

113/D-758

**EVALUATION OF HISTORICAL SIGNIFICANCE AND INTEGRITY OF OLD SOUTH
ENTRANCE ROAD, GRAND CANYON NATIONAL PARK, ARIZONA**

**Harlan D. Unrau
Historian
National Park Service, Denver Service Center, Resource Planning**

November 17, 1997

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PURPOSE

The purpose of this evaluation report is to provide historical documentation, a description of existing conditions, and an evaluation of the significance and integrity of the old South Entrance Road, constructed in 1927-28, in Grand Canyon National Park (GRCA). It is intended that the report will provide the National Park Service (NPS) with the necessary information (as outlined in the Advisory Council on Historic Preservation's procedures 36 CFR 800 and described in National Register Bulletin No. 15, *How to Apply the National Register Criteria of Evaluation*) to make a recommendation regarding the road's eligibility for listing in the National Register of Historic Places.

RESEARCH AND FIELDWORK

During October 14-16, 1997, Harlan D. Unrau, Historian, Denver Service Center, Resource Planning, visited Grand Canyon National Park to collect historical documentation in the park's museum collection and its NEPA and 106 Compliance Office and conduct a site reconnaissance of the old South Entrance Road. The site reconnaissance was conducted with the guidance of Douglas R. Brown.

Prior to the park visit, issues relating to the road's significance, integrity, and potential eligibility for listing in the National Register were discussed with Jan Balsom, Chief, Branch of Cultural Resources, GRCA, and Michael F. Anderson, a graduate student at Northern Arizona University in Flagstaff who prepared a Historic American Engineering Record study on the South Entrance Road in September 1994. This study, entitled *South Entrance Road (Grand Canyon Route #2), HAER No. AZ-45*, was prepared as part of the National Park Service Roads and Bridges Recording Project, conducted during the summer of 1994 under the co-sponsorship of Grand Canyon National Park and the Historic American Buildings Survey/Historic American Engineering Record.

HISTORICAL DOCUMENTATION

Background

The old South Entrance Road as aligned and constructed in 1927-28 represented the National Park Service's first attempt to accommodate and attract growing numbers of motoring tourists to Grand Canyon National Park. As the first road built to automotive standards in the park, it served as the principal entrance to the park for nearly thirty years as the only automobile approach from the south, and a portion of the road -- Shuttle Bus Road and Center Road segments -- still serve as internal park roads. In 1953-54, the NPS built a south entrance replacement road along an entirely new alignment parallel to the old road for almost four miles -- only some 50 to 200 yards to the east of the 1927-28 alignment -- in response to heavier and increasing numbers of vehicles which placed greater physical demands on the roadway, and in order to redirect traffic from a direct to an oblique approach to Grand Canyon Village. (See Map No. 1 at the back of this report for an "As Constructed Plan" drawing showing the 1927-28 and 1953-54 South Entrance Road alignments.)¹

A multitude of roads -- some formal, others not -- approached and entered Grand Canyon National Monument from the south before it was established as a national park on February 26, 1919. These roads, which had been constructed during the previous three decades at little cost by private entrepreneurs and maintained by whoever used them or, sporadically by a generous county government, started at convenient points (Ashfork, Williams, and Flagstaff) and ended somewhere along the south rim.²

After the NPS assumed administration of the newly-designated Grand Canyon National Park in 1919, Assistant Civil Engineer W. H. Peters was named acting superintendent on August 15. In his annual report for fiscal year 1920, Peters noted that the approach or entrance roads to the south rim of Grand Canyon

¹ A map entitled "Current Road Proposals, South Entrance Road Relocation, Grand Canyon National Park," prepared by Region III, Division of Plans and Design, on February 13, 1947, shows the routes and alignments of the pre-1927 and the 1927-28 South Entrance roads. A copy of this map may be found in the GRCA NEPA and 106 Compliance Office.

² Historic American Engineering Record, *South Entrance Road (Grand Canyon Route #2)*, HAER No. AZ-45, by Michael F. Anderson, September 1994, pp. 2-3, and U.S. Department of the Interior, National Park Service, *Report of the Director of the National Park Service to the Secretary of the Interior for the Fiscal Year Ended June 30, 1921*, and *the Travel Season 1921* (Washington, Government Printing Office, 1921), p. 255.

leave the East and West highway [National Old Trails Highway -- U.S. 66] at Williams, Flagstaff and Ashfork, these points being in order given 64, 85, and 70 miles from Grand Canyon village. The Ashfork road has been practically impassable during the year and not used. Both the Williams and Flagstaff roads have been only fair desert roads throughout the year as little or no work has been done. Probably eighty percent of the travel comes over the Williams road, but an effort has been constantly made by members of the Service to route cars in over one road and out over another.

According to Peters, the approach roads to the park were

a disgrace to the State of Arizona and Coconino County. While they can be called fair roads in this locality and among persons accustomed to desert travel, they seem almost impassable to the Californian and Eastern tourists. On account of these roads probably sixty percent of the transcontinental auto tourists do not come to the park.³

All approach or entrance roads to the park, including one that was constructed by Coconino County from the railroad at Maine, 15 miles east of Williams, to the south rim during 1920-21, were of dirt, sand, and bedrock with little or no subgrade. All were impassable when wet, deeply rutted following rains, prone to washouts from flash floods, and lacking drainage structures. Local ranchers and homesteaders looked forward to winter showers, snowmelt, and summer thunderstorms for the economic boom afforded by pulling hapless tourist automobiles out of the muck with horse teams. The nearly 15,000 motoring visitors to the south rim in the 1920-21 travel year dreaded the trip leaving the park along the same routes, and each year the number of mired automobiles and angry motorists increased.⁴

During the 1925-28 period, Fred Harvey buses reportedly became stuck on the south approach road to the park so frequently that the drivers began taking carrier pigeons on their excursions. The south approach road was used by the Harvey buses for trips to points south and outside the park. When the buses got stuck, the drivers would release a pigeon who flew back to the Fred Harvey garage in Grand Canyon Village. At that point, help would be sent to the mired vehicle and its stranded passengers.⁵

For further information on early roads to the south rim, see Excerpts from Report Made Jan. 25, 1910, to Forest Supervisor F.C.W. Pooler, Forest Supervisor, On Roads and Trails in Grand Canyon Division, and Memorandum for Superintendent Crosby, M.R. Tillotson, Assistant Engineer, September 3, 1923, File, "Old Roads & Trails In the Park, 1923-1944," Sheet 2 of 2, GRCA Catalog No. 34281, Grand Canyon National Park Museum Collection (GRCAMC); and W. W. Crosby, Superintendent, to The Director, National Park Service, August 7, 1923; M.R. Tillotson, Superintendent, to The Director, National Park Service, December 24, 1931; and Memorandum for the Files, H. C. Bryant, Superintendent, January 17, 1944; File, "Roads," Unaccessioned Files, GRCAMC.

³ Superintendent's Annual Report, 1920, (GRCAMC). The Superintendents' Annual Reports from 1920 to 1953 are filed under GRCA Catalog No. 54706, 65017-20.

⁴ *Ibid.*, 1920, 1921.

Grand Canyon National Park superintendents raised annual protests to NPS Director Stephen T. Mather concerning the condition of roads in the vicinity of the park during the 1920s. Regional and approach roads received as much written abuse as park roads. Superintendent J. Ross Eakin, for instance, pointed out that during the 1925-26 travel year, more visitors arrived by automobile than by train during several months and that for the entire season, 63,000 visitors arrived at the south rim in some 20,000 automobiles.⁶ In his published annual report for fiscal year 1926, Mather noted:

. . . . Much has been said and written about the south entrance road and despite the fact that its poor condition is more apparent than ever, nothing is being done about it. The condition of this road not only injures the park and northern Arizona, but keeps thousands of motorists out of the State with a resultant loss in revenue to its citizens.⁷

During 1926-27, some 77,000 visitors in nearly 25,000 automobiles visited Grand Canyon National Park -- the first year in which more people arrived at the south rim in automobiles than by the Grand Canyon Railway. While most officials understood the emerging traffic trends to the park, little could be done concerning construction of a new south approach and entrance road until Congress appropriated funds for the work.⁸

Funds for the construction of roads to and within the national parks began to become available during fiscal year 1925. An agreement in 1924 (formalized in February 1925) between the National Park Service and the Bureau of Public Roads (BPR) whereby the latter would design and manage construction of park-related roads also bode well for construction of new park automotive roads. Since BPR engineers had worked with the states since the turn of the century, and with state departments of transportation since the years preceding World War I, prospects for cooperative federal/state road projects looked hopeful. Thus, in 1925 BPR engineers, led by Donald Evans, began surveys and development of specifications and estimates for five road projects in and near Grand Canyon National Park, one of which detailed a new south entrance. A BPR-engineered approach road leading to this entrance from a point on the National Old Trails Highway some 2-3/4 miles east of Williams, however, would not be built until 1928-32, following the complex political transfer of the Coconino County-owned Bright Angel Trail to the federal government in exchange for \$100,000 in federal road funds which would be used to reconstruct an approach highway from Williams to the south rim. The State of Arizona would formally assume control of the south approach highway, designated

⁵ Memorandum for History File, H. C. Bryant, Superintendent, September 20, 1948, File, "Roads," Unaccessioned Files, GRCAMC.

⁶ Superintendent's Annual Report, 1926.

⁷ U. S. Department of the Interior, National Park Service, *Report of the Director of the National Park Service to the Secretary of the Interior for the Fiscal Year Ended June 30, 1926, and the Travel Season, 1926* (Washington, Government Printing Office, 1926), p. 35.

⁸ Superintendent's Annual Report, 1927.

Arizona State Highway 64, on May 1, 1933, under an agreement that provided that the state would maintain the highway in a manner satisfactory to the Secretary of the Interior.⁹

Design and Construction

Planning for the first BPR-engineered South Entrance Road within the park originated with the 1924 master plan design for Grand Canyon Village prepared by the NPS Landscape Engineering Division. Beginning at the south park boundary adjacent to the Moqui Lodge, BPR engineers designed the initial 3.85-mile segment to run almost due north through ponderosa forest well to the west of the Grandview entrance and east of Rowes Well Road. The final 1.96-mile segment curved northwest through ponderosa and pinon-juniper forest and ended in the heart of the expanding Grand Canyon Village at the 1921 NPS administrative office (Superintendent's Residence). The last 2,000 feet of this road would be redesigned in 1928 as a double road and ultimately become a portion of Village Loop Drive. The 1.6-mile segment which entered the village from the southeast would serve as a dividing line between the Fred Harvey concession development to the west and the NPS administrative and maintenance development to the east, and after 1954 become designated Center Road.¹⁰

Development of the South Entrance Road proceeded slowly. The Bureau of Public Roads completed its survey during the summer of 1925. Still lacking funds to proceed, National Park Service personnel cleared the proposed route to a 44-foot width within the park boundaries during the winter of 1925-26.¹¹ In December 1926, engineers completed plans and specifications for the road, and administrators programmed funds for its grading and surfacing. The BPR advertised for bids on November 27, 1926, and on January 13, 1927, the U.S. Department of the Interior awarded the contract for grading and penetration macadam surfacing to James Vallandingham of Salt Lake City, Utah. On March 16, 1927, the contractor was notified that his 300-working-day contract time would begin on March 27.

⁹*Ibid.*, 1924-28; 1931, pp. 6-7; 1932, pp. 29-32; and 1933, p. 26; and 1950. Also see U.S. Department of the Interior, National Park Service, *Annual Report of the Director of the National Park Service to the Secretary of the Interior for the Fiscal Year Ended June 30, 1931, and the Travel Season, 1931* (Washington, Government Printing Office, 1931), p. 51, and *ibid.*, *Annual Report of the Director of the National Park Service to the Secretary of the Interior for the Fiscal Year Ended June 30, 1932, and the Travel Season, 1932* (Washington, Government Printing Office, 1932), p. 43. In 1931, the Arizona Automobile Association furnished "standard Arizona Highway Department type signs" for the signing of "the Grand Canyon-National Old Trails-the south approach highway."

¹⁰"Grand Canyon National Park General Plan for Community Development," Prepared by NPS Landscape Engineering Division, June 24, 1924. A copy of this sketch map may be found in the GRCA NEPA and 106 Compliance Office.

¹¹ Superintendent's Annual Report, 1926.

Vallandingham immediately began moving equipment and supplies to Grand Canyon, establishing his main camp at the Reed quarry some eight miles south of the canyon rim. During the winter of 1926-27, the park boundary was extended one mile south by an Act of Congress. To complete the grading of this additional mile, a supplemental agreement was entered into with the contractor on March 21, 1927, whereby the contractor was to omit the top course of penetration macadam on the South Entrance Road and grade the extra mile at original contract unit prices. Under the terms of the modified contract, Vallandingham would receive \$1,000 for the additional clearing and grubbing entailed. By June 30, 1927, approximately one-fourth of the work provided for in the contract had been completed.¹²

In an October 3, 1927, letter to J. E. Shirley, the Fred Harvey Company transportation department manager, Superintendent Minor R. Tillotson reported on the progress of the construction of the South Entrance Road. Tillotson noted that as of September 21, 1927, Vallandingham had completed the rough grading and that "finishing" was 80 percent complete. Surfacing the base course had not started. It was anticipated that the new road would be completed and opened to traffic early during the winter of 1927-28 "except that the top course of penetration macadam will be placed later." With additional appropriations, the contract would be modified on August 7, 1928, providing for placement of the top course of penetration macadam on the entire South Entrance Road.¹³

According to the construction report for the project that was prepared in 1929 by W.R.F. Wallace, the BPR associate highway engineer who supervised the contract, the South Entrance Road was designed to a "20-ft. 1926 forest highway standard." The shortest radius curve was 360 feet, the width of the pavement was 18 feet, and the maximum grade was five percent.

The "major part of the excavation for the road was removed with an "Erie, cu. yd. gas-air power shovel." An "outfit of 30 mules" worked with the shovel, stripping the rock cuts, making borrow fills when the length of haul permitted, and "finishing." Drilling and shooting of the rock cuts delayed the grading, some cuts requiring four separation operations of drilling and shooting. Borrow material was easily obtained except on the portion of the road near the village.¹⁴

All of the crushed rock for the project was obtained from the Reed quarry. The rock was a comparatively hard limestone. Vallandingham lost considerable time in getting the crushing plant installed, and production of crushed rock was delayed

¹²*Ibid.*, 1927, and W.R.F. Wallace, Associate Highway Engineer, "Final Construction Report, (1927-1928) on Grand Canyon National Park Highway System, Sections 1A1, Rectification and Surfacing, 2A2, Surfacing and IC2 Grading, Arizona," 1929, pp. 1-3, 6-7, Grand Canyon National Park Construction Reports, 1926-1954, GRCA Catalog No. 34527, Report No. 28, Box 2 of 2, (GRCAMC).

¹³ M.R. Tillotson, Superintendent, to J.E. Shirley, Mgr., Transportation Department, Fred Harvey Company, October 3, 1927, File, "Roads," Unaccessioned Files, GRCAMC.

¹⁴ Wallace, "Final Construction Report, (1927-1928) on Grand Canyon National Park Highway System," pp. 2-4.

until June 1, 1927. During the season of 1927 "very crude methods" were employed to transfer rock to the bunkers. The large pieces were broken with hand sledge hammers, after which the rock was hand loaded into dump cars and pushed to the bunker.

During the spring of 1928, Vallandingham changed his methods for handling rock at the quarry, thus increasing the efficiency of his operations. Compressed mix hammers were used to break up the rock, the shovel was used at the quarry for loading, and the material was hauled to the bunker in Ford trucks, thus reducing the cost of producing crushed rock by almost one-third.

Vallandingham sublet the hauling and spreading of the crushed rock, and Butler spreaders were used in spreading both base and top courses. The limestone rock compacted "very well under rolling and required about 25% to 30% of fines to thoroughly fill the voids after rolling." In 1927, the spreading of the fines was done by hand, but in 1928 a Coombs spreader was used.

Oil for the penetration macadam was furnished by the federal government under contract to the Gilmore Oil Company. Vallandingham entered into an agreement with the oil company to install a retort for heating the oil and a distributor for spreading. Virtually all of the subgrade was rolled with an NPS steam roller. Two one-cylinder, 10-ton gas engine rollers belonging to the contractor were used for the base course and penetration macadam.¹⁵

After a final field inspection on November 9, 1928, the project was accepted on behalf of the National Park Service by the park superintendent and landscape engineer and on behalf of the Bureau of Public Roads by the BPR district engineer on December 14.¹⁶

The "As Constructed Plans" for the project provide additional information on the construction of the South Entrance Road, some of which varies from that in the aforementioned construction report. According to the plans, Vallandingham's workmen and NPS personnel completed the South Entrance Road in three segments. The initial 1.055-mile segment (2B) from the south park boundary northward, and the second 3.807-mile segment (2A1) to within 0.187 miles of the entrance road's junction with the village loop, were graded to a 24-foot roadbed width. Vallandingham then applied an 18-foot-wide penetration macadam surface to complete his portion of the work. The final 0.187-mile segment (2A2) extending from the present-day Ranger Office building to the old superintendent's residence was, as mentioned earlier, redesigned and graded to a "double 18-foot width" by park personnel and then surfaced by Vallandingham in October 1928.¹⁷

¹⁵*Ibid.*, pp. 4-6.

¹⁶*Ibid.*, pp. 7-8.

¹⁷U.S. Department of the Interior, National Park Service, "As Constructed Plans for Project 2-A1 (Por.), B, D (Por.), Grading, Base Course & Bit. Treat., Route No. 2 -- South Entrance, Grand Canyon National Park

Plans for the proposed bituminous-treated surfacing for the South Entrance Road, approved by NPS Director Arno B. Cammerer on June 15, 1935, provide information that both supplements and conflicts with the aforementioned "As Constructed Plans." The 1935 proposed plans indicate that the 0.187-mile segment (2A2) was constructed to a "2-14' 1926 F.H. Std." on a graded base consisting of 5-inch compressed crushed rock. A layer of 2-1/2-inch penetration macadam was placed on top of the crushed rock. The 3.807-mile and 1.055-mile segments (2A1 and 2B, respectively) consisted of an 18-foot-wide penetration macadam surface on a 19-foot-wide graded base consisting of 5-inch compressed crushed rock.¹⁸

Construction of the South Entrance Road included an entrance arch at the south park boundary and an entrance station where the road approached Grand Canyon Village. The entrance arch, constructed in the National Park Service rustic architectural style, spanned the roadway and consisted of two masonry pillars of rough-quarried stone tapering near the top. A peeled ponderosa pine log pierced the stone pillars near the top and spanned the roadway at a height of approximately 20 feet. A rough-hewn wooden sign dangled by chains from the overhead log which read "Grand Canyon National Park" in capital letters, carved into the wood and highlighted with white paint. This arch was dismantled some time after abandonment of the old South Entrance Road alignment in the mid-1950s.¹⁹

The south entrance station, completed by 1930, stood in the middle of present-day Center Road on a curve, some 50 yards southeast of the 1938-39 Fred Harvey Company service station (present-day school bus building) at Boulder Street. The peeled-log building was located in the center of a masonry-curbed traffic island, landscaped with native grass and shrubs. The rustic building, reminiscent of the present-day North Entrance Station, was destroyed in 1951 by a park visitor's runaway automobile and replaced by a Mission 66 utilitarian style frame and glass station. The new building was placed along the shoulder of the South Entrance Road rather than on the traffic island which was apparently removed by NPS personnel. The Givens Construction Company, contractor for construction of the 1953-54 South Entrance Road alignment, moved this structure in September 1954 for use as part of the entrance station along the new road.²⁰

Highway System, Arizona," Approved December 7, 1953, GRCA No. 113/60209A. Copies of these plans may be found in the GRCA NEPA and 106 Compliance Office.

¹⁸ U.S. Department of the Interior, National Park Service, "Plans for Proposed Project P.E.C. 2-A1, A2, B, Bituminous Treated Surfacing, Sections A and B, Route No. 2 -- Grand Canyon - South Entrance, Grand Canyon National Park Highway System, Arizona," Approved June 15, 1935, GRCA No. 113/60205. Copies of these plans may be found in the GRCA NEPA and 106 Compliance Office.

¹⁹ Historic American Engineering Record, *South Entrance Road*, HAER No. AZ-45, by Anderson, p. 9, and GRCA Photograph No. 140, taken ca. 1931 (GRCAMC). The location of what appears to be the foundation of the two pillars may still be seen just north of the present-day south boundary fence.

²⁰ Historic American Engineering Record, *South Entrance Road*, HAER No. AZ-45, by Anderson, p. 9.

Major Repairs and Alterations

The present-day Center Road segment of the old South Entrance Road has retained its original alignment since completion in 1928, but roadside features and the road's adjacent landscape in the vicinity of the Grand Canyon Village have changed considerably. Vallandingham built the road through ponderosa pine and pinon-juniper forest where no road had gone before, but the area in the vicinity of the road terminus at the village soon began to change.

The 1924 master plan for the park called for survey and grading of Avenues A, B, and C -- minor roads that would serve the Fred Harvey and Santa Fe employees' residential district east of the South Entrance Road. In early 1926 these minor roads and residences were surveyed, beginning with 22 residences along Avenue A (present day Apache Street), which was described at the time as a "by-road which meandered in and out among the trees, narrow, and in Fall, Winter and Spring, impassable to all traffic." NPS forces cleared and rough-graded Avenue A in 1927, including its intersection with the entrance road, and further improved it in 1931 along with the survey, clearing, grading, ditching, and crushed rock surface treatment of other intersection streets -- Avenue B (present day Boulder Street) and Avenue C (no longer connected to Center Road). Later in 1935-36, NPS labor forces would make further improvements on these minor roads, including fine grading, shaping of side ditches to uniform dimensions, paving gutters, and application of light surface oil treatment.²¹

The South Entrance Road, along with its intersecting village service streets, were improved by the Civilian Conservation Corps (CCC) during the Great Depression, especially in the years 1933-37. Soon after the enrollees of CCC Company No. 819 arrived at the park on May 29, 1933, under the command of Captain L.C. Dill, they established Camp NP-2-A west of the Fred Harvey residential area between the "Public Camp Ground and the Santa Fe residential area south of Avenue A." Park Superintendent Tillotson approved 17 initial park projects for the company, including roadside improvement to the South Entrance Road and its intersecting minor roads. Landscape Architect Alfred C. Kuehl kept some 50 enrollees engaged for several enlistment periods along the South Entrance Road on the following tasks:

1. Large rock which had been deposited in the area by previous road construction was removed. The rock was blasted and hauled away for use in making additional fills to road slopes.
2. An area averaging 250 feet on each side of the road was cleared of all debris. This work included removal of down timber, uprooting and removal of stumps, and burning snags and dead timber.

²¹*Ibid.*, pp. 9-10. Also see M. R. Tillotson, "Final Construction Report on Service Roads, Project No. 514," and C. M. Carrel, Park Engineer, "Final Construction Report On Project No. 850, Avenue "A" -- Grading, Drainage, Gutters and Surfacing," August 30, 1935, Grand Canyon National Park Construction Reports, 1926-1954, GRCA No. 34527, Reports Nos. 16 and 19, Box 1 of 2, (GRCAMC).

3. Culvert headwalls were rebuilt, road shoulders were shaped and aligned to a minimum of four feet in width, rocky fill slopes were covered and shaped, and rock and earth cuts were shaped. Great quantities of material were removed from the vertical cuts to bring them down to a "rounding form." In one case, approximately 600 cubic yards of material was removed from a cut bank.

4. Shoulder and drainage ditches were shaped to easy rounding slopes. Wherever excessive erosion had occurred, low or washed-out areas were filled with rock to prevent further erosion.

5. Borrow pits were cleaned up, improved, and obliterated.

In addition, enrollees under the supervision of CCC Camp Superintendent J.V. Fish constructed a new steel rail cattle guard at the South Entrance Road arch. Pit drainage was provided, and stone header walls were constructed. Stone guards were provided at each end of the cattle guard.²²

In 1938, the South Entrance Road, originally constructed in 1928 with a penetration macadam surface, was given bituminous-treated (asphalt) surfacing. Nearly ten years of use had apparently broken down the wearing tread of the road, leaving its surface corrugated and "wavy." Under the supervision of the Public Roads Administration (PRA), the successor agency to the BPR, the Phoenix-based J. A. Casson Company applied two overlays to the entire length of the 18-foot-wide roadway "to bring about a smooth riding highway." The two overlays, which were placed over the existing "asphaltic-bound, macadam pavement," included a leveling course, and a 1-1/2-inch, bituminous-treated Class F, Type F-1 plant mix aggregate wearing course. The Casson Company began work on May 17, 1938, and the completed project was inspected and accepted by NPS and PRA officials on August 4, 1938.²³

In 1938-39, the Fred Harvey Company constructed a modern eight-pump service station along the South Entrance Road at Avenue B, some 50 yards northwest of the entrance station. The new service station was constructed in response to the inadequacy of the one (gravity) pump at the end of the railroad tracks in front of the Fred Harvey garage in the village, as well as traffic problems at that location caused by automobiles and buses lining up to fill. The new masonry building, which today

²²Alfred C. Kuehl, Landscape Architect, "Summary Report -- E.C.W. Work Projects C.C.[C.] Camp Number 819 -- June 1 - Oct. 15, 1933, Grand Canyon National Park," GRCA Catalog No. 29861, E.C.W. (C.C.C.) Documents, Box No. 4, Folder No. 4, GRCAMC, and Superintendent's Annual Report, 1933, pp. 25-26.

²³Superintendent's Annual Report, 1938, p. 9, and U.S. Department of the Interior, National Park Service, "As Constructed Plans, South Entrance," December 7, 1953, GRCA No. 113/60209A. While the work was going on, various detours were required. On June 3, 1938, for instance, a temporary tent checking station was established along the South Entrance Road when the road improvement work made it necessary to detour around the established checking station. Superintendent's Monthly Reports, June 3, 1938, p. 8; July 6, 1938, p. 6; and September 6, 1938, p. 7, Grand Canyon National Park Monthly Reports, 1938, GRCAMC, and Superintendent's Annual Report, 1939, p. 10.

serves as a repair facility and parking area for school buses, included a projecting flat roof with peeled-log pillars designed to protect vehicles from the weather as they drove in to the two pull-through lanes of four pumps each. The "awning" extended to the roadway in front of the southeast end of the building.²⁴

During World War II, park visitation and Congressional appropriations fell to early 1920s levels. Thus, little work other than minimal routine maintenance was directed to park roads, including the South Entrance Road. During the latter part of the war and the early postwar period, NPS administrators anticipated an "explosion" of visitation that would ensue and began to make plans for a new South Entrance Road that would bypass Grand Canyon Village. In view of these planning efforts, only routine maintenance of the old South Entrance Road continued through the late 1940s and early 1950s.²⁵

With construction of the new South Entrance Road in 1953-54, the purpose of the old road changed. No longer the primary automobile access to the south rim, its northern portion in the Grand Canyon Village area became a service road for NPS and Fred Harvey village employees. Its name was changed from Route 2, South Entrance Road, to Route 32, Grand Canyon Village Commercial Access Road. After 1954, it also acquired the popularly-used name of Center Road, a designation that would soon become its official name.²⁶

Immediate changes for the old South Entrance Road in 1954 included obliteration of the approximate 3.3-mile portion from the south boundary fence to present-day Shuttle Bus Road and reconfiguration of the eastern end of the old road to form a "T" intersection with the new South Entrance Road. NPS personnel obliterated the old alignment, removing surface and subgrade as well as culverts and other roadway-related structures, while grading the topography to something approaching a natural appearance. In December 1954, a NPS ranger-led crew of Boy Scouts reportedly planted pinon pine seeds along the road scar, although a reconnaissance of the road alignment leads to the conclusion that most of the planting occurred in the vicinity of the south boundary fence. Today this segment -- which serves as a utility corridor to service the telephone boxes and manholes associated with the present-day park telephone system -- is easily traced (once found) by following a rutted, dirt road along and through the absent-tree line from Shuttle Bus Road on the north to the Moqui Lodge adjacent to the south boundary fence.²⁷

Development continued along the Center Road segment of the old South Entrance Road after it was bypassed by the new entrance road in 1954, but the road itself

²⁴Historic American Engineering Record, *South Entrance Road*, HAER No. AZ-45, by Anderson, p. 10, and Superintendent's Monthly Report, October 6, 1938, p. 7, Grand Canyon National Park Monthly Reports, 1938.

²⁵Superintendent's Annual Reports, 1940-52.

²⁶"Road Routes, Grand Canyon National Park (Appendix to Chart of Accounts)," October 27, 1958, File, "Roads," Unaccessioned Files, GCNPMC.

²⁷Historic American Engineering Record, *South Entrance Road*, HAER No. AZ-45, by Anderson, p. 11.

changed little until it was widened and surfaced in 1994. NPS personnel continued normal maintenance which included chip seal and surfacing, crack filling, patching, and ditch clearing. Intersections with minor roads such as Apache Street were reconstructed and curbed (1984), but the 1928 roadway alignment and width, as well as the CCC-constructed culvert headwalls, remained as constructed until 1994. Although the 1928 alignment was retained, in 1994 the roadway was converted to an "urban" street of masonry curbing and curb-to-curb surfacing with parking pullouts that were constructed on the east and west sides of the roadway as far south as Apache and Tonto streets. A nine-foot-wide bicycle path was built across the road at Boulder Street, and most of the historic CCC culvert headwalls were replaced with modern masonry headwalls.²⁸

Conclusions/Significance

For more than a century, visitors to Grand Canyon have approached the rim area in the greatest numbers from the south. During the earliest years, parties rode stages operated by private entrepreneurs over dirt wagon roads of their own creation to small camps and hotels at Bass Camp and Grandview. With the arrival of the Grand Canyon Railway at the head of the Bright Angel Trail in 1901, visitors abandoned the bumpy all-day stage experience for a three-hour Pullman ride, thereby hastening the establishment and steady development of Grand Canyon Village surrounding the depot. When automobile motorists began arriving in significant numbers during the 1910s, they found the best accommodations and visitor services at the village, and by their patronage further stimulated its growth. By the time automotive travel eclipsed that of the railway in 1926-27, it had become a foregone conclusion that any road approaching the park from the south would terminate at Grand Canyon Village.

In 1919, Acting Superintendent Peters verbalized the automotive challenge at Grand Canyon National Park within the context of early NPS strategy. Congress would never appropriate significant funds for the national parks unless voters pressured them to do so. Voters would not have reason to pressure their congressional representatives until they experienced the scenic beauty of the existing parks, and they could not obtain this experience until they had convenient means to visit the parks. The number of motorists had nearly exceeded railway passengers by the early 1920s and since the trend was irrefutable, NPS officials, especially Director Mather and his able assistant Horace M. Albright, focused on construction of modern automotive roads and alliance with the era's principal road building agency, the Bureau of Public Roads.

²⁸*Ibid.* For more information on the 1994 roadwork project, see Historic American Engineering Record, *Grand Canyon National Park Roads, Grand Canyon National Park, Grand Canyon Village, Coconino County, Arizona, HAER No. AZ-35*, by Michael F. Anderson, December 1993.

Within this overall strategy and partnership, Grand Canyon's South Entrance Road achieves significance as one of the earliest of automotive roads planned and constructed by the BPR and the NPS. BPR Engineer Donald Evans traveled to Grand Canyon and surveyed five new roads before the two federal agencies formalized their agreement in 1925. Since the national park's superintendents consistently agitated for a better road entering the park from the south, it is possible that Evans surveyed the South Entrance Road first. In any event, the BPR, NPS, and contractor James Vallandingham completed it first, and the results -- in combination with progress on the approach road from Williams during 1928-32 -- fulfilled Peters' hopes of capturing more of the transcontinental automobile traffic along the new National Old Trails Highway.

Present-day observation of the 1927-28 road alignment corridor leads to the conclusion that the old South Entrance Road was constructed like many other NPS roads of the 1920s and 1930s to handle some 20,000-30,000 light- to moderate-sized vehicles per year. Remnants of the alignment suggest that vehicle speeds were probably limited to 25-35 miles per hour. At these speeds, visitors had more time to appreciate associated road structures, such as a masonry portal and masonry culvert headwalls and retaining walls. The NPS and BPR designed these early roads with fewer cuts and fills, steeper grades, sharper curves, and more scenic vistas and aesthetic constructions with slower speeds in mind.

In response to heavier and escalating numbers of vehicles entering the park after World War II that placed greater physical demands on the roadway, a new South Entrance Road was constructed in 1953-54 to replace the 1927-28 alignment. The new entrance road, with its greater width, more gentle grades, longer tangents, and few rustic-style aesthetic features, reflected the escalating traffic pattern, as well as a new NPS capability to move park visitors with fewer stops, greater efficiency, and speed. A faster, wider, sleeker South Entrance Road, embellished with few distracting aesthetic features, also reflected postwar economic realities, which favored more roadway and fewer frills for the dollar. Architectural trends which favored the utilitarian look and "honest" use of building materials also had some effect on design and construction of the new South Entrance Road. Thus, the South Entrance Road as completed in 1954 mirrored the visitation, economic, and architectural changes which emerged at Grand Canyon National Park, as well as other national parks, after World War II. Thus, its significance is derived from the fact that it was the first road in the park to evolve in such a manner and that it set the pattern for others during the next decade.²⁹

²⁹Historic American Engineering Record, *South Entrance Road*, HAER No. AZ-45, by Anderson, pp. 40-43.

DESCRIPTION OF EXISTING CONDITIONS (See Maps and Photographs at the back of this Evaluation)

At the present time, the 1927-28 South Entrance Road alignment, which extends 4.9 miles from the intersection of Center Road and Village Loop Drive to the south park boundary fence, consists of three distinct segments, the first two of which serve as components of the present-day road network in Grand Canyon National Park. These segments and their approximate mileages are: the Center Road segment which extends from Village Loop Drive southward to Shuttle Bus Road (1.4 miles); a short Shuttle Bus Road segment (0.15 mile); and the dirt road segment which extends from Shuttle Bus Road southward to the south park boundary fence (3.35 miles).

The intersection of the present-day Center Road segment of the old South Entrance Road and Village Loop Drive, planned since the World War I period as a civic plaza within a village setting, has never developed in the manner envisioned, in part because of traffic realities and ever-increasing expansion of Grand Canyon Village. When the Center Road segment of the old South Entrance Road was completed in 1928, at least one building in place reflected the civic plaza concept -- the Babbitts' store at the northwest corner of Center Road. By 1932, however, planners had begun to discard the open plaza concept; instead, buildings in the vicinity were developed into a "civic center" with a three-tier parking lot and a large landscaped traffic island curbed with stones was constructed immediately north of the store building.³⁰ This allowed two lanes of traffic to pass (perhaps one lane to park) in front of the store, while vehicles continued along Center Road on the east and Village Loop Drive on the south. This intersection was more severely constricted in 1935-36 when a formal parking area three lanes deep was constructed to the north serving both the store and the newer post office to the west.³¹

The area in the immediate vicinity of the intersection and the initial several hundred feet of the Center Road segment continued to evolve as the new administration building (present-day Ranger Office building) was completed at the northeast corner of the intersection in 1929 and the Babbitt brothers constructed several additional warehouses south of their store. The landscape, however, appeared to undergo little change during the 1930s as all the buildings were of rustic architecture, roadways were generally compatible with the surrounding terrain (being surfaced first with gravel and then macadam), and efforts were taken to preserve the natural

³⁰GRCA Photograph No. 2922-B, GRCAMC. This photograph shows the two-story Babbitts' store and traffic island, ca. 1932.

³¹U.S. Department of the Interior, National Park Service, "Grand Canyon National Park Minor Roads -- Headquarters Area," 1935, GRCA No. 113/5066 (microfiche). A copy of this map is on file in the GRCA NEPA and 106 Compliance Office.

vegetation and reflect a relatively uncluttered, rustic setting down to the hand-lettered, wooden directional road signs.³²

The roadside and adjacent landscape from the intersection to the south and southeast as far as the south park boundary also exhibited a more natural appearance during the 1930s and 1940s than it does today. Fewer intersecting roads and fewer vehicles would account for this, but teams of CCC enrollees raking, planting, and rounding ditches and shoulders throughout the developed area and beyond assured this primary NPS goal. Aside from undergrowth, however, which is thicker today, the natural landscape remains much as it was 60 years ago. The canopy of ponderosa pines surrounding the Village Loop intersection and thick stands of pinon and juniper farther to the southeast have survived.³³

During the 1994 roadwork project, the 1928 alignment of the present-day Center Road segment of the old South Entrance Road was retained, but the roadway from the aforementioned intersection to Apache and Tonto streets was converted into an "urban" street of masonry curbing and curb-to-curb surfacing. Road crews resurfaced the remainder of Center Road, at least through the developed area which extends southward to the Clinic Road and Lapp Loop.

Beginning at the intersection with Village Loop Drive, the first features of the Center Road segment worthy of note are the roadway aprons which ease the flow of traffic between the two roads. The aprons, which provide the intersection with a broad appearance, date to the late 1920s. Along the south-southeast side of Center Road, a four-foot-wide asphalt walk with placed stone (not cemented) curbing, both of which have been attributed to CCC improvement activities, abuts the street and continues along the front of the Ranger Office building.

The Center Road segment's surfaced roadway measures 20 feet in width just south of its intersection with Apache. This width is consistent with some of the early construction documents which identify a 20-foot macadam surface. It is two feet wider than other documents which identify an 18-foot-wide macadam then bitumious-treated asphalt surface. In any event, it suggests that the roadway has undergone little widening since the 1927-28 construction, and identifies with roadway width prior to the 1994 project.

Unlined ditches parallel Center Road and drain to the northwest toward Village Loop. These ditches continue from Apache beyond Albright Street as the road ascends in a moderate grade. The main ditch is on the southwest side of Center, and the slope ensures that all culverts under Center (at least to Albright and perhaps beyond) drain from the northeast to the southwest. Each intersecting road (Tonto, Apache,

³²Many historic photographs (GRCA Photographs Nos. 2922-B, 14019, 14017, 2977, 9492, GRCAMC) of the intersection, as well as numerous CCC reports in the museum collection that include snapshots of public works crews landscaping the area, depict its rustic and relatively uncluttered appearance.

³³Numerous photographs, including GRCA Photographs Nos. 285, 2912, 4693, 16095 as well as photographs attached to CCC reports in the GRCAMC, document this conclusion.

Boulder, Albright, and Clinic) had CCC stone culvert headwalls that were replaced in 1994 with new masonry headwalls using rough-cut, irregularly-shaped stones.

At the intersection of Center Road and Boulder, a nine-foot-wide bicycle path was constructed across Center in 1994. The path, which continued down to the east side of the Ranger Office building and across Village Loop to the footbridge over the wash and on to the railroad depot area, required culverts and headwalls. Beyond Boulder Street as far as Clinic Road several culverts which pass under Center Road had new headwalls constructed in 1994.

There are no intersections nor masonry walls southward of Clinic as Center Road passes along minor cuts and fills to its intersection with present-day Shuttle Bus Road. At this point, the old entrance road curved sharply to the south along the initial present-day Shuttle Bus alignment for its run to the south park boundary. Today, Shuttle Bus Road leads back to the NPS helicopter field and shuttle bus repair station, but the first several hundred yards (approximately 0.15 mile) of the road (until it turns again sharply toward the helicopter field) follows the 1927-28 entrance road alignment. The 0.15-mile Shuttle Bus Road segment is a two-lane paved 18-foot-wide roadway that features small, narrow shoulders and drainage ditches along both sides. The cleared roadway corridor is more narrow than that of present-day Center Road and likely provides a setting that reflects that of the 1927-28 South Entrance Road.

At the curve, an earthen berm directly south blocks the path of the 1927-28 alignment, but one can drive around this obstacle and remain on a dirt road (essentially a rutted two-tire-track trace) along and near the old South Entrance Road alignment for approximately 3.35 miles southward to the park's south boundary fence adjacent to the Moqui Lodge. This dirt road, the vestiges of the obliterated old South Entrance Road, ends just short of the lodge and offers no exit to the new South Entrance Road that is visible immediately to the east. Along this segment of the old South Entrance Road alignment, one can observe periodic piles of rock and cutstone and metal pipe remnants that provide evidence of obliterated culvert headwalls and culvert conduit pipe. As one passes along the alignment, one can observe pieces of macadam and asphalt and the remnants of eroded roadway berms, cuts and fills, and drainage ditches. Although the roadway surfacing has been removed and all roadway appurtenant structures, such as culverts, rock walls, and retaining walls, have been obliterated and most of their materials removed, one can still obtain a sense of the cleared right-of-way of the road corridor as a result of the absent-tree line. There is evidence of tree planting in the old road corridor for 20 to 30 yards north of the south boundary fence. Approximately one mile below the intersection of the Shuttle Bus Road and dirt road segments, there is evidence of a borrow pit on the east side of the alignment that might be related to construction activities associated with the 1953-54 new South Entrance Road. Because all of the culverts along this 3.35-mile segment of the old entrance road corridor have been obliterated, the alignment is rutted or deeply eroded in many places where watercourses have reestablished natural drainage patterns across the former roadway. Dirt roads, some of which may date from the early 20th century and others which have likely developed since the 1950s, intersect the old entrance road alignment at various places. The dirt road segment serves as a utility access

corridor to service the modern telephone boxes and manholes (associated with the present-day park telephone system) that are located along the old entrance road alignment. Old rusted tin cans lie in scattered locations along the 1927-28 road alignment, but their significance has yet to be determined.³⁴

³⁴Material for this section was gathered during a site reconnaissance visit conducted by the author of this evaluation report with the guidance of Douglas R. Brown on October 14-15, 1997. Other sources of reference include Historic American Engineering Record, *South Entrance Road*, HAER No. AZ-45, by Anderson, pp. 19-22; Telephone interviews with Jan Balsom and Michael F. Anderson on October 2, 1997; and Historic American Engineering Record, *Grand Canyon National Park Roads*, HAER No. AZ-35, by Anderson.

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Historic American Engineering Record. *Grand Canyon National Park Roads, Grand Canyon National Park, Grand Canyon Village, Coconino County, Arizona, HAER No. AZ-35*, by Michael F. Anderson, December 1993.

_____. *South Entrance Road (Grand Canyon Route #2), HAER No. AZ-45*, by Michael F. Anderson. September 1994.

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EVALUATION

Recommendation

Based on my documentary research and site reconnaissance of the old South Entrance Road, Grand Canyon National Park, this property does not meet the standards or criteria for significance and integrity necessary for listing in the National Register of Historic Places. Therefore, it is not eligible for listing in the National Register. This evaluation is based on the application of National Register Criteria A, B, and C as outlined in the Advisory Council on Historic Preservation's procedures 36 CFR 800 and described in National Register Bulletin No. 15.

Analysis

Significance

To be determined eligible for listing in the National Register, districts, sites, buildings, structures, and objects must possess integrity and under

Criterion A -- "be associated with events that have made a significant contribution to the broad patterns of our history;"

Criterion B -- "be associated with the lives of persons significant in our past;"

Criterion C -- "embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;"

Criterion D -- "have yielded, or may be likely to yield, information important in prehistory or history."

The 1927-28 South Entrance Road alignment retains a measure of significance under Criterion A, because it was the first BPR-engineered road in Grand Canyon National Park, and it may have been the first road in the park to be surveyed by BPR engineers. In any event, it was the first road in the park to be planned and

constructed by the BPR and the NPS under the terms of their February 1925 agreement for the design and construction of park-related roads. Thus, it represented the park's first attempt to accommodate and attract growing numbers of motoring tourists to the south rim, and it served for nearly thirty years as the only automobile approach road from the south. Hence it contributed to the growth and development of automobile-related tourism and visitation to the park.

Nevertheless, the significance of the 1927-28 entrance road's alignment under Criterion A is negated, because it no longer exists for its original purpose as a park entrance road. At the present time, the original alignment of the old entrance road is divided into three distinct segments, two of which serve as components of the present-day park road network and one of which has lost virtually all of its associated roadway features and historic structures.

The 1927-28 South Entrance Road alignment is not significant under Criterion B, because it is not associated with the lives of persons significant in American history.

The 1927-28 South Entrance Road alignment is not significant under Criterion C, because it has lost virtually all of its appurtenant historic features and structures. The present-day 1.4-mile Center Road segment, although retaining the alignment and approximate width of its 1927-28 road design, boasted some fine examples of CCC culvert headwalls and cutstone rock work until most were replaced in 1994. The present-day 0.15-mile Shuttle Bus Road segment retains much of the historic character and setting of the 1927-28 alignment, but this portion of the old South Entrance Road alignment does not contain any distinguishing physical features or appurtenant historic structures. The present-day 3.3-mile dirt segment of the old South Entrance Road alignment from Shuttle Bus Road to the south park boundary fence can be easily traced, but the roadway and its appurtenant historic features and structures were obliterated during the 1950s.

Integrity

To be listed in the National Register, a property, according to National Register Bulletin No. 15, "must not only be shown to be significant under the National Register criteria, but it also must have integrity." According to National Register Bulletin No. 16A, integrity is defined as the "authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period." To determine whether historic properties retain integrity and address the question of whether they possess physical features that convey their significance, the National Register recognizes seven aspects or qualities that, in various combinations, define integrity. The seven aspects include: location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity, a property, according to National Register Bulletin No. 15, "will always possess several, and usually most, of the aspects."

Although the 1927-28 alignment of the South Entrance Road retains the aspects of location and setting, it does not possess a high degree of the other five qualities. As a result of the 1950s-period obliteration of the 3.3-mile segment of the road's surface, subgrade, and associated features and structures from the south park boundary to the present-day Shuttle Bus Road segment and the 1994 road improvement work on the present-day 1.4-mile Center Road segment, the 1927-28 South Entrance Road alignment does not possess the qualities of design, materials, workmanship, feeling, and association. Thus, the old entrance road alignment does not retain sufficient integrity for listing in the National Register.

MAPS

1. "As Constructed Plan" drawing showing the 1927-28 and 1953-54 South Entrance Road alignments.
2. U.S. Geological Survey, 7.5 minute series (topographic), Grand Canyon, Phantom Ranch, and Tusayan East Quadrangles showing 1927-28 South Entrance Road alignment.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

**AS CONSTRUCTED PLANS FOR
PROJECT 2-A1 (POR.), B, D (POR.)
GRADING, BASE COURSE & BIT. TREAT.
ROUTE NO. 2 ~ SOUTH ENTRANCE
GRAND CANYON NATIONAL PARK
HIGHWAY SYSTEM
ARIZONA**

INDEX TO SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet - Grand Canyon Route 2
2	Title Sheet - So. App. Grand Can. Natl. Pk.
3-3A	Typical Cross Sections
4	Estimate of Quantities
5-13	Plan & Profile - Sta 154+01 to Sta 409+71.30
14	Entrance Station
15	Metal End Sections
16	Side Fence & Gates (Arch.)
17	Low Fence & Gates - Steel Posts
18	Succul Project Sign
19	Sign Signs for Use on Construction

(Sheet 3A added making total of 20 sheets)

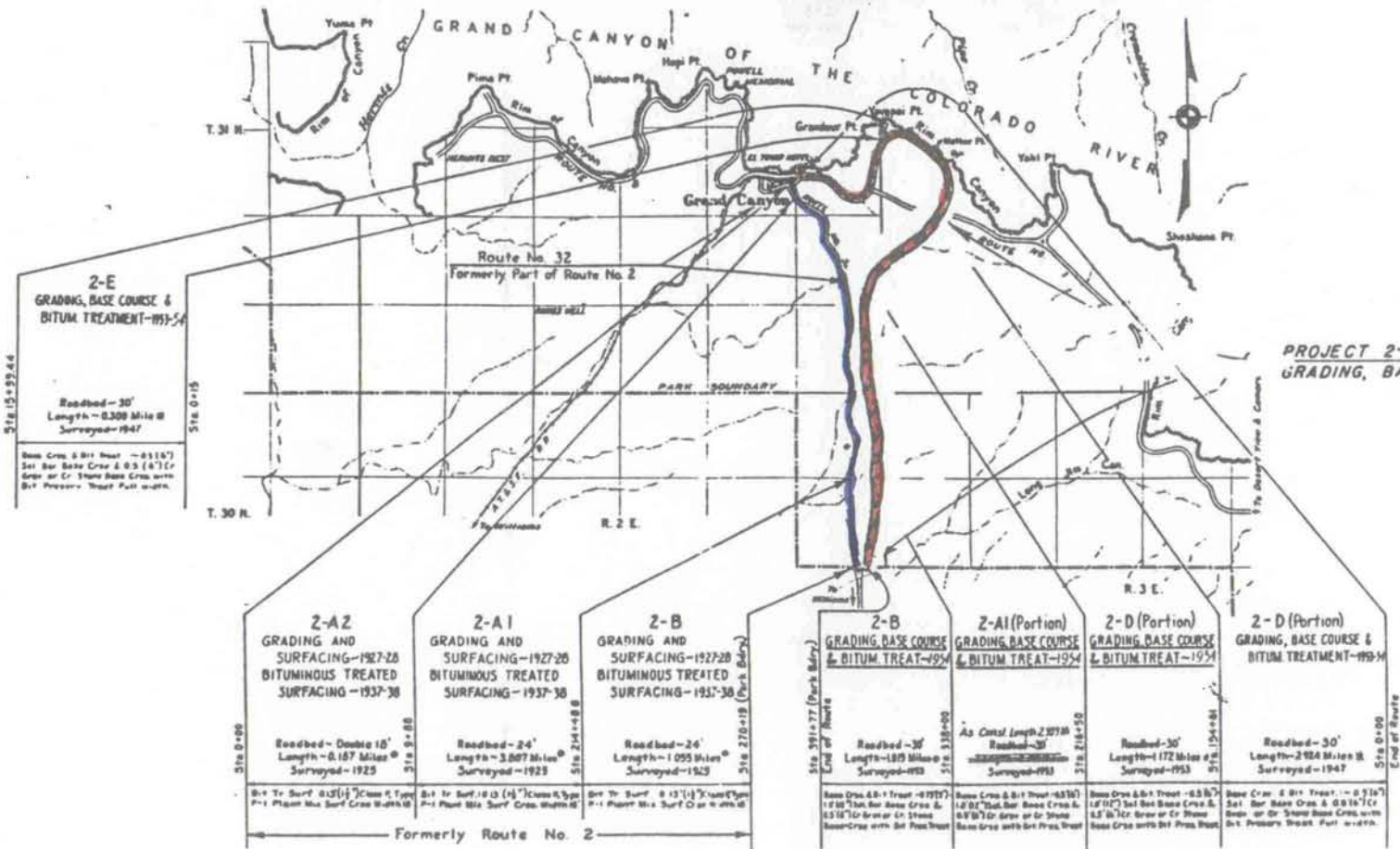
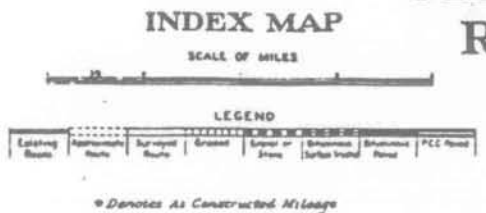
DESCRIPTION OF PROJECT:-
 Project: Grand Canyon National Park Highway
 2-A1 (Portion), B, D (Portion),
 Grading, Base Course and Bituminous
 Treatment.
 Location: Junction of Park Route No. 1 to South Park
 Boundary, Sta 154+01 to Sta 391+77
 Length: ~~14.34~~ Miles *
 4.94
 Note: This project is combined with Project South
 Arizona Grand Canyon National Park
 A (Portion), Grading, Base Course and
 Bituminous Treatment
 (Combined Length 4.94 + 2.35
 = 7.29 Miles)

PREPARED BY
U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

PROJECT 2-A1 (POR.), B, D (POR.)
GRADING, BASE CRSE. & BIT. TR.

(BLUE) 1927-28
ALIGNMENT

(RED) 1953-54
ALIGNMENT



GRAND CANYON QUADRANGLE
ARIZONA-COCONINO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 BRIGHT ANGEL 15' QUADRANGLE

5655 N NE
(BRIGHT ANGEL
POINT)

10'

'96

430 000 FEET

'97

'98

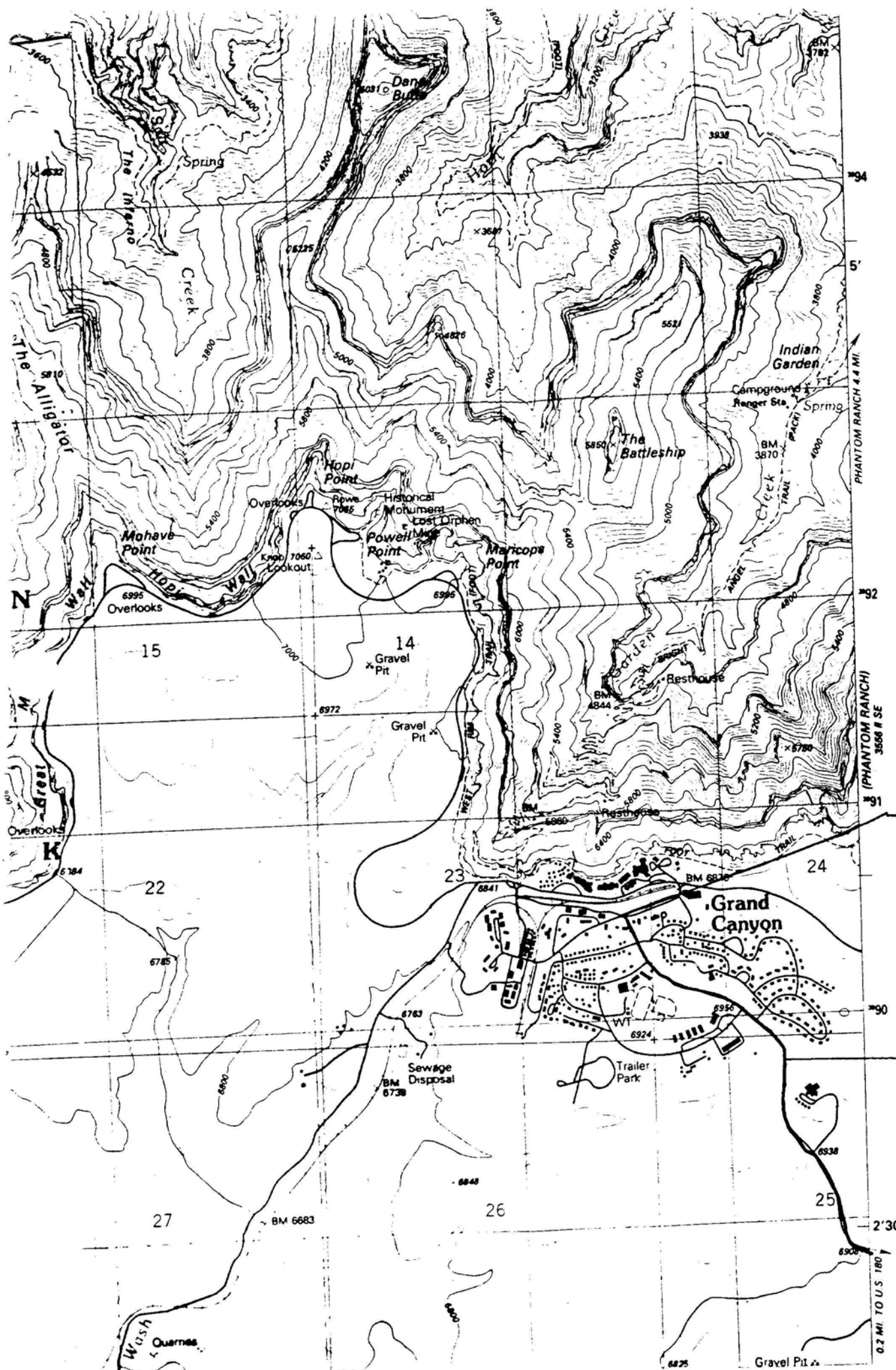
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36°07'30"



1 860 000
FEET

1 INCH = 4 MI.



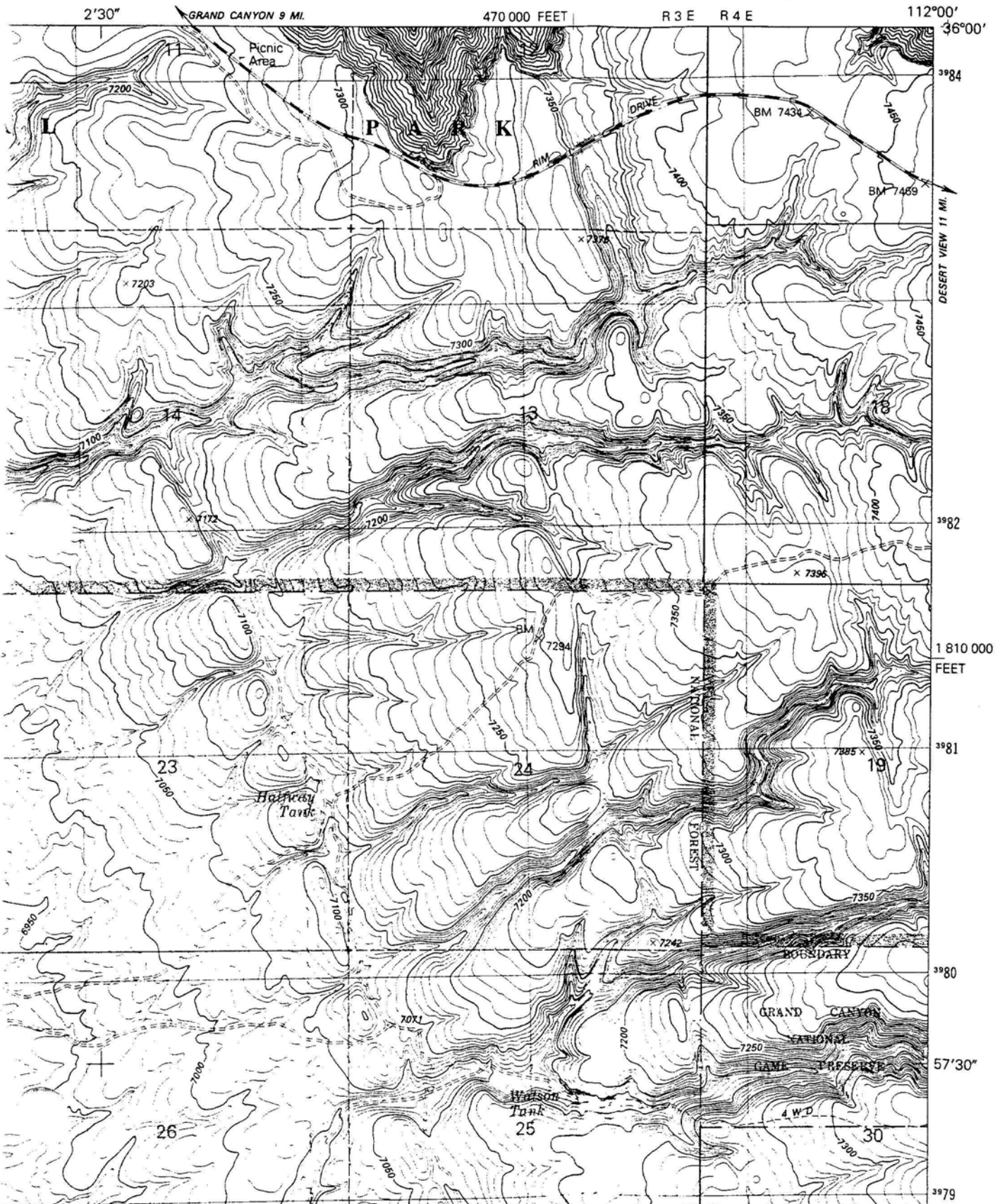
INTERSECTION
OF CENTER
ROAD AND
VILLAGE
LOOP DRIVE

CENTER
ROAD
SEGMENT
MARKED
IN RED

PHANTOM RANCH 4.4 MI.
PHANTOM RANCH
3558 N SE
0.2 MI. TO U.S. 180

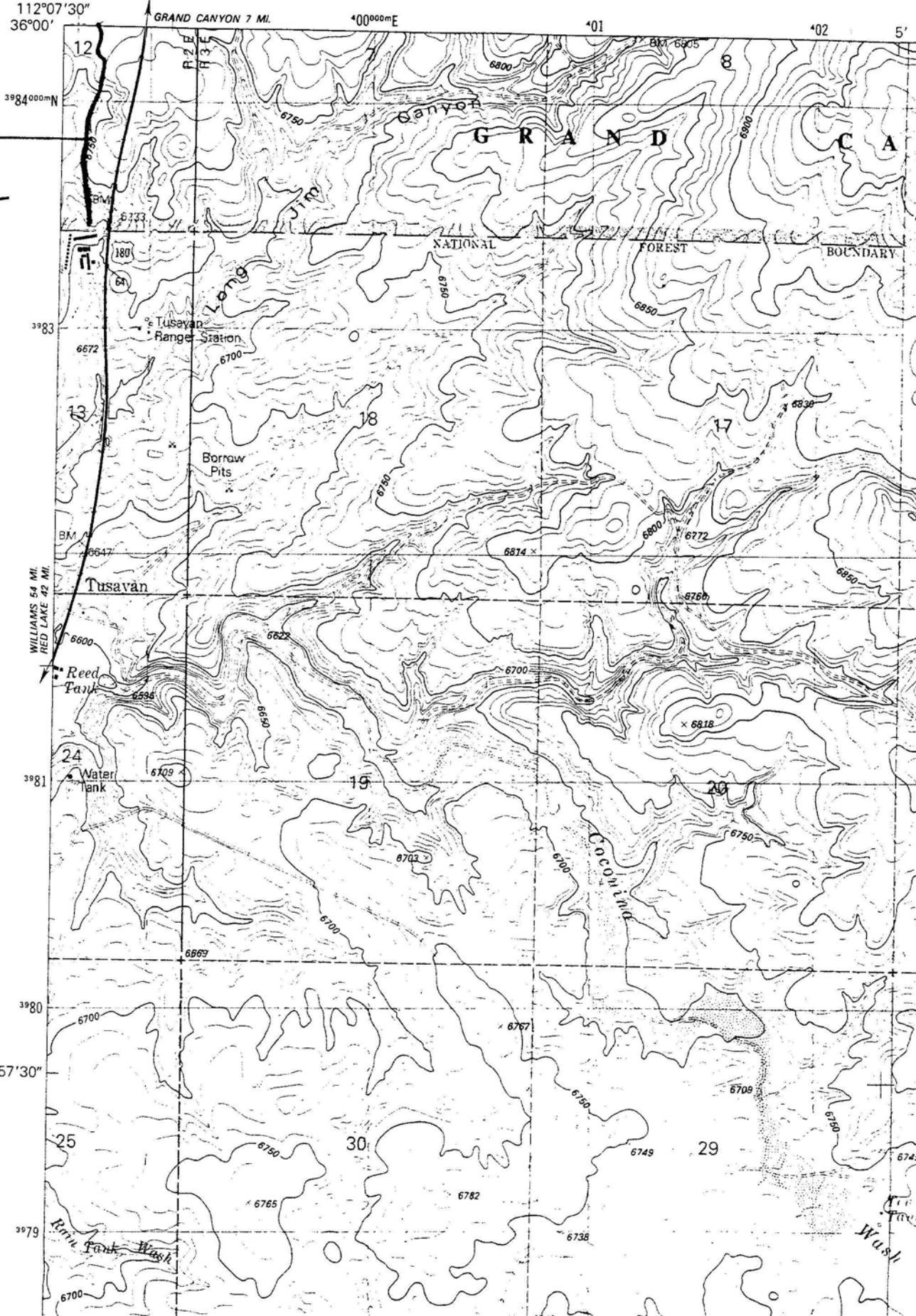
TUSAYAN EAST QUADRANGLE
ARIZONA-COCONINO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

3656 III
(VISHNU TEMPLE)
1:62,500



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

3556 II
(BRIGHT ANGEL)
1:62,500



DIRT
ROAD
SEGMENT
(MARKED
IN GREEN)

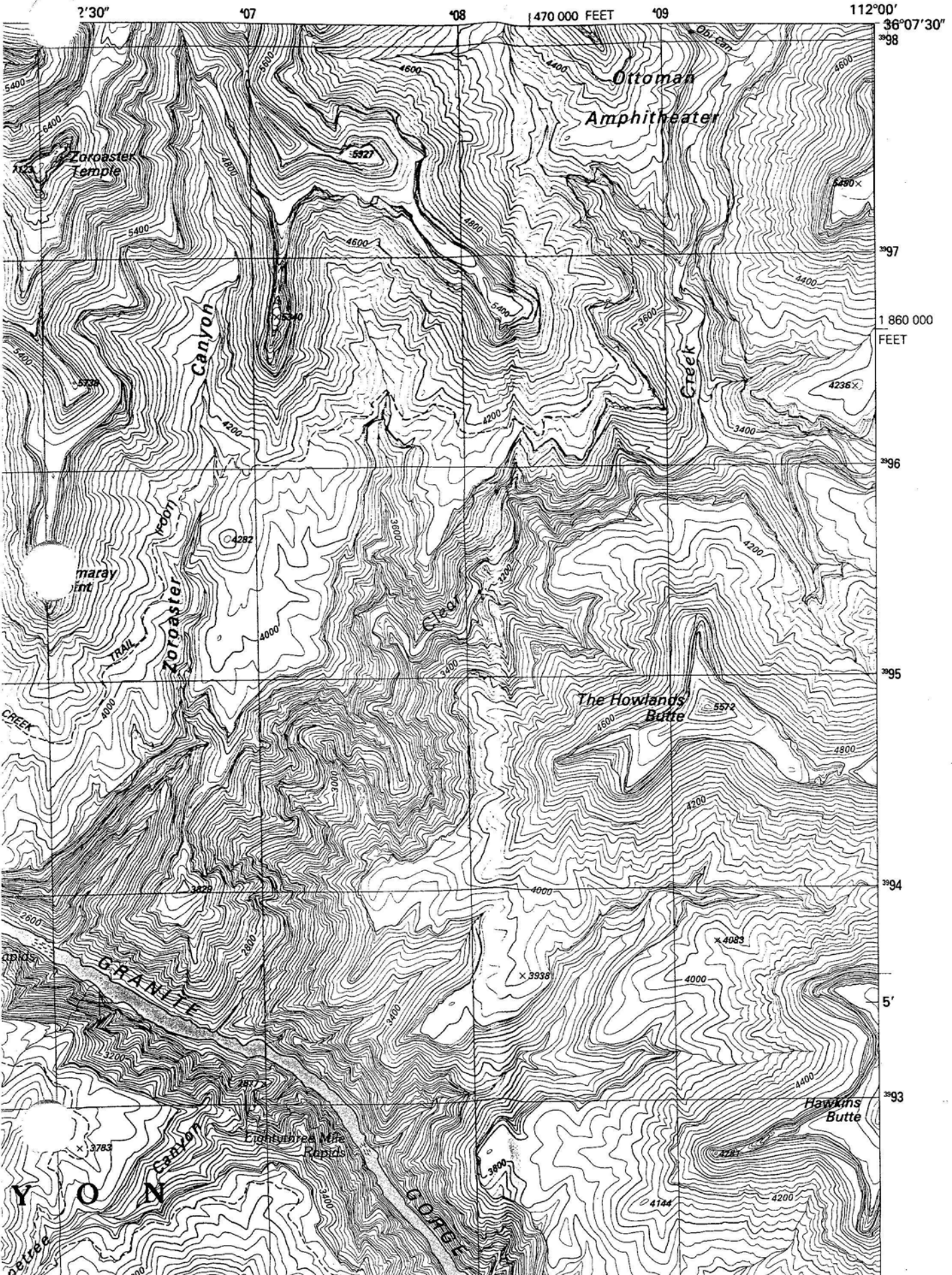
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RED LAKE 42 MI.

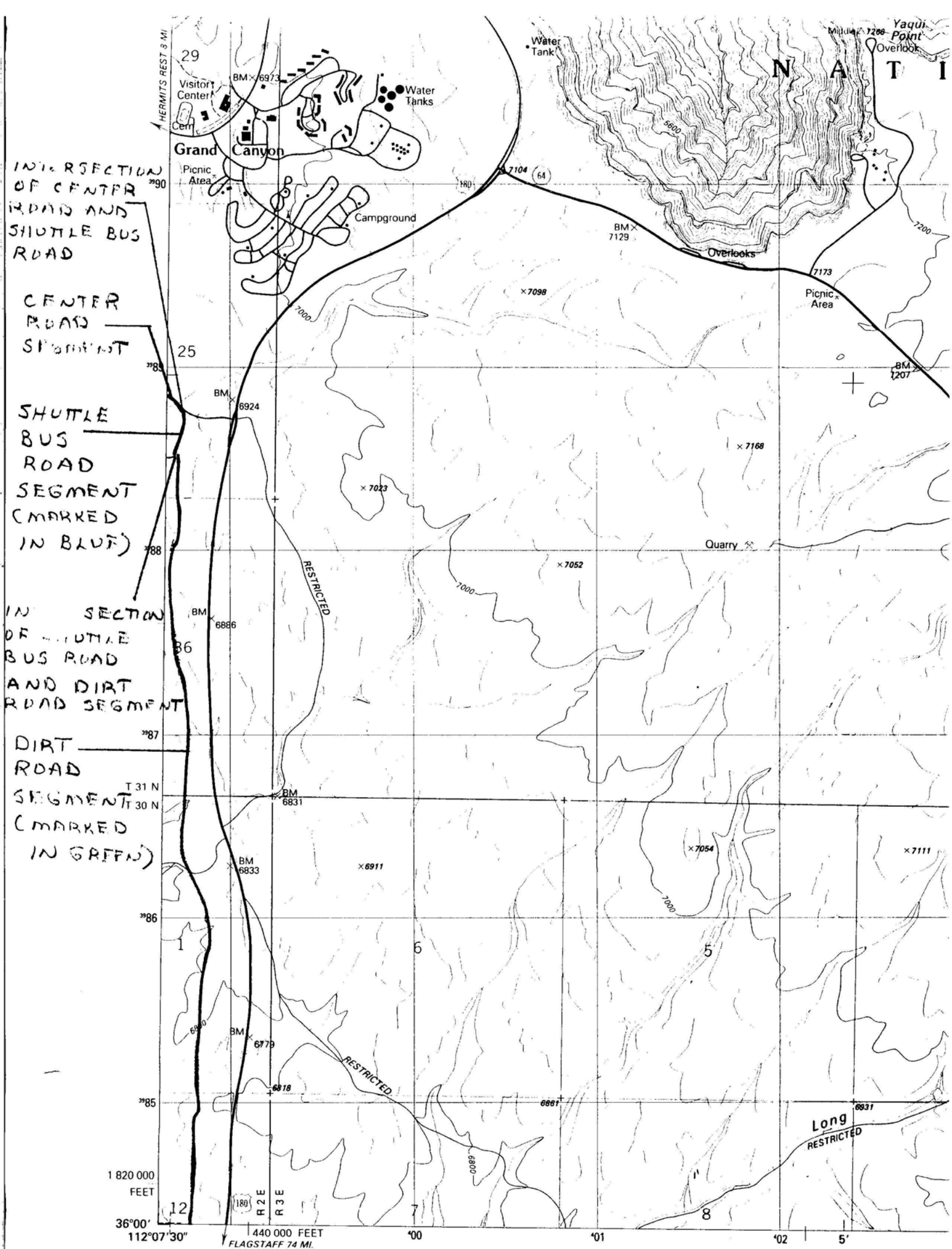
PHANTOM RANCH QUADRANGLE
ARIZONA-COCONINO CO.

7.5 MINUTE SERIES (TOPOGRAPHIC)

SE/4 BRIGHT ANGEL 15' QUADRANGLE

3656 III NW
(WALHALLA PLATEAU)





Produced by the United States Geological Survey

Control by USGS and NOS/NOAA

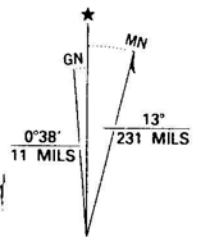
Compiled by photogrammetric methods from aerial photographs taken 1982. Field checked 1985. Map edited 1988

Projection and 10,000-foot grid ticks: Arizona coordinate system, central zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid, zone 12
1927 North American Datum

To place on the predicted North American Datum 1983 move the projection lines 6 meters north and 66 meters east as shown by dashed corner ticks

Where omitted, land lines have not been established

There may be private inholdings within the boundaries of the National or State reservations shown on this map



UTM GRID AND 1988 MAGNETIC NORTH DECLINATION AT CENTER OF MAP DIAGRAM IS APPROXIMATE

SAYAN WEST 1
3555 / NW

FOR SALE BY
A FC

PHOTOGRAPHS

Photographs taken by Harlan D. Unrau, October 14-15, 1997.

Mileage measured from intersection of Center Road and Village Loop Drive (0.0 miles) to south park boundary fence (4.9 miles).

1. Mileage 0.0 -- Looking south on Center Road from its intersection with Village Loop Drive.
2. Mileage 0.2 -- Looking north on Center Road from Boulder Street.
3. Mileage 0.2 -- Looking south on Center Road from Boulder Street.
4. Mileage 0.3 -- Looking south on Center Road from site of ca. 1930 entrance station.
5. Mileage 1.4 -- Looking north on Center Road from its intersection with Shuttle Bus Road.
6. Mileage 1.4 -- Looking south on Shuttle Bus Road from its intersection with Center Road.
7. Mileage 1.6 -- Looking north on dirt road segment with earthen berm in background. Earthen berm is located at curve on Shuttle Bus Road where 3.3-mile dirt road segment southward commences.
8. Mileage 1.7 -- Looking south on dirt road segment (typical view).
9. Mileage 2.0 -- Looking north on dirt road segment (typical view).
10. Mileage 2.75 -- Looking south on dirt road segment (west side of corridor).
11. Mileage 3.55 -- Looking north on dirt road segment (typical view).
12. Mileage 3.55 -- Looking south on dirt road segment (typical view).
13. Mileage 3.6 -- Remnant of metal culvert conduit at side of road.
14. Mileage 3.8 -- Looking south on dirt road (view of eroded gully, pool of water, and earthen berm/embankment in foreground)
15. Mileage 4.5 -- Looking south on dirt road segment (typical view).
16. Mileage 4.6 -- Looking south on dirt road segment (typical view).

17. Mileage 4.9 -- Looking north on dirt road segment from south park boundary fence (typical view).



PHOTOGRAPH NO. 1



PHOTOGRAPH NO. 2



PHOTOGRAPH NO. 3



PHOTOGRAPH NO. 4



PHOTOGRAPH NO. 5



PHOTOGRAPH NO. 6



PHOTOGRAPH NO. 7



PHOTOGRAPH NO. 8



PHOTOGRAPH NO. 9



PHOTOGRAPH NO. 10



PHOTOGRAPH NO. 11



PHOTOGRAPH NO. 12



PHOTOGRAPH NO. 13



PHOTOGRAPH NO. 14



PHOTOGRAPH NO. 15



PHOTOGRAPH NO. 16



PHOTOGRAPH NO. 17