

HAER
ARIZ
3-GRACANY,
1-

GRAND CANYON NATIONAL PARK ROADS
Grand Canyon National Park
Grand Canyon Village
Coconino County
Arizona

HAER No. AZ-35

~~PHOTOGRAPHS~~

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Western Region
Department of the Interior
San Francisco, California 94107

HAER
ARIZ
3. GRAND CANYON,
1-

HISTORIC AMERICAN ENGINEERING RECORD

GRAND CANYON NATIONAL PARK ROADS
GRAND CANYON NATIONAL PARK
HAER No. AZ-35

Location: The culvert headwalls and road retaining walls considered in this project are located along Village Loop Drive, Center Road, Apache Street, and Boulder Street within Grand Canyon Village. Figure One identifies the specific locations of each structure.

USGS Quad: Grand Canyon, AZ 1988 1:24,000

Date of Construction: 1933-36

Type of Structure: Road retaining walls, culvert headwalls

Use: Road retaining walls, culvert headwalls

Designer/Engineer: National Park Service

Builder: Civilian Conservation Corps

Owner: National Park Service

Significance: These walls are representative of rustic style road structures constructed by the Civilian Conservation Corps and other depression-era public works agencies within the western national parks during the period 1933-1942. They are purposely constructed of undressed native sandstone and limestone and rough-mortared to blend with surrounding natural ground features.

Project Information: Documentation of headwalls and retaining walls associated with Village Loop Drive, Center Road, Apache Street, and Boulder Street are the result of a mitigation study in anticipation of imminent Grand Canyon road work which may bury the structures or require that they be rebuilt. This report was prepared as an NPS Denver Service Center contract assignment in September and December 1993, by Michael F. Anderson, 985 N. Granite Reef #150, Scottsdale, AZ 85257 (602)432-1602

INTRODUCTION

Many of the minor roads and associated structures within Grand Canyon National Park's residential and commercial areas were designed in the 1920s/1930s by NPS and Bureau of Public Roads engineers. These men designed roads to federal highway standards of the time, which considered far fewer and smaller vehicles than travel these routes today. Changing traffic patterns have required new alignments, grades, and roadway widening since the 1930s. Such modifications are now being considered which may result in the burial or dismantling and reconstruction of masonry road retaining walls and culvert headwalls along Village Loop Drive, Center Road, Apache Street, and Boulder Street within Grand Canyon Village (See Figure One). This report describes construction and modifications of the roads and associated structures during the historic period under consideration and identifies the historic context within which each is significant.

HISTORICAL CONTEXT

Grand Canyon and its north and south rims have undergone a number of land management changes since the first European-American pioneers arrived in the 1860s. Roads and associated structures have evolved along with these changes. Until 1893, the region was public domain and anyone could construct crude wagon roads north from the National Old Trails Road (later U.S. 66 and Interstate 40) and Atlantic & Pacific Railroad line to the Canyon's south rim. President Harrison proclaimed Grand Canyon Forest Reserve in 1893 and President Roosevelt elevated its status to national monument in 1908, but roads remained within the purview of private miner-tourism entrepreneurs well into the 1910s. Two "major" wagon and stage roads approached the south rim from the east and west by these years, while streets within the nascent Grand Canyon Village ran along informal lines connecting tourist structures of the park's primary concessioner--the Fred Harvey Company--and the few remaining small tourist operators.¹

With the appearance of significant numbers of automobiles at Grand Canyon National Monument beginning in the mid-1910s and ever-increasing numbers of monument visitors, U.S. Forest Service administrators recognized the need for orderly growth within Grand Canyon Village. At the Service's request, Frank A. Waugh completed the first plan for residential and commercial development in 1918. Despite Waugh's assessment that the village would "never have any extended growth," he laid out a town plan that would follow along the progressive-era City Beautiful

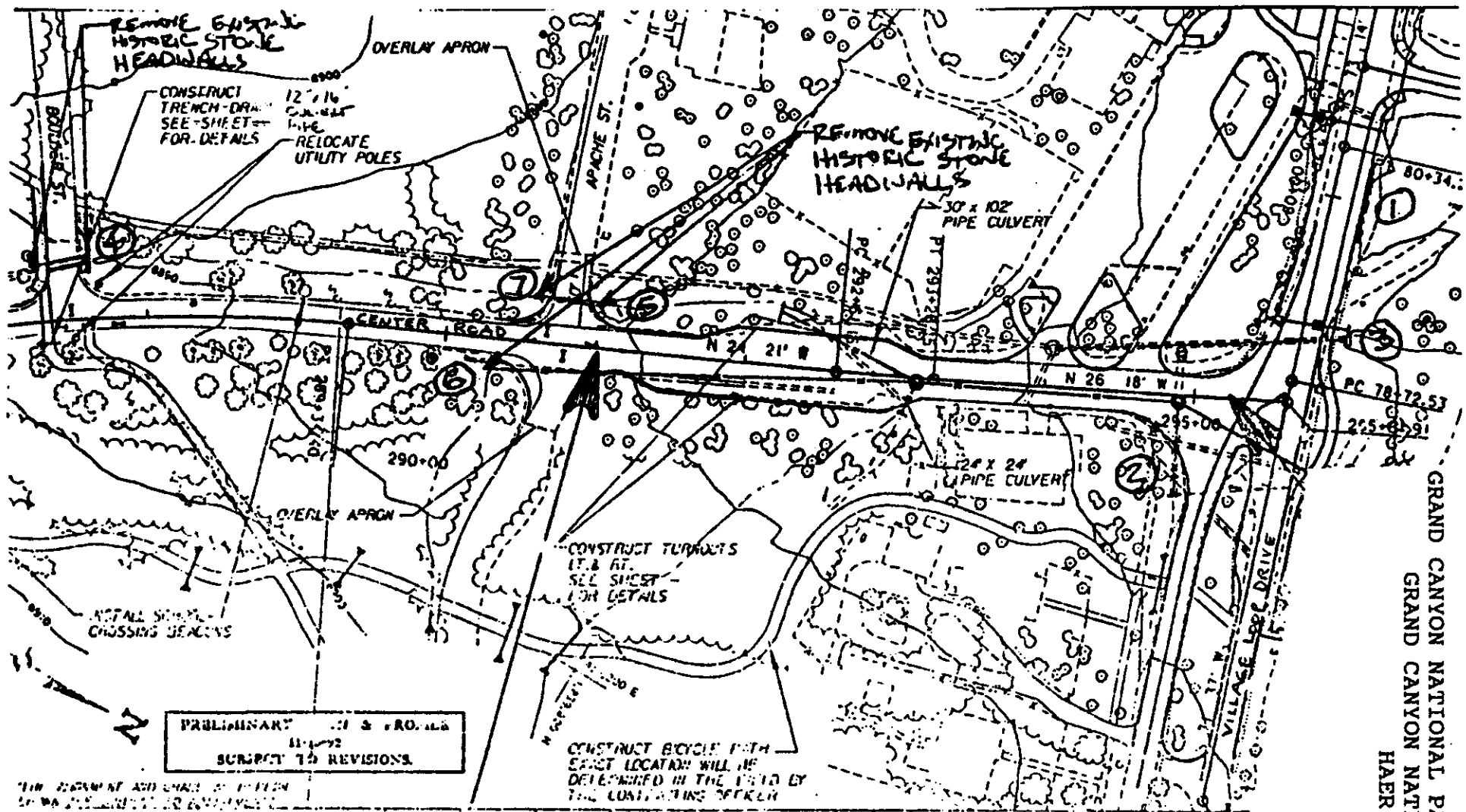


Figure 1. Location of structures which may be effected by 1993 road construction. 1. Village Loop Retaining Wall #1; 2. Village Loop Headwall #1; 3. Village Loop Headwall #2; 4. Boulder Street Headwall #1; 5. Apache Street Headwall #1; 6. Apache Street Headwall #2; 7. Apache Street Headwall #3. (NPS Denver Service Center)

concept of open plazas, strict zoning, and curvilinear streets.² Waugh's document would be discarded the following year when the National Park Service took over administration of the new Grand Canyon National Park, but elements of village and street design would be retained in the Park Service's own plans for growth.

Soon after the National Park Service assumed responsibility for Grand Canyon National Park in 1919, administrators began to assess needs for roads approaching the park and within Grand Canyon Village. Concerns by 1922 prompted the NPS and the Atchison, Topeka & Santa Fe Railroad to hire the Chicago architectural firm of Graham, Anderson, Probst and White to design the village's infrastructural future. The firm's design architect, Pierce Anderson, developed the first Grand Canyon master plan with the assistance of Park Service Chief Landscape Engineer Daniel Hull, others in the NPS Landscape Engineering Department, architects and engineers of the Santa Fe railroad, Park Engineer Minor R. Tillotson, and Park Superintendent W.W. Crosby (See Figure Two). The Park Service adopted the plan in 1924, and with periodic modifications and consistent direction from Minor R. Tillotson (park engineer, 1922-27; superintendent, 1927-1938) it served as the blueprint for village development through the years 1924-1939.³

The 1924 master plan called for the delineation of civic, residential, accommodation (tourist), and industrial zones using the existing railroad tracks and two new roads as lines of separation. Borrowing from Waugh's plan for road development, a new park access road would proceed south from the railroad tracks and also serve to separate concessioner from NPS residential districts (today's Center Road). Curvilinear minor roads would penetrate these residential districts (today's Apache, Boulder, and Tonto Streets survive). An east-west loop road (today's Village Loop Drive) would parallel both sides of the railroad tracks and separate the industrial zone along the tracks from the accommodation zone along the south rim, as well as separate the industrial zone from the residential zone to the south. With few variations, these roads were constructed as planned between 1926 and 1936 and remain today essentially along the alignment of those years (see Figure Three).⁴

The NPS in 1924 judged the old unimproved south entrance road, developed long before Grand Canyon became a national park, to be "tortuous...and very unsatisfactory for a tourist route." The Department of Agriculture's Bureau of Public Roads (BPR)--the road building arm of the National Park Service beginning in the middle 1920s--surveyed a replacement in the summer of 1925. The new road would run from the park's south boundary through the

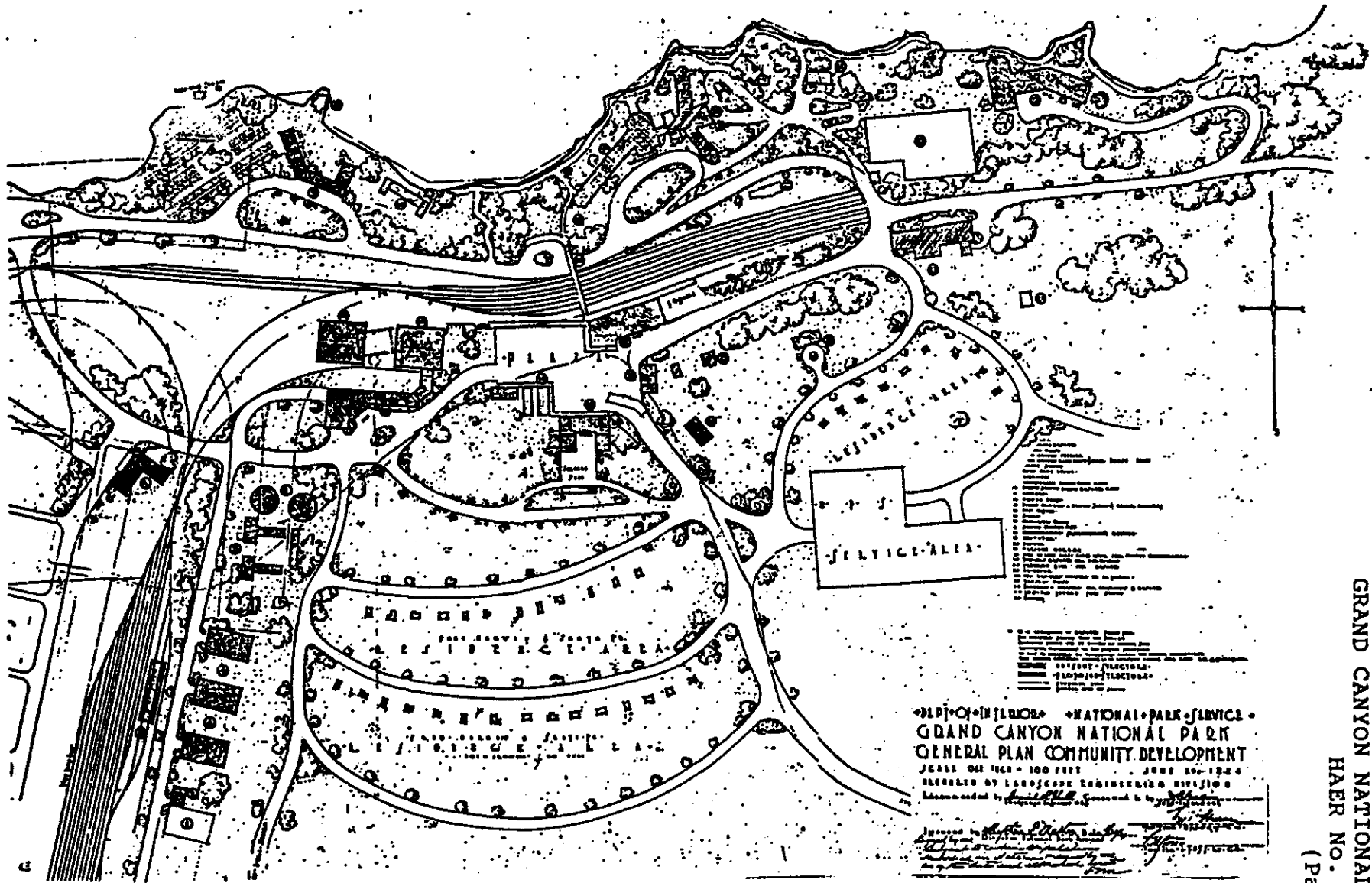
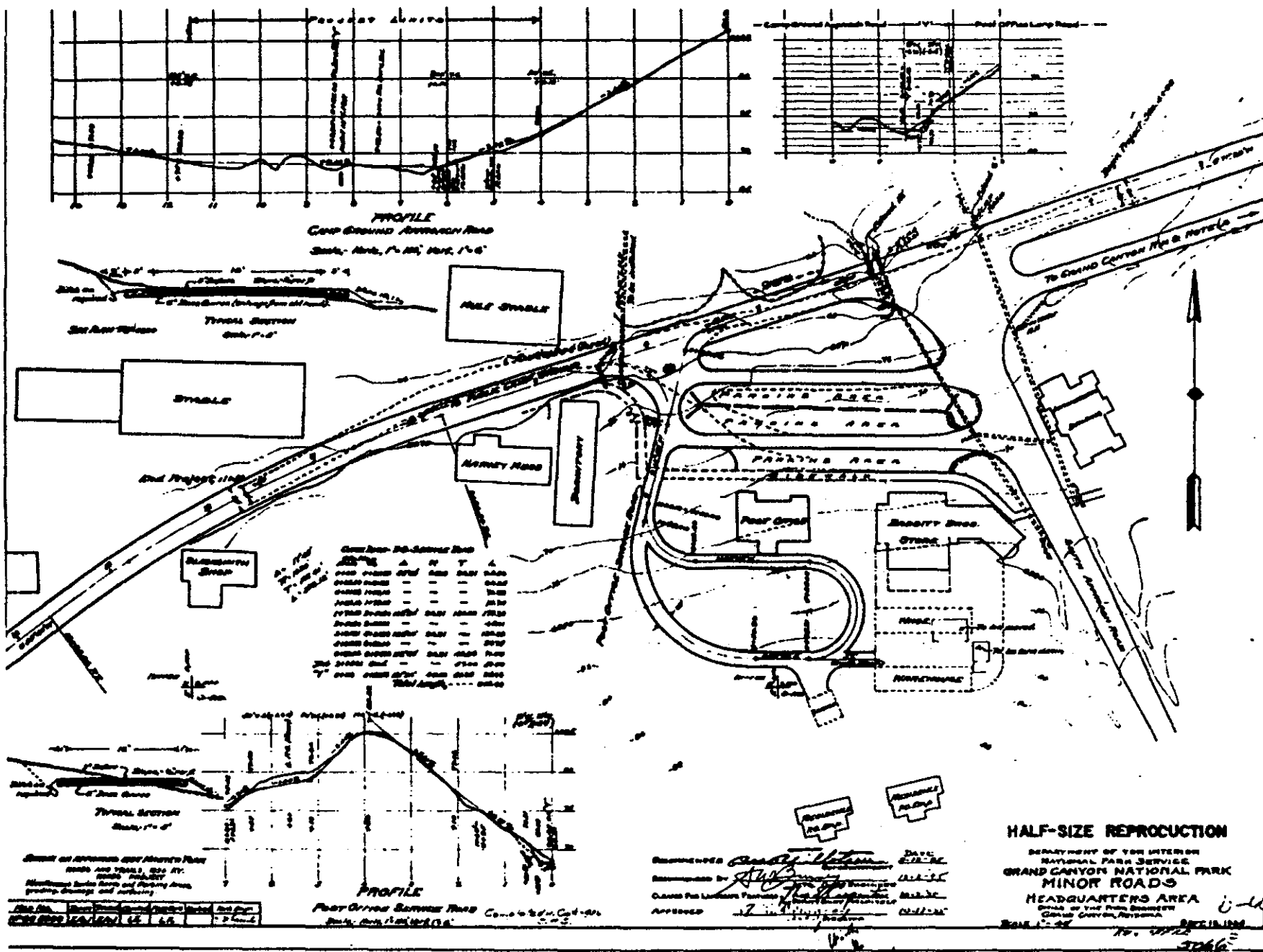


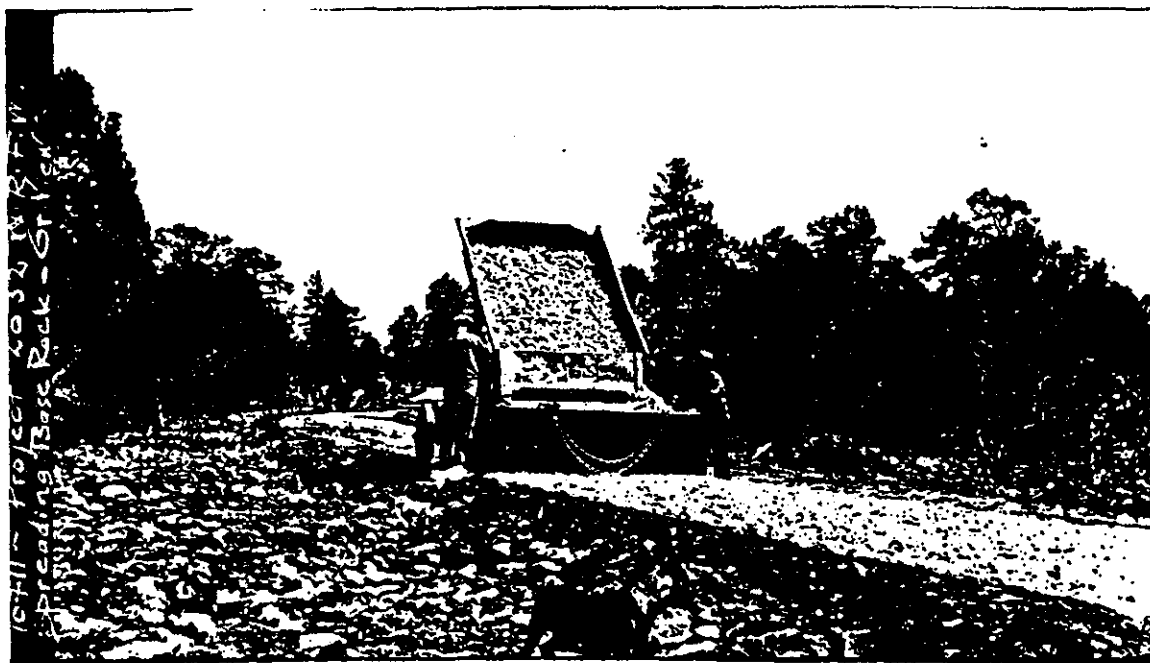
Figure 2. Design architect's conception of the development of Grand Canyon Village, from the 1924 Master Plan. (GCNP Professional Services)

GRAND CANYON NATIONAL PARK ROADS
 GRAND CANYON NATIONAL PARK
 HAER No. AZ-35
 (Page 5)



GRAND CANYON NATIONAL PARK ROADS
GRAND CANYON NATIONAL PARK
HAER NO. AZ-35
(Page 6)

Figure 3. Park Engineer C.M. Carrel's sketch map of 1935-36 Minor Roads project along Village Loop Drive (Microfiche #113/5066, Railway Depot)



Figures 4 and 5. Subgrading (above) and surfacing (below) for 1927-28 South Entrance Road Construction. (Final Construction Report, GCNP Study Collection)





Figure 6. Quarry near town of Tusayan, used for 1927-28 South Entrance Road construction. (Final Construction Report, GCNP Study Collection)



Figure 7. Apron, culvert, and headwall on Navajo Street built by C.W.A. crews between December 1933 and April 1934. Not all road structures were built by the C.C.C. (CCC reports, GCNP Study Collection)

center of Grand Canyon Village and continue to the administration building southeast of the railroad depot. Park Service day labor forces cleared the route in the winter of 1925-26 and the Department of the Interior awarded the road contract to James Vallandingham of Salt Lake City in January 1927. The contractor completed a high quality 20-foot macadam roadway and associated structures by December 1928. Although the BPR final inspection report identifies the use of 339.3 cubic yards of "dry wall masonry" and 18", 24", and 30" diameter corrugated metal pipe for the project, it is uncertain whether the masonry work entailed construction of culvert headwalls or roadway retaining walls.⁵ Photographs and written sources from the 1920s suggest, however, that Canyon road culverts were often if not always composed of corrugated pipe covered only by the grade and coarse rock.

While the construction of Center Road in 1927-28 went where no road or path had gone before, and it is thus easy to begin the history of its structures from these years, the road which became today's Village Loop Drive has a more uncertain origin. Long before the NPS developed its 1924 master plan, a wagon road ran along the north side of the railroad tracks from the railroad depot (and perhaps from a point further east) past the mule barn, corrals, and industrial area, thence southwest to Rowe Well and beyond to Williams and Ash Fork. This was one of two original approach roads to the south rim of Grand Canyon which developed soon after the railroad reached the rim in 1901. By 1918, the segment which followed the lines of today's Village Loop Drive north of the tracks from west of the village to the depot was called the Rim Road, and its construction and maintenance was attributed to the Grand Canyon Railway (the Santa Fe spur to the Canyon). Also by this year, the road looped around the depot as it does today and continued west along the south side of the tracks at least as far as the Fred Harvey stables.⁶

Most structures associated with Village Loop Drive probably originate after 1928. The roadway from the old administration building northeast of the depot to the 1929 administration building (today's Ranger Ops building) at Center Road was reconstructed in that year. The entire roadway north of the tracks and as far west as Hermit's Rest was rebuilt at an even later date.

The 1928 Village Loop project originated from designs of the 1924 master plan.⁷ BPR engineers surveyed the approximate 2,000-foot roadway segment in 1925, but in early 1928 completed a relocation calling for two parallel roads, each 16 feet in width and separated by a 30-foot parking island. Upon completion in late September 1928, the graded gravel "double road" provided a modern

landscaped connection between the new south entrance road and another new road which continued west from the administration building toward Grandview Point. The final completion report written for this 2,000-foot road segment indicates that men completed its drainage structures in late September. The final inspection report identifies the use of 182 linear feet of 24" and 30" corrugated metal pipe and construction of a concrete catch basin. No materials for masonry walls of any type nor mention of such work is found in the reports, however, and the drainage structures were likely bare pipe covered by the grade and coarse rock.⁸

In addition to the construction of the new south entrance road and Village Loop Drive, the 1924 master plan called for survey and grading of Avenues A, B, and C--minor roads that would serve the Fred Harvey Company's residential district.⁹ This district was laid out in early 1926 beginning with 22 residences along Avenue A (later, Apache Street), which was described as a "by-road which meandered in and out among the trees, narrow, and, in Fall, Winter and Spring, impassable to all traffic." Park labor forces cleared and rough-graded Avenue A in 1927 and further improved it in 1931 along with the survey, clearing, and rough-grading of Avenue B (later, Boulder Street) and Avenue C (no longer connected to Center Road).¹⁰ No further work on these roads is recorded until after the arrival of the Civilian Conservation Corps in May 1933.

Construction of masonry structures within the park and Grand Canyon Village did not originate with the Civilian Conservation Corps. The foundations of most buildings and entire structures such as the Kiva Building and the Desert View Watchtower were built before the 1930s of local sandstone and limestone. These were designed to mimic constructions of long-gone Pueblan Indians or to conform to the essential tenets of rustic architecture which was favored at nearly all western national parks by the 1920s. Researchers have also identified at least two stone retaining walls constructed along the railroad's right-of-way in 1928 and 1930 by Santa Fe railroad stone masons Jesus Morales and Charlie Grant.¹¹ Evidence attesting to the use of masonry for minor road structures prior to the 1930s is lacking, however. Construction reports and references within other reports of the period note the consistent use of varied-sized corrugated metal pipe for culverts, and none identify headwalls or retaining walls as finishing touches.

Conrad Wirth, serving as the Department of the Interior's representative on the Civilian Conservation Corps advisory council in 1942, noted that some 880 CCC camp years (roughly

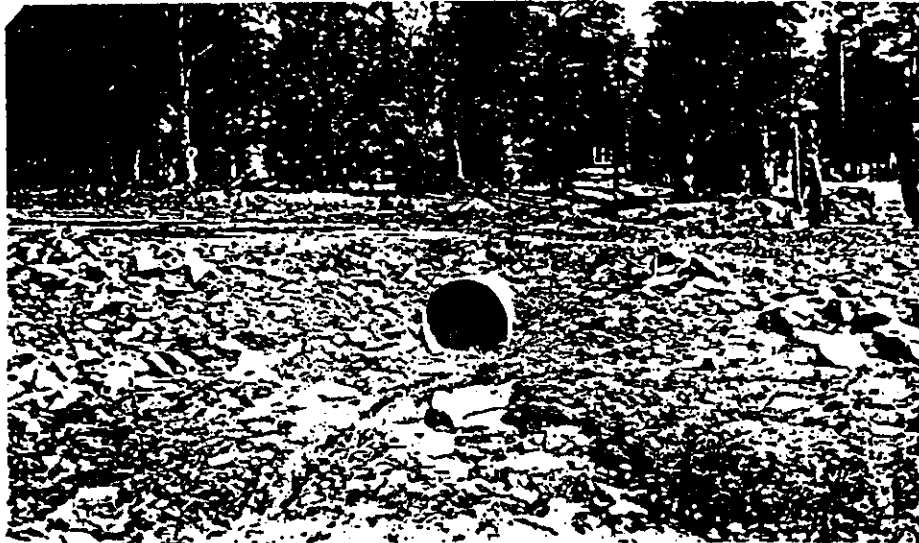
GRAND CANYON NATIONAL PARK ROADS
GRAND CANYON NATIONAL PARK
HAER No. AZ-35
(Page 11)

132,000 man years) had been invested in improvements to the National Park System during the relief program's nine-year duration. Their work, he said, had advanced national park infrastructures by some 50 years. During the halcyon years of 1934-37, between 425 and 560 200-man camps worked annually in the parks to construct and maintain roads and trails; erect, remodel, and paint all manner of buildings; construct reservoirs, fences, and fire breaks; and perform general maintenance among a hundred other myriad tasks. Ironically, CCC crews contributed to what some consider the golden years of the National Park System in an era otherwise marked by national economic depression and structural decay.¹²

Soon after the U.S. Congress legislated the CCC in March 1933, Corps Company 819 was formed and its initial contingent sent from its training camp in southern Arizona to the south rim of Grand Canyon. Ultimately, as many as four companies would operate at five CCC camps within the Canyon and upon its rims. Although other camps moved to varied locations within the park and other relief agencies such as the C.W.A. worked here during the 1930s, Company 819 remained in Grand Canyon Village and accomplished most of the minor road-related projects during this period. These men setup Camp NP-2-A west of the Fred Harvey residential area and south of Avenue A at the end of May 1933, and on 3 June 1933, 143 of the 200-man company reported to work on park projects.¹³

Superintendent Tillotson approved seventeen initial projects for Company 819, including roadside improvement to the 4.7-mile south entrance road and general maintenance of minor roads. The former project was an ongoing task which involved slope cutting, drainage ditch cleaning, and "rebuilding" culvert headwalls.¹⁴ Although the report identifying this project implies by the term used that headwalls previously existed, photos accompanying this and other project reports--some "before and after" shots--reveal that culverts built prior to the CCC were typically headed by loose rubble or large rocks, or were simply bare pipe jutting into ditches from beneath road grades. The roadside improvement project went on for at least several enlistment periods (of six months each) under the supervision of Landscape architect A.C. Kuehl, with approximately fifty men working at all times.¹⁵

Others of Company 819 worked throughout the 1930s on minor roads and landscaping projects within the village. Tasks included widening, grading, and surfacing roads in the residential areas as well as landscaping, drainage construction and clearance, and headwall construction along Village Loop Drive between Center Road and the old administration building. The CCC performed most of this work between the years 1933 and 1937. Most of the road-



Figures 8 and 9. Example of culverts before (above) and after (below) C.C.C. headwall construction. (GCNP Study Collection)



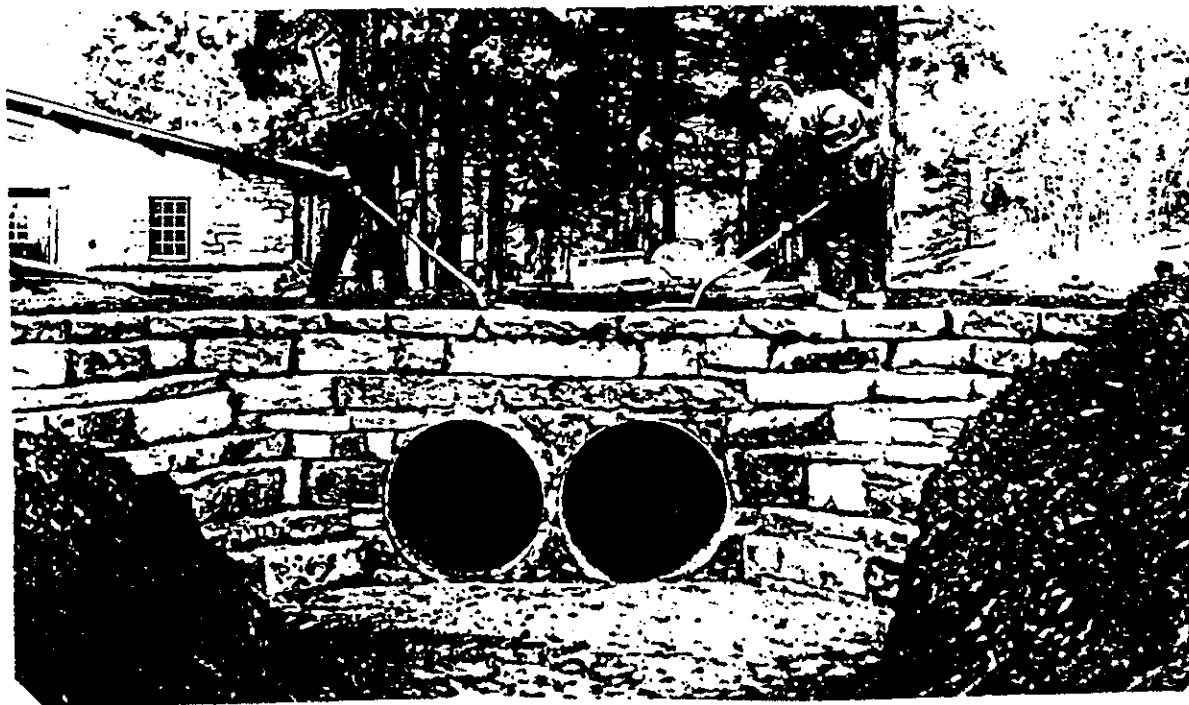


Figure 10. Example of fine masonry headwall near the Fred Harvey garage, built by C.C.C. crews between October 1933 and April 1934. (CCC reports, GCNP Study Collection)



Figure 11. C.C.C. landscaping project near intersection of Village Loop Drive and Center Road in late 1934. (CCC reports, GCNP Study Collection)

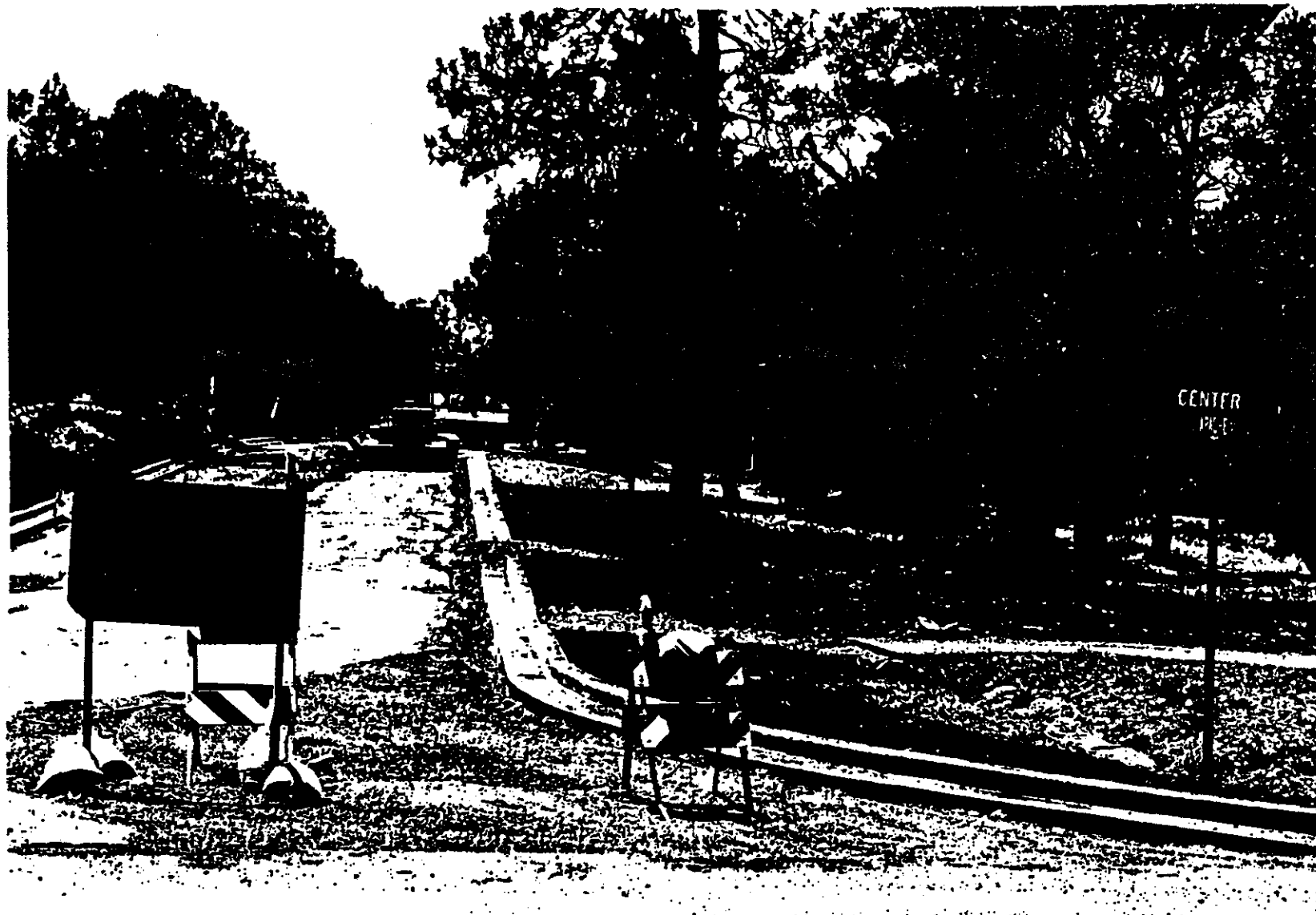


Figure 12. Road construction near Apache Street Headwalls #1 and #2. Top of Headwall #1 is beside the street sign. (GCNP Study Collection #16095)

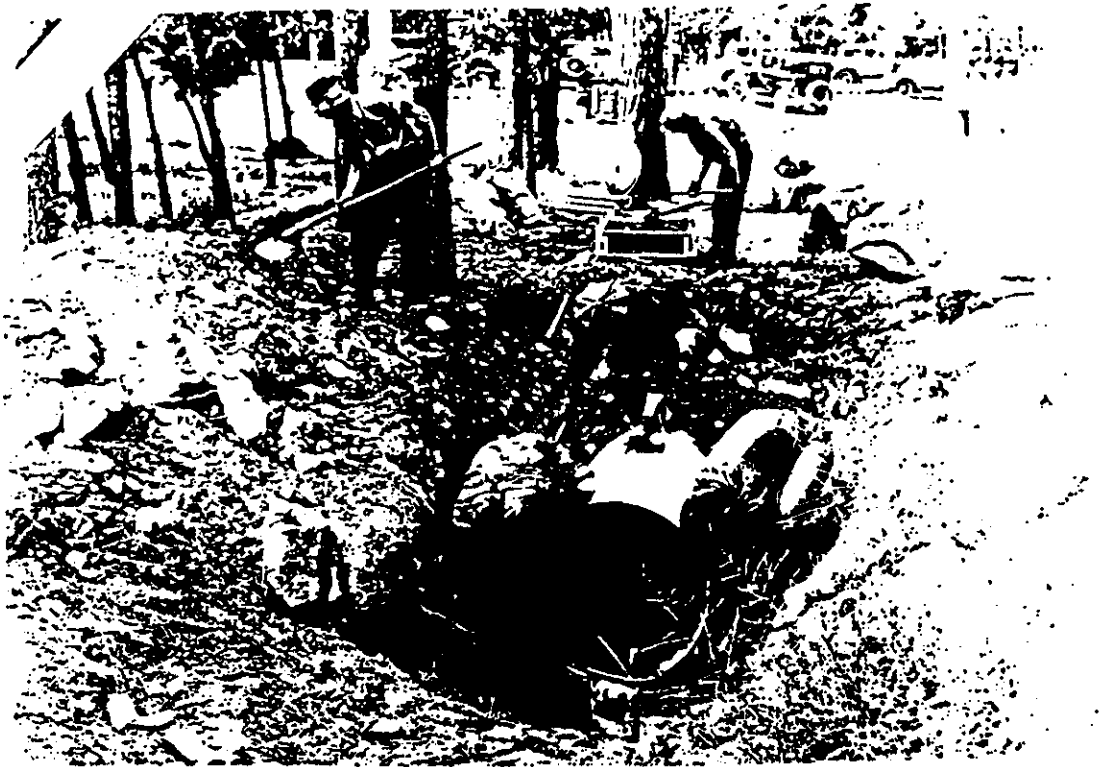


Figure 13. Village Loop Drive Headwall #1 under construction, September 1934. (CCC Reports, GCNP Study Collection)

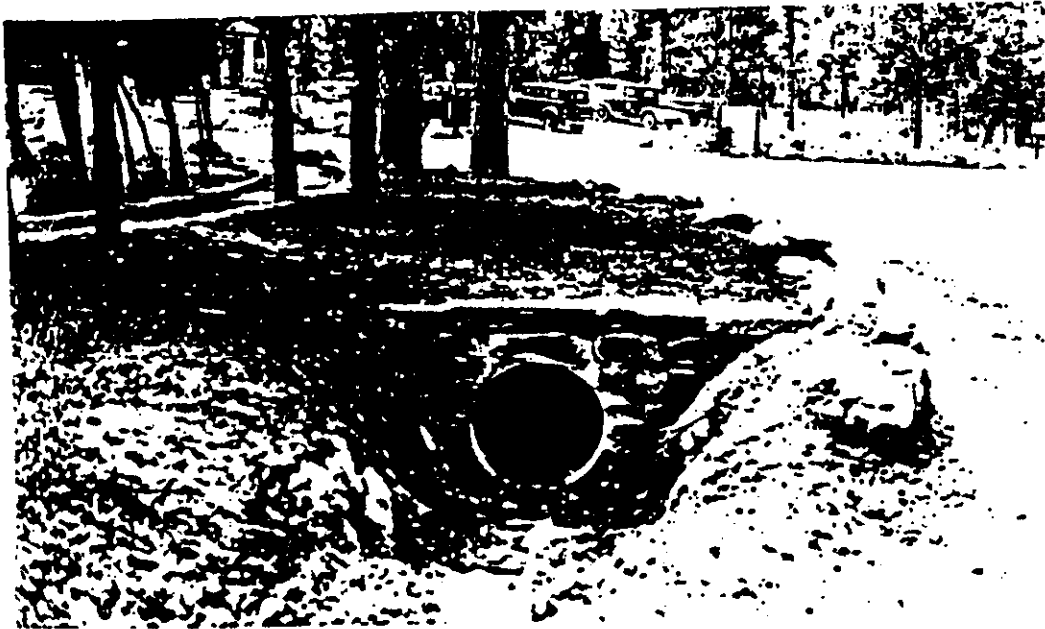


Figure 14. Village Loop Drive Headwall #1 completed, September 1934. (CCC Reports, GCNP Study Collection)



Figure 15. C.C.C. crew landscaping above Village Loop Drive
Headwall #1. (CCC Reports, GCNP Study Collection)



Figure 16. C.C.C. culvert construction or reconstruction at what appears to be the intersection of Apache Street & Center Road. Apache Street Headwall #1 would head the corrugated pipe in the foreground. (GCNP Study Collection #4693)



Figure 17. Avenue A (Apache Street) road grading, 17 July 1935. Apache Street Headwall #1 (right) and #2 (left). (GCNP Study Collection #2912)



Figure 18. Boulder Street Headwall #1, February 1935. (CCC reports, GCNP Study Collection)



Figure 19. Headwall at southwest corner of Boulder Street and Center Road. The top of Boulder Street Headwall #1 is visible across the street. (From December 1936 Construction Report, GCNP Study Collection)

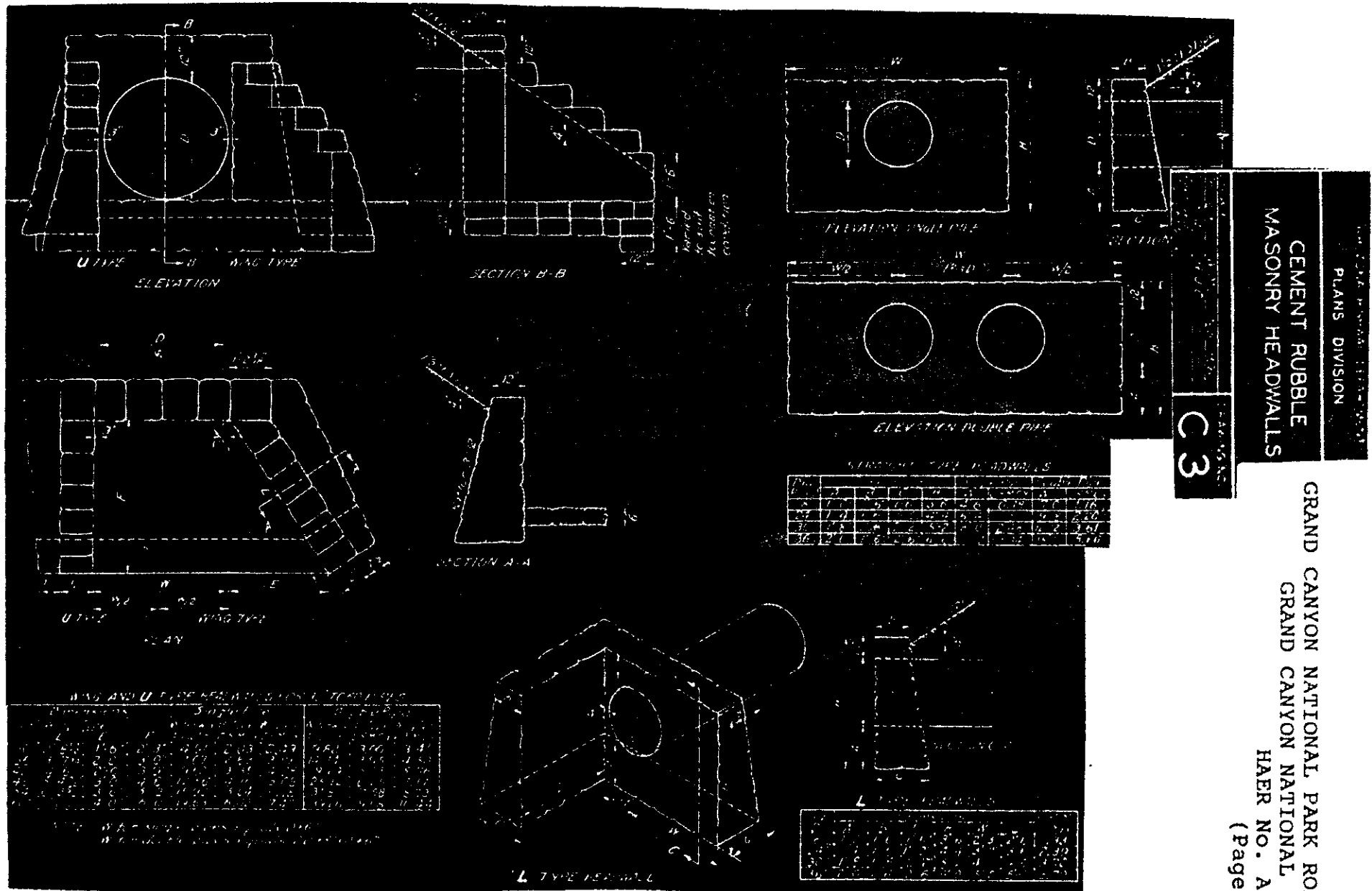


Figure 20. Plans of the Arizona Highway Department for masonry headwalls, 1936. (Plans and drawings cabinet, Railway Depot)

GRAND CANYON NATIONAL PARK ROADS
 GRAND CANYON NATIONAL PARK
 HAER No. AZ-35
 (Page 19)

PLANS DIVISION
 CEMENT RUBBLE
 MASONRY HEADWALLS
 C 3

related structures, retaining walls, and footpaths existing today within this area of proposed road reconstruction were built during this period.¹⁶

DESCRIPTION

The natural landscape surrounding the road-related structures under consideration is much as it was in 1936. Old photographs of Grand Canyon Village and of road construction projects within the village indicate the same grass ground cover and the same preponderance of ponderosa pine, pinon pine, and juniper. Some of today's trees along the roads are recognized in their youth in 1930s photographs. They have not survived by chance. Landscape engineers have been involved in national park roadway engineering since the early 1920s, and construction reports of the 1930s indicate that great care was exercised to disturb the landscape as little as possible during Grand Canyon Village projects.

The nearby built landscape has changed considerably. Prominent structures such as the old administration building; Fred Harvey garage, mule stable, and dormitory; Babbitts store building; the post office; the 1929 administration building (Ranger Ops); and residences appear today much as they did in the 1930s, but other features are radically different. A segment of road now passes north of the hollow and mule stable, and the mule corral with its barbed wire fence is gone. The terrain between Village Loop Drive and Babbitts store has undergone a number of revisions, such that it would be unrecognizable to a 1930s visitor. Principally, the area north of the store once had more parking space and did not have the road leading to today's shuttle bus stop.

Perhaps the greatest aesthetic difference between the 1930s and today, which is pervasive in the park (and the nation), is the relationship of rustic style masonry road structures to modern asphalt wearing courses. The natural relationship of crushed-gravel and oil-mixed gravel roads of the 1920s/1930s to limestone and sandstone walls--all materials quarried from the same local pits--is lost with the use of black bituminous surface materials. Some national parks such as Zion use specially-chosen local aggregate to chip seal their roads, thus mimicking (with partial success) nearby geologic formations and to some degree matching masonry road structures for aesthetic purposes. This is not done in Grand Canyon Village.

CONCLUSIONS/SIGNIFICANCE

The culvert headwalls and road retaining walls considered in this project are significant for their association with the prodigious accomplishments of the Civilian Conservation Corps within western national parks. Built during the peak years of CCC activities, these structures represent a conscious attempt to conform to the tenets of rustic architecture popular at the parks from the 1920s through the 1940s. Constructed of native sandstone and limestone from local quarries and purposely rough-mortared, the walls attract no attention to themselves; rather, they complement the landscape while serving the utilitarian purpose of supporting road and drainage structures.

ENDNOTES

1. A summary of early roads to the south rim of Grand Canyon and within today's park boundaries can be gleaned from "Excerpts from Report Made Jan. 25, 1910, to Forest Supervisor F.C.W. Pooler, on Roads and Trails in Grand Canyon Division," no author nor date; W.W. Crosby, GCNP Superintendent, to the Director, letter, 7 August 1923; Arno Cammerer, Acting Director, to W.W. Crosby, letter, 17 August 1923; M.R. Tillotson, Assistant Engineer, to Superintendent Crosby, memorandum, 3 September 1923; W.W. Crosby to the Director, letter, 26 September 1923; M.R. Tillotson to J.E. Shirley, Manager, Transportation Department, Fred Harvey Company, letter, 3 October 1927; M.R. Tillotson to the Director, letter, 24 December 1931; H.C. Bryant, Superintendent, to the Files, memorandum, 17 January 1944; and H.C. Bryant to Horace M. Albright, letter, 12 July 1949; all in Reference File--Roads, Grand Canyon National Park (GCNP) Library, GCNP.

2. Frank A. Waugh, A Plan for the Development of the Village of Grand Canyon, Ariz. (Washington: Government Printing Office, 1918), 7-11, attached map; Laura Skawski, untitled draft of research into the development of Grand Canyon Village, GCNP Professional Services Building, GCNP. Ms. Skawski's thoughtful landscape contexts sketch the village's development history, and refer often to the City Beautiful movement.

3. James W. Woodward, Jr., Janus Associates, Inc., "Grand Canyon Village Historic District," National Register of Historic Places nomination, 19 May 1989, 8.8-9.

4. Woodward, 8.10-8.11; NPS Landscape Engineering Division, "Grand Canyon National Park General Plan Community Development," sketch map, 24 June 1924, copy in Professional Services building, GCNP.

5. W.R.F. Wallace, Associate Highway Engineer, "Final Construction Report (1927-1928) on Grand Canyon National Park Highway System, Sections 1A1, Rectification and Surfacing, 1A2, 2A1, 2B Grading and Surfacing, 2A2 Surfacing and 1C2 Grading," report, 1929, Grand Canyon National Park Construction Reports, 1926-1954 Folder, Accession #3594, Box 1 of 2, GCNP Study Collection.

6. Waugh, 10.

7. Woodward, 8.17.

8. W.R.F. Wallace, "Final Construction Report--Grand Canyon Village Road Route 2 Portion of Section 'A'," report, 10 May 1930, Grand Canyon National Park Construction Reports, 1926-1954, Accession #3594, Box 1 of 2, GCNP Study Collection, GCNP.

9. Woodward, 8.17.

10. C.M. Carrel, park engineer, "Avenue 'A' - Grading, Drainage, Gutters and Surfacing," project report with photographs, undated [c. mid-1936]; M.R. Tillotson, Superintendent, "Final Construction Report on Service Roads," report, 28 March 1931; both reports in Grand Canyon National Park Construction Reports, 1926-1954, GCNP Study Collection, GCNP.

11. Woodward, 8.20; Skawski research.

12. Conrad L. Wirth, "Civilian Conservation Corp Program of the United States Department of the Interior, March 1933 to June 30, 1942," a report to Secretary of the Interior Harold L. Ickes, January 1944, copy in E.C.W. (CCC) Documents folder, Box #10, GCNP Study Collection, GCNP, 14, 30; J.V. Fish, Camp Superintendent, "General Report on ECW Camp N.P. 2 for Second Enrollment Period October 1, 1933 to April 1, 1934," report, [1934], Location 157.04, Box #1, Folder #1, GCNP Study Collection, GCNP.

13. Alfred C. Kuehl, Landscape Architect, "Summary Report--E.C.W. Work Projects C.C. Camp Number 819--June 1 - Oct 15," report with photographs, undated [1933], Accession # 157.04, Box #4, Folder #4, GCNP Study Collection, GCNP; "CCC Yearbook: Company 819, Grand Canyon, Arizona," in Box #10, E.C.W. (C.C.C.) Documents folder, GCNP Study Collection, GCNP.

Company 847 arrived at Grand Canyon Village in October 1934 and established Camp NP-4-A on Avenue C. These men remained at the village for several years, but apparently worked more on trail building and maintenance, insect control, forest fire control, and telephone line construction than on road-related projects. See "CCC Company 847," historical report, 1936, Box #10, E.C.W. (C.C.C.) Documents folder, GCNP Study Collection, GCNP and Woodward, 8.24.

14. Kuehl, "Summary Report, June 1 - Oct. 15."

15. Kuehl, "Summary Report--June 1 - Oct. 15"; Reports of the work of the Civilian Conservation Corps at Grand Canyon Village occupy more than ten boxes within the Grand Canyon Study Collection. It is important to note that many of these reports contain photographs of work underway which are not necessarily found in the park's photo collection. The author reviewed each report and inclusive

photos--as well as several hundred relevant photos in the photo collection, and found no instance of CCC men repairing an existing masonry or stacked-stone headwall.

16. None of the final construction reports and CCC reports in the Grand Canyon Study Collection contain narrative identifying specific retaining walls or headwalls constructed by park forces or the CCC. Identification requires analysis of photographs, sketches, and maps in combination with road or maintenance projects underway.

WORKS CITED

Full citations are given in the endnotes of this report. All sources were obtained from various offices and archives at Grand Canyon National Park (GCNP):

GCNP LIBRARY

- Reference File, Roads, microfiche.
- Superintendents' Monthly Reports, microfiche.

The library also holds miscellaneous files of roads and the CCC on microfiche which were reviewed but unhelpful; and Louis Lester Purvis, The Ace in the Hole (Columbus, GA: Brentwood Press, 1989), which is a history of CCC Company 818 and camps NP-1-A and NP-3-A at Grand Canyon, which was also unhelpful for this project

GCNP STUDY COLLECTION

- Grand Canyon National Park Construction Reports, 1926-1954.
- E.C.W. (C.C.C.) Documents, reports with photographs.
- Old Roads & Trails in the Park, 1923-1944.
- Patricia Mott to Division Chief Resource Management et al, memorandum, 28 November 1983, Accession #159.11, Box 2, is a secondary work which itemizes CCC projects by year within GCNP. It provides very little detail, however.
- GCNP Photograph Collection. More than 17,000 photographs are within the collection and computer indexed by keyword. Logical keywords were searched and several hundred photographs reviewed, some of which were used in this report.

PROFESSIONAL SERVICES

- Construction drawings and microfiche records are indexed, and stored in the upper floor of the railway depot. A search of all road-related drawings was made within the index, and an inspection of drawings which seemed promising were reviewed.

FIELD STUDIES

- The author physically inspected and photographed the structure and surrounding landscape in the company of J.R. Kirkaldie of the NPS Denver Service Center.

INTERVIEWS

- The author spoke with Doug Brown and Brad Travers of Professional Services and with personnel at the library and study collection concerning the structures and potential sources.