World War II Fire Control Stations in the Harbor Defenses of San Francisco

Bolling W. Smith

In the summer of 1940, the Harbor Defenses of San Francisco were in the midst of a major expansion, part of "Project 34." This included the construction of about 40 "observation stations" and the remodeling of another 10 or so. There were to be some differences between the stations - some would require extra space for Signal Corps equipment and for sleeping quarters - but the observation portions of the stations were to be virtually identical.

Under the Dome

On July 22, 1940, Maj. Robert C. Hunter, the San Francisco district engineer, submitted a design to Maj. Gen. Julian L. Schley, chief of engineers, through Col. Warren Hannum, the South Pacific Division engineer. The letter, accompanied by drawings and photographs, described a proposed type of observation room for the HD of San Francisco.

Hunter's design was built of reinforced concrete with a 1-inch-thick steel dome, cantilevered forward, that would allow unobstructed 180^{O} vision. The dome was steel instead of concrete because steel was thinner for the same strength and therefore cast a smaller shadow. Entry to the station was through a manhole in the roof, eliminating the need for the shaft that would be required if the entrance was at the rear of the station or in a rear room of a larger station. A slanted steel staircase with flat treads was used in place of the normal steel rungs, or "staple ladder." The manhole cover had a built-in lock instead of a padlock.

The observation slot was 8 inches high, except in the center, where it broadened to 12 inches to allow an emergency exit in case the manhole entrance was blocked. Tests had shown that an 8-inch observation opening was sufficient if the line of sight of the observing instrument was within two or three inches of the top of the slot.

The slot was closed by a movable, one-piece heavy-steel visor, stiffened with angle iron and pivoted, either on roller bearings or ball bearings. Using a handle, the counterbalanced visor could easily be raised or lowered with one hand and the counterbalance could be adjusted so that the visor would remain in either the open or closed position. The handle was so designed that when the visor was closed, locking would be "practically automatic," but a chain provided positive locking. Thanks to the counterweight, the visor could be made thicker and heavier without seriously increasing the effort needed to raise or lower it.

The station provided room for folding cots and one prison-type bunk on the rear wall, so three men could sleep in the station. The front and rear portions of the station were to be shop-built and fitted together in the field using a light crane if one was available. If not, the sections could be manhandled into place without difficulty. Forms would be fastened to the reinforcing steel trusses, using a single line of shoring, and the front walls and roof poured in one operation.

Hunter believed that the new station design was an improvement over the existing type, being less readily identifiable either from the ground or from the air. The heavy visor afforded greater protection and could be quickly and easily closed in the event of a surprise attack. The single visor with its two counterweights and two springs would replace the nine overlapping shutters, eighteen hinges, nine latches, and nine locking devices needed for the previous type of station. It would in addition be more

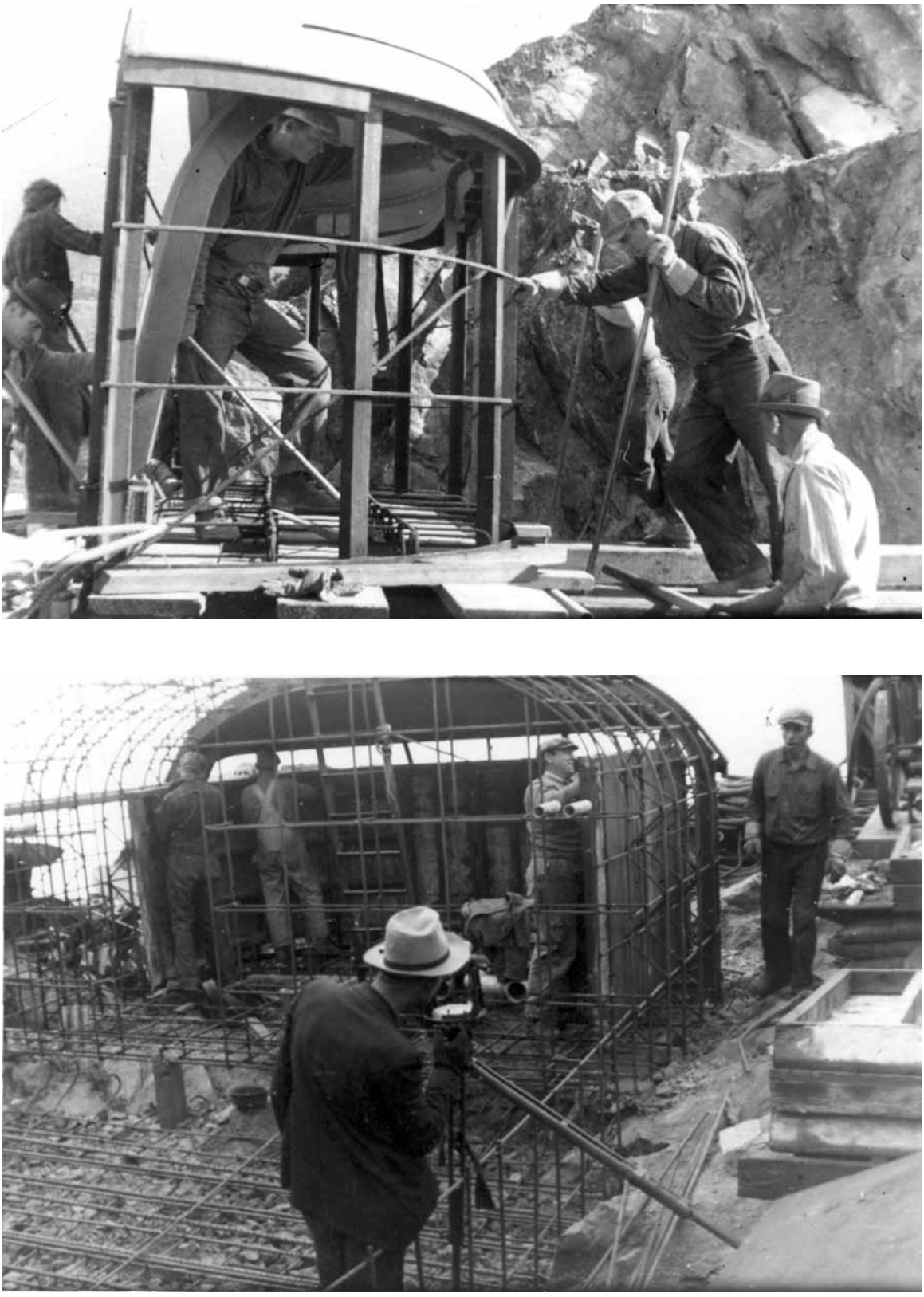
weatherproof, and rubber gaskets around the edge of either the visor or the slot opening would make it entirely so.

The station was designed for ease of manufacture; the only critical pieces were the top and ends of the visor and slot. Because the visor would swing away from the dome as it was raised, tolerances of almost ¼ inch were acceptable. The cost for each station was estimated at about $1,500, somewhat less than the current stations. The primary reason for the saving was the rapidity of the field work.

One sample station had been constructed at Tennessee Point, Fort Cronkhite, with a 12-inch slot. The harbor defense commander had inspected the station and urged its adoption. Major Hunter recommended approval of the new-type station, with the possible exception of the increased opening in the center of the slot.(1)

No document has been found that clearly identifies the first domed station. However, it appears to have been Battery Rathbone's B^2S^2 station at Tennessee Point. This station, as shown in photographs, has a steel roof that extends back, past the manhole. When more domed stations were constructed, such as the Devil's Slide stations for Batteries Davis and Townsley, one key difference was the manhole for all the stations other than B^2S^2 Rathbone goes up through concrete, not the steel dome. The reports of completed works (RCWs) add some information, but also some confusion. On November 14, 1941, 24 fire control stations were transferred at one time, 20 with steel domes and only four of the old style. Current photographs show that the Rathbone B^2S^2 station has a steel roof that extends past the manhole. However, the RCW shows this portion of the roof as concrete, the same as for the other domed stations. Since this is clearly contradicted by the existing structure, the most reasonable explanation is that in the production of a large number of similar RCWs at the same time, the same design was inadvertently used for all the plans. This would not be the first error found in the RCW drawings for the Harbor Defenses of San Francisco.(2)

Construction of Devil's Slide domed station. *E.R. Lewis Collection*



Construction of Devil's Slide domed station. *E.R. Lewis Collection*

1940 design of fire control stations. *NARA*

1940 design of fire control stations. *NARA*

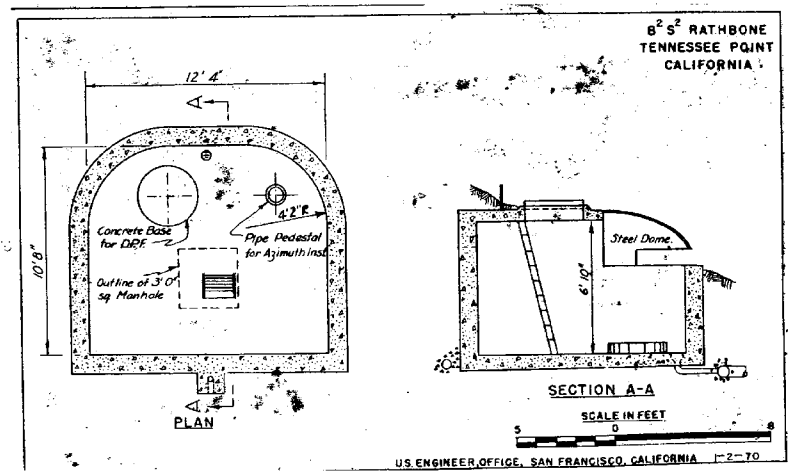
Proposed new design for fire control stations, 1940. *NARA*

Proposed new design for fire control stations, 1940. *NARA*

REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS
(Fire Control or Torpedo Structures)
Form 2. Corrected to November 14, 1941

COAST DEFENSES OF San Francisco
Tenessee Point, California (Ft. Cronkhite)
STRUCTURE B^2 S^2 Rathbone (6) - M.C. Index (7)

STRUCTURE	:	TYPE OF DATA TRANSMISSION	:
Location	:Tennessee Point, California	:Type of transmission equipment	:Telephone (Installed by Signal Corps)
Date of transfer	:November 14, 1941	:Date of transfer	:
Cost to that date	:$3,734.53	:Cost of data transmission equipment	:
Type of construction	:	:For tide stations give description of tide gauge	:
(a) Roof	:Reinf. conc. and steel dome	:For datum points give Forts from which visible	:
(b) Remainder of bldg.	:Reinforced concrete	:For dormitories give stations served	:
How concealed	:Earth cover, vegetation, and camouflaged dome	:For cable hut give S.C. type	:
How protected	:Earth backfill and one inch thick steel dome	:	:
Height above concealment	:Not above concealment	:	:
Height above protection	:Not above protection	:	:
Conspicuous at 400 yds.	:Not conspicuous from sea	:	:
ELECTRIC ENERGY	:	:	:
Source of electric current	:None	:	:
Kilowatts required	:None	:	:
Type of lighting fixtures	:None	:	:
HEAT	:	:	:
How heated	:Not heated	:	:
WATER AND SEWER	:	:	:
Connected to water mains	:No	:	:
Connected to sewer	:No	:	:
Type of Latrine	:None	:	:
Perm. or temp. installation	:Perm.		
Present condition	:New		
REFERENCE	:		
Reference of site	:Lat.37°50' 08.708" Long.122°32' 47.234"		
Reference of inst. axis	:223.68' M.L.L.W.		
Elev. of Ins. Pedestal	:219.02' M.L.L.W. CM		
Type of observing inst.	:D.P.F. Lewis M1907 No./105. Also pier mount for M1910 Azimuth inst.		
Type of plotting board	:None		
Type and capacity of crane	:None		
Max. dim. of reel handled	:No reel		



RCW, B^2S^2 Rathbone, Tennessee Point. *NARA, RG 77, Entry 1007.*

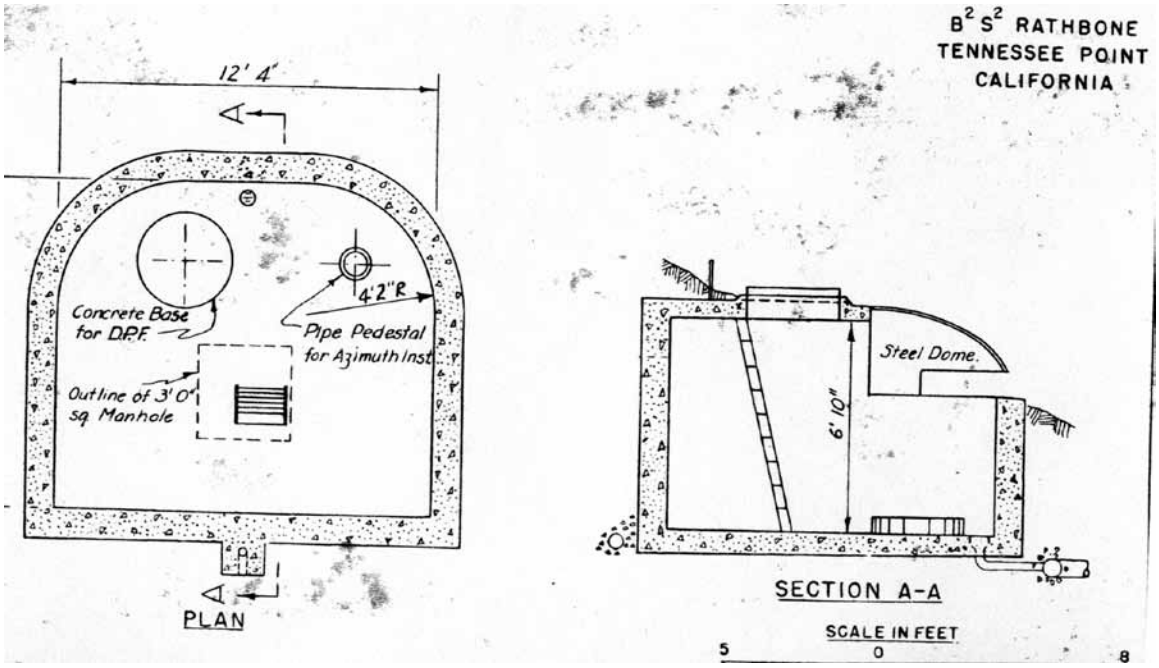
B²S² Rathbone, Tennessee Point, showing current condition. *John Martini*

B²S² Rathbone, Tennessee Point, showing current condition. *John Martini*

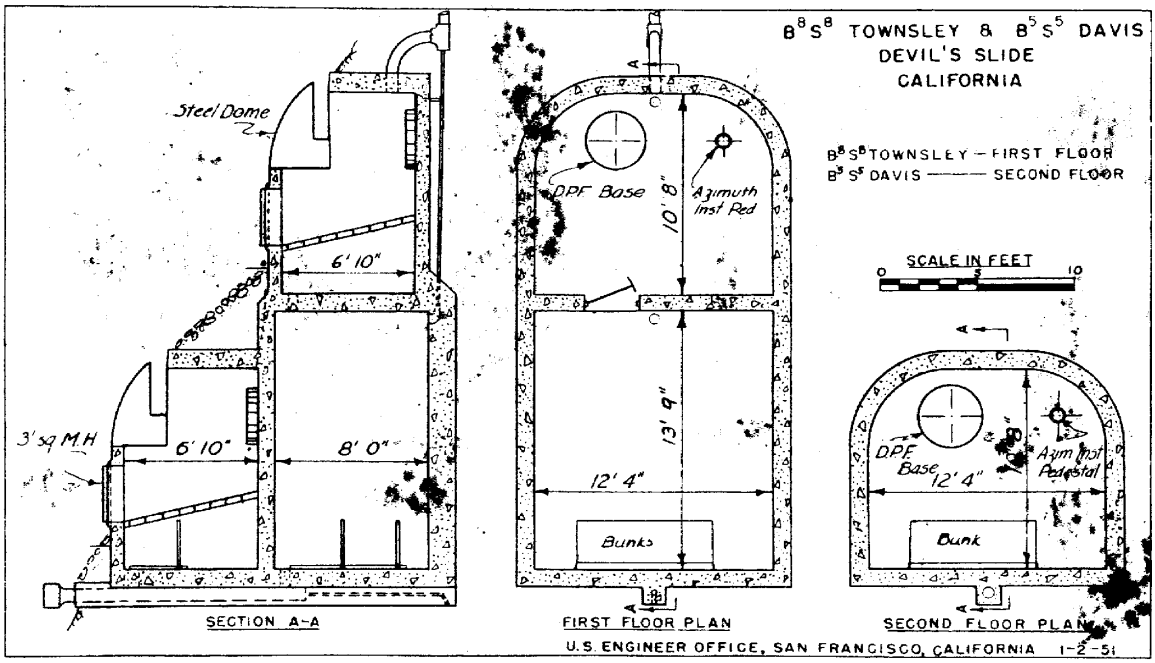
Maj. Henry C. Wolfe, executive assistant acting for and in the absence of the division engineer, recommended approval on July 25.(3)

By order of the chief of engineers, Lt. Col. George Mayo, chief of the Construction Division, responded August 13, 1940. He approved the proposed design with the following modifications:

1. The emergency exit at the middle of the slot opening was not considered essential, and was omitted.
2. A dust cover for the key opening in the lock was to be provided.
3. The gaskets Major Hunter mentioned as possibilities were to be provided, making the slot more weatherproof.



RCW plan, B²S² Rathbone, Tennessee Point. Date of transfer and RCW November 14, 1941. *NARA, RG 77, Entry 1007.*



RCW plan, B5S5 Davis & B8S8 Townsley, Devil's Slide. Transferred November 14, 1941; RCW dated August 1944. *NARA, RG 77, Entry 1007.*

Mayo also noted that the photo submitted by Major Hunter labeled "present design" was not the approved design with overhanging roof, as prepared by the Office of the Chief of Engineers.(4)

On September 4, Major Hunter advised that the modifications requested by Colonel Mayo had been incorporated on the drawings, along with other minor changes.(5)

Meanwhile, on July 23, 1940, Major Hunter had forwarded a copy of his July 22 letter to Col. Thomas A. Terry, commander of the HD of San Francisco, along with prints and photographs. No reply from Colonel Terry was found in the archives.

However, on August 19, 1940, Terry addressed a letter to Maj. Gen. Joseph A. Green, chief of coast artillery. Terry enclosed a description of the new-type fire control station, which he said Hunter had developed in consultation with Colonel Terry and his staff. One station had been built at Fort Barry, and it had been inspected by Division Engineer Warren Hannum and Brig. Gen. Henry T. Burgin, commander of the 9th Coast Artillery District. All thought the station "a decided improvement" over the previous stations, especially as it could be constructed "on a quantity production basis." Terry believed that the chief of coast artillery would want to use this type of station, or some modification of it, in new fortification construction projects.(6)

On August 26, 1940, Lt. Col. Kenneth T. Blood, executive officer in the Office of the Chief of Coast Artillery, forwarded Colonel Terry's correspondence to William S. Bowen, president of the Coast Artillery Board (CAB), at Fort Monroe, VA. By order of General Green, Blood directed the Coast Artillery Board to study the proposed type of station, submit comments, and recommend whether it should be adopted for future construction in place of the present-type station.(7)

Colonel Bowen responded promptly, on September 6, 1940. The board was generally supportive, with some reservations.

First, they believed the 1-inch steel dome would provide protection against bomb fragments and machine guns up to .50 caliber, but probably not 20 mm or 37 mm guns. Similarly, the ⅛-inch-thick manhole cover his should be at least ⅜ inches thick, even if this required a counterweight.

Secondly, the board questioned the value of the smaller shadow cast by the steel dome. They felt it would have some camouflage value, but would not be a significant feature.

Third, the suitability of the 8-inch observation slot would depend on the height of site and therefore the angle of depression required for the instrument. They concluded that the new design could only be used for stations at elevations of 100 feet or more, where the field of view was unobstructed over the required water area.

Fourth, the design would be limited to stations which did not require more than 180^{O} field of view.

As positive factors, the proposed station was less visible than the present type, and the quick-opening visor was an advantage. Lastly, the new design should be easier, quicker, and cheaper to build.

The CAB concluded that the new design was "generally an advance over the present type of station, and if provided with a thicker manhole cover, it was suitable for those cases where the field of view was within acceptable limits, and the elevation was at least 100 feet.(8)

On September 13, the CAB report was forwarded to the chief of engineers, who 10 days later replied to the chief of coast artillery that the dome-type station had been reviewed. It was considered an improvement over the present design of dug-in stations, and was recommended for suitable sites where the field of fire requirements could be met.

The board's recommendation to increase the thickness of the manhole cover to ⅜ inch was concurred in. In addition, the other minor modifications suggested in the August 13 letter to Major Hunter were described.(9)

By order of the chief of engineers, on September 26, 1940, Colonel Mayo wrote the district engineer, through the division engineer, advising that the Office of the Chief of Engineers had concurred in the recommendation of the CAB to increase the thickness of the manhole cover to ⅜ inch. Although this might require a counterweight due to the increased weight, the increase was necessary to protect against bomb fragments.

It was also suggested that the cross section of the pivoted shutter arm be a lattice section rather than a box section, to permit painting the interior surfaces.(10)

On November 25, 1940, Maj. Kenneth M. Moore, now the district engineer for San Francisco, transmitted a drawing dated October 31, superseding the drawing of June 27. The additional thickness of the manhole cover was incorporated, along with a counterweight to facilitate handling the heavier cover.

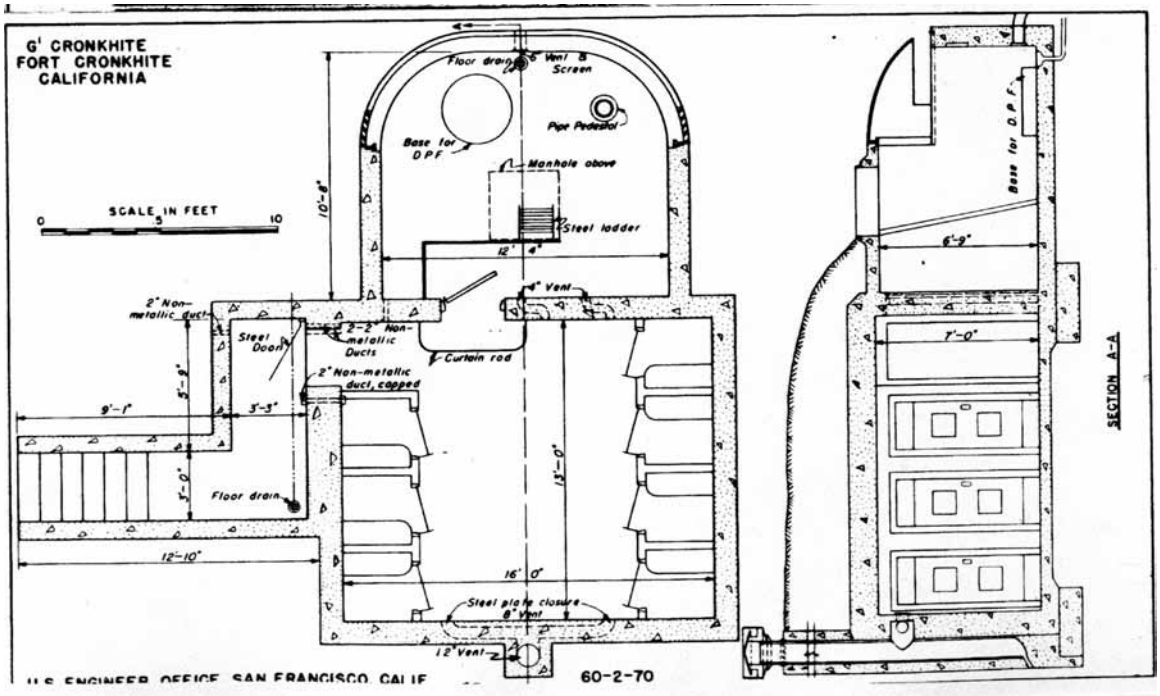
Moore further explained that the pivoted shutter arm was a single angle, and the necessary one-foot box section only occurred at the connection of the pivoted shutter arm and the pillow block. He reassured Colonel Mayo that the interior surfaces could be easily painted.(11)

Horizontal Entrances

The approval of the new design did not end the matter. The normal rotation of officers, exacerbated by war, meant that it was difficult to settle issues once and for all. On January 20, 1942, the new commander for the HD of San Francisco, Brig. Gen. Edward A. Stockton, wrote the district engineer with his concerns about the new fire control stations. Stations whose complements were relatively large needed two exits, and the 8-inch slot was too narrow to serve that purpose. A second entrance would provide an alternative exit if one was blocked, aid in clearing the station of gas, and improve ventilation when the station was continuously occupied by a large group of men.

General Stockton requested second entrances in the Funston Groupment, Group 4, and BC Davis at Fort Funston, and the Group 1 and BC stations at Fort Cronkhite. The second entrances could be

either side or back, depending on the occupancy and the topography. It should have an angle in it to prevent light from shining out and bomb fragments from coming in. The door should be of steel, capable of being locked from the outside with a padlock and from the inside with a bolt.



RCW plan, Group 1 fire control station, Ft. Cronkhite, showing side entrance. Transferred November 14, 1941; RCW dated December 14, 1942. *NARA, RG 77, Entry 1007*

Stockton estimated the cost at between $350 and $500 per station for materials and $400 to $600 for labor, for a total of $4,450 for the five stations.

Three days later, Stockton approved his own proposal, this time as commanding general, 9th CA District. Eight days later, Lt. Col. Charles C. Quigley, assistant adjutant general, also approved for the commanding general, Western Defense Command. He requested that the matter be referred to the War Department for authorization and an early allotment of funds to cover the work.

When the correspondence was forwarded to Col. James D. Andrews, the district engineer, he increased the cost estimate on February 20 from $4,450 to $6,700. Col. John R.D. Matheson, acting for and in the absence of the division engineer, recommended approval on February 24.(12)

When the proposal reached the Office of the Chief of Engineers, Lt. Col. Francis J. Wilson, assistant chief, Operations Branch, Construction Division, was considerably less enthusiastic. In his March 13 indorsement for the chief of engineers to the commanding general, Services of Supply, Wilson noted that his records showed that BC Davis and BC Townsley had observation slots 15 inches high, ample for a man to escape. The domed stations, other than B^2S^2 Rathbone, only had slot openings of about 8 inches.

The Office of the Chief of Engineers objected to materially modifying existing structures, to prevent interference with their use in an emergency. Emergency exits were considered unnecessary and would defeat the attempts to camouflage the structures. It was therefore recommended that the project not be favorably considered.

Colonel Wilson did state that the incorporation of emergency exits in future construction, either by provision of an additional entrance or by increasing the height of the observing slot to a minimum of 15 inches, would be considered.(13)

The Services of Supply, however, did not see it in that light. On March 25, 1942, Brig. Gen. Wilhelm D. Styler, chief of staff to the commanding general of the S.O.S., responded to Colonel Wilson's indorsement. Styler informed the chief of engineers that the project to add side or rear entrances to the five fire control stations was approved, at an estimated cost of $6,700.

Noting that exiting through the observing slots would be difficult, if not impossible, the S.O.S. concluded that the moral, or psychological, advantages of providing an exit in addition to the present trapdoor outweighed the disadvantages. However, construction should interfere as little as possible with the normal operation of the stations.

On April 9, 1942, Colonel Wilson, for the chief of engineers, advised the commanding general, Harbor Defenses of San Francisco, that $6,700 to modify the stations would be allotted to the district engineer by separate letter.(14)

On March 26, 1942, the commander of the Harbor Defenses of San Francisco indorsed a letter to the district engineer, through the commanding generals of the 9th Coast Artillery District and the 9th Corps Area. Twenty-four fire control stations had been inspected and were accepted for use and care of troops.

He did, however, make several additional points, based on recently acquired experience with "this type of fire control station":

1. The projecting counterbalances on the manhole hatches should be eliminated to facilitate camouflage.
2. Horizontal entrances, either rear or side, should be provided as the principal means of access. This was especially important for stations that would have more men.
3. Provision should be made for locking the hatch from inside.
4. Ventilation should be improved for stations with more men, such as BC, group, and groupment stations.
5. The rubber gasket in the slot tended to stick when closed for some time. A heavy coating of flake graphite or something similar should be applied to prevent this.
6. The junction between the steel dome and the concrete should be improved; several stations showed a tendency to leak.
7. The hatch should be raised approximately nine inches so that earth, stone, and plant camouflage could be added.
8. Small, automatically-operated power plants for station and instrument lighting should be provided for groups of remotely located stations.
9. The outer ends of drain pipes should be covered with screens to prevent the entry of rodents and the blocking of the drains.(15)

Wartime photograph of unidentified domed fire control station, showing exterior counterbalance that was the subject of complaint. *NARA.*

In his May 26 indorsement, Lt. Col. A.H. Griffin, executive assistant to the district engineer, advised the chief of engineers that in reference to the preceding points:

1. His office was experimenting with ways to eliminate the projecting counterbalance, either by placing the hinges off center or by counterweights. However, this investigation was not yet complete.
2. Although concurring generally about horizontal entrances, he did not believe side entrances for base end stations necessary.
3. Experiments with forced draft ventilation had been successful.
4. Only one station had experienced leakage, and this had been corrected by waterproofing compound.
5. A separate study should be made for each station or group of stations, with a view to providing appropriate electric power.
6. Screens were provided on the outer ends of drain pipes on the group of stations mentioned.(16)

On November 23, 1942, Lt. Col. W.D. Greenlee, executive assistant to the San Francisco district engineer, wrote the chief of engineers. He made reference to the letter from the Office of the Chief of Engineers to the commanding general, Western Defense Command, dated August 10, 1942, which stated that an additional $2,900 was allotted to provide horizontal entrances in fire control stations for the HD of San Francisco.

The district engineer had no record of this allotment.(17)

Interior of B^{3}S^3 Battery 129, Hill 640, showing current condition. *John Martini*

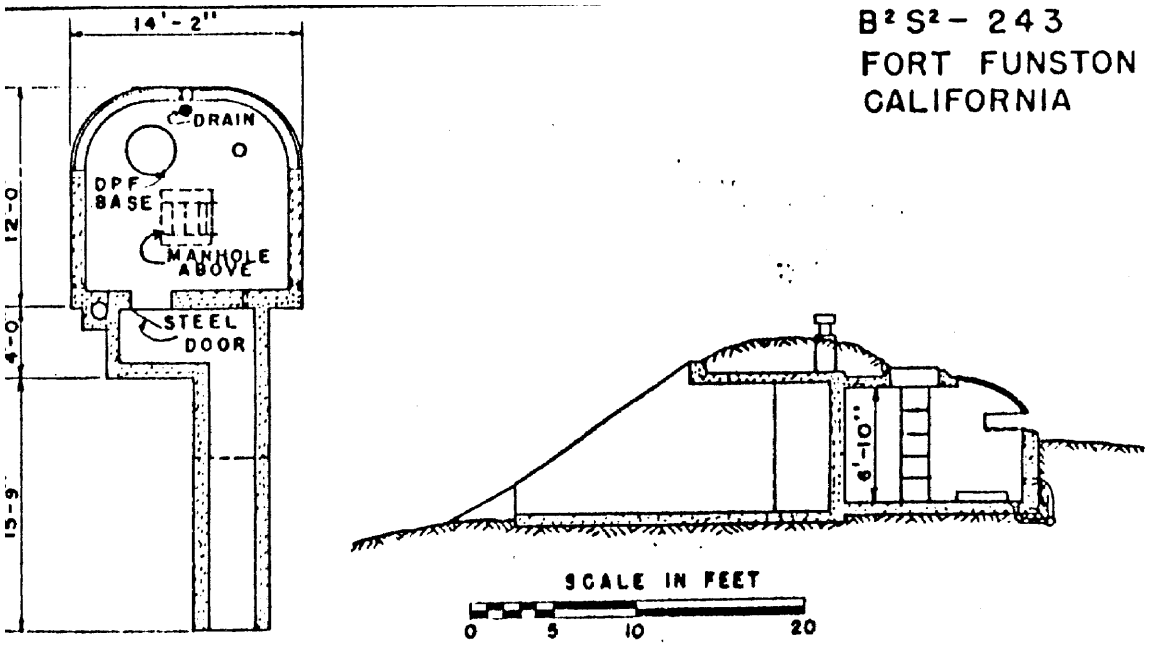
On December 14, Lt. Col. Sherwood B. Smith, assistant in the Operations Branch of the Construction Division of the Corps of Engineers, advised the district engineer that the allotment had been "inadvertently delayed." However, funds available to the district engineer could be used to the extent of $2,900. If this was insufficient, he was authorized to proceed with the work and request authorization for additional funds, submitting a complete justification.(18)

On April 19, 1943, Mr. F.C. Scheffauer, chief engineer in the Office of the Pacific Division Engineer, wrote the chief of engineers, referencing the August 10, 1942, letter and indorsements. The division engineer had questioned the provision of horizontal entrances because they were for "manhole type" stations and would substantially increase the cost.

The question had been referred to the coast artillery and engineers officers at the Western Defense Command, where it was decided that horizontal entrances were desired even for single fire control stations, and it was considered that they had been authorized for all stations in the 1943 Expenditure Program. Mr. Scheffauer therefore advised the chief of engineers that the district engineer was proceeding to construct all fire control stations of the 1942 and 1943 Expenditure Programs with horizontal entrances.

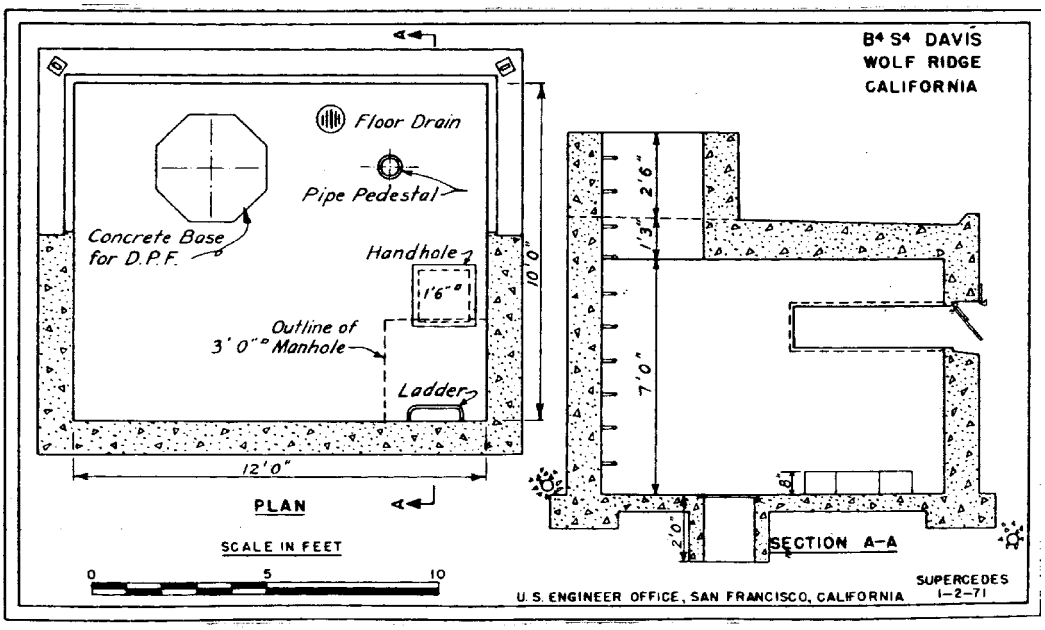
By order of the chief of engineers, on May 3, Col. Albert H. Thomas, chief of the Fortification Branch, Construction Division, approved the action of the division engineer.(19)

B^{2}S^2 243, 2003. Originally constructed over 100 feet above the ocean, it has since slide down to the beach, even more so in the decade since this picture was taken.
This photo shows the concrete and steel construction of this station, transferred November 15, 1943.
Todd Lappin, httpwww.flickr.comphotostelstar15558597 1inphotostream



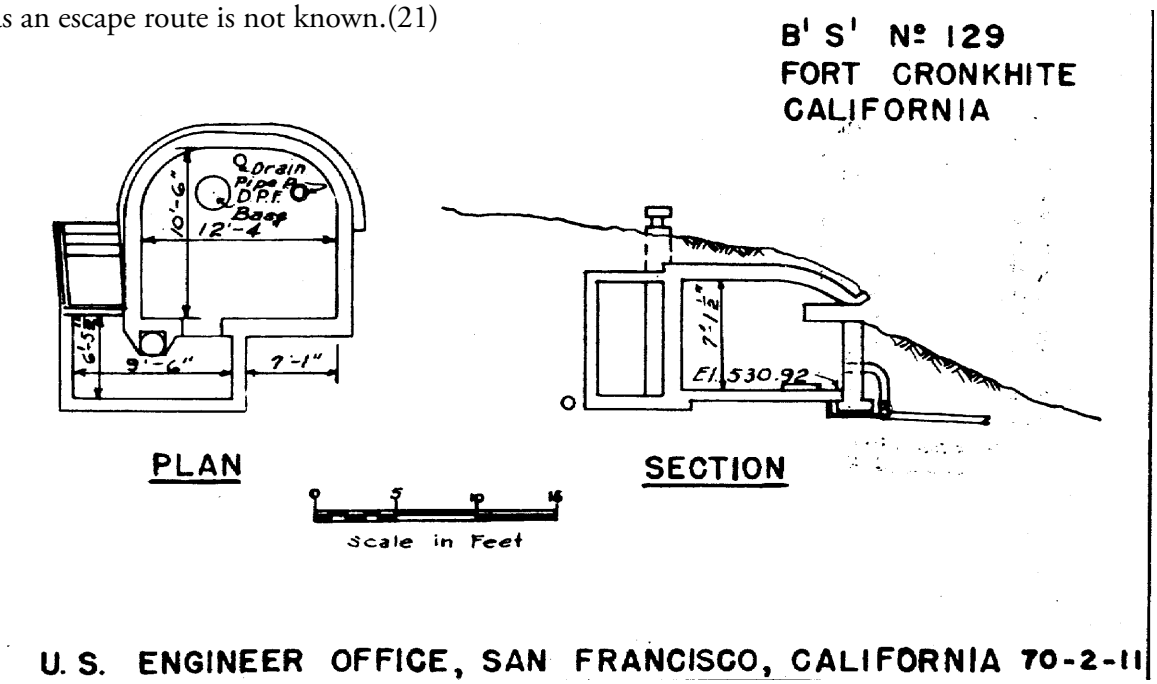
RCW plan, B2S2 243, Ft. Funston; transferred November 15, 1943, RCW dated October 1943. *NARA, RG 77, Entry 1007*

The RCW for Battery Davis B⁴S⁴, also transferred November 14, 1941, shows the older design. Interestingly, despite Colonel Mayo's assertion that the photographs submitted by Major Hunter labeled "present design" were not the approved design with overhanging roof prepared by the Office of the Chief of Engineers, the RCW for Davis B⁴S⁴ shows what appears to be the same design, without an overhanging roof. The field of view for its DPF does appear to have exceeded 180°, which may explain why the older design was used.(20)



Davis B⁴S⁴, Wolf Ridge, transferred November 14, 1941, RCW dated June 1944. *NARA, RG 77, Entry 1007*

A third wartime design, illustrated by the B[1]S[1] station for Battery 129 at Fort Cronkhite, resembles the steel-domed station, but rather than a steel roof, it has a concrete-dome roof with a thin earth or rock covering, presumably for camouflage. A concrete lip at the lower edge of the dome helped hold the material in place. Possibly this design was motivated by the desire to save steel, a critical war material. The entrance was by outside stairs, rather than a manhole. Like the pre-1940 design, this style station had hinged shutters instead of a visor**.** Interestingly, several, at least, of this style station had an observation slot that was larger at one end. Whether this was to allow greater depression of the DPF or as an escape route is not known.(21)



RCW plan, B[1]S[1] 129, Ft. Cronkhite; transferred October 25, 1943, RCW dated August 1943. *NARA, RG 77, Entry 1007*

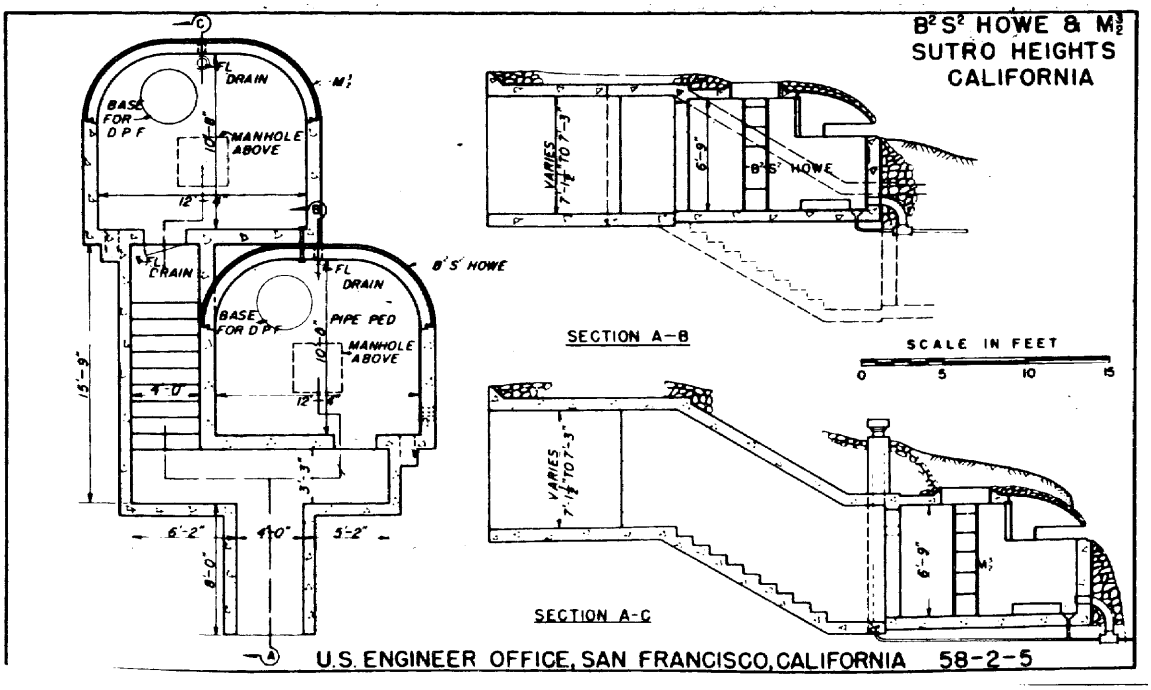
BC Battery 244, showing rocks still attached to rear roof and the lip where rocks were once attached to front of domed roof. *John Martini*

B^6S^6 129, Hill 640; current condition illustrates side entrance. B^3S^3 129 is visible above the lower station. *John Martini*

B^6S^6 129; current condition of interior. *John Martini*

Whatever the reason, roughly half of the stations transferred in 1943 were of the steel-dome design and the remainder were the newer, concrete-domed style. Interestingly, the RCWs of all the domed stations transferred in 1941 show bare steel domes, but the RCWs of several stations transferred in 1943 show the steel dome covered with earth or rocks. Metal brackets on many of the domes were presumably added later to retain rocks for camouflage. Surviving RCWs show 20 domed stations transferred

in 1941 and at least another 12 in 1943. There may be additional domed stations whose RCWs are not on file.(22)

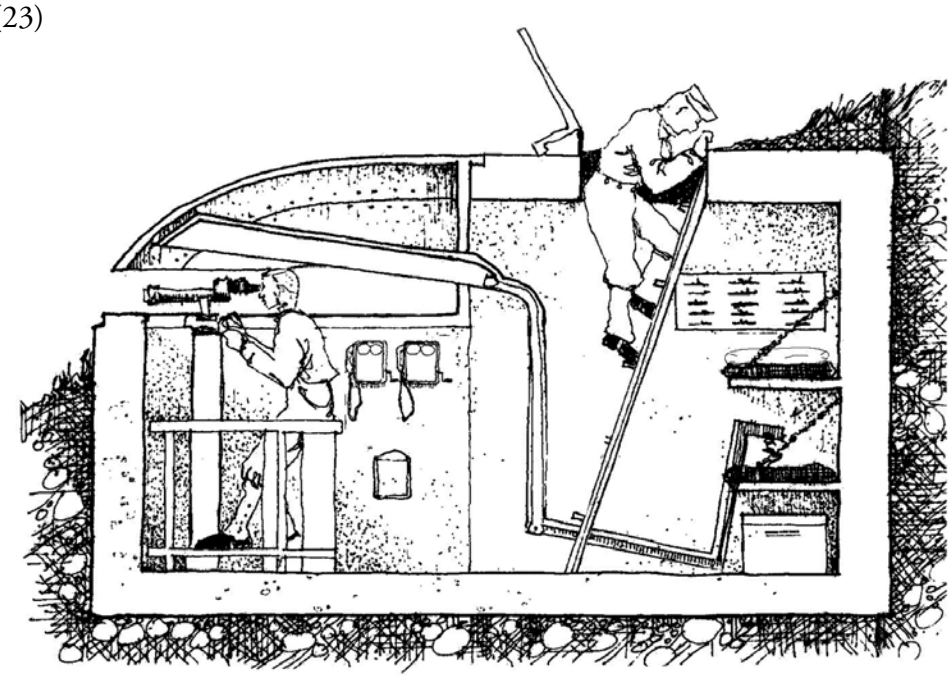


RCW plan, B^2S^2 Howe & M^3_2, Sutro Heights, showing camouflage rocks on steel dome. *NARA, RG 77, Entry 1007*

Sutro Heights FC stations. Rocks remain attached to the lower part of the steel, while those once attached to the actual steel-dome roof have been removed. *John Martini*

BC Wallace, showing bracket for attaching rocks for camouflage. *John Martini*

As for cost savings, the difference between locations makes it difficult to arrive at any conclusion, even for otherwise similar stations. Comparing the three 1940s designs for similar-size stations, B^2S^2 Rathbone cost $3734.53, while $B^3{}_{12}S^3{}_{12}$ station for Battery Townsley at Milagra Knob only cost $2898.08. The older-design B^4S^4 Davis cost $2536.08, and the concrete-domed B^1S^1 129 cost $4,023.66.(23)



Domed fire control station, HD San Francisco, based on drawing by E.R. Lewis.
Golden Gate National Parks Conservancy

Acknowledgement

The information, advise, and photographs from John Martini are gratefully acknowledged and appreciated.

Sources

1. NARA, Archives II, College Park, MD, RG77, Entry 1007, Box 142, D.F. 665 (San Francisco) 167. All NARA citations are from Archives II, College Park, MD.
2. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 177. RCWs Rathbone and Devils Slide, RG77, Entry 1007.
3. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 167, 1st ind.
4. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 167, 2nd ind.
5. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 167, 4th ind.
6. NARA, RG 165, Entry 257, Box 139, D.F. 665 170/1. Colonel Terry was in error as to the location of the Tennessee Point station. It was on Fort Cronkhite, not Fort Barry.
7. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 170.
8. NARA, RG 77, Entry 1007, Box 142, D.F. 665.2.
9. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 170 3rd ind.
10. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco).
11. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 2nd ind.
12. NARA, RG 77, Entry 1007, Box 142, 665 (San Francisco) 184, with 1st, 2nd, 4th, and 5th ind.
13. NARA, RG 77, Entry 1007, Box 142, 665 (San Francisco) 184, 6th ind.
14. NARA, RG 77, Entry 1007, Box 142, 665 (San Francisco) 184, 7th & 8th ind.
15. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 177, 7th ind.
16. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) 177, 12th ind.
17. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) CM 22183.
18. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) CM 22183, 2nd ind.
19. NARA, RG 77, Entry 1007, Box 142, D.F. 665 (San Francisco) CM 39286 & 1st ind.
20. RCW B^4S^4 Davis, NARA, RG 77, Entry 1007.
21. RCWs B^1S^1 129, RG 77, NARA, Entry 1007.
22. RCWs HD San Francisco, NARA, RG 77, Entry 1007.
23. RCWs B^2S^2 Rathbone, B^3S^3 Townsley, B^4AS^4 Davis, B^1S^1 129, NARA, RG 77, Entry 1007.