

As the nineteenth century drew to a close, Honolulu's building tradesmen were enjoying more activity than ever before. Additions and improvements to the business blocks were described as "limited" but there were new residences "in all directions".

On June 12, 1890 Lorrin A. Thurston, Minister of the Interior for the Kingdom of the Hawaiian Islands granted a charter to the Pioneer Building and Loan Association of Hawaii. The applicants listed were Theodore F. Lansing, George Smith, R.I. Lillie, Alexander Cockburn, George E. Boardman, S.B. Rose, William A. Bowen, Arthur W. Richardson, and John M. Dowsett. One year later, in 1891 Thrum's Annual reported, "There has been no suspension of the building activity recorded in 1889 and 1890. If anything, the city has more to show in new and improved residences than any prior year, largely due, no doubt, to the successful working of the Pioneer Building and Loan Association."

A report of some of the year's other building activity read as follows:

"The substitution of the fine new Cummins' block, corner of Fort and Merchant sts. for the former buildings covering that site.....adds materially to the improved condition of the city, as does also the completion of the Robinson block on Hotel st. and the Foster building, corner of

Nuuanu and Marine sts. The new edifice of the Central Union Church, corner of Richards and Beretania sts, is making good progress, and will probably reach completion during the coming year. Its corner stone was laid June 3, 1891. It is being built of fine grained blue lava rock, the same as the Kamehameha School and Bishop Museum buildings, quarried from the hills in the neighborhood of the school premises in Kalihi... Among the new ventures is to be noted the establishment of the Hawaiian Electric Light and Power Co. with headquarters and plant on King st. near Alakea, in their newly constructed brick building. Its successful working is giving encouragement for the establishment of similar companies on Maui and Hawaii."

Honolulu's water system now consisted of four reservoirs in Nuuanu Valley, and one at the entrance of Makiki Valley, providing a combined capacity of 40, 369, 937 gallons. In addition, there were 5 flowing artesian wells which connected with mains in the Eastern parts of the city and in Waikiki. The city's street mains now totalled nearly 37 miles in total length, being comprised of 150 feet of 24" pipe, 100 feet of 16" pipe, 10,300 feet of 15" pipe, and 27,560 feet of 12" pipe. Many smaller diameter lines were also still in use. It was noted that for the year 1892, the water system produced an income of \$42,000.

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Hawaii was beginning to actively seek the tourist dollar, and in 1892 the Hawaii Bureau of Information was formed. Its stated mission was "to place these islands intelligently before the world in general and the traveling public in particular, with the object of securing the share of annual tourist travel which the unique and exceptional attractions of Hawaii warrant".

The Risdon Iron Works was given a contract to deepen Honolulu Harbor, and the following historical perspective of that project was published:

"In November of 1794 the harbor of Honolulu, known to early Hawaiians as Ke Awa o Kou, The Harbor of Kou, was discovered by Capt. Brown, of the British ship Butterworth, and called by him "Fairhaven". It was first entered by the schooner Jackall, her tender, followed shortly after by the Prince Leeboo and Lady Washington. This was subsequent to Vancouver's last visit to these islands, and some 6 months prior to Kamehameha's conquest of Oahu by the overthrow of Kalani kupule and his brave co-defenders in the battle of Nuuanu in 1795.

Capt. Broughton, of the Brit. ship Providence, is accredited with making the first survey of this port on his first visit to these islands in 1796. He was followed in similar work 20 years later by

Capt. Kotzebue, in the Russ. frigate Rurick, and again by Lieut. Malden, of H.B.M.S. Blonde, in 1825. Other national visitors have, from time to time, verified or corrected the records of these pioneers, and since the establishment of the Survey Department of this Government various surveys have been made defining the harbor and channel, and locating the bar; but we do not find that any attempt was ever made to deepen the channel until the period dealt herewith. With all the soundings made by this and other governments it seems to have been generally admitted that the removal of the bar would be a costly and laborious undertaking, from the presumption that it partook of the coral nature of the adjacent reefs, with but a thin covering of sand. In fact, as late as August 1889, in a survey of the channel by Capt. F.D. Walker, occupying some 2½ months in making soundings and test borings, he labored under this same error, as he reported the bar to be of coral, hard near the surface and softer at a depth of 6 or 8 ft, with occasional cavities. Further examinations followed under Capt. A. Rosehill, to more fully determine its character and the material to be dealt with. A diver was employed and a few experimental blasts were set off, for a basis of estimate of cost; but finding no rock as reported plans were changed, and with a force pump a large number of holes were sunk to the

required depth of 30 ft without meeting with any obstructions excepting, occasionally, a piece of detached coral, thus indicating clearly the character of the bar to be coral sand, mainly, and simplifying the problem of its removal as well as materially modifying the expense of the work.

To the administration of L.A. Thurston, as Min. of the Interior, is due the credit of inaugurating this most important public work and to his successor, C.N. Spencer, for entering upon it and carrying it out almost to completion. Estimates were sought for from prominent dredging contractors abroad, but on ascertaining the actual condition of the bar, the services of G.F. Allardt, C.E. - then on a visit to these islands on work connected with the Oahu Railway and Land Co. - were secured to prepare plans and estimate of cost for dredging the same, for submission to the Legislature, then convened. In due time a report was submitted which was adopted in the main, and appropriation of \$200,000 granted for "Honolulu harbor and improving the bar."

"A contract was made for the construction of a hydraulic dredger for the work with the Risdon Iron Works Co. of S.F. through their resident agent here, Mr. J.T. Dyer. The hull, a flat bottomed scow, 100 ft long by 40 ft.

width, and a depth of 9 ft...was built in Honolulu, while the machinery was constructed in S.F. and fitted up here, and delivered over to the government, tested for its designed work, for the sum of \$65,000. The dredger is of the von Schmidt pattern and is fitted with the best type of condensing engines on the most modern improvements, of which one pair of 350 h.p. - is required by the pumping plant, and one pair each of 75 h.p. to run the cutting gear and the winches.

On the completion of the dredger, tenders were called for to deepen the bar to 30 ft for a distance of 1,100 ft. by a width of 200 ft, depositing the excavations into the coral walled enclosure of some 28 acres constructed for this object on the eastern side of the entrance to the harbor. For this purpose the plant was provided with 1,000 feet of floating pipe and pontoons for the same, while the government constructed a shore or fixed line on piles of some 3,000 ft. Rison Iron Works Co. secured this contract also, and, through unpropitious weather and other delays, began work in reality on the bar June 12, 1892, and for some 6 weeks worked steadily night and day, with but slight interruption. Since that time the finishing up, or "leveling off" process has delayed its completion beyond the estimated time, though no less than 67,000 cubic

yards of sand has been removed, which has been utilized towards making valuable land for future warehouse or storage purposes in the 28 acre enclosure referred to....The expenses of the work have been as follows; Construction of dredger and its machinery, complete, \$65,000; construction of coral walled enclosure and expense of pipe line to the same, \$61,000; dredging contract, \$49,000; total, \$175,000, with the dredger in hand for furthur public improvements."

A major building project of the day was the original Central Union Church. Located at Beretania and Richards Street, it was a predecessor to the Church in use today.

"Honolulu has reason for a large degree of satisfaction at the completion, with the close of Nov. 1892, of the fine new structure of the Central Union Church...for it is an edifice of which cities of greater age, wealth and population might justly feel proud. Not only does it bear evidence of the earnest purpose of its membership, the liberality of the community, but illustrates also the legitimate, uplifting aspirations in progress of higher civilization in Hawaii-Nei.

The building covers 84 x 160 feet, occupying nearly all the plot of ground by the church, its corner tower reaching 75 ft, finishing off

with a graceful spire at a total height of nearly 160 ft to top of finial... It is constructed of the bluish, close grained lava rock of this island... and is laid up in what is designated as rough dressed blocks, with copings and window-sills of concrete. The building conveys the idea of durability, spaciousness and effective finish, without effort of grandeur or ostentatious display. Its style of architecture is that of the renaissance type and is similar in plan to a church erected a few years since in east Oakland Calif, whose architect, Mr. G.A. Bordwell, provided plans for this one after visiting the field and consulting upon advisable alterations for climate, etc. Its construction was conducted under the personal supervision of Mr. Robert Lishman, assisted by Mr. Wm. Mutch, superintendent of the carpentering and finishing work...

After the preparation of the foundation walls, the first stone was placed Feb. 23, 1891, and the corner stone was laid with ceremonies on the third of June following. Since then the work has progressed steadily, reaching a successful completion-as already mentioned and was dedicated for service on Sunday, December 4, 1892.

In the construction of the building there have been 1450 cubic yards of stone required, representing a weight of some 3,000 tons, with 943 bbls.

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of cement and 488 bbls. of lime. The numerous windows throughout the building are from Chicago, and are fitted with geometrical figures in opalescent, cathedral and venetian glass. The pews, of natural finished birch, are from Cleveland, Ohio, while the panels of the gallery, choir and vestry are of contrasting plain and gnarl redwood, prepared in sections, from Calif. This near market also furnished the galvanized shingles for the roof and spire, which took no less than 80,000. The ~~electric light fixtures are from Waterbury, Conn.~~ The total expense of the edifice, with furnishings will foot up about \$127,500...

~~The floor of the auditorium slopes toward the speaker's desk, while the pews have the circular form now generally adopted. Five aisles afford convenient passage for the various sittings.~~ The seating capacity, including the gallery, is planned for 750 with comfort, though an actual count of the seated audience at its dedication showed 1037.

~~The inside of the building throughout is finished in varnished natural woods, even to the rafters or nor'west and ceiling of beaded Oregon pine. High wainscot runs around the auditorium, lecture room and halls of close beaded wood, with door and window casings beaded to match, with carved rosettes relieving all corners thereof. The walls~~

are finished in rough plaster, slightly tinted, so that the subdued effect of light through the stained glass windows is pleasing and harmonious in the sunlight, and is equally effective under the system of electric lights...

... The total number of lights throughout the building is 229 controlled by 18 switches, located in the stairway leading from the central hall to a room beneath the choir and organ loft. The electrolier and reflector was made by J.P. Frink of N.Y. The electric light installation was done by E.O. Hall & Son of Honolulu, under the supervision of Mr. P.S. Taylor, and the electricity is furnished by the Hawaiian Electric Co. by direct wires from the station on King st... On the building committee were Alex. Young, C.M. Cooke, W.O. Smith, W.W. Hall, and F.J. Lowrey."

With the exception of the Central Union Church structure, Honolulu's major building activity remained "sparse". Reporters said that general trade was "remarkably dull", no doubt due to the "unprecedented low prices obtained for our staple product, sugar, and close competition of heavy rice imports in San Francisco..."

The Union Iron Works succumbed to the depression of the sugar industry, and "after an effort to readjust itself to the condition of

things, was purchased by the Honolulu Iron Works Company.

Doctor G. Trousseau launched an experimental ostrich farm at Kapiolani Park, and the year's imports of building materials had an estimated value of \$174,763.

By 1895 a "substantial and commodious" brick pumping house had been erected at the corner of Beretania and Alapai, to serve as an auxiliary to the Nuuanu reservoir system. When a serious epidemic of cholera occurred, this facility allowed the flushing of contaminated mains, and was credited for saving many thousands of lives.

It was reported that, "notwithstanding the set back to business during the months of revolution and pestilence there has been much done in the lines of building and extension of business. Real estate has been active at improved figures, with little of the speculative character attending it; city and suburban property buyers planning early improvements. This is already notable between Punchbowl slope and Punahou where tracts have been cut up into building lots and building activity has followed."

Oahu College was anticipating the dedication of its fine new two-story structure, and interior remodeling, including the "fitting of electric lights" was completed at Kawaihāo Church.

Trading continued to increase dramatically, and the accomodation of the giant China steamers which now regularly called at Honolulu required the construction of larger wharves, as well as further dredging of Honolulu Harbor.

The year 1896 saw the building of a new Opera House, utilizing the three walls left standing when the former Music Hall had burned down. Acknowledging the doubtful financial return of such a venture, accounts of the day saluted its owners, W.G. Irwin of Honolulu and the Spreckels family of San Francisco for their public spirited generosity. Also saluted was architect C.B. Ripley for "the masterly manner in which he has carried out a very difficult project". The building contract was awarded by competitive bid to George W. Lincoln, with painting and decorating by E.C. Crowe.

In addition to the continuing improvement of Honolulu's thoroughfares, increasing attention was being paid to road development on the neighbor islands. On the island of Hawaii, road work was underway in both North and South Kona, as well as at Hilo and Puna. On Maui a new road was opened joining Makena to the Kula agricultural settlement, and a new wharf was constructed ^{at} by Kihei.

For the year, 171 building permits were issued by the Superintendent of Public Works, and the value of building materials imported was estimated at \$120,638. It was noted that "changes going on in the residence portion of the city and its suburbs include several "new departures" in tropic architecture".

In 1897, the much-discussed problem of a smooth carriage road over Nuuanu Pali finally came to a head. This project was a matter of ^{concern} much among the citizenry, particularly in view of the fact that previously legislated funds for its construction had never been spent. A plan first suggested in 1890 by Henry McIntosh, who was then superintendent of public works, was adopted and the legislature of 1897 appropriated \$40,000 for the project. W.W. Bruner, an engineer who had first surveyed the road in 1889 was assigned the task of retracing his steps, and of relocating survey lines as necessary. He was accompanied by John H. Wilson, a young engineer and contractor who wanted to familiarize himself with the ground before bidding on the project.

Wilson's partner in his contracting business was L.M. Whitehouse, who was from Oakland, California, the two having met when they were among the first students to enroll in the school of engineering at Stanford University. Wilson, the son of Charles B. Wilson, who was formerly

Marshal of the Hawaiian Kingdom, and once the Superintendent of Water Works for the city of Honolulu, had gained much practical engineering experience working for the Oahu Railway and Land Company during summer vacations. Both he and Whitehouse also worked for the Southern Pacific Railway following graduation from college.

Tenders for the construction of the Pali Road were called for on April 1, 1897, and on May 24th the contract was awarded to Wilson and Whitehouse for \$37,500. Ground was broken on May 26th, and on that same day a gang of 40 men was put to work. By June that number had grown to 130 and before the project's end the largest number of men to be employed during any given month would reach 224. The project was described thusly in 1898:

"The road began 600 ft. on the Honolulu side of the Pali and followed the course of the old road for a distance of 1000 ft, at which point the grade is 20 ft directly above the old road, the embankment being held in place by a masonry retaining wall 400 ft long. At the end of the wall the road followed a narrow ledge of rock, jutting conveniently from the face of the cliff for a distance of 110 ft. This ledge was compared by one of a party who went to see the works, when directed to it as a convenient trail across the verticle precipice, to "a lead pencil stroke on the side of

a house". The remark was received as a striking correct description for this dizzy stretch, a hundred ft or more above any place to fall upon, if one missed his footing. The necessary width of roadbed is obtained by an extension of concrete, artificially widening the ledge, laid on a projecting framework of steel girders. 100 ft from the termination of the girders another masonry wall 40 ft long, and from the end of this wall the roadbed is benched in, upon the face of the bluff, for its entire distance with the three following exceptions: 1-A five foot arched culvert 2,500 ft from the top of the pali, where the road crosses a mountain stream at the head of a waterfall springing one hundred ft. 2-At the point where the road turns, to wind down the bluff from the upper levels, there is another masonry wall 80 ft long. 3-At the point the road re-crosses the mountain stream, 350 ft immediately below the arched culvert, there is a wooden opening upon which the road is built. The total length of the new road ran 7,620 ft. At the lower end the new road joins an old grade, which was built by the Government about 7 years ago at a cost of \$5,000 or thereabout. This old grade is 4,750 ft long and connects with the present Kaneohe road. Included in the Pali road contract there is a branch road to Waimanalo which begins near the wooden opening aforesaid, and connects with the old Waimanalo road after running a distance of 3,200 f

An easy grade of 8% is established for the Pali road, and of 6% for the Waimanalo branch. The width of the subgrade is 20 ft upon which is constructed the roadway. This is macadamized thoroughfare 16 ft wide by 1½ ft deep, the superstructure of metal being firmly retained between stone cribs along the sides. There is a substantial wooden railing extending along the outer edge of the road from the top of the Pali for a distance of 8,800 ft. A stone gutter the entire length, with intersecting ditches every 150 ft. provides good drainage for the road. The deepest cutting on the line is 90 ft, and through a ledge of decomposed lava. For 10% of its length the road runs through soft earth and loose lava gravel; 30% hard earth 60% decomposed lava and soft rock; and 10% hard blue rock. There were used in the operation of the contract about 17,500 pounds of blasting powder and 10,000 lbs of dynamite. As these lines are written at the first of November there is 6,200 ft of the road completed, besides the Waimanalo branch, and the old grade repaved....On October 4th at the setting off of the largest blasts of all, there were 19 cells containing 2,100 lbs of powder exploded at intervals of a few seconds, to remove a dangerous rocky ledge that overhung the road. Pres. Dole and hundreds of residents assembled to enjoy the spectacle..Yet with all the 6 - 8 hundred tons of material disarranged to the ancient trail below, the scenery is scarred

but a faint pin scratch by the sacrifice...."

In August of 1899, work was begun on Honolulu's first sewer system. "Long desired and carefully planned", the project terminated at a receptive cistern and pumping works located at Kakaako from whence all waste matter would be carried through discharge pipes beyond the reef. The system was designed by civil engineer Rudolph Hering of New York, who was also commissioned to prepare a report on Honolulu's water supply.

Groundbreaking ceremonies for construction of the Hackfeld Block were held, the site fronting on Fort Street and running between Queen and Halekauwila. Three stories in height, the building was constructed of dressed lava, and featured chiselled, fluted columns, and a large dome.

"Massive" foundations were laid for the "up-to-date, fireproof" Stangenwald Building on Merchant Street, and the first floor of the four-story Boston Building was "well advanced".

The "dry and arid wasteland" of Kaimuki, which had been plotted and subdivided by Pioneer Building and Loan's Theodore Lansing was beginning to catch on as a popular residential area, as was the newly subdivided district of Pacific Heights.

In August of 1899, the Waiialua Hotel was opened in Haleiwa,

offering first-class accommodations for those travelers who had taken the train excursion which rounded Kaena Point from Honolulu. The hotel's owner was B.F. Dillingham, and its manager was Major Curtis P. Iaukea. Architect for the structure was O.G. Traphagen.

Agricultural development of the Big Island continued at a rapid pace, and plans were drawn for a large new wharf at Hilo.

The Marconi wireless Telegraphy System franchise was awarded to a corporation headed by electrician F.J. Cross, who announced plans for the early establishment of telegraphy between the islands.

Plans which had been announced by the Tramway Company to convert from animal to electric power were delayed by a legal injunction.