STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Honolulu, Hawaii 96813

July 24, 2015

Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Ref: GL 5909

OAHU

Approve the Memorandum of Agreement between Hawaii Public Radio and the University of Hawaii; General Lease No. 5909, Hawaii Public Radio, Lessee, Kalawahine, Honolulu, Oahu Tax Map Key: (1) 2-5-019:Portion of 005.

APPLICANT:

Hawaii Public Radio ("HPR") , a domestic non-profit corporation; and

University of Hawaii ("UH").

LEGAL REFERENCE:

Section 171-36(a)(6), Hawaii Revised Statutes, as amended.

LOCATION:

Portion of Government lands situated at Kalawahine, Honolulu, Oahu, identified by Tax Map Key: (1) 2-5-019:portion of 005, as shown on the attached map labeled **Exhibit A**.

AREA:

3,475 square feet, more or less.

TRUST LAND STATUS:

Section 5(b) lands of the Hawaii Admission Act

DHHL 30% entitlement lands pursuant to the Hawaii State Constitution: No

LEASE

CHARACTER OF USE:
Non-commercial radio transmission purposes.

TERM:
Thirty (30) years, commencing on August 1, 2007 and expiring on July 31, 2037. Next rental reopening is scheduled for August 1, 2017.

ANNUAL RENTAL:
$1,450.

MEMORANDUM OF AGREEMENT:

CHARACTER OF USE
Radio broadcasting purposes.

TERM:
Co-terminous with the lease, GL 5909, i.e. expiring on July 31, 2037.

ANNUAL RENTAL:
None. UH is responsible for paying a pro-rata share of one-third (1/3) of common expenses in relation to the maintenance and repair of the HPR broadcast antenna.

DCCA VERIFICATION:

Not applicable.

REMARKS:

GL 5909, with basic terms and conditions as described above, was issued to HPR in 2007. Condition 51 of the lease provides that, "[a]dditional telecommunication users may be permitted on the site upon approval of the Board subject upon such conditions set by the Board including an adjustment in rent, and subject to all applicable laws, statutes, regulations and Federal Communication Commission requirements."

UH is licensed by the Federal Communication Commission to operate KTUH, a non-commercial student-managed radio station, with its main transmitter located at the rooftop of the Saunders Hall at the Manoa campus. KTUH wants to reach a wider audience, which would require a more favorable location for its broadcasting equipment. Eventually, HPR agreed with UH that the latter can install antennas on the existing tower at the subject location, pursuant to Condition 51, Co-Location, of the lease. A copy of the letter dated June 30, 2015 from UH enclosing the fully executed memorandum of agreement between HPR and UH and other associated documents is attached as **Exhibit B** for the Board's information.

Staff understands UH is not required under the memorandum of agreement to pay for any rent, other than the pro-rata share of common maintenance expenses. Upon discussion with the Office of Conservation and Coastal Lands, UH needs to submit the construction drawing to them for approval prior to commencement of any construction work.

Staff did not solicit comments from other agencies on the subject request as there is no change in the use of the leased premises. Staff has no objection to the request.

RECOMMENDATION:

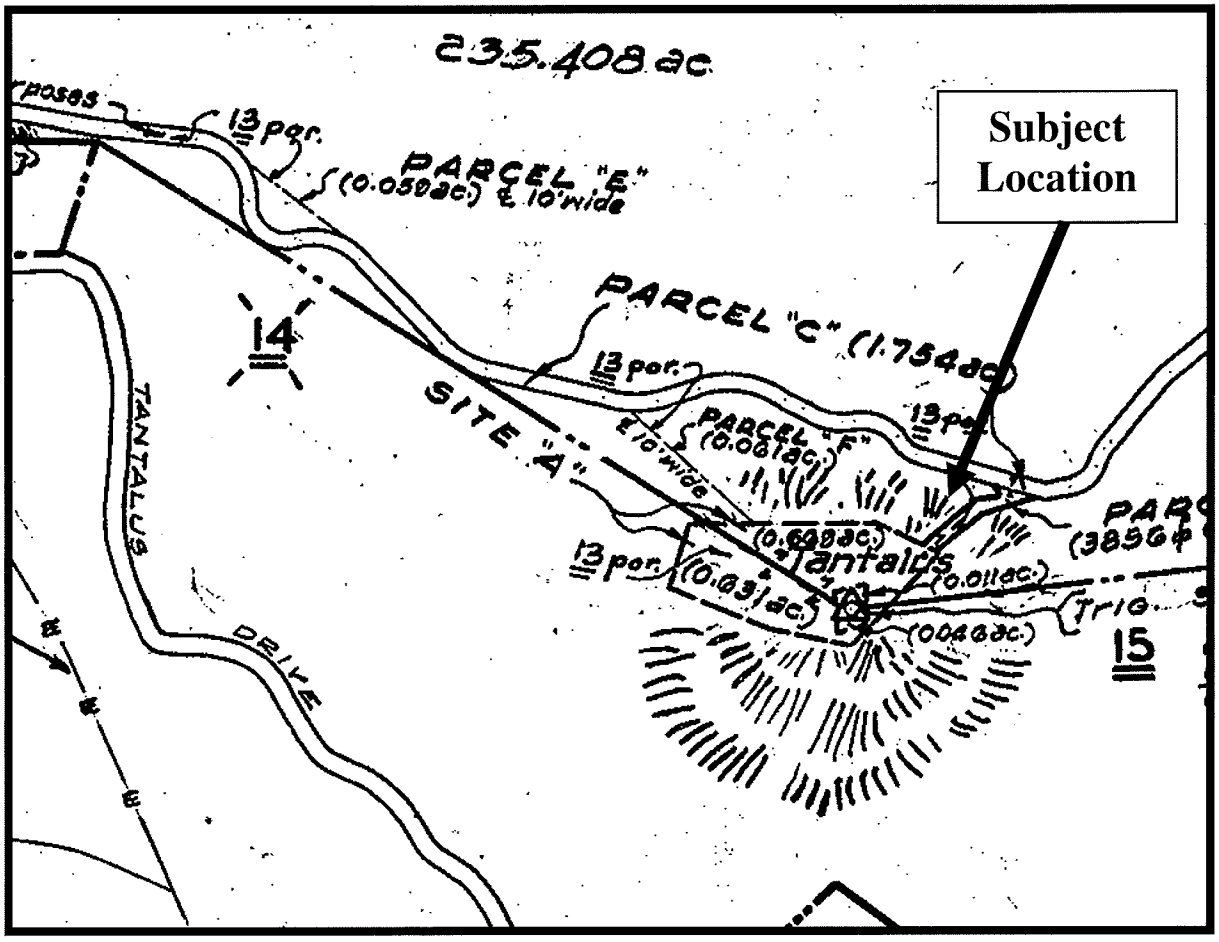
That the Board approve the memorandum of agreement between Hawaii Public Radio and the University of Hawaii under General Lease No. 5909, subject to any applicable conditions cited above which are by this reference incorporated herein.

Respectfully Submitted,

Barry Cheung
District Land Agent

APPROVED FOR SUBMITTAL:

Suzanne D. Case, Chairperson



TMK (1) 2-5-019:Portion of 005

EXHIBIT A

UNIVERSITY OF HAWAI'I

Vice President for Administration

June 30, 2015

The Honorable Suzanne Case, Chairperson
Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Chairperson Case:

Subject: Co-location of KTUH Antenna on Hawai'i Public Radio Transmission Site – SOH GL No. S-5909 (Tantalus)

The Federal Communications Commission has licensed the University of Hawai'i Board of Regents to operate KTUH, a non-commercial student-managed radio station with its main transmitter currently located on the rooftop of Saunders Hall on the University of Hawaii, Manoa Campus. The mission of the station is "to provide the people of Honolulu with alternative programming for their cultural and educational enrichment." The license has been renewed for a term expiring on February 1, 2022.

State of Hawaii General Lease No. S-5909 between the State of Hawai'i and Hawai'i Public Radio ("HPR") provides for a non-commercial radio transmission site situated at Tantalus, Kalawahine, Honolulu, Oahu, Hawai'i, identified as the Hawai'i Public Radio Transmission Site. The lease is for a term of thirty years and is scheduled to terminate on July 31, 2037. Paragraph 51. Co-location., states "***Additional telecommunication users may be permitted on the site upon approval of the Board subject upon such conditions set by the Board including an adjustment in rent, and subject to all applicable laws, statutes, regulations and Federal Communication Commission requirements***".

The University respectfully requests the approval of the Board of Land and Natural Resources to co-locate at the Hawaii Public Radio Transmission site at Tantalus. The higher elevation of Tantalus will enable KTUH to reach a wider audience on the island of Oahu and would also increase power and program coverage, as shown on the attached map (Attachment No. 1). HPR and UH have entered into a Memorandum of Agreement dated March 8, 2015 ("MOA") (Attachment 2) for the co-location of KTUH at the Tantalus site, subject to the approval of the Board of Land and Natural Resources.

Under the MOA, KTUH proposes to: 1) broadcast at a frequency of 90.1 Mhz; 2) install a seven (7) kilowatt transmitter in the building (; and 3) place a three bay antenna to fit below the

EXHIBIT "B"

present HPR antenna. In addition, UH shall be responsible for the installation of its own electrical meter and phone and data line connections. UH shall also pay a pro rata share of one third (1/3) of common expenses incurred in relation to the maintenance and repair of the HPR Broadcast Antenna.

Should you or your staff have any questions regarding the specifics of the co-location arrangement or require additional information, feel free to contact Dale Machado, KTUH engineer, at 550-9268, or Lynn Nakamasu of the University's Office of Procurement and Property Management at 956-2115.

Very truly yours,

Jan S. Gouveia
Vice President for Administration

JG:DZ:LNN

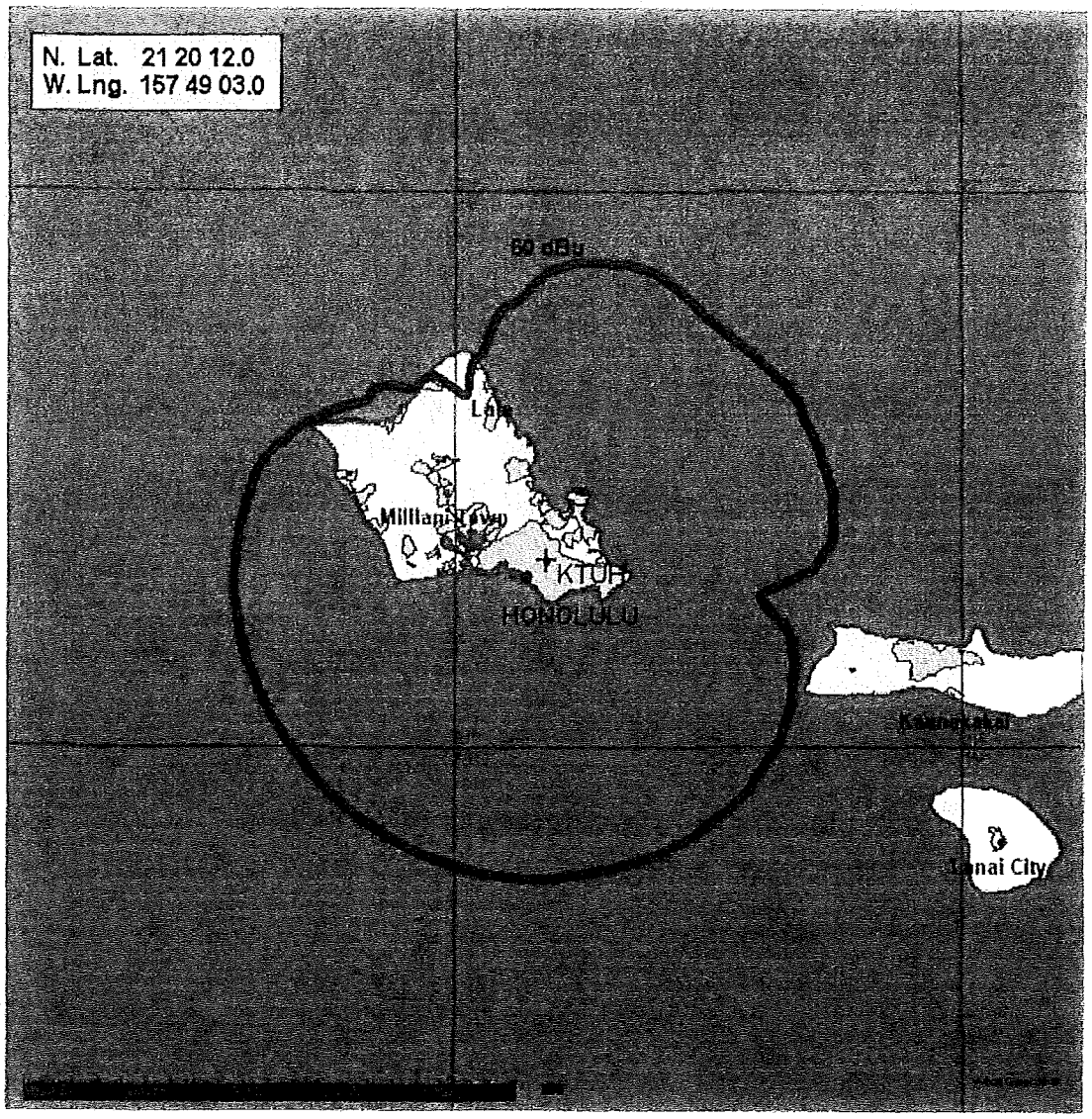
Enclosures

c: Jay Hartwell, KTUH
Dale Machado, KTUH
Duff Zwald, OPRPM

KTUH Minor Change
The University of Hawaii

Coverage Study - FCC NGDC 30 Sec
07-25-2014

KTUH-C CH211 C1, 7.0 kW, 501.0M HAAT, 619.0M COR AMSL
Service Contour = 60 dBu. Population = 873,204



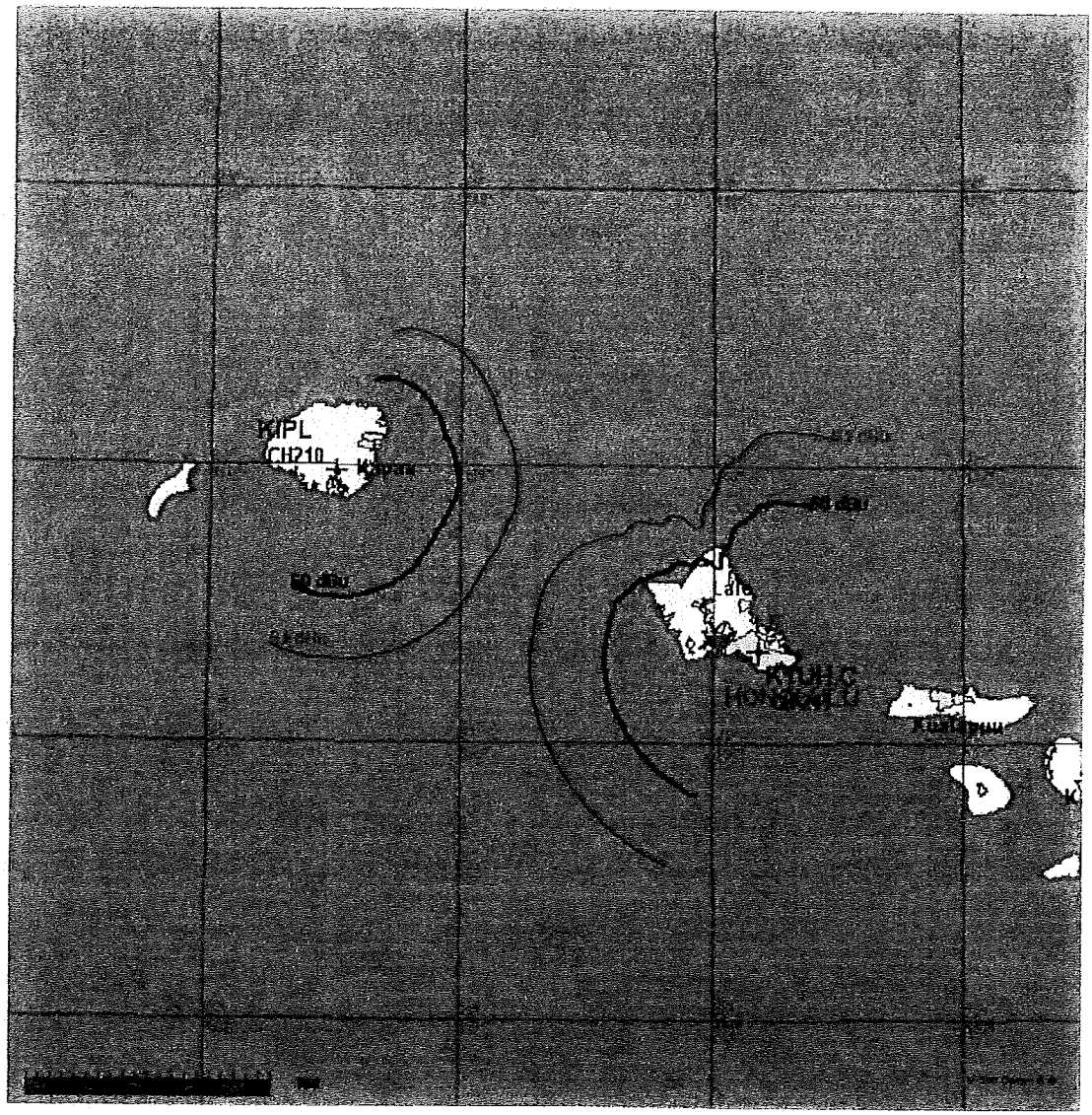
ATTACHMENT NO. 1
Page 1 of 2

KTUH Minor Change
The University of Hawaii

FMCommander Single Allocation Study - 07-25-2014 - FCC NGDC 30 Sec
KTUH.C's Overlaps (In= 53.19 km, Out= 49.89 km)

KTUH.C CH 211 C1
Lat= 21 20 12.0, Lng= 157 49 03.0
7.0 kW 501 M HAAT, 619 M COR
Prot.= 60 dBu, Intef.= 54 dBu

KIPL CH 210 C2 BLED20130809ABF
Lat= 21 58 35.6, Lng= 159 29 54.7
1.0 kW 537.4 M HAAT, 853 M COR
Prot.= 60 dBu, Intef.= 54 dBu



MEMORANDUM OF AGREEMENT

HAWAII PUBLIC RADIO

and the

UNIVERSITY OF HAWAI'I

for the benefit of the

University of Hawai'i at Mānoa
Office of Student Life and Development – KTUH)

This Memorandum of Agreement (MOA), made this 8th day of March 2014, by and between Hawaii Public Radio (HPR), a N/A, whose principal business address is 738 Kaheka Street, Honolulu, Hawai'i 96814 (hereafter "HPR") and the University of Hawai'i, whose business address is Bachman Hall, 2444 Dole Street, Honolulu, Hawai'i 96822 (hereafter the "UNIVERSITY") for the benefit of the University of Hawai'i at Mānoa, Office of Student Life and Development (hereafter "UHM OSLD") and KTUH – University of Hawaii at Mānoa College Student Radio, whose business address is 2445 Campus Road, HH203, Honolulu, Hawai'i 96822 (hereafter "KTUH").

WITNESSETH THAT:

WHEREAS, since about 1969, the UNIVERSITY, with the assistance of UHM OSLD, has operated KTUH as a radio station operated primarily by UNIVERSITY students; and

WHEREAS, since its inception, KTUH, with the assistance of the UHM OSLD, has consistently sought to upgrade and increase its broadcasting range and capability; and

WHEREAS, HPR, since its establishment, has operated as a non-profit radio station whose programming format has included cultural, educational, current events, and entertainment related programming; and

WHEREAS, HPR, like KTUH, has consistently sought to upgrade and increase its broadcasting range and capability; and

WHEREAS, on July 17, 2007, HPR entered into a lease from the State of Hawai'i Board of Land and Natural Resources (hereafter the "Land Board") for a site in the Tantalus area on the island of O'ahu (hereafter the "HPR Leased Area") for a term of thirty (30) years (hereafter the "HPR Lease") and completed the construction of a building facility (hereafter the "HPR Building") and a broadcast antenna on the leased site (hereafter the "HPR Broadcast Antenna"); and

WHEREAS, while HPR has been broadcasting from its HPR Broadcast Antenna and improved its broadcasting range and capability, HPR has indicated that there is space for KTUH to install a broadcasting transmitter and booster in the HPR Building and on the HPR Broadcast Antenna; and

WHEREAS, HPR and the UNIVERSITY, for the benefit of KTUH, desire to have KTUH install and co-locate a KTUH 7 kilowatt transmitter in the HPR Building and a 3 bay antenna on the HPR Broadcast Antenna (hereafter collectively the "KTUH Transmitter"), subject to the terms and conditions contained in this MOA; and

WHEREAS, HPR and the UNIVERSITY plan to seek such approval from the State Department of Land and Natural Resources and/or Land Board as may be necessary under the HPR Lease to accomplish the co-location of a KTUH Transmitter to the HPR Building and HPR Broadcast Antenna (hereafter collectively the "KTUH Co-location"),

NOW, THEREFORE, in consideration of the mutual covenants and promises herein made, the parties do hereby agree as follows:

I. Term of Agreement:

The term of this MOA shall be for the duration of the HPR Lease, including any extensions to the HPR Lease and/or HPR's continued ownership of the HPR Broadcast Antenna.

II. KTUH Relocation Area:

HPR and the UNIVERSITY acknowledge and agree that the KTUH Co-location will be accomplished by installing the KTUH Transmitter partially in the HPR Building (as shown on the map attached hereto as Exhibit A and incorporated herein by reference) and partially on the HPR Broadcast Antenna (as shown on the map attached hereto as Exhibit B and incorporated herein by reference), which together shall comprise the HPR Lease area to be made available to the UNIVERSITY for the KTUH Transmitter and the KTUH Co-location under this MOA.

III. UNIVERSITY responsibilities:

A. Installation and operation of the KTUH Transmitter. The UNIVERSITY shall be responsible, at the UNIVERSITY's expense, for installing, connecting, and operating the KTUH Transmitter upon and at the HPR Antenna.

B. Payment of pro-rata share of common expenses. The UNIVERSITY will be responsible for paying a pro-rata share of one third (1/3) of common expenses incurred in relation to the maintenance and repair of the HPR Broadcast Antenna (hereafter the "UNIVERSITY's Share").

1. UNIVERSITY's Share. The UNIVERSITY's Share was determined based on the number of broadcast stations operating from the HPR Building and the HPR Broadcast Antenna, with HPR having and operating two (2) broadcast stations and KTUH having and operating one (1) broadcast station. Such expenses shall include periodic servicing and repair of the HPR Broadcast Antenna and emergency or short notice repairs but shall not include any costs to upgrade, improve, or expand the broadcasting range or quality of the HPR Broadcast Antenna.

2. HPR Budget. HPR shall notify the UNIVERSITY in writing at least thirty (30) days prior to the start of each fiscal year (July 1) regarding the estimated annual amount of the maintenance and repair costs for the HPR Broadcast Antenna ("HPR Budget") and the amount of the UNIVERSITY's Share. The UNIVERSITY shall review the HPR Budget and the UNIVERSITY's Share and notify HPR within ten (10) days of receiving the HPR Budget of any issues or concerns that the UNIVERSITY may have with respect to the HPR Budget and/or the UNIVERSITY's Share. HPR shall address the UNIVERSITY's issues/concerns and respond to the UNIVERSITY's within ten (10) days

of receiving the UNIVERSITY's response. This process shall be repeated until mutual agreement is reached on the HPR Budget and the UNIVERSITY's Share.

3. Reconcile HPR Antenna Costs. HPR shall, within thirty (30) days of the end of each fiscal year, reconcile the HPR Budget which consists of the estimated HPR Broadcast Antenna maintenance and repair expenses (hereafter collectively the "HPR Antenna Costs") with the actual amount of HPR Antenna Costs incurred by HPR. If there is a deficit in the payment of the UNIVERSITY's Share of the HPR Antenna Costs, the UNIVERSITY shall be responsible for paying such deficit to HPR within sixty (60) days. If the UNIVERSITY's Share of the HPR Antenna Costs paid by the UNIVERSITY is more than it was obligated to pay based on the actual amount of HRP Antenna Costs incurred by HPR, HPR shall refund the full amount of such overpayment to the UNIVERSITY or credit the UNIVERSITY for the full amount of such overpayment against the next succeeding payment(s) of the UNIVERSITY's Share.

4. UNIVERSITY's right to audit. The UNIVERSITY may audit the HPR Budget and the accounting and reconciliation of the HPR Antenna Costs. If not presently a part of the HPR Antenna Costs, the parties will mutually agree upon whether any additional expenses relating to the operation of the HPR Broadcast Antenna incurred by HPR can be included in the present HPR Antenna Costs

C. Install electric sub meter. The UNIVERSITY shall install or have installed, at the UNIVERSITY's expense, an electrical sub meter at a location to be agreed upon between HPR and the UNIVERSITY to monitor the UNIVERSITY's usage of electricity.

D. Utility services. The UNIVERSITY shall install, activate, and operate or have installed, activated, and operated electricity/power, phone, and data line connections and services that the UNIVERSITY may require in connection with the operation of the KTUH Transmitter (hereafter collectively the "UH Utility Lines"). The UNIVERSITY shall be responsible for paying for such installation, activation, and operation of the UH Utility Lines. Because the UNIVERSITY will pay for such installation, activation, and operation of the UH Utility Lines, the UNIVERSITY will not be responsible for paying for any electrical, phone, and data line any electricity/power costs as part of the HPR Antenna Costs.

E. Repair/maintenance. The UNIVERSITY shall repair and maintain the KTUH Transmitter, at the UNIVERSITY's expense, and the UNIVERSITY shall give HPR prior written notice before performing or conducting any major repairs and/or upgrades to the KTUH Transmitter. The UNIVERSITY is not required to give HPR such prior written notice for routine or minor repairs and upkeep.

F. Comply with applicable laws. The UNIVERSITY, in installing, connecting, and operating the KTUH Transmitter, will comply with all applicable federal, state, and county laws, statutes, rules, regulations, and ordinances.

IV. HPR responsibilities.

A. Grant of entry. HPR shall grant and provide the UNIVERSITY with access to the HPR Leased Area, the HPR Broadcast Antenna, and the HPR Building to allow the UNIVERSITY to install, connect, operate, maintain, repair, upgrade, and remove the KTUH Transmitter, including, without limitation, providing to the

UNIVERSITY, at no cost to the UNIVERSITY, keys and combinations to locks, as may be necessary to allow the UNIVERSITY such access to the HPR Leased Area, the HPR Broadcast Antenna, and the HPR Building.

B. Use of HPR generator. HPR will allow the UNIVERSITY to connect to and use the HPR generator(s) located on the HPR Leased Area in case of emergencies and power outages.

C. Maintenance and repair of HPR areas. HPR shall be responsible, at HPR's expense, for keeping the HPR Leased Area, the HPR Broadcast Antenna, and the HPR Building (collectively the "HPR Areas") in good condition and repair and shall maintain the same, including, without limitation, making all structural repairs (e.g., roof replacement) and expending such capital costs as may be necessary to keep the HPR Areas in good condition and repair. HPR shall not include as part of the HPR Antenna Costs and/or charge the UNIVERSITY for any such structural repairs or capital costs incurred by HPR.

D. Grant for others to use HPR Areas. HPR shall give the UNIVERSITY written notice prior to granting other persons or entities the right to install, connect, use, or operate from the HPR Broadcast Antenna and/or the HPR Building. HPR shall promptly and timely respond to any concerns raised or identified by the UNIVERSITY and try to resolve such concerns prior to allowing such other persons and entities access to the HPR Areas.

V. Insurance. The UNIVERSITY, as an agency of the State of Hawai'i, is self-insured and is willing to provide HPR with a Statement of Self-Insurance (which will be prepared by the State of Hawaii Department of Accounting and General Services Risk Management Office) upon request by HPR..

VI. Modifications to the MOA

Any modifications to this MOA shall be in writing and signed by both parties.

IN WITNESS WHEREOF, the parties, by their duly authorized officers, have executed this MOA as of the date first above written, to be effective as of said date.

[Remainder of Page Intentionally Left Blank]
[Signature pages to follow]

HPR:

Hawaii Public Radio

By: _____
Michael Titterton
Its President

DATE: 1/27/15

UNIVERSITY:

UNIVERSITY OF HAWAI'I, a body corporate and state university of the State of Hawai'i

By _____
Robert Bley-Vroman
Its Chancellor, University of Hawai'i at Manoa
Its Chancellor

By _____
Lori M. Ideta
Interim Vice Chancellor For Students
University of Hawai'i at Manoa

Recommend Approval:

By _____
~~Mechillis Iochad~~ Alicia DeVoll
Chair, UHM Student Media Broadcast Board
University of Hawai'i at Mānoa

By _____
Paige Okamura
KTUH General Manager

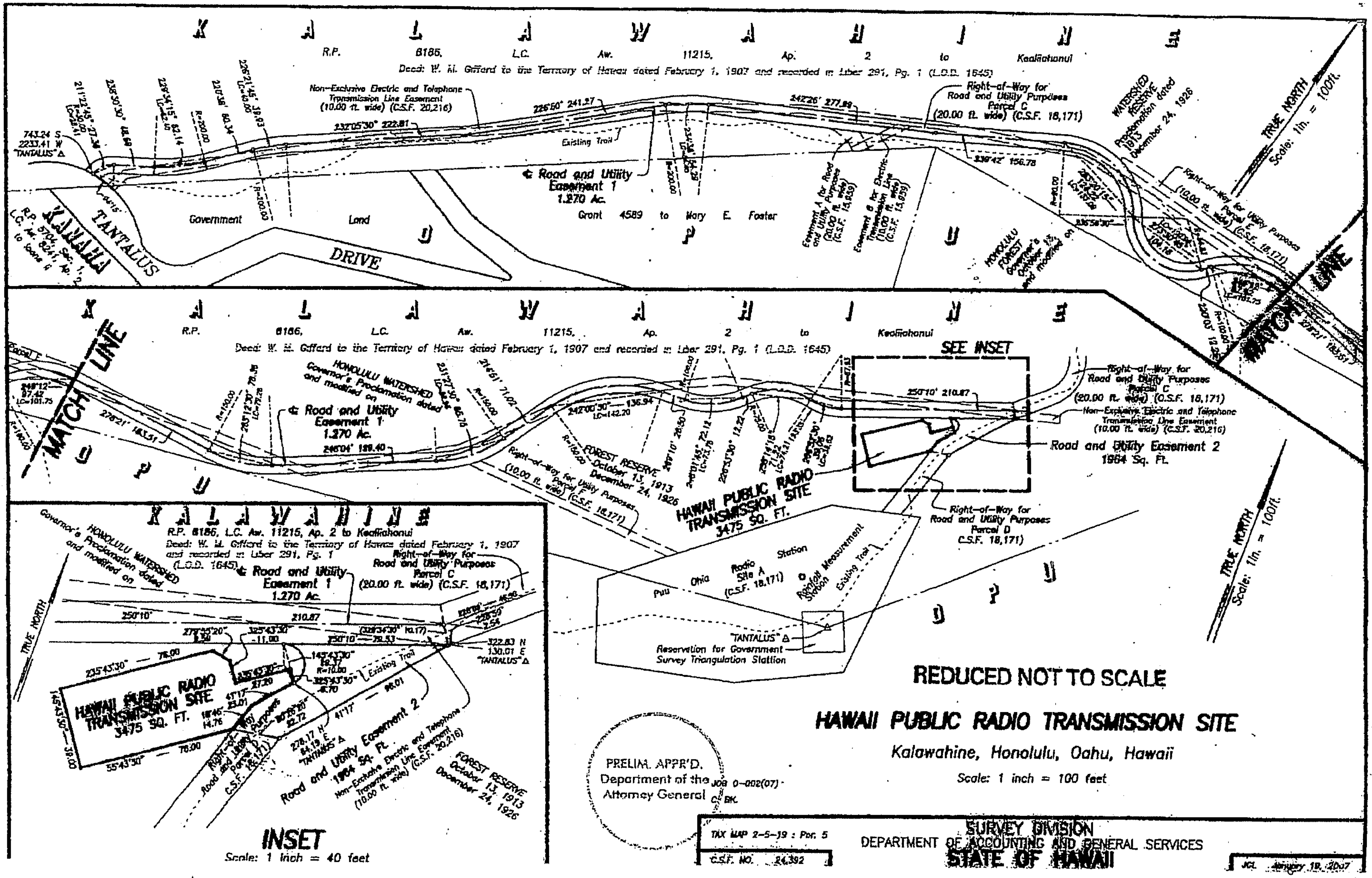
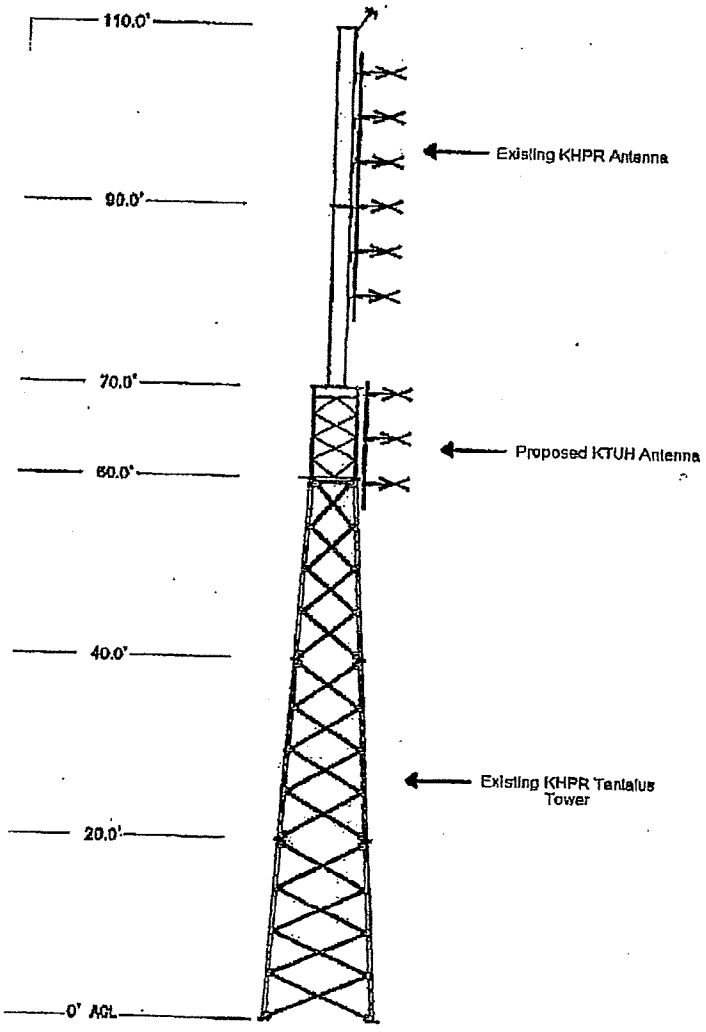
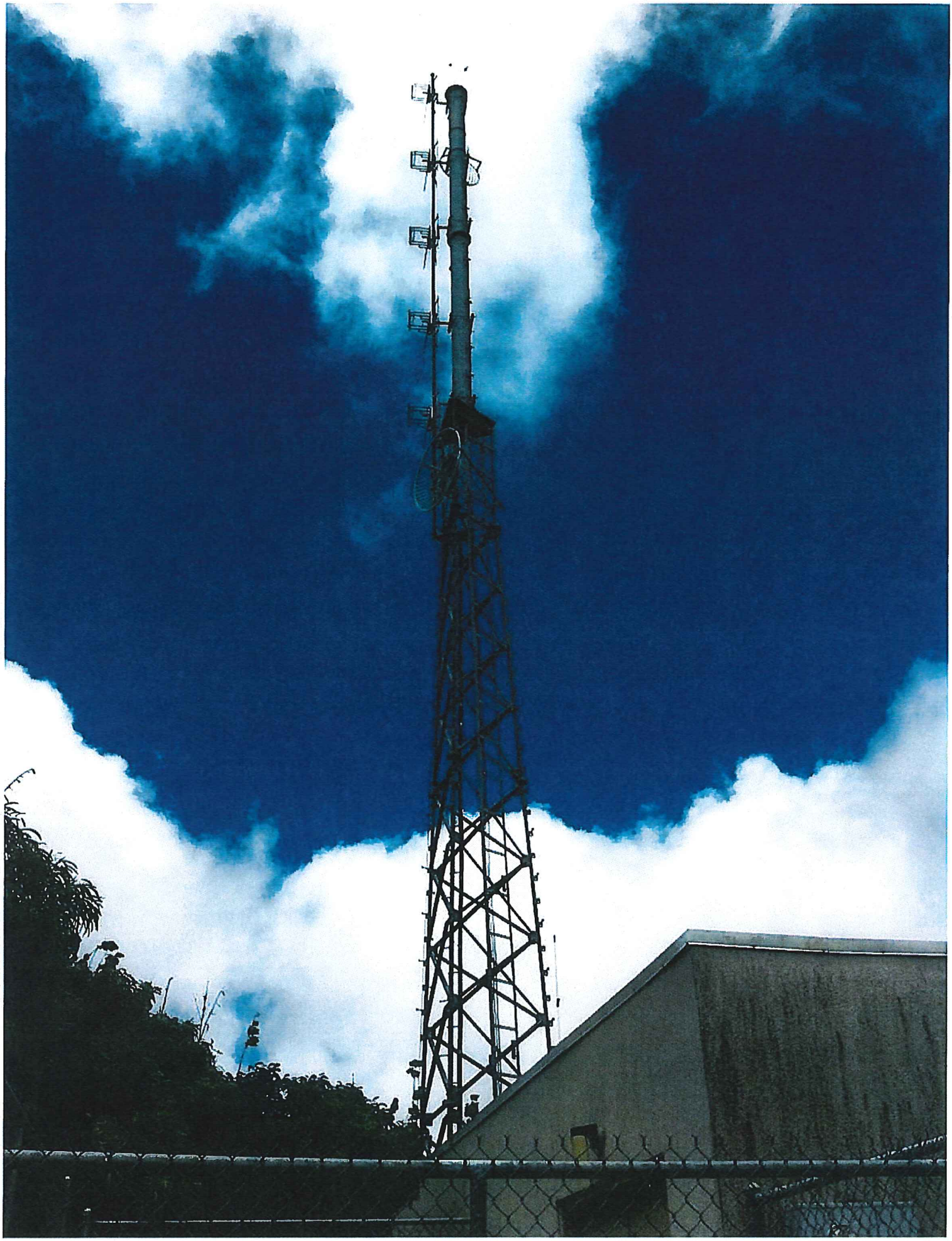

KALAWAHINE
R.P. 6186, L.C. Aw. 11215, Ap. 2 to Keaiiahonui
Deed: W. H. Gifford to the Territory of Hawaii dated February 1, 1907 and recorded in Liber 291, Pg. 1 (L.O.D. 1645)
Non-Exclusive Electric and Telephone Transmission Line Easement (10.00 ft. wide) (C.S.F. 20,216)
Right-of-Way for Road and Utility Purposes Parcel C (20.00 ft. wide) (C.S.F. 18,171)
Road and Utility Easement 1
1.270 Ac.
Existing Trail
Government Land
TANTALUS DRIVE
KANAHA
R.P. 5704, Sec. 1, L.C. Aw. 8241, Ap. 2 to Ioane Ii
Grant 4589 to Mary E. Foster
PUU
Easement A for Road and Utility Purposes (20.00 ft. wide) (C.S.F. 15,839)
Easement B for Electric Transmission Line (10.00 ft. wide) (C.S.F. 15,839)
HONOLULU WATERSHED FOREST RESERVE
Governor's Proclamation dated October 13, 1913 and modified on December 24, 1926
TRUE NORTH
Scale: 1in. = 100ft.
MATCH LINE
Right-of-Way for Utility Purposes Parcel E (10.00 ft. wide) (C.S.F. 18,171)
SEE INSET
Road and Utility Easement 2
1964 Sq. Ft.
HAWAII PUBLIC RADIO TRANSMISSION SITE
3475 SQ. FT.
Right-of-Way for Road and Utility Purposes Parcel D C.S.F. 18,171)
Puu Ohia Radio Station Site A (C.S.F. 18,171)
Rainfall Measurement Station
"TANTALUS"
Reservation for Government Survey Triangulation Station
INSET
Scale: 1 inch = 40 feet
REDUCED NOT TO SCALE
HAWAII PUBLIC RADIO TRANSMISSION SITE
Kalawahine, Honolulu, Oahu, Hawaii
Scale: 1 inch = 100 feet
PRELIM. APPR'D.
Department of the Attorney General
JOB 0-002(07)
TAX MAP 2-5-19 : Por. 5
C.S.F. NO. 24,392
SURVEY DIVISION
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
STATE OF HAWAII
JCL January 19, 2007

EXHIBIT A

EXHIBIT B

KTUH proposes to place its new antenna on the existing KHPR tower at Tantalus and below Hawaii Public Radio's current antenna.





LICENSE RENEWAL AUTHORIZATION

THIS IS TO NOTIFY YOU THAT YOUR APPLICATION FOR RENEWAL OF LICENSE, BRED-20130930BAH, WAS GRANTED ON 04/23/2014 FOR A TERM EXPIRING ON 02/01/2022.

THIS IS YOUR LICENSE RENEWAL AUTHORIZATION FOR STATION KTUH.

FACILITY ID: 66592

LOCATION: HONOLULU, HI

THIS CARD MUST BE POSTED WITH THE STATION'S LICENSE CERTIFICATE AND ANY SUBSEQUENT MODIFICATIONS.

THE UNIVERSITY OF HAWAII
2444 DOLE STREET
BACHMAN HALL 209
HONOLULU, HI 96822

United States of America

FEDERAL COMMUNICATIONS COMMISSION

FM BROADCAST STATION CONSTRUCTION PERMIT

Authorizing Official:

Official Mailing Address:

THE UNIVERSITY OF HAWAII
2444 DOLE STREET
BACHMAN HALL 209
HONOLULU HI 96822

Rodolfo F. Bonacci
Assistant Chief
Audio Division
Media Bureau

Facility ID: 66592

Call Sign: KTUH

Permit File Number: BPED-20140825AAR

Grant Date: June 15, 2015

This permit expires 3:00 a.m. local time, 36 months after the grant date specified above.

Subject to the provisions of the Communications Act of 1934, as amended, subsequent acts and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions set forth in this permit, the permittee is hereby authorized to construct the radio transmitting apparatus herein described. Installation and adjustment of equipment not specifically set forth herein shall be in accordance with representations contained in the permittee's application for construction permit except for such modifications as are presently permitted, without application, by the Commission's Rules.

Commission rules which became effective on February 16, 1999, have a bearing on this construction permit. See Report & Order, Streamlining of Mass Media Applications, MM Docket No. 98-43, 13 FCC RCD 23056, Para. 77-90 (November 25, 1998); 63 Fed. Reg. 70039 (December 18, 1998). Pursuant to these rules, this construction permit will be subject to automatic forfeiture unless construction is complete and an application for license to cover is filed prior to expiration. See Section 73.3598.

Equipment and program tests shall be conducted only pursuant to Sections 73.1610 and 73.1620 of the Commission's Rules.

Name of Permittee: THE UNIVERSITY OF HAWAII

Station Location: HI-HONOLULU

Frequency (MHz): 90.1

Channel: 211

Class: C1

Hours of Operation: Unlimited

Callsign: KTUH Permit No.: BPED-20140825AAR

Transmitter: Type Accepted. See Sections 73.1660, 73.1665 and 73.1670 of the Commission's Rules.

Transmitter output power: As required to achieve authorized ERP.

Antenna type: Non-Directional

Antenna Coordinates: North Latitude: 21 deg 20 min 12 sec

West Longitude: 157 deg 49 min 03 sec

	Horizontally Polarized Antenna	Vertically Polarized Antenna
Effective radiated power in the Horizontal Plane (kW):	7.0	0
Height of radiation center above ground (Meters):	25	0
Height of radiation center above mean sea level (Meters):	619	0
Height of radiation center above average terrain (Meters):	501	0

Antenna structure registration number: Not Required

Overall height of antenna structure above ground: 34 Meters

Obstruction marking and lighting specifications for antenna structure:

It is to be expressly understood that the issuance of these specifications is in no way to be considered as precluding additional or modified marking or lighting as may hereafter be required under the provisions of Section 303(q) of the Communications Act of 1934, as amended.

None Required

Special operating conditions or restrictions:

1 The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

2 Permittee has specified use of the antenna listed below to demonstrate compliance with the FCC radiofrequency electromagnetic field exposure guidelines. If any other type or size of antenna is to be used with the facilities authorized herein, THE AUTOMATIC PROGRAM TEST PROVISIONS OF 47 C.F.R. SECTION 73.1620 WILL NOT APPLY. In this case, a FORMAL REQUEST FOR PROGRAM TEST AUTHORITY must be filed in conjunction with FCC Form 302-FM, application for license, BEFORE program tests will be authorized. The request must include a revised RF field showing to demonstrate continued compliance with the FCC guidelines.

Three sectioned, 0.9 wavelength spaced antena

*** END OF AUTHORIZATION ***

Broadcast Engineering Services of Bonny Doon, Inc.
Donald E. Mussell Jr. NCE-CBT
Consulting Engineer
740 Front Street Suite 305
Santa Cruz, Ca 95060
(808) 828-0209 Office
(831) 588-9463 Cell
dmsml@well.com
www.well.com/user/dmsml

Engineering Statement
in support of a Minor Change
to
KTUH Honolulu, Hawaii
BLED-20010820AAQ

KTUH, licensed to the University of Hawaii, is requesting to amend the license for KTUH (BLED-20010820AAQ). The applicant proposes to migrate to Ch. 211, utilize a non-directional antenna system, separate from the combined antenna utilized by KIPO (BLED-20100119ABP) and KHPR (BLED-20111216AAR), both on the same tower and also licensed to Honolulu. This application incorporates RFR calculations appropriate for a shared antenna site. KTUH proposes to increase power to 7 kilowatts, and increase the height of the antenna to 619 meters above mean sea level, 25 meters above ground, and 501 meters above average terrain.

This proposal is free from overlap, either caused or received, and there are no FM or TV facilities in the entire state of Hawaii that are affected or overlapped by this proposal. An allocation study, along with detail maps, is attached to this statement

The proposed antenna system is a Shively 6600-3, a 3 bay, .9 wave spaced horizontally polarized design. At 25 meters above ground, this antenna will produce a calculated worst-case RFR energy field of 18.07 microwatts per squared centimeter at a distance of 10 meters from the base of the tower support structure. When the calculated RF level is combined with the existing calculated RFR level of the co-located facilities of KIPO and KHPR, the total calculated RFR level on the ground at the tower site will be just under 159 microwatts per squared centimeter. This is just over 79% of the public limit, and the overall calculated RFR level is therefore compliant with the FCC rules concerning RFR both on and adjacent to the proposed tower location. There are no other full power broadcast facilities within 2 miles of this site.

This proposal is well within the limitations of the FCC's Waipahu monitoring station. The RF limitation at the Waipahu monitoring facility is 27 mV/m. The distance to the monitoring station is 19.33 kilometers. The straight-line radial between the proposed tower site and the monitoring station is 284.11 degrees true, with an average height above average terrain of 563.7 meters. The effective radiated power in the 284 degree azimuth will be 7 KW, which produces a calculated level of 14.814 mV/m (50,10) at the monitoring station. The resulting signal level from this proposal complies with the specified RF field strength limitations at the monitoring facility.

The University of Hawaii is ready to construct the KTUH facility with these specified changes. Once this modification is granted, construction will commence on the transmission facilities and will be completed well within the time limitations imposed by the underlying construction permit.

Respectfully submitted,

Donald E. Mussell Jr. NCE-CBT
Consulting Engineer
July 26, 2014

AFFIDAVIT AND QUALIFICATIONS OF
DONALD E. MUSSELL JR.

State of Hawaii)
Kilauea)
County of Kauai)

Donald E. Mussell Jr. affirms that he is a consulting radio and electronics engineer; that he is Certified as a Broadcast Engineer, Class 1, by the National Association of Radio and Telecommunications Engineers, Inc., License #E1-00619, issued in 1985;

That he is recognized as a Broadcast Technologist by the Society of Broadcast Engineers, License # 22301, and a member of the Society of Broadcast Engineers since 1980;

That he held a First Class Radiotelephone License from 1975 until 1985, when it was replaced by a lifetime General Class Radiotelephone license (PG-12-20588), issued by the Federal Communications Commission in January of 1985;

That he has submitted many applications to the Federal Communications Commission for broadcast and auxiliary broadcast construction permits and licenses, and that his experience in Radio and Television broadcast engineering extends over four decades;.

That he declares, under penalty of perjury, that the foregoing engineering exhibits were prepared by him or under his direction and supervision; and that the statements contained therein are true and correct to the best of his belief and knowledge.

Donald E. Mussell Jr. NCE-CBT
Consulting Engineer
July 26, 2014

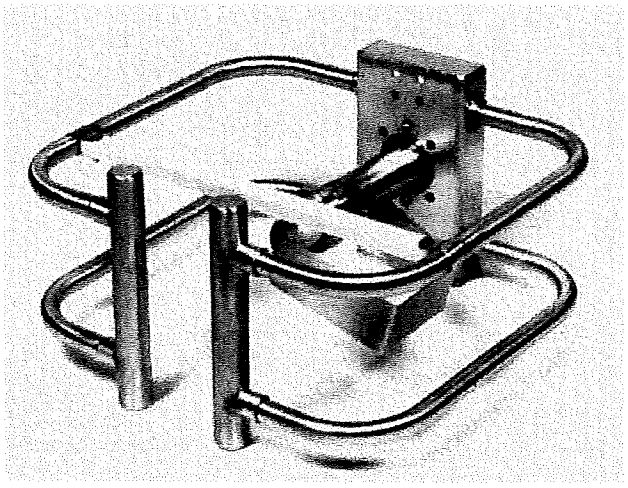
Shively Labs®

Model 6600 Horizontally-Polarized FM Antenna Full-Wave-Spaced

Horizontal polarization

Power rating: 5 kW per bay

Shively standard features:



- Ring stub design
- Low weight and windload
- Consistently predictable patterns
- Digital-ready
- Pattern studies available
- No factory personnel needed to install
- Adjustable fine-matching transformer
- Radomes and deicers available
- Rugged corrosion-resistant mounts
- Works with regular towers; no need for special frequency-sensitive tower sections
- Pressure relief valve for easy purging of the system
- Special spacing, null fill and beam tilt available

Electrical specifications:

No. of Bays	Gain		Power Rating	No. of Bays	Gain		Power Rating
	Power	dB	kW		Power	dB	kW
1	0.92	-0.36	5	7	7.74	8.89	35
2	1.98	2.97	10	8	8.92	9.50	40
3	3.10	4.91	15	10	11.30	10.53	40
4	4.24	6.27	20	12	13.70	11.37	40
5	5.40	7.32	25	14	16.10	12.07	40
6	6.56	8.17	30	16	18.50	12.67	40

Performance specifications:

Polarization: Horizontal only

VSWR: 1.08 : 1 ± 100 kHz
1.16 : 1 ± 200 kHz

Azimuth pattern circularity: ± 1.5 dB on pole.

Input connection: Female 3-1/8 in EIA

Notes:

1. Our gain figures are derived from the computed directivity and include the losses in the antenna feed system.

   Gain is provided for horizontal polarization only. Gain will be reduced if null fill, beam tilt, or special wavelength spacing is provided. Gain will increase in a directional array by the directivity of the azimuth pattern.

Document No. ds-6600-fw (150317)

A Division of Howell Laboratories, Inc., P. O. Box 389, Bridgton, Maine 04009 USA
(207) 647-3327 1-888-SHIVELY Fax: (207)647-8273
An Employee-Owned Company
www.shively.com
sales@shively.com
Certified to ISO-9001

Model 6600 size and weight (full-wave-spaced):

No. of Bays	Vertical Tower Space						Weight					
	Antenna Radiation Aperture		Physical Space Used		Total Tower Space Recommended		Without radomes		With radomes		With radomes & 1/2" (1.2 cm) radial ice	
	ft	m	ft	m	ft	m	lb	N	lb	N	lb	N
1	2	0.7	9	3.0	20	6.6	60	268	93	415	177	789
2	10	3.3	19	6.2	30	9.8	101	450	167	745	343	1530
3	20	6.6	29	9.5	40	13.1	141	629	240	1070	509	2270
4	30	9.8	39	12.8	50	16.4	182	812	314	1400	675	3011
5	40	13.1	49	16.1	60	19.7	222	990	387	1726	841	3751
6	50	16.4	59	19.4	70	23.0	263	1173	461	2056	1007	4491
7	60	19.7	69	22.6	80	26.2	303	1351	534	2382	1173	5232
8	70	23.0	73	23.9	90	29.5	322	1436	586	2614	1296	5780
10	90	29.5	93	30.5	110	36.1	403	1797	733	3269	1628	7261
12	110	36.1	113	37.1	130	42.6	484	2159	880	3925	1960	8742
14	130	42.6	133	43.6	150	49.2	565	2520	1027	4580	2292	10222
16	150	49.2	153	50.2	170	55.8	647	2886	1175	5241	2625	11708

Windload (full-wave-spaced):

No. of Bays	Revision 'C'						Revision 'F'					
	Without radomes		With radomes		With radomes & 1/2" (1.2 cm) radial ice		Without radomes		With radomes		With radomes & 1/2" (1.2 cm) radial ice	
	lb	N	lb	N	lb	N	(ft2)	m2	(ft2)	m2	(ft2)	m2
1	70	312	149	665	188	838	2.2	0.2	4.2	0.4	5.1	0.5
2	140	624	297	1325	373	1664	4.6	0.4	8.6	0.8	10.8	1.0
3	210	937	445	1985	558	2489	7.0	0.7	13.0	1.2	16.5	1.5
4	280	1249	593	2645	743	3314	9.5	0.9	17.4	1.6	22.1	2.1
5	350	1561	741	3305	928	4139	11.9	1.1	21.8	2.0	27.8	2.6
6	420	1873	889	3965	1113	4964	14.3	1.3	26.2	2.4	33.4	3.1
7	490	2185	1037	4625	1298	5789	16.8	1.6	30.6	2.8	29.1	2.7
8	533	2377	1159	5169	1437	6409	18.3	1.7	34.1	3.2	43.2	4.0
10	673	3002	1455	6489	1807	8059	23.1	2.1	43.0	4.0	54.5	5.1
12	812	3622	1751	7809	2177	9709	28.0	2.6	51.8	4.8	65.8	6.1
14	952	4246	2047	9130	2548	11364	32.9	3.1	60.6	5.6	77.1	7.2
16	1092	4870	2343	10450	2918	13014	37.7	3.5	69.5	6.5	88.5	8.2

Notes:

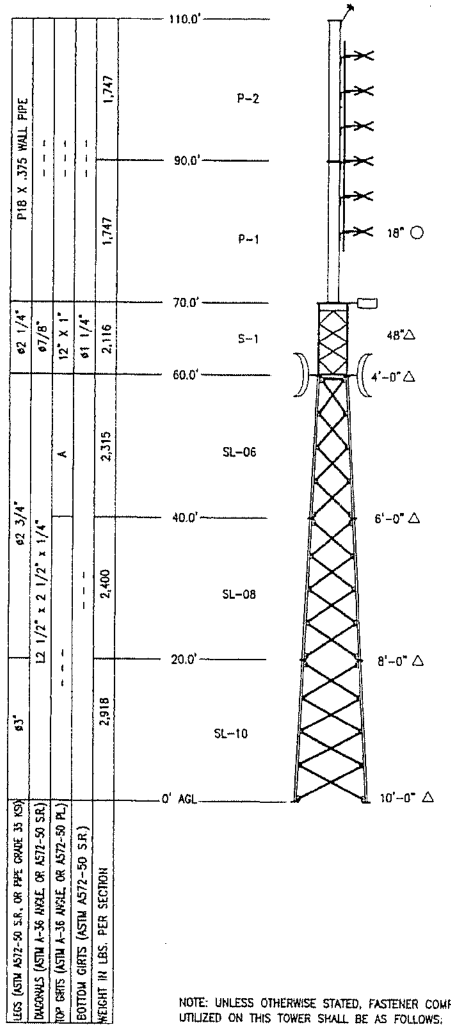
2. The mounting structure must not flex more than ± 1/2 in in any 10-ft section. 5 ft of mounting structure is required above and below the antenna for proper pattern formation.
3. Antenna radiation aperture is the distance from the center of the top bay to the center of the bottom bay. Physical space used is from the top of the top bay to the input flange at the bottom of the array, or the bottom of the bottom bay in a center-fed array. Total tower space recommended allows ten feet of clear tower space above and below the antenna to protect from pattern interference by other antennas.
4. Seven bays or less are normally end-fed. All antennas supplied with beam tilt will be center-fed. Antennas with an odd number of bays are normally not available with center feed.
5. Windload and weight tabulations are estimates and assume 98 MHz. They include the bay, interbay feedline, input connection, and a fine-matching transformer. No values have been included in these tabulations for mounts. Actual values vary with the specific installation. Contact us with details of your installation if more precise values are needed.
6. Antenna windloads are calculated for 112 mph (180 kph), using 50 psf (2400 N/m²) for flats and 33 psf (1600 N/m²) for rounds] per EIA standard RS-222-C and CSA standard S37-94. The surface area is calculated per EIA standard RS-222-F (C_aA_c).
7. Deicers add approximately 1 lb (4.4 N) per bay in weight and 2 lb (8.9 N) or 0.05 ft² (0.005 m²) per bay in windload.
8. Ask for technical assistance at Shively if you are planning to mount antennas on AM towers or install them at altitudes over 3,000 ft (915 m) AMSL.

DESIGNED ANTENNA LOADING

ANTENNA TYPE	ELEVATION (A.G.L.)	LINE
(2) 6' GRID	60.0'	(2) 7/8" COAX
SCALA MF-960	70.0'	7/8" COAX
MP-6AC-DA-HW-SP	80.16' - 105.03'	3" COAX
A-1 LIGHTNING SPUR	TOP	- - -

MATERIAL LIST

MARK	SIZE
A	L2 1/2" X 2 1/2" X 1/4"



TOWER DESIGN NOTES

1. TOWER DESIGNED FOR A 125 MPH BASIC WIND SPEED IN ACCORDANCE WITH THE ANSI/TIA-EIA-222-F STANDARD.

2. LEG STEEL IS ASTM-A572 GRADE 50 OR EQUAL. ALL OTHER STEEL IS A-36 UNLESS OTHERWISE SPECIFIED.

3. CONNECTIONS USE GALVANIZED A-325 BOLTS, LOCKING DEVICES AND NUT. INSTALLATION PER EIA-222-F SPECIFICATIONS.

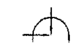
4. TOWER MEMBERS ARE "HOT DIPPED" GALVANIZED IN ACCORDANCE WITH ASTM A-123 AND A-153 STANDARDS.

5. WELDS ARE FABRICATED WITH ER-70S-6 ELECTRODES.

6. LISTED WEIGHTS ARE ESTIMATES TO BE USED FOR INSTALLATION ERECTION PLANNING ONLY. IT SHALL BE THE RESPONSIBILITY OF THE ERECTOR TO VERIFY ALL SECTION WEIGHTS AT GROUND LEVEL PRIOR TO THE FINAL HOISTING OPERATION.

MAX CORNER REACTIONS AT BASE:

DOWN: 124K
UPLIFT: -109K
SHEAR: 13K



TORQUE = 6 KIP-FT
125 MPH WIND

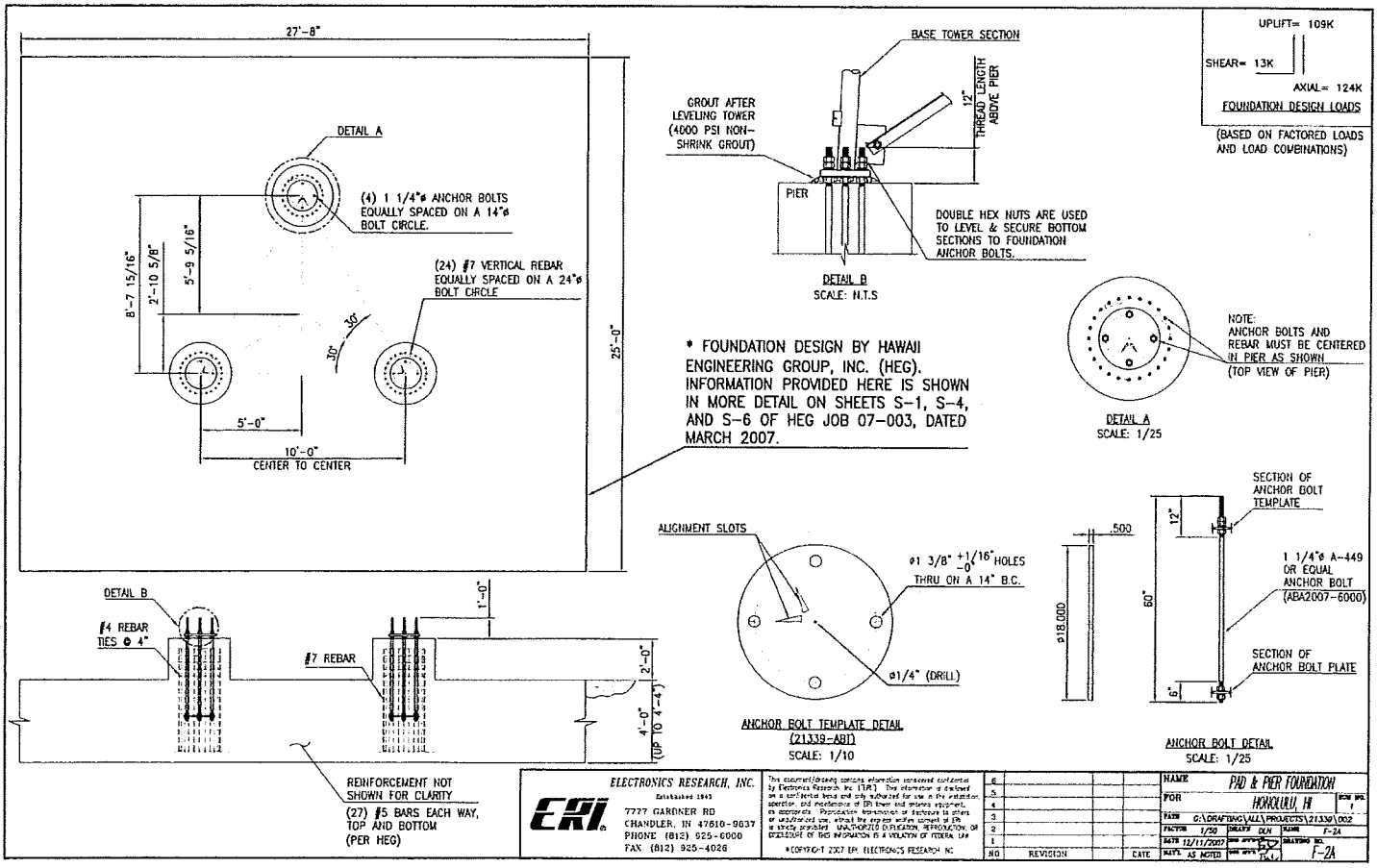
NOTE: UNLESS OTHERWISE STATED, FASTENER COMPONENTS UTILIZED ON THIS TOWER SHALL BE AS FOLLOWS:

COMPONENTS	DESCRIPTION
STRUCTURAL BOLT	ASTM A-325
HEAVY HEX NUT	ASTM A-563
ANCO LOCKNUT	ASTM A-563 HEAVY HEX NUT W/ STAINLESS PIN
FLATWASHER	ASTM F-436
LOCKWASHER	ASME B18.21.1

TOWER ELEVATION
HONOLULU, HI
FILE G:\DRAFTING\ALL\PROJECTS\21339\001
SCALE 1/150 DRAWN DLN
DATE 12/18/2007 MAT'L AS NOTED
DRAWING NO. E-1

NO. | REVISION | DATE

ELECTRONICS RESEARCH, INC.
Established 1943
7777 GARDNER RD
CHANDLER, IN 47610-9037
PHONE (812) 925-6000
FAX (812) 925-4030



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FAX (812) 925-4026

NO	REVISION	DATE
6		
5		
4		
3		
2		
1		

NAME: PAD & PIER FOUNDATION
FOR: HONOLULU, HI
PATH: G:\DRAFTING\ALL\PROJECTS\21339\002
FACTOR: 1/50 DRAFT: DLN NAME: F-2A
DATE: 12/11/2007
SCALE: AS NOTED
DRAWING NO. F-2A

G:\Drafting\ALL\PROJECTS\21339002\F-2A.dwg, 12/18/2007 3:23:15 PM, dnoel

Broadcast Engineering Services of Bonny Doon, Inc.
Don Mussell NCE-CBT

KTUH Minor Change
The University of Hawaii

REFERENCE CH# 211C1 - 90.1 MHz, Pwr= 7 kW, HAAT= 501.0 M, COR= 619 M
21 20 12.0 N. Average Protected F(50-50)= 58.66 km
157 49 03.0 W. Omni-directional

DISPLAY DATES
DATA 07-25-14
SEARCH 07-25-14

CH CALL CITY	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kW) INT(km) HAAT(M) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
211C1 KTUH Honolulu	CP _HX HI	0.0 0.0	0.00 BMPED20120827AER	21 20 12.0 157 49 03.0	7.500 138.0 501 619	58.0 The Universit	-195.3*	-194.8*
212A KTUH Honolulu	LIC _C_ HI	188.5 8.5	3.67 BLED20010820AAQ	21 18 14.0 157 49 22.0	3.000 19.5 -25 77	13.2 The Universit	-80.1*	-104.2*
210D K210DX Honolulu	LIC _V_ HI	96.4 276.4	6.35 BLFT20051122AEZ	21 19 49.0 157 45 24.0	0.010 20.8 668 748	13.4 University Of Hawaii	-61.4*	-76.5*
210C2 KIPL Lihue	LIC _HX HI	292.6 112.0	187.87 BLED20130809ABF	21 58 35.6 159 29 54.7	1.000 73.2 537 853	48.7 Cross Roads Christian Fell	53.2	49.9

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= - Zone 2, Co to 3rd adjacent.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside protected contour.
« = Station meets FCC minimum distance spacing for its class.