlain, who had since gone from governor to United States Senator. In June 1910 Chamberlain successfully sponsored an amendment (rider) to an appropriations bill, a measure that allotted $10,000 for "surveying, locating, platting specifications, plans, and estimates for a comprehensive system of roads and trails in Crater Lake National Park, Oregon."[12]

Location surveys of 1910-11

What made the survey attractive to Steel and park supporters in general was the idea that engineers needed to supply plans, specifications, and estimates before Congress could follow with appropriations for all phases of construction. This preliminary step had been undertaken by commissioners in charge of the road funds received from subscribers for improving the route between Medford and Crater Lake. Before the project went to contract, however, they brought a highway engineer from the Department of Agriculture's Office of Public Roads to produce a located line, paying special attention to the rugged section along the Rogue River beginning about 30 miles from Medford, then all the way to the national park boundary.[13]

Steel quickly became convinced that having engineers study and design a road system might be the only avenue to the appropriations for building routes within the park that he had sought for so long. Rather than conduct a survey through the Office of Public Roads (which, being located in the Department of Agriculture, still did most of its work on federal lands with the U.S. Forest Service, and often in an advisory capacity), the Secretary of the Interior chose to employ the Army Corps of Engineers for road projects in national parks. A powerful precedent had been established at Yellowstone National Park in 1883, when the Corps assumed

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[10] "Legislation Declared to be Invalid," Portland *Oregon Journal*, February 15, 1910. Klamath County commissioners, meanwhile, failed to approve their portion of the deal; Medford *Mail Tribune*, December 16, 1909.

[11] This was intended to stretch funding from the subscription, much of which had already gone to contract; "Work Commences on Crater Lake Highway, " Medford *Mail Tribune*, October 14, 1910. "Convicts to Build Road to Crater Lake, Medford *Mail Tribune,* September 25, 1911.

[12] *Congressional Record*, June 10, 1910. The appropriation had been reduced by a House conference committee from $15,000; Medford *Mail Tribune*, June 26, 1910. This initial amount had supposedly been suggested by the Secretary of Agriculture, likely through the Office of Public Roads; "$10,000 for Surveys in Crater Park," Medford *Mail Tribune,* June 26, 1910.

[13] "Heidelback enthused by fine views," Medford *Mail Tribune*, June 6, 1910. The engineer led a survey of 30 men and focused on the section between Trail and Prospect that season; "Soon to Call for Bids on Crater Road," Medford *Mail Tribune,* July 24, 1910.

responsibility for road design and construction there. They made the vision of a "Grand Loop" leading to "all the great points of interest" a reality by 1905, and then turned their attention to building or improving four of the approach roads in Yellowstone.[14]

The popularity of a loop drive, initially for horse-drawn carriages, in the United States emerged during the nineteenth century. Andrew Jackson Downing emphasized how proper road design in private estates might lead visitors to points of interest that either disclosed attractive vistas or led them to appreciate natural features in a desired way. Frederick Law Olmsted, Sr., took Downing's ideas and others derived from English landscape gardens beyond private estates into public parks, where he designed loop drives like the one for Central Park in New York City.[15] Although the roads built by the Corps in Yellowstone often lacked the highly manipulated qualities of landscapes designed by Downing and Olmsted, they adhered wherever possible to road standards governing width, drainage, gradient, and possessed some concern for scenic values. Beyond just grading earth roads, the Corps trumpeted how the process of macadamizing roads could produce a much more durable surface than just simply adding gravel. Despite macadam roads often becoming very dusty during the summer, the Corps attempted to mitigate this problem by sprinkling sections with water as a palliative.[16]

Much of what the Corps achieved in the Pacific Northwest to that time revolved around aiding navigation on rivers and in harbors. They also undertook fortification on the Columbia River and Puget Sound, but the experience of building roads in Yellowstone provided their few highway engineers with the expertise and credibility to take on much smaller projects in other national parks such as Crater Lake or Mount Rainier.[17] In terms of mileage, the Crater Lake project could be likened to Yellowstone in miniature, with a road loop planned to take tourists around its central feature and be fed by several approach roads. The circuit route around the rim of Crater Lake was an even more dominant feature of circulation, as it accounted for more than half of the anticipated construction.

As to its initial conception, Joseph Silas Diller of the U.S. Geological Survey presented a possible horse packing route with suggested camp locations in his *Geology of Crater Lake National Park* in 1902.[18] Talk of building an actual road around the lake began when Steel finished his first season as park concessionaire in September 1907, and may have arisen during a visit by Edward H. Harriman, president of the Southern Pacific Railroad and owner of a resort at Pelican Bay on Upper Klamath Lake that summer.[19] In any event,

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[14] Nancy M. McClure, Yellowstone Roads and Bridges, addendum to HAER No. WY-24, Summer 1999 draft, 129-130. See also Mary Shivers Culpin, The History of Construction of the Road System in Yellowstone National Park, 1872-1966, *Historic Resource Study*, Volume 1, Selections from the Division of Cultural Resources, Rocky Mountain Region, NPS (1994). More specifics are in Kenneth C. Baldwin, "The Grand Loop: A Legacy of Dan C. Kingman, in *Enchanted Enclosure: The Army Engineers and Yellowstone National Park—A Documentary History* (Washington, DC: Office of the Chief of Engineers, U.S. Army Historical Division, 1976), 85-93.

[15] Laura E. Soulliere, *Historic Roads in the National Park System—Special History Study* (Denver: USDI-NPS, 1995), 8.

[16] McClure, Yellowstone Roads and Bridges, 132. The macadam process started with grading that included provision for a crown on the road with side ditches, followed by a layer of crushed rocks laid from six inches to a foot in depth but in two successive courses and then compacted by a heavy roller. After the second course, a binder course was added to cement the crushed stone together, followed by several more rounds of rolling and sprinkling with water to provide a relatively durable surface.

[17] C.H. Knight, "Report upon the Construction, Repair, and Maintenance of Roads and Bridges in the Yellowstone National Park"; J.B. Cavanaugh, "Report upon the Road into Mount Rainier National Park"; and Jay J. Morrow, Report upon Crater Lake National Park in *Annual Report of the Chief of Engineers,* Appendices GGG, HHH, and III (Washington, DC: Government Printing Office, 1912), 1334-1342.

[18] Diller and Horace Bushnell Patton, *The Geology and Petrography of Crater Lake National Park*. USGS Professional Paper No. 3 (Washington, DC: Government Printing Office, 1902), 8-9 and map on page 16.

[19] "Road around the Rim of Crater Lake," Medford *Mail Tribune*, September 17, 1907; "Crater Lake is for Me, says Edward," Portland *Oregon Journal*, November 24, 1907. Some context about Harriman's visit is in Stephen R. Mark, "A

discussion of a "Rim Road" around Crater Lake took a back seat while Steel and others fought for a better route from Medford, and only when Chamberlain succeeded in securing funds for a civil survey within the park did it receive notice in the newspapers. Even then, one writer conflated the arrival of a survey party in August 1910 with visits by the Secretary of the Interior Richard Ballinger and other federal officials, all supposedly aimed at planning "an exclusive automobile boulevard" about the rim of Crater Lake, one planned to be separated from another circuit road for the use of horses and wagons.[20]

The secretary did not officially sanction the use of automobiles within Crater Lake National Park until November of that year, but with posted rules still reflecting expectations derived from horse-drawn travel on wagon roads. These included stipulations that motorists had to yield the right of way to teamsters, possess a written permit, and in no case could they exceed a speed of 15 miles per hour.[21] The survey crew, which started work in August of 1910, had every intention to plat roads primarily suitable for automobiles. They arrived at Crater Lake with the idea that a "boulevard around the rim of the lake" could form the nucleus for a system of roads and trails outward to the park entrances as well as to various points of interest.[22] A newly drafted topographical map by the U.S. Geological Survey provided a general guide so that a group of 26 men might then run preliminary lines with transit and level, but also take topography every hundred feet as a basis of final location. The associated field notes might accordingly furnish a basis for plans, specifications, and estimates for future appropriations.[23]

Although hampered by forest fires burning just outside the park, the survey crew partly split into two during September. Camping while they worked over the next six weeks, surveyors produced a located line with estimates for what it might cost to build a road around Crater Lake, along with some of the approach routes. The lead engineer, H.L. Gilbert, reckoned that almost $400,000 might be needed to construct the proposed circuit, with the total based on mile by mile estimates for clearing, grubbing, grading, cross-drainage (culverts), retaining structures such as riprap, macadam for surfacing, further engineering such as construction surveys, and supervision.[24] Another party, this one consisting of 11 men and led by William G. Carroll of the Corps, completed the location survey phase as far as initial funding was concerned during the summer of 1911. During their three weeks of work while camping in the park, the crew of 1911 attempted to finish what Gilbert and his men started, even if parts of the survey amounted to little more than reconnaissance in the judgment of other engineers employed by the Corps. Carroll's report put estimated costs for the Rim Road to $429,000, with the total package (including approach roads) now figured at an estimated $700,000 in future appropriations. Included in the total estimate was a statement that hard surface paving on top of the proposed macadam surface might cost an additional $5,000 per mile.[25]

Sluggish Sort of Eden: Dreams and Decline in Fort Klamath, Oregon," *Journal of the Shaw Historical Library* 21 (2007), 73-76.

[20] "Exclusive Auto Road about Rim," Medford *Mail Tribune*, September 9, 1910.

[21] Ballinger, Regulations Governing the Admission of Automobiles into the Crater Lake National Park, Oregon, during the season of 1911, promulgated on November 15, 1910.

[22] "Roads to Run to Crater," Portland *Oregonian*, August 18, 1910.

[23] H.L. Gilbert, Civil Engineer, to Major Jay J. Morrow, Corps of Engineers, August 6, 1910, Record Group 77, Entry 36, Box 28, file CLP 102, National Archives and Records Administration, Seattle.

[24] Gilbert, Report on Surveys in Crater Lake National Park, August to October 1910, March 3, 1911, RG 77, Entry 36, Box 27, File CLP 100 [1911], NARA Seattle.

[25] Carroll to Morrow, November 15, 1911, RG 77, Entry 36, Box 27, File CLP 100 [1911], NARA Seattle; Carroll also wanted the Corps to be cognizant that an additional $80,000 was needed to supply water for sprinkling roads, in addition to an annual expenditure of $9,000 for road maintenance. He saw a need for dry laid guard walls and the eventual construction of roughly 100 miles of trails.

The upshot of all this surveying materialized in a report from the Corps to the House of Representatives, as transmitted with a letter from the acting Secretary of War, Robert Shaw Oliver, on December 19, 1911.[26] This document became the basic reference for the Corps when they made subsequent requests for annual appropriations, with the commanding officer in the Portland District estimating that the project would take seven years to complete.[27] Just four years later, Project Engineer George Goodwin would complain about how much of the road built so far had to be changed from "the crude preliminary survey upon which the approved project was based," but like it or not, the survey of 1910-11 furnished the basic parameters for funding construction through what the Corps and its supporters hoped might be the summer of 1918.[28]

Both reports by Gilbert and Carroll followed the methods of a preliminary railroad survey, where control was by an azimuth checked by frequent sun observations. Surveyors used Y levels and set benchmarks about every half mile according to a transit line in conjunction with developing a strip by taking topography, within which the final location might fall.[29] By the time Morrow gave his testimony to Congress (in 1912), the surveys of 1910-11 meant that plans, specifications, and engineering estimates were based on road design calling for a maximum grade of 8 percent, but for only short distances, whereas the minimum radius of a curve was to be 50 feet. The survey, meanwhile, called for the width of subgrade in an embankment to be only 16 feet, with the projected macadam surface of only 12 feet.[30] This meant that oncoming cars (let alone wagons) could have difficulty passing each other. As he took control of the project prior to the first construction season in 1913, Goodwin realized that he would definitely have to change portions of the preliminary line. Not only that, but the Corps needed to hire a small survey crew each season to do the survey work necessary for determination of the final located line just ahead of the first major phase of road construction, that of rough grading.[31] Goodwin (1875-1945), a civilian engineer who emerged as the most dominant figure in the project, was also a keen observer of what adjustments were needed in the location work to accommodate the rapidly evolving automobile, whose potential speed and handling was vastly different from wagon roads built for teams of horses pulling wagons. Most importantly, any changes in road location had to be incorporated within a construction budget where the Corps routinely received barely more than half the funds it requested from Congress each year.

Subproject of 1913 (Rim and Pinnacles roads, 8.5 miles in two sections)

During his testimony before Congress in 1912, Morrow tried to impart a sense of urgency to his audience by stating that as much of the roadwork should be completed as soon as possible before the Panama-Pacific Exposition commenced with San Francisco at its heart in 1915. He also recommended a "continuing contract" for the proposed construction at Crater Lake, presumably based on how the Corps usually approached the maintenance of rivers and harbors for navigation. This had to be changed in the wake of Congress passing its first annual appropriation for the road project in August 1912. After the Senate approved $100,000 for what remained of the fiscal year, the House cut amount in half, so the Corps began to consider using hired labor

[26] House Document No. 328 (62nd Congress, Second Session) , transmitted by Major Jay J. Morrow on November 21, 1911.

[27] Morrow, in the *Congressional Record* 48:163 (June 14, 1912), statements related to Crater Lake National Park Roads at a hearing by the House Committee on Public Lands.

[28] Goodwin, Crater Lake National Park, Improvements of Roads and Bridges, (December 30, 1915), 13, RG 77, Entry 36, Box 29, File CLP 200 (1) Project Estimates, NARA Seattle.

[29] Gilbert, Report on Surveys, 1. This is generally depicted, both in plan and profile, with a mass haul diagram so that quantities and costs can be estimated.

[30] Morrow to Chief of Engineers, U.S. Army, "Basis of Plans and Estimates," in the *Congressional Record* of June 14, 1912.

[31] Goodwin, Special Report, Crater Lake National Park, with transmittal from Morrow to Chief of Engineers, January 5, 1914, 8, RG 77, Entry 36, Box 29, File CLP 200(2), Project Estimates, NARA Seattle. He also urged improvements in design of typical road sections before the work had even started; Goodwin to H.H. Robert, May 22, 1913, 1-2, RG 77, Entry 36, Box 28, File CLP 109, General Improvement Work, NARA Seattle.

under the direction of a project engineer. Contracting at that point in time would not have worked anyway, given the park's remote location and short construction season, as well as the uncertainty surrounding a sequence of annual appropriations for the project.[32]

As things stood, the Corps decided to delay any construction until the summer of 1913 for two reasons. It made no sense to try bringing men and equipment for barely more than a month remaining of the 1912 construction season, though some additional surveying could be accomplished. Most of the latter concerned the suitability of approach roads for freight. The head surveyor recommended that new alignments for both the west entrance (Medford) and south entrance (Fort Klamath) roads could both wait, but a road through a new east entrance (on Wheeler Creek) needed to be built from the nearest station on the Southern Pacific Railroad.[33] The SP's Oregon-Eastern Railway had reached Chiloquin from the south in 1911, as part of the "Natron cut-off," a route intended to cross Willamette Pass at some point on its way to Eugene. A crew hired by the Corps erected a temporary stable and warehouse at Kirk in the spring of 1913, prior to building what they considered to be a temporary road of just over 13 miles in length to the park boundary near the Pinnacles on Wheeler Creek by May 30.[34]

Goodwin, who formerly had charge of construction work at The Dalles-Celilo boat canal on the Columbia River, took over as project manager on February 1, 1913. He arrived in Klamath Falls by train on May 3, somewhat assured that an appropriation for the project would pass Congress, knowing that the House of Representatives had approved the amount of $75,000 on April 22.[35] Officials in the Portland office actively sought ways to keep costs within parameters of the unexpectedly reduced appropriations even before Goodwin's arrival, mainly because they feared what might happen to future funding if construction expenses began to exceed the initial limit of $125,000.[36] Goodwin proved to be not only a masterful bookkeeper, but also adjusted the final located line to generally avoid expensive sidehill excavation and other weaknesses he saw in the surveys of 1910-11 that would otherwise increase costs. He could also think ahead to reduce the cost of long-term maintenance, emphasizing to his superiors that specifications of a typical section could be modified to be less susceptible to erosion, but also permit improvements to cross drainage with a modified side ditch.[37]

This final suggestion applied to much of the flatter topography of the proposed Pinnacles Road and for portions of a realigned Fort Klamath Road. Both of these approach routes factored into the plan for what the Corps hoped to achieve in 1913 in building a portion of the Rim Road. This involved clearing, grubbing, grading and supplying cross drainage for a new stem that allowed crews to construct the Rim Road in two directions once grading operations reached an intersection at Lost Creek, about four miles northwest of the new east entrance. Work might then proceed to the west, where grading on the Rim Road could eventually reach an intersection with the Fort Klamath Road in Munson Valley, where the Corps made their headquarters at the center point of the ACERS. From the upper reaches of Munson Valley the engineers aimed to improve a steep climb to the rim of Crater Lake, where tents accommodated overnight guests in lieu of a still unfinished hotel at the site. After a somewhat average snow year, construction over the summer progressed to a point

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[32] "To Rush Road Work in Crater National Park," Medford *Mail Tribune*, February 11, 1913.
[33] Kenneth S. Hall, U.S. Surveyor, to Captain H.H. Robert, Corps of Engineers, Portland, January 29, 1913, 2-3, RG 77, Entry 36, Box 28, File CLP 109 General Improvement Work, NARA Seattle.
[34] H.H. Robert to the Chief of Engineers, January 5, 1914, 6, RG 77, Entry 36, Box 29, File CLP 200(2) Project Estimates, NARA Seattle.
[35] To Rush Road in Crater National Park," Medford *Mail Tribune*, February 11, 1913; "Appropriations for Crater Lake for Road Building "Seem Sure," Medford *Mail Tribune*, April 30, 1913; "Work Begins on Highway Building Crater Lake Park," Medford *Mail Tribune*, May 3, 1913.
[36] H.H. Robert to District Engineer Officer (Morrow), April 28, 1913, 4, RG 77, Entry 36, Box 28, File CLP 109, NARA Seattle.
[37] Goodwin to Robert, May 22, 1913, RG 77, Entry 36, Box 28, File CLP 109, NARA Seattle.

where about 15 miles of the Rim Road could be described as cleared but just over half of that distance graded, with culverts installed for cross-drainage.[38]

To place this accomplishment in some sort of perspective, the Corps employed an average force of 95 men (a number Goodwin estimated to be between 25 and 50 percent below the optimum level) due to a labor shortage in the Klamath Basin. Clearing had to be done with handsaws, with some grading also completed by hand labor. More of the grading, however, could be accomplished with teams of horses, either pulling plows, or in the case of finish work, harrows or scrapers. With moving rock both slow and expensive, Goodwin looked for ways to save precious funding by comparing the estimates of 1910-11 with what his survey crew could do with alternate alignments through a sequence of reconnaissance, preliminary location, final location, and construction surveys. By August, he wrote to the Portland office about two major changes to the 1910-11 line that could be made for the sake of cost. The first involved extending the Pinnacles Road from Lost Creek all the way to Kerr Notch, which eliminated a rugged traverse over the Anderson Bluffs in favor of much lighter work needed to round the top of Anderson Point on the way to Sentinel Rock. A second change reduced excavation considerably by going from Lost Creek and following a lower line to Vidae Creek, thus avoiding Sun Notch entirely. Both proposals received approval from the Portland office.[39]

The supply line associated with field operations relied heavily on the rail link to Kirk, from which specially-geared trucks could haul food and other supplies to the camps. Some of the latter consisted of moving or "fly" camps where men and horses could be billeted for a few days, as when building the temporary road from Kirk to the park's new east entrance. Others took on a more permanent quality—with tents on platforms to be shared by employees, mess facilities, corrals, and sometimes storage structures. During the 1913 season, Camp #1, for example, was most often situated at the head of Lost Creek, which also served as something of a midpoint between Kirk and the headquarters for the Corps (Camp #2) in Munson Valley. Phone line connecting these points served as a communications link, though Goodwin quickly learned that winter weather required some of the men to reinstall it the each spring.[40]

Although the headquarters development in Munson Valley remained modest at first (the Corps built a warehouse and small office along the main stem of Munson Creek during the season of 1913), it also served as a venue for evaluating experimental road surfacing. Goodwin coordinated the laying of 1,000 feet near the intersection of the Rim Road with the Fort Klamath Road in August in order to determine the most expedient surfacing and paving methods at Crater Lake, given the absence of any studies done on similar soil types at this elevation. The alternatives included oil-bound earth, water-bound macadam, bituminous concrete, as well as other types of pavement. As a preliminary finding, Goodwin thought the combination of oil-bound macadam and bituminous paving fared the best, but wanted to see how it and other types of surfacing held up during the next season or two. Moving the plant and equipment to the park for these tests proved expensive, and he experienced difficulties calculating costs for future funding requests, especially since the facilities for heating the oil and distributing it proved to be inadequate.[41]

Subproject of 1914 (Rim Road, 10 miles in two sections)

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[38] Goodwin to Morrow, as conveyed to Chief of Engineers, U.S. Army, January 5, 1914, 6-9, RG 77, Entry 36, Box 29, File CLP 200/2 Project Estimates, NARA Seattle. A summary written by Morrow appeared in Appendix FFF (on work at Crater Lake) in *Annual Report of the Chief of Engineers* (Washington, DC: Government Printing Office, 1914), 3397.

[39] Goodwin to Captain T.H. Dillon, August 5, 1913, and Morrow to Goodwin, November 17, 1913, RG 77, Entry 36, Box 28, File CLP 103 Projects, NARA Seattle.

[40] The phone line initially extended 24 miles, essentially between Munson Valley and Kirk; Goodwin to Morrow, then conveyed to Chief of Engineers, January 5, 1914, 8.

[41] Goodwin to Dillon, November 19, 1913, with Report on Experimental Road Sections, RG 77, Entry 36, Box 29, File CLP 200 Project Estimates, NARA Seattle.

As Goodwin began to prepare for the construction season of 1914, his aims for the summer corresponded with the rapidly evolving pattern of visitor use. As with 1913, the prospect of increased attendance loomed in response to the Panama-Pacific Exposition set for 1915. The Department of the Interior meanwhile moved to hire a part-time "Superintendent of National Parks" based in San Francisco, who could also do some site design. Mark Daniels devoted much of his time to Yosemite, but came to Crater Lake on one occasion to coin the name "Rim Village" for the area around the still-unfinished hotel. He produced some sketches for a model village that resembled similar proposals for other national parks, but William Gladstone Steel, the park's superintendent, possessed only a bare-bones budget aimed at operations rather than development—and one largely limited to minor repairs or salaries for a few employees at Crater Lake.[42]

Daniels also made the first suggestion of moving park staff from Annie Spring to Munson Valley, but parsimonious appropriations for park operations at that time did not permit any such shift. Goodwin instead succeeded in adding to what had been constructed in 1913 at the headquarters in Munson Valley: 90 tent houses with wooden frames in the main part of the camp along Munson Creek, some stables to accommodate 30 teams, a small log cabin, but a considerably larger storehouse. Additional "temporary" structures included adding a dormitory to the office built the previous summer across the roadway from a log messhall.[43] Other camps were transitory in comparison, with two others on Rim Road enjoying a longer working season in 1914. The Corps hired more laborers than in any other of their seasons at Crater Lake, such that a number in excess of 200 men on the road project were on the payroll at one point. It resulted in the completion of clearing, cross-drainage, and grading of two segments on Rim Road totaling about 10 miles.[44]

Just as in Goodwin's previous annual report, surveying costs in 1914 came to roughly five percent of what the Corps spent on the subproject. By this time Goodwin had concluded the location surveys of 1910-11 to be little more than reconnaissance, especially now that considerable expense could be saved by relocating the preliminary line to avoid unnecessarily tedious and expensive excavation. He also believed the preliminary surveys were based on an unsafe paved width of 15 feet, and thought 18 feet to be necessary for two-way traffic to sustain a speed of 25 miles per hour. Paving with the preferred materials of oil-bound macadam with bitumen overlay could cost as much as $10,000 per mile, so Goodwin considered some alternatives to keep the project within the total estimate of $700,000 from 1910. It meant taking one of two courses, and recognizing that only part of the surfacing and paving would be possible within that total estimate, but even that required some faith that Congress could provide sufficient funding to complete what amounted to phased construction. As things stood, he could follow the most expedient path and open roads by grading only, then do surfacing and paving later; alternatively, the roads could be paved with a cheaper material to buy some time; or simply pave only the worst sections.[45]

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[42] Daniels to the Secretary of the Interior, September 22, 1914, 3-4, RG 79, Entry P9, Box 005, File 1237, Part 1 Appropriations, NARA II, College Park. In terms of development, Steel could only fund a short road loop that summer, one about a quarter mile in length about two miles south of the engineers headquarters in Munson Valley at what later became known as Godfrey Glen.

[43] Goodwin, Crater Lake National Park, Improvement of Roads and Bridges, Report of Operations for Month of November 1914 and Resume of Operations to Date, 6-7, RG 77, Entry 36, Box 27, File CLP Monthly Reports (3 of 3), NARA Seattle.

[44] The Corps attributed the abundance of labor that summer to a general business depression accompanied by a general lack of money in the area; Goodwin, Report of Operations for Month of November 1914, 13. In addition to Camp #2, the others consisted of Camp #4 (which moved several times before finishing the season on Sun Creek next to the Rim Road), and Camp #5, located "under Andersons Bluff" from the end of July until October 13; a "Camp #6" had something of a phantom existence, but existed on a paper so as to charge expenses against that were incurred building a temporary road between Rim Village and Lightning Spring, located below the future Rim Road. The total of 11.2 miles included portions of Rim Road only rough graded and not completed in 1913; Goodwin, Report of Operations for Month of November 1914, 3-4 and 8-9.

[45] Goodwin's response about the surfacing question in reply to letter from Chief of Engineers about whether to extend grading beyond Cloudcap on one side and the foot of Watchman on the other, December 23, 1914, RG 77, Entry 36, Box 29, File CLP 200(2) Project Estimates, NARA Seattle. The specific alternatives are in a letter from T.H. Dillon to the Chief

A more immediate logistical challenge involved getting three wood-burning steam shovels to where they could perform the most difficult and unavoidable excavation. Just reaching the areas on Rim Road where these machines were needed involved laying parallel tracks of timbers 6 by 12 by 16 inches, which could be dragged in front again after the shovel, through its own power, had moved over them. They went at a pace of about a half mile per day, so that it took two months for each of them to finally arrive at a starting position on the road.[46] One of the shovels worked from Kerr Notch to the top of Anderson Point, a stretch of road where some of the laborers built a dry laid retaining ("revetment") and guard walls by hand. Another machine performed the excavation needed for motor vehicles to reach Vidae Creek from Munson Valley, then climbed to a viewpoint above the Sun Creek Valley. The third shovel moved rock on the road alignment between headquarters for the Corps in Munson Valley and Rim Village, where the Rim Road ascends some 700 feet in less than three miles. In all, the steam shovels graded 3.7 miles of the Rim Road that summer, while teams and hand labor accounted for the remaining 6.3 miles.[47] A graded earth road now linked Rim Village (with its still unfinished Crater Lake Lodge as the only permanent building) with Sentinel Rock by way of Munson Valley, Lost Creek, and Kerr Notch, with virtually all of the cross drainage devices having been placed in the roadbed, where the engineers calculated it was needed.[48]

The steam shovels used for heavier excavation represented a key difference between the two construction seasons so far, but there were others. Instead of the wood planks used for culverts in 1913, the project now employed corrugated iron of varying diameters depending upon the topography. Re-grading of the road sections built in 1913 occurred for the first time, and was incorporated in subsequent seasons as maintenance. Crews also had to restring the 24 miles of phone line installed the first summer and added 2.5 miles of new line so that communications among the four construction camps was made possible. In addition, Goodwin and his assistants touted the benefits of having a new Mack truck deliver provisions for the men in the camps and feed for their horses. The only progress made toward surfacing, however, during the 1914 subproject involved opening a quarry on Dutton Ridge a short distance above the Rim Road segment that lay between Lost Creek and Munson Valley, so that a rock crushing operation could begin once the Corps acquired a plant and equipment.[49]

Subproject of 1914 (Fort Klamath and Medford roads, 12.2 miles in two sections)

Given the prevalence of horse-drawn wagons and foot traffic over most of the five decades since soldiers cut open a route linking Union Creek with Fort Klamath, it is not surprising that the Corps had to realign it for automobiles within what had become the national park. Construction crews began clearing and graded less than a mile of what they now called the Fort Klamath Road in 1913, a route that linked their headquarters in Munson Valley with the southern park boundary at "Wildcat." The Fort Klamath Road could also be divided into two parts: one that ran alongside the older wagon road between Wildcat and Park Headquarters near Annie (Anna) Spring, but on a substantially improved alignment for automobiles, and another wagon road that largely followed what former park superintendent W.F. Arant had graded in 1905 between Anna Spring and what became the headquarters for the Corps in Munson Valley.

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of Engineers, March 24, 1915, RG 77, Entry 36, Box 29, File CLP 200(3) Project Estimates, NARA Seattle. The $700,000 cap was known publicly, as mentioned by Lewis A. McArthur, "Crater Lake is Attracting Thousands of Visitors This Year," Portland *Oregonian*, October 11, 1914, section 3, page 9.

[46] Goodwin summarized the movement in his Report of Operations for Month of November 1914, 10-11, but it is recounted with some specifics in Marshall Dana, "Road System will bring Crater Lake nearer to public," Portland *Oregon Journal*, December 10, 1916, section 2, page 8.

[47] Goodwin, Report of Operations for Month of November 1914, 3-4.

[48] Goodwin, Report of Operations for Month of November 1914, 2-5.

[49] Goodwin, Report of Operations for Month of November 1914, 5-6, with freighting described on page 10. He also noted on page 13 the fires started by the shovels and the measures needed to fight them.

The Corps and its hired labor force resumed clearing operations for the Fort Klamath Road at Wildcat in mid-May, less than two weeks before grading began at the same spot. Clearing over the entire 11.4 miles did not finish until the last of August, mainly because a small crew of men had teams pull small trees with a purchase tackle, though they felled larger trees and blew stumps with dynamite. Grading from Wildcat to the headquarters of the Corps in Munson Valley covered the road's entire length and did not finish until mid-September, consuming more than three months because of the hand labor needed, which substituted for one of the steam shovels while it slowly reached Wildcat from Kirk. Placing cross-drainage devices also took time, as several rustic log bridges ranged between 6 and 20 feet in length, while mostly wooden culverts were placed along the route.[50]

Crews cleared and graded only 1.5 miles of the Medford Road during the 1914 season, though the surveyors found a new road location around Arant's "Corkscrew Hill," located a little less than two miles northwest of Anna Spring. Despite being relatively short, the segment required a new reverse curve to the south and west, avoiding the "corkscrew" altogether. Goodwin described the realignment and some road widening above the park headquarters of the time as rather light work, at least in comparison to the Fort Klamath and Rim roads.[51]

Subproject of 1915 (Rim Road, 4.5 miles in two sections)

With much of the $85,000 appropriation approved by Congress on August 1, 1914, to be carried over to the following season, Goodwin remained optimistic about the prospect of surfacing and paving the Rim Road and its approach routes at Crater Lake. In the dead of winter he combined both phases and figured the cost per mile as $13,600, a figure that seemed increasingly implausible once Congress appropriated only half of what the Corps requested for the following year. With only another $50,000 in hand, the cost of surfacing and paving a graded Rim Road seemed prohibitive. The alternative of sprinkling them with water to keep the dust at bay (something factored into the estimates from the surveys of 1910-11 mainly due to precedents established at Yellowstone National Park) also did not appear viable because many (if not most) road segments were located simply too far away from water sources and tanks mounted on wagons could not hold enough to do the job effectively.[52]

Crater Lake followed the larger trend of increased visitation to the national parks in 1915, with the season total of 12,129 almost double what it had been just two years earlier. More importantly, the number of automobiles that summer had risen to 2,399, or almost triple the number admitted in 1913.[53] Noting the progress made on two high profile trunk routes located elsewhere in Oregon, Goodwin recommended the suspension of any further grading at Crater Lake to his superiors in December, due to the urgency of surfacing and paving what had so far been built.[54] He found that some previously graded road sections were beginning to break up during the summer, and so performed some experiments with heated road oil on the earth base to see what

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[50] Goodwin, Crater Lake National Park, Improvement of Roads and Bridges, November 1914, 1-2, MS 591, Southern Oregon Historical Society, Medford.

[51] Goodwin, Crater Lake National Park, Improvement of Roads and Bridges, November 1914, 5.

[52] Morrow to Chief of Engineers, June 1, 1915, RG 77, Entry 36, Box 31, File CLP 230 Road Surfacing, NARA Seattle. Part of the difficulty lay in Goodwin having altered the preliminary lines, which better took into account water sources for sprinkling, in order to save money with the constructed line, which meant that surfacing and paving became even more of a necessity, even if their cost per mile was at least five times what clearing, grading, and cross-drainage cost combined.

[53] "Crater Season Busy," Portland *Oregonian*, December 5, 1915.

[54] Goodwin, attached to transmittal letter to Chief of Engineers, December 13, 1915, appendix "h," RG 77, Entry 36, Box 29, File CLP 200(2) Project Estimates, NARA Seattle. The two roads were portions of the Columbia River Highway and the Pacific Highway.

could work as a short-term holding action. The best results came from mixing the oil with gravel, but to do this on a large scale required equipment for crushing rock as well as heating and distributing the oil.[55]

As for the subproject phases of clearing and grading, Goodwin saw the summer of 1915 as having an almost ideal construction season, the Corps having lost only two days on account of storms. Much like 1914, crews had to restring almost all of the telephone line located between Munson Valley and the two construction camps. One of them, remained on Anderson Point at a place dubbed "Snow Spring Camp," while the other (Lightning Spring Camp) served as a base for work on the Rim Road between Crater Lake Lodge and the foot of Watchman. Similar to the previous two seasons, a four-man survey crew did final location work on 26 miles of road, construction survey for 10.8 miles and figured quantities of material needed. Goodwin, meanwhile, continued to track unit costs in order to stay within the perimeters of preliminary estimates as part of his office duties in Munson Valley.[56]

Grading that summer centered on two noncontiguous segments of the Rim Road. One picked up where work ceased near Sentinel Rock in 1914, proceeding mostly uphill to the road summit on Cloudcap. A steam shovel did all of the heavy sidehill cuts for roughly six weeks, ahead of a force that averaged 20 men and six teams, who used drag scrapers and hand tools to complete the segment by September 25. It and the segment from Kerr Notch to Sentinel Rock graded in 1914 lacked cross-drainage devices, with Goodwin's rationale being that freshly excavated banks consisting mostly of pumice might quickly slough and fill the culverts.[57] One of the Secretary of the Interior's assistants, Stephen T. Mather, visited this part of the park in August and declared that "the view from Sentinel [Point] is the most wonderful of all" and instructed Goodwin to build a trail from the [Rim] road to [Sentinel] point so that it will be easily accessible."[58] Goodwin, however, did not report to Mather, so Steel had a couple of seasonal rangers build the trail in September, which ran slightly less than one third mile.[59]

A more intensive grading operation linked Rim Village with a point at the foot of Watchman. An average force of 55 men and six teams tackled this segment of Rim Road over the late summer of 1915, one where the steam shovel had to work double shifts in order for the grading work to be suspended on October 16. Not only did the shovel have to perform practically all of the rock excavation, but also move much of what Goodwin called "heavy earth sections." The men and teams completed the finish grading after the shovel, but also situated culverts and drilled boulders by hand in order to set charges prior to the machine moving material on slopes.[60] Goodwin characterized all of the labor in the subproject of 1915 as being of "an indifferent grade," and complained that it proved almost impossible to secure experienced drill men. Not only did efficiency suffer in this respect, but it waned at altitude in comparison to road construction at low elevation. At the close of the 1915 construction season, Goodwin calculated that the entire project stood at 34 percent completed, having reckoned 18 miles of Rim Road still needed to be graded, along with another five miles of approach routes, in addition to the entire road system requiring the phases of surfacing and paving.[61]

Subproject of 1915 (Medford Road, one section of 5.3 miles)

[55] Goodwin, Crater Lake National Park, Improvement of Roads and Bridges, Report of Operations for November 1915 and Resume of Operations to Date, 5-6, RG 77, Entry 36, Box 29, File CLP 200(2) Project Estimates, NARA Seattle.
[56] Goodwin, Report of Operations for November 1915, 7.
[57] Goodwin, Report of Operations for November 1915, 3-4.
[58] "Mather Boosts Crater Lake as National Asset," Portland *Telegram* (in Medford *Mail Tribune*), August 26, 1915.
[59] Steel, Superintendent's Monthly Report, October 1, 1915, RG 79, Entry P9, Box 013, File 123—Reports Monthly, Superintendent, May 15, 1915-July 15, 1919, NARA II, College Park. The trail was reportedly four feet wide over most of that distance. Mather was in reality Steel's supervisor at that time, though he later became the first director of the National Park Service and supervised Goodwin when the latter joined the NPS beginning in May of1917.
[60] Goodwin, Report of Operations for November 1915, 3-4.
[61] Goodwin in Arthur Williams, *Report upon Crater Lake National Park*, as part of the annual Chief of Engineers Report to the Secretary of War (Washington, DC: Government Printing Office, 1916), 1847.

Work on the last of three approach roads concluded at the end of September, with clearing, grading, and cross-drainage extending over the distance between Anna Spring and the park's new west entrance above Castle Creek, or about 6.8 miles. Just as in 1914, work on the Medford Road included one major realignment, but this came over the last mile to the park boundary. Superintendent W.G. Steel went over Goodwin's head by preemptively contacting Jackson County officials as part of his plan to place rangers at each of the park entrances during the summer season of 1915. For this scheme to be viable at the west entrance, the road needed to be moved north about one mile so that water could be obtained from Castle Creek. Steel met with the county's roadmaster on the ground and selected a spot where the two segments could now meet. Once the Jackson County commissioners instructed their surveyor to find a new road location, Steel contacted Goodwin's supervisor and asked that the survey crew hired by the Corps find a new road location within the park, one adjacent to the canyon of Castle Creek.[62]

Most of the clearing and grading occurred on the portion of road between White Horse Creek and the new western entrance to the park. Crews cleared a corridor 30 feet wide over the entire length of road, using methods similar to those employed the previous summer: trees up to eight inches in diameter were pulled by teams using tackles, whereas larger ones were felled and stumps blasted with dynamite. Grading started near the end of June, with a road width of 16 feet built from shoulder to shoulder on grades averaging from two to six percent. None of the excavation was done by steam shovel, so the crews accomplished the work by hand and with teams that utilized two types of scrapers. Some of the men also drilled rocks by hand in order to set charges. They either rolled the blasted rocks over embankments or loaded them on stone drags for hauling away by teams. Goodwin also noted the placement of 13 corrugated iron culverts and construction of a bridge 50 feet long over White Horse Creek.[63]

What remained of Goodwin's optimism about surfacing and paving at Crater Lake slowly ebbed throughout the year, but especially after July 1, when Congress again appropriated only half the amount the Corps requested. The sum of $50,000 allowed grading and yearly maintenance to continue, but it began to dawn on him even in February 1916 that paving at the park might not happen at all.[64] For one thing, a bill aimed at establishing a bureau to exclusively manage the national parks had made sufficient progress in Congress for the Corps (through the Secretary of War) to preemptively address key representatives in both houses of Congress on the advantages of assigning road work to trained engineers, given how things had not worked well when roads had been the responsibility of individual park superintendents.[65] Engineers at the Portland office reassured Goodwin in June that funding for a "national park service" would not commence until 1917 at the earliest, and even then, the estimates made for the new bureau during that fiscal year did not provide anywhere near enough funding to take over roadwork in the parks.[66]

Subproject of 1916 (Rim Road, one section of 2.9 miles)

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[62] Steel to Major Jay J. Morrow, U.S. Engineers, May 20, 1915, RG 77, Entry 36, Box 31, File CLP 217 General Improvement Work, NARA Seattle.

[63] Goodwin, Crater Lake National Park, Improvement of Roads and Bridges, November 1915, 1-2, RG 77, Entry 36, Box 29, File CLP 200 Project Estimates, NARA Seattle.

[64] Warren Brothers Company [paving contractor] to Goodwin, February 5, 1916, with appended estimates for various road widths, RG 77, Entry 36, Box 31, File CLP 230 Road Surfacing, NARA Seattle.

[65] Secretary of War (to various Congressional representatives), April 17, 1916, RG 77, Entry 36, Box 29, File CLP 200(2) Project Estimates, NARA Seattle.

[66] C. Keller, Lt. Col., Corps of Engineers, to Arthur Williams, June 1, 1916, in reply to a letter from Williams of May 24, 1916, copies to Goodwin, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates; at virtually the same time Superintendent Steel made a request for $8,000 to the Secretary of the Interior, to cover maintenance of existing roads at Crater Lake, but emphasized that the acquisition of a car (the first one for any members of park staff) rated as a higher priority; RG 79, Entry P9, Box 006, File 123, Part 5, NARA II, College Park.

Although news about the Corps' status at Crater Lake represented something of a reprieve, a big snow year and persistently cool spring weather left drifts of 15 to 20 feet at the rim well past the middle of July. With this in mind, Goodwin saw no point to grading the Rim Road beyond Cloudcap in 1916 since carrying it another three miles or so into the "low timbered country near Round Top" had minimal scenic value and might only hasten maintenance on a road doomed to deteriorate in light pumice.[67] What shaped up to be a short season seemingly allowed for no time to even consider applying road oil as a temporary surfacing measure, as well as any work to create a roughly 1.25 mile auto trail to Sun Notch. The latter constituted a way to compensate for Goodwin's decision to include Kerr Notch in the Rim Road, something that involved changing the line proposed in 1910-11 to route the circuit from Lost Creek to Munson Valley, but only getting as close to Sun Notch as Vidae Creek.[68]

His focus for grading that summer also involved another change in the preliminary line proposed by the Corps in 1910-11. One of the engineers at that time, William G. Carroll, had estimated that only $36,000 would be needed to build the Rim Road across the east face (the one toward Crater Lake) of the Watchman. Unconvinced, Goodwin ordered the survey crew to make three preliminary locations during the previous season, in order to produce estimates based on quantities and the types of labor needed. They showed that a route in back of Watchman represented by far the cheapest option, even when factoring the paving estimate, at a total of $29,000 for about two miles of road. Apart from cost, its advantages also included views of the mountains located west of the park, construction with equipment that the Corps had on hand, greater safety of construction crews when compared to the other side of Watchman, and an appeal to visitors who might otherwise be squeamish about crossing Watchman on the lake side. Goodwin played down the problem of rockfall due to crossing a talus slope and did not mention snow drifts that piled high on the western face of Watchman. He summarized a second alignment, that of a bench road across the peak's eastern side, describing it as "extremely thrilling" and short—but the most expensive ($111,000). It might also prove the most hazardous to workmen, require continual maintenance due to rockfall, and increase the anxiety of visitors. Goodwin also presented a third alternative, whose estimated cost came to $79,000, and one he preferred to build if the expense did not matter, since it represented a "final climax" to the park road system. He envisioned a "very spectacular piece of road," as a combination bench and tunnel section, with the latter containing two or three windows like the famed Axenstrasse in Switzerland or the recently constructed Mitchell Point Tunnel on the Columbia River Highway.[69]

In weighing all these things, Goodwin concluded that he had little choice but to recommend the route behind Watchman. It proved to be the only realistic alternative, as the late season made for an acute labor shortage (the Corps could hire only half the force needed), especially since the subproject of 1916 had to compete with employment opportunities in both agricultural harvests and logging. Shipping gangs of "foreign" labor (recent immigrants) from Portland constituted another option, but labor problems arose in 1914, when this was last tried.[70] At any rate, Goodwin described the summer as both short and cold, so that many of the drifts along the road to be graded did not melt, even in July. This meant construction could not commence until August 1, but at that point, snow had to be moved by hand and teams; some of the deeper drifts required blasting. Grading on the north side of Watchman proved to be both slow and expensive, especially since water for the steam shovel had to be hauled by wagon from Lightning Spring. This meant a climb of 1,000 feet, with the

[67] Goodwin, Memorandum to Major Williams, June 20, 1916, 2, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, NARA Seattle.
[68] Goodwin to Williams, July 3, 1916, 2, RG 77, Entry 36, Box 29, File CLP 202 Accounts, NARA Seattle.
[69] Goodwin to Williams, July 10, 1916, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, NARA Seattle. The third alignment also required special equipment for tunnel construction and more skilled labor than what the project had so far attracted, and would likely take more than one season to build.
[70] Much of the trouble seemed to center around the Corps paying fares for the crews, who then were reluctant to work, but Goodwin could not afford to fire them; Goodwin to E.B. Clark, July 29 and August 10, 1916, RG 77, Entry 36, Box 31, File CLP 228 Correspondence, NARA Seattle.

tank wagon pulled by team over the road summits of the Watchman and Hillman Peak as the shovel advanced. Wood for fuel appeared to be scarce in many places and much hand work needed to be done by hand on the north side of Watchman, especially when building the revetment (dry laid rockwork used as base for the road) for the first time since 1914, when workers constructed a far shorter base and guard wall after sidehill excavation near Kerr Notch. Drilling in order to blast parts of this section also tended to be tedious, owing to how material could cave and the slanting of drill holes.[71]

Goodwin thus had to adjust the located line in the rockiest sections, and accordingly saved some money, but construction continued into November. When a heavy snow storm started on the fourth day of that month, the remaining crew of 40 men had to leave the steam shovel, some tents, and wagons in place. The workers and horses only just made their way through the snow (which, during the storm, drifted to 10 or 12 feet in places), over the five miles back to headquarters for the engineers in Munson Valley. From there some equipment needed to be placed in winter storage outside the park, so the first recorded snow plowing at Crater Lake was accomplished with a wooden plow hauled by eight horses. In his report made to recap the season, Goodwin calculated that progress on the Rim Road at the end of 1916 amounted to having roughly two-thirds of it graded, something that included clearing, cross-drainage, and revetment for a total expenditure of $133,700 to date, or a savings of some $63,000 compared to the amount originally estimated.[72]

Subproject of 1917 (Rim Road, 6.1 miles in two sections)

With Congress seemingly in no mood to grant any more than half of the Corps' request on a year by year basis, Goodwin made a tactical decision to resume grading of the Rim Road from two directions in 1917, rather than do any preparation for surfacing.[73] He outlined the upcoming season's work in May, assuming that $80,000 was available, even though the snowpack that winter exceeded the previous year. Congressional passage of legislation creating the National Park Service led to its director, Stephen T. Mather, offering Goodwin the post of chief civil engineer for the agency's infant roads program.[74] This meant that Carroll became the project engineer in May, while junior engineer Alex Sparrow accepted the job of park superintendent in August 1917 after Steel's resignation.[75] Carroll followed Goodwin's plan to close the last 12 miles of the Rim Road circuit from two directions. He more or less had to, as the annual appropriation approved by Congress in June once again called for only $50,000 to be allotted for the project.

For a second year in a row the winter snowpack pushed the construction season's start into August, with American entry into World War I during April having had the effect of escalating the labor costs upward. Carroll could nevertheless report that grading Rim Road occupied an average of 110 men and 27 teams during August, with the numbers fairly stable (at 108 men and 34 teams) in September.[76] A steam shovel did the heaviest excavation on each segment, but unlike 1916, the types of grading ranged from light clearing and easy earth excavation all the way to heavy clearing and difficult excavation, as Goodwin had forecast in May.

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[71] Goodwin, Crater Lake National Park, Improvement of Roads and Bridges, Report of Operations for November 1916, 7-9, RG 77, Entry 36, Box 31, File CLP 217 General Improvement Work, NARA Seattle.

[72] Goodwin, Report of Operations for November 1916, 21-22.

[73] Goodwin to Williams, July 22, 1916, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates; Goodwin to E.B. Clark, July 26, 1916, RG 77, Entry 36, Box 31, File CLP 228 Correspondence; and Goodwin to Major E.J. Dent, May 5, 1917, 2, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, all NARA Seattle.

[74] Linda Flint McClelland, *Building the National Parks: Historic Landscape Design and Construction* (Baltimore: Johns Hopkins University Press, 1998), 175.

[75] Harold P. Danz, et al., *Historic Listing of National Park Service Officials* (Washington, DC: Government Printing Office, 1991), 52, 85. Goodwin initially established offices at Glacier National Park and in Portland. Carroll had been involved with the 1910-11 survey projects.

[76] Carroll, Report of Operations for August 1917 and September 1917, both in RG 79, Entry P9, Box 013, File 123 Reports – Monthly, Superintendent, May 15, 1915 – July 15, 1919.

From Cloudcap Camp roughly 40 men, teams, and one shovel worked downhill to Skell Head and completed three miles of grading by October. In that time they reached Wineglass, and learning from the experience of 1916, erected a temporary shelter cabin there to store equipment for the following season. One of their biggest logistical challenges throughout the construction season involved hauling water to the new camp in tank wagons from a water system built above Kerr Notch on the Rim Road, with five teams needed to supply both the camp and steam shovel. Not only was the base camp situated three miles away from the spring, but by the end of the season, the shovel and most of the men were working a further 2.5 miles from Cloudcap.[77]

Crews could not reach their base near Devils Backbone Camp (located some three miles from their previous encampment above Lightning Spring) until mid-August, but at least the new location had water. The Corps deployed 60 or more men on the western side of the caldera for most of the season, a force that allowed for finishing a quarter mile of grading left from 1916 and then pushed most of the way around Llao Rock. All told, the men working on the western part of Rim Road graded three miles of new road and then built a shelter cabin for their equipment at the base of Grouse Hill, a short distance from their ending point on Rim Road. Obtaining water for the shovel did not prove as vexing as on the east rim since a small spring inside the caldera near Devils Backbone could be pumped about 150 feet into a tank and then delivered by gravity through a pipeline close to the road and into camp.[78]

Subproject of 1918 (Rim Road, 6.2 miles to complete the circuit)

With just over six miles on the Rim Road remaining to clear, drain, and grade, it came as little surprise to Carroll and the other engineers that Congress made another appropriation of $50,000 for the project on July 1. Like Goodwin, Carroll became quite concerned about the lack of surfacing and pointed out that all but two miles of the road system had become badly in need of a macadam base and, ideally, some asphalt paving. He pointed to the wisdom of doing the entire job all at once rather than in pieces, but one of Goodwin's assistants—while agreeing with Carroll in principle—commented that those roads outside the park leading to Crater Lake were in far worse shape than what the Corps built within its boundaries.[79] This did not obviate the need for surfacing in the near future, but Assistant Engineer W.H. Peters (who like Sparrow had served the project in a variety of capacities since 1914) thought a minimum of ten miles of road could be surfaced per season. Peters cautioned, however, that some type of funding formula needed to be established in cooperation with the counties and other federal bureaus before it made sense for the Corps to spend any more money on park roads other than grading and annual maintenance.[80]

The construction season of 1918, in contrast to the two seasons preceding it, was less constrained by the snowpack. This meant that more days could be spent regrading and repairing roads, setting up and operating camps, doing surveys, as well as the actual grading work. An even more acute labor shortage, combined with having to wait for the appropriation from Congress, cost the project schedule a month or more. Carroll also pointed out what represented an ongoing, and likely permanent, problem of the Rim Road encountering the large drifts around Watchman and suggested a revised line several hundred feet lower, so that the road might

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[77] Carroll, Crater Lake National Park, Improvement of Roads and Bridges, Season of 1917, 1-2 plus attached map; RG 77, Entry 36, Box 31, File CLP 217 General Improvement Work, NARA Seattle.

[78] Carroll, Crater Lake National Park, Improvement of Roads and Bridges, Season of 1917, 1-2.

[79] Carroll to District Engineer Officer, June 8, 1918, and reply from W.H. Peters to E.B. Clark [June 1918], RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, NARA Seattle.

[80] Peters to Clark; Peters observed that not one car in 20 enters or left the park by its east entrance, and predicted that traffic on the Pinnacles Road to Kerr Notch would not equal the other entrances until the Natron Cutoff by the Southern Pacific Railroad was completed, an event that did not take place until 1926. Even at its height of popularity the east entrance barely accommodated five percent of visitors; response to Clark postdating June 13, 1918, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, NARA Seattle. Oddly enough, Peters called the park road system and its temporary access from Kirk "the only approach road leading to Crater Lake Park that can be dignified by that name."

again emerge on the rim at the Devils Backbone.[81] This amounted to little more than wishful thinking, as the two remaining steam shovels worked double shifts for extended periods just to get the remaining six miles graded during the season.

Although the number of men peaked at 120 in August, Carroll complained of their inexperience. Teams were hard to find, so the burden of grading fell more to the shovels than it had previously. Even a wage increase during September seemed to have little effect on slowing the drain of men to nearby lumber camps that paid better wages than the Corps.[82] The labor shortage made it impossible for the Corps to hire a doctor, but somehow the season produced surprisingly few injuries. Surveyors continued their work, just as in the previous five summers, but three men from the Oregon Agricultural College in Corvallis were engaged in this work during the 1918 season instead of junior personnel in the Corps.[83]

Freighting to the Engineers Headquarters in Munson Valley and the two field camps (where shelter cabins had been built at Wineglass and at the base of Grouse Hill) required purchase of yet another truck, making a total of four that the Corps had on hand. Hauling water to the field camps was accomplished, however, once again by teams of horses pulling tank wagons. This was relatively straight forward from the spring at Devils Backbone, since they traversed graded road for three miles to the camp at the base of Grouse Hill. Yet an ambitious attempt to pump water from the lakeshore initially failed at the Wineglass, so teams hauled water from the system above Kerr Notch for several weeks, then over Cloudcap as they had the previous summer. Eventually, however, two smaller pumps worked at the lakeshore so that the camp and the steam shovel had water. Elsewhere along Rim Road, all four temporary wooden bridges were replaced by corrugated metal culverts and earth fills. Crews installed an additional six miles of telephone line, making almost 50 miles in all.[84]

Sparrow claimed the honor of being the first person to ride completely around Crater Lake in a vehicle on October 3, several days before Carroll and his road crews left the park for good.[85] The Corps departed having calculated that the project stood at only 44 percent complete and spent a total amount of $420,000 over seven years.[86] Park visitation, meanwhile, increased every year since 1913 over the previous one, with the exception of a very snowy 1917. While World War I still raged, the Corps settled for $15,000 in the fiscal year of 1919, ostensibly for maintenance of the graded roads at Crater Lake. They started demobilizing at the park in September 1918, the plan being to ship everything not needed for the maintenance work to Portland, then wait for funding to surface and pave the roads after the war ended.[87]

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[81] Carroll to George A. Zinn , District Engineer Officer, July 21, 1918, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, NARA Seattle.

[82] Alex Sparrow, Superintendent, to the Director, National Park Service, September 10, 1918, RG 79, Entry P9, Box 008, File 123, Part 3, Employees, NARA II, College Park. "Road Encircles Crater Lake Rim," Portland *Oregon Journal*, October 13, 1918.

[83] Carroll to Crater Lake Company, September 18, 1918, RG 77, Entry 34, Box 1, Book 16 Correspondence, NARA Seattle. The engineering and survey crew consisted of G.V. Robinson, B.J. Price, and OAC instructor C.B. McCullough, who later became the renowned bridge engineer for the Oregon State Highway Department.

[84] Carroll, Crater Lake National Park, Improvement of Roads and Bridges, Report for the Working Season of 1918, 1-10, RG 77, Entry 36, Box 27, File CLP 200 Monthly Reports, Roads and Bridges. About half of the plank culverts placed in 1913 for cross drainage were also replaced by corrugated metal ones; Zinn to Chief of Engineers, April 15, 1918, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, NARA Seattle.

[85] "Rim Boulevard Now Completed," Medford *Mail Tribune*, October 3, 1918.

[86] Construction (total of all subprojects) accounted for about $395,000, with $9,500 going to the 1910-11 surveys, and $20,600 in road maintenance.

[87] Zinn to Carroll, September 24, 1918, RG 77, Entry 36, Box 31, File CLP 212 Property, NARA Seattle. The federal fiscal year at that time ran from July 1 until June 30. Sparrow estimated that there was still about one tenth of a mile on the Rim Road that needed to be graded in 1919. Peters was also hired by the NPS, initially as Goodwin's assistant, but quickly advanced to become superintendent of Mount Rainier National Park by 1922.

What turned the Corps away from Crater Lake and other national parks had to do with the perception that NPS Director Mather wanted to create in front of Congress. New federal bureaus are the most vulnerable to dissolution or mergers during their infancy, so Mather wanted control (or at least provide the illusion of it) over all facets of construction and operations in the parks. This meant that the Corps left Yellowstone in 1918, so road building and maintenance shifted to the NPS. The departure from Yellowstone differed from that at Crater Lake because the Corps had worked on road maintenance to the virtual exclusion of new construction since 1905. Sparrow, who was a junior engineer with the Corps at Crater Lake from 1914 until 1917, was hired by Mather as superintendent with the transition to maintenance and limited construction in mind. He observed that the grading by the Corps in 1918 came off better than the previous year, but that the going for automobiles on the Rim Road north of both Watchman and Cloudcap could be difficult.[88] Brilliant fall weather characterized much of October that year, so visitation continued in spite of the Spanish influenza pandemic. Sparrow, however, also noted that heavy rains that season did considerable damage to park roads and was compounded by the fact that the work of regrading and rolling the roads did not occur.[89]

Immediate Aftermath

Even if automobiles, with a little extra effort, could travel all of Rim Road, it did not mean that the Corps had reached a point where the NPS could easily pick up the ball. Sparrow assumed the role that Goodwin and Carroll held formerly, in that he hired laborers with the $15,000 in addition to his duties as park superintendent. This occurred while visitation at Crater Lake increased by another 25 percent in one year, to 16,645. It reflected the same jump nationally in all areas managed by the NPS—so that the national parks and monuments under the agency's administration reached a combined total of 756,000 for the first time.[90]

A heavy snowpack meant that Rim Road opened on August 10, 1919, and even then, some snow drifts had to be blasted. The road crew peaked in late July (with 50 men having a total of 30 horses) and worked to make a number of minor repairs on the road, like raising the grade over short stretches in several places.[91] They even had enough time and funding to complete a "trail" that connected Rim Road with Sun Notch, something that the Corps had wanted ever since Goodwin changed the located line from that point to Kerr Notch in 1913. It traversed Sun Meadows for about 1.2 miles and remained on some park maps until 1938, when NPS landscape architects directed Civilian Conservation Corps enrollees to "obliterate" what remained of the "trail."[92] Sparrow also gently made Mather aware, much as Goodwin and Carroll had to their superiors in the Corps, of the need for surfacing and paving the Rim Road and its approach routes. In the interim, Sparrow had the crews apply gravel to some of the most worn sections and hoped that the annual appropriations received by the NPS might continue to support 30 men and from 12 to 16 horses all season.[93]

The assumption that a crew of this size could be found every year might be called questionable in light of the long-standing labor shortage. As Sparrow told Mather, "not since 1913 was there ever enough labor in this park," but continued, "some forty percent of which would have been fired if anything better could be

[88] Sparrow to Mather, October 10, 1918, 3, RG 79, Entry P9, Box 013, File 123 Reports, Monthly, NARA II College Park.
[89] Sparrow to Mather, November 6, 1918, 1-3, RG 79, Entry P9, Box 013, File 123 Reports, Monthly, NARA II, College Park.
[90] Harlan D. Unrau, *Administrative History of Crater Lake National Park, Oregon*, Volume II (Denver: USDI-NPS, 1988), 562.
[91] Sparrow to Zinn, July 7, 1919; Sparrow to Mather, July 9, 1919, 2-3, both RG 79, Entry P9, Box 013, File 123 Reports Monthly, NARA II College Park.
[92] Stephen R. Mark, *Crater Lake National Park Trails, Chapter 19 Administrative History* (Seattle: USDI-NPS, 2013), 43. Only a very faint trace could be seen of it afterwards, but even under the best conditions, cars could only reach to a point located about half a mile from the rim.
[93] Sparrow, Superintendent's Annual Report 1922, cited in Unrau, *Administrative History of Crater Lake National Park, Oregon*, 532.

obtained."[94] At any rate, Sparrow reported in August 1920 that the NPS spent $13,000 the previous summer doing the finish grading over much of what the Corps rough graded in 1917 and 1918.[95] Without surfacing and paving, work to build the ACERS never officially reached an end point, while NPS crews regraded it each summer, often resorting to periodic applications of road oil to the earth base to reduce dust.

Road standards continued to evolve during the 1920s, with engineers designing and implementing several new types of features justified on the basis of increased safety as average speeds of vehicles climbed. Much of design centered on curvature, where practices like widening, super-elevation (banking) and lengthening (as opposed to tight radii) became standardized. Federal aid in road building through the acts approved by Congress beginning in 1916 proved to be the trigger for Oregon to make a rather late start (at least in comparison with Washington and California) toward building a state highway system.[96] Amid a rapid rise in the number of motor vehicles throughout Oregon, the state legislature finally empowered an appointed highway commission to sell revenue bonds and tap money from license fees.[97] By 1920, the Oregon State Highway Commission had amassed a pool of $15 to $20 million to spend on roads, a figure undreamed of just a decade previously.

Federal aid for highways in Oregon and other states ramped up further during the 1930s, when work relief programs supplied funding and/or labor to expand the road network in much of the nation. Among these projects was $2 million for building a "Rim Drive" around the lip of Crater Lake, a road constructed from 1931 to 1941 by using contracts through a partnership between the NPS and Bureau of Public Roads. It effectively superseded Rim Road, with only one section of five miles continuing to be part of the park's vehicular circulation system—the Grayback Road, built in 1914 and connecting Lost Creek with Vidae Falls. Other parts of Rim Road eventually became foot trails, particularly along the western part of the caldera (where hikers can traverse about three miles of it between a picnic area above to Lightning Spring to the Devils Backbone), while other segments were effectively hidden due to road obliteration efforts along Rim Drive so that much of what the Corps built lies abandoned.

Comparative analysis

Like Rim Drive that succeeded it, the Crater Lake Rim Road was designed and built with the aim of providing motorists with spectacular views of Crater Lake. The condition of Rim Road as a graded (rather than surfaced and paved) route, however, largely omitted the qualities of landscape architecture that distinguish Rim Drive as a circuit or scenic loop. Rim Road instead reflects the rapidly evolving highway engineering practice of the early twentieth century, with as many vista points and pullouts as the constraints of the annual subproject budgets allowed. Road location is the one true art form of a highway engineer, and with so much emphasis placed on staying within project estimates formulated in 1910-11, this resulted in a need to resurvey for a final

[94] Sparrow to Mather, March 27, 1920, 2, RG 79, Entry P9, Box 006, File 6 Appropriations-General, NARA II College Park.
[95] Sparrow, Superintendent's Annual Report for Fiscal Year 1920, August 26, 1920, 4, RG 79, Entry P9, Box 006, File 6 Appropriations-General, NARA II, College Park. The Corps admitted as much in 1919, as one of them in Washington admitting in an appropriation hearing that as much as 14 miles needed finish grading; Statement of Col. J.C. Mehaffey, Office of the Chief of Engineers, accompanied by Maj. H.L. Buell, January 11, 1919, 149, RG 77, Entry 36, Box 29, File CLP 200(1) Project Estimates, NARA Seattle.
[96] While federal aid proved to be the tipping point in convincing Oregon voters and their elected officials that issuing state bonds to finance highway construction, the general anxiety over bonded indebtedness had not abated until 1909 in California and 1911 in Washington. This was when the legislatures of those states finally approved of this mechanism to begin building their state highway systems primarily through bonds, rather than direct appropriations or formulas dependent on cooperation from counties.
[97] To illustrate how their numbers grew during those years, the State of Oregon had 13,597 passenger cars and trucks registered on January 1, 1914, as compared to 152,975 cars and 13,437 trucks registered within the state on January 1, 1924; cited by Frank Kittredge, Study of Concrete Pavement, Jackson County, Oregon, August 1924, page 3, RG 30, Bureau of Public Roads files, Oregon Highway section, (studies of materials), NARA Seattle.

located line just ahead of workers hired each year to tackle the various aspects of initial construction. This adds up to Rim Road having no direct parallels, either in the State of Oregon or highway projects that occurred at other national parks of the time. There are, however, some engaging comparisons with those contemporaries.

Most of the road construction in national parks from 1925 onward took place as the result of a cooperative agreement between the NPS and the Bureau of Public Roads, the predecessor to the Federal Highway Administration. The agreement is an important watershed because BPR was a "single purpose" agency run by highway engineers, staffed so that it could oversee a variety of contracts (clearing, grading, surfacing, and paving, but also subcontracts for details like stone masonry and landscaping), in addition to being able to cooperate with various state highway departments. BPR evolved from an advisory agency to one that directly handled large construction projects on federal lands with partners such as the NPS. This partnership came at a time when the evolution of automobiles had begun to level off, and equipment to build roads moved away from horse power and hand tools to diesel and hydraulics, promoting specialization in the workforce.

Away from wartime, the U.S. Army Corps of Engineers has largely focused their efforts on improving rivers and harbors, which have also included jetties or dams for flood control. The Corps entered the field of road building briefly in response to Congressional direction, and in only three national parks: Yellowstone, Mount Rainier, and Crater Lake. Most of the contribution by the Corps to Yellowstone's road system occurred between 1883 and 1905, when they completed a proposed circulation system for horses, wagons, bicycles, and stagecoaches. It was essentially single-track, with maintenance the chief concern of the Corps between 1906 and 1918, when they departed from the park. This road system's limitations proved to be a determining factor in the relatively late decision (on August 1, 1915) to allow private automobiles into Yellowstone National Park. All traffic was thus limited to one way, at least initially, while reducing the number of horses required for transporting park visitors. During its protracted stay in the park, the Corps widened some roads for motor traffic, along with continuing bridge construction, but also proved able to sprinkle over 100 miles of roads in Yellowstone with water to reduce dust on a regular basis.[98]

While the Yellowstone situation furnishes some useful precedents for understanding what the Corps accomplished at Crater Lake, the former's size and scope is far larger, as was the funding and duration of road projects there. A somewhat better comparison in regard to scope is that of Mount Rainier, where Congress appropriated $10,000 in 1903 for a survey of the most practical way to build a wagon road into the park. It resulted in the Corps constructing a route 24.5 miles in length between 1904 and 1911, with a total amount appropriated of $240,000 (or almost $60,000 over the original cost estimate). This road linked the western boundary of the Mount Rainier Forest Reserve with Longmire and almost reached Paradise Park, but was plagued initially by the contracting of a critical section of this route. The contractor performed so poorly that the Corps annulled the arrangement and proceeded to hire men directly under Captain Hiram Chittenden, who had formerly supervised much of the roadwork completed by the Corps at Yellowstone. Chittenden insisted on reconstructing critical segments between the Nisqually entrance to the park and Longmire, but subsequently reduced the per-mile cost of road building over much of the route by narrowing the roadway. Despite subsequent work to emphasize points of interest along the route under Eugene Ricksecker, who succeeded Chittenden, the narrow roadway severely crimped early automobile traffic. Although still

[98] These points are summarized in a brochure issued by the Historic American Engineering Record, *Yellowstone Roads and Bridges: A Glimpse of the Past* (Denver: USDI-NPS, 1989), with more detail in annual reports by the Corps. An example of the latter is Amos A. Fries, *Report upon the Construction, Repair, and Maintenance of Roads and Bridges in the Yellowstone National Park* (Washington, DC: Government Printing Office, 1917), 1940-1955. For a general overview of roads in parks before automobiles, see Timothy Davis, "'Everyone Has Carriage Road on the Brain,' Designing for Vehicles in Pre-automotive Parks," in Ethan Carr, et al. (eds.) *Public Nature: Scenery, History, and Park Design* (Charlottesville: University of Virginia Press, 2013), 39-54.

incomplete when the Corps left Mount Rainier in 1912, this road still represented one of the earliest scenic routes in any national park.[99]

Another example of project work in a park setting during this period is that of the Fall River Road in Rocky Mountain National Park. Originally consisting of 40 miles and constructed between 1913 and 1920, only nine miles of the Fall River Road survives in a single segment. It initially linked the town of Estes Park with Grand Lake, located over the Continental Divide. Built under state and county auspices, the start of construction on the Fall River Road preceded establishment of the national park in 1915, so that the State of Colorado spent $262,000 on it by 1923. Much like that five mile segment of the Rim Road known as the "Grayback" route, the surviving section of the Fall River Road has been managed as a one-way "motor nature trail" until comparatively recent times.[100]

Portions of the state highway system in Oregon are contemporaries with building and use of the Rim Road, but relatively few segments from that period survive in unaltered or even partially reconstructed form. Of these, fewer still were built primarily as a scenic or "pleasure" roads, as opposed to the predominance of trunk and connecting routes, county farm to market roads, or forest highways.[101] Most of the projects completed during the Oregon State Highway Department's first decade that began in 1917 consisted of rebuilding and widening earlier routes pioneered by counties, but centered on completing a system of primary and secondary roads. This system was authorized by the legislature, and the highway department aimed to expand it from 2,900 miles (much of which had to be reconstructed) to 4,300 miles. Almost all of these roads are still used a century later, even if most have been subject to numerous alterations and some segments bypassed completely.[102]

Due to the way highways in Oregon were authorized and funded, the state system possesses few (if any) scenic roads as a distinct category, but rather many routes with scenic character. A number of the trunk and connecting routes authorized in 1917 are designed in part to display Oregon's scenery to motorists, with discernible parking areas and overlooks allowing for access to state parks, trailheads, forested corridors, campgrounds, and/or resorts on public land within the highway right of way or adjacent to it. In this respect, the trunk routes with overtly scenic alignments built by 1920 include portions of the following highways: 1) Oregon Coast (US 101); 2) Pacific (or what became US 99); 3) The Dalles – California (US 97); 4) Fremont (SR 31); and 5) Columbia River (US 30). Later improvements to connecting roads such as McKenzie (SR 242), Greensprings (SR 66), and Crater Lake (SR 62) highways provided them with recreational components that could be utilized by residents and visitors alike, something also true for forest highways like the approach

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[99] Theodore Catton, *An Administrative History of Mount Rainier National Park* (Seattle: USDI-NPS, 1996), 118-122. Although Ricksecker emphasized that the route was designed "solely as a pleasure road," his superiors at the Corps pointed to its limitations such as its narrow width as insufficient for automobiles and the lack of surfacing material. Ricksecker's death in 1912 provided the Corps with an opportunity to turn the equipment and management of the park over to the Department of the Interior; J.B. Cavanaugh, *Report upon the Road into Mount Rainier National Park* (Washington, DC: Government Printing Office, 1912), 1339-40, 3559. For details about the various stages of grading early scenic roads, see Richard Quin, Historic American Engineering Record, Mount Rainier National Park Roads and Bridges (HAER No. WA-35) 1992, 70-73, 79-82.

[100] Richard H. Quin, Historic American Building Survey, Fall River Road, Rocky Mountain National Park, HAER No. CO-73, September 1993, 1-20, 31-32. The federal government contributed only $39,000 to its construction because the state did not cede jurisdiction of the park until 1929.

[101] Formation of the Oregon State Highway Commission came in response to the opportunity for federal aid, with its importance summarized in State of California, Division of Highways, *Some Historical Information Concerning Federal Aid for Highways, 1912-1972* (copy in Oregon Department of Transportation Archives, Salem). The major categories of roads in Oregon are summarized in RW Engineering Group, et al., *History of State Highways in Oregon* (Salem: Oregon Department of Transportation, 2010), 14-15.

[102] ODOT History Committee, *Oregon on the Move: A History of Oregon's Transportation System* (Salem: State Printer, 2009), 16-18.

to Oregon Caves (SR 46) something that opened initially in 1922, but it also underwent widening and reconstruction from 1928 to 1931.[103]

The Columbia River Highway, especially that section traversing the Gorge between Corbett and The Dalles, is probably the only contemporary of Rim Road where a comparison could be made. Although the two routes were built during the same period, they display some big differences. For a start, Rim Road is a circuit accessed by three approach roads, whereas the Gorge section of the Columbia River Highway is one segment of a larger route that included another section (Portland to Astoria) built roughly at the same time.[104] Both the Gorge segment and the larger Columbia River Highway were eventually surfaced and paved (in contrast to Rim Road), with a far greater degree of ancillary developments (in the form of trails, picnic areas, campgrounds, and viewpoints such as Crown Point or Multnomah Falls) than was the case at Crater Lake. The only funding source for Rim Road was limited to the parsimonious individual appropriations from Congress, where as the Gorge section enjoyed a mix of county, state, and federal funding.[105]

There are some similarities in methods of road construction between the Gorge section and Rim Road, especially during the period of 1913 to 1918. Wood burning steam shovels did the heaviest excavation, with teams used in a variety of capacities, along with hand labor. The Columbia River project, however, possessed the advantage of a much longer construction season that at Crater Lake in addition to better financing and access to far larger pools of labor. Already existing roads or temporary rail lines allowed for more efficient movement of men and equipment in the Gorge, though it should be added that some trade unions and farmers in Oregon occasionally voiced opposition to the Columbia River Highway and other roads they considered "scenic" on the grounds that these routes served a comparatively small number of automobile owners during the Progressive era.[106]

Subsequent road construction aimed at accommodating increased traffic volumes had negative effects on both the Gorge section and Rim Road. For the former, the building of a shoreline route (something that widened to become a freeway by the 1960s) meant the loss of road segments between Warrendale and Hood River.[107] Rim Drive's effect on its predecessor was largely that of forcing abandonment of the older route as a

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[103] Designing trunk roads actually goes back to 1914, once the legislature directed the state highway engineer to prepare a map of the main highways to be built and maintained by the state; Ralph Watson, Casual and Factual Glimpses at the Beginning and Development of Oregon's Roads and Highways, OSHC typescript [c. 1951], Oregon State Highway Technical Library, Salem, 22. Numbering of highways in Oregon began in 1926, whether this meant the system of federal or state highways; thus Oregon Coast is US 101, Pacific is US 99, The Dalles-California is US 97, Fremont is SR 31, and Columbia River is US 30. The connecting roads include McKenzie (SR 126 and 242), Greensprings (SR 66), and Crater Lake (SR 62).

[104] The Gorge section did not become part of the so-called "Mount Hood Loop" until the 1930s, when the remaining segment of what became US 26 and SR 35 was completed. An unpaved Columbia River Highway opened between Portland and Hood River in July 1915, to be followed a month later by the Portland to Astoria section. While the latter did not pose as great a design challenge, it still has scenic components, such as Clatsop Crest, where Bradley State Wayside is located; Lawrence C. Merriam, Jr., *Oregon's Highway Park System, 1921-1989: An Administrative History* (Salem: State Printer, 1992), 158.

[105] This could also include the City of Portland, if park acquisition is included in development costs of areas later transferred to Oregon State Parks and the U.S. Forest Service. Much of the earliest federal funding came in the form of trail development (the Eagle Creek Trail, for example, is widely acknowledged as the first recreational trail built by the USFS anywhere in the nation) and something of a resort at Multnomah Falls. County assistance mainly came in the initial phases where revenue bonds were sold to finance road construction in Multnomah and Hood River counties; this is summarized in Ralph Watson, Glimpses of Highway History IV, OSHC press release of March 13, 1950, ODOT Archives, Salem.

[106] Lawrence M. Lipin, "Cast Aside the Automobile Enthusiast: Class Conflict, Tax Policy, and the Preservation of Nature in Progressive-Era Oregon," *Oregon Historical Quarterly* 107:2 (Spring 2006), 166-195.

[107] Including what one writer called "the supreme engineering feat of the entire [Columbia River] highway," that of the Mitchell Point Tunnel; Howard O. Rogers, "A Day on the Columbia Highway," *Sunset* (May 1917), 80. Portions of the

thoroughfare for motorists, but with only minimal overlap and some obliteration where motorists might see short sections of Rim Road. Much of it on the western side of the Crater Lake caldera, however, can still be hiked as a foot trail and is readily evident from Rim Drive. In this respect, the NPS at Crater Lake has followed (albeit to a lesser degree) what the Oregon Department of Transportation did in the Gorge by resurrecting some abandoned sections of the Columbia River Highway for cyclists, runners, and hikers.

While the Gorge segment of the Columbia River Highway has been designated as a national historic landmark for its preeminent role in the evolution of scenic highways in the United States, Rim Road has so far faded into obscurity. One of the reasons is that the almost incessant promotion of the Columbia River Highway with its abundance of natural attractions also served to entice travelers to Oregon's largest city over the course of more than a century, giving rise to efforts aimed at preserving the road—or at least allow a portion of it to serve as a viable alternative to the freeway. Promotional efforts at Crater Lake National Park have mostly concentrated on its central feature rather than the center of a vehicular circulation system, whether that was Rim Road or even Rim Drive, which gained listing on the National Register of Historic Places as a designed cultural landscape in 2008.[108] Nevertheless, Rim Road is an expression of early highway engineering and construction methods aimed at presenting Oregon's only national park to motorists. Not only is it one of the few manifestations of how the Corps pursued road building a century ago, but is a tangible link to the work of George Goodwin, who was the leading influence in planning and building roads for the national parks once he left Crater Lake in May 1917 and until the NPS signed a cooperative agreement with BPR in January 1926.[109]

Rim Road since the completion of Rim Drive in 1941

On the eve of American involvement in World War II, annual park visitation at Crater Lake reached a figure in excess of 270,000 for the first time.[110] A total expenditure of $2 million from federal relief funds over the preceding decade finally pushed Rim Drive to effective completion during the summer of 1941, so that Rim Road became a distant memory in the wake of a wider route with better curvature and one fully surfaced and more than half paved. Only one segment of Rim Road remained in occasional use (the five miles between Lost Creek and Vidae Falls presently known as the Grayback Road), mostly as a "safety valve" if sporadic slides on Dutton Cliff or above Sun Notch blocked use of Rim Drive. That segment became a "motor nature trail" in 1969 and remained accessible to one-way traffic until the NPS planning process designated it a trail for cyclists and hikers in 2005.[111]

A short (.4 mile) section of Rim Road was incorporated into a trail linking Rim Drive with the Watchman Lookout that opened in 1932, setting a precedent for the eventual formalization of Rim Road as a foot trail for

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segment between Warrendale and Hood River have since been converted to a state trail, while much of the old road between Wyeth and Mitchell Point has been demolished for the freeway.

[108] In contrast to the outpouring of booklets and pamphlets on the Gorge section of the Columbia River Highway, the only promotional item so far located with Rim Road as its subject is Fred Kiser (with a foreword by Park Superintendent C.G. Thomson), *Rim Road—A Wonder Drive* (Portland: Scenic America Company, 1926). Apart from sporadic features in advertising as part of Oregon's "Cool Green Vactionland" campaign of the 1950s, Rim Drive has fared little better.

[109] Goodwin retired as chief engineer of the NPS on July 19, 1925, and the office he established in Portland was closed in the spring of 1926. The next chief engineer, Frank Kittredge, served in that role from 1927 to 1937. Goodwin received passing mention in several histories of the agency, even though he spent more time working for the Corps; see, for example, Laura E. Soulliere, *Special History Study, Historic Roads in the National Park System* (Denver: USDI-NPS, 1995), 34-44, Linda Flint McClelland, *Building the National Parks: Historic Landscape Design and Construction* (Baltimore: Johns Hopkins University Press, 1998), 175-190, and Robert Shankland, *Steve Mather of the National Parks* (New York: Knopf, 1951), 156-59, 246-47.

[110] By way of contrast, when the Corps left Crater Lake more than two decades earlier, park visitation set a new record of just over 13,000 during the 1918 season.

[111] Mark, *Trails at Crater Lake National Park*, 60-61; USDI-NPS, *Final General Management Plan/Environmental Impact Statement*, May 2005, iv.

about three miles between a picnic area and Devils Backbone (located on the west Rim Drive) in 1994. The latter became part of a larger effort to provide an alternative to the existing Pacific Crest Trail (which is located on a series of fire access roads well below Rim Drive) for hikers who wish to see Crater Lake.[112] Another half mile of Rim Road was utilized near Vidae Falls on the east Rim Drive in a realignment of the Crater Peak Trail in 2000 as part of a project aimed at improving the experience of hikers.[113] For the most part, however, the Rim Road lies abandoned in much the same state as when Rim Drive superseded it. Very little along the three approach roads built by the Corps remains intact, and this is largely because all of the Medford, most of the Fort Klamath, and some of the Pinnacles routes were later overtopped by projects completed by BPR and the Federal Highway Administration. What is extant of these roads is largely bereft of design features apart from curvature, a steady grade of 5 percent or less, and the graded earth surface. None of the remnant sections of those approaches lie adjacent to the Rim Road, but they do constitute a part of the ACERS, and are thus components of the first federal highway project in Oregon.

[112] Mark, *Trails at Crater Lake National Park*, 72-73; Brenda Bridges, "A New Pacific Crest Trail at Crater Lake," *Nature Notes from Crater Lake* 26 (1995), 28-31.
[113] Steve Mark, "Presenting Crater Peak and the Pacific Crest," *Nature Notes from Crater Lake* 32-33 (2001/2002), 25-27.

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Hoyt, Hugh Myron (Jr.), The Good Roads Movement in Oregon, 1900-1920, Ph.D. dissertation at the University of Oregon, Eugene, June 1966, 207-241.

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Quin, Richard. Historic American Engineering Record, Mount Rainier National Park Roads and Bridges (HAER No. WA-35). Washington, DC: Library of Congress, 1992, 70-73, 79-82.

National Archives and Records Administration: 1. Record Group 77 (U.S. Army Corps of Engineers), Entry 36, Boxes 27-31, Pacific Northwest Region, Seattle; 2. Record Group 79 (U.S. National Park Service), Entry P9, Boxes 005-013, NARA II, College Park, Maryland.

Southern Oregon Historical Society, Alex Sparrow Collection, containing photographs, maps, and drawings of Rim Road, including: U.S. House of Representatives, *Executive Document No. 328* (Washington DC: U.S. Government Printing Office, 1911), 1-16.

Previous documentation on file (NPS):

___preliminary determination of individual listing (36 CFR 67 has been requested)
___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 # **_OR-107___**
___recorded by Historic American Landscape Survey # _____

Primary location of additional data:

___State Historic Preservation Office
___Other State agency
_X_Federal agency
___Local government
___University
___Other
Name of repository: Crater Lake National Park

Historic Resources Survey Number (if assigned):

Army Corps of Engineers Road System Historic District (Crater Lake National Park)
Name of Property

Klamath Co., Oregon
County and State

10. Geographical Data

Acreage of Property 282
(Do not include previously listed resource acreage; enter "Less than one" if the acreage is .99 or less)

Latitude/Longitude Coordinates
Datum if other than WGS84: NAD27
(enter coordinates to 6 decimal places)

1	42.879639° Latitude	-122.037977° Longitude		3	42.975757° Latitude	-122.102999° Longitude	
2	42.909379° Latitude	-122.141657° Longitude		4	42.849343° Latitude	-121.999822° Longitude	

Verbal Boundary Description (Describe the boundaries of the property.) Although the Army Corps of Engineers Road System originally consisted of the Rim Road and three approaches when the Corps left Crater Lake National Park in 1918, this nomination is specifically concerned with those road segments having integrity, not overtopped, widened, or regraded by subsequent projects. Instead of 56.8 miles of graded roads that existed when the Corps departed, the total length of the historic district is 38.9 miles. The boundary forms a circuit of the Rim Road, beginning and ending at Lost Creek, includes one trail of 0.3 mile (Sentinel Rock), then runs from Lost Creek to the East Entrance along the alignment of the Pinnacles Road built in 1913. Contributing sections of the ACERS are generally as designed (16 feet shoulder to shoulder), with the clearing limits at 30 feet each side of centerline in either direction. All of the Sentinel Rock Trail is contributing and averages four feet wide. The latitude/longitude coordinates correspond with the junction of Rim and Pinnacles roads at Lost Creek (1), Rim Road near Crater Lake Lodge (2), Rim Road at Pumice Point (3), and the Pinnacles Road at the park's east entrance (4).

Boundary Justification (Explain why the boundaries were selected.) The nominated area includes those road segments and adjacent road-related features that have been historically part of the Rim Road, Pinnacles Road, and Sentinel Rock Trail, as they were historically designed and used.

11. Form Prepared By

name/title Stephen R. Mark, Kelly Kritzer, Jessica Gabriel, Chris Wayne date January 2017
organization USDI National Park Service, Crater Lake NP telephone (541) 594-3094
street & number P.O. Box 7 (Park Headquarters, Hwy. 62) email steve_mark@nps.gov
city or town Crater Lake state OR zip code 97604

Additional Documentation

Submit the following items with the completed form:

- **General Location Map of Crater Lake National Park** (Army Corps of Engineers Road System, figure 1)
- **Maps of road segments (figures 2-10)**
- **Photo Location Map** (Include for historic districts and properties having large acreage or numerous resources. Key all photographs to this map and insert immediately after the photo log and before the list of figures).

Army Corps of Engineers Road System Historic District (Crater Lake National Park)
Name of Property

Klamath Co., Oregon
County and State

Photographs:

Submit clear and descriptive photographs. The size of each image must be 3000x2000 pixels, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log 20 current views and 12 historic images

Name of Property: Army Corps of Engineers Road System (Crater Lake Rim Road, Pinnacles Road, Sentinel Rock Trail) in Crater Lake National Park

City or Vicinity: Crater Lake

County: Klamath **State:** Oregon

Photographer: Stephen R. Mark and Kelly N. Kritzer

Date Photographed: October 14, 2016

Description of Photograph(s) and number, include description of view indicating direction of camera:

Photo 1 of 20: OR_KlamathCounty_ACERS_0001
Typical section of Rim Road, Grayback Segment, looking east

Photo 2 of 20: OR_KlamathCounty_ACERS_0002
Cross drainage at Vidae Creek on Rim Road, looking north

Photo 3 of 20: OR_KlamathCounty_ACERS_0003
Abandoned section of Rim Road, showing base material, looking east

Photo 4 of 20: OR_KlamathCounty_ACERS_0004
Portion of Rim Road used as the Watchman Trail, looking north

Photo 5 of 20: OR_KlamathCounty_ACERS_0005
Typical section of abandoned Rim Road with part of roadway used as Rim Trail at left edge, looking north

Photo 6 of 20: OR_KlamathCounty_ACERS_0006
Part of Rim Road revetment in left foreground near Hillman Peak, looking south

Photo 7 of 20: OR_KlamathCounty_ACERS_0007
Rim Trail at left within a typical section of abandoned Rim Road, with small trees in the center of old roadway, looking east

Photo 8 of 20: OR_KlamathCounty_ACERS_0008
Section of abandoned Rim Road with rounded shoulder, looking west

Photo 9 of 20: OR_KlamathCounty_ACERS_0009
Arm of Thew steam shovel next to abandoned Rim Road, looking north

Photo 10 of 20: OR_KlamathCounty_ACERS_0010
Piece of temporary "pavement" treated with oil and rock to reduce dust, looking north

Photo 11 of 20: OR_KlamathCounty_ACERS_0011
Parts of a water station in the bed of abandoned Rim Road, looking north

Photo 12 of 20: OR_KlamathCounty_ACERS_0012
Portion of an abandoned overlook on Rim Road, looking northwest

Photo 13 of 20: OR_KlamathCounty_ACERS_0013
Typical section of Rim Road below Cloudcap showing ditch line on inside slope instead of culverts for cross drainage, looking south

Photo 14 of 20: OR_KlamathCounty_ACERS_0014
A through cut on Rim Road below Cloudcap, looking north

Photo 15 of 20: OR_KlamathCounty_ACERS_0015
Lower portion of Sentinel Rock Trail leading to terminal point, looking west

Photo 16 of 20: OR_KlamathCounty_ACERS_0016
Trees on roadbed of abandoned Rim Road section, looking north

Photo 17 of 20: OR_KlamathCounty_ACERS_0017
Section of abandoned Rim Road showing metal culvert and cross drainage failure, looking west

Photo 18 of 20: OR_KlamathCounty_ACERS_0018
Rim Road revetment (retaining wall) at center, located between Kerr Notch and Anderson Point, looking east

Photo 19 of 20: OR_KlamathCounty_ACERS_0019
Abandoned water system next to overgrown section of Rim Road, looking south

Photo 20 of 20: OR_KlamathCounty_ACERS_0020
Log plank culvert on abandoned Rim Road, looking east

Army Corps of Engineers Road System Historic District (Crater Lake National Park)
Name of Property

Klamath Co., Oregon
County and State

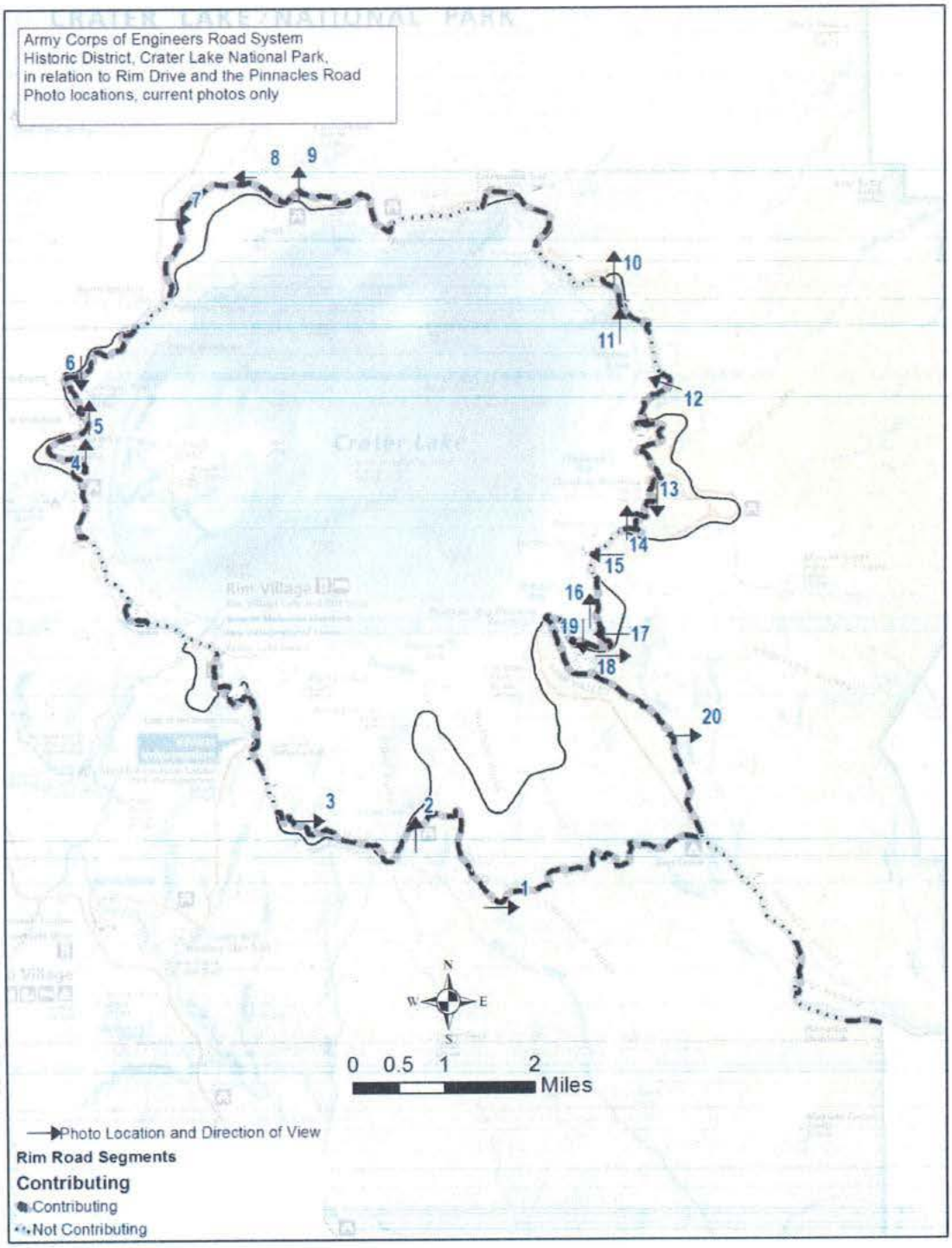


Photo Location Map, Army Corps of Engineers Road System Historic District

List of Figures
(Resize, compact, and paste images of maps and historic documents in this section. Place captions, with figure numbers above each image. Orient maps so that north is at the top of the page, all document should be inserted with the top toward the top of the page.

Figure 1: General Location Map, Latitude/Longitude Coordinates: 42.879639 / 122.037977 (Lost Cr. Jct.)

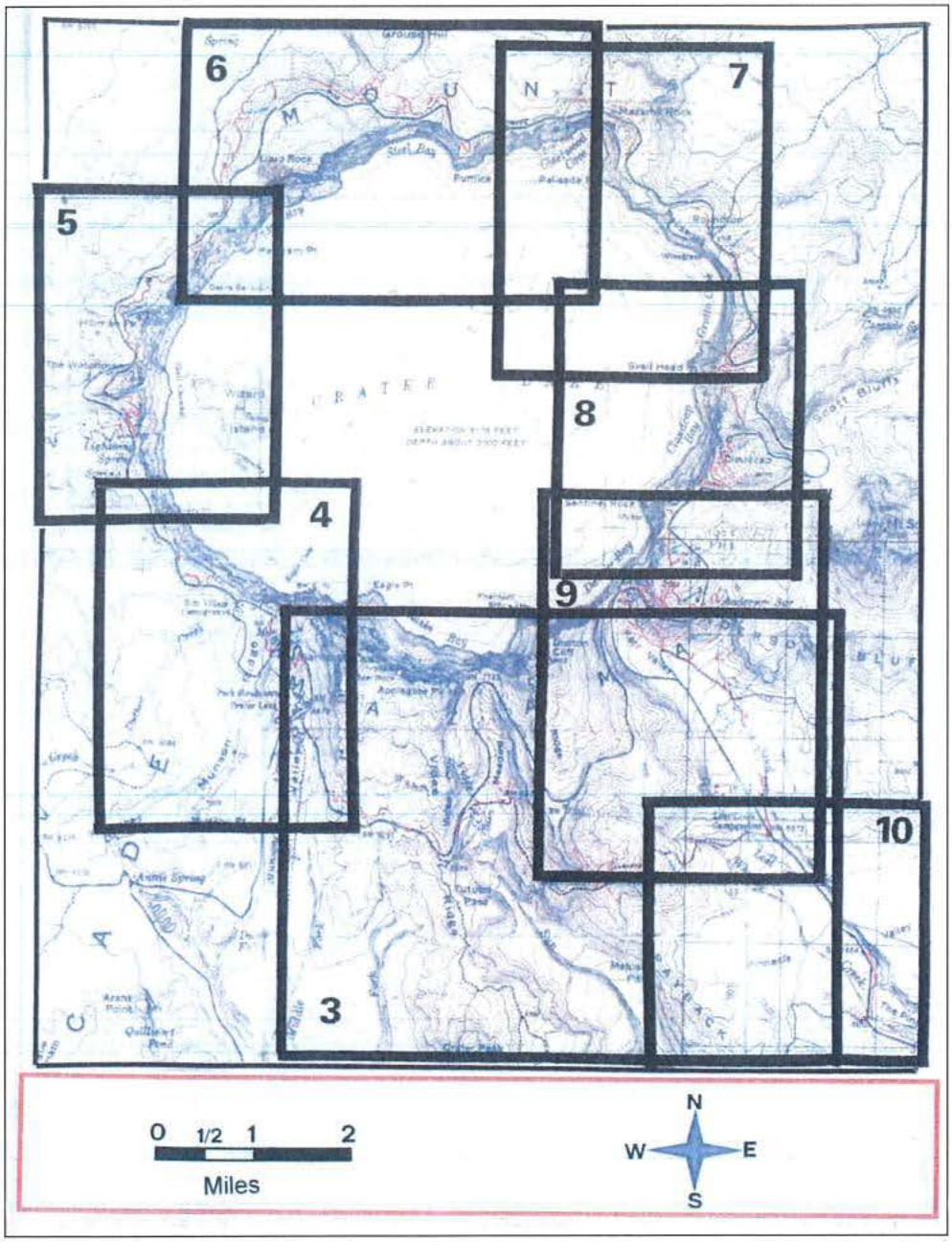


Figure 2: Key to section maps of the ACERS, Crater Lake National Park. Numerals indicate the figure number, proceeding clockwise from the **Grayback Segment** (depicted on Figure 3).

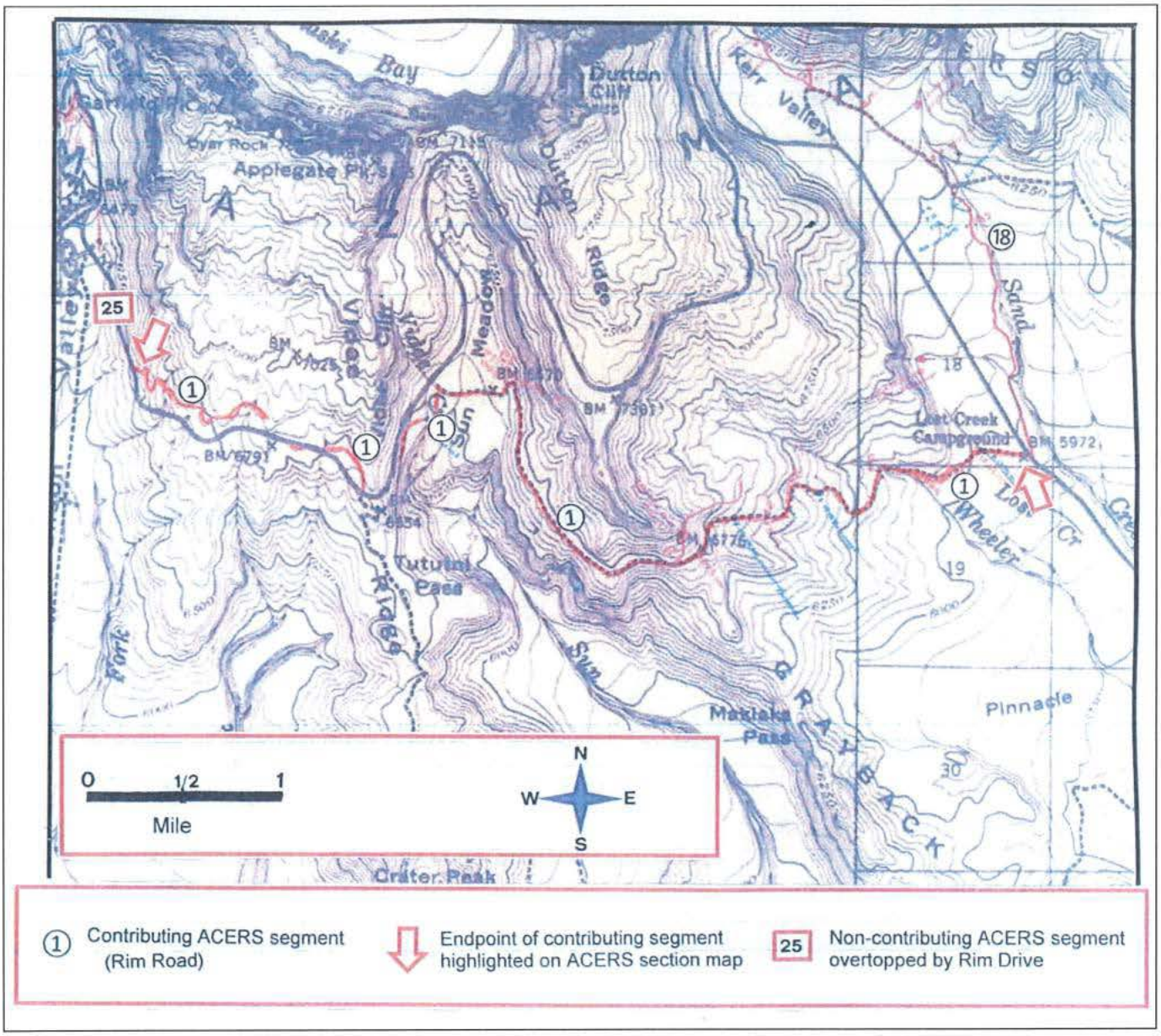


Figure 3: The **Grayback Segment** (Resource 1), Rim Road. Also included are portions of a contributing segment (18) and the non-contributing segment 25.

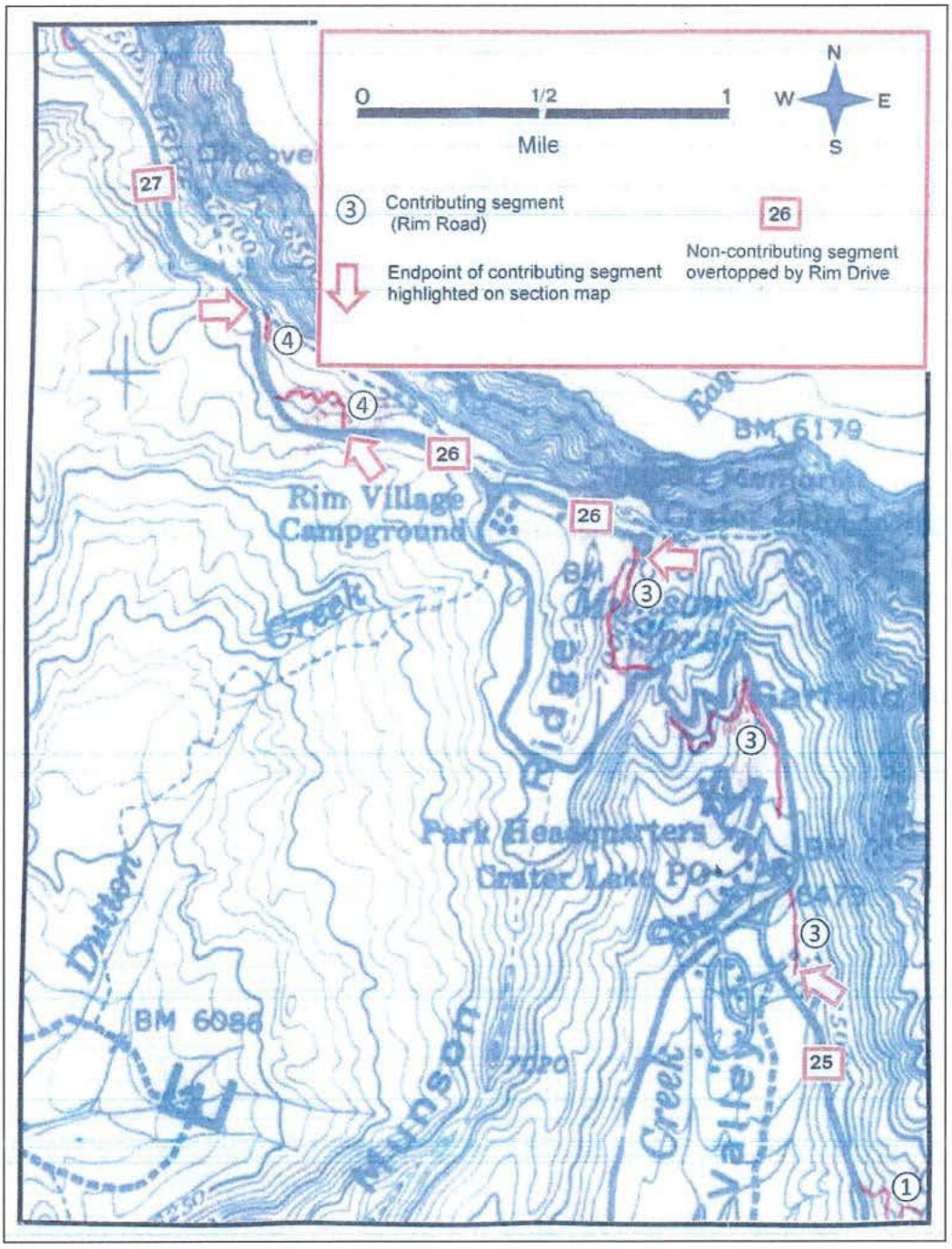


Figure 4: The **Munson Valley Segment**, Resource 3, and **East of Discovery Point Segment**, Resource 5, are contributing, whereas Rim Drive overlays #1, #2, and #3, or resources 25, 26, and 27, are noncontributing segments of Rim Road.

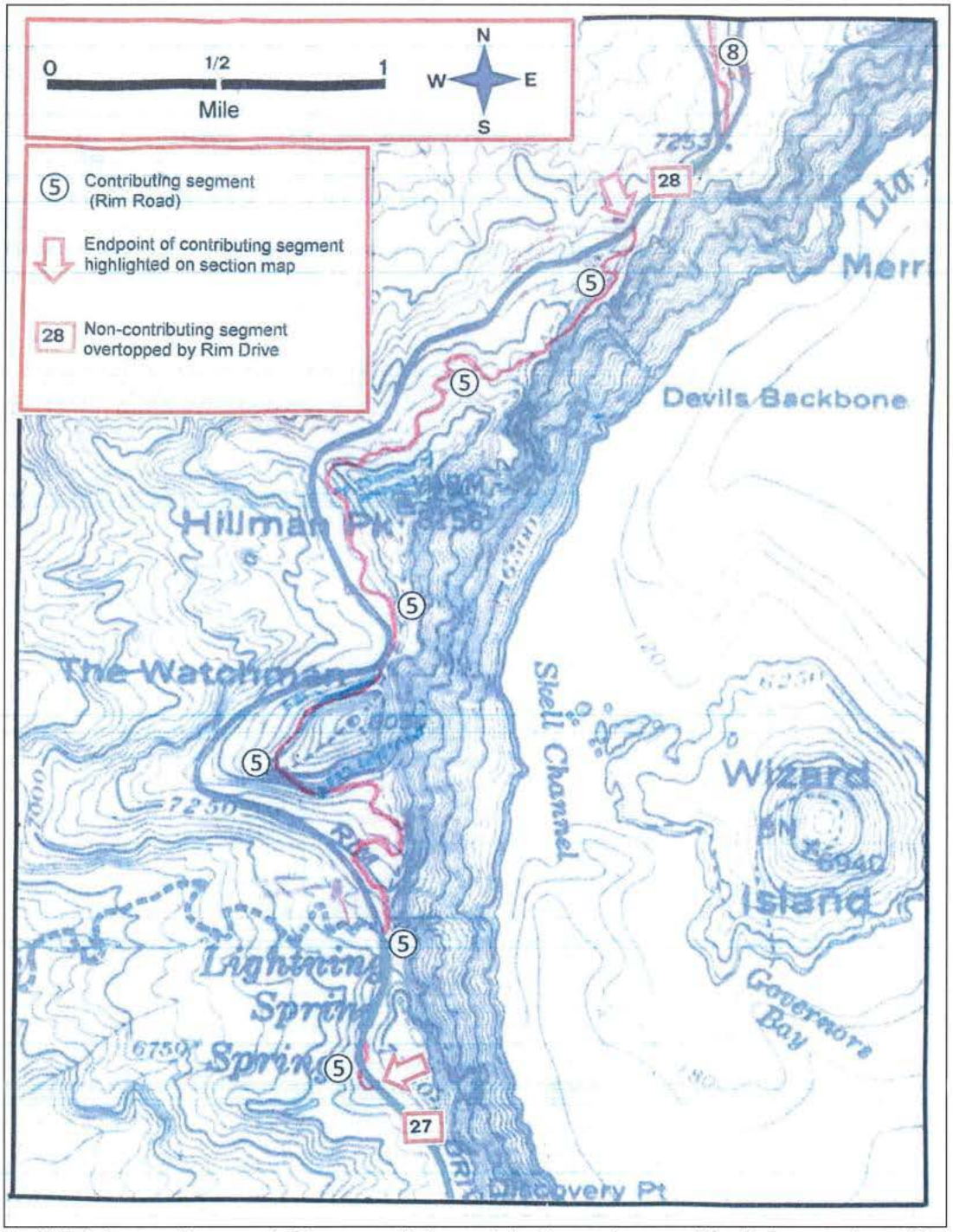


Figure 5: The **Watchman Segment**, Resource 5, is contributing, whereas Rim Drive overlays **#3** and **#4**, resources 27 and 28, are non-contributing segments of Rim Road.

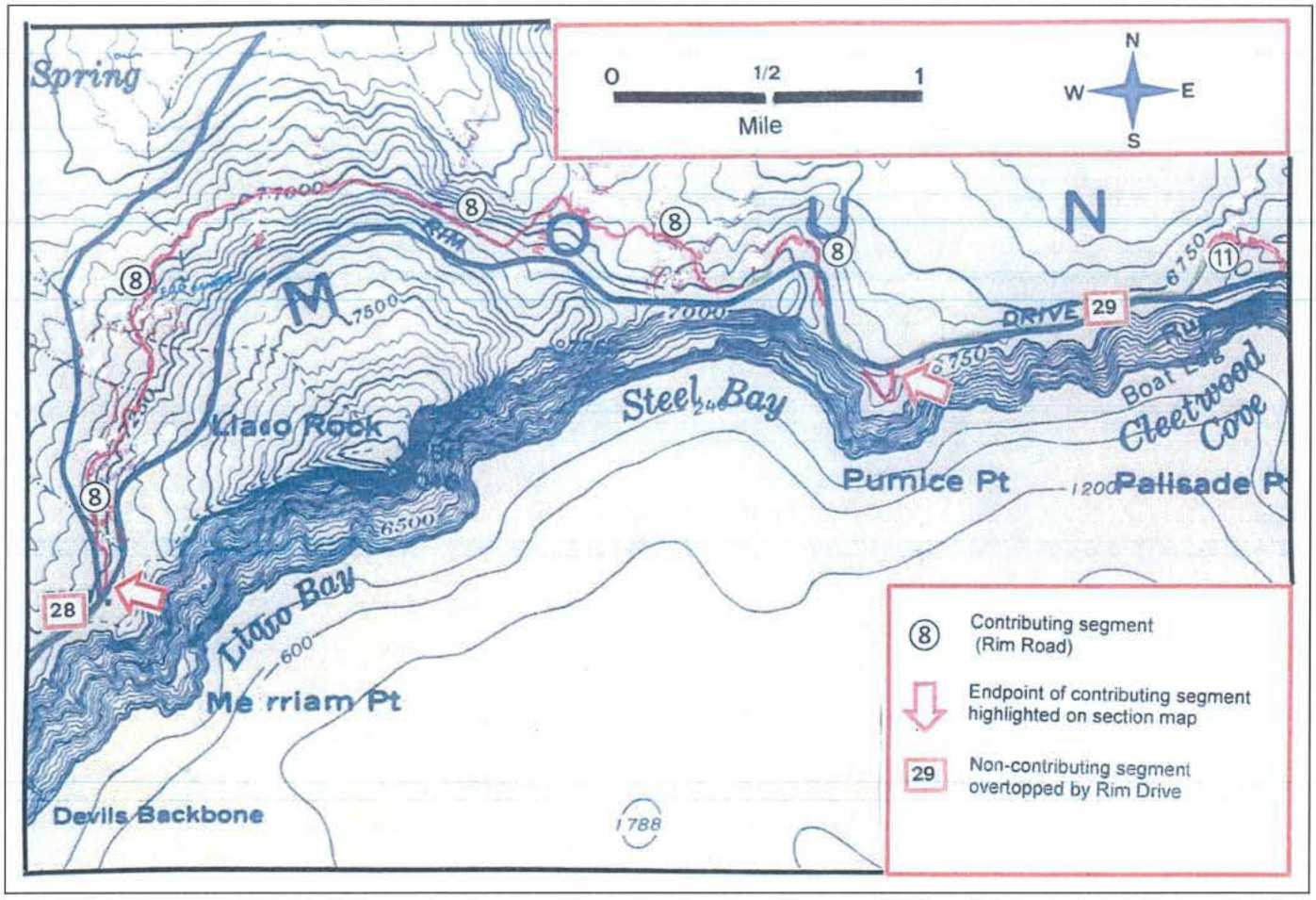


Figure 6: The **Grouse Hill Segment**, Resource 8, is contributing, whereas Rim Drive Overlay #5 (resource 29), is a noncontributing segment of Rim Road.

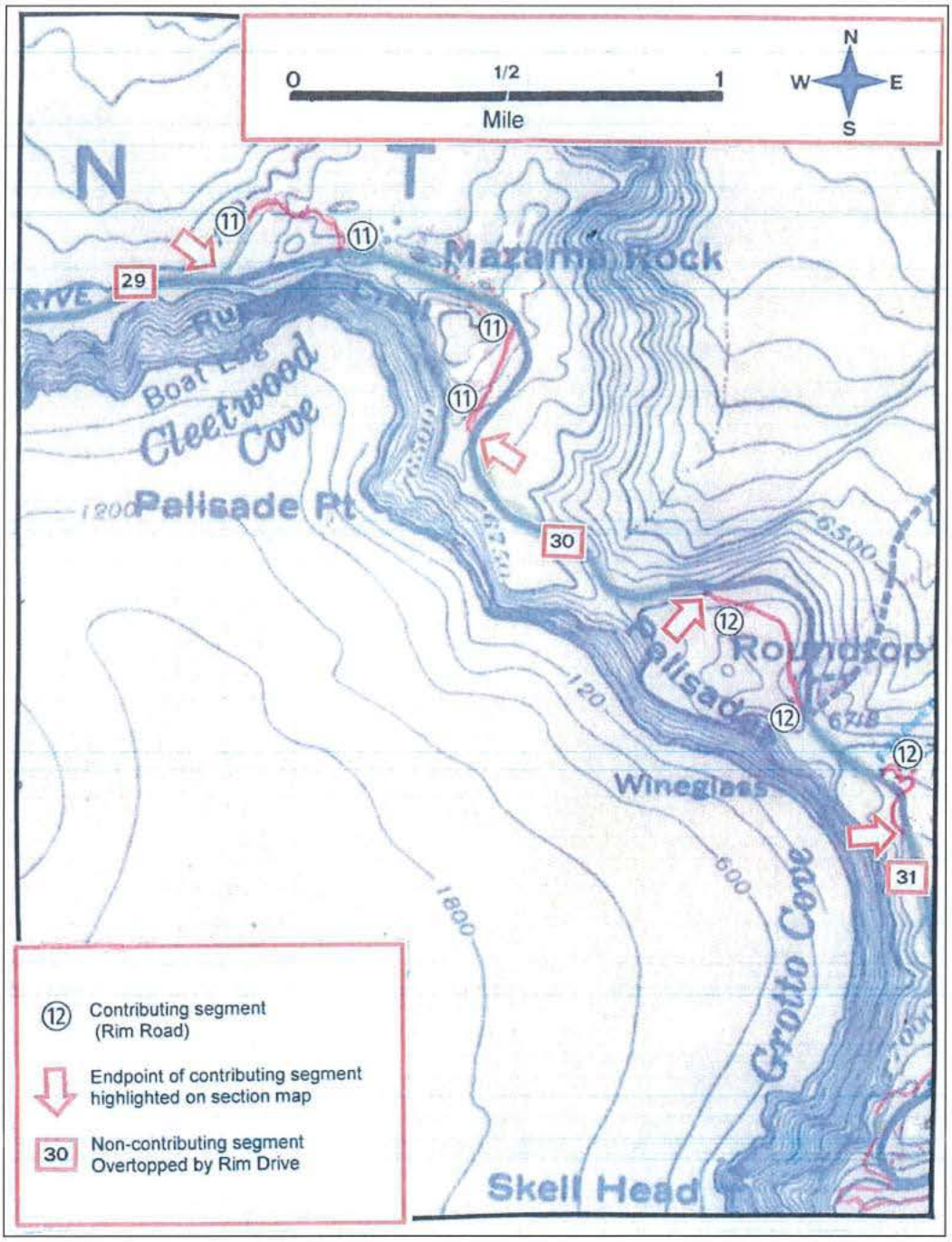


Figure 7: The **Cleetwood Segment**, Resource 11, and the **Wineglass Segment**, Resource 12, are contributing, whereas Rim Drive overlays #5, #6 and #7 (resources 29, 30, and 31) are noncontributing segments of Rim Road.

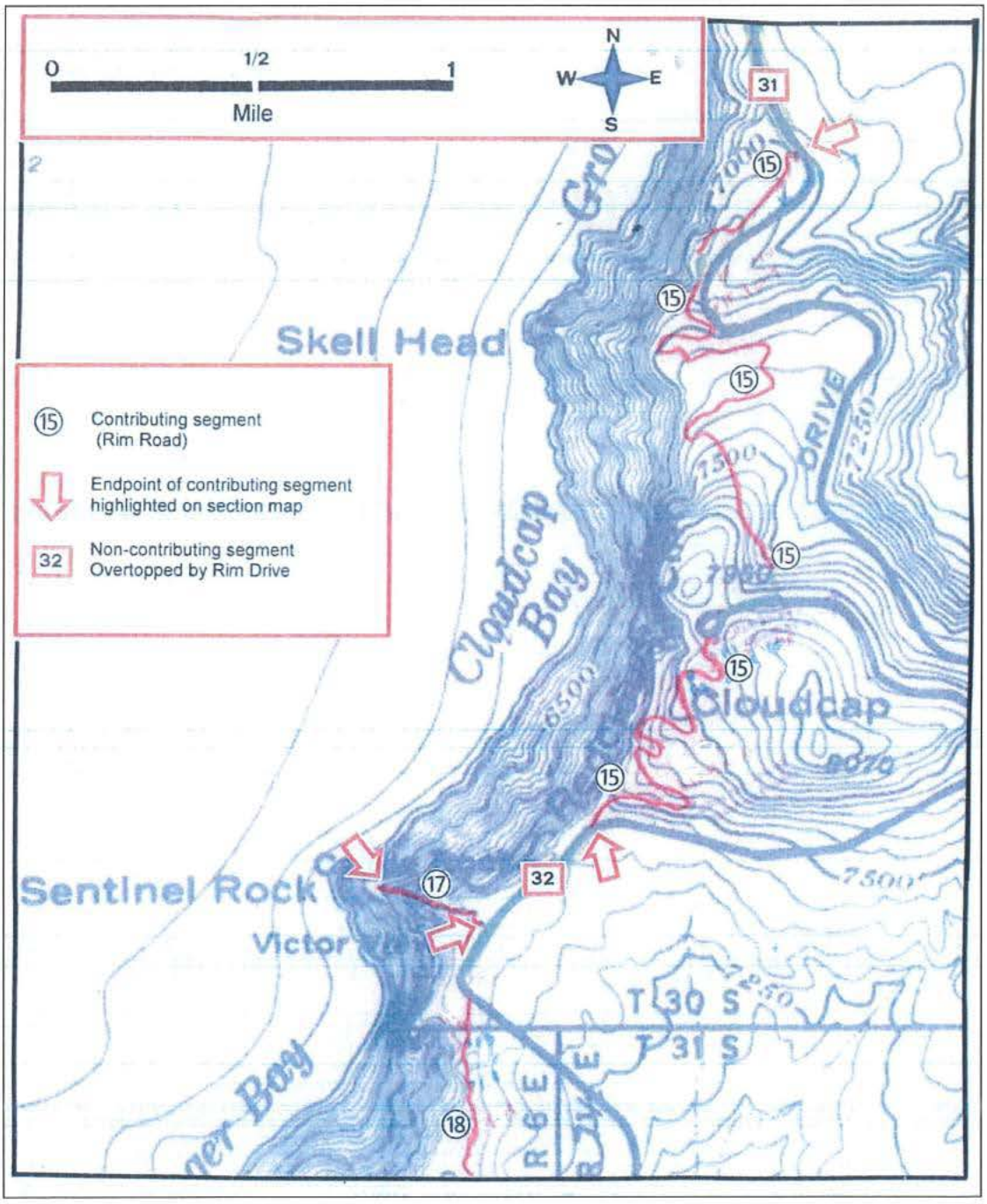


Figure 8: The **Cloudcap Segment**, Resource 15, and the **Sentinel Rock Trail**, Resource 17, are contributing, whereas Rim Drive overlays #7 and #8 (resources 31 and 32), are noncontributing segments of Rim Road.

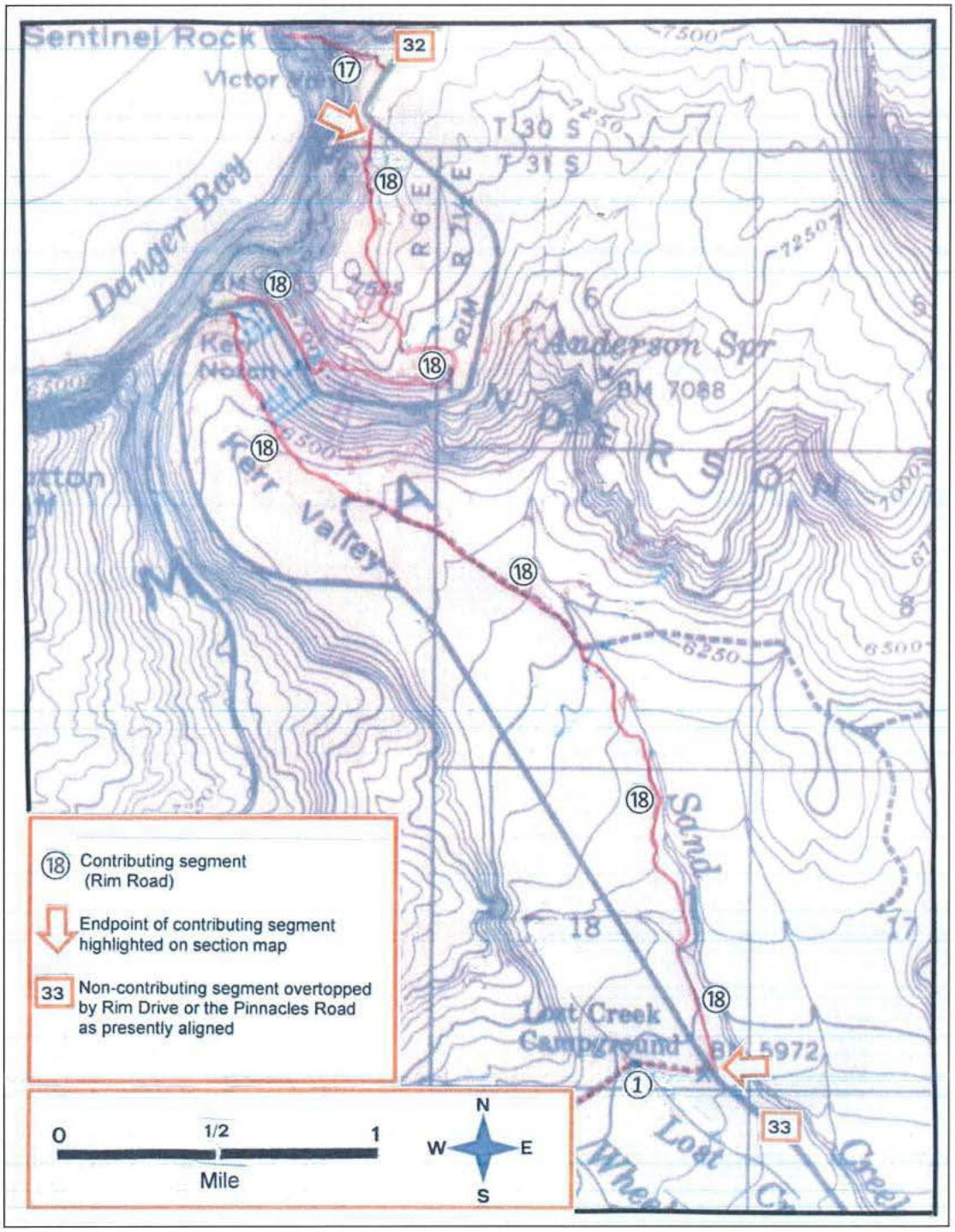


Figure 9: The **Kerr Valley Segment** (Resource 18), Rim Road.

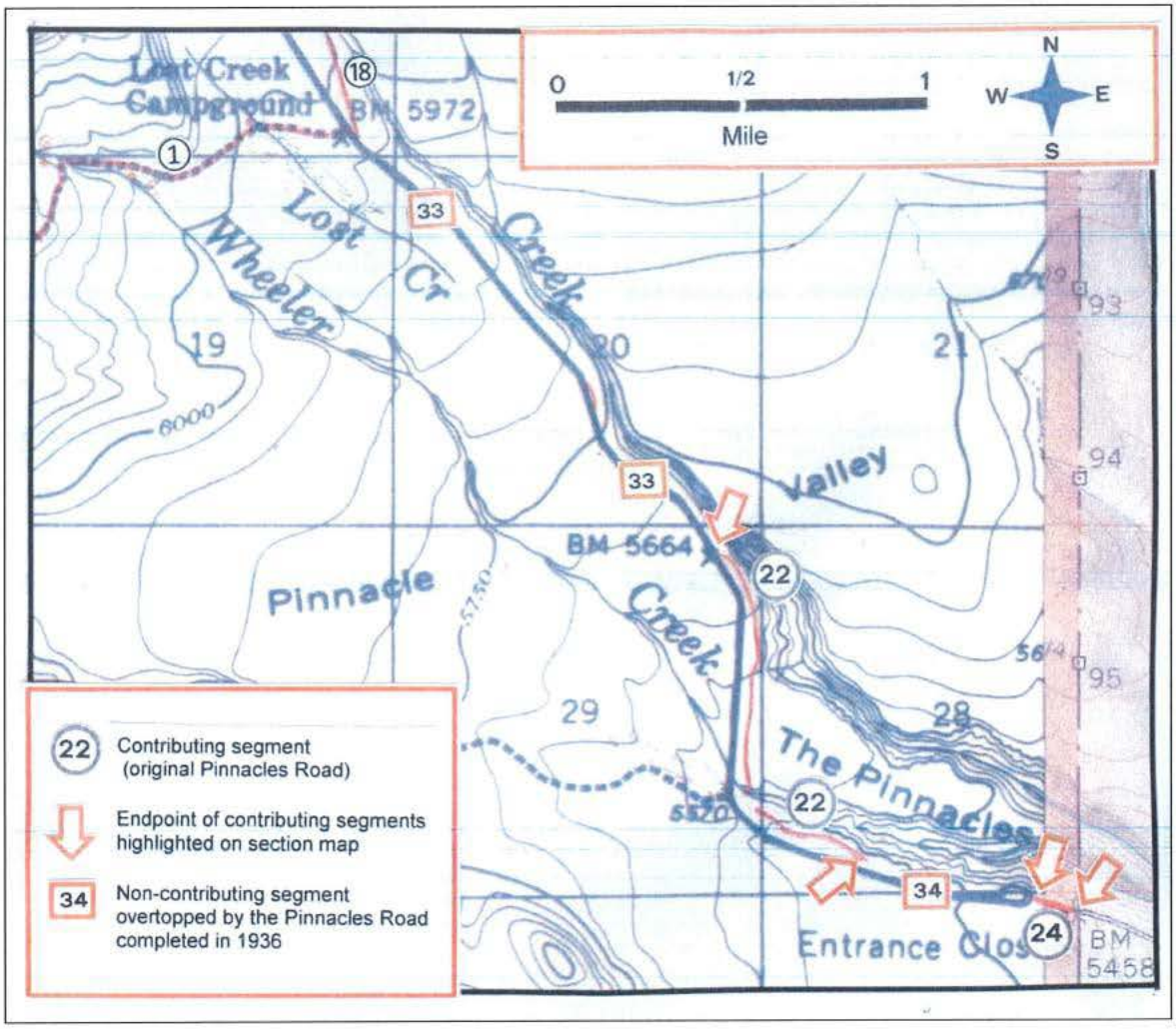


Figure 10: The **Pinnacles Valley Segment**, Resource 22, and **East Entrance Segment**, Resource 24, are contributing, whereas Pinnacles Road overlays #1 and #2, Resources 33 and 34, are noncontributing segments on the original Pinnacles Road of 1913.

Figure 11: Section of Pinnacles Road (corresponding to Resource 22), **in 1917**.

Figure 12: Rough grading with team of horses and plow, (just below Kerr Notch in Resource 18),**1913.**

Figure 13: **Automobile on Rim Road** (in Grayback Segment, Resource 1), **1913.**

Figure 14: Spreading rock for experimental road surfacing in Munson Valley (Resource 3), **1913.**

Figure 15: Crew opening the Rim Road below the Watchman, (in Resource 7), **1917.**

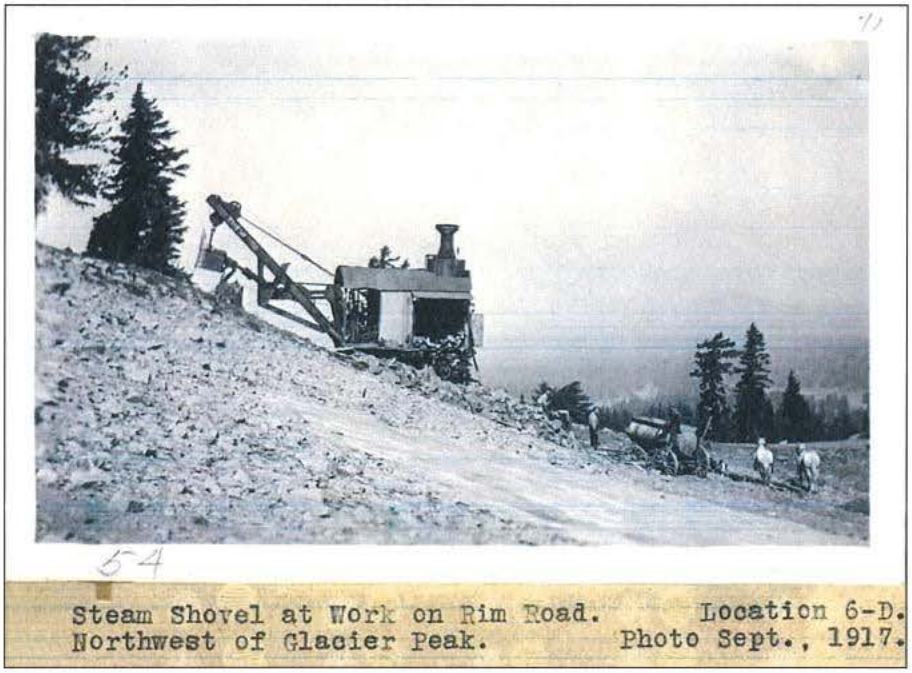


Figure 16: Thew steam shovel and tank wagon near Devils Backbone, (Resource 7) **1917.**

Figure 17: Postcard view of overlook on Rim Road below Cloudcap, (Resource 15) **ca. 1920.** Photo by Frank Patterson.

Figure 18: Ranger and visitors at Sentinel Rock, (Resource 17) **1919.** NPS photo by Alex Sparrow.

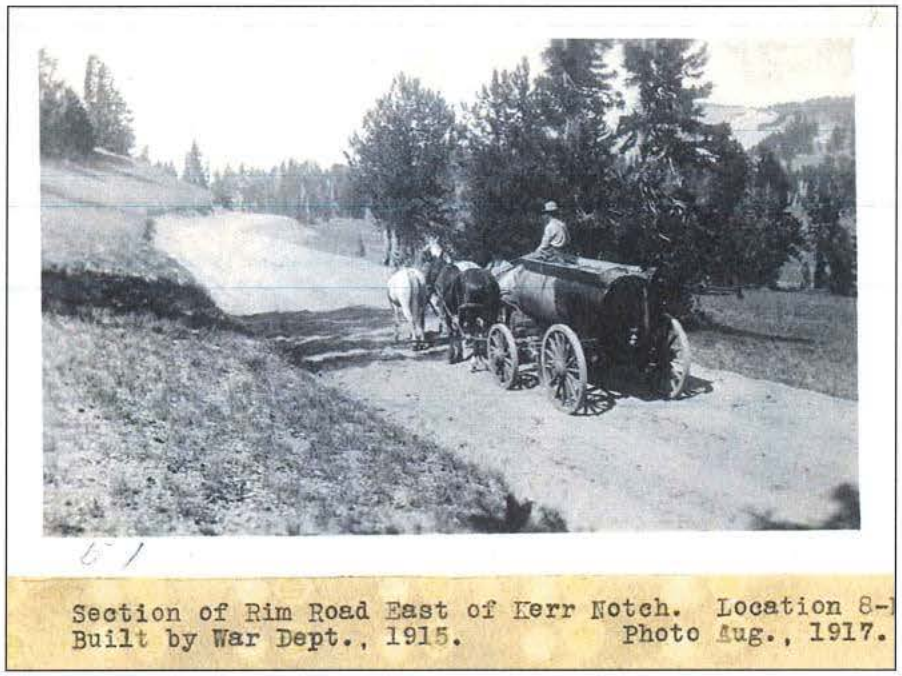


Figure 19: Horse drawn wagon holding water tank near Anderson Point, (Resource 18) **1917.**

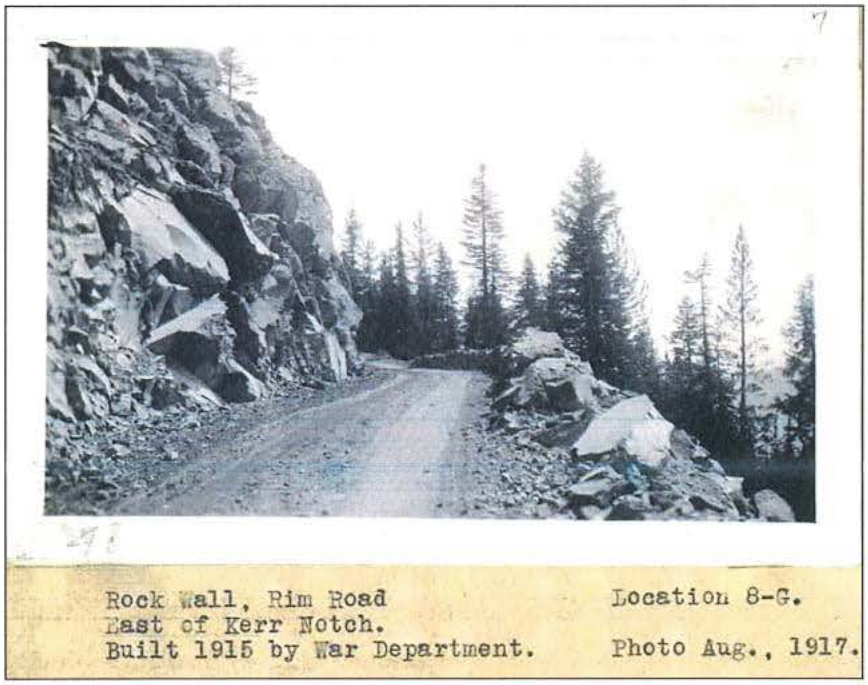


Figure 20: Dry-laid guard wall on Rim Road east of Kerr Notch, (Resource 18) **1917.**

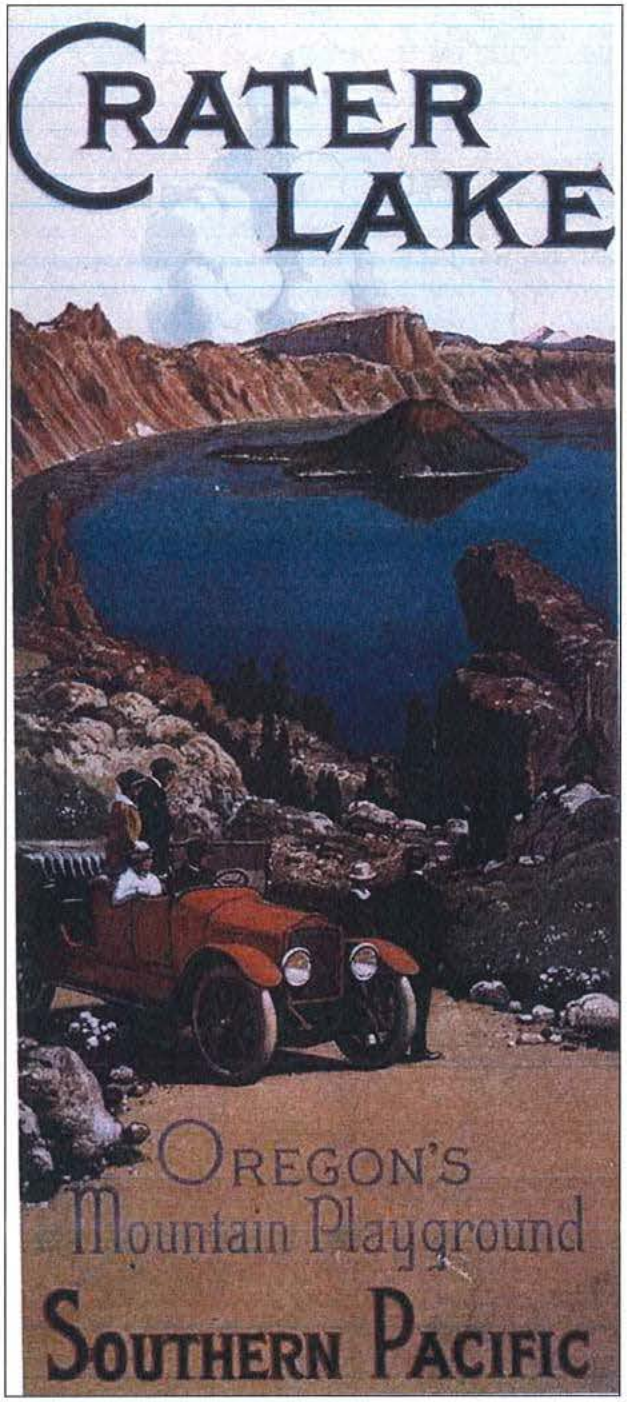


Figure 21: Railroad promotion of Crater Lake with motorists on Rim Road, undated (ca. 1918).

United States Department of the Interior
National Park Service

Army Corps of Engineers Road System
Name of Property Klamath Co., OR
County and State N/A
Name of multiple listing (if applicable)

National Register of Historic Places Continuation Sheet

Section number Additional Documentation Page 74

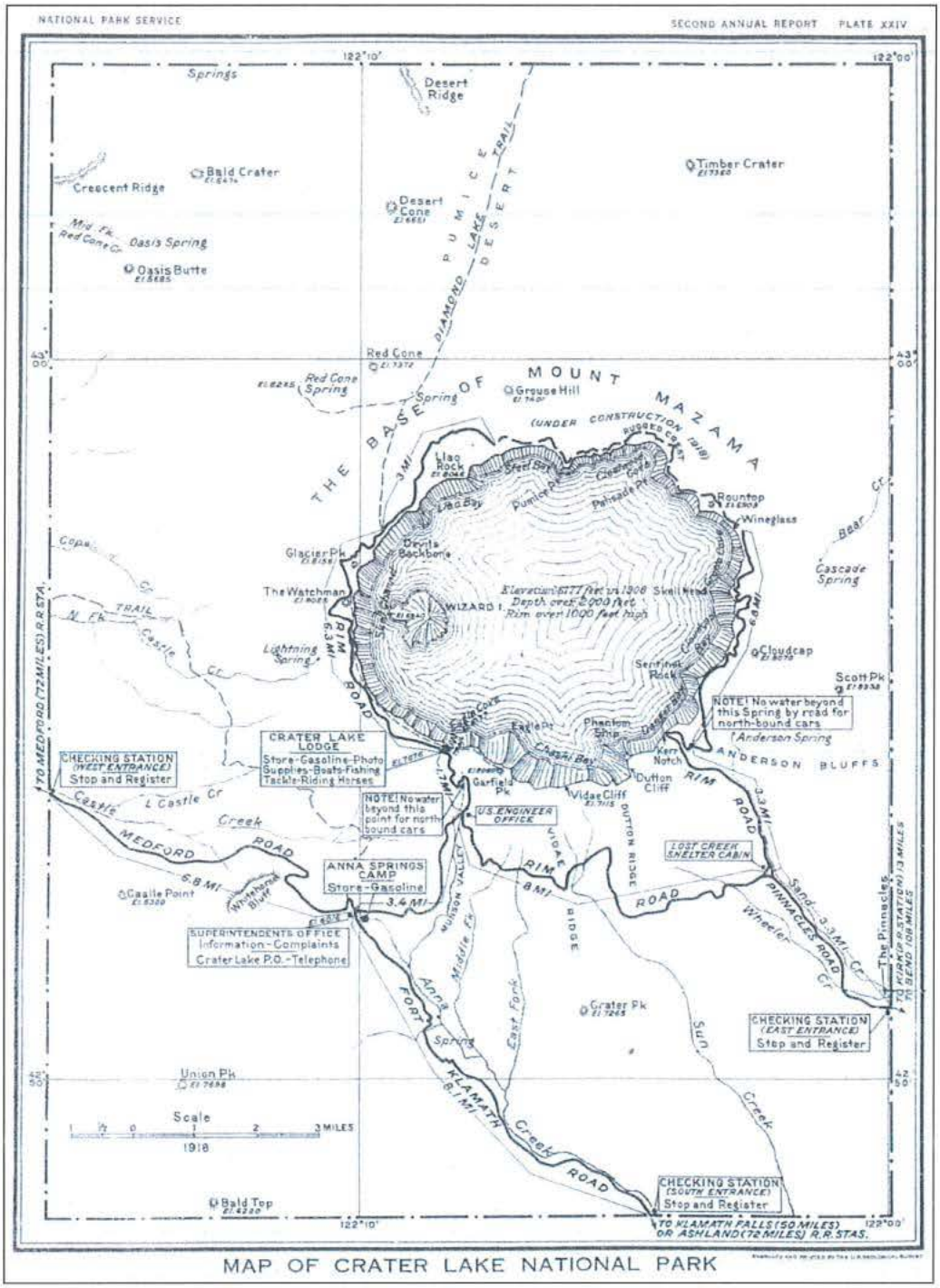
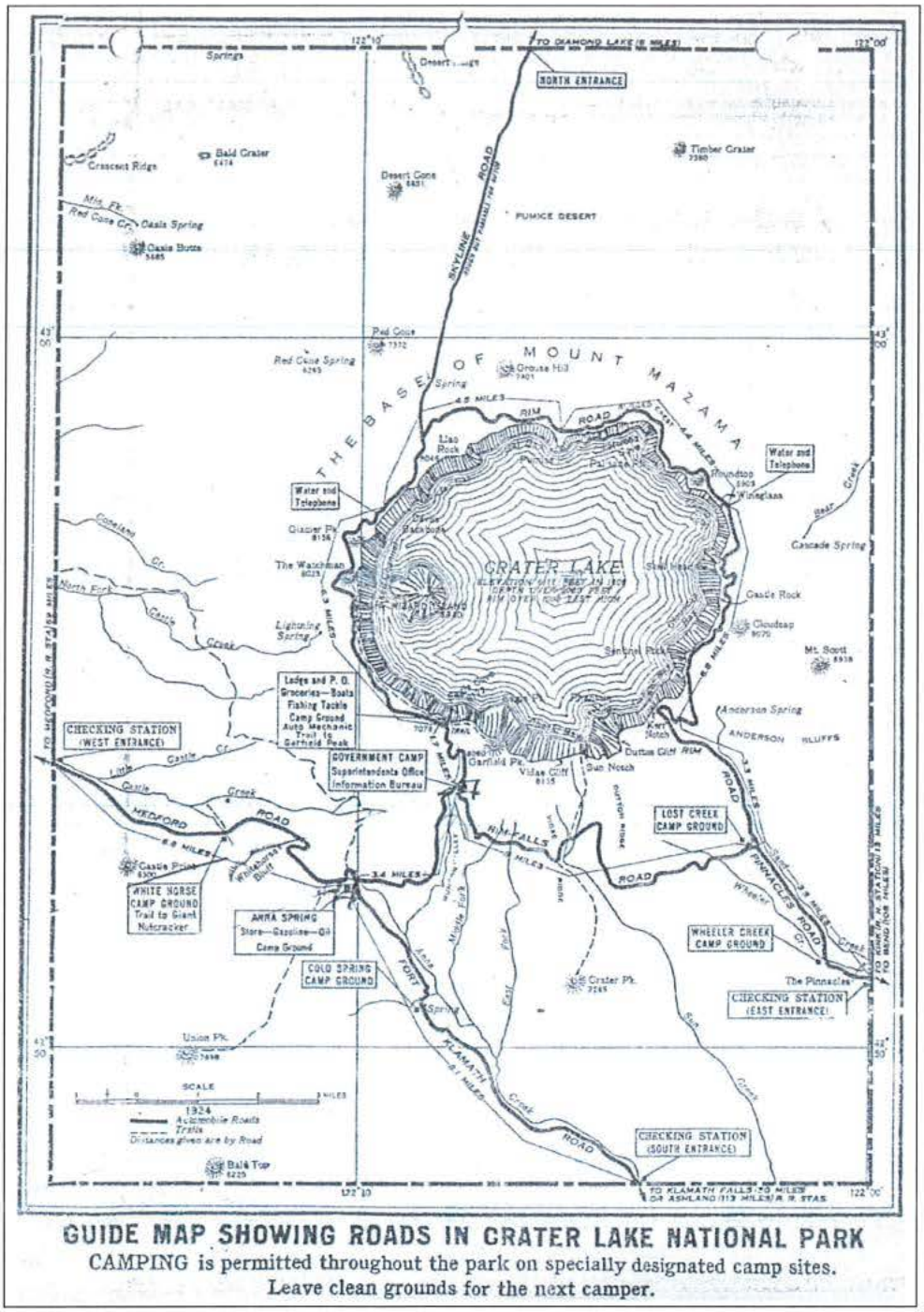


Figure 22: Park map, 1918. Note progress of grading the Rim Road and locations of approach routes.



GUIDE MAP SHOWING ROADS IN CRATER LAKE NATIONAL PARK
CAMPING is permitted throughout the park on specially designated camp sites.
Leave clean grounds for the next camper.

Figure 23: Park map, 1922. The extent of Army Corps of Engineers Road System and subsequent development by the National Park Service is shown.

Photo 1 of 20: Typical section of Rim Road, Grayback Segment, looking east

Photo 2 of 20: Cross drainage at Vidae Creek on Rim Road, looking north

Photo 3 of 20: Abandoned section of Rim Road, showing base material, looking east

Photo 4 of 20: Portion of Rim Road used as the Watchman Trail, looking north

Photo 5 of 20: Typical section of abandoned Rim Road with part of roadway used as Rim Trail at left edge, looking north

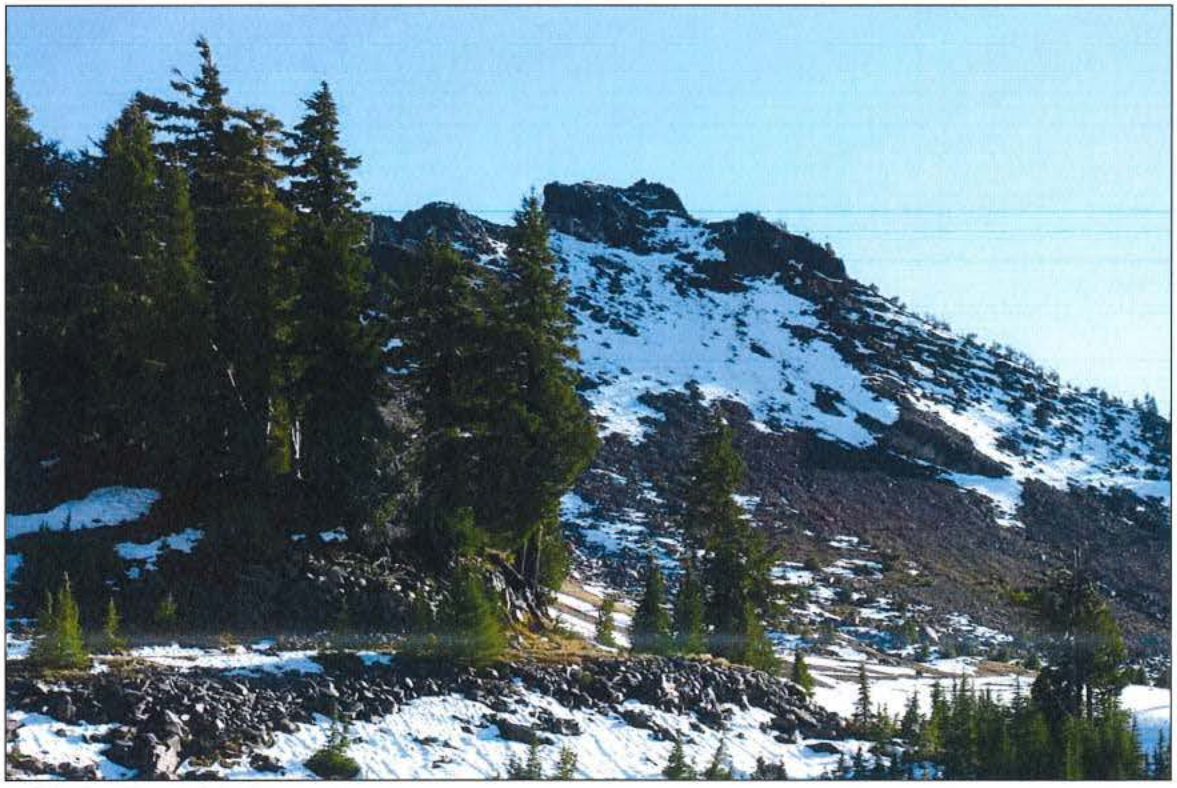


Photo 6 of 20: Part of Rim Road revetment in left foreground near Hillman Peak, looking south

Photo 7 of 20: Rim Trail at left within a typical section of abandoned Rim Road, with small trees in the center of old roadway, looking east

Photo 8 of 20: Section of abandoned Rim Road with rounded shoulder, looking west

Photo 9 of 20: Arm of Thew steam shovel next to abandoned Rim Road, looking north

Photo 10 of 20: Piece of temporary "pavement" treated with oil and rock to reduce dust, looking north

Photo 11 of 20: Pieces of a water station in the bed of abandoned Rim Road, looking north

Photo 12 of 20: Portion of abandoned overlook on Rim Road, looking northwest

Photo 13 of 20: Typical section of Rim Road below Cloudcap showing ditch line on inside slope instead of culverts for cross drainage, looking north

Photo 14 of 20: A through cut on Rim Road below Cloudcap, looking north

Photo 15 of 20: Lower portion of Sentinel Rock Trail leading to terminal point, looking west

Photo 16 of 20: Trees on roadbed of abandoned Rim Road section, looking north

Photo 17 of 20: Section of abandoned Rim Road showing metal culvert and cross drainage failure, looking west

Photo 18 of 20: Rim Road revetment (retaining wall) at center, located between Kerr Notch and Anderson Point, looking east

Photo 19 of 20: Abandoned water system next to overgrown section of Rim Road, looking south

Photo 20 of 20: Log plank culvert on abandoned Rim Road, looking east