



# United States Department of the Interior

NATIONAL PARK SERVICE  
Pacific West Field Area  
Pacific Great Basin System Support Office  
600 Harrison Street, Suite 600  
San Francisco, California 94107-1372

IN REPLY REFER TO:

H40(PGSO-PC)

February 27, 1998

Mr. John Edwards  
SMC/AXFV  
2420 Vela Way, Suite 1467  
El Segundo, California 90245-4659

Re: Historic American Engineering Record documentation of White's Point Reservation, Base End Stations, San Pedro, Los Angeles County, California

Dear Mr. Edwards:

The National Park Service acknowledges the receipt of and accepts the Historic American Engineering Record (HAER) documentation for the White's Point Reservation Base End Stations. This documentation meets the Historic American Engineering Record standards and complies with the Memorandum of Agreement among the Department of the Air Force, the California State Historic Preservation Officer and the Advisory Council on Historic Preservation.

The completed documentation will be transmitted to the Prints and Photographs Division of the Library of Congress. The records are in the public domain and will be accessible through the Library. A copy of the documentation will be provided to the State Historic Preservation Officer.

These records will be a valuable addition to the documentation of America's engineering and industrial heritage.

Sincerely,

  
David W. Look  
Team Leader, Cultural Resources

cc:

HABS/HAER, WASO  
SHPO, CA

Advisory Council

Bob Mason, TRC Environmental Solutions, Inc., 21 Technology Way, Irvine, CA 92618

Dayle Cheever, RECON, 4241 Jutland Dr., Suite 201, San Diego, CA 92117-3653

## HISTORIC AMERICAN ENGINEERING RECORD

### WHITE'S POINT RESERVATION, BASE END STATIONS (B"1-B"6)

HAER No. CA-185

Location: White's Point Reservation  
Bounded by Voyager Circle and Mariner Drive  
San Pedro, Los Angeles County, California

USGS 7.5-minute San Pedro, California, quadrangle  
Universal Transverse Mercator Coordinates: B"1 - 378575/3731516;  
B"2 - 378597/3731509; B"3 - 378619/3731502; B"4 - 378641/3731496;  
B"5 - 378663/3731489; B"6 - 378684/3731482

Date of Construction: 1917-1918. Altered in the early 1930s (World War II)

Engineer/Builder: U.S. Army Corps of Engineers, District Engineer Officer, Los Angeles

Present Owner: United States Air Force  
SMC/AXFV  
2420 Vela Way, Suite 1467  
El Segundo, California

Present Use: Abandoned

Significance: The six Base End Stations at the White's Point Reservation are part of the fire control complex for Batteries Osgood, Farley, Merriam, Leary, Saxton, and Barlow located within Fort MacArthur Upper Reservation. These secondary fire control stations were built as part of the coastal defense strategy of the United States for World War I and modified for similar defense strategy during World War II. Batteries Osgood and Farley, 14" disappearing carriage guns, are on the National Register, and Batteries Barlow and Saxton were nominated in 1982 for listing. The secondary Base End Stations at the White's Point Reservation are contributing elements to these historically important and sensitive properties.

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Date: December 1997

## Introduction

The following information summarizes the conditions of six World War I Base End Stations (BESs) associated with the fire control of Batteries Osgood, Farley, Merriam, Leary, Saxton, and Barlow, Fort MacArthur, San Pedro, California. These six fire control stations were tied to the fire control and ranging system of four 14" disappearing carriage guns (Batteries Leary, Merriam, Osgood, and Farley) and eight 12" mortars (Batteries Barlow and Saxton), located in the Upper Reservation area of Fort MacArthur. Figure 1 provides the location of this project on the USGS quadrangle. Figure 2 is an historic map of the locations of these batteries within Fort MacArthur and Figure 3 provides the position of the White's Point Reservation (location of the BESs) in relation to Fort MacArthur. This report and the supporting documentation were completed as part of the creation of an Historic American Engineering Record for these structures which was stipulated in a Memorandum of Agreement among the Department of the Air Force, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation, prior to the commencement of the demolition of existing housing and the construction of new housing for military personnel assigned to the Space and Missile Systems Center (SMC) and Los Angeles Air Force Base (LAAFB), California.

Batteries Osgood-Farley and Barlow-Saxton were nominated to the National Register by the Fort MacArthur Museum Association and both are on the Register. The nomination of these batteries did not include the fire control elements or other supporting elements and related features in the Upper Reservation of Fort MacArthur or the series of Base End Stations that were necessary for the accurate firing of these weapons. The current scope of work was to document these structures and to tie them with their associated batteries.

The project involved the evaluation and documentation of a series of six Base End Stations identified as Barlow (B"1), Saxton (B"2), Leary (B"3), Merriam (B"4), Osgood (B"5), and Farley (B"6) (Figure 4). This complex of six fire control stations date to circa 1920 and are located in the White's Point Reservation. The central station, Merriam (B"4), is located immediately north of the Battery Commander (BC) Station for Battery Bunker; a 16-inch gun emplaced during World War II. Merriam is completely buried with only a small area of the hatch showing. There are no plans to move or alter either BES Merriam or the Battery Bunker BC Stations as part of the current construction effort and these structures were left in their current condition. Base End Stations Barlow, Saxton, Leary, and Osgood will be demolished as a result of the planned construction effort. As currently planned, BES Farley will be moved approximately 50 feet to the east of its current location and will be used by the Fort MacArthur Historical Society as a point of interest and interpretive location.

The original construction of these base end stations and the gun batteries that they supported are related to the theme of coastal defense, which is a unifying theme along the California coast from Spanish Colonial times through the Cold War years. Specifically, this project focuses on the development of harbor defense for the Los Angeles Harbor beginning in the late 1800s with the preliminary steps of acquiring land. The property under consideration was placed under the ownership of the War Department by an Executive Order dated September 4, 1888 (Berhow 1992). This "Old Government Reservation" was located next to San Pedro Bay and had been a Spanish public landing prior to being taken over in 1848 as government land, when California became part of the United States. Additional military holdings were added to the original reservation in 1897 and 1910. The early plans for these lands were to build fortifications to guard the newly completed deep-water harbor facilities of the Los Angeles Harbor (Berhow 1992). The

military reservation was separated into two areas, the Upper and Lower Reservations. Battery construction began in 1914, and by 1917 there were four 14" rifled guns and eight 12" rifled mortars emplaced in the Upper Reservation. The 14" guns were mounted on disappearing carriages which rose above their protective parapets during firing, then returned to their protective positions after firing. The protection of these guns was provided by a thick buffer of reinforced concrete and earth. The 14" guns could deliver a 1560-pound shell a distance of 14 miles. The directional information necessary for setting the trajectory of fire, or the "gun arc" for these batteries, was provided by members of an Observing Detail stationed in four groupings of six base end stations located between Point Fermin and Point Vincent. The Station detail included an observer and a reader who were stationed in these 24 base end stations. The stations overlooked the portion of California coast immediately west of the Los Angeles harbor. The observers in the distant stations, and the plotters and gunners at the battery were coordinated by a timed interval signal sent every 10 seconds by phone. At the signal the observers reported their target azimuths by phone, the plotters recorded the present position data of the target location, and the gunners entered newly computed firing data on their guns. Information from two stations (B<sup>1</sup> and B<sup>2</sup>) was necessary for the accurate plotting of a target. The bisecting lines created by observational data allowed the plotters to relay accurate information to the gunners to establish the azimuth and distance to a target. Figure 5 provides an idealized representation of the relationships among the various participants in the fire control system.

The base end stations contained optical instruments for making target observations. There was an azimuth telescope for taking horizontal angle readings and depression range finders for determining the vertical azimuth of a target mounted in each station. The telescopes were mounted on concrete columns and the range finders were mounted on octagonal cement platforms. The Report of Completed Works provide that the instrument that was intended for these stations was the "Lewis D.P.F. Model 1907." A copy of the "Training Regulations, No. 435-221, War Department, Washington, September 30, 1924, Coast Artillery Corps, Fire Control and Position Finding" is provided as a project field record.

The primary base end stations for these gun batteries were located in the Upper Reservation (BC1-B'1 (Barlow), BC2-B'2 (Saxton), B'3 (Leary), B'4 (Merriam, located in Angels Gate Park), B'5 (Osgood, located at Point Fermin), and B'6 (Farley, located at Point Fermin) (see Figure 2). The White's Point Reserve (current project area) contained the secondary stations (B''1-B''6) (see Figure 3). B''1 corresponds with Battery Barlow, B''2 with Battery Saxton, B''3 with Battery Leary, B''4 with Merriam, B''5 with Osgood, and B''6 with Farley. In addition to the White's Point complex of base end stations, there were six stations located at Sea Bench Reservation (B'''1-B'''6), to the west of White's Point, and six stations at Long Point Reservation (B''''1-B''''6), located further to the west, near Point Vicente (Figure 6).

The other guns which were sited in the Upper Reservation were eight 12" mortars which were designed to launch a 700-pound shell as far as 11 miles. The trajectory for these shells was high, as they were intended to land on the decks of approaching enemy ships. These guns were known as Batteries Barlow and Saxton and two of the six base end stations were devoted to these batteries. Within the White's Point Reservation project area, B''1 and B''2 were devoted to Batteries Barlow and Saxton, respectively.

Plans for the construction of the White's Point base end stations were submitted to the Chief of Engineers for the United States Army by the District Engineer Officer, Los Angeles in 1917. A copy of this information is provided as a field record under separate cover. The plans and estimates for a number of fire control installations at Fort MacArthur were reviewed and commented on as part of the endorsement process. As identified in the initial correspondence, the stations are

described as "Type base end station, covered, for high sites, File No. 15-1-43A" (Leeds 1917). This letter identifies that these stations were to be "located on the hillside and can be provided with permanent cover as shown and still be made inconspicuous and have the required angle of view. Entrance to them is provided by a manhole covered by a hatch made up as described above" (Leeds 1917). The hatchway that is described in a preceding paragraph of this letter indicates a hatchway with a fixed ladder. The hatchway is detailed as being "made of wood with painted canvas cover to insure a weather-tight structure" (Leeds 1917). The hatch covers for the base stations at White's Point appear to have been made of metal.

The construction tasks and cost estimates that were provided with this letter indicate the excavation of 13 cubic yards of soil, backfilling and grading, concrete, reinforcing steel, steel doors and windows, and a drain for a total cost of \$307.00 (Leeds 1917). The Report of Completed Works - Seacoast Fortifications which was completed by the Coast Defenses of Los Angeles, California, on June 30, 1920, for the base end stations indicates a final cost of \$357.60 (Form 2, Report of Completed Works). These forms were completed for each of the six stations and include plans for construction and design. The copies of these plans are difficult to read; however, they provide generally consistent findings with the field investigation. Details of these findings and existing condition information is provided below.

An overview context photograph was taken of these stations from a distance of 280' due south of B"4. This photograph provides an overall view of the relationship and setting of these stations (Photograph CA-185-1). This view is intended to demonstrate the appearance of these stations when they were in their original use. As is apparent from this photograph, the intention was for these stations to blend with the surroundings and as such they are difficult to pick out from the background. As a consequence, the visibility of the stations is poor.

## **Base End Station (B"1) Barlow**

This is the westernmost station of the six in the White's Point Reservation complex and is in the poorest condition. This station is the anchor location for the series of stations and is referenced in the Completed Works Form as 61°N 38'W of Battery Osgood, at a distance of 4,950 feet. This orientation and distance of this station is in reference to Battery Osgood, located in the Upper Reservation of Fort MacArthur. Each of the remaining five stations is mapped in relation to BES Barlow and was positioned at 75-foot intervals along the established axis of 72° 44' from BES Barlow. B"1 was attached to one of the 12" mortar batteries located on the Upper Reservation of Fort MacArthur and was named for John W. Barlow. It is also interesting to note that the linear relationship of these stations with each other appears to be a function of the landform rather than a necessary element of the way in which these stations worked. This becomes clear when the relative positions of the 18 other base end stations is considered. As shown on Figure 6, the other stations are not placed in a linear arrangement but do have a specific connection with the batteries at Fort MacArthur.

The condition of B"1 at the time of the present fieldwork is categorized as poor (Photograph A-1). A World War II access road was cut downslope from this station. The steepness of the cut, subsequent erosion, and finally efforts in the 1950s to minimize the "attractive nuisance" quality of all six of the base end stations have contributed to the poor state of preservation of B"1. The development of the road and erosion resulted in more extreme exposure of the walls of this station

when compared with the remaining five stations. This is also the only station which does not have a roof. The removal of the roof is proposed to have been accomplished when the stations were partially buried and filled or partially filled with earth. It appears that the original plan may have been to remove the roof to make infilling easier to accomplish as the route for filling is restricted to the hatchway opening if the roof is in place. Based on the construction of these structures, the removal of the roof was a substantial undertaking and not the most efficient method of filling the stations with soil. After the experience with removing the roof and filling B"1, it appears that the remaining stations were not dealt with in the same manner.

The dimensions of each of the stations vary to some extent; however, the general attributes are as follows: exterior width (east/west axis), exterior depth (north/south axis), and height of southern wall at rooftop without sandstone additions is 8' for each dimension. The interior measurements are 6'6" for width and depth and height at ceiling center. The rear area ceiling height at the hatchway is 7'9". The hatchway interior measurements are 2'6" by 3'. The exterior hatchway dimensions are 3'10" by 4'4". The interior height of the lower sill of the viewing slit from the floor is 4'5". The viewing slit is a 12" opening across the entire southern wall and an opening of 12" for a distance of 3'11" along the west and east walls.

B"1 is a concrete box that was poured in place using wooden board forms, where sufficiently deep excavation into the geological formation of the slope could not be accomplished. The southern elevation of B"1 is 5'4" from the footing to the sill (Figure 7; Photograph A-2). To construct this wall, a trench was excavated into the slope to a depth of 2'9" and boards were used to form the remaining wall surface. The outside face of this wall was poured directly into the trench and the added exterior board form, while the interior face of the southern wall was formed entirely with lumber. The interiors of all of the stations were formed with lumber. The boards were smaller than those that were used on the exterior, they were arranged vertically, and the grain is not generally visible in the cement finish. It is possible that the interior walls were smoothed. The exterior trench/board form style of construction is seen in each of the stations with variation coming from the depth of the excavated trench and the amount of lumber used in forming the exterior wall facing. For B"1, the exterior treatment of the south, east, and west walls includes the use of formed lumber to a greater extent than was found for B"2, B"3, and B"5. This appears to have been done because the landform did not allow for a deeper trench excavation while still maintaining the necessary spatial relationship with the remaining stations on the slope. The horizontally placed boards that were used to form the facade were 12" wide and rough cut, as the open grain is visible in the poured concrete. The eastern edge of the south wall was cut to a depth of 2'8" with a 2' lumber formed section above. There is a broken cast iron drain pipe emerging from the lowest section of the south wall at a distance of 12" from the western edge.

The concrete that was used for B"1 and in the remaining structures is an aggregate of cement and rounded to subrounded pebbles, from off-site. The size of the aggregate is somewhat larger than what is generally seen today. One inch to inch and a half clast size was apparent in wall profile views. The quality of the construction material appears to be good, as there is little evidence of weathering and the walls appear sound with no evidence of cracking. The building cost estimate plans for these stations called for 9 cubic yards of concrete and 700 pounds of reinforcing steel (Leeds 1917). Evidence of reinforcing steel was not readily apparent in the interior or exterior profiles of B"1 or the remaining stations; however, some evidence of reinforcement was seen in the damaged wall portions of B"1.

The pouring of the floor and walls of B"1 appears to have occurred as a single event, as there are small areas of extruded concrete between forming boards on the exterior wall faces and there are no

visible cold joints. There is no roof on B"1 and the interior was two-thirds filled with soil at the commencement of fieldwork.

The exterior west wall of B"1 was exposed through erosion, revealing the use of three 12" boards and a 9" section of a fourth board for the exterior form of the upper section. The lower portion was formed on the exterior by the excavated trench.

The east wall of the station was less exposed during the initial field visit (Figure 8; Photograph A-3). This side of the station was partially covered in soil and there is a short, damaged segment of a stacked sandstone wing wall on this side. The stacked wall angles into the station, meeting the east wall, just behind the edge of the viewing slit. The preserved segment of wall is five courses in height with variable stone size. In general the stones appear to weigh 30-40 pounds and are sandstone. The stones are subangular and rounded and were stacked with no apparent support except for soil as loose fill behind them and between them. These walls are shown in the plan drawing of the stations that was attached to the Report of Completed Works - Seacoast Fortifications; however, there is no description or explanation as to the purpose or attributes of these walls. Speculation is that the walls may have served several purposes including additional camouflage, by breaking up the line of the station as viewed from the front and the sides, and they may have aided in maintaining a clear line of sight from the side viewing slots by holding back soil.

After uncovering these wing walls at each of the stations, the construction techniques, dimensions, and relationship of these additions to each of the stations is generally consistent from one to the next. The following similarities were noted: The western sidewall was generally higher and longer than the eastern sidewall. The walls were generally a minimum of five courses in height with as many as eight courses. There was no reinforcement or stabilization used with the exception of small amounts of cement found between some of the rocks. These wing or side walls meet the station walls at an angle of about 45 degrees and abut the sidewalls of the station just behind the terminus of the viewing slit. The walls taper in height as they angle towards the natural slope and there is a slight backward lean to their construction. Fill dirt was placed behind and below these walls.

The interior of B"1 was cleared during the initial fieldwork phase because the absence of a top made clearing the infilled soil an expedient task. The tops of the walls were also exposed on this station because of the removal of the roof. One fragment of rebar is evident at the approximate center of the north wall. This metal bar is imbedded in the wall and is bent over towards the outside of the structure. The bar is half-inch-square stock with a simple twist. The function of this bar is unclear, although it may have been used to anchor the roof. The exposed walls at the roof line also revealed an uneven cold joint between the former location of the roof and the walls near the rebar fragment and also at the two rear corners.

The interior of the east wall revealed paint an "Army" green or gray color from the floor up the wall a distance of 3'4". The remaining surface of the wall is painted white. As mentioned previously, the interior wall surface is generally smooth with some demarcations of the 5" boards that were used to frame the interior space. The section of view slit in this wall has a beveled interior edge. There was also a "hook" set into this wall while the concrete was wet. This hook is 4'7" from the floor at a distance of 3'8" from the north wall. Information from the National Archives, Pacific Region, Laguna Niguel Office indicates that these "hooks" may have been for the lighting that was provided by oil lanterns.

The interior of the south wall includes a number of scars or shadows from mounted or attached items. There is a conduit scar running horizontally to the floor, 2'2" up the wall. This conduit connected the "operators/observers" phone to the main exterior connection (Completed Works form). A similar connection is visible in the opposite corner of the station. The phone boxes were affixed to the walls using lead anchors inserted in the holes that were drilled into the cement walls. The phone box was attached to the wall with treaded rods inserted into the lead anchors, two at the bottom and two at the top. The conduit was attached to the wall with brackets that were screwed into lead anchors at intervals of about 14 inches. At the corners the bracket spacing was closer, with a bracket placed within 4" of the corner. Immediately below the viewing slit in each of the corners of the front wall is a single eye bolt. These bolts were set into wet cement. There is a length of approximately 8" of brass transom chain that is attached to the eye bolt in the southeast corner. It appears that these bolts and chain were used to secure the metal shutters on the stations, as there is a corresponding hasp welded on the inside of the metal shutters, which is present in the other stations.

The left interior wall has similar paint, phone hook, and conduit scarring as the south wall. On the east wall, 4'9" above the floor there is a 3/8" round metal rod support bracket. The bracket supports the center of an angle iron frame. There is a conduit aperture in the north corner of this wall, 3'6" from the floor. There is a small remnant of lead conduit hanging from the aperture. At the conduit's entrance to the wall there is a fibrous insulation.

The paint on the interior of the rear wall is the same as the previously discussed walls. There is evidence of an "Outlet Box" having been mounted on this wall. An outlet box was recovered from the soil in the corner of this station and the outline of this or a similar box is scarred into the paint on this wall. There is also a matching top center mounting screw 4'6" above the floor. It appears that as many as four boxes of this type were attached to this wall. There is a series of six metal rungs mounted into the concrete of the north wall. There is a 4" space between the west wall and the rungs. The first rung is mounted 12" from the floor and the remaining rungs are 12" apart. The rungs are made of 3/4" round metal stock and there is a 3" space from the rung surface to the wall. It appears that the ladder path was painted black.

The floor of the station is poured concrete and both the floor and pedestal are painted red. The floor is dominated by an octagonal, poured concrete pedestal (Photograph 1). The pedestal is 3'6" across and rises 15" from the floor. The edge of the pedestal is beveled 3/4" back. The edge of the pedestal is 8" to the north of the south wall and 17" from the west and east walls. There are three 1" in diameter threaded bolts imbedded in to the platform. The bolts are 2'3" on center in relation to each other in a tripod arrangement. The single bolt is to the rear and the two remaining bolts are spaced at the southern side of the pedestal. There is a stain on the surface of the pedestal that appears to correspond to a mounted piece of equipment. The final feature of the floor is a drain that is located 11" from the west wall. The drain is cut into the joint between the floor and the south wall and appears to have been added after the concrete was dry. This drain corresponds to the pipe outlet on the front-left exterior side of this station.

The Report of Completed Works indicates a number of other features regarding these stations. The height above concealment was 3 feet with the height above protection given as 5 feet. These structures were listed as conspicuous from 750 yards and were concealed with earth and cobble stone cover. There was no source of electric current, no kilowatts required, and no heating. Lighting was provided by oil lanterns and there was no water, sewer, or latrine service. Data from these stations was transmitted via telephone line to the appropriate receivers.

## Base End Station (B"2) Saxton

This station is located at a bearing of 72°44' from B"1 at a distance of 75'. At the time of the fieldwork, this station was in generally good condition. This station, along with B"1, was attached to one of the 12" mortars that were located on the Upper Reservation of Fort MacArthur. The reader is referred to the discussion above for information on the size and construction of this station as there are many similarities which will not be repeated for the other stations. The differences will be highlighted here.

At the time of the initial fieldwork, this station was covered with soil on the top, interior, front, and sides. Some of the surrounding soil is believed to be part of the original camouflage treatment; however, some slumping and more recently placed soil was apparent. The removal of what was perceived to be slump and recently added soil was accomplished with shovels. These efforts were made to return the station to a "World War I" context condition for documentation (Photograph B-1). The sandstone cap stones along the forward roof line were in excellent condition, as were the cap stones on the right and left roof edges. These cap stones were placed in cement and are believed to have been part of the camouflage efforts, serving to break up the roof profile and blend the structure into the light-colored hillside. These rocks may also have aided in keeping the soil that was placed on the roof from falling forward, across the view slit.

Station B"2 was recessed into the slope and sandstone "wing" walls were well established and in good condition on the left and right sides. The top hatch cover is missing, although a portion of the hinge/strap fitting is present. This is the only BES that retains this mechanism. The exterior roof area of this station is unremarkable except for the presence of the hatch opening, which is detailed in the measured drawing referenced as Figure 9. There was an accumulation of soil and dried grass on the roof of BES 2 which may reflect conditions that are consistent with a World War I appearance.

The front of this structure (Figure 10; Photograph B-2) shows that the exterior of this wall was formed primarily by pouring concrete directly into the excavated trench to a depth of 4'9". A section of this wall approximately 9" in height, located immediately below the view slit, was formed with boards and was shaped and smoothed accordingly. There is a small band of unformed concrete hemming the structure between the trench pour and the formed view slit area. The view slit space is 12" in size and the approximately 7-9" roof thickness caps the structure. The metal slit on the south wall is intact, although rusted. The hinges are functioning and the door can be raised and lowered to some extent. The view slit is recessed about 5" which creates a small ledge at the top of the support wall and a slight overhang of the roof above the slit. The lower sill has a small cement lip against which the door rested when closed. The roof above the slit has been channeled on the underside. The purpose of the channeling appears to be for water or moisture control; however, this was not tested. The channeling was created in the concrete when it was wet. There is also a short piece of round metal protruding from the middle of the roof fascia. The metal rod is bent slightly upward. The catch placement appears to correspond with a hasp and metal catch attached to the face of the door for opening. The catch and hasp are not present on the front or left-side doors, but are present on the right-side door (see Figure 4).

The south wall also has a drain opening in the lower left corner. There was a length (9') of rusted cast iron pipe attached to this drain on the outside. The diameter of the pipe is one inch and the path of the pipe was to the south, towards the edge of the slope.

The right exterior wall of B"2 is in excellent condition (see Photograph B-2). The profile reveals a trench formed wall, 4'9" in height with a small band of unfinished concrete between the trench area and the formed view slit apron. The metal view slit door has a hasp and metal catch remaining. The catch is a piece of metal rod with loops on either end. One loop is attached to the "U"-shaped hasp on the metal door and the other can be caught on the metal rod that was hooked on the roof fascia above it.

The east wall of B"2 is also in good repair and is essentially the same as the west wall (Figure 11). The differences are the absence of the door catch and hasp. Photograph B-3 provides a view of the left and front sides of this station after the concealing soil was removed. A short section of the drain pipe is visible in the lower left corner.

The interior of BES 2 was cleared of soil over a two day period, using shovels. Access to the interior was gained through the open hatch which allowed one individual to stand on the infilled soil and begin the excavation process. The upper two feet of fill was removed from this station through the view slits. The removal of this soil allowed two individuals access to the interior of the structure. Soil was removed through the view slits and the open hatchway. The soil was moderately compact and contained a variety of items. The catalog of recovered items is provided at the end of this document. All of the collected items were returned to RECON for cleaning and identification.

In general terms the recovered items from this BES are discarded trash dating to World War II and later. The most substantial of the recovered items are planks of wood which are from wooden crates with the following stenciled lettering: "20-L-2 LOCKER CLOTHING METAL ATTACHMENT FULL LOUVERED DOOR 3 EA 18X24X72 WT. 265 . . ." and on the second plank "TRANSPORTATION OFFICER FT. MACARTHUR SAN PEDRO CALIF M/F QM PROPERTY OFFICER REQN 04225 . . . A wooden box fragment painted with bright yellow paint carries the words "FUZE-V.T. M-93." All of these items, as well as the remainder of the miscellaneous debris recovered from the interior of this station appears to date to World War II or later. It appears that debris from around the stations was thrown in with some of the items representing the continued military presence. The presence of Battery Bunker in the middle of the line of base end stations probably accounts for the greatest amount of the military trash. In addition to the materials that were retrieved from the excavated soil, the removal of soil revealed that B"2 contained the original bench on which the observer sat when using the observing instrument (Photographs 2-4). This is a wooden bench painted a light gray in color. The bench is curved and was mounted on the metal rings which bound the instrument pedestal at the top of the pedestal and on the floor. The lower, or floor ring, provided the track for a pair of metal wheels, one on each leg of the bench. These wheels tracked on the ring allowing the bench to rotate. Midway up the legs of the bench are a pair of metal brackets with a pair of round guides which fit on either side of the upper metal ring. These guides maintain the position of the bench on the metal rings and keep the bench upright. This bench is 36\_" in total height and is some 49\_" in overall length. The bench is 11\_" wide. There is a display to this equipment in use at the Fort MacArthur Museum.

The remainder of the interior of station B"2 appears to be consistent with the original setup, as portrayed in the Report of Completed Works drawing. All of the hardware was removed from this

station with the exception of several of the fastener or closures for the view slit covers. The fastener in the right-front corner of this station is complete and revealed a length of transom chain similar to the piece found in station B"1. The entire mechanism is present in B"2, and reveals that the chain is attached to the cement wall at one end while the second end is connected to the middle of a length of metal rod. This metal rod is bent at both ends so that the ends fit into the circular catches which are welded to the interior of the metal slit covers. In this way the covers can not be opened from the outside.

The scars on the walls of this station reveal the outline of the two boxes on the front wall, immediately below the view slit, which correspond with the identified "Observers Line" and "Readers Line" on the station plans. The rear wall indicates the presence of the "T. I. Bell" or the Timed Interval Bell that was used to signal when readings were to be taken. Representations of these features are presented below in a series of medium format photographs that were taken of the interior of BES B"6.

## **Base End Station (B"3) Leary**

This base end station is located 150 feet on a heading of 72°44' from B"1. This station was tied to Battery Leary, one of the 14" guns located on the Upper Reservation of Fort MacArthur. During the initial fieldwork at this site, the condition of the structure was noted as fair to good. As with B"2 the similarities between this station and the previously discussed stations will not be repeated, including shared dimensions.

This station was generally obscured by soil on the front, right, and left sides up to the lower ledge of the view slit and was completely buried on the rear side, at the initiation of fieldwork. The roof is intact and the station is filled with soil. The hatch cover is absent with damaged hinge pieces embedded in the concrete. The roof has an accumulation of light tan sandy soil with some weed growth. The sandstone cap stones from the edge of the roof line are missing in a number of places. Soil was removed from the sides and front to expose the view slits and the wing walls. A photograph was taken which is intended to duplicate the World War I appearance of the structure (Photograph C-1).

This structure was formed in a manner quite similar with B"2 (Photographs C-2 and C-3). A trench was used to form the exterior form of the walls to a height of approximately 4'6". The finished area for the view slit sill is similar to B"2 and there is a thin band of extruded, unfinished concrete separating these two areas. The metal view slit door is present. This door is rusted and has sustained some damage. The door can be opened with some effort as the hinges are rusted. The most remarkable feature of B"3 is an alteration to the front wall (Figure 12; see Photograph C-2). The left side of B"3 is essentially unaltered and the view slit cover door is in excellent shape (Figure 13; see Photograph C-3). The alteration to the front of this station is an opening cut in the concrete wall. The opening extends 33" from the sill of the view slit down the front wall. The opening is 36" in width. The area that was cut away was repaired to create a smooth edge. Wooden framing was fitted into the cut concrete opening. The framing has the appearance of a window or door frame as there is the type of lipping that is consistent with a door or window which opened out. There were also two lightweight hinges on the left upright and a small amount of screening material was found in the soil around this station. A second alteration is a series of wooden shutters that were placed inside of the metal view slit doors. A set of shutters covered each of the view slits on the left and right sides with two sets in the front view slit. The shutter

sets on the south side were separated by the created opening, so that they were not continuous across this facade.

At the commencement of fieldwork at this station, the shutters were in poor repair and generally out of position or severely damaged. This was also true of the wooden jamb in the front wall opening. A better understanding of the shutters and altered opening was gained after viewing B"5 which has also been altered in a similar manner. These alterations appear to date to World War II; however, the reasons behind them are not clear at present. There is some indication that these changes may have been related to the relative position of the Battery Commander Station for Battery Bunker, the World War II structure that is present between B"3 and B"5 and directly in front of B"4. The alterations of both B"3 and B"5 are similar and may be related to the use of these stations for placement of radar or other siting equipment by World War II forces. Aside from the modified south wall and cement addition to the pedestal, both B"3 and B"5 exhibit modifications in the arrangement and types of mounted wall items and the addition of electric power.

B"3 has been fitted with a switch box and conduit leading to a fixture on the ceiling which appears to have supported an electric light. The switch box was mounted on the left wall and power was routed through a drilled hole in the rear wall, adjacent to the ladder on the left side. There are also a number of shadows on the walls of B"3 which indicate that there were a number of boxes mounted in this station which are not consistent with the World War I arrangement (Photographs 5-8). The interior appearance of B"6 provides an arrangement that appears accurate to the World War I era. Figures 14-17 provide views of the outlines that were visible on the interior walls of B"6. As shown there were relatively few items mounted on the wall of this station. The front wall supported two boxes of similar size with wire running across the wall below these boxes. The right wall was effectively absent of mounts and the left wall was limited to the continuation of the wire path from the front wall to a rectangular shaped holder made from metal strap and a small "Y"-shaped hook mounted in the wall. The "Y"-shaped hook may be one of the hooks that were used to hang the oil lanterns on as mentioned in one of the endorsements for these stations. The rear wall supported the ladder as well as the continuation of the wire from the forward and left-side walls, and a length of wood. The shadows of three unidentified boxes or equipment items are also present on the rear wall of B"6.

## **Base End Stations (B"4) Merriam**

BES Merriam was linked with one of the 14" guns at Fort MacArthur. This station was named for Henry C. Merriam and is located 225" on a heading of 72°44' from B"1. This BES is located immediately to the north of the large World War II era Battery Commander Station that is linked with Battery Bunker located to the west of the current project. This building was not the subject of the current undertaking, except as it relates to B"1-B"6 at White's Point. As part of the effort to eliminate the dangers associated with unused, but accessible open buildings near the Air Force Housing project, soil was used to infill the base end stations, as noted above. With B"4 positioned behind the Battery Commander Station, the filling was complete. The rear portion of the larger building held soil in place and B"4 was completely covered with fill.

There are no plans to remove the soil covering this station, as both of these buildings are expected to remain in place. At a future date, the Battery Commander building may be cleaned and returned to an historically accurate state. There are no plans to include B"4 in this process; however, if B"4

was modified in a similar fashion as B"3 and B"5, the inclusion of B"4 in a restoration program may be appropriate. Based on the apparent pattern of modification for B"3 and B"5 it would not be surprising to find that B"4 was also used during World War II activities and modified accordingly.

## Base End Station (B"5) Osgood

B"5 or BES Osgood was linked with one of the 14" guns (Battery Osgood) at Fort MacArthur. This BES was named in honor of Henry B. Osgood and, like the remaining five stations, was constructed between 1918-1919. The Report of Completed Works for these stations shows their condition and specifications as of June 20, 1920 when they were transferred. This station is located 300 feet from B"1 on a heading of 72°44'. B"5 is remarkable when compared with the remaining stations with regard to a slight alteration of the basic design footprint. The Report of Completed Works shows that the original design of B"5 included a "kick-out" area of some six inches on the rear wall. This enlarged area corresponds with the left edge of the hatchway and includes one-half of the left rear wall. The reason for this design difference is discussed below. A photograph of B"5 which duplicates the World War I appearance is provided as Photograph E-1. Photographs E-2 and E-3 provide views of this station, after the concealing soil was removed. As with the previously discussed stations, the elements of this station that are consistent with regard to the general dimensions and construction techniques will not be repeated. The features that are unique to this station or that represent alterations are presented below.

This station shares much in common with B"3. As with the previously discussed station, B"5 was altered in a number of ways. An enlargement of the front wall was made on this station. The modification appears to be nearly identical to the modification of B"3 (see Figure 12 and Figure 18). The representation of B"5 that is shown in Figure 18 provides a view with the metal slit cover in the closed position; however, in other respects these stations are quite similar. A wooden jamb was fitted into the enlarged opening in B"5 and wooden slat shutters were present in the slit openings on the right and left walls and on either side of the enlarged opening on the front wall (Photograph 9). As mentioned previously, the shutters in this station were in reasonably good condition. A representation of the left side of B"5 is provided as Figure 19.

The modifications to the interior of B"5 are similar to B"3, with several differences. The equipment pedestal was modified in the same manner, with the addition of a rectangular cement extension to the rear portion and the alteration of the mounting bolts. An electric light source was also added to this station with similar hardware as was used in B"3; however, the switch box was mounted on the right wall, near the ladder. The light fixture was mounted in the center of the ceiling.

The left and rear walls of B"5 exhibit a number of differences when compared with B"3 (Photographs 10 and 11). As noted above, the left one-half of the rear wall in B"5 juts some 6" beyond the limits that was found for this same area in the other stations. There were three holes drilled into the left rear corner of this BES. The lowest of the holes inlet a series of three, thick, lead encased wire bundles. Small openings in the lead casing revealed that the wires were bound in a rough cotton fabric before the casing was placed over them. On the left wall, immediately adjacent to the wire bundles, are two metal circuit boxes. These boxes were mounted side by side and contain 51 pairs of circuits each. A wire outlets from the box on the left and runs to the middle of the three holes in the corner. It is also interesting that the scars or shadows on the left wall,

beneath the two metal circuit boxes, is different than what was noted for this same area of wall in stations B"1, 3, or 6. This section of wall in B"5 is unpainted with the appearance that the originally mounted item covered a large and continuous surface, from just behind the slit terminus to the rear corner of the left wall. This unpainted area extends in the other direction, from the top of this wall to the floor. The condition of this area in the other stations is generally unaltered and painted white beginning approximately half way up the wall including the ceiling. The structure plan for this station indicates that a "Term. Box" was located on this wall. The assumption is that this was a terminal box of some sort.

B"5 shares the pattern of mounted equipment on the front wall with the remaining stations (see Photograph 9). The outline of two, similarly sized and shaped rectangles are present on the right and left sides of the front wall. These locations correspond with the BES plans provided on the Report of Completed Works, which identifies the box on the left as the "Readers Line" and the marking on the right as the "Observers Line." This refers to the telephone connections between the stations and the batteries to which they were linked.

The differences that are present in B"5 may be consistent with the use of this station as a transfer point for the other stations, in that the telephone wires ran from the five other stations to B"5 and then were routed from this station to their respective gun batteries. Excavation of the rear areas of these stations may provide information regarding the routing of wire between stations. Each of the stations has instructions for "2 pipe conduits" in the left rear corner, which appears to correspond to the entrance and exit of electric lines from these boxes.

## **Base End Station (B"6) Farley**

BES Farley is the eastern most station in the White's Point series. This station is located on a bearing of S. 72° 44' at a distance of 375 feet east of station B"1. This station was attached to one of the 14" guns (Battery Farley) at Fort MacArthur and was named for Joseph P. Farley. At the commencement of the current project this station was partially buried and infilled with dirt. Photograph F-1 shows the station as it is believed to have looked during its original period of use. Photographs F-2 and F-3 provide views of the station after the infilled soil was removed and the walls were cleared of cover. Measured drawings of this station are provided as Figures 20 and 21. The dimensions and features of this station are most similar with station B"2. BES Farley was not altered after its original World War I use period in any ways that are obvious. The walls of this structure are intact and the sandstone capping along the roof line is in excellent condition. The wing wall on the west side of this structure is in fine shape and is the most extensive of the wing walls that were uncovered. The representation of this wall that is provided as Photograph 12 shows the remarkable work that went into creating this wall. The complimentary wall on the east site of B"6 is quite small in comparison and may have been damaged prior to the commencement of this fieldwork; however, it appears that the east wall was never as extensive as the west wall on this station.

Another feature that distinguishes B"6 from the other stations, with the exception of B"1, is the amount of exterior framing that was used to construct this station. As shown in Figure 20, there are the scars of three complete framing boards evident on the front wall. The profile view of this station, shown on Figure 21, also demonstrates the amount of area that was framed rather than trenched. These construction techniques suggest that the position of this structure relative to the other stations, did not allow the use of the natural slope for trenching, except for the lowest section

of the walls. Consequently this station may have been more visible, as was noted for B"1, and the larger western wing wall was necessary to break-up the profile of the station.

As was discussed in some detail above, the interior of B"6 is in perhaps the best shape of any of the other stations with the possible exception of BES 2, and appears to maintain a consistent appearance with the World War I design. With the exception of some small items of hardware on the walls (brackets, strap metal holder, mounting screws, and hook) the only items of substance left inside this station are on the floor (see Figures 14-17 and Photographs F-4 through F-8). The paint outlines indicate that there were few items mounted on the walls in the station and that the positions of the items follow the engineering drawings that are provided on the Report of Completed Works.

The pedestal on the floor of B"6 is in excellent condition (Figure 22; see Photograph F-8). The mounting bolts with nuts are in place, a mounting ring is present on the top of the pedestal, and a second metal ring surrounding the pedestal is mounted on the floor. The upper metal ring is held in place with a series of six metal brackets. These brackets are screwed into the cement pedestal and attached to the inner face of the ring elevating the ring 4" from the pedestal. This station and B"2 are the only stations that retain these elements. As seen in B"2, this pair of metal rings supported the wooden bench that the observers sat upon to view through the instrument. The immediate plans are to move this station approximately 50 feet to the east and to restore the exterior to a World War I appearance. The station will be secured with a new hatch cover and lockable slit covers (Photograph 13). The bench that was recovered from B"2 could be installed in this station to add to the authenticity. The sandstone wing wall on the west and east sides of the station will be reconstructed to maintain an historically accurate appearance. This station will serve as an interpretive location for the local historical society and the Fort MacArthur Museum Foundation members.

## References Cited

- Berhow, Mark. *The Harbor Defenses of Los Angeles: A Reference Manual*. Fort MacArthur Military Press, Fort MacArthur Military Museum Association, 1992.
- Leeds, Charles. Letters of correspondence between the District Engineer Officer, Los Angeles, and the Chief of Engineers, U.S. Army. 1917.

**HAER No. CA-185**

**PHOTOGRAPHS**  
**WRITTEN HISTORICAL AND DESCRIPTIVE DATA**

**Historic American Engineering Record  
National Park Service  
Department of the Interior  
San Francisco, California**

**HISTORIC AMERICAN ENGINEERING RECORD  
SEE INDEX TO PHOTOGRAPHS FOR CAPTION**

**HAER No. CA-185-A-3**



CA-185-A-3 VIEW OF STATION BARLOW SHOWING EXPOSED EXTERIOR FRONT AND LEFT SIDE OF THE CONCRETE CONCEALMENT WITH SANDSTONE FLANK-WALL FRAGMENT, FACING NORTHWEST.

**HISTORIC AMERICAN ENGINEERING RECORD  
SEE INDEX TO PHOTOGRAPHS FOR CAPTION**

**HAER No. CA-185-C-1**



CA-185-C-1 VIEW OF BASE END STATION LEARY SHOWING THE SUGGESTED APPEARANCE DURING USE, FACING NORTH, VIEW IS OF THE FRONT.

**HISTORIC AMERICAN ENGINEERING RECORD  
SEE INDEX TO PHOTOGRAPHS FOR CAPTION**

**HAER No. CA-185-C-2**



CA-185-C-2 VIEW OF STATION LEARY FACING NORTH SHOWING EXPOSED EXTERIOR FRONT OF THE CONCRETE CONCEALMENT INCLUDING POST 1920 DOORWAY ALTERATIONS, SANDSTONE FLANK-WALLS ARE VISIBLE AT THE REAR SIDES.

**HISTORIC AMERICAN ENGINEERING RECORD  
SEE INDEX TO PHOTOGRAPHS FOR CAPTION**

**HAER No. CA-185-F-1**



CA-185-F-1 VIEW OF BASE END STATION FARLEY SHOWING THE SUGGESTED APPEARANCE DURING USE, FACING NORTH, VIEW IS OF THE FRONT.

**HISTORIC AMERICAN ENGINEERING RECORD  
SEE INDEX TO PHOTOGRAPHS FOR CAPTION**

**HAER No. CA-185-F-2**



CA-185-F-2 VIEW OF BASE END STATION FARLEY FACING NORTH  
SHOWING EXPOSED FRONT OF THE CONCRETE CONCEALMENT,  
SANDSTONE FLANK-WALLS ARE VISIBLE AT THE REAR SIDES.

**HISTORIC AMERICAN ENGINEERING RECORD  
SEE INDEX TO PHOTOGRAPHS FOR CAPTION**

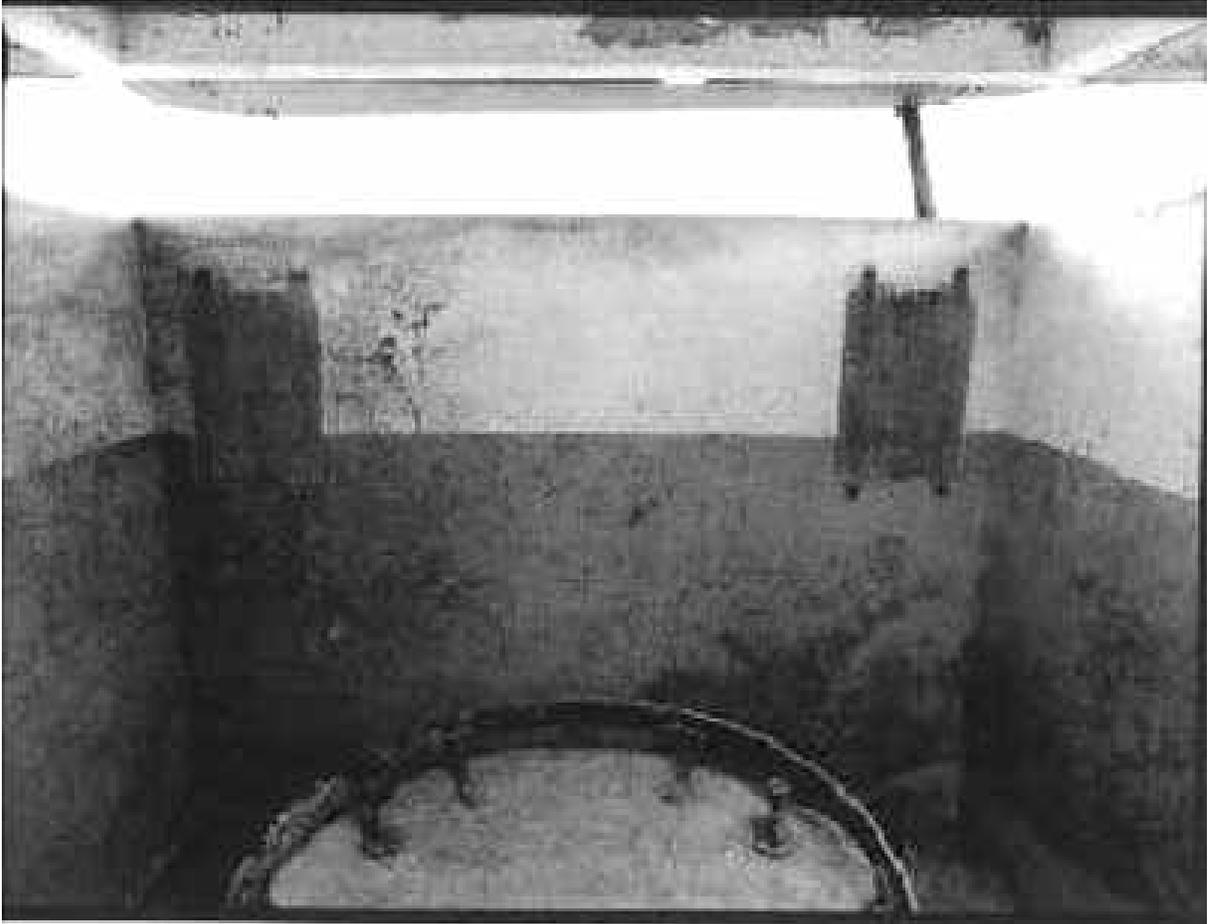
**HAER No. CA-185-F-3**



CA-185-F-3 VIEW OF STATION FARLEY FACING NORTHWEST, SHOWING EXPOSED EXTERIOR FRONT AND LEFT SIDE OF THE CONCRETE CONCEALMENT, SANDSTONE FLANK-WALL IS VISIBLE AT THE LEFT REAR.

**HISTORIC AMERICAN ENGINEERING RECORD  
SEE INDEX TO PHOTOGRAPHS FOR CAPTION**

**HAER No. CA-185-F-4**



CA-185-F-4 INTERIOR VIEW OF STATION FARLEY FACING SOUTH,  
SHOWING THE FRONT INTERIOR WALL AND VIEW APERTURE  
AND PORTION OF THE INSTRUMENT MOUNTING PLATFORM ON  
THE FLOOR.