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Diag. Chart No. 5530-3

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

O. H. Tittmann
Superintendent.

State: Calif

DESCRIPTIVE REPORT.

Hydc *Sheet No.* 2771

LOCALITY:

Angel Island -
Immigrant Reservation

1902

CHIEF OF PARTY:

Lieut. T. Rodgers

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DESCRIPTIVE REPORT

to ACCOMPANY COMBINED TOPOGRAPHIC AND HYDROGRAPHIC SHEET of 1906

IMMIGRANT RESERVATION, ANGEL ISLAND, CALIFORNIA

EXECUTED BETWEEN SEPTEMBER 12th and OCTOBER 31st, 1905

RECEIVED
ASSISTANT IN CHARGE
OFFICE OF ASST. IN CHARGE
COAST AND GEODETIC SURVEY

The Survey of the Immigrant Reservation, Angel Island, San Francisco Bay, was undertaken under Instructions from the Superintendent dated August 26th, 1905, in accordance with an official request by the Commissioner General of Immigration, Washington, D.C.

2. The original Instructions called for a close hydrographic survey of the water front of the Immigrant Reservation tract.

3. Estimates of cost for the prosecution of this hydrographic work were called for and an estimate submitted and approved for twenty one dollars ($21.00) per day for a period of twenty days, this amount to include wages of party hands, purchase of material required for signals etc. and the hire of one steam or gasolene launch and two Whitehall boats.

4. The hydrography was commenced on September 12th, 1905 by the employment of four party hands and Mr. Bernhardt, a former employé of the Coast and Geodetic Survey, to take charge of the Soundings. A few days after Mr. Bernhardt's temporary employment as stated, he received the appoinment of Mate in the C.& G. Survey, his assignment to the work at Angel Island to continue "until time for him to leave San Francisco for the Philippine Islands" to report to the Director of Coast Surveys, Manila, P.I.

5. In a communication dated September 14th the Commissioner General of Immigration made a supplementary request that the Superintendent should extend the Survey of the water front of

the Immigrant Reservation so as to include contours of level over the whole tract, thus adding a detailed topographic survey to the hydrography covered by the original Instructions of August 26th. An estimate for the topographic work was called for and an estimate submitted and approved extending the term an additional twenty days at the former rate of twenty one dollars per day. I was directed to confer with Mr. Walter G. Mathues (Mathews) Architect, to whom the Department had assigned the development of plans for the improvement of the Reservation for the purposes of an Immigrant Station etc.

6. On September 22nd a letter from the Superintendent was received covering a copy of Instructions to Assistant B.A.Baird directing him upon his return from Alaska to report for duty in connection with the Survey in progress at Angel Island, California Mr. Baird reported for duty at Angel Island on September 28th, and his assignment made it possible for me to attend to duties in the Sub-office, he being entirely competent to execute the field work without immediate supervision.

7. Submarine borings on the water front of the Immigrant Reservation tract were added to the work at the request of the Commissioner of Immigration and I was directed to confer with the U.S.Engineers. I conferred with Colonels Handbury and Heuer, Corps of Engineers, thinking it possible they might detail some one from their corps to supervise the boring required. This was found impracticable but they recommended the American Dredging Company as familiar with the work required, as having been employed by them and found to be a reliable firm.

An offer was made by the president of the Dredging Company, Mr.Marshall C.Harris,to make the borings at the rate of one dollar per bore,but having to use a tug to tow their boring plant from Oakland Harbor to Angel Island,he would not undertake the work for a less amount than one hundred dollars ($100).This offer was submitted and approved by the Commissioner General and in pursuance 74 borings were made and 50 specimens of the material bored through were obtained and filed in bottles,marked and numbered to correspond with the positions shown upon the field chart of hydrography.

ANGEL ISLAND

SAN FRANCISCO BAY,CALIFORNIA

Angel Island is the largest and most conspicuous of the islands in San Francisco Bay;it is approximately five statute miles in circumference and contains an area of 750 acres. Its principal summit is near the center of the island,having an elevation of seven hundred and eighty two feet(782').

2. Angel Island is separated from the nearest main land of San Francisco Bay by Raccoon Strait,a strait three fourths of a mile wide and a length of a mile and three fourths. The depth of the water in the strait is one hundred and thirty feet off Point Stuart,the western extremity of the island and two hundred and sixteen feet off Point Campbell the northeast point of Angel Island. Strong currents and tide rips are characteristic of Raccoon Strait at certain stages of the tide.

3. The eastern and western shores of Angel Island are notably different in character of climate,temperature and force of wind.

The western shore exposed to the N.W. summer winds and fogs from the ocean is comparatively cold, with the wind blowing at the rate of 25 to 30 miles an hour, while at the same time on the eastern shore of the Island from Point Knox to Point Campbell and notably off Quarry Point, sailing craft bound up and down the Bay are becalmed and are only released by being carried by the tide out of the calm belt and into the wind.

4. Angel Island being the property of the United States there are no occupants but those in the employ of the Government. On the western shore at Point Knox the Light House establishment, under the Department of Commerce and Labor, maintains a fixed red lens light and fog bell; between Points Knox and Stuart the War Department has the Army post known as Fort McDowell; in an indentation of the Angel Island shore on Raccoon Strait, known as Hospital Cove, the Treasury Department has established a quarantine station; on the eastern shore of the island near Quarry Point the Treasury Department has a so-called "Detention Camp", where passengers from incoming vessels exposed to contagious or infectious diseases are held for examination and treatment; on the northeastern shore of the island between Points Simpton and Campbell, the Department of Commerce and Labor secured from the War Department the 10 acre tract known as the Immigrant Reservation. All of Angel Island, except the several small tracts mentioned as set aside for the use of the Treasury Department and the Department of Commerce and Labor, is under the military control of the War Department, no persons unless officially authorized being permitted to land on the island.

3. The eastern and western borders of the tract are marked by steep, rocky bluffs partially covered by timber. The ground from these bluffs slopes somewhat abruptly to a small valley, which topographically considered is the redeeming feature of the tract. Except in the axis of this valley, sites for buildings of any but cottage dimensions must be excavated.

4. SOIL. The soil of the Immigrant Reservation is loam, a mixture of clay and sand susceptible of cultivation and the raising of fruits and vegetables if water were available for irrigation during the California dry season.

5. TIMBER. A part of the Immigrant tract is covered with small but thrifty trees, among which I mention oak, buckeye and madroño. The brush growing on the hillsides is largely the California pest, Yedra Arboracia, familiarly known as "Poison Oak", which grows in clumps 10 or 20 feet in circumference; its varigated leaves of green and red and yellow, simulating the frost tinted colors of Eastern autumn, but tinted here without frost, offer a constant temptation to the uninitiated to pluck and wear them for their beauty.

6. The luxuriant growth of this Yedra plant on the Immigrant tract may not be ignored, nor regarded as a trivial matter. Unless its limits are curtailed or measures taken for its extermination, it will be a constant menace to unwary immigrants and of trouble to the medical officers attending them. During the spring months, when the pollen from the Yedra leaves is floating in the air, susceptible persons are poisoned without contact with the plant; while breathing smoke from burning Yedra

brush has proved a dangerous form of infection from it.

7. ROCKS. The only visible rocks are those upon the shore line of the Immigrant Reservation and notably in the bluffs at the eastern and western borders of the tract. These rocks of gnesoid formation have been exposed by wave action and denudation of the shores. What their condition may be beneath the surface I have no means of knowing, but where exposed to air and water, weathered, they are generally friable and easily broken with a pick or hammer.

8. A prominent feature of the Immigrant tract is the little cove and sand beach, approximately 250 feet wide, the centre of the cove about equally distant from the eastern and western boundaries of the tract. On the eastern side of the cove and built up on the original formation, which is here a clay bluff about 8 feet above tide, is the remnant of an Indian settlement, of which there are many around the shores of San Francisco Bay . The former occupation by Indians is shown by the so-called Kitchen middens, an accumulation of shells, oysters and clams and abelones being in evidence as forming the principal dietary of the people, while human remains, all the bones of the human body from the skull downward, would indicate that at times the dead were buried among the general debris of the living, evidently in some cases the accumulation of centuries.

These Middens are generally located in sheltered places out of the wind, where nature's warmth and sunshine might supplement the deficiencies of a wardrobe and habitation. This is true of Immigrant Cove, it is sheltered from the winds and fogs of

summer, and compared with the windward side of Angel Island the difference in climate is quite marked.

9. WATER. Natural supplies of surface water can be had only in scant measure anywhere on Angel Island. At Immigrant Cove there is a living spring at an elevation of 112 feet and 300 feet distant from the centre of the Cove at high water mark. The seepage from this spring forms an elongated area of fresh marsh which is kept green the year round.

10. Although attempts have been made to develope water supplies by boring and tunneling at the Army post, Fort McDowell, and at the Quarantine Station on Angel Island, from information I am led to believe that the supply of water is scant at both places. In my opinion the only way to obtain an unlimited supply of water is by deep artesian boring. This would be as it is everywhere, a matter of experiment. There are, however, many successful artesian wells round the shores of San Francisco Bay, from the City of San Francisco itself, down to Alviso at the southern end of the Bay, in Santa Clara valley, a prolongation of the Bay formation, and again from Alviso northward to East Oakland.

11. HYDROGRAPHY, IMMIGRANT COVE

An ordinary open tide staff, marked in feet and tenths, was located in the the most available place on the western side of the Cove and 125 feet from high water mark. This staff was observed continuously in daylight hours from September 12th to October 30th and at convenient intervals simultaneous observations were made for comparison at Presidio Tide Station. The soundings were made under my supervision by Mr. Henry Bernhardt, Mate. A marked line with 25 feet intervals,

was securely pinned down and fastened to a cross section stub, the position of which had been carefully determined.
As a preliminary it may be stated that the basic line for cross-sectioning was the visual line between the principal boundary stations of the Immigrant tract, designated in the original O.M. survey as "N.E.X.1 " and "N.W.X.2 ". A theodolite was set up at N.E.X.1 in position with the cross wires,(line of collimation,) pointing to N.W.X.2 . An angle of 90° degrees was turned on the graduation of the theodolite and the line thus indicated by the telescope cross-wires was measured by rod and marked by wooden stubs and tacks at intervals of 25 feet. The same method was observed at the station "N.W.X.2 ". The cross-wires of the theodolite were fixed on a nail in the stub marking the center of the station at N.E.X.1. The theodolite was then turned 90° degrees and in the line thus indicated stubs and tacks were placed at 25 feet intervals. It will be apparent that the lines set off as described at N.E.X.1 and N.W.X.2. were at right angles to the visual line joining the two stations and were parallel to each other. At each marked stub, numbered consecutively 1,2,3,4 etc. on the line measured and marked from N.E.X.1 a theodolite was set up and with the cross wires directed to a stub of the corresponding number,measured inland from station N.W.X.2. 12. These cross-lines were successively divided by rod meaures into 25 feet intervals and stubs and tacks driven to mark centers. These lines parallel to the general direction of the shore line, were numbered from 1 to 42 , commencing 25 feet from inshore from N.E.X.1 and N.W.X.2, and ending at the southern extremity of the Immigrant tract, the number 42 indicating a distance of

1050 feet from the stations named. The lines at right angles to these were marked alphabetically, from A to Y excluding the letter J. Not all the lines were required for the hydrography, but were absolutely essential to the development of the topographic detail, called for before the actual sounding was commenced.

13. The position of each sounding was definitely fixed by using a No. 7 braided line with 25 feet intervals marked upon it. The zero of this line was securely pinned down to one of the numbered cross-section stubs and stretched over the water to a Whitehall boat moored stem and stern. The boat and sounding line were aligned by front and rear flags, successively held over the lettered stubs before mentioned, these marking lines, 25 feet apart and normal to the shore line.

14. The depth of the water as shown on the western water front of the Immigrant Cove indicates that material eroded from the valley of the Immigrant tract has been deposited and remains in front of the western bluff. It will be noticed that this comparatively shoal water lies in the axis of the valley mentioned; or it it may mean material from the Sacramento dropped at the parting of the ebb tide, between the ebb set through Raccoon Strait and that along the eastern shore of Angel Island past Quarry Point and round Point Blunt, in its course to the Golden Gate. From the chart it will be seen that at 28 intervals of 25 feet from the western bluff of Immigrant Cove, or at a distance of 700 feet from that bluff, there is a depth of 45 feet, while in front of the eastern bluff a depth of 61 feet is shown at a distance of 325 feet off shore.

16. SUBMARINE BORING.

At the request of the Commissioner General of Immigration, a verbal contract was made with the American Dredging Company, which was submitted by letter and approved, for an expenditure not to exceed one hundred dollars, with the object of determining the character of the bottom, depth of mud, etc. on the water front of the Reservation. In pursuance the the Dredging Company, using a tug, moved their barge and boring plant from Oakland Harbor to Angel Island and in two days made 74 bores; Fifty specimens of bottom were obtained and placed in specimen bottles, duly labeled and marked to identify the location of the boring. The general evidence of this boring would indicate conditions favorable to wharf building in Immigrant Cove.

17. TOPOGRAPHY. While Mr.H.Bernhardt, Mate, did three fourths of the cross sectioning and later the sounding on Immigrant Reservation, and with a zeal and efficiency highly appreciated by me, Assistant B.A.Baird completed the cross sectioning and carried spirit levels over the interior of the tract and determined the elevation in feet and tenths of each of the cross section stubs.

18. Having completed the cross sectioning and leveling Assistant Baird took up the triangulation to connect the stations of the Immigrant tract with the Coast and Geodetic Survey stations on the shores of San Francisco Bay. Owing to the bowl-like depression in which the Immigrant Reservation is situated it was necessary to make trigonometric connection with it from Brooks Island

and Red Rock, both of them approximately four miles distant. After the completion of the triangulation, in which Mr. Arthur Crowell, Junior Aid, acted as recorder, the work was computed and a plane table sheet upon a scale of 1-600 was projected and the positions determined by triangulation were platted upon it by Geographic Coordinates.

19. The topography was developed to show contours of 5 feet difference in elevation with the map showing every fifth contour emphasized. In the work under your orders under my general direction, I desire to express my official obligation to Mr. Bernhardt, Mate, who personally made the soundings and did the larger part of the cross sectioning, while under orders and waiting transportation to the Philippines, and to Assistant Baird and Mr. Crowell who brought the work in field & Office to what I hope may be considered a successful close.

Respectfully submitted

Alex. D. Rodgers

3

Assistant

ON ORIGINAL DOCUMENT

Note:

In paragraph 3 under the heading ANGEL ISLAND SAN FRANCISCO BAY, CALIFORNIA: I omitted proper mention of

"Storm Winds". The westerly winds of summer which from May 1st to October 31st are often boisterous, leave Immigrant Cove waters unruffled, the high peak of Angel Island acting as a wind barrier, California storm winds which may occur from November 1st to April 30th, accompanied usually by rain, come from the southeast and back round to the south west. My experience is that blowing along the eastern shore of Angel Island, they would not seriously affect the wharf frontage of Immigrant Cove. The only storm wind which blows home at Immigrant Cove is an occasional Norther which comes without warning during the autumn and winter months, and accompanied always by a brilliant steel colored sky and clear weather. While in the progress of the survey of Immigrant Cove in September and October - it may be said that a Whitehall boat could have been moored and held by a piece of twine - but a Norther came along unheralded at night and beached and stove in the side of one of our hired Whitehall boats. In my opinion a Norther, so-called, is the only storm wind that could make wharf landings troublesome for a few hours at Immigrant Cove, just as they do on the water front of San Francisco, and notably on the northern front of the City.

Department of Commerce and Labor

Sheet 2771 Angel Id Cal

Verified by F C Dorn.

The field and office plans differed by .3 of a foot. Therefor a correction of +.3 of a foot was made to all soundings when necessary- outside the low water mark above low water mark the correction was not applied.

F C Dorn

June 9-1906.

number of Soundings 635 } Row Boat
" " Miles 2.6 }
" " Borings 74 Pile Driver A. D. Co.

No. 205
(Ed. 11-22-1904—500,000)