

ICEBERG ROCK STAIRCASE  
Carlsbad Caverns National Park  
727 Carlsbad Cavern Highway  
Carlsbad vicinity  
Eddy County  
New Mexico

HABS NM-227  
*HABS NM-227*

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

HISTORIC AMERICAN BUILDINGS SURVEY  
National Park Service  
U.S. Department of the Interior  
1849 C Street NW  
Washington, DC 20240-0001

# HISTORIC AMERICAN BUILDINGS SURVEY

## ICEBERG ROCK STAIRCASE

HABS No. NM-227

**Location:** 727 Carlsbad Cavern Highway, Carlsbad Caverns National Park, Carlsbad vicinity, Eddy County, New Mexico

The coordinates for Carlsbad Caverns National Park (taken at the Visitor's Center) are 32.175373 N and -104.444190 W, and they were obtained through Google Earth in August 2013 with, it is assumed, WGS 1984. There is no restriction on the release of the locational data to the public.

**Present Owner:** National Park Service, US Department of the Interior

**Present Occupant:** National Park Service, US Department of the Interior

**Present Use:** Scheduled for Demolition

**Significance:** Iceberg Rock Staircase at Carlsbad Caverns National Park is the last remaining section of wood stairs from the pre-World War II period of cave tourism. Although discovered decades earlier and mined for guano by commercial interests, the extensive scenic qualities of Carlsbad Cavern were not widely known until the early 1920s. A party of Carlsbad citizens guided by local cave explorer Jim White toured the cave in 1922 and immediately began promoting its unique features to attract visitors. On October 25, 1923 Carlsbad Cave became a National Monument under the jurisdiction of the National Park Service. Because National Monument status came with little funding, the initial development of a tourist infrastructure within the cave was sponsored by the Carlsbad Chamber of Commerce and completed by Jim White and local work crews. At first access was only available via a guano hoist bucket through the cavern ceiling or a makeshift collection of wall-mounted wood ladders and hand grips at the natural entrance. Widespread publicity for the wonders of the cavern meant that the early crowds quickly outstripped the available facilities.

In 1925 the Carlsbad Chamber of Commerce hired Jim White to build the first staircase from the natural entrance into the cavern. Although staircase access was a great improvement, touring the caverns was still a strenuous five-hour expedition. Throughout the next decade, particularly after the arrival of the first NPS superintendent, Thomas Boles, in 1927, underground trails were almost continually added, modified and repaired. Wood staircases, platforms, bridges and parapet walls throughout the caverns were essential to the increasingly popular program of public tours.

Iceberg Rock Staircase was built c. 1926, and then used for incoming tour traffic only starting with the construction of the Green Lake Room trail to the north of Iceberg Rock in spring 1929. Known as "Fat Women's Misery," eliminating a steep climb on this staircase was an early tour route improvement.

Carlsbad Cave became Carlsbad Caverns National Park on May 14, 1930, and was already one of the most prominent tourist sites in the Southwest. Shortly thereafter the first elevator service in the cavern was introduced, allowing shorter and more frequent tours. By World War II, Carlsbad Cavern had reached an impasse between its rapid development as a tourist attraction, with the attendant crowds, and the desire among NPS officials for a more professional, science-based presentation. In 1943, a short connector trail allowed regular tours to bypass the Iceberg Rock Staircase altogether, and it was used only for smaller "walk-out" groups foregoing use of the elevator. Continued improvements to the trail around the west side of Iceberg Rock meant that the Staircase was used as secondary, "short-cut" route starting in the mid-1950s. The wood staircase documented here survived this period of improvement because it was removed from the main tour route.

Historian: Lisa Pfueller Davidson, Ph.D., HABS Staff Historian

## PART I. HISTORICAL INFORMATION

### A. Physical History:

1. Date of erection: c. 1926
2. Architect: None
3. Original and subsequent owners, uses: The staircase has been owned and used by the National Park Service for tours of Carlsbad Cavern and as a staff-only short-cut route.
4. Builder: The staircase was built and maintained by Carlsbad Caverns National Park staff carpenters using lumber and tools that had to be carried in to the site.
5. Original plans and construction: Design drawings or plans have not been located. This utilitarian structure was planned in an informal manner as the staff carpenter responded to site conditions. It existed in some fashion as early as 1926, but was likely substantially rebuilt a few years later.
6. Alterations and additions: The staircase has been repaired over the years, with some stair treads replaced, and reconfiguration of the upper and lower sections. Starting in spring 1929, the Iceberg Rock Staircase (known as Fat Women's Misery) was only

used by tours on the way in from the natural entrance. In spring 1943, the staircase became a secondary short-cut route because trail alterations directed both incoming and outgoing tour traffic through the Green Lake Room. In the early 1950s, the trail was again altered to allow travel closer to the west side of Iceberg Rock, while the staircase continued to be a short-cut only.

B. Historical Context:

Carlsbad Caverns National Park is located approximately 28 miles southwest of Carlsbad, New Mexico in the desert landscape of the Guadalupe Mountain foothills. Carlsbad Cavern was formed when ground water percolated through porous limestone, hollowing out massive spaces and creating fantastic stalactites, stalagmites and other unique formations. Starting in the early 1920s, visitors gathered to tour its impressive underground spaces. At first access was only available via a guano mining hoist bucket through the cavern ceiling, or a makeshift collection of wall-mounted wood ladders and hand grips at the natural entrance. By the late 1920s, a series of wood stairs, dirt trails, and ramps had been developed throughout the Main Corridor and Big Room. The Iceberg Rock Staircase, while extensively repaired over the decades, may be the last remaining section of wood stairs from this first generation of tourist infrastructure in the Cavern. It is located about a mile into the Main Corridor, to the east of Iceberg Rock. This area has always been part of the public tour, but the exact trail route has been altered several times, eventually by-passing this staircase and turning it into a staff-only short cut. The Iceberg Rock Staircase illustrates the development of tourism at Carlsbad Cavern and how its visitor access and infrastructure has evolved up to the present.

The earliest years of Carlsbad Cavern link the economic forces of mining and tourism in eastern New Mexico. The extensive scenic qualities of Carlsbad Cavern were not appreciated or widely known until the early 1920s. At the turn of the twentieth century, the City of Carlsbad was known for its mineral springs and as a railroad town. The large population of Mexican Free-Tail bats living near the natural entrance to Carlsbad Cavern created a valuable resource with thick layers of guano, or bat droppings, on the cave floor. Guano was a sought after fertilizer and the mining rights for this supply were first purchased by local resident Abijah Long in 1903, and changed hands every few years. Carlsbad guano was shipped to the agricultural fields of California until the quality of the supply began to wane in the late 1910s. Various local residents, including Long, claim to have first discovered Carlsbad Cavern. Although evidence for a precise discovery date is thin, there does seem to be agreement that Jim White, a local cowboy, was the first to extensively explore the Cavern beyond the bat cave at the natural entrance.<sup>1</sup>

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<sup>1</sup> For a brief summary of the various claims, see Frederick Earle MacVaugh, "Preserving the Underground: The Creation of Carlsbad Caverns National Park, 1922-1930," (MA Thesis, University of Texas, El Paso, May 2000), 8-9, 19-25. On guano mining see Hal K. Rothman and Daniel Holder, *Promise Beheld and the Limits of Place: Historic Resource Study of Carlsbad Caverns and Guadalupe Mountains National Park and Surrounding Areas*. (Southwest Regional Office, National Park Service, 1998), 144-145.

Jim White remained the constant at the site, working for most of the various mining companies and continuing to explore the Cavern.<sup>2</sup> His family and early work crew continued to live in the wood quarters built by the guano mining company near the hoist bucket shaft. The General Fertilizer Company of California was last owner of the property before transfer to the National Park Service. Two other extraction industries emerged in the region during the 1920s - oil drilling and potash (potassium chloride) fertilizer mining. Oil and potash, along with the tourism, would prove to be more economically viable than local guano mining.

The start of Carlsbad Cavern as a tourist attraction is often dated to September 1922 when Jim White led a party of local Carlsbad leaders and residents through the cave.<sup>3</sup> The Carlsbad Chamber of Commerce immediately began promoting its unique features to encourage visitors. They were able to quickly attract the attention of federal officials. A Government Land Office official named Robert Holley made the first inspection of the Cavern in 1923, in order to assess its feasibility to become a National Monument. After meeting with Jim White and taking a tour, Holley was deeply impressed with this "handiwork of the Great Architect."<sup>4</sup> He recommended the federal government acquire this natural wonder and make it available to the traveling public. It is also interesting to note that in his description of touring the caverns, he offered this assessment of the "sheer descent of 100 feet" in the Iceberg Rock area:

Here a huge rock has dropped into the cave forming two passage-ways, both of which are extremely difficult to get through, as they are filled up with big, ragged rocks... It will be necessary to construct a ladder-way and walk ... in order to make the travel safe.<sup>5</sup>

Holley described members of his party helping each other down a seven foot drop, squeezing through a small hole, and navigating another eight foot drop before they could resume along the rough trail.

On October 25, 1923, Carlsbad Cave became a National Monument under the jurisdiction of the National Park Service, which had been created less than ten years before in 1916. National Monuments were often sites of natural or archeological significance with smaller acreage than a National Park. While protection from commercial interests was part of the motivation for National Monument designation, an active tourism program dominated management of the site from the start. In 1924, geologist Willis T. Lee began the first mapping expeditions of the Cavern. Lee's work was sponsored by the National Geographic Society and he was granted temporary National Monument custodian status so he would have the authority to

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<sup>2</sup> Jim White's continued involvement at Carlsbad Cavern and his self-published account, (*Jim White's Own Story: The Discovery and History of Carlsbad Caverns as told to Frank Ernest Nicholson*, 1932 [first edition]) have made his role in the discovery the most widely known. His book was released in several editions and sold at the Cavern. His family continued to promote his contributions with a later book: Ruth Caiar and Jim White Jr. *One Man's Dream: The Story of Jim White, Discoverer and Explorer of the Carlsbad Caverns*, 1957.

<sup>3</sup> MacVaugh, 28.

<sup>4</sup> Typescript, Robert A. Holley, "Report on the Carlsbad Cave," (1923), 9. Box 211, Entry 10 - Central Classified Files, 1907-49, Record Group 79 - Records of the National Park Service, National Archives and Records Administration II, College Park, MD [hereafter Entry 10, RG 79, NARA II].

<sup>5</sup> Holley, "Report on the Carlsbad Cave," 12.

restrict trespassing.<sup>6</sup> Two articles in *National Geographic Magazine* - one in January 1924 and a second in September 1925 - promoted the new National Monument to a broad audience.<sup>7</sup> Articles about Carlsbad Cavern appeared in newspapers, travel magazines, and popular science journals throughout the country and overseas.<sup>8</sup>

While on site Lee observed the hazardous conditions for tourists. Beyond the need to lower through the cave ceiling via a guano bucket, hazardous dirt roads required visitors to hire a truck to drive the around 30 miles to the site from the town of Carlsbad. He informed federal officials that, in addition, access via the guano shaft was uncertain, since it was still the property of General Fertilizer, now in bankruptcy receivership. He advocated for construction of a tunnel or a staircase from the natural entrance.<sup>9</sup> NPS Acting Director Arno Cammerer was not inclined to support a new tunnel, but did seek funding for a staircase.<sup>10</sup> Members of New Mexico's Congressional delegation offered their support. For example, Congressman John Morrow of New Mexico's 1st District wrote to Secretary of the Interior Hubert Work regarding his interest in introducing legislation to support the further development of cave tourism, including funding for lighting, walks and stairways, and guides.<sup>11</sup>

In spite of federal interest, development of the National Monument remained largely controlled by local efforts and participants for the first few years. Because National Monument status came with little funding, the initial development of a tourist infrastructure within the cave was sponsored by the Carlsbad Chamber of Commerce and completed by Jim White and his work crews. In November 1923, the Carlsbad Chamber of Commerce urged National Park Service Director Stephen Mather to appoint Jim White the official guide, a position he held for a number of years.<sup>12</sup> Jim White also served as the foreman for the first trail building crews. After Lee's tenure as custodian, William McIlvain, a local banker and Chamber of Commerce President, took over the job in fall 1924. Although the position only came with a nominal \$12 a year salary, the custodian served as the federal caretaker and guided all decisions regarding the new National Monument.<sup>13</sup> Widespread publicity for the wonders of the cavern meant that the early crowds quickly outstripped the available facilities. In addition to lobbying politicians and government agencies for support, McIlvain worked diligently to promote the Cavern and accommodate the growing crowds.

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<sup>6</sup> Letter, Acting Director to Pinkley (Regional Superintendent), (28 March 1924), Box 212, Entry 10, RG 79, NARA II.

<sup>7</sup> See Willis T. Lee, "A Visit to Carlsbad Cavern," *National Geographic Magazine* 45, no. 1 (January 1924): 1-32; and "New Discoveries in Carlsbad Cavern," *National Geographic Magazine* 46, no. 3 (September 1925): 301-320.

<sup>8</sup> MacVaugh, 36-38. Rothman and Holder also discuss the early conditions and promotional efforts for Carlsbad Cavern. See esp. Chapter 6.

<sup>9</sup> Letter, W. T. Lee to Director [Stephen Mather], (14 July 1924), Box 214, Entry 10, RG 79, NARA II.

<sup>10</sup> Letter, Arno Cammerer to Senator Jones, (22 July 1924), Box 214, Entry 10, RG 79, NARA II.

<sup>11</sup> Letter, Rep John Morrow to Hubert Work, (4 December 1924), Box 210, Entry 10, RG 79, NARA II. New Mexico Senator Holm Bursum also contacted the Secretary of the Interior after receiving a letter from McIlvain lobbying for Carlsbad Cavern tourism. See Letter, Holm O. Bursum to Hubert Work, (14 November 1923), Box 215, Entry 10, RG 79, NARA II.

<sup>12</sup> Letter, Carlsbad Chamber of Commerce to Stephen Mather, (10 November 1923), Box 212, Entry 10, RG 79, NARA II.

<sup>13</sup> Letter, Arno Cammerer to W. F. McIlvain, (28 August 1924), Box 210, Entry 10, RG 79, NARA II.

In January 1925, McIlvain reported to NPS headquarters that 448 people had been taken through the Cavern since September, using the guano bucket and then a combination of ladders and dirt stairs to conduct the tour. Jim White also had done some work on the approach road to the site.<sup>14</sup> McIlvain announced his intention to have a staircase built from the natural entrance to eliminate use of the guano bucket. The Chamber of Commerce would pay for this improvement, feeling that it was essential to have at least a temporary stair before the start of the 1925 summer tourist season, particularly to avoid the continued risk of using the guano hoist.<sup>15</sup> Jim White and his work crew were paid \$1500 to construct a wood staircase from the edge of the natural entrance down to the floor of the Main Corridor.<sup>16</sup> The steep flight of stairs remained in use for several years and represented a great improvement from slowly lowering one or two visitors at a time by guano bucket. Director Mather reported positive feedback from the first visitors to use the new stairs in March. However touring the caverns was still a strenuous five to six-hour expedition. Mather also noted that the town of Carlsbad was moving forward with road improvements.<sup>17</sup> McIlvain expressed the willingness of the local business community to sponsor this work, but with the hope that some reimbursement might be available in the future.<sup>18</sup>

Late in 1925, McIlvain wrote anxiously to Mather about his desire to keep development of Carlsbad Cavern in local hands for the short term. He argued that Jim White would do a better job managing local men and stretching limited trail construction funds than a foreman Mather and Cammerer proposed to send in from Grand Canyon:

Mr. White has had a good deal of experience in handling men, is extremely anxious to have this work done, has the success of the cavern at heart and I believe his work will be satisfactory. I had him put in the stairway, which was very successful.<sup>19</sup>

McIlvain also offered specifics on the amount of trail construction he proposed to accomplish with the available funds:

In talking this matter over with Jim, he states that he is willing to undertake this job and that he can build the trail at lease [sic] as far as the \$5,000 will go, which in all probability would not be further than the Devil's Den, or possibly between the Devil's Den and King's Palace. After we reach the Big Room, then we would want some advice as to trails for my own satisfaction and Jim's likewise, but the present funds will not get us that far in. It is very important in my judgment, that this trail be completed from the top to the Devil's Den, and as much further as our funds will go, but this part is imperative. It is my judgment that these trail should

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<sup>14</sup> Letter, McIlvain to Cammerer, (3 January 1925), Box 214, Entry 10, RG 79, NARA II.

<sup>15</sup> Ibid. See also MacVaugh, 121-123.

<sup>16</sup> Local carpenter John Nevenger worked on this and a number of staircases in the Caverns. According to his great-grandson Phillip Gregory, it was Nevenger's idea to use sharpened Model T axels for anchor rods. Phone conversation with author, May 28, 2013.

<sup>17</sup> Letter, Stephen Mather to Arno Cammerer, (24 March 1925), Box 211, Entry 10, RG 79, NARA II.

<sup>18</sup> Letter, McIlvain to Mather, (13 April 1925), Box 212, Entry 10, RG 79, NARA II.

<sup>19</sup> Letter, McIlvain to Mather, (5 December 1925), Box 212, Entry 10, RG 79, NARA II.

be completed NOW [emphasis original], taking up the matter of installing the pump and water lines on top and the buildings at a later date.<sup>20</sup>

Carlsbad Caverns National Monument was starting to receive field visits from NPS engineers and landscape architects evaluating construction of buildings and sanitation issues, as well as trail design and construction.<sup>21</sup> However Cammerer did agree that in light of the "fine work" Jim White did on the entrance stairs, he could be relied on to continue the pathway construction.<sup>22</sup>

The first official full-time National Park Service employee arrived at Carlsbad Caverns National Monument in spring 1927. Thomas Boles came from Hawaii Volcanoes National Park and initially took over McIlvain's custodian title before being officially named Carlsbad's first Superintendent. Boles remained at the helm of Carlsbad for the next twenty years, tirelessly promoting tourism to the site and managing tours. His supervisors in Washington, DC praised him as an excellent "contact man," skilled in talking to the public, whether giving tours, talks, or discussing the Cavern with visiting politicians. Many members of Congress and NPS officials took tours through the Cavern and offered thoughts on its development, such as a visit from Congressmen Cramton (head of the Interior Appropriations Committee), Morrow, French, and Taylor in October 1927. Boles offered a detailed account of this visit to NPS officials in DC and felt that there was support for developing "the Cave from a spectacular standpoint, rather than as a mere geological exhibit."<sup>23</sup>

Boles began overseeing the program of infrastructure improvements begun by McIlvain in 1925-26, both within the Cavern and on the surface. On-going projects included lighting and pathways in the Cavern, comfort stations, the approach road, parking, surface buildings for equipment storage, an office and the Chief Guide's residence, and a lunchroom concession.<sup>24</sup> Development of underground trails was a particular focus during the late 1920s. Wood staircases, platforms, bridges and parapet walls throughout the cavern were essential to the increasingly popular program of public tours.<sup>25</sup> In addition, the underground trails were nearly continually repaired, improved, and changed in response to the needs of ever larger groups.

In 1928, Boles submitted a report that provides a snapshot of conditions just as a major expansion effort for the trails got underway. He noted that the primary duties for himself, three permanent guides, and a force of seasonal guides was trail and stairway maintenance, conducting tours, and protecting cave formations from the public. Facilities at this time included about seven miles of underground trail with lighting, a small powerhouse, a checking station, a guide cottage, a bunk house, and basic electrical and sewerage systems. Tours began at 10:30 every morning and lasted six and a half hours. Adults were charged \$2 each and children were free. Tours included a 30 minute lunch break when food could be purchased from the concessioner -

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<sup>20</sup> Letter, McIlvain to Mather, (5 December 1925), Box 212, Entry 10, RG 79, NARA II.

<sup>21</sup> Letter, Arno Cammerer to Daniel Hull, Chief Landscape Engineer, (3 December 1925), Box 210, Entry 10, RG 79, NARA II.

<sup>22</sup> Letter, Cammerer to McIlvain, (12 January 1926), Box 212, Entry 10, RG 79, NARA II.

<sup>23</sup> Letter, Boles to A. E. Demaray, Assistant Director, (21 November 1927), Box 210, Entry 10, RG 79, NARA II.

<sup>24</sup> See Letter, McIlvain to Mather, (21 April 1926), and (8 September 1926), Box 210, Entry 10, RG 79, NARA II.

<sup>25</sup> Letter, Demaray to Director, (13 August 1927), Box 211, Entry 10, RG 79, NARA II.

Cavern Supply Company - and eaten in the "underground lunchroom."<sup>26</sup> In spite of the progress in the first few years, including revising the entrance staircase to make the climb easier, touring Carlsbad Cavern was still a rigorous experience. As one observer wrote to Stephen Mather in July 1928: "To my mind the most serious objection to urging the general public to come and see these caverns is the very large amount of strenuous climbing up and down underground which it is necessary for the tourist to do."<sup>27</sup> A 1928 trail guide and map shows the trail route going along the steep grade at the east of Iceberg Rock, presumably using the earliest iteration of the current stairway (Figure 1).<sup>28</sup> This steep route along the east side of Iceberg Rock was used for all early trips between the Main Corridor and the Big Room.<sup>29</sup> Extensive improvements to underground trails still were needed to make Carlsbad Caverns National Monument a first rate tourist experience.

After the visit from Cramton and the Congressional delegation, Carlsbad Caverns received funds to greatly expand underground trails and lighting in 1929. New trail funds of \$10,000 for fiscal year 1929 represented a huge increase from \$926.68 in 1927 and no new trail funding in 1928. Boles planned to both expand public access by extending trails into the "Lower Room" and greatly improve the trails in the Main Corridor. He proposed that eliminating "dips" and "humps" in the steep areas of the Main Corridor (such as Devil's Den and Iceberg Rock) would make the entire trip more manageable, mitigating the need for an expensive elevator. In addition to new trails, Boles requested \$2,500 for trail maintenance. These funds would go toward trail widening efforts allowing two-way traffic that would ease the movement of larger crowds.<sup>30</sup> As he often noted, costs for trail building at Carlsbad Cavern generally tended to be high because all materials had to be carried in to work sites and work done by hand to avoid damaging nearby formations.

Boles' trail development plans were shaped by Assistant Engineer Allison Van V. Dunn from the San Francisco NPS office. Dunn spent seven weeks at Carlsbad Cavern during February, March, and April 1929, overseeing trail construction.<sup>31</sup> He noted that with over 46,000 visitors in 1928 and a great increase with planned road improvements, ad hoc development for cavern tourism was no longer feasible. The trail system would need to be designed to meet the challenge of providing shorter tours to more people. Dunn described a number of current and proposed trail improvements. During his time at Carlsbad, grades were reduced, trails rerouted and earth staircases replaced by wood ones with proper handrails in various areas between the Natural entrance and the Lunch Room. The Devil's Den was a particular focus, due to the difficult grades there. The solution involved both a tunnel and wood staircases.

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<sup>26</sup> Typescript, Thomas Boles, Superintendent "Carlsbad Cave National Monument" [1928], Box 210, Entry 10, NARA II.

<sup>27</sup> Letter, Frank Elliott to Stephen Mather, (9 July 1928), Box 214, Entry 10, RG 79, NARA II.

<sup>28</sup> *Trail Guide and Map to the Carlsbad Caverns*, (Carlsbad, NM: Cavern Supply Co., 1928), CAVE Library.

<sup>29</sup> Donald R. Standiford, *The Development of the Cavern Trail System and Other Visitor Facilities in Carlsbad Caverns* [typescript], (August 1964), 2. CAVE library.

<sup>30</sup> "Budget Estimate Justification, Fiscal Year 1929," Box 212, Entry 10, RG 79, NARA II.

<sup>31</sup> Allison van V. Dunn, "Report on Engineering Activities at Carlsbad National Monument, Spring 1929," Box 211, Entry 10, RG 79, NARA II.

Another section of trail built during spring 1929 involved a new outgoing route past the Green Room to the north of Iceberg Rock, leaving the east route for ingoing tours only. Several scenic rooms are located directly west and southwest of Iceberg Rock, including the Green Room, King's Palace, Queen's Chamber, and Papoose Room. In this period the area with the current Iceberg Rock stairway was referred to as "Fat Woman's Misery" due to the steep grade. Dunn writes that:

It was desirable to open this trail through the Green Room because it offers an easy route from the King's Palace up over the Iceberg. The old trail through the "Fat Woman's Misery" under the Iceberg is one of the most difficult stretches in the trip.<sup>32</sup>

Before this link past the Green Room was completed, a visit to the King's Palace was included in the return trip from the Big Room; visitors then had to climb "Fat Women's Misery" past the east Iceberg Rock to continue their journey out through the Main Corridor and natural entrance. The 1929 improvements routed outgoing tours through King's Palace to the new Green Room trail past the north side of Iceberg Rock (Figure 2).

Frank Kittredge, Chief Engineer in the San Francisco office, wrote to the NPS Director in November 1929 praising the work that had been done so far:

These trails are in fine condition and are an asset to the Cavern. Superintendent Boles advised that these trails have brought forth many favorable comments from visitors. The grade of the new stairways is light and the trails are roomy and run true to grade and alignment. These trails open up many very interesting rooms not previously touched and at the same time provides an *inbound and outbound trail* [emphasis added] which supports the traffic and greatly aids in operating the tours during heavy days. The need for such a system can readily be appreciated when we realize that at times there are 1,700 people in the cave at once.<sup>33</sup>

With the trail improvements in 1929 and 1930, the cost of maintenance was reduced but Boles continued to request \$2,500 for repairs and larger amounts to continue to expand the trail system. He noted, "Future travel and revenues of Carlsbad Cave depends entirely upon the proper development and maintenance of our trails and electric lighting system."<sup>34</sup> Kittredge also discussed Boles' continued rebuilding efforts for the oldest trails. Most significantly, the steep staircase and trail at the entrance was to be replaced with a series of winding switchback ramps, a solution considered more compatible with the setting and still in place today.<sup>35</sup>

As the operation became more complex and tourism continued to grow, a tension emerged between the "cowboys" - i.e. Jim White and his local repair and guide crew - and the more professional image desired by the National Park Service. Apparently Jim White had a

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<sup>32</sup> Dunn, "Report on Engineering Activities at Carlsbad National Monument, Spring 1929;" Standiford, 9.

<sup>33</sup> Letter, F.A. Kittredge to Director, (19 November 1929), Box 216, Entry 10, RG 79, NARA II.

<sup>34</sup> Appropriation Justification, (2 July 1929), Box 212, Entry 10, RG 79, NARA II.

<sup>35</sup> Letter, F.A. Kittredge to Director, (19 November 1929), Box 216, Entry 10, RG 79, NARA II.

severe drinking problem that also was beginning to affect his health, and although Boles was sympathetic, he did not feel that White could continue to serve as a NPS employee. Early in the 1929, White resigned his "Chief Guide" position and a number of his cronies who did not conform to stricter NPS management were let go. NPS officials welcomed the change, feeling that "cleaning out the old 'bat cave' crowd" was the right thing to do.<sup>36</sup>

Carlsbad Caverns National Monument became a National Park on May 14, 1930 and was rapidly becoming one of the most prominent tourist sites in the Southwest. Widespread publicity in this period included elaborate newspaper coverage in papers such as the *New York Times* and the *Los Angeles Times*.<sup>37</sup> An extensive drawing published in the *Los Angeles Times* on September 15, 1929 showed the cavern trails, including an artist's rendition of the steep staircase on the east side of Iceberg Rock (Figure 3). The Carlsbad Chamber of Commerce continued to distribute brochures and promote visiting the Cavern. The Santa Fe and other railroads serving New Mexico also advertised Carlsbad Cavern as a major attraction for many tourist excursion trains. A 1931 Santa Fe Railway brochure advertised a side trip to Carlsbad Cavern, similar to the "Indian Detours" offered by motor coach to Taos and other sites away from the rail lines. The text noted that "the progress made in the last four years in providing for the comfort and convenience of visitors has been phenomenal."<sup>38</sup> The Southern Pacific also offered special excursions to Carlsbad Cavern.<sup>39</sup>

Development of Carlsbad Cavern's tourist infrastructure continued in the early 1930s, aided by increased funding due to National Park status. A number of stone buildings were built on the surface, such as employee housing, a new generator building, bunk and mess house, terraced parking lots constructed, and improvements done on the approach road through Walnut Canyon.<sup>40</sup> In addition to the new switchback entrance trail, the most important change to cavern access was the construction of an elevator and its building (this building would become the nucleus of the current visitor's center). Construction of a passenger elevator began in 1930 and the new elevator building was completed by the end of 1932. The elevator could deposit those unable to negotiate the trails to a spot near the lunchroom at the bottom of the approximately 750-foot descent. However, the recommended and most common tour still involved walking in and out from the natural entrance.<sup>41</sup>

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<sup>36</sup> Letter, Fred L. Conner, Supervisor of Field Accounts to Director Horace Albright, (8 July 1929), Box 210, Entry 10, RG 79, NARA II. See also Memorandum, Cammerer to Albright, (22 May 1929), Box 210, Entry 10, RG 79, NARA II, which mentions the need to advise Boles on how to get rid of White and his cronies. White resigned in June 1929 and spent years afterwards lobbying to return and trying to generate sympathy for being "pushed out." He was given a concession to sell his booklet, *Jim White's Own Story*, but never returned to the NPS payroll. See correspondence in Box 212, Entry 10, RG 79, NARA II.

<sup>37</sup> MacVaugh, 69-70.

<sup>38</sup> Brochure, Santa Fe Lines, "Carlsbad Caverns, New Mexico," (1931), Box 210, Entry 10, RG 79, NARA II.

<sup>39</sup> Ford Sibley, "My Trip Through Carlsbad Caverns National Park," Southern Pacific Railway, (1937), Box 850, Entry 10, RG 79, NARA II.

<sup>40</sup> See reports and correspondence in Box 211, Entry 10, RG 79, NARA II for information on construction during this period.

<sup>41</sup> "Final Report on the Excavation of a Shaft and the Construction of a Passenger Elevator," by Walter G. Attwell and Ira S. Stinson, (25 January 1932), Box 215, Entry 10, RG 79, NARA II. The elevator was dedicated in January 1932 with a temporary wood building sheltering it. A permanent stone building was built during 1932.

The underground trails continued to require constant maintenance and improvements. As Superintendent Boles stated in his annual report for 1931:

From an operating standpoint, the most valuable construction work accomplished during the past and previous years has been the revision of our underground trails, and the elimination of most of our stairways. This has brought out much favorable comment, and has added much to the enjoyment of the Cavern by the visitors; and it is my sincere hope that our elevator will be used merely as an emergency exit and a convenience for handling supplies.<sup>42</sup>

Assistant Engineer Ira Stinson from the San Francisco field office was assigned to oversee underground trail work and all other improvements from March 1, 1932 until the end of the fiscal year in July.<sup>43</sup> Many of the improvements in this period involved updating staircases or removing obsolete trails and guard rails.<sup>44</sup> NPS Landscape Architect Herbert Kreinkamp expressed surprise in an inspection report that long straight runs of wood stairs were still in use for cavern tours. He specifically referred to the one at Devil's Den.<sup>45</sup> It was recommended that all staircases have a uniform plank tread of two by fourteen inches, rather than the variety of rise and run currently in use.<sup>46</sup> Director Albright felt that while this work was important, the only new underground trails built at Carlsbad should be linked to other projects such as the construction of the elevator.<sup>47</sup> Engineer Ira Stinson noted the importance of this maintenance to visitor safety:

On underground trails, because of the fact that the path may not be as visible as in the open, and because of the fact that the visitor is gazing around and overhead, extra care must be observed to keep the trail free from small rock and pebbles which might cause one to trip and sprain an ankle.<sup>48</sup>

In addition these daily repairs, the trail foreman and his small crew made small improvements in many areas, such as "cutting out a bad point here and straightening there." The results were generally longer trails that were praised by visitors for their gentler grades.<sup>49</sup>

It is likely that improvements were made to the Iceberg Rock stairs (now ingoing only) as part of this effort in the mid-1930s. The work was done by in-house crews, including the park

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<sup>42</sup> Superintendent's Report - Carlsbad Caverns National Park, (1931), Box 212, Entry 10, RG 79, NARA II.

<sup>43</sup> Letter, Frank A. Kittredge, Chief Engineer to Director, (30 January 1932), Box 212, Entry 10, RG 79, NARA II.

<sup>44</sup> Herbert A. Krienkamp, "Inspection Report - Carlsbad Caverns," (20 August 1932), Box 211, Entry 10, RG 79, NARA II. See also, Memorandum, Thomas Vint, Chief Landscape Architect, to Thomas Boles, (9 April 1931), Box 215, Entry 10, RG 79, NARA II.

<sup>45</sup> Herbert A. Krienkamp, "Inspection Report - Carlsbad Caverns," (29 November 1931), Box 211, Entry 10, RG 79, NARA II.

<sup>46</sup> Herbert A. Krienkamp, "Inspection Report - Carlsbad Caverns," (22 November 1932), Box 211, Entry 10, RG 79, NARA II.

<sup>47</sup> Memorandum, Director to Demaray, (15 October 1932), Box 211, Entry 10, RG 79, NARA II.

<sup>48</sup> Report of 1932 Field Activities - Carlsbad Caverns National Park, Box 212, Entry 10, RG 79, NARA II.

<sup>49</sup> Superintendent's Monthly Narrative Report, (May 1932), CAVE Library.

carpenter. Superintendent Boles wrote a budget justification for \$3000 in underground trail improvements during fiscal year 1934:

It is proposed to eliminate many steep grades and steps and otherwise improve the trails now in the cave as well as to construct an additional 750 feet of new trail to properly display additional features of the Caverns. The work is in line with the development program begun in 1930 and continued since that date with the exception of 1933 during which year no provision was made in our appropriation.<sup>50</sup>

A map of Carlsbad Cavern's underground trails dated April 1934 shows a multi-part staircase at the east side of Iceberg Rock (Figure 4). While the upper and lower sections differ from what is extant today, the basic configuration matches. The outgoing route at the north of Iceberg Rock via the Green Lake Room is shown as "existing trail - unimproved" in this drawing. Another Cavern trail map from November 1934 shows improved trails on both the east and north of Iceberg Rock, as well as an improved series of switchbacks leading from "Lunchroom Junction" towards King's Palace to the southwest (Figure 5).

Another drawing from February 1936 for "Proposed Cave Trail Improvements Iceberg and Green Lake Room Section," shows a long tunnel going under Iceberg Rock from the Green Lake Room to the south side, eliminating the long wood staircase at the east.<sup>51</sup> A letter from the regional geologist praised this plan, noting that in addition to the tunnel and short flight of concrete stairs, it would require a short connecting link between the two trails near the upper end of the Iceberg.<sup>52</sup> However this proposal remained unbuilt in spite of being approved.<sup>53</sup> The Superintendent's *Monthly Reports* from 1936 indicate that the available funds were exhausted by May on other projects.<sup>54</sup> The procedure of technical support from the engineers in the San Francisco office continued, with work crews of Carlsbad Cavern staff and details of enrollees from the Civilian Conservation Corps camp assigned to the park. Reports and correspondence through the late 1930s frequently mention routine maintenance of underground trails, including resurfacing slippery trails and continuing to replace stairways with ramps. Much of this work was conducted during the winter and early spring, in order to prepare for and avoid in-season crowds.<sup>55</sup>

Although World War II generally caused a drop in automobile tourism, Carlsbad Caverns National Park still hosted a steady stream of visitors including many servicemen and women stationed at the large military installations in New Mexico and West Texas. Tom Boles cautioned that Carlsbad needed to prepare for even larger crowds with the revival of tourism in the post-war period; he served as superintendent until 1946. By the 1940s, Carlsbad Caverns had

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<sup>50</sup> Justification for Individual Cost Projects - Trail Construction, 1934, Box 212, Entry 10, RG 79, NARA II.

<sup>51</sup> NPS Office of Chief Engineer, Drawing 130-5108, "Carlsbad Caverns National Park, Proposed Cave Trail Improvements, Iceberg and Green Lake Room Section," (February 1936), eTIC, Denver Service Center.

<sup>52</sup> Letter, Vincent Vandiver, Regional Geologist, to Boles, (7 February 1936), Box 862, Entry 10, RG 79, NARA II.

<sup>53</sup> Letter, Conrad Wirth, Assistant Director, to Boles, (10 April 1936), Box 862, Entry 10, RG 79, NARA II.

<sup>54</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (May 1936), Box 850, Entry 10, RG 79, NARA II.

<sup>55</sup> See Boxes 850 and 851, Entry 10, RG 79, NARA II.

reached an impasse between its rapid development as a tourist attraction, with the attendant crowds, and the desire among NPS officials for a more professional, science-based interpretation. Park naturalists were assigned to Carlsbad for the first time and the popular "Rock of Ages" hymn-singing part of the tour was discontinued. Ned Burns, Chief of the Museum Division, wrote that he would like to see "more emphasis on the true significance of the cave formation and less on the fanciful and silly names given to them."<sup>56</sup> In 1943, Tom Boles oversaw a committee charged with making recommendations for improving the visitor experience that included a regional naturalist and landscape architect. This effort was in reaction to complaints about a lack of surface facilities and objections to feeling "herded" while on the tour. While some recommendations regarding operating procedure could be put in place immediately, others were slated for after war conditions abated, such as construction of new visitor buildings.<sup>57</sup>

In spite of wartime limitations, some improvement work on the trail system was undertaken. The *Annual Report* for 1941-42 noted that the wood stairway at Devil's Den was repaired and partially rebuilt. The stairway in the Green Lake Room was also rebuilt in this period.<sup>58</sup> Most of the remaining stairs in the Caverns were in the steep sections of the Main Corridor; those in the Big Room had been eliminated earlier.<sup>59</sup> In April 1943, a short cross-over trail was built near the Iceberg, connecting the ingoing and outgoing trails. This improvement only cost \$182 but allowed the tours to "by-pass five flights of stairs" - i.e. the Iceberg Rock staircase.<sup>60</sup> The connecting trail idea was first proposed as part of the Iceberg Rock tunnel in 1936. In 1944 the monthly reports include a number of references to work on the "short-cut" stairs. After changes to the trail, the Iceberg Rock staircase was no longer used for ingoing tours, but instead functioned solely as a "short-cut" between the top of Iceberg Rock and the trail to the lunchroom. The April 1944 report noted that "the top flight of stairs on the short-cut was rebuilt and removal of a large rock permitted adjustment of this flight to an easier standard riser and tread." Additional work on the short-cut stair was mentioned in May, June, and September of that year, with most of the park carpenter's time being spent on that project in the latter month.<sup>61</sup> The current configuration of the Iceberg Rock staircase likely dates to the alterations done in this period. A 1964 report on the trail system indicates that in this period the "short-cut" stairs were used for tour "walk-outs" -- i.e. the portion of the group that did not take the elevator to the surface after seeing the Big Room.<sup>62</sup>

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<sup>56</sup> Memorandum, Ned J. Burns, (26 July 1944), Box 848, Entry 10, RG 79, NARA II.

<sup>57</sup> Memorandum, Natt Dodge, Regional Naturalist to Region Three Director, (22 September 1943), Box 848, Entry 10, RG 79, NARA II.

<sup>58</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (August 1942), Box 851, Entry 10, RG 79, NARA II.

<sup>59</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (April 1936), Box 850, Entry 10, RG 79, NARA II.

<sup>60</sup> Carlsbad Caverns National Park, *Superintendent's Annual Reports*, (FY 1941-42; FY 1942-43), Box 849, Entry 10, RG 79, NARA II.

<sup>61</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (May, June, September 1944), Box 851, Entry 10, RG 79, NARA II.

<sup>62</sup> Donald R. Standiford, *The Development of the Cavern Trail System and Other Visitor Facilities in Carlsbad Caverns* [typescript], (August 1964), 3. CAVE library.

Monthly reports again document extensive repairs to the short-cut staircase in the immediate postwar years. In December 1946, the park carpenters renewed all the "bearing-blocks." Again in December 1947 an inspection revealed that one of the short-cut flights would have to be rebuilt. Reports a few months later offer some details on the process for rebuilding a flight of the short-cut stairs:

Most of the carpenter's time was utilized on cavern stairways. ...The carpenter is getting material ready to replace two flights of stairs in the cavern. The timbers will be cut to fit in the shop, which will decrease the time necessary to install them when the old stairs are torn out. The lumber will be treated with a preservative which leaves no odor.<sup>63</sup>

A month later the superintendent reported:

The carpenter has given the lumber for the short-cut stairway several coats of woodtox, an odorless wood preservative. We are now ready to replace one of the old stairways on the short-cut trail, as soon as time can be found to do so. The carpenter made several repairs on the stairways in the cavern.<sup>64</sup>

These reports illustrate how the repairs to the staircase were done with park personnel and handled on an as-needed basis. The form of the staircase evolved according to on-site conditions and the technique of individual carpenters.

The section of the Main Corridor near Iceberg Rock continued to be an important junction in the trail system, with limited access there creating a bottleneck in moving large groups through the Cavern. With up to 1,500 people or more in the Cavern during a tour, the trail system needed to facilitate this foot traffic as much as possible. From March to June 1950 a trail extension was built between the Iceberg and the "Baby Hippo" to encourage groups to walk out rather than wait for the elevator, and avoid interfering with later groups on their way in. This section of trail was described as being located one mile from the natural entrance and 3/4 mile from the lunchroom, and including ramps and wood stairs.<sup>65</sup> The Iceberg Rock staircase would continue to function as a short-cut; minor repairs were conducted such as replacing treads. The park continued to revise the trails around Iceberg Rock to alleviate crowding. Drawings from March 1951 show new ramped trail being constructed in the difficult area directly west of Iceberg Rock. Engineer John H. Diehl reported after his field visit that this possible ramp route would "eliminate more sections of stairway, and also provide a short trail connection."<sup>66</sup> In late

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<sup>63</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (February 1948), Box 852, Entry 10, RG 79, NARA II.

<sup>64</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (March 1948), Box 852, Entry 10, RG 79, NARA II. Additional minor repairs are mentioned in November 1948 and the addition of hand-rails to the short-cut stair is listed in January and February 1949.

<sup>65</sup> "Project Completion Report," Main Corridor Trail Extension R-19-1, (May 1951), Box 1046, Entry 11 - Administrative Files, 1949-71, RG 79, NARA II [hereafter Entry 11, RG 79, NARA II]. The next year this section of trail was already being revised to replace stairs with ramps. See Memorandum, John H. Diehl, Highway Engineer, to Regional Engineer, (23 February 1951), Box 1046, Entry 11, RG 79, NARA II.

<sup>66</sup> Memorandum, John H. Diehl, Highway Engineer to Regional Engineer, (23 February 1951), Box 1046, Entry 11,

1952, another section of by-pass trail near Iceberg Rock was under construction. This 75-foot long new trail would "eliminate the congestion when a group going in meets a group coming out."<sup>67</sup> This project included a short concrete bridge and a long rock retaining wall.<sup>68</sup> With these improvements and more staffing, the tour schedule was increased to four daily tours in 1949 and five daily tours in 1952.<sup>69</sup> The addition of new 25-passenger elevators ended walk-out tours in 1955, although today visitors can choose to walk-out via the natural entrance as part of the self-guided tour.<sup>70</sup>

In 1954 a small seating area of rock benches was added near the top of Iceberg Rock for interpretative talks during the tours.<sup>71</sup> The following year, the trails around Iceberg Rock were again altered, this time to eliminate stairs in the section between the by-pass junction near Iceberg Rock and the beginning of a new trail in the Green Lake Room. Only a small section of concrete stairs would remain.<sup>72</sup> By 1956, all the long stairways on the main cavern trail had been replaced by ramps.<sup>73</sup> The Iceberg Rock staircase remained as a secondary, short-cut route. A park improvement initiative called Mission 66 began in 1956. Mission 66 set forth a ten-year goal of improving park facilities in time for the 50th anniversary of the Park Service in 1956. Many critical infrastructure projects were done in the parks, and interpretative and museum facilities expanded. The major project at Carlsbad Cavern was construction of a much needed visitor's center and expanded concessions buildings starting in the mid-1950s. The Mission 66 prospectus for Carlsbad Caverns National Park noted that it was essentially a day use area with visitation concentrated in a small area. In order to extend the hours of operation and increase the number of tours, it was recommended that the park receive increased personnel and housing in addition to the new visitor center. However, no new trails within the cavern were planned as part of Mission 66 development. The previous thirty years of trail construction already fully developed access through the Main Corridor and Big Room.<sup>74</sup>

A big change to cavern tourism did come in the late 1960s. A self-guided tour of the Big Room was introduced which required new trail paving and erecting barricades. Traces of many maintenance and short-cut trails were also removed to avoid confusion.<sup>75</sup> While ranger-led tours are used for some areas, today most tours through the Main Corridor and Big Room are self-

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RG 79, NARA II.

<sup>67</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (September 1952), Box 141, Entry 11, RG 79, NARA II.

<sup>68</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (October-December 1952), Box 141, Entry 11, RG 79, NARA II.

<sup>69</sup> Bennett T. Gale, Park Naturalist, "Historical Sketch Carlsbad Caverns National Park," [typescript], (29 March 1952), CAVE Library.

<sup>70</sup> Standiford, 12.

<sup>71</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (January-March 1954), Box 142, Entry 11, RG 79, NARA II.

<sup>72</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (October, November 1955), Box 142, Entry 11, RG 79, NARA II.

<sup>73</sup> Carlsbad Caverns National Park, *Annual Report*, (1 June 1956), Box 74, Entry 11, RG 79, NARA II. See also "Completion Report - Cavern Trails, Iceberg Rock to Green Lake," (26 May 1956), CAVE archives.

<sup>74</sup> *Mission 66 Prospectus, Carlsbad Caverns National Park*, (1956), 2, 5. Box 732, Entry 11, RG 79, NARA II.

<sup>75</sup> Carlsbad Caverns National Park, *Superintendent's Monthly Report*, (March, April 1967), Box 83, Entry 11, RG 79, NARA II.

guided. The trails are clearly defined by stainless steel hand rails on both sides. The Iceberg Rock staircase continued to be used as a short-cut by staff into the 1980s, but it is currently heavily deteriorated, structurally unsound, and slated for demolition.<sup>76</sup>

## PART II. ARCHITECTURAL INFORMATION

### A. General Statement:

1. Architectural character: Very simple wood structure painted blue gray and built with dimensional lumber in an ad hoc fashion.
2. Condition of fabric: Poor. The staircase was rotted and broken throughout the middle and upper sections. The lower section was in fair condition. There was extensive mold growing on much of the staircase.

### B. Description:

1. Overall dimensions: The staircase runs between the lower east edge of Iceberg Rock to near the upper east edge. It is composed of three distinct sections connected by gravel switch back trails. All of the staircases are simple wood open-riser stairs with utilitarian two by four railings on both sides and 11 1/2 inch wide treads. The lowest section is a straight run of ten stairs going up from south to north with wood railings on either side. The trail rises and switches back to the bottom of the next section.

This middle section is the largest and most elaborate with three quarter-turn landings. The first two sections are supported on tall posts with a run of nine stairs leading up from the east to the first quarter-turn landing. The next run of ten stairs travels north to the second quarter-turn landing. A large flight of 25 stairs rises up to the east. Another small flight of six stairs leads to a gravel path traveling east through a tunnel and around to approach the bottom of the final stair section.

The uppermost section of stairs is a straight run of 26 steps rising from the west edge of the tunnel trail to the north. From here another closed section of trail travels along the east side of the Iceberg.

2. Foundations: The wood posts rest directly on the limestone cave formations or gravel paths.
3. Structural system, framing: Wood 5 by 5 inch posts for vertical support with wood string, steps and railings. Thin metal tie rods run under some of the steps and a few metal rods pin the posts to the rock. Much of the structural system is an ad hoc placement of boards braced between the posts and nearby rock.

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<sup>76</sup> Tom Bemis, Carlsbad Caverns Cave Specialist, personal communication with author, (29-31 January 2013).

4. Steps: The typical step is 11 1/2 inches deep, and 1 1/2 inches thick. It rests on a small wood block nailed to the string board. The width varies slightly for each section, with an average width of four feet.
5. Railings: The Iceberg Rock Staircase has simple railings fashioned from dimensional lumber. They consist of a handrail and one lower bracing rail nailed to vertical boards.

### PART III. SOURCES OF INFORMATION

- A. Architectural drawings: Architectural drawings of the Iceberg Rock Staircase have not been located, however the stairs do appear in plan on several trail maps of the cavern. See below for artist's renditions of the staircases in this portion of the cavern.
- B. Early Views: The earliest views of the Iceberg Rock Staircase seem to be artist's renditions in tourist maps and promotional materials. See for example Figure 3 for a rendering published in the Los Angeles Times in 1929. A guidebook from 1946 appears to be using a modified version of the same drawing, although at this point the trail was used as a short-cut and for walk-outs only.<sup>77</sup> One photograph in the CAVE collections shows the lower section of the staircase, c. 1980 (Figure 6).
- C. Bibliography:

#### **Archival Collections:**

Carlsbad Caverns Museum Collection Records, Carlsbad Caverns National Park (CAVE), Carlsbad, NM.

Carlsbad Caverns National Park (CAVE) Library, Carlsbad vicinity, NM.

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<sup>77</sup> A.W. Anderson, Gaby L. Bingham, et al. *The Carlsbad Caverns of New Mexico: Its History and Geology*, Bradford-Robinson Printing Co., 1946 ed.

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#### PART IV. PROJECT INFORMATION

The documentation of Iceberg Rock Staircase was undertaken in 2013 by the Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER) of the

Heritage Documentation Programs division of the National Park Service (HDP, NPS), Rich O'Connor, Chief. The project was sponsored by Carlsbad Caverns National Park (CAVE), NPS, John Benjamin, Superintendent. Project planning was coordinated by Catherine Lavoie, Chief, HABS; and by David Kayser, Museum Curator, CRM Lead, CAVE. The field work was undertaken and measured drawings produced by HAER Architect Jeremy Mauro and HABS Architect Mark Schara. The historical report was written by HABS Historian Lisa P. Davidson. The large-format photography was undertaken by HAER Photographer Jet Lowe. Crucial assistance was provided by CAVE staff, especially Technical Resource Specialist Tom Bemis and Archeologist Sam Denman.

PART V. ILLUSTRATIONS

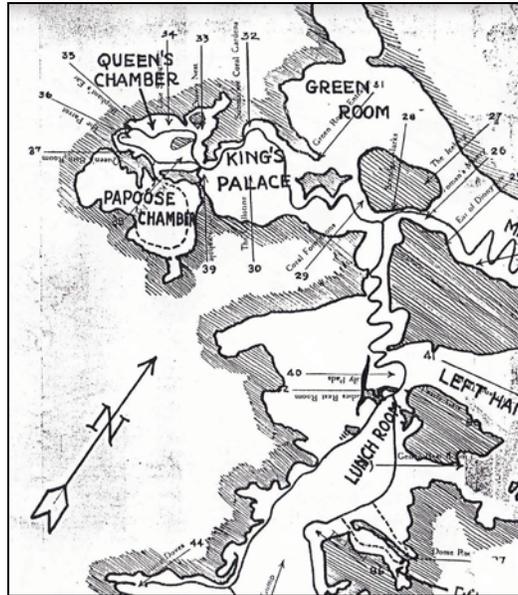


Figure 1: Excerpt of Trail Map Including Iceberg Rock Area Below Green Room, 1928.  
Source: *Trail Guide and Map of the Carlsbad Cave*, (1928), CAVE Library.

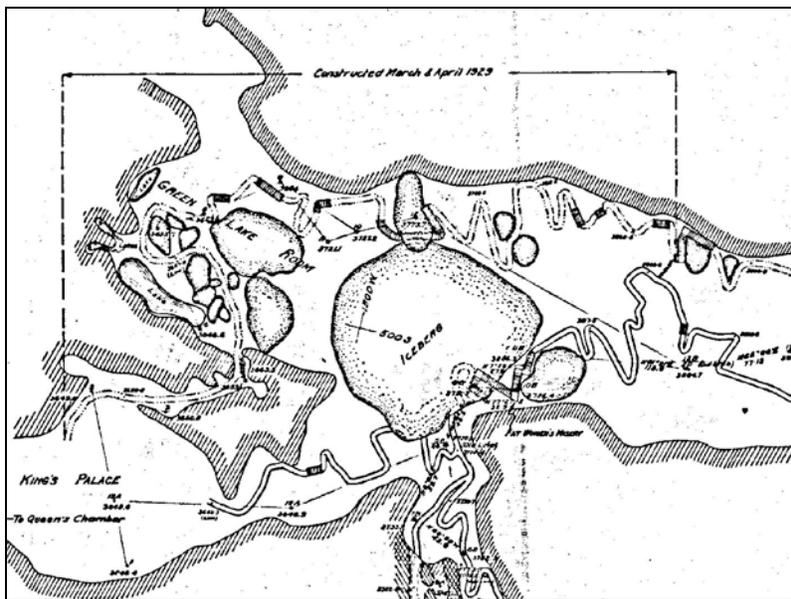


Figure 2: Excerpt of Trail Map Showing Iceberg Rock Area, May 1929.  
Source: "Carlsbad National Monument - Trail Map from Entrance to Lunch Room,"  
(May 1929), Drawing 130-4627, eTIC, Denver Service Center.



Figure 3: Rendering of Iceberg Rock Staircase  
Source: Excerpted from *Los Angeles Times*, 15 September 1929, clipping in RG 79, NARA II.



Figure 4: Iceberg Rock Section of Trail Map, April 1934.  
Source: NPS Office of the Chief Engineer,  
"Carlsbad Caverns National Park - Trail Map from Entrance to Lunch Room," (April 1934),  
Drawing NPS/CC-5053, CAVE Museum Collection.

