KAUAI VETERANS MEMORIAL HOSPITAL
4643 Waimea Canyon Dr, Waimea, HI 96796
(808) 338-9431

HAWAI'I HEALTH SYSTEMS CORPORATION
KAUA`I REGION

SAMUEL MAHELONA MEMORIAL HOSPITAL
4800 Kawaihau Rd, Kapa'a, HI 96746
(808) 822-4961

ADDENDUM #1

March 18, 2024

TO: Potential Offerors

FROM: Maia Guirao, Contract Manager

RE: Solicitation Addendum #1 to RFP #24-01/Renovation for CAH Beds

This correspondence serves as Addendum #1 to the subject Request for Proposals ("RFP"). Your response to this RFP should be governed by the content of the original RFP and the revisions/corrections/additions/clarifications provided in this addendum notice.

1. Drawings **A1.0 – Lower Level Plan R1** and **A2.6 – Building Sections R1** were provided for your reference.

The following questions were asked:

2. Q: Is there a hazardous material survey and report for this project?
   A: Section 2F - Asbestos Abatement, paragraph incorrectly noted a Hazardous Material Survey by HEIS was part of the project specifications. This has been deleted in the attached revised specification section. There is no HAZMAT report available for the project area.

3. Q: The specifications are missing HVAC, Plumbing, Fire Sprinkler, and Electrical sections. Please provide.

   A: The Specifications can be found on Sheets M7.1, M7.2, & M7.3.

4. Q: Architecture Drawings are missing roof plan and roof details. Please provide.

   A: Roof plan and detailed attached.

5. Q: Please provide specifications for Windows.

   A: Window specifications attached.

6. Q: Please provide specifications for Aluminum Doors.

A: Stanley Dura-Glide 3000 as noted on Sheet A3.0.

7. Q: Please provide basis of design and specifications for Breakaway door on Detail 1/A30 on sheet A3.0.

   A:Door Type "C" Stanley Dura-Glide 3000 and Detail 1/A3.0 as shown.

8. Q: Reference drawing sheet A3.0. Door to Hallway Rm 100 and Door to Bathroom RM103 are both labeled D/1. Please advise.

   A: Pair Doors D/1 to/from Hallway 100 is correct. Door D/7 is to Bathroom RM103 as noted on floor plan and door schedule.

9. Q: Please provide specifications for Plumbing, Fire Sprinkler, HVAC, and Electrical.

   A: The specifications for plumbing, fire sprinkler and HVAC can be found on Sheets M7.1, M7.2, & M7.3. Electrical specifications are attached.

10. Q: Reference Electrical Drawing Sheet E1.1. Note 4 states to furnish head wall system. Please provide Head System basis of design, specifications, elevation drawings, and details.

    A: Patient Room Headwall System and Cabinets are found in 1L – Finish Schedule, Code CAB-1 and CAB-2. Cost to be included in bids. Architectural plans that note these are "NIC" is incorrect.

11. Q: RFP Section 3.5 Submission of Proposals states, "The Issuing Officer must receive one (1) original and three (3) copies and **one copy in electronic format** of the proposal no later than the "Closing Date for Receipt of Proposals", identified in Section 1, paragraph 1.1. **Proposals received after this time/date may be rejected**."
    a) Kindly confirm if the required electronic copy of the proposal is to be submitted via email to mguirao@hhsc.org.
    b) Similar to previous HHSC submittals and in order to provide HHSC with a competitive price proposal that is submitted in a timely manner, we kindly request allowance that the required hard copies of the proposal be submitted within three (3) business days after the closing date for receipt of proposals and submission of the electronic copy.

    A: Required electronic copy of the proposal may be submitted via email to mguirao@hhsc.org. Electronic copy may also be submitted via USB drive and sent with the hard copies.

    Hard copies of the proposal must be post marked by Friday, April 12, 2024.

12. Q: Item 1: Request substitution of Accutrol lsoTek model (qty1) ISO3112-MW room pressure monitor in lieu of Setra models (qty3) SRPM for Pharmacy, IV Prep, and Vestibule spaces. lsoTek 7" Color Touchscreen displays: differential pressure, temperature, humidity, ACH, & polarity of three zone's pressure relationships and conditions (Pharmacy, IV Prep Room, and Vestibule). Provided with Bluetooth wireless communication for no-ladder & touch-free service, configuration and TAB verification. Submittal, IOM, and data sheets attached.

    Q: Item 2: Request substitution of Accutrol lsoTek model (qty1) ISO2112-MW room pressure monitor in lieu of Setra model (x2) SRPM for Airborne Infection Isolation Room & Ante Room spaces. lsoTek 7" Color Touchscreen displays: differential pressure, temperature, humidity, ACH, & polarity of two zones pressure relationships and conditions {Isolation Room, and Ante Room). Provided with Bluetooth for no-ladder & touch-free service, configuration and TAB verification. Submittal, IOM, and data sheets attached.

    Notes: There are no deviations from the design intent in this substitution. The proposed substitutions provide same or better functional performance and or instrumental accuracy of the specified devices.

    A: We take no exception to the proposed substitutions of Accutrol IsoTek in lieu of Setra model for Item 1 and Item 2.

13. Q: Reference Sheet A2.0. Sheet A2.0 note states Headwall System is NIC. Please confirm headwall units are to be provided by others.

    A: Patient headwall and cabinet system to be included in bid. Refer to specifications Section 1L – Finish Schedule for details.

14. Q: Reference Specification Section 10B-1 Toilet and Sink Counter Accessories. Please provide quantity of OFCI Paper Towel Dispensers and Soap Dispensers.

    A: Fourteen (14) each paper towel dispensers and soap dispensers.

15. Several restrooms/toilet rooms are missing Toilet Paper Holders and Toilet Seat Cover Dispensers on elevation drawings. Please advise if contractor should assume all restrooms/toilet rooms should receive 1 EA Toilet Paper Holder and Toilet Seat Cover Dispenser.

    A: Contractor to assume all restrooms/toilet rooms are to receive toilet paper holder and toilet seat cover dispensers.

16. Q: Is Test and Balance required for this project?

    A: Yes, per Sheet M7.2.

17. Q: Does this project require prevailing wages?

    A: Yes, this project requires prevailing wages.

18. Q: Please confirm if existing furniture will be removed by others.

    A: Yes, existing furniture is to be removed by Samuel Mahelona Memorial Hospital.

19. Q: Reference Room Architecture Sheet A1.1 and Interior Finish Sheet F2.2. Interior Finish Sheet F2.2 detail 5/A2.2 calls for Casework to be Herman Miller Mora System. Architecture Sheet A1.1 seem to indicate millwork counters at room elevation D and room elevation B. Please provide details for these countertops.

    A: Herman Miller Compass headwall system and Mora cabinet system to only be installed in Patient Rooms 104, 105, 108, 109, 113 and Ante Room 113A. All other millwork cabinets and countertops to be custom millwork as shown on Sheet A4.0

20. Q: Reference Architecture Sheet A4.0. Sheet A4.0 provides cabinet elevation details. However, call out for these details are missing from Floor Plan and Room Elevation drawings. Please assign these details to the corresponding millwork cabinets and countertops on room elevation drawings.

    A: Details are to be used on millwork cabinets and countertops to be used at Nurse Station 119, Pharmacy 116, Pharmacy Private Office, Nourishment 117, Med Room 118.

21. Q: Reference Architecture Sheet A4.0. Detail 1/A4.0 indicates Speed Brace Bracket. Please provide spacing of Speed Brace Bracket.

    A: Maximum distance 60" apart.

22. Q: Specification Section 2F-1 Asbestos Abatement, paragraph 2b states "Refer to Hazardous Material Survey prepared by HEIS dated 3/4/21. See Specification Section 1J". Hazardous Material Survey is missing. Please provide.

A: This was not edited out of the original specification template. There is no hazmat survey available for the existing work area. See attached revised Section 2F – Asbestos Abatement.

23. Q: Please confirm lead abatement is not required for this project.

    A: There may be lead-based in existing building area. Remediation if required would be covered under allowance noted in revised Section 2F - Asbestos Abatement.

24. Q: Please provide glazing specifications.

    A: Refer to Section 8F - Aluminum Windows issued. Window glazing spec noted on Sheet A3.0 is to be deleted.

25. Q: Reference Drawing Sheet A2.6 detail 1/A2.6. Please provide thickness of glass for the railing.

    A: Glazing to be 3/8" clear tempered glass

26. Q: Reference Detail 1/A2.6 – Please provide required finish for the Pre-Manufactured Aluminum Guardrail.

    A: Provide clear aluminum finish.

27. Q: Reference Structural Drawings S1.1. Design Criteria note 2 calls for Risk Category IV making this an Essential building requirement and Large Missile Impact. Please confirm if it is the intention for the building structure to be Risk Category IV.

    A: Confirmed building to be a Risk Category IV due to the emergency treatment portion of the facility.

28. Q: Reference Structural Drawings S1.1. Design Criteria note 2 calls for Risk Category IV making this an Essential building requirement and Large Missile Impact. Please provide Missile Impact Window Specifications.

    A: Refer to revised Section 8F – Aluminum Windows

29. Q: Reference Structural Drawings S1.1. Design Criteria note 2 calls for Risk Category IV making this an Essential building requirement and Large Missile Impact. If the structure is to be Risk Category IV, the D-2 Pair of doors should not be Arcadia Narrow Stile NS-

212. Instead, it should be Arcadia MS362HD-IP Medium Stile Heavy Duty offset impact rated and 9/16" LMI Glazing. Please advise.

A: Revised pair door D-2 as noted to Arcadia MS362HD-IP Medium Stile Heavy Duty offset impact rated and 9/16" LMI Glazing.

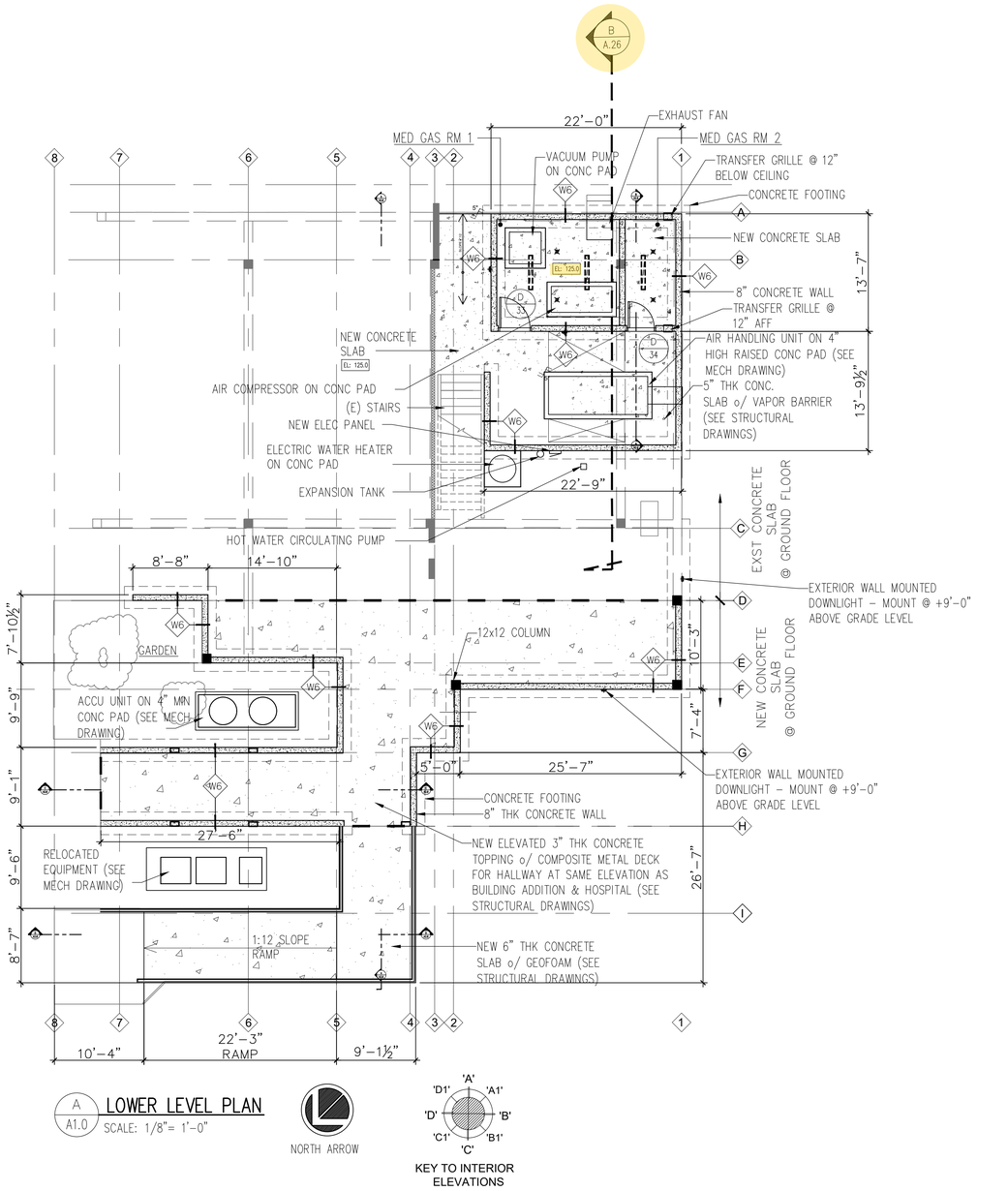
GENERAL NOTES:

1. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL NEW WORK NOTES.
2. SEE MECHANICAL DRAWINGS FOR ADDITIONAL NEW WORK NOTES.
3. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL NEW WORK NOTES.

LEGEND

4' L. LED SURFACE MOUNTED INDUSTRIAL STRIP

FIRE SPRINKLER HEAD



A1.0 LOWER LEVEL PLAN
SCALE: 1/8"= 1'–0"

NORTH ARROW

KEY TO INTERIOR ELEVATIONS

ARTHUR Y. MORI & ASSOCIATES, INC.

ARCHITECTS AIA
1314 SOUTH KING / SUITE 955
HONOLULU, HAWAII 96814

PATIENT ROOM & PHARMACY ADDITION

MAHELONA MEDICAL CENTER
4800 KAWAIHAU ROAD
KAPAA, HI 96746

TMK: 4-6-014: 030

SHEET TITLE
LOWER LEVEL PLAN

JEFFREY Y. MORI
LICENSED PROFESSIONAL ARCHITECT
No. 6053
HAWAII, U.S.A.

LICENSE EXPIRE: 4/30/24

This work was prepared by me or under my supervision and construction of this project will be under my observation (observation of construction as defined in Section 16-115 of the Hawaii Administrative Rules, Department of Commerce and Consumer Affairs entitled Professional Engineers, Architects and Surveyors of the State of Hawaii.

SIGNATURE

NOTE:
Contractor to check and verify all dimensions at job before proceeding with work.

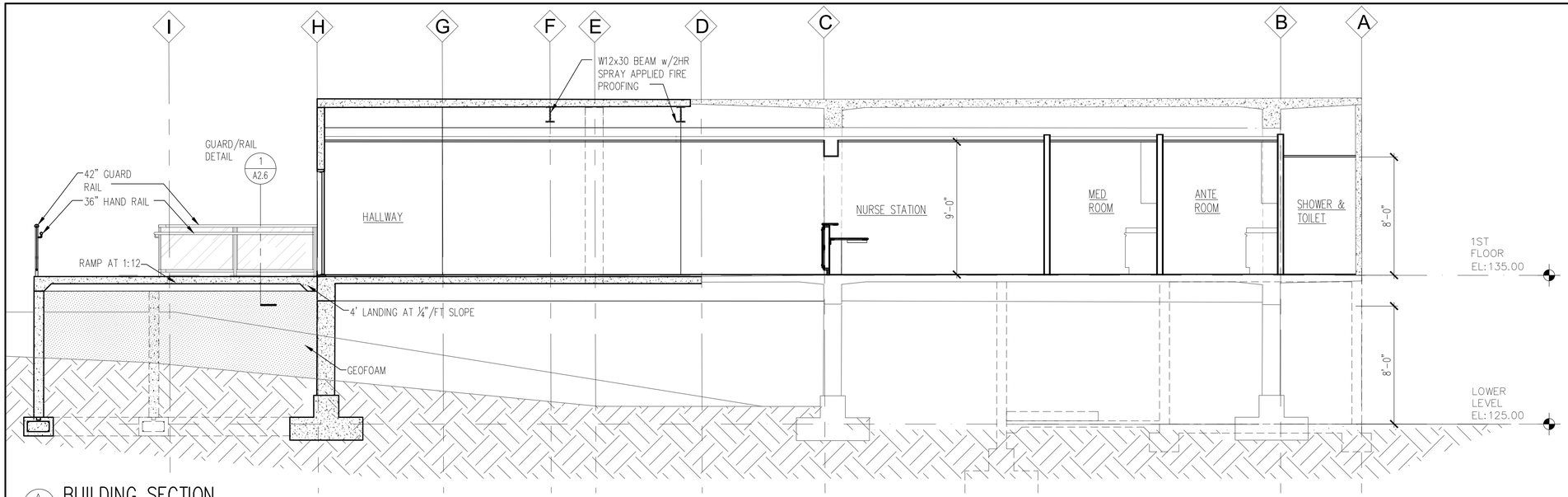
NO.		REVISION
1	3/7/24	ADDENDUM 1

JOB NO. –

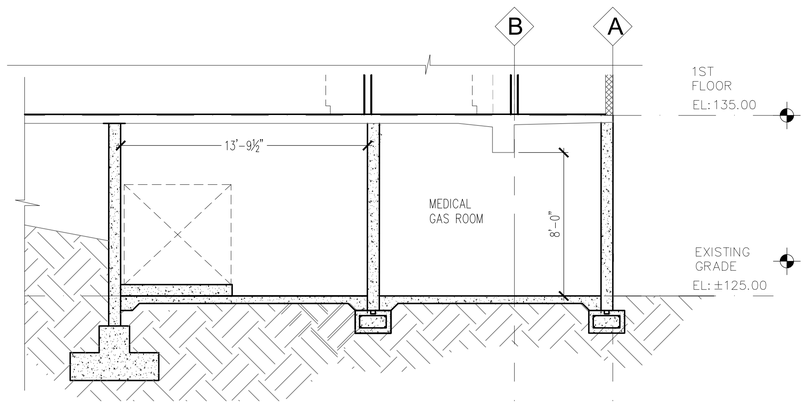
SHEET
A1.0

DATE January 31, 2024

4 OF 58 SHTS

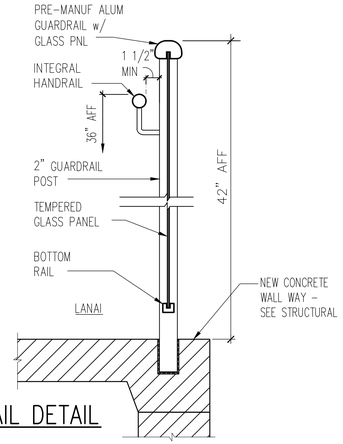


A A2.6 **BUILDING SECTION**
SCALE: ¼" = 1'-0"

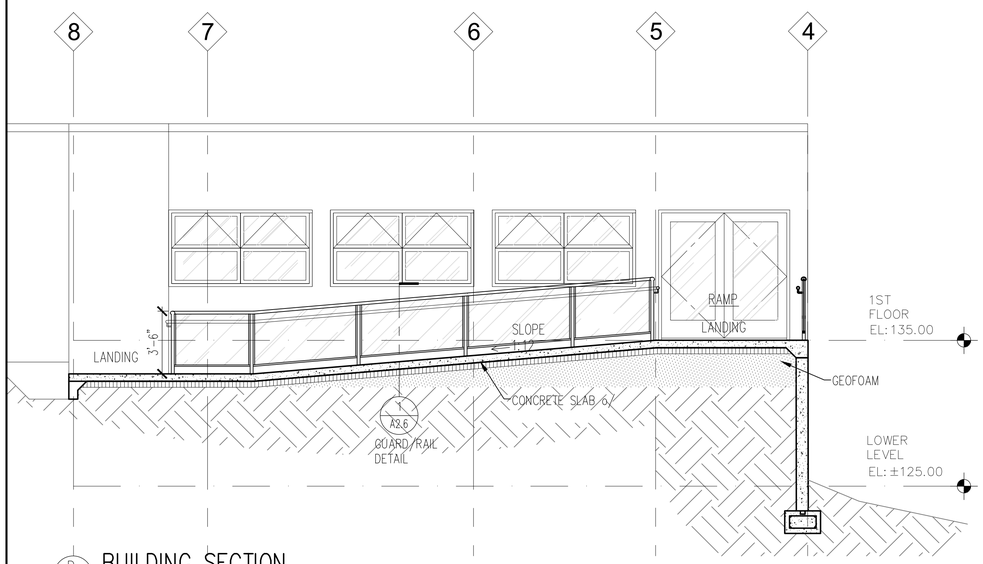


B A2.6 **BUILDING SECTION**
SCALE: ¼" = 1'-0"

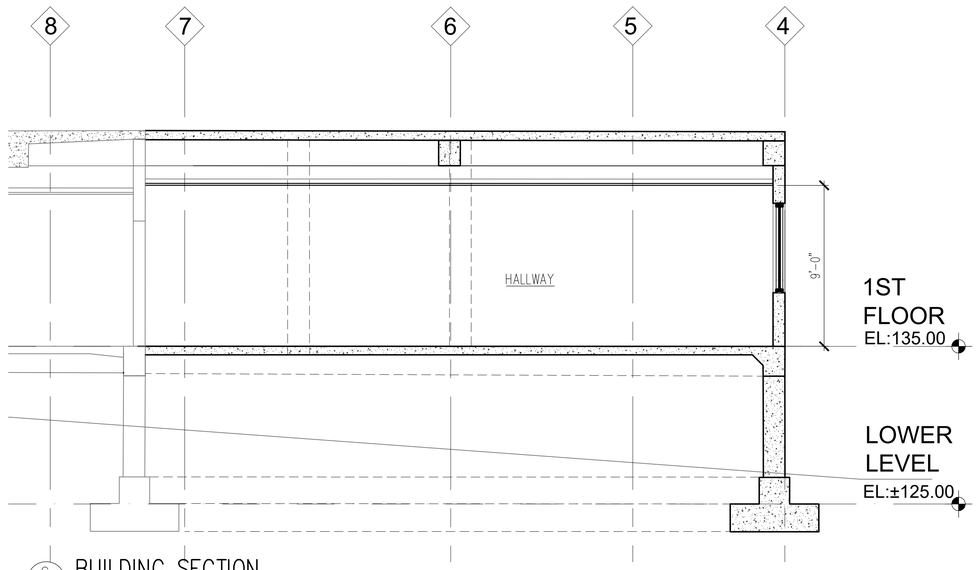
NOTE:
ALL NEW STRUCTURAL BEAMS TO BE PROVIDED w/ SPRAY APPLIED FIRE-PROOFING TO ACHIEVE 2 HOUR FIRE-PROTECTION. 1 1/16" MATERIAL THICKNESS UL-DESIGN NO. D916



1 A2.6 **GUARD/RAIL DETAIL**
SCALE: ¼" = 1'-0"



D A2.6 **BUILDING SECTION**
SCALE: ¼" = 1'-0"



C A2.6 **BUILDING SECTION**
SCALE: ¼" = 1'-0"

ARTHUR Y. MORI & ASSOCIATES, INC.
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1314 SOUTH KING / SUITE 955
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PATIENT ROOM & PHARMACY ADDITION

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SHEET TITLE
BUILDING SECTIONS

JEFFREY Y. MORI
LICENSED PROFESSIONAL ARCHITECT
No. 6053
HAWAII, USA

LICENSE EXPIRE: 4/30/24

This work was prepared by me or under my supervision and construction of this project will be under my observation (observation of construction as defined in Section 16-115 of the Hawaii Administrative Rules, Department of Commerce and Consumer Affairs entitled Professional Engineers, Architects and Surveyors of the State of Hawaii.

SIGNATURE

NOTE:
Contractor to check and verify all dimensions at job before proceeding with work.

NO.		REVISION
1	3/7/24	ADDENDUM 1
JOB NO.	–	

SHEET A2.6

DATE January 31, 2024

13 OF 58 SHTS

SECTION 8F: ALUMINUM WINDOWS

1. GENERAL REQUIREMENTS

Division One, "General Requirements" is hereby made a part of this section.

2. SCOPE

Provide all aluminum windows with on building exterior complete with glass and hardware.

3. SHOP DRAWINGS

a. Submit shop drawings for the Architect's review and do not fabricate prior to acceptance.

b. Submit samples of aluminum framing system and glass.

4. WARRANTY

Provide a warranty from the manufacturer that the completed work will not be defective in workmanship, materials, or installation for a period of two (2) years from the date of acceptance of its work, and that repair or replacement of any work that may prove to be defective will be done promptly. This warranty does not extend to defects caused by unusual abuse.

5. REFERENCES

a. American Architectural Manufacturers Association (AAMA)
b. American Society for Testing and Materials (ASTM)
c. Aluminum Association (AA)
d. National Wood Window & Door Association (NWWDA)
e. California Association of Window Manufacturers (CAWM)

6. SYSTEM DESCRIPTION

a. General: In addition to requirements shown or specified, comply with applicable provisions of AAMA Windows and Sliding Glass Doors Manual for design, materials, fabrication and installation of component parts.

b. Design Requirements: Arcadia IPT200 Series (thermal) Heavy Commercial Fixed, Awning and Fixed Windows 2-inch depth. Hinged compression sealed aluminum windows. Suitable for outside or inside glazing.

c. Performance Requirements: Each assembly shall be tested by a recognized testing laboratory or agency in accordance with specified test methods.

   1. Conformance to ASTM E1996 Large Missile Test.

   2. Conformance to F-AW55, C-AW80, AP-AW80 specifications in AAMA/NWWDA 101/I.S. 2/A440-8.

a. Air Infiltration: Accordance with ASTM E 283 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per square foot.
b. Water Resistance: Accordance with ASTM E 331/ASTM E 547 at a static air pressure difference of 12 psf. No water leakage.
c. Uniform Load Structural: Aluminum window systems comply with AAMA/WDMA/CSA 101/I.S.2/A440-08, Voluntary specifications for aluminum windows. Guidelines for specified AW rated product.
d. Component testing: Accordance with procedures described in AAMA/NWWDA 101/I.S. 2/A440-08.
e. Forced Entry Resistance: All windows shall conform to CAWM 301-90.
f. Condensation Resistance Test: (CRF) when tested in accordance with AAMA 1503.1-88, the condensation resistance factor shall not be less than 51.
g. Thermal Transmittance Test: Accordance with AAMA 1503.1-88, (U-Value) not more than .59 BTU/hr/sf/°F.
h. Thermal Movements: Allow thermal movement resulting from the following maximum change (range) in ambient temperature. 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

7. QUALITY ASSURANCE

Obtain windows and finish through one source from a single manufacturer.

8. WARRANTY

Warranted against failure and/or deterioration of metals due to manufacturing process for a period of two (2) years.

9. MATERIALS AND MANUFACTURER

a. Manufacturer: Arcadia, Inc., 94-410 Uke'e Street, Building #A, Waipahu, Hawaii.

1. Awning and Fixed Windows: Arcadia IPT200 Series (thermal) heavy commercial windows, 2-inch depth.

2. Custodial Locks: Provide Arcadia Inc #179 001 custodial locks on all operable windows.

3. Glass: 1-inch (25mm) units with ½-inch (13mm) airspace and two 1/4" (6mm) lites. Interior lite is clear laminated glass with minimum 0.090 inch (2.29mm) interlayer, Solarban 60 Solexia + Clear as manufactured by PPG Industries, Inc.

4. Finish for Window: White Kynar finish.

10. INSTALLATION

a. Install component parts level, plumb, and true to line with uniform joints. Do not use defective parts (warped, twisted, bowed, dented, or abraded). Secure to structure with non-staining, non-corrosive shims, anchors, fasteners, spacers, and fillers. Use care in erection so as not to mar, abrade, or stain finished surfaces. Where aluminum is to be placed in contact with steel, concrete block, and other dissimilar surfaces, backpaint the aluminum before erection with an acceptable bituminous paint.

b. Seal frames with a Thiokol or equal approved sealant in color to match the frames, making a neat, fully weatherproof job.

11. PROTECTION

After installation, adequately protect, by masking or other acceptable covering, all exposed parts of the work and the anodized finish from damage by grinding and polishing machines and/or by plaster, lime, cement, acid, or other harmful substances.

12. CLEANING

After completion of all other work in the vicinity of the aluminum door frames and storefronts, remove all masking and/or other covering used to protect the work, and thoroughly clean the aluminum surfaces with plain water or a petroleum product such as white gasoline, kerosene, or distillate. **Do not use abrasive cleaning agents**.

SECTION 26 00 00 – ELECTRICAL WORK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: The work under this section of the specifications includes all labor, materials, equipment, and services necessary to complete the electrical work as shown on the drawings and herein specified including, but not limited to:

1. Branch circuit and feeder wiring.
2. Luminaires and lighting control devices.
3. Fire alarm system devices.
4. All equipment requiring electrical power for operation shall be connected and tested electrically by the Contractor, unless otherwise specified.
5. Electrical connections.
6. As-built drawings.

B. Items of electrical equipment not furnished in other sections of these specifications, but necessary for a complete installation, shall be provided as part of the electrical work. The drawings note various sizes of equipment as determined for basis of design; the electrical work however shall be installed to comply with the equipment sizes furnished by the successful supplier.

C. Contractor’s scope does not include telecom, data, or nurse call cabling.

1.2 RULES AND REGULATIONS

A. The entire installation shall be made in compliance with the applicable provisions of the latest edition of the National Electrical Code and Local Ordinances, Rules and Regulations of the Building Department. Permit charges shall be included in the bid. The Contractor shall obtain the electrical permit as required by local laws or rules. He shall arrange for periodic inspection by the local authorities as work progresses so that certificates of completion and inspection may be turned over to the Owner on the day scheduled for final inspection.

1.3 GUARANTEE AND STANDARDS

A. The Contractor shall guarantee all items of material and workmanship for a period of one (1) year from the date of final acceptance by the Owner.

B. All materials shall be new, code gauged and sized, and shall bear the UL label of approval for all items where standards have been established and label service is regularly furnished. Acceptance to bid shall be obtained in accordance with the Notice to Bidders.

1.4 SUBMITTALS

A. Submit shop drawings of the following equipment for acceptance. Do not fabricate units for the project until acceptance has been received.

1. Luminaires and lighting control devices
2. Panelboards
3. Electrical apparatus
4. Fire alarm system components

1.5 CONDITIONS AT SITE

A. Visit project site and review Contract Documents. Report any error or omission to the Architect at least one week before submission of bids for clarification. If errors or omissions are not reported, provide necessary work at no cost to the Owner to complete intent of specifications and drawings.

1.6 DRAWINGS

A. These specifications are accompanied by reflected ceiling and floor plans of the building indicating locations of all outlets, switch control, service runs, and other electrical apparatus. These locations are approximate and before installing, the Contractor shall study the adjacent details and actually make the installation in the most logical manner. Any outlet may be relocated within ten feet (10') before installation at the direction of the Architect without additional cost to the Owner. The layout is generally diagrammatic and the Contractor shall coordinate the installation of wiring runs, outlets, control devices, and power units as permitted by structural conditions and appropriately locate these units with the acceptance of the Architect.

B. The circuit routing is typical only and may be varied in any logical manner. However, record plans consisting of one set of prints shall be submitted in accordance with General Conditions. The drawings and specifications are complementary, each to the other, and what is called for by one shall be as binding as if called for by both. Should there be a conflict among contract documents, the more stringent shall apply.

C. Raceways and junction boxes shown on the plans for the camera system installation are diagrammatic only and is intended to represent a system basis of design only. The Contractor shall follow the most recent camera system drawings specific to the project site for sizing and installation of the system raceways and junction boxes.

D. Should it appear that any part of the electrical drawings have been omitted or require clarification, the Bidder shall call such to the attention of the Architect not less than fourteen (14) days before the date of bid opening so that clarification or correction may be made. Otherwise, the Contractor shall furnish and install all items in a manner corresponding with the rest of the work as if same were specified to provide complete operational systems.

1.7 PRODUCT HANDLING

A. The Contractor shall take all means necessary to protect installed and stored materials from physical damage, corrosion, construction debris, and vandalism. No metallic conduit, apparatus, luminaires, wiring devices, and other construction material shall be stored in the open. All installed conduit, outlet boxes, and panelboard interiors shall be protected at all times against construction debris and water. All materials damaged or rusted in any way shall be removed from the job and replaced with new materials of equal quality at no cost to the Owner.

1.8 MATERIAL AND WORKMANSHIP

A. All materials shall be new and of the best grade. They shall bear the label of approval of the Underwriter's Laboratories, Inc., wherever standards have been established and label service is furnished by the agency.

B. All materials that are normally contained in packages shall be delivered in unopened packages to the job site.

C. Brand names and catalog numbers when noted in the drawings or listed in these specifications indicate the standards of quality of the items required. When other manufacturers' products are not mentioned, the Contractor may bid on substitutes only after obtaining written approval from the Architect.

D. All work shall be installed in a workmanlike manner and, when completed, shall be neat and symmetrical, plumb, uniform, properly aligned and firmly secured in place presenting a high quality of workmanship.

E. The Architect shall be afforded every opportunity to ascertain the quality of materials and the skill and competency of labor. Concealed work may be opened at random for formal inspection by the Architect.

1.9 GUARANTEE

A. Any item of material, apparatus or workmanship furnished by the Contractor that develops defects in quality design, construction or serviceability within one (1) year of final acceptance by the Owner shall be replaced by the Contractor, without cost to the Owner, with such new material, apparatus, replacement parts, or work as may be found necessary to make the defective portion of the complete system conform to the true intent and meaning of the plans and specifications.

PART 2 - PRODUCTS

2.1 GENERAL

A. New and UL Labeled: Material and equipment new and free of defects and suited to the intended use; and be listed by the Underwriters' Laboratories, Inc., meet their requirements and bear their label whenever standards have been established and label service is regularly furnished by that agency.

B. Standards established: Where materials, equipment, apparatus, or other products are specified by manufacturer, brand name, type, or catalog number; such designations are to establish standards or desired quality and style and be the basis of the bid.

C. Product continuity: All equipment or materials for any one system by the same manufacturer. Items such as conduit fittings, wire, wiring devices, etc., to be the same throughout the project.

2.2 RACEWAYS

A. Rigid metallic: Conform to industry standards, steel, full weight, threaded fittings, factory bends over 1" in diameter. Protected inside and outside by galvanizing or sherardizing. Provide 3/4" conduit minimum.

B. Electrical metallic tubing: Protected inside and outside by galvanizing or sherardizing 4" maximum. Same manufacturers as for steel rigid conduits. 3/4" minimum size.

1. Connectors: With insulated throats.
2. Couplings and Connectors: ¾" and smaller may be compression threadless. Use compression type or other approved raintight for 1" and larger.

C. Flexible conduit: PVC coated galvanized steel, ½" minimum. Provide ground wire for length 6' and longer.

D. PVC: UL listed, rigid, Schedule 40 or 80 as indicated.

2.3 WIRE AND CABLE

A. Conductors: All conductors shall be copper. Conductors of soft drawn copper with 600-volt insulation as hereinafter specified. All wires and cables must be delivered to the building in standard coils or reels with a tag bearing the manufacturer's name and trade name of the wire and the Underwriters' Label.

B. Size: #12 AWG minimum, 120 V. branch circuit runs over 100' must be #10 AWG minimum. Fire alarm system wiring may be #14 AWG minimum.

C. Insulation Types:

1. #8 AWG and Smaller - THWN or as noted.
2. #6 AWG and Larger - THW, RHW, THWN, XHHW, or as noted.

D. Lugs and Connectors:

1. #6 AWG to #2 AWG: One-wrench bolt conductor connector with single-hole lug, copper.
2. #8 AWG and Smaller: Compression conductor connector with nylon insulation, single-hole lug, copper.
3. Cable Taps #1 AWG and Larger: Copper compression type, sized to match conductors, flame retardant cover.

E. Splicing Insulation: Electrical tape, 7 mil vinyl insulating type, moisture and chemical-resistant.

2.4 PULLBOXES

A. Pull and junction boxes shall be code gauged and sized and shall be provided where noted or required. Boxes shall have screw covers. All boxes shall be factory finished in baked gray enamel.

2.5 OUTLETS AND WIRING DEVICES

A. Receptacles: 15 A., 125 V. duplex grounding type, 2-pole, 3-wire. Types as listed below.

1. Commercial Specification Grade: 15A, 125V rated, grounding type. Leviton #BR15 or approved equal
2. Ground-Fault Circuit Interrupter Receptacles: UL 943, duplex type for mounting in standard outlet box. Device shall be capable of detecting current leak of 5 milliamperes or greater and tripping per requirements of UL 943 for Class A GFI devices. Provide screw-type, side-wired wiring terminals. Leviton #GFNT1-W or approved equal.
3. Receptacle coloring: White.

B. Switches: Switches shall be provided where indicated on the drawings. Switches shall be flush type where connected to conceal wiring in furred space. One-inch clearance shall be maintained between switch plates and the door casing, or if there is no casing, 6 inches shall be left clear between the door jamb and the edge of the switch plate. Switches shall be heavy duty, 20 Ampere, 120/277 Volt, ac, commercial specification grade, quiet, non-mercury type, equal to Leviton No. CSB1-20-White. Where more than one switch occurs at the same locations, they shall be ganged under one plate. Where space does not permit horizontal ganging, interchangeable type switches may be used, only with approval of the Architect.

C. Wallbox Dimmer Switches: Slide-to-off type, 800W minimum. Dimmer control shall be compatible with the respective light fixture driver. Leviton or Lutron.

D. Device Cover Plates: Nylon for switches and receptacles, gangs as required. Color to match respective receptacle or device. Weatherproof receptacle plates shall be the in-use protected type with gasketed polycarbonate cover.

1. Nylon for switches and receptacles, gangs as required. Color to match respective receptacle or device.
2. Weatherproof receptacle plates shall be the in-use protected type with gasketed polycarbonate cover.

3. All outlet/receptacle coverplates shall have the feeding panel and circuit number indicated. This indication shall be by a permanent adhesive printed label or other similar permanent means.

E. Switch and receptacle boxes, gangs as required, 1-1/2-inch deep with 5/8-inch deep collar plate.

F. Outlets for luminaires shall be minimum 4-inch octagon by 1-1/2" deep.

G. Weatherproof Receptacles: 15 A. specification grade weather-resistant GFCI, grounding-type duplex receptacle with “weatherproof in-use” type gasketed cover

H. Occupancy Sensors: Dual-technology (passive infrared/ultrasonic) type, wallbox or ceiling-mounted as shown, 800W minimum ballast rating, 1000 square-foot minimum full-coverage pattern. Provide full-feature relay packs for higher load rating as necessary. Relay packs shall allow for manual off and system override (hold-on) functions where noted. Watt Stopper DW-100 or DT-300/355, with BZ-150 relay as necessary or equal.

I. Disconnect Switches: Ampere rating as indicated. Type HD, with enclosures as indicated

2.6 LUMINAIRES

A. Luminaires shall be provided complete with lamps. LED light fixtures shall have electronic drivers with voltages as noted. Dimmable drivers shall be compatible with the respective dimmers used.

2.7 CABINETS AND JUNCTION BOXES

A. Cabinets and junction boxes shall be constructed from code gauged steel and shall be finished in baked grey enamel. All covers shall be screw-on type. All cabinets shall be furnished with 3/4" treated plywood backboard and locking latch, keyed to panelboard locks.

2.8 PANELBOARDS

A. Enclosures: Single door, dead front, of code gauge steel with trim, and door of 12 gauge stretcher leveled steel, flush or surface as indicated on drawings. Flush trims to have no exposed hardware. Box 20" wide x 5¾" deep minimum except as otherwise noted. Where box is deeper than wall, provide frame to seat trim flush. Copper busses.

B. Finish: One coat rust resisting primer and one coat gray enamel inside and out. Flush panels and adjacent cabinets or pull boxes, etc., to be the same color.

C. Lockable: With flush type combination latch with all panel locks keyed alike.

D. Directory: Provide a printed directory behind glass or plastic on inside of panel door, giving circuit number and complete “as-built” description of all outlets controlled by each circuit breaker. (6" x 8" minimum) Directory to be arranged to match actual circuit breaker arrangement within panel, i.e., 2, 4, 6 on right side, or in sequence on schedule.

E. Manufacturers: For panel and breakers: Square D, Gould, GE, CH, Westinghouse, or approved equal.

F. Branch Breakers: Molded case, bolt-on, quick-make, quick-break, A. I.C. ratings as noted, thermal magnetic with on and off tripped positions. 14,000 A. I.C. minimum for 277/480 V. lighting panels. Half-sized and plug-in breakers not acceptable.

G. Equipment Nameplates: Laminated plastic, black-white, engraved with 3/8" high commercial letters to expose white.

2.9 FIRE ALARM SYSTEM

A. General: The Contractor shall provide all equipment and accessories for the extension of the existing electrically supervised, zoned, non-coded fire alarm system. Components shall have UL label and shall be compatible with the existing system control panel.
   1. The system shall include evacuation alarm devices, initiating devices, magnetic door releases, and system wiring.

   2. The system shall comply with the applicable provisions of the National Board of Fire Underwriters Standard Number 72 and with all requirements of the local authorities having jurisdiction. All equipment and devices shall be listed by the Underwriters' Laboratories Inc., or approved by the Factory Mutual Laboratories.

   3. Evacuation signals shall match the existing facility signals. Visual devices shall have synchronized output xenon flashers.

B. The system shall be electrically supervised against open circuits and grounds on the wiring to the alarm initiating and indicating devices. An open or ground in the system shall cause the trouble buzzer in the control unit to sound continuously until the system is restored to normal or until the signal is silenced by means of a cut-off switch on the control unit. When the cut-off switch is thrown to "off" position, a red pilot light shall be illuminated to show that the trouble signal has been cut off. When the system is restored to normal operation, the trouble signal shall sound again and shall be silenced only by restoring the cut-off switch to its normal position, thereby also extinguishing the pilot light. Open and grounded circuits in the system shall not cause the sounding of false alarms.

C. The various components shall be as follows:
   1. Visual Flashers: Xenon flasher, low voltage DC, gasketed lens, semi-flush mount, user-selectable 15/30/75 candela output level. Multiple flashers which are visible from a room or area shall have synchronized outputs.
   2. Audible Devices: Low voltage dc, sound tone/type (bell, horn, chime, etc.) to match that of the facility’s existing audible devices. Minimum audibility as required to meet code levels with installed locations, surface mount.
   3. Combination audible/visual devices: As specified, in a single combination enclosure. Separate devices mounted adjacent to each other may be used in lieu of combination-type devices.
   4. Smoke detectors: 2- or 4-wire photoelectric, with separate detector base, latching alarm LED and a single Form C contact (if required).
   5. Output Expander Panels: Where necessary, alarm/amplifier output expander panels shall be provided to supplement the alarm output(s) from the control panel. The expander panels shall be electrically supervised from the control panel, and shall have backup batteries as necessary to provide code-minimum system standby and alarm operation in the event of loss of AC power.

PART 3 - EXECUTION

3.1 WORKMANSHIP

A. All electrical work shall be neatly executed, workmanlike in appearance, symmetrical, plumb, uniform, properly aligned and firmly secured in place. Dimensions and locations shown on the drawings shall be verified in the field. Discrepancies and interferences with other work shall be immediately called to the attention of the Architect and corrections or adjustments shall be made as he directs. All cutting and patching necessary for electrical work shall be done by artisans skilled in the trade.

3.2 CONDUIT SYSTEM

A. Permitted Uses:

1. Rigid Steel: Exposed conduit stubbed up or exposed below 7 feet at areas susceptible to physical damage.
2. EMT:
   a. All interior branch circuiting, not susceptible to physical damage.
   b. All interior feeders, not susceptible to physical damage.
   c. All branch circuits in drywalls, furring, underfloor, and ceiling space.
3. PVC:
   a. All grade slab branch circuits, or underground site wiring.

B. Installation:

1. The conduit system shall be continuous from outlet to outlet or fittings to fitting so that electrical continuity is obtained between all conduits of the system. Factory threads shall be cleaned with a die before conduit is installed. All conduits shall be concealed where possible.
2. Ends of all conduits shall be cut square and inner edges reamed. Adjoining lengths shall butt together evenly in the couplings to provide passage for installing conductors.
3. Conduits shall be of ample size to allow drawing in or removing of wires and cables without undue strain, and suitable chaffing bushings shall be installed on each end of every run of conduit where wires are installed.
4. Where necessary, powdered soapstone shall be used as a lubricant for drawing wires through conduit. No other means of lubrication will be allowed.
5. Conduit shall be installed entirely free from other piping, valves, or mechanical equipment, and shall not be installed nearer than 6" to hot water pipes and steam pipes.
6. Bends, offsets, and crossing of conduits shall be avoided wherever possible. When bends and offsets are necessary, they shall be made with an approved hickey or a conduit-bending machine. The use of a vise or pipe tee will not be permitted. Bends shall be made so that the interior cross-sectional area will not be reduced. The radius of the curve of the inner edge of any field bend shall not be less than ten times the internal diameter of the conduit. A run of conduit between outlets or other boxes shall not include more than the equivalent of two 90-degree angle bends, including those bends located immediately at the outlet or fitting. Junction boxes with blank covers shall be installed as necessary to meet this requirement. The use of running threads will not be permitted. Where conduits cannot be joined by standard threaded couplings, approved watertight conduit unions shall be used with prior approval.
7. Conduits shall be capped during construction with metal-capped bushings to prevent the entrance of dirt or moisture. All conduits shall be thoroughly swabbed out and dried before wires or cables are pulled in.
8. Fish wires, cords, strings, chains, or the like, shall not be placed or inserted in the conduit system during installation.
9. After the conduit system has been installed and thoroughly dried out, the empty conduits shall be left with a No. 12 galvanized iron drag wire.
10. Concealed conduit behind wall furring, above false ceiling, in special riser chases or shafts shall be installed as the building construction or work progresses. All metallic underground conduits shall be painted with two coats of approved bituminous compound.
11. Where conduits cross construction and/or expansion joints, a rigid steel conduit sleeve shall be provided on both sides of the joint. The inside diameter of the sleeve shall be three times the outside diameter of the conduit, and shall be 3-feet long.
12. All conduits which is deformed or crushed in any way shall be removed from the job at once.
13. Final connections to equipment shall be with liquid-tight flexible conduit.

14. Coordinate conduit requirements for the CT system with the system manufacturer's drawings. Provide conduits where noted on the system drawings as being contractor-provided.

3.3 WIRING

A. All wiring shall be installed after conduit system is complete.

B. No conductor in the branch circuit shall be smaller than the homerun conductor size. The branch circuit conductors in a continuous row of luminaires (wired through their own wireways from one ceiling outlet) shall not be decreased in size from panelboard to farthest ballast. Conductors in fixture wire ways shall be of type approved for such use as per NEC.

C. Where the Contractor finds it necessary to radically reroute any conduit run resulting in marked increase in circuit length from what is indicated on the plans, he shall change the conductor size to prevent a voltage drop to the farthest outlet exceeding 3% under load or notify the Architect, who shall then stipulate the conductor size.

3.4 PAINTING

A. Paint all exposed conduit and junction boxes to match the color of surrounding surfaces.

3.5 GROUNDING

A. All branch circuit runs above grade slab shall be ground through #12 green insulated ground wire run with the circuit conductors. Duplex receptacles shall be grounded with #12 green insulated jumper wire.

3.6 LABELS

A. Provide phenolic black-on-white cables for all new panels.

B. Label each outlet by panel and circuit number.

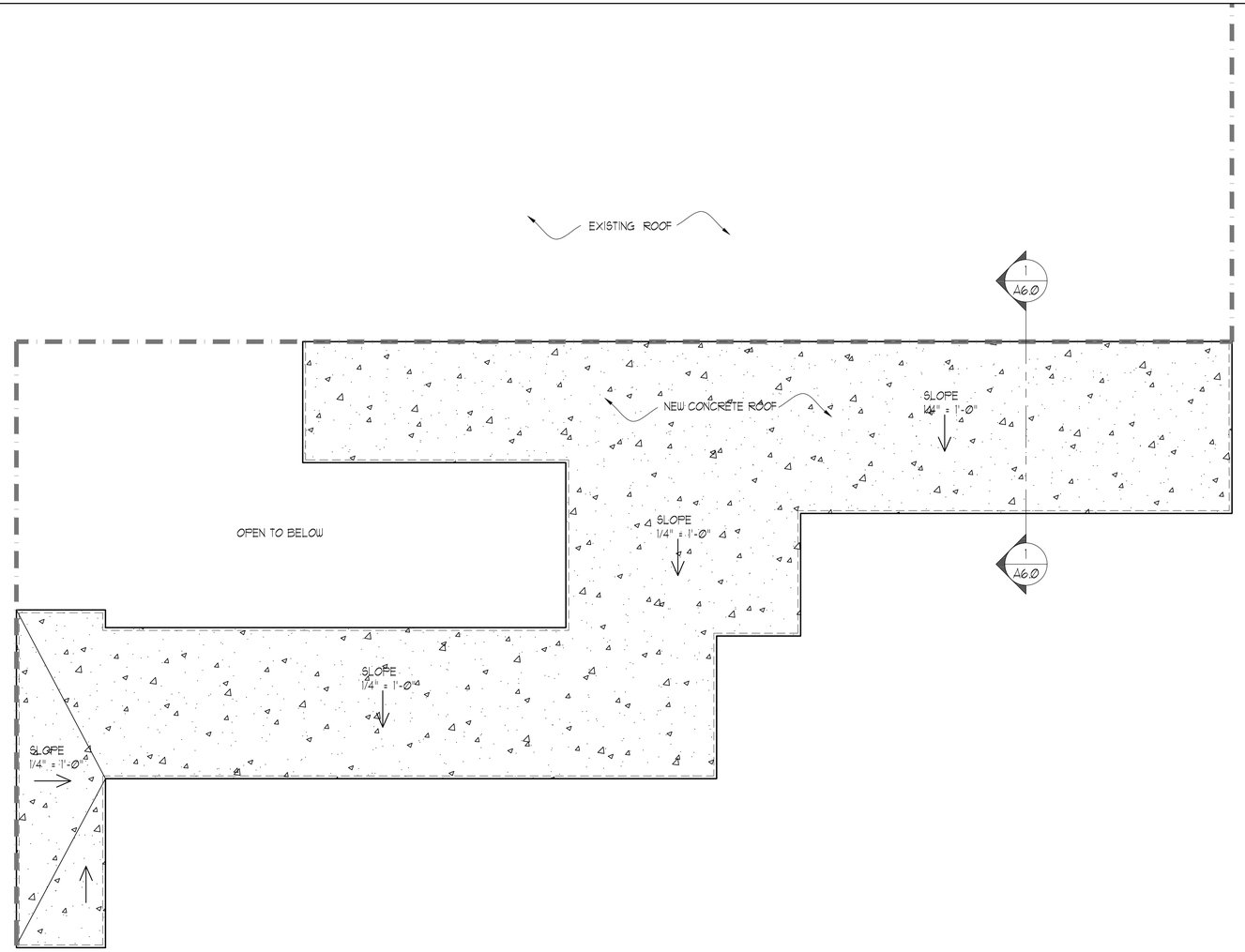
3.7 TESTING AND COMPLETION

A. The Contractor shall provide suitable and neatly stenciled nameplate identifications on all of the electrical devices and/or apparatus installed. Nameplates, legible from distance of 10-feet, letters not less than ¾" high, shall indicate the circuit termination operational directions and/or apparatus and load controlled.

B. The Contractor shall provide the personnel and equipment, including instruments to perform the following tests:

1. Insulation resistance tests in accordance with NEC Section 110-20, using a 500-volt megger. A record of the readings shall be submitted to the Architect for acceptance. Correct any defects.
2. Reconnect subfeeders at the panelboards as required until a nearly perfect balance is obtained on the system.
3. Request final inspection of the system by the local inspector. Test circuits and equipment for proper operation.
4. The entire electrical and auxiliary systems shall be in good working condition upon acceptance by the Owner.

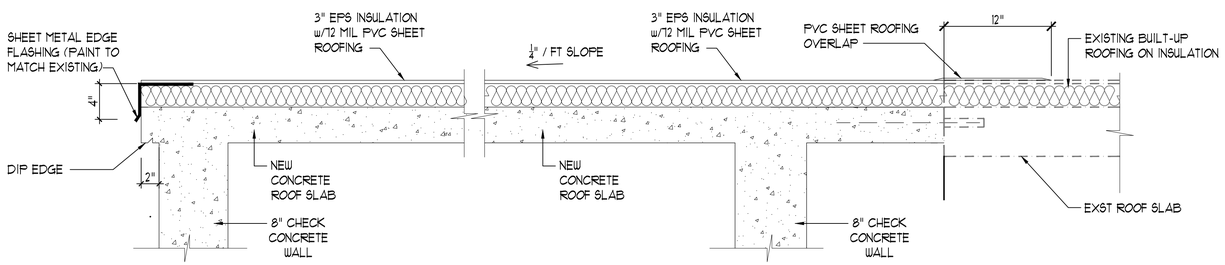
END OF SECTION 26 00 00



A6.0 **PARTIAL ROOF PLAN**

SCALE: 1/8" = 1'-0"

NORTH ARROW



1 A6.0 **ROOF DETAIL**

SCALE: 1 1/2" = 1'-0"

ARTHUR Y. MORI & ASSOCIATES, INC.

ARCHITECTS AIA
1314 SOUTH KING / SUITE 955
HONOLULU, HAWAII 96814

PATIENT ROOM & PHARMACY ADDITION

MAHELONA MEDICAL CENTER
4800 KAWAIHAU ROAD
KAPAA, HI 96746

TMK: 4-6-014: 030

SHEET TITLE
PARTIAL ROOF PLAN & ROOF DETAIL

JEFFREY Y. MORI
LICENSED PROFESSIONAL ARCHITECT
No. 6053
HAWAII, USA

LICENSE EXPIRE: 4/30/24

This work was prepared by me or under my supervision and construction of this project will be under my observation (observation of construction as defined in Section 16-115 of the Hawaii Administrative Rules, Department of Commerce and Consumer Affairs entitled Professional Engineers, Architects and Surveyors of the State of Hawaii.

SIGNATURE

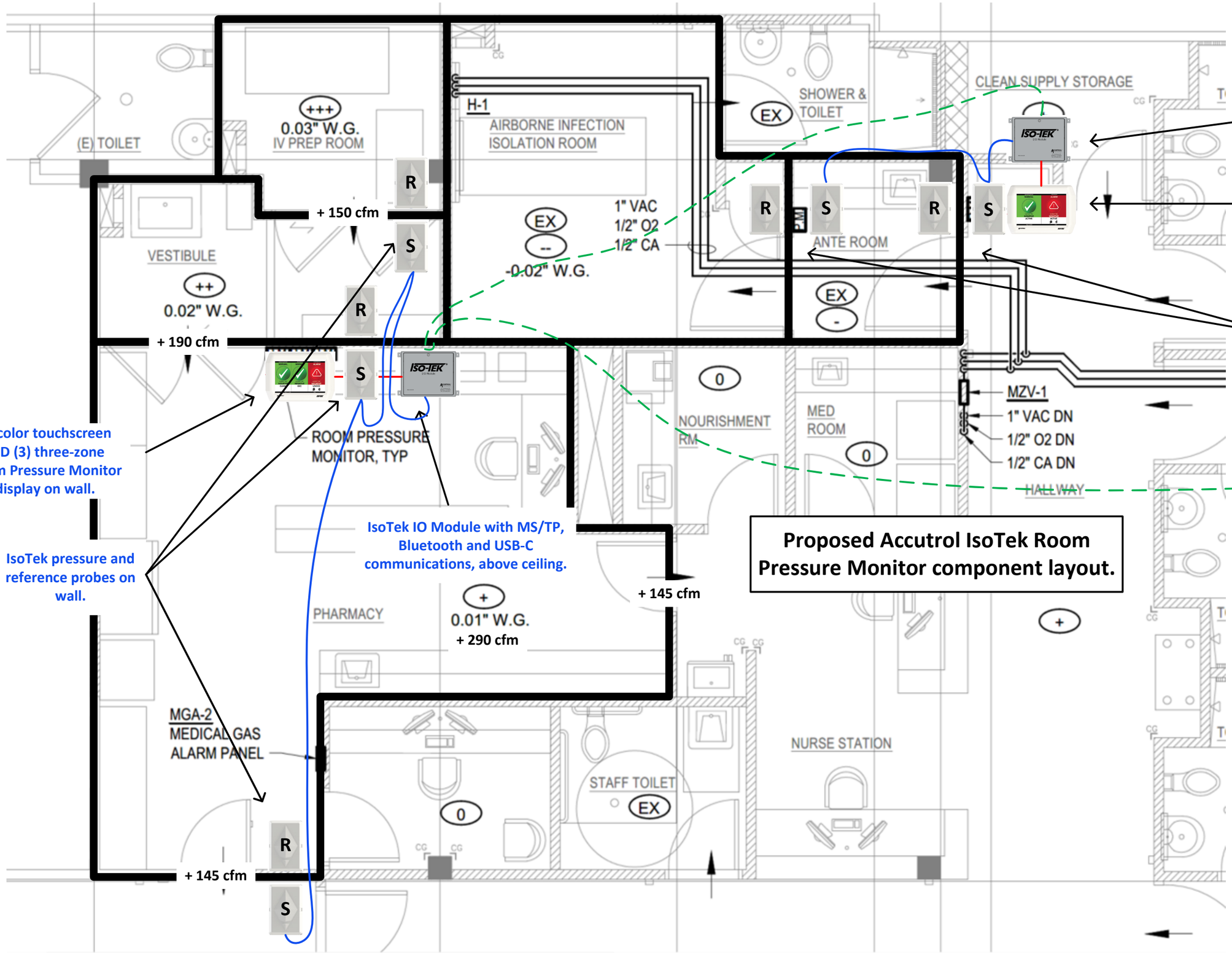
NOTE:
Contractor to check and verify all dimensions at job before proceeding with work.

NO.		REVISION
1	3.7.2024	ADDENDUM 1
JOB NO.	–	

SHEET A6.0

DATE January 31, 2024

17a OF 58 SHTS



IsoTek IO Module with Bluetooth and USB-C communications, above ceiling.

7" color touchscreen LCD (2) two-zone Room Pressure Monitor display on wall.

IsoTek pressure and reference probes on wall.

Optional BACnet MS/TP to BAS for trending / data recording.

7" color touchscreen LCD (3) three-zone Room Pressure Monitor display on wall.

IsoTek IO Module with MS/TP, Bluetooth and USB-C communications, above ceiling.

IsoTek pressure and reference probes on wall.

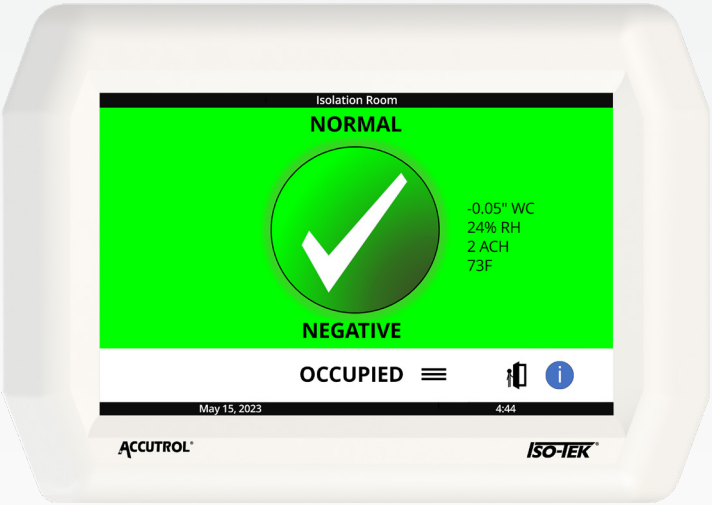
Proposed Accutrol IsoTek Room Pressure Monitor component layout.

ACCUTROL® LLC

Iso-Tek®

Room Pressure Monitor

Advanced Pressure Monitor Technology
Healthcare, Laboratories, Life Sciences



Innovative features for the Iso-Tek®

- 7-inch Color Touchscreen
- Intuitive Graphical User Interface
- Bluetooth® Configuration Optional
- Detailed Event Tracking Capabilities
- BACnet® MS/TP Compatible with Any BAS
- Industry-Leading High Pneumatic Impedance Sensor
- Monitor Up to 4 Rooms on the Same Display
- Monitor Up to 6 Parameters per Room
- Precise, Accurate and Stable Measurement for Isolation Rooms, Operating Rooms, Laboratories and Support Spaces

Accutrol, LLC • 21 Commerce Drive, Danbury, CT 06810 • 203-445-9991 • www.accutrolllc.com

The Accutrol Iso-Tek® provides the latest in technology in room pressure monitors designed for health care and laboratories. The Iso-Tek provides high-accuracy pressure monitoring in isolation rooms, operating rooms and other hospital applications as well as in laboratories and support spaces.

High Stability HPIS™ Pressure Sensor

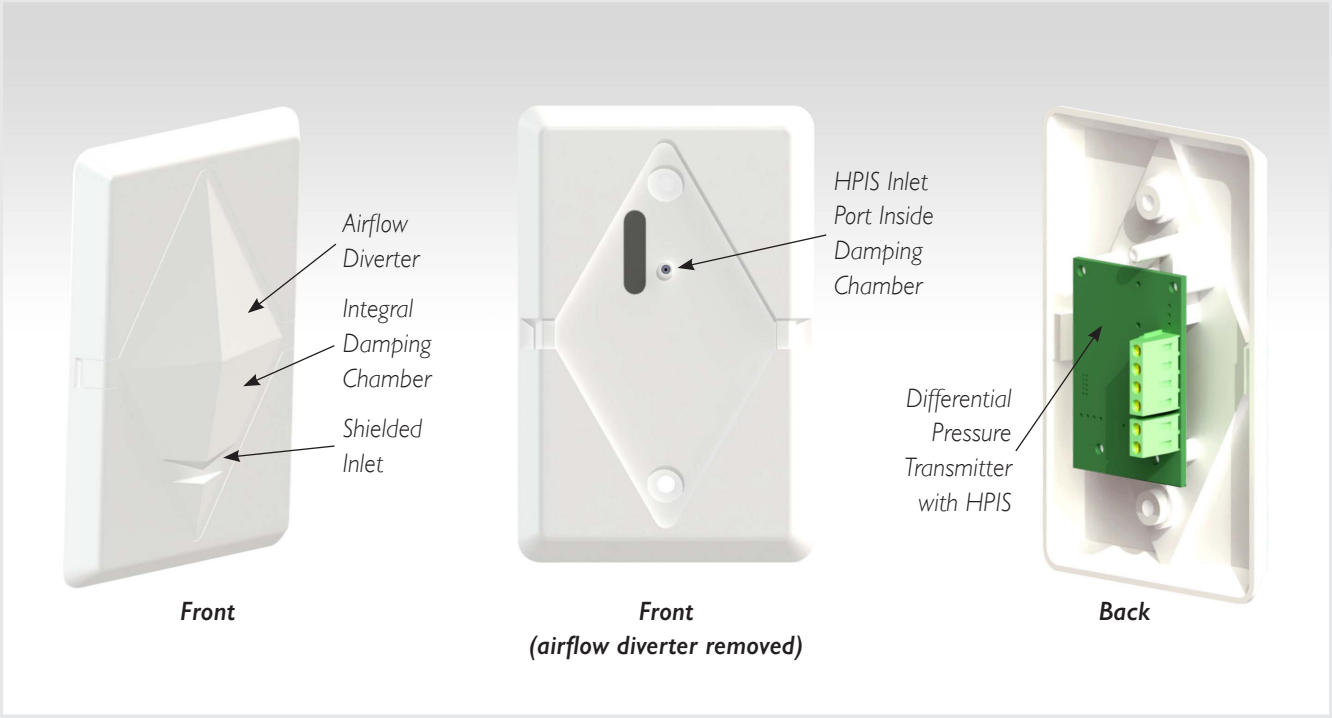
The heart of any room pressure monitor is the sensing device being used. Accutrol utilizes a High Pneumatic Impedance Sensor (HPIS). HPIS combines the best performance features of the diaphragm-based-dead-ended and thermal-based-flow-through type sensors. The high input pneumatic impedance of the micro-flow channel virtually eliminates airflow through the sensor, making contamination nearly impossible. This overcomes the disadvantage that is normally associated with flow-through sensor technology. The airflow through the microchannel with a DP = 0.10" WC (25 Pa) is only **0.000005 CFM** resulting in an inlet velocity of **0.000473 FPM**. The Micro-flow Channel inlet opening is only 5 microns wide, which can be put into perspective when compared to a human red blood cell which is 6-8 microns wide.

Key advantages resulting from the ultra-low inlet velocity:

- Not susceptible to contamination.
- Not affected by humidity.
- Not affected by tubing length variations.
- Excellent accuracy at ultra-low pressures where room pressure monitors operate.
  - The accuracy of the Iso-Tek using the HPIS sensor is better than 3.0% of reading at 0.01" WC as compared to 16% of reading for a diaphragm-based sensor with a published accuracy of 0.8% of span.
- Excellent long-term stability.
- Not position sensitive.
- No zero drift.

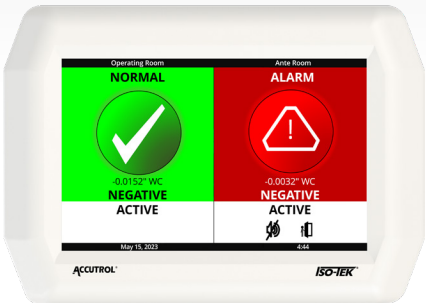
Iso-Tek Wall-Mounted Pressure Probe

The HPIS Sensor is enclosed in a specially designed wall-mounted enclosure to minimize the influence of room air currents using a unique airflow diverter with a shielded inlet leading to a damping chamber that provides an ideal pressure zone with virtually no possibility for infiltration of contaminants.



Multiple Pressure Display Capability

The Iso-Tek offers a 7" resistive touchscreen display which can be used with nitrile gloves or bare hands. Bold bright visual indicators ensure the room status is clearly indicated from a distance. The Iso-Tek is capable of monitoring and displaying up to four independent pressures simultaneously. A single tap of the touchscreen allows the user to drill into each individual room for more detailed information on ACH, relative humidity, temperature, alarm status, pressure, room mode, door status, and polarity.



Bluetooth® Configuration

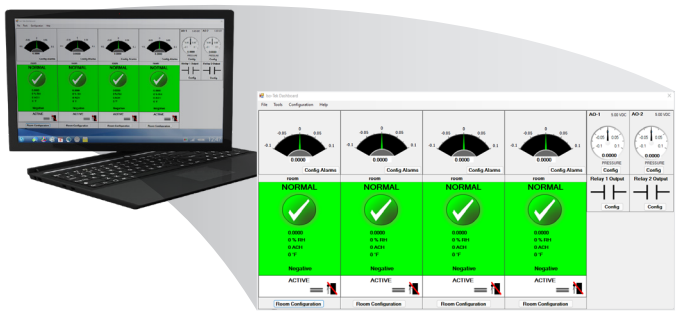
The Iso-Tek is available with a Bluetooth® configuration option, which alleviates the requirement for a USB connector when accessing the monitor via Accutrol's Insight graphical user interface software.

BACnet® MS/TP Configuration

The optional BACnet® MS/TP allows direct communication to the Building Automation System (BAS) where desired.

Insight Software with Intuitive Graphical User Interface

The Iso-Tek also incorporates a simple and intuitive graphical user interface which enables the user to configure the monitor for their specific room and alarm requirements. Accutrol Insight software, provided free of charge, ensures that the owner is not required to contact the manufacturer of the system when changes are required in the field.



Specifications

PRESSURE SENSOR

Pressure Range	± 0.100"wc (± 25Pa)
Pressure Measurement Resolution	0.00000335"wc (0.00083Pa)
Accuracy	± 3% of reading
Long Term Stability	± 0.00008"wc (± 0.02Pa) per year max
Status Indicators	Green LED to indicate status
Connections	4-pos. screw terminal Note: connect to I/O Module using Windy City Wire #042003 only
Operating Temperature	-4° to 176° F (-20° to 80° C)
Storage Temperature	-40° to 185° F (-40° to 85° C)
Humidity	0 to 95% non-condensing

DISPLAY (LOCAL HMI)

Display Type	7" LCD-TFT resistive touchscreen display with LED backlight
Color	RGB 65K colors
Active Area	6.49" W x 3.937" H (164.9mm W x 100mm H)
Installation	Mounts on triple-gang standard dept electrical box
Resolution	800 x 480 pixels
Speaker	Audible notifications, 550~18KHz, 83dBA SPL @ 1W/0.5M
Connections	RJ-45 connector Note: connect to I/O module using factory-provided cable only
Configuration Port	USB 2.0, Isolated, Type C Connector, connect to PC with Iso-Tek Insight
Operating Temperature	-4° to 150° F (-20° to 65° C)
Storage Temperature	-40° to 185° F (-40° to 85° C)
Humidity	10 to 95% non-condensing

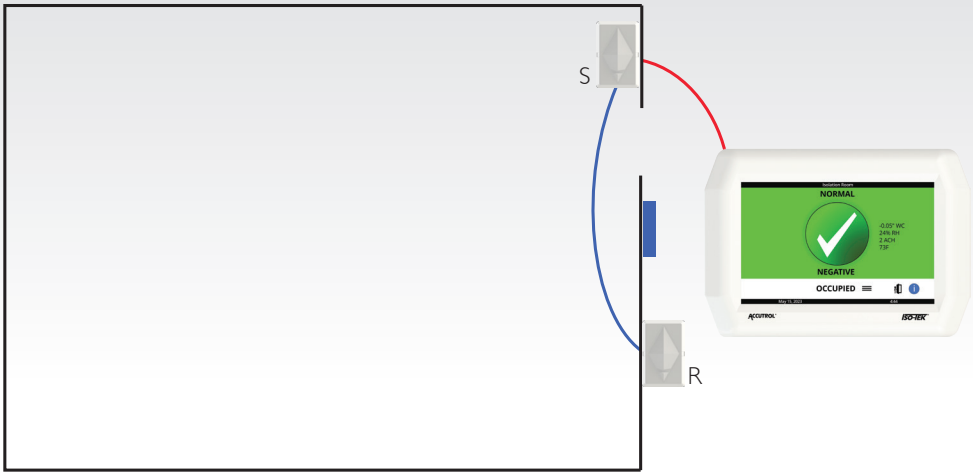
I/O MODULE

System Input Power	24 VAC ± 20% 50-60Hz or 24 VDC ± 10%
	Max power requirements for fully loaded system: 15 VA or 9 W
Relay Outputs	2 independent SPST relay contacts (software configurable)
	Contact Rating: 2A @ 30 VDC, 0.5A @ 60 VDC, 0.3A @ 125VAC
Analog Outputs	2 analog outputs for room pressure (software configurable)
	0-5v, 1-5v, 0-10v, 2-10v, 0-20mA or 4-20mA capable of driving 1 K-ohm load
Door Switch Input	Dry contact input for primary room door switch (software configurable)
Sensor Port	5-pos. pluggable screw terminal Note: Connect to pressure sensor network using Windy City Wire #042003 or equivalent
Display Port	RJ-45 connector Note: Connect to display module using factory-provided cable only
BACnet MS/TP (optional)	EIA 485 2-wire, BACnet MS/TP, galvanically isolated
	1/8 unit load transceiver impedance full master
	Node state machine data rates 9600, 19200, 38400, 76800 and 115200
	MAC address is software configurable
BACnet IP (optional)	Future
Status Indicators	LED indicators for power, pressure sensor, display, BACnet, and Bluetooth
I/O Terminal Blocks	Removable vertical plugs, wire size range 12-30AWG
Bluetooth (optional)	Bluetooth v4.2 or later, connect to PC with Iso-Tek Insight
Operating Temperature	-20° to 176° F (-29° to 80° C)
Storage Temperature	-40° to 185° F (-40° to 85° C)
Humidity	0 to 95% non-condensing

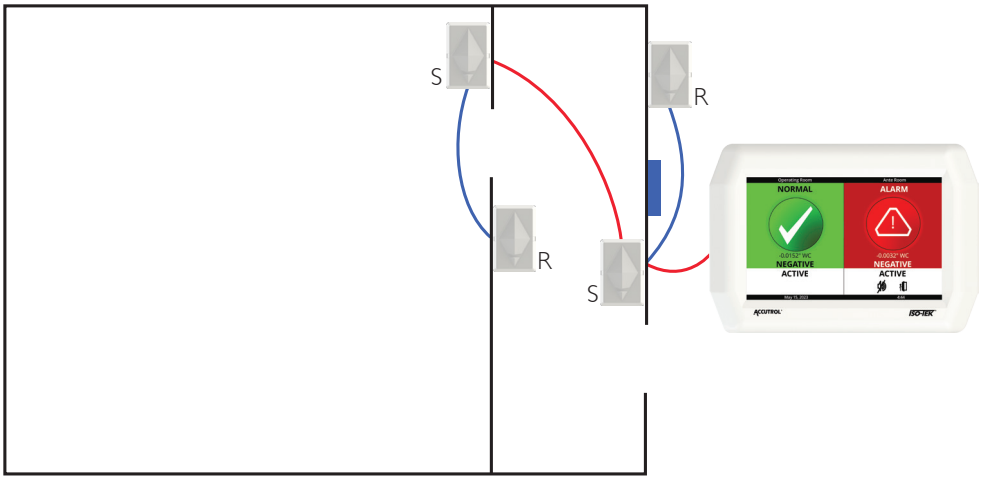
Applications (Typical)

— Tubing
— Communication
S – Sensor
R – Reference

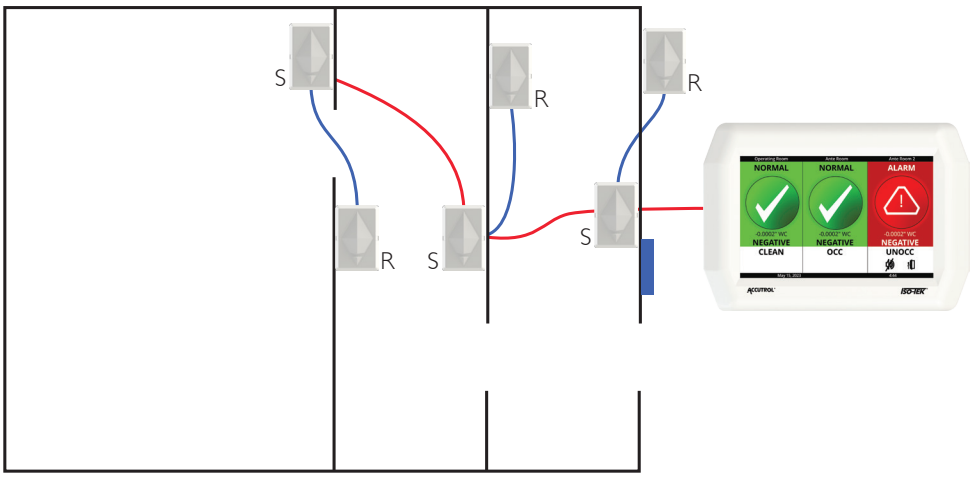
Single Space



Two Space



Three Space



Room Pressure Monitor Ordering Guide

ISO [ ][ ][ ][ ][ ] - [ ][ ]

Number of Room Sensor Kits

1 = 1 Room Sensor Kit
2 = 2 Room Sensor Kits
3 = 3 Room Sensor Kits
4 = 4 Room Sensor Kits

Sensor Range

1 = -0.1" to +0.1" wc

Display Type

1 = 7" Touchscreen

Options

BLANK = No Options
M = BACnet MS/TP
W = Wireless Bluetooth

Display Cable Length

1 = 25' (7.6m)
2 = 50' (15.2m)
3 = 75' (22.9m)
4 = 100' (30.5m)

Each Iso-Tek System Includes:

- I/O assembly, optional BACnet® digital communications
- 7" color touchscreen display/alarm
- Display cable (selectable length)
- Wall-mount room pressure sensor (selectable quantity)
- Wall-mount room pressure reference probe(s)

Your representative is:

Local Support by: **Trane Hawaii**
2969 Mapunapuna Place
Honolulu, HI 96819

MODEL CODE

ISO [ ][ ][ ][ ][ ] - [ ]

SENSOR RANGE
1 = -0.1" TO +0.1" wc

DISPLAY TYPE
1 = 7" Touch Screen

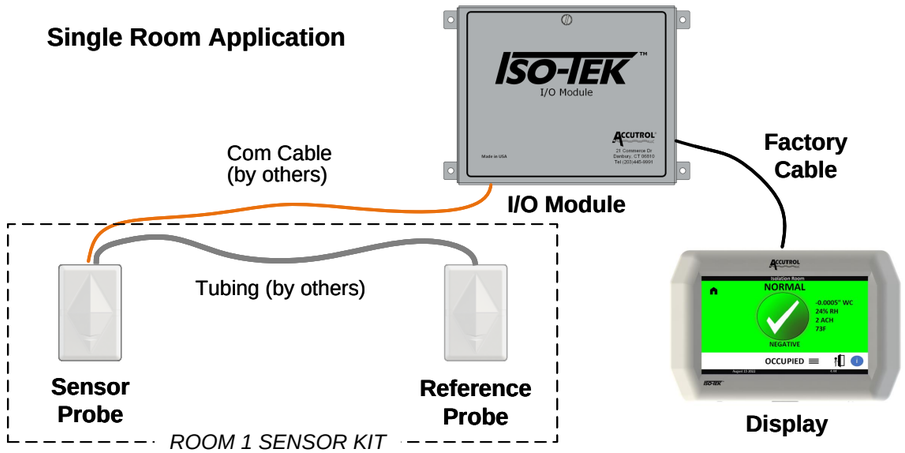
DISPLAY CABLE LENGTH
1 = 25' (7.6m)
2 = 50' (15.2m)
3 = 75' (22.9m)
4 = 100' (30.5m)

OPTIONS
BLANK = No Options
W = Wireless Bluetooth

DIGITAL COMMUNICATIONS
0 = No BACnet
1 = BACnet MS/TP
2 = BACnet IP (Future)

SYSTEM DIAGRAM

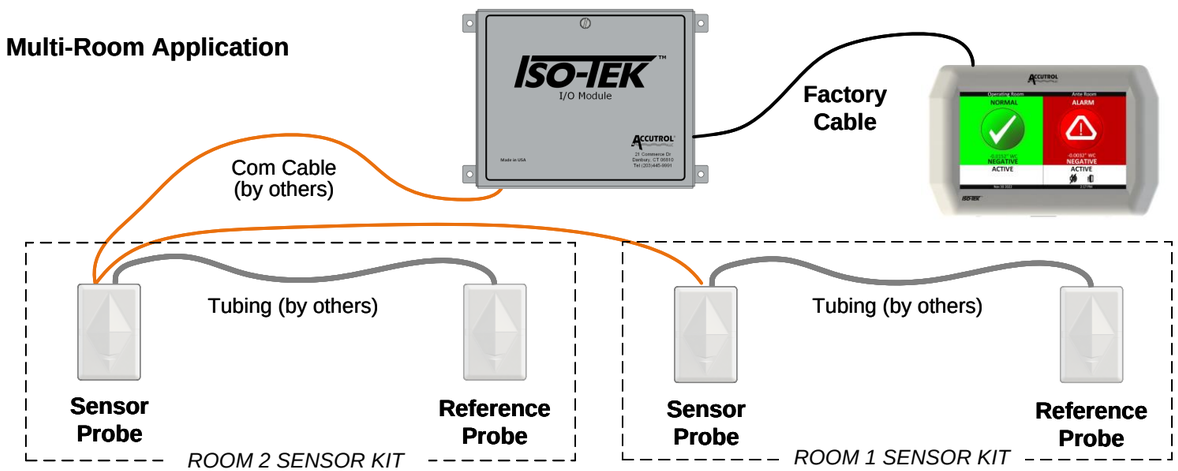
Single Room Application



NOTES:

1. *Up to 3 additional Room Sensor Kits, PN ISOP1, can be added to one Iso-Tek System to monitor up to 4 differential pressure relationships. Additional Room Sensor Kits are ordered separately.*
2. *Reference Sheet 3 for tubing details.*
3. *Reference Sheet 4 for wiring details.*

Multi-Room Application



SPECIFICATIONS

PRESSURE SENSOR	
Pressure Range	+/- 0.100”wc (+/- 25Pa)
Pressure Measurement Resolution	0.00000335”wc (0.00083Pa)
Zero Pressure Offset Accuracy	Typical: +/- 0.00016”wc (+/- 0.04Pa)
	Max: +/- 0.0004”wc (+/- 0.1Pa)
Span Accuracy	Typical: +/- 0.75% of reading
	Max: +/- 1.5% of reading
Thermal Effects -4 to 185 deg F (-20 to 85 deg C)	Offset: Max +/- 0.0004”wc (+/- 0.1Pa)
	Span: Typical +/- 0.2% of reading per 18 deg F (10 deg C)
	Max +/- 0.5% of reading per 18 deg F (10 deg C)
Long Term Stability	+/- 0.00008”wc (+/- 0.02Pa) per year max
Status Indicators	Green LED to indicate status
Connections	4-pos. screw terminal
	Note: connect to IO Module using Windy City Wire # 042003 or equivalent
Operating Temp Range	-4 to 176 deg F (-20 to 80 deg C)
Storage Temp Range	-40 to 185 deg F (-40 to 85 deg C)
Humidity	0 to 95% noncondensing
DISPLAY (Local HMI)	
Display Type	7” LCD-TFT Resistive touch display with LED backlight
Color	RGB 65K colors
Active Area	6.49” x 3.937” (164.9mm x 100mm)
Resolution	800 x 480 pixel
Speaker	audible notifications, 550~18KHz, 83dBA SPL @ 1W/0.5M
Connections	RJ-45 connector
	Note: connect to IO Module using factory-provided cable only
Configuration Port	USB 2.0, Isolated, Type C Conn., connect PC with Iso-Tek Insight
Operating Temp Range	-4 to 150 deg F (-20 to 65 deg C)
Storage Temp Range	-40 to 185 deg F (-40 to 85 deg C)
Humidity	10 to 90% noncondensing
IO MODULE	
System Input Power	24VAC +/- 20% 50-60Hz or 24 VDC +/- 10%
	Max Power requirements for fully loaded system: 15VA or 9 Watts
Relay Outputs	2 Independent SPST Relay Contacts (Software Configurable)
	Contact Rating; 2A @ 30VDC, 0.5A @ 60VDC, 0.3A @ 125VAC
Analog Outputs	2 Analog Outputs for Room Pressure (Software Configurable)
	0-5v, 1-5v, 0-10v, 2-10v, 0-20mA or 4-20mA
	capable of driving 1 K-ohm load
Door Switch Input	Dry Contact Input for Primary Room Door Switch (software configurable)
Accutrol Sensor Port	5-pos. pluggable screw terminal
	Note: connect to Pressure Sensor Network using Windy City Wire # 042003 only
Accutrol Display Port	RJ-45 connector
	Note: Connect to Display Module using factory-provided cable only
BACnet MS/TP (Optional)	EIA 485 2-wire, BACnet MS/TP, Galvanically Isolated
	1/8 unit load transceiver impedance
	Full Master Node State Machine
	Data Rates 9600, 19200, 38400, 76800 and 115200
	MAC address is software configurable
BACnet IP (Optional)	Future
Status Indicators	LED Indicators for Power, Pressure Sensor, Display, BACnet, & Bluetooth
I/O Terminal Blocks	Removable Vertical Plugs, Wire Size Range 12-30 AWG
Bluetooth (Optional)	Bluetooth Version 4.2 or later, connect to PC with Iso-Tek Insight
Operating Temp Range	-20 to 176 deg F (-29 to 80 deg C)
Storage Temp Range	-40 to 185 deg F (-40 to 85 deg C)
Humidity	0 to 95% noncondensing
COMPLIANCE	
	RoHS, UL94-V0

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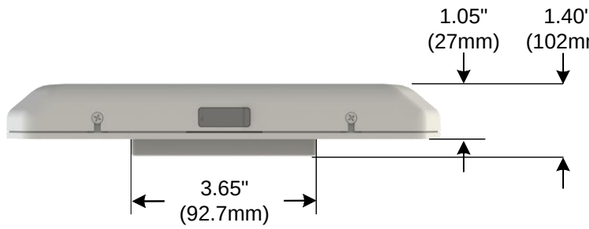
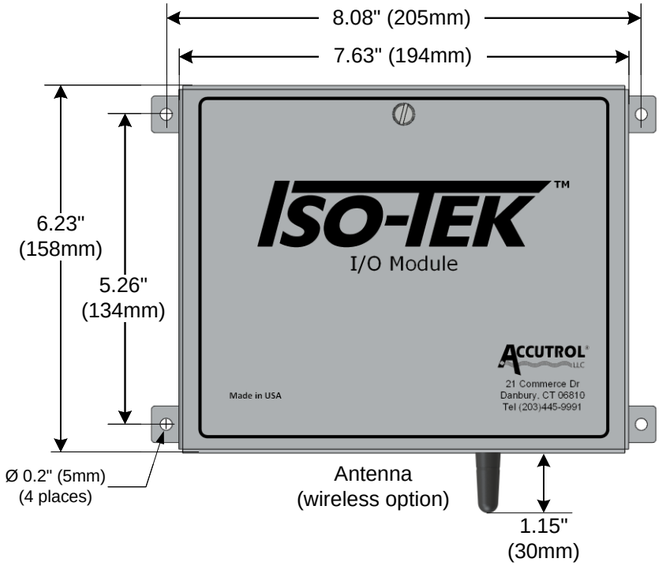
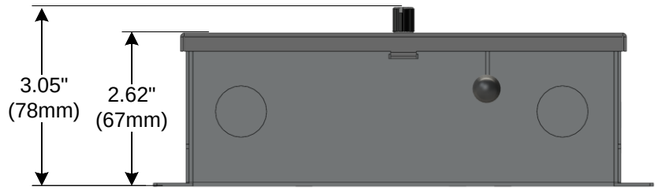
DIMENSIONS

Display Module

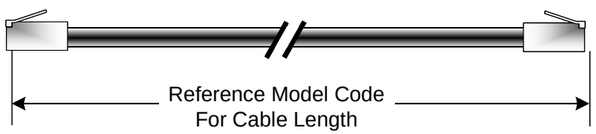


IO Module

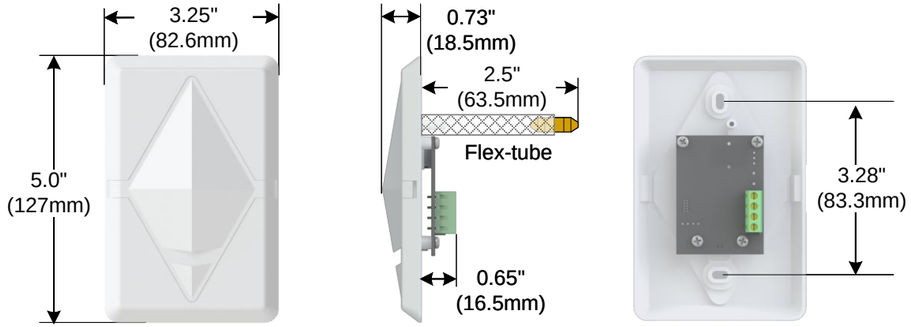




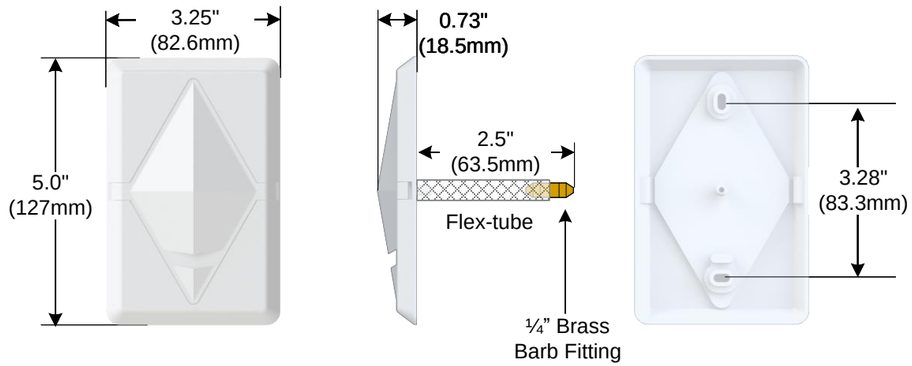
Display Cable



Sensor Probe



Reference Probe



Materials

All Materials are RoHS Compliant
IO Module Enclosure: 16 Gauge Aluminum Alloy 5052-H32
Display Module Bezel & Mounting Plate: ABS Plastic UL94-V0
Sensor Probe and Reference Probe: ABS Plastic UL94-V0
Display Cable: Plenum-rated shielded cable

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INSTALLATION

Display Module

The Display Module is designed to be installed onto a standard double or triple-gang electrical box (e-box) provided by others. The e-box is typically located at eye-level at the entrance of the room being monitored.

Step 1: Install the e-box level & flush with finished wall surface.

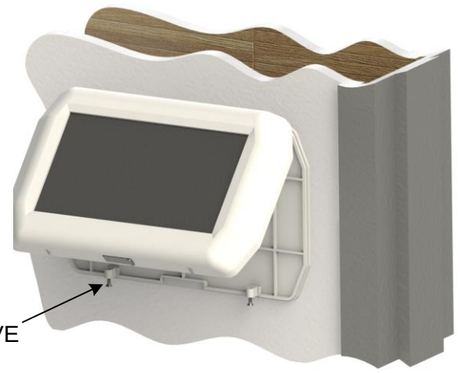
Step 2: Insert Display Cable from e-box through the hole located in the Display Mounting Plate.

Step 3: Position the Display Mounting Plate with the arrow UP and secure to e-box using the (4) #6-32 x 1" long screws provided.

⚠ ***CAUTION:*** *Do not overtighten mounting screws. Overtightening may deform mounting plate .*

Step 4: Align the notches in the top of Display with slots in the top of the Mounting Plate.

Step 5: Tighten the (2) screws located at the bottom of the Display to secure the Bezel to the Backplate.



IO Module

The IO Module enclosure includes 4 flanges with 0.2" dia holes provided for securing the IO Module to a wall or panel plate. The IO Module is typically located in the vicinity of the room above the ceiling or inside a control panel that is within the range of the display cable provided.

Secure IO Module to mounting surface using either (4) #8 or #10 screws (Provided by others).

For sheetrock installation, use the appropriate wall anchors (provided by others).

Sensor Probe & Reference Probe

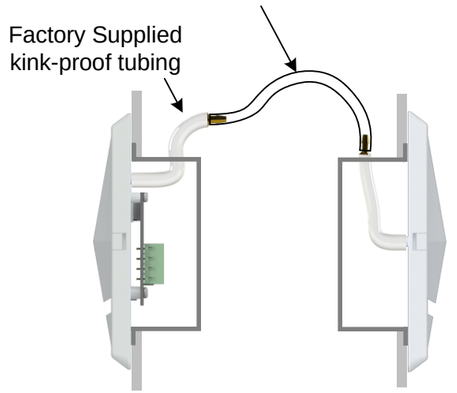
The Sensor and Reference Probes are designed to be installed onto a single-gang electrical box (e-box). The sensor probe shall be located inside of the pressurized space and the reference probe shall be installed outside the pressurized space in a location designated as the reference pressure zone for the room being monitored. Both probes shall be located in areas that will not be influenced by air currents from supply diffusers, fans, personnel, etc..

Step 1: Install the e-box level & flush with finished wall surface.

Step 2: Run field tubing (by others) from Sensor Probe e-box to Reference Probe e-box.

Step 3: Each probe is provided with a short length of kink-proof tubing with a ¼" barb fitting. Connect the field tubing to the barb fitting on the Sensor Probe and Reference Probe.

Field tubing: 0.25" (6mm) O.D., .040" (1mm) wall, NFPA 90 flame retardant polyethylene control tubing, such as Chevron Plexco or equivalent approved by local building codes.



Sensor Probe

Reference Probe

Step 4: Remove airflow deflector plates on both probes to reveal mounting holes by pulling outwards on the side tabs.

Step 5: Position the Probe with the arrow UP and secure to e-box using the (2) #6-32 x 1" long screws provided.

⚠ ***CAUTION:*** *Do not overtighten mounting screws. Overtightening may deform mounting plate .*

Step 6: After installation is complete, reattach the airflow deflector plates.

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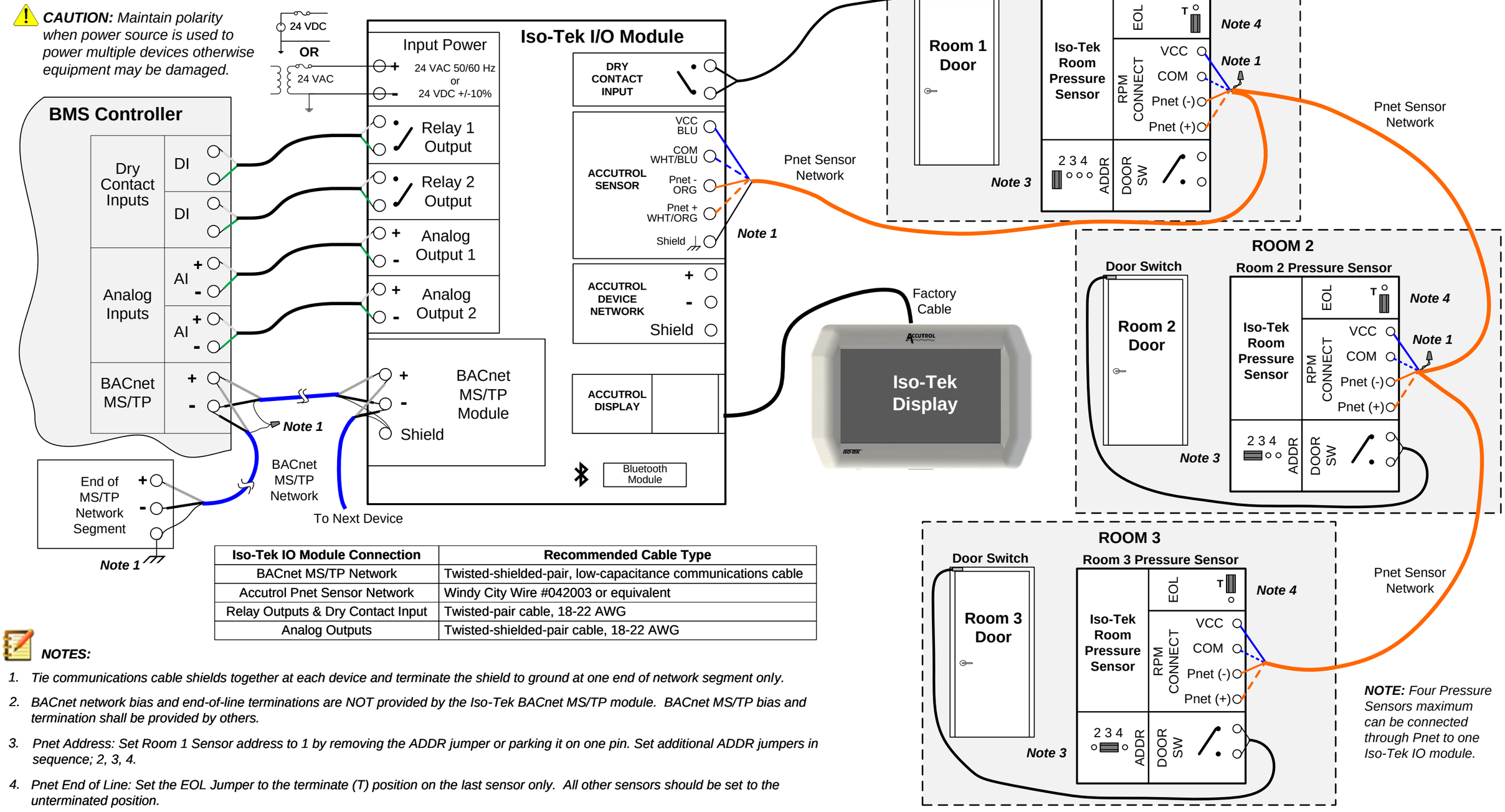
WIRING

CAUTION: *Maintain polarity when power source is used to power multiple devices otherwise equipment may be damaged.*



Iso-Tek IO Module Connection	Recommended Cable Type
BACnet MS/TP Network	Twisted-shielded-pair, low-capacitance communications cable
Accutrol Pnet Sensor Network	Windy City Wire #042003 or equivalent
Relay Outputs & Dry Contact Input	Twisted-pair cable, 18-22 AWG
Analog Outputs	Twisted-shielded-pair cable, 18-22 AWG

NOTES:

1. *Tie communications cable shields together at each device and terminate the shield to ground at one end of network segment only.*
2. *BACnet network bias and end-of-line terminations are NOT provided by the Iso-Tek BACnet MS/TP module. BACnet MS/TP bias and termination shall be provided by others.*
3. *Pnet Address: Set Room 1 Sensor address to 1 by removing the ADDR jumper or parking it on one pin. Set additional ADDR jumpers in sequence; 2, 3, 4.*
4. *Pnet End of Line: Set the EOL Jumper to the terminate (T) position on the last sensor only. All other sensors should be set to the unterminated position.*

NOTE: *Four Pressure Sensors maximum can be connected through Pnet to one Iso-Tek IO module.*

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SECTION 2F: ASBESTOS ABAT1EMENT

1. GENERAL CONDITIONS

Division One, "General Requirements" is hereby made a part of this section.

2. SUMMARY OF PROJECT

a. Furnish all labor, materials, and equipment necessary to carry out the safe removal and disposal of asbestos-containing materials in compliance with these specifications, U.S. Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), State of Hawaii, and any other applicable federal and state regulations. Whenever there is a conflict or overlap of the above references, the most stringent shall apply.

b. Not used.

c. All removal work will be scheduled for off-hours or during periods of low occupancy. Hazardous Material Subcontractor shall verify the existing locations, conditions, layers, and thickness of all materials prior to commencement of any work. The "assumed" asbestos work shall include:

1. Removal and disposal of sheet vinyl flooring and mastic.
2. Removal and disposal of tile grout.
3. ***Contractor to include a $35,000 allowance in his bid for this work. Should material testing by the hospital reveal these materials do not include asbestos, a credit change order for this amount will be issued to the construction contract.***

d. In general, the principal items of the asbestos removal work shall be as follows:

1. Worker protection.
2. Decontamination enclosure system.
3. Preparation of work area.

e. Removal of asbestos-containing materials.

1. Removal of protective sheeting.
2. Disposal.

f. Cleaning shall include areas within and immediately around the work area affected by the abatement work and all areas contaminated by the Hazardous Material Subcontractor's work.

g. The asbestos abatement work shall include removal of all asbestos-containing materials within the work area as specified herein.

h. Hazardous Material Subcontractor shall comply with all regulations pertaining to asbestos removal. If there is a conflict with the specifications, the more stringent requirement shall apply.

i. The Hazardous Material Survey also identifies light fixture ballasts that contain PCBs. Work scope shall include removal and disposal of these ballasts as hazardous waste.

3. **COORDINATION WITH OTHER SECTIONS**

Prior to commencement of work, an annotated description of all existing damaged and missing items shall be submitted to the Owner. It will be the Hazardous Material Subcontractor's responsibility to repair and/or replace to all items identified as damaged and/or missing that cannot be proven to have been in this condition prior to the commencement of this project.

4. **SUBMITTALS PRIOR TO WORK**

a. Notices: As early as possible but prior to commencement of work, as regulated by each agency and before commencement of any on-site project activity, send written 10-day notice in accordance with 40 CFR Part 61.145 of Subpart M, of the proposed asbestos abatement work and to the following agencies:

1. The Administrator of the Environmental Protection Agency Regional Office having jurisdiction over the project.

2. State of Hawaii, Department of Health, "Notification of Demolition and Renovation" form. Send to: Noise, Radiation and Indoor Air Quality Branch, Asbestos Abatement Office, State Department of Health, P.O. Box 3378, Honolulu, Hawaii 76801-9984.

b. Permits and Licenses: Copies of all permits, licenses (C-19) and arrangements for removal, transportation and disposal of asbestos-containing materials and wastewater, no later than 20 consecutive working days from notice of award unless otherwise instructed in writing by QMC.

c. Insurance: Proof of insurance for Worker's Compensation and General Liability which covers asbestos, lead, and pollution.

d. Manufacturer's Data: Copies of manufacturer's specifications, installation instructions and field test procedures for each material and all equipment related to asbestos handling and abatement and include other data as may be required to show compliance with these specifications and proposed uses.

e. Work Plan: Submit an asbestos abatement work plan to the State Department of Health (DOH), signed by the Hazardous Material Subcontractor's Project Designer. The Contractor is to retain a Hazardous Material Subcontractor to generate the work plan. The work plan shall provide detailed information concerning:

1. Preparation of the work area.

2. Personal protective equipment including respiratory protection and protective clothing.

3. Decontamination procedures for the personnel who may be exposed to asbestos.

4. Handling and disposal methods and procedures to be used.

5. Required air monitoring procedures and sampling protocols.

6. Procedures for final clean up.

7. A sequence of work and performance schedule in coordination with other trades.

8. Emergency procedures.

f. Shop Drawings: Submit shop drawings for the following items as a minimum:

1. Descriptions of any equipment to be employed not discussed in this section.

2. Security provisions, if any, in and around the project area.

3. Outline of work procedures to be employed.

4. Location and construction of all airtight barriers.

5. Staging of the work, the sequence.

6. Entrances and exits to the work place.

7. Location and construction of worker decontamination units.

8. Water filtration system for all contaminated water. Description of water disposal and copy of water disposal permit from the City and County of Honolulu, Environmental Services, Division of Environmental Quality, Industrial Wastewater Discharge Permit for Temporary Discharge into the City Sewer System.

9. Proposed method of attaching plasticizing (polyethylene sheeting) shall be approved in advance to minimize damage to equipment and surfaces. Method of attachment may include any combination of duct tape or other approved waterproof tape, furring strips, spray glue, staples, nails screws or other effective procedures capable of sealing adjacent sheets of polyethylene sheeting and capable of sealing polyethylene to dissimilar finished or unfinished surfaces both under wet and dry conditions (including amended water).

10. Proposed method of patching and repairing all damage to existing finishes from the attachment of polyethylene sheeting (as applicable).

11. Documentation for Instruction: Submit documentation that each and every individual, including foremen, supervisors, and other company personnel or agents and any other individual who may be exposed to airborne asbestos fibers, who may be responsible for any aspect of abatement activities, or who is allowed or permitted to enter areas where such exposure may occur has currently attended and passed the Abatement Worker and/or Hazardous Material Subcontractor/Supervisor course whichever is relevant to that worker's responsibilities as specified in 40 CFR Part 763, "Asbestos Materials in Schools". These courses shall be EPA-approved or approved by a State Accreditation Program in the most current listing of the Federal Register. No worker shall be allowed on site if they are found to have either an expired accreditation certificate or does not comply with the requirements set forth in 40 CFR Part 763 on training. All workers shall be certified for asbestos related work in accordance with Department of Health, Chapter 11-504, Hawaii Administrative Rules, *Asbestos Abatement Certification Program*.

12. The Subcontractor shall be responsible for keeping the documentation up to date before any additional employee or individual, not currently on the list, is allowed within the project site.

13. Submit completed and signed "Employee Acknowledgment of Instruction and Release" forms. A sample "Employee Acknowledgment of Instruction and Release" form is provided at the end of this section.

14. Documentation from Physician: Submit documentation from a physician that all employees or agents who may be exposed to airborne asbestos have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that all individuals permitted within the project site have received medical monitoring or had such monitoring made available to them as required in OSHA 29 CFR 1926.1101. The Hazardous Material Subcontractor must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g., high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities. The Subcontractor shall keep and make available to all affected individuals a record and the results of such examinations.

15. High Efficiency Particulate Absolute (HEPA) Vacuums: Submit manufacturer's certification that vacuums conform to ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems as applicable to this project.

16. Emergency Planning Procedures: Submit an emergency plan prior to abatement initiation.

    a. Emergency procedures shall be in written form and prominently posted adjacent to the Worker Protection Notices specified hereinafter. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt of emergency exits and emergency procedures.

    b. Emergency planning shall include notification of police, fire, and emergency medical personnel of planned abatement activities work schedule, and layout of the work area, particularly barriers that may affect response capabilities.

    c. Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, and heat related injury. Written procedures shall be developed and employee training procedures shall be provided in the Hazardous Material Subcontractor's plan.

5. **SUBMITTAL AFTER WORK IS COMPLETED**

a. At the completion of the work, a final report shall be prepared by the Hazardous Material Subcontractor for acceptance.

b. The project name, Hazardous Material Subcontractor, Hazardous Material Subcontractor license number, notification form to the Hawaii Department of Health and EPA, work duration, material removed, respiratory protection employed, asbestos waste manifest, total quantity of waste, employee exposure air sample results, and results of the most current Proficiency Analytical Testing (PAT) round results for the laboratory conducting all air sample analysis.

c. Certification of the Hazardous Material Subcontractor's employees and the Qualified Consultant.

d. Visitor/Worker Entry Log: The daily log of all personnel including the Hazardous Material Subcontractor's employees and agents who enter the work area while asbestos abatement operations are in progress, until final clearance is received that the work area is asbestos free. The log shall contain the listed information as a minimum and shall be certified by the Qualified Consultant.

1. Date of visit/worker entry.

2. Visitor/Worker's name, employer, business address and telephone number.

3. Time of entry and exit from work area.

4. Purpose of visit.

5. Type of protective clothing and respirator worn.

6. Certificate of release signed and filed with the Hazardous Material Subcontractor.

e. Clearance certifications received from the Qualified Consultant.

f. A statement signed by the Hazardous Material Subcontractor that all asbestos abatement and disposal was completed in compliance with this specification, federal and state regulations, and the approved work plan

6. PRODUCT HANDLING

Delivery and Storage of Materials: Deliver materials to the site in original packages, containers or bags fully identified with manufacturer's name, brand and lot number. Store materials in a dry, well-ventilated space, under cover, off the ground and away from surfaces subject to dampness or condensation. Material that becomes contaminated with asbestos shall be disposed of in accordance with applicable regulations. Replacement materials shall be stored outside the contaminated work area until abatement is completed.

7. PROTECTION

a Site Security: The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employees of other Subcontractors, Kuakini Medical Center and its representatives, state and local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start.

1. Entry to the work area by unauthorized individuals shall not be permitted.

2. A visitor/worker entry log shall be maintained.

3. The Hazardous Material Subcontractor shall have control of security in the work area and in proximity of Subcontractor’s equipment and materials.

b. Site Protection and Safety: As a minimum, follow the requirements of EPA, HIOSH (State of Hawaii), OSHA and NIOSH. Take all necessary precaution to ensure there is no asbestos contamination to those areas not included in the work schedule.

c. Protective Covering: The Hazardous Material Subcontractor shall provide and install protective covering on an “as required” or “upon request” by the Qualified Consultant. Protective covering shall be clean plastic sheets minimum thickness of 6-mil.

d. Safeguarding of Property: The Hazardous Material Subcontractor shall take whatever steps necessary to safeguard his work and other individuals in the vicinity of his work area during the execution of this contract. He shall be responsible for and make good on any and all damages by his employees' negligence. Do not load structure with weight that will endanger the structure.

e. Completed Work: The Subcontractor shall provide all necessary protection for surfaces encapsulated under this section.

8. **ABBREVIATIONS**

a. ANSI: American National Standards Institute, Inc.

b. CFR: Code of Federal Regulations.

c. EPA: U.S. Environmental Protection Agency.

d. HIOSH: Division of Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii.

e. NESHAP: National Emission Standards for Hazardous Air pollutants.

f. NIOSH: National Institute for Occupation Safety and Health.

g. OSHA: Occupational Safety and Health Administration.

9. **GENERAL REQUIREMENTS**

a. Hazardous Material Subcontractor shall examine and have at all times in his possession at his office (one copy) and in view at each job site office (one copy) a current issue of the following publications:

1. State of Hawaii, Department of Health, Title 11, Chapter 501-1, Asbestos Requirements.

2. State of Hawaii, Department of Health, Title 11, Chapter 501-4, Asbestos Abatement Certification Program.

3. Title 29, Code of Federal Regulations, Section 1910.134 – General Industry Standard for Respiratory Protection, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

4. Title 29, Code of Federal Regulations, Section 1926.1101 – Asbestos, Construction Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

5. Title 29, Code of Federal Regulations, Section 1910.2 – Access to Employee Exposure and Medical Records, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

6. Title 29, Code of Federal Regulations, Section 1910.1200 – Hazard Communication, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

7. Title 40, Code of Federal Regulations, Part 61, Subparts A and M (Revised Subpart B), National Emission of Standards for Hazardous Air Pollutants, U.S. Environmental Protection Agency (EPA).

8. Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA 560/5-85-024 (Purple Book), U.S. Environmental Protection Agency (EPA).

9. Title 34, Code of Federal Regulations, Part 231, Appendix C, Procedures for Containing and Removing Building Materials Containing Asbestos, U.S. Environmental Protection Agency (EPA).

10. Title 29, Code of Federal Regulations, Section 1910.145 Specifications for Accident Prevention, Signs and Tags, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

11. ANSI Z88.2-80 Practice for Respiratory Protection.

12. EPA, Final Response to the Asbestos Hazard Emergency Response Act (AHERA), 40 CFR, Part 763, Subpart E.

b. The Hazardous Material Subcontractor shall comply with the above requirements and any applicable state and local regulations. Where conflict or any inconsistency among requirements or with this specification exists, the more stringent requirements shall apply. Ignorance of the above requirements and any applicable state and local regulations resulting in additional cost to the Subcontractor shall be solely the Subcontractor's responsibility.

c. All regulations shall govern over these specifications, except that any more stringent specification or specification providing greater protection against asbestos exposure, injury, loss or liability, shall control to the extent permitted by regulation

10. **DEFINITIONS**

a. Abatement: Procedure to control fiber release from asbestos-containing building materials.

1. Removal: All herein specified procedures necessary to remove asbestos-containing materials at an approved site in an acceptable manner.

2. Post-removal surface encapsulation: Procedures necessary to coat surfaces from which asbestos-containing materials have been removed and where designated on the drawings to control any residual fiber release.

b. Air Monitoring: The process of measuring the fiber content of a specific, known, volume of air in a stated period of time. For this project, NIOSH 7400 Method.

c. Amended Water: Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.

d. Authorized Visitor: The Qualified Consultant, his representatives, air monitoring personnel, or a representative of any regulatory or other agency having jurisdiction over the project.

e. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area without dismantling.

f. Friable Asbestos: Asbestos-containing material which can be crumbled to dust, when dry, under hand pressure.

g. Hazardous Material Subcontractor: Asbestos Abatement Contractor hired by the Contractor who will perform asbestos abatement.

h. HEPA Filter: A High Efficiency Particulate Absolute filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 micron in length.

i. HEPA Vacuum Equipment: Vacuuming equipment that utilizes a High Efficiency Particulate Absolute filter.

j. Holding Area: A secure area used for the storage of double-bagged asbestos-containing material before removal from the project site to an approved disposal site.

k . Post-Removal Encapsulation: A liquid material which can be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating in to the material and binding its components (penetrating encapsulant). Selected product shall be compatible with the existing finishes including wood, metal, and plastic.

l. Qualified Consultant: Consultant hired by the General Contractor who will perform air monitoring and inspection during abatement work and shall have the authority to initiate engineering controls. The Qualified Consultant must have attended the 4-day Joint Commission (JC) seminar, accredited as a State of Hawaii Department of Health accredited Asbestos Contractor Supervisor, Project Monitor; and NIOSH 582 certified.

m. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

11. **MATERIALS**

a. Plastic Sheeting: Minimum thickness is 6-mil polyethylene film.

b. Plastic Bags: Minimum thickness 6-mil polyethylene film labeled as specified hereinafter.

c. Tapes: Tape shall be capable of sealing joints of adjacent sheets of polyethylene and for attaching polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including the use of amended water. Silver cloth duct tape, minimum 2 inches wide; red or NATO orange tape, minimum 2 inches wide for exit arrows; and double faced foam tapes, by Nashua, 3-M, Arno, or approved equal.

d. Adhesives: Adhesives (3-M #76, #77, or approved equal) shall be capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

e. Surfactant (Wetting Agent): Fifty percent polyoxyethylene ester and 50% polyoxyethylene ether, or equivalent, and shall be mixed with water to provide a concentration of one ounce, or more as needed, of surfactant to 5 gallons of water. (An equivalent surfactant shall be understood to mean material with a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM Method D 1331-56 (R 1980), “Surface and Interfacial Tension of Solutions of Surface-Active Agents”.)

f. Warning Labels and Signs: As required by OSHA regulations 29 CFR 1926.1101. Permanent signage for access panels and areas with encapsulated asbestos-containing materials shall be as specified hereinafter.

g. Protective Clothing: As specified hereinafter. The Hazardous Material Subcontractor shall have all the required sets of coveralls required for this project on island prior to the start of work. There will be no time extension for the unavailability of coveralls or related equipment.

h. Post-Removal Encapsulation: The encapsulant shall be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating in to the material and binding its components (penetrating encapsulant) and shall be compatible with the existing finishes including wood, metal, and plastic.

i. Other Materials: Provide all other materials, such as, but not limited to, lumber, plywood, nails, fasteners, metal studs, hardware, foam sealants, and caulking which may be required to properly prepare and complete this project.

12. **TOOLS AND EQUIPMENT**

a. General: Provide and fabricate suitable tools for the asbestos abatement procedures.

b. Water Sprayer: Airless or a pressure sprayer for amended water application as applicable.

c. Air Purification Equipment: High Efficiency Particulate Absolute (HEPA) filtration systems.

d. Paint/Encapsulant Sprayer: Airless type.

e. Other tools and equipment as necessary.

13. **PERSONNEL PROTECTION REQUIREMENTS**

a. The Hazardous Material Subcontractor acknowledges he alone is responsible for instruction and for enforcing personnel protection requirements and that these specifications provide only a minimum acceptable standard.

b. Provide workers with sufficient sets of disposable protective full body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full body coveralls, footwear, gloves and headgear. Provide hard hats as required by applicable safety regulations. Disposable clothing shall not be allowed to accumulate and shall be disposed of as asbestos contaminated waste. Protective clothing shall be worn by all personnel within the work area from the start of the removal and post-removal encapsulation work until the work area has received its final clearance.

c. Insulated non-skid rubber boots or an approved equal shall be required for all individuals entering the work area. Protective full body clothing without elastic at sleeves and legs shall require separate elastic or taped protection to seal the opening. Visitors shall be provided full body protective clothing.

d. No visitors shall be allowed in work areas.

e. All electrical systems used for asbestos abatement operations shall as a minimum be protected with "Ground Fault Circuit Interrupters" selected and installed in strict accordance with the manufacturer's instructions, the National Electric Code and all other pertinent codes.

f. Additional safety equipment (e.g., hardhats meeting the requirements of ANSI Z-89.1-1981, eye protection meeting the requirements of ANSI Z87.1-1979, safety shoes meeting the requirements of ANSI Z41.1-1967, disposable polyvinyl chloride gloves), as necessary, shall be provided to all workers and authorized visitors.

14. **SEPARATION OF WORK AREAS FROM NON-WORK AREAS**

a. Visual Separation: Where applicable, visual separation shall be accomplished at all glazed areas using opaque polyethylene. This separation shall not be incorporated within the other seals required on this project.

b. Air Systems: Shut down and isolate all ventilation air systems to prevent contamination and fiber dispersal to other areas of the building. During the abatement operations, air intake vents within the work area shall all be sealed with tape and two layers of 6-mil polyethylene sheeting.

c. Emergency Exits: Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations. Provide knockout/cut away panels in the barriers in the direction of emergency egress. Properly mark the knockout/cut away panels, seal them airtight, and on a continuing basis instruct workers and authorized personnel as to their locations. Post a diagram in each Clean Room and Equipment Room locating the emergency exits. In case of fire while doing work in the work areas, emergency exit procedures have priority over normal work exiting procedures.

d. Inspection: The Hazardous Material Subcontractor shall inspect all barriers at least twice a day (once prior to the start of each day's abatement operations and following the day's abatement operations). Document the inspections and observations in a daily project log.

15. **DECONTAMINATION ENCLOSURE SYSTEMS**

a. General: The Hazardous Material Subcontractor shall construct the decontamination enclosure system or use portable units acceptable to the Qualified Consultant, adjacent to the work area.

b. Personnel Decontamination Unit: As deemed necessary by the Qualified Consultant, provide a personnel decontamination enclosure system contiguous to the work area consisting of 3 totally enclosed chambers as follows:

1. An Equipment Room with 2 curtained doorways, one to the work area and one to the shower.

2. A Shower Room with 2 curtained doorways, one to the Equipment Room and one to the Clean Room. The Shower Room shall contain at least one shower. Careful attention must be paid to the shower enclosure to insure against leakage of any kind. Ensure a supply of soap at all times in the shower. Drainage from the shower shall be disposed of as contaminated wastewater or filtered as specified hereinafter.

3. A Clean Room with one curtained doorway to the Shower Room and one entrance/exit door to non-contaminated area. The Clean Room shall have sufficient space for storage of worker's street clothes and personal effects, towels, and other non-contaminated items.

c. Maintenance of Decontamination Units: At the beginning of each work shift and throughout abatement operations, all seals and curtained doorways shall be inspected and if not found in proper condition, repaired immediately. All areas shall be kept clean at all times. Ensure that drainage filtering systems are kept clean and operational at all times.

1. Personnel decontamination unit:

a. The Hazardous Material Subcontractor shall maintain Clean Room and shall repair and sanitize respirator equipment after each use.

b. Soap and shampoo shall be in the showers at all times.

c. Fresh towels shall be available at all times.

d. Provide a disposal bag for contaminated filters in the Shower Room at all times.

e. Provide storage for wet and dry towels.

f. Provide a fine bristle brush outside the Equipment Room in the work area.

g. At the end of each work shift the shower shall be thoroughly disinfected, the filter bag (if applicable) shall be returned to the Equipment Room for disposal, and the Equipment Room shall be thoroughly HEPA vacuumed and wet cleaned. The decontamination enclosures shall be sealed and removed (as necessary) and area restored after each work day.

d. Worker Protection Notice: Post the following notice in each Clean Room and Equipment Room:

1. Workers and authorized personnel, in order to enter the work area, shall:

a. Remove all clothing, unless it is to remain in the Equipment Room for eventual disposal.

b. Don the appropriate respiratory protection, follow all training procedures and manufacturer's instructions. Once all of the above has been completed, proceed to the shower. Check the equipment out for proper operation before proceeding any further.

c. Don protective clothing (full body coveralls, gloves, boots, headgear etc.) after donning respirator.

2. All workers and authorized personnel, in order to leave the work area, shall:

a. Remove gross (visible) contamination from themselves and their equipment. Brush off dust with a fine bristle brush and leave the brush outside the Equipment Room in the work area.

b. Enter the Equipment Room and, keeping your respirator in place, remove all protective clothing, including full body coveralls, gloves, boots, and headgear. Place contaminated clothing in the bag(s) provided. Store reusable gloves and boots in their respective areas in the Equipment Room.

c. Respirator still in place, move into the Shower Room and rinse off thoroughly.

d. Accomplish complete showering, thoroughly soaping and shampooing.

e. Proceed to the Clean Room: Dry off, get dressed and return respirator to its proper place.

f. No smoking, eating, drinking shall be allowed inside the work area or the decontamination enclosures.

16. **WASTEWATER FILTERING SYSTEM**

a. Prior to any wastewater disposal into the sanitary sewer system, the Hazardous Material Subcontractor shall be responsible for obtaining from the City and County of Honolulu, Environmental Services, Division of Environmental Quality, Industrial Wastewater Discharge Permit for Temporary Discharge into the City Sewer System.

b. Filter: All wastewater that will be discharged into the sanitary sewer system shall be treated as contaminated with asbestos and shall be filtered using 2 in-line filter cartridges with 2-inch inlets and outlets. The outlet of the first cartridge shall connect to the inlet of the second cartridge. The first cartridge shall contain six 100-micron prefilters and a second cartridge shall contain six 0.5-micron filters or equal staging according to type filtering unit.

c. One spare set of 100-micron prefilters shall be maintained at the site at all times to replace prefilters during cleaning. Maintain at least one set of 0.5-micron or equal filters at the site at all items form replacement as necessary.

d. When prefilters become clogged, replace with spares, and wash out the prefilters in the Shower Room, allowing drainage from the cleaning operation to go through the filtering system.

e. When the final filters become clogged, remove the filters, replace with new, and dispose of the clogged filters as contaminated waste.

f. Provide a holding tank for contaminated wastewater as required to prevent backup of water into the shower when the amount of water generated exceeds the flow rate of the filters.

17. **COMMUNICATIONS**

Provide a communications system suitable to monitor all activities within the work area and to readily transfer messages from one location to another.

18. **WORK AREA PREPARATION**

Work by the Hazardous Material Subcontractor:

1. Step 1:

    a. Posting of danger signs: Post danger signs in and around the work area to comply with 29 CFR 1926.1101 and all other federal, state and local requirements. Signs shall be posted at a distance sufficiently far enough away from the work area to permit a person to read the sign and take the necessary protective measures to avoid exposure.

    b. Inspect the building openings: At the beginning of each work day, the Subcontractor shall inspect and ensure that all doors, windows and other openings of affected building(s) and all surrounding buildings are closed and locked (as applicable).

    c. Barrier enclosures: Cover all openings between the work area and the occupied portions of the building with opaque plastic. Construct all general and separation barriers.

    d. Sealing openings: Seal all openings including, but not limited to, ducts, vents, electrical penetrations, and any other penetrations of the work areas, with plastic sheeting sealed with tape.

2. Step 2:

    a. Provide decontamination units where appropriate: Personnel decontamination unit(s) specified hereinafter shall be required.

    b. Pre-cleaning/wet-wiping: Pre-clean fixed object within the work area, first using HEPA vacuum equipment and then wet cleaning methods as appropriate and separately enclose with minimum 6-mil plastic sheeting sealed with tape. Fixed objects shall include, but not be limited to exposed electrical conduits and all other permanently fixed items.

3. Step 3:

    a. Plasticizing: Objects which may be contaminated during abatement or difficult to clean shall be taped and sealed in a minimum of 6-mil polyethylene plastic sheeting. A minimum of 2 layers of 6-mil polyethylene plastic sheeting shall be used for preparation of critical barriers and containments.

    b. When sealing (plasticizing), plastic sheet shall be protected against damages by sharp edges, projections, etc. Provide 2-inch squares of duct tape at all sharp projections prior to applying plastic sheet to prevent puncture and tearing.

    c. NOTE: Combining lower mil thickness sheets to total the minimum mil thickness is not acceptable.

    d. Install glove bags on all asbestos-containing insulation material in accordance with the manufactures instructions.

    e. Marking exits: Maintain and mark both normal and emergency exits from the work areas to include large tape or spray painted orange arrows in the direction of egress and at curtained doorways which side of plastic sheeting to access first. One arrow marking shall be visible from every work location. Establish a color or designation system to distinguish normal exiting to the personnel decontamination unit and emergency exiting when life safety conditions prevail.

4. Step 4: Temporary utility services:

    a. Temporary electricity and lighting:

        1. Existing electrical service to the building may be used for temporary electrical power during abatement and replacement work; however, the electrical power to the work area will be shut down during abatement work.

        2. The Hazardous Material Subcontractor shall verify the locations(s) of available electrical service outside the work areas and shall tie into the existing system at a location approved by QMC.

        3. Provide a minimum of 35 foot candles of illumination on surface for finishing operation and 100 foot candles for removal operations. Provide 24 volt safety lighting.

    b. Temporary water: Existing domestic water service to the building may be used for temporary water during construction. Location of tie-in shall be approved by QMC.

    c. Temporary fire protection:

        1. Provide and maintain temporary fire protection equipment during the asbestos abatement operations.

        2. Equipment shall be of the appropriate type to fight fires associated with the existing building materials and those materials used during the construction operations.

        3. The Subcontractor shall clearly mark the location of all fire extinguishers.

5. Step 5: After the sealing and temporary facility work is completed, notify the Qualified Consultant and get his approval prior to proceeding with abatement

19. **REMOVAL OF FLOORING (VINYL SHEETING, ADHESIVE, FIBROUS BACKING, LEVELING COMPOUND**)

    a. Cover all vertical surfaces a minimum of 4 feet from the floor. Completely seal the top and bottom of the sheeting with a continuous length of duct tape.

    b. Spray the asbestos-containing material repeatedly during the removal operations to maintain a wet condition and to minimize asbestos fiber dispersion. Prevent contamination spreading to the surrounding public area. A fine spray of the amended water shall be applied in small sections to reduce fiber release preceding the removal of the asbestos-containing material. Spray the asbestos-containing material repeatedly during the removal operations to maintain a wet condition and to minimize asbestos fiber dispersion. The Qualified Consultant shall have the authority to stop all work due to improper removal techniques.

    c. The asbestos-containing material shall be removed in small sections. Before beginning the next section, the material shall be packed while still moist into sealable 6-mil double polyethylene bags and sealed airtight. No removed material, whether bagged or unbagged, shall be allowed to dry, fall to the ground, be crumbled into small pieces, pulverized, or made friable.

d. It shall be the responsibility of the Hazardous Material Subcontractor to verify the thickness of the material and satisfy himself as to the total work and/or effort to remove said material. No additional payment will be considered by the Owner for any deviation of the actual thickness from the thickness noted on the drawings.

e. The Subcontractor is prohibited from using methods of removal that create excessive amounts of dust and debris.

20. **EQUIPMENT CLEANING**

All contaminated equipment and tools used for removal work shall be washed and cleaned in the work area prior to removing them from the work area. No washing of contaminated equipment and tools will be allowed outside the work area.

21. **ASBESTOS-CONTAINING WASTE HANDLING**

a. Collect and bag all asbestos debris and any other contaminated debris found in the work area. Clean the visible residual by HEPA vacuuming.

b. Clean fixed object within the work area, using HEPA vacuum equipment. Fixed objects shall include, but not be limited to, pipes, wiring and all other permanently fixed items. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not use HEPA vacuum equipment on wet surfaces.

c. Debris shall be bagged and sealed in 6-mil plastic bags immediately after removal. All gross debris created by the removal process shall be bagged and sealed at the end of each removal day.

d. The bags containing the asbestos waste material shall be checked for evidence of waste material attached to the outside of the bags. If dirty, the bags shall be washed down in the work area. The bags are then moved to the holding bin. Bags and containers shall be marked with OSHA label prescribed by the Hawaii OSHA regulations referenced in this specification section. Label shall state, "DANGER – CONTAINS ASBESTOS FIBERS – AVOID CREATING DUST – CANCER AND LUNG DISEASE HAZARD". Additionally, label bags in accordance with OSHA 40 CFR 61.150; or EPA 40 CFR 763 if more restrictive. Labeling shall include the name of the waste generator and the site where the waste was generated.

e. Asbestos contaminated waste with sharp edges (e.g., nails, screws, metal lath, etc.) will tear the polyethylene bags and sheeting and therefore shall be placed in drums or enclosed with cardboard and double wrapped and sealed with plastic.

f. During the removal process, if plastic sheeting tears or the duct tape loosens from the surface, the Hazardous Material Subcontractor shall immediately stop work, clean up loose asbestos–containing materials, and then reseal the surface by taping over the torn or loosened surface, before commencing again.

g. Protect the plastic sheeting against tearing caused by sharp projection, corners, edges, etc., of all equipment being used in the removal process. However, if the plastic sheeting tears, the Hazardous Material Subcontractor shall follow repair procedure specified above.

h. Any housing or penetration concealing asbestos–containing materials shall be removed and protected to provide access to the materials. Replacement or reattachment of these shall be in a manner such that function and appearance is equal or exceeds the original condition.

22. **CLEANING AND CLEARANCE OF THE WORK AREA**

a. Visual Clearance of Removal Work Areas:

1. Remove all visible accumulation of asbestos-containing materials and debris by HEPA vacuums, sponging, and wet-wiping. The work areas shall be totally visibly clean and remaining material encapsulated. The Hazardous Material Subcontractor, in the presence of the Qualified Consultant, shall make a complete visual inspection of the work area to ensure dust-free conditions.

2. Once the Qualified Consultant certifies that the work areas are essentially clean of asbestos-containing debris the other Subcontractors may proceed with their work. The removal of signage required by the asbestos removal work shall be allowed after all asbestos-containing material designated to be removed is removed. Signage applicable to job site safety and the performance of the remaining portions of the work shall remain as applicable.

b. Completely remove all temporary barriers and materials when their use is no longer required. Clean and repair damage caused by temporary installations or use of temporary facilities.

23. **DISPOSAL OF ASBESTOS-CONTAINING MATERIAL**

a. As the work progresses and asbestos-containing waste is generated the Hazardous Material Subcontractor shall transport all waste generated on a pre-scheduled day to the State of Hawaii, Department of Health's authorized disposal site to prevent delay in the disposal operation. Transport all waste to the predesignated disposal site in accordance with EPA regulations and specific landfill requirements.

b. Contaminated material shall be double–bagged in bags with OSHA label prescribed by the HIOSH regulations referenced in these specifications. Label shall state, "DANGER – CONTAINS ASBESTOS FIBERS – AVOID CREATING DUST – CANCER AND LUNG DISEASE HAZARD". Additionally, label bags in accordance with OSHA requirement 29 CFR 1926.1101 or EPA 40 CFR 61.150 if more restrictive. Labeling shall include the name of the waste generator and the site where the waste was generated.

c. Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible. The marking must be displayed in such a manner and location that a person can easily read the legend. Refer to 40 CFR Part 61.149 for lettering size, fonts and wording of sign requirements. For all loading and unloading activities, the sign referred to in 40 CFR Part 61.150 (b) (3) shall be displayed prominently.

d. Vehicles used for transporting waste to the disposal sites shall have a completely enclosed, lockable storage compartment. Storage compartments shall be plasticized and sealed with a minimum of one layer of 6-mil polyethylene sheeting on the sides and top and 2 layers of 6-mil polyethylene on the floor (bed). Waste materials, except those with sharp edges (metal lath, screws, nails, metal suspension system, etc.), properly double bagged may be transported to the disposal site without being placed in drums if the transporting vehicle is prepared as specified above in addition to any more stringent requirements by HIOSH. The compartments shall be thoroughly wet-cleaned and/or HEPA vacuumed following the disposal of each load at the disposal sites at an approved location with electrical power as required. At the conclusion of the asbestos abatement, or before transport vehicles are

used for other purposes, the polyethylene sheeting shall be properly removed and disposed of as contaminated waste. After this has been accomplished, compartments shall once again be wet–cleaned and HEPA vacuumed in order to eliminate all debris.

e. At the landfill, upon delivery of the waste for disposal, the Hazardous Material Subcontractor shall notify the Scale Attendant and Landfill Spotter that the waste to be disposed of is asbestos material.

f. Workers unloading bags at the disposal sites shall be dressed in full body protective clothing and dual cartridge respirators.

g. Waste disposal manifest forms shall be properly completed to assure custody and disposal of all asbestos–containing material and asbestos contaminated waste at approved disposal sites.

h. NOTE: IT IS THE HAZARDOUS MATERIAL SUBCONTRACTOR'S RESPONSIBILITY TO ASSURE THAT ANY LANDFILL USED FOR DISPOSAL OF ASBESTOS–CONTAINING OR ASBESTOS CONTAMINATED WASTE IS APPROVED FOR THAT PURPOSE.

24. **TESTING AND AIR MONITORING**

a. Testing, daily area (environmental) air monitoring and final clearance inspections shall be provided by the Qualified Consultant, for the purpose of:

1. Verifying compliance with this specification section and the applicable regulations;

2. Ensuring that the documentation required by these specifications and by law is collected.

3. Instigating engineering control during the project.

b. Subcontractors Responsibilities:

1. The Hazardous Material Subcontractor shall be responsible for his employees' personnel protection, personal air monitoring and necessary records as required by OSHA (29 CFR 1926.1101) and all other applicable laws and as required in these specifications. The Subcontractor shall provide all required documentation to the Owner. The Subcontractor shall collect daily personal air samples on at least 25% of the personnel performing removal work with the most exposure for the duration of the project.

2. The Hazardous Material Subcontractor shall procure legally required reports for air monitoring as part of the contract. All air monitoring reports shall include all field data, laboratory reports, test results and other pertinent information about the daily work activities.

3. Qualified Consultant shall make available, one copy of daily area air monitoring reports for the Contractor's use. The Contractor may accept such reports as they are offered at his own risk. Availability of additional copies of the reports during the work or at any future time shall not be considered a part of the contract. The Contractor shall be responsible for his own personnel air monitoring as required by law and these specifications.

4. Air monitoring and testing which becomes necessary in order to follow up on work by the Hazardous Material Subcontractor, rejected as not conforming to the requirements shall be the responsibility of the Subcontractor. The full cost of such additional monitoring shall be borne by the Subcontractor, and shall not be a part of the final contract payment.

5. The Hazardous Material Subcontractor shall be responsible for the proper required notifications to the State of Hawaii Department of Health.

c. Qualified Consultant

1. The Qualified Consultant shall have the authority to instigate engineering controls during the project.

2. Daily area air monitoring shall be performed to detect airborne fiber concentrations in and outside the work area for the duration of the project. At least one sample will be collected inside the work area, at the entrance to the work area, and in occupied areas adjacent to the work area.

3. Air monitoring will be conducted according to the method prescribed by Section 1926.1101 (f) of the OSHA regulations, NIOSH 7400 method or approved substitute per OSHA revisions 15 August 1994. Final visual clearance inspection will be performed by the Qualified Consultant together with the Hazardous Material Subcontractor's foreman.

Asbestos Notification of Demolition & Renovation
(Ref. HAR Chapter 11-501)

SEND TO: **STATE DEPARTMENT OF HEALTH**
INDOOR AND RADIOLOGICAL HEALTH BRANCH
591 ALA MOANA BOULEVARD, 1ST FLOOR
HONOLULU, HAWAII 96813
Phone (808) 586-5800 Fax (808) 586-5811

I.	**Type of notification:** O=original R=revised C=cancelled		
II.	**Type of operation:** D=Demolition R=Renovation OD=Ordered Demolition ER=Emergency Renovation		
III.	**Facility information**		
	Owner name:		
	Address:		
	City:	State:	Zip code:
	Contact person:		Telephone #:
	Removal contractor:		License #:
	Address:		
	City:	State:	Zip code:
	Contact person:		Telephone #:
	Other operator:		
	Address:		
	City:	State:	Zip code:
	Contact person:		Telephone #:
IV.	**Is asbestos present (y/n):** Inspector's name:	Certification #:	State of certification:
V.	**Facility description (Include building number, floor and room number)**		
	Building name:		
	Address:		
	City:	State:	Zip code:
	Site location:		
	Building size (sq. ft.):	# Floors:	Age:
	Present use:	Prior use:	

Official Use Only

Postmark Date: **Received by:** **State Record Number:**

VI. Procedure used to detect the presence of asbestos Laboratory name: Analytical method			
VII. Specify the nature of the asbestos material (TSI, surfacing, VAT, miscellaneous):			
Amount of asbestos, including: 1. RACM to be removed 2. CAT I left in place, and 3. CAT II left in place	RACM to be removed	Nonfriable ACM not to be removed	
		Category I	Category II
Pipes (linear ft.)			
Surfacing (square ft.)			
Facility components (cu. ft.)			
VIII. Scheduled asbestos abatement dates Start (mm/dd/yy): Finish (mm/dd/yy) Circle workdays and times: weekdays: daytime nighttime weekends: daytime nighttime			
IX. Scheduled renovation/demolition dates Start (mm/dd/yy): Finish (mm/dd/yy) Circle workdays and times: weekdays: daytime nighttime weekends: daytime nighttime			
X. Description of the planned renovation/demolition work and methods to be used:			
XI. Description of the work practices and engineering controls to be used to prevent emissions of asbestos from the work-site: Project designer name: Certification #: State:			
XII. Waste transporter #1			
Name:			
Address:			
City:	State:	Zipcode:	
Contact Person:	Telephone:		
Waste transporter #2			
Name:			
Address:			
City:	State:	Zipcode:	
Contact Person:	Telephone:		
XIII. Waste disposal site:			
Facility Name:	Telephone:		
Address:			
City:	State:	Zipcode:	

XIV. For demolition ordered by a government agency, please identify:	
Name:	Title:
Authority (Agency):	
Date of order (mm/dd/yy):	Date ordered to begin (mm/dd/yy):
XV. For emergency renovations:	
Date and time of emergency Date (mm/dd/yy): Time: (a.m./p.m.)	
Description of sudden, unexpected event and the damage caused:	
Explanation of how the event caused an unsafe condition or would cause equipment damage or an unreasonable financial burden:	
Person contacted for approval at the Indoor and Radiological Health Branch: Name: Date (mm/dd/yy): Time: (a.m./p.m.)	
XVI. Description of procedures to be followed in the event that unexpected asbestos is found or previously nonfriable asbestos material becomes crumbled, pulverized or reduced to powder:	
XVII. I certify that an individual trained in the provisions of Hawaii administrative rules chapter 11-501, and certified as a contractor/supervisor, will be on-site during the entire renovation and/or demolition and evidence that the required training has been accomplished for this and all workers will be available at the work-site. Signature of owner/operator	Date (mm/dd/yy):
XVIII. I certify that the information on this notification is correct. Signature of owner/operator	Date (mm/dd/yy):
XIX. Additional Comments:	

VISITOR/WORKER ENTRY LOG
(Sample)

DATE: _____

PROJECT: _____

_____

ALL PERSONNEL MUST SIGN-IN AND SIGN-OUT EVERY TIME THEY ENTER/EXIT THE WORK AREA. PLEASE PRINT CLEARLY. ATTACH EMPLOYEE RELEASE FORM FOR ALL VISITORS.

NAME	EMPLOYER Name, *Address, *Phone	TIM		*PURPOSE OF VISIT	**TYPE OF PPE ISSUED

*NOT required of Hazard Material Subcontractor's employees.

**Type of PPE (Personal Protective Equipment) Issued to include list of protective clothing worn and type of respirator used (Type "C", half-face dual cartridge, etc.

Employee Release Form
(Sample)

Employee Name:

_____

Employee Address:

_____

Employee Telephone No.:

_____

Name of Training Center, Certificate Number and Expiration Date:

_____

Classification of Worker:

_____

Have you had in the past or present, any respiratory problems?

Yes _____ No _____

Have you worked in the past with asbestos or fiberglass type materials?

Yes _____ No _____

The project you will be working on involves the use of asbestos and the removal of the asbestos from the building. Asbestos is considered a health hazard.

The company is supplying all necessary safety clothing and working conditions required and necessary for your protection from asbestos hazard.

You shall be instructed at the commencement of the job on the required use of safety equipment, clothing, working conditions, and procedures. These must be rigidly adhered to. Smoking is not permitted in the work areas. Disregarding of safety instructions shall result in instant dismissal.

I acknowledge that safety instructions have been given to me by the company at my work commencement and I am thoroughly conversant with them and I have answered the above questions truthfully.

Signed (Employee) Date

_____ _____

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME: _____ DATE: _____

PROJECT ADDRESS: _____

_____

CONTRACTORS NAME: _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project. you must be given a copy of the written respiratory protection manual issued but your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: You must have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course must have included the following:
Physical characteristics of asbestos
Health hazards associated with asbestos
Respiratory protection
Use of protective equipment
Pressure Differential Systems
Work practices including hand on or on-job training
Personal decontamination procedures
Air monitoring, personal and area

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

By signing this document, you are acknowledging only that the Owner of the building you are about to work in has advised you of your rights to training and protection relative to your employer, the Contractor.

Signature _____ Social Security Number _____

Printed Name _____ Witness _____

ASBESTOS DISPOSAL FORM
(Sample)

Date: _____

Owner or Operator of Landfill: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Name of Landfill: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Hauler: _____

Approximate Volume of Asbestos Received: _____

Type of Container Asbestos in: _____

Asbestos Container Labeled? YES ____ NO _____

I certify that the above statements are true and that the landfill has been approved for the disposal of asbestos. The delivered material will be covered within 6 inches (15 cm.) of non-asbestos material within 24 hours.

Signed: _____
Landfill Owner-Operator

END OF SECTION

AIR CONDITIONING SYSTEMS (CONT'D):

17. CLEANING AND ADJUSTING: INSIDE OF EQUIPMENT, DUCTS, AND CASING SHALL BE THOROUGHLY CLEANED OF DEBRIS AND BLOWN FREE OF SMALL PARTICLES OF RUBBISH AND DUST AND THEN SHALL BE VACUUM CLEANED BEFORE INSTALLING OUTLET FACES. EQUIPMENT SHALL BE WIPED CLEAN, WITH TRACES OF OIL, DUST, DIRT, OR PAINT SPOTS REMOVED. SYSTEM SHALL BE MAINTAINED IN THIS CLEAN CONDITION UNTIL FINAL ACCEPTANCE. BEARINGS SHALL BE PROPERLY LUBRICATED WITH OIL OR GREASE AS RECOMMENDED BY THE MANUFACTURER. BELTS SHALL BE TIGHTENED TO PROPER TENSION. CONTROL VALVES AND OTHER MISCELLANEOUS EQUIPMENT REQUIRING ADJUSTMENT SHALL BE ADJUSTED TO SETTING INDICATED OR DIRECTED. FANS SHALL BE ADJUSTED TO THE SPEED INDICATED BY THE MANUFACTURER TO MEET SPECIFIED CONDITIONS.

18. EXISTING ACCU:

    A. REMOVE ACCU INDICATED ON MECHANICAL DEMO PLAN FOR RELOCATION. FOLLOW ACCU MANUFACTURER'S RECOMMENDATIONS FOR REMOVAL.

    B. CLEAN AND STORE ACCU. ACCU SHALL BE STORED IN AN APPROPRIATE LOCATION TO PREVENT IT FROM BEING DAMAGED.

    C. REINSTALL ACCU TO LOCATION INDICATED ON NEW MECHANICAL PLAN. FOLLOW ACCU MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION. RECONNECT TO VRF PIPING, MODIFY AND PROVIDE NEW REFRIGERANT PIPING AS NEEDED FOR NEW LOCATION.

    D. RETEST REINSTALLED ACCU TO ENSURE PROPER OPERATION AND TEST FOR REFRIGERANT LEAKS. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR TESTING.

19. BALANCING AND TESTING OF MECHANICAL SYSTEM: AT THE COMPLETION OF THE INSTALLATION WORK, THE AIR CONDITIONING AND VENTILATION SYSTEMS SHALL BE ADJUSTED, BALANCED AND TESTED.

20. TEST AND BALANCE REPORT: UPON COMPLETION OF ALL BALANCING WORK, THE CONTRACTOR SHALL SUBMIT FOUR (4) COPIES OF A TEST AND BALANCING REPORT WHICH SHALL INCLUDE ALL DATA SPECIFIED HEREIN.

    A. AIR SYSTEM DATA
    HIGH OUTSIDE AIR SYSTEM, EXHAUST FAN
    INSTALLATION DATA:
    - MANUFACTURER AND MODEL
    - SIZE
    - MOTOR H.P., VOLTAGE, PHASE, CYCLES AND FULL LOAD AMPS

    DESIGN DATA: DATA LISTED IN SCHEDULES ON DRAWINGS AND SPECIFICATIONS.

    RECORDED DATA:
    - AIR QUANTITIES, CFM
    - STATIC PRESSURE, INCHES WATER GAGE
    - R.P.M.
    - MOTOR OPERATING AMPS
    - ENTERING AND LEAVING AIR CONDITIONS, °F (DB AND WB)
    - VFD INITIAL SETPOINT

    DUCT SYSTEMS:
    DUCT AIR QUANTITIES - MAIN, SUBMAINS, BRANCHES, OUTDOOR AIR, TOTAL AIR, AND RETURN AIR:
    - DUCT SIZES
    - AVERAGE VELOCITY, FPM
    - RECORDED AIR QUANTITIES, CFM
    - DESIGN AIR QUANTITIES, CFM

    INDIVIDUAL AIR TERMINALS:
    - TERMINAL IDENTIFICATION (SUPPLY, RETURN OR EXHAUST, LOCATION AND NUMBER DESIGNATION)
    - DESIGN AND RECORDED AIRFLOW QUANTITIES - CFM
    - APPLICABLE FACTOR FOR APPLICATION, VELOCITY, AREA, ETC.
    - DESIGN AND RECORDED VELOCITIES - FPM (STATE "CORE", "INLET", ETC., AS APPLICABLE)

    ELECTRICAL REHEAT COIL:
    - RECORDED AIR QUANTITIES, CFM
    - DESIGN AIR QUANTITIES, CFM

    SUPPLY AND RETURN AIR VALVE:
    - RECORDED AIR QUANTITIES, CFM
    - DESIGN AIR QUANTITIES, CFM

FIRE PROTECTION SYSTEMS

1. THE HE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH THE EXISTING FIRE SPRINKLER LAYOUT AND PIPE SIZE.
2. FIRE SPRINKLERS

    A. TYCO CONCEALED OR APPROVED EQUIVALENT.

    B. SPRINKLER HEADS SHALL BE ORDINARY HAZARD GROUP 1 CLASSIFICATION AND SHALL BE OF CONCEALED PENDENT WITH WHITE COVER PLATE

2. PIPING AND FITTINGS

    A. PROVIDE FIRE SPRINKLER PIPING AND FITTINGS IN ACCORDANCE WITH NFPA 13. PIPE MATERIAL SHALL MATCH EXISTING.

    B. FITTINGS INTO WHICH SPRINKLER HEADS, SPRINKLER HEAD RISERS NIPPLES, THREADED, OR GROOVED-END TYPE. USE OF PLAIN-END FITTINGS WITH MECHANICAL COUPLING WHICH UTILIZE STEEL GRIPPING DEVICES TO BITE INTO PIPE WHEN PRESSURE IS APPLIED WILL NOT BE PERMITTED. FITTINGS MUST BE UL LISTED OR FM APPROVED FOR USE IN SPRINKLER SYSTEM.

3. PIPE HANGERS AND SUPPORTS: PROVIDE IN ACCORDANCE WITH NFPA 13. PROVIDE RETAINING STRAPS ON BEAM CLAMPS. PROVIDE BRANCH LINE SEISMIC RESTRAINT.

PLUMBING

1. DOMESTIC WATER PIPING:

    A. UNDERGROUND PIPES SHALL BE TYPE "K" SEAMLESS RIGID COPPER TUBING CONFORMING TO ASTM B88 WITH WROUGHT COPPER SOLDER TYPE FITTINGS CONFORMING TO ANSI B16.22 OR ANSI B16.18. JOINTS SHALL BE BRAZED WITH SILVER ALLOY FILLER METAL.

    B. ABOVE GROUND PIPING SHALL BE TYPE "L" SEAMLESS RIGID COPPER TUBING CONFORMING TO ASTM B88 WITH WROUGHT COPPER OR CAST COPPER ALLOY SOLDER TYPE FITTINGS CONFORMING TO ANSI B16.22 OR ANSI B16.18. SOLDER SHALL BE 95-5 TIN-ANTIMONY LEAD FREE.

    C. T-DRILL JOINTS AND PROPRESS AND/OR PRESS TYPE FITTINGS ARE NOT ALLOWED.

2. SOIL, WASTE, AND VENT PIPING:

    A. SOLID CORE SCHEDULE 40 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS CONFORMING TO ASTM D 1785 AND ASTM D 2665 JOINED WITH SOLVENT CEMENT CONFORMING TO ASTM D 2564 FOR ALL INSTALLATION. PROVIDE HANGERS EVERY 4 FT FOR PVC PIPING.

    B. AT THE CONTRACTOR'S OPTION, VENT PIPING 2-1/2 INCH SIZE AND SMALLER MAY BE DWV COPPER PIPE MADE UP WITH DWV DRAINAGE FITTINGS AND 50-50 JOLDER JOINTS IN LIEU OF THOSE SPECIFIED FOR ABOVE GROUND INSTALLATION.

3. FIXTURES: PROVIDE CHROME PLATED ANGLE STOPS, SUPPLY RISER, CHROME PLATED P-TRAPS, ESCUTCHEONS AND COVER PLATES. ALL PIPING OUTSIDE OF THE WALL SHALL BE CHROME PLATED. PROVIDE CONNECTING FITTINGS, BRAIDED SUPPLY LINES, CHINA BOLT CAPS, WALL SUPPORT BRACKETS AS REQUIRED. FURNISH MASONRY AND CONCRETE CONTRACTOR WITH WALL SLEEVES AND INSERTS REQUIRED FOR FIXTURE INSTALLATION. PROVIDE WATER FLOW RESTRICTORS FOR ALL LAVATORIES.

    A. SCRUB SINK (SK-3):
    ELKAY MODEL EWSF13026SACC, WALL HUNG SINGLE BOWL SURGEON SCRUB SINK, STAINLESS STEEL WITH A BUFFED SATIN FINISH, REAR CENTER DRAIN.
    SPEAKMAN FAUCET MODEL SEF-18207-8. 1.5 GPM FAUCET, INTEGRATED SENSOR EYEWASH WITH 8 INCH SPOUT.
    BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS.
    CS&B NO. 19GJ OR FROST NO. 4008GJ 1-1/4" X 1-1/2" CHROME PLATED 17 GAUGE TUBULAR TRAP.

    B. SINK (SK-1)
    ELKAY LUSTERTONE MODEL ELUHAD141455, UNDERMOUNT, STAINLESS STEEL SINGLE BOWL, ADA SINK, REAR CENTER DRAIN.
    T&S BRASS AND BRONZE WORKS MODEL B-2741, 0.5 GPM FAUCET WITH 5-3/4" SWIVEL GOOSENECK, AERATOR.
    BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS.
    CS&B NO. 19GJ OR FROST NO. 4008GJ 1-1/4" X 1-1/2" CHROME PLATED 17 GAUGE TUBULAR TRAP.

    C. SINK (SK-2)
    AMERICAN STANDARD MODEL MURRO UNIVERSAL DESIGN, WALL HUNG LAVATORY WITH EVERCLEAN, ACRYLIC SHROUD CONTACT GUARD 0062.00
    CHICAGO FAUCET FOOT OPERATED MODEL 834-EPABCP WITH DOUBLE LONG PEDALS, POLISHED CHROME FINISH.
    T&S BRASS AND BRONZE WORKS MODEL B-2741, 0.5 GPM FAUCET WITH 5-3/4" SWIVEL GOOSENECK, AERATOR.
    BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS.
    PROVIDE SINK CARRIER WITH CONCEALED ARMS, LEVELING AND SECURITY SCREWS, EXTRA HEAVY STEEL UPRIGHTS WITH
    BLOCK BASES OR CANTILEVER WEB FEET SECURELY ANCHORED TO FLOOR TO SUIT INSTALLATION.

    D. LAVATORY
    AMERICAN STANDARD MODEL MURRO UNIVERSAL DESIGN, WALL HUNG LAVATORY WITH EVERCLEAN, ACRYLIC SHROUD CONTACT GUARD 0062.000
    T&S BRASS AND BRONZE WORKS MODEL B-2741, 0.5 GPM FAUCET WITH 5-3/4" SWIVEL GOOSENECK, AERATOR.
    BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS.
    CS&B NO. 19GJ OR FROST NO. 4008GJ 1-1/4" X 1-1/2" CHROME PLATED 17 GAUGE TUBULAR TRAP.
    SMITH FIG. 700 M31, EXTRA HEAVY DUTY LAVATORY CARRIER WITH CONCEALED ARMS, LEVELING AND SECURITY SCREWS, EXTRA HEAVY STEEL UPRIGHTS WITH
    BLOCK BASES OR CANTILEVER WEB FEET SECURELY ANCHORED TO FLOOR TO SUIT INSTALLATION.

    E. WATER CLOSET
    KOHLER HIGHCLIFF ULTRA MODEL K-96057 WATER CLOSET, FLOOR MOUNTED FLOOR OUT, FLUSH VALVE, ELONGATED BOWL, VITREOUS CHINA, 1-1/2" TOP SPUD.
    PROVIDE WHITE PLASTIC OPEN FRONT SEAT.
    SLOAN MODEL ROYAL BPW 1150-1.28, MANUAL WATER CLOSET BEDPAN WASHER FLUSHOMETER FOR WC-1 AND WC-1A.
    SLOAN MODEL 111, 1.28 GPF MANUAL FLUSHOMETER FOR WC-2A

    F. SERVICE SINK
    KOHLER BANNON MODEL K-6714, 22-1/4" WALL MOUNT SERVICE SINK, RECTANGULAR BASIN WITHOUT OVERFLOW, ENAMELED CAST IRON, STAINLESS STEEL RIM GUARD AND PROVIDE MOUNTED TRAP. KOHLER FAUCET MODEL K-13625 WITH 7" SWING SPOUT THREADED HOSE CONNECTION, VACUUM BREAKER, POLISHED CHROME FINISH.

    G. SHOWER AND ADA SHOWER:
    SHOWER AND ADA SHOWER SHALL BE LIGATURE RESISTANT, STAINLESS STEEL PANEL WITH POWDER COATING, CONICAL SHOWER HEAD, CHROME PLATED ADA COMPLIANT LIGATURE RESISTANCE HANDLE, FURNISH WITH VANDAL RESISTANT FASTENERS, SHOWER ASSEMBLY WITH 60 INCH DOUBLE SPIRAL METAL HOSE, 24 INCH SLIDE BAR, ADA ADJUSTABLE SLIDE, VACUUM BREAKER, AND WALL SUPPLY ELBOW.

4. VALVES: BALL VALVES; CRANE 930-TF OR APPROVED EQUIVALENT.

5. MIXING VALVE: MIXING VALVE SHALL FEATURE PARAFFIN-BASED, THERMAL ACTUATION TECHNOLOGY FOR PRECISE TEMPERATURE CONTROL. VALVE SHALL BE LISTED TO ASSE 1017 AND CUPC AND SHALL BE APPROVED TO ASSE 1017 & CSA B125.3 STANDARDS. MIXING VALVE SHALL HAVE AN APPROACH TEMPERATURE OF 5°F (3°C). VALVE SHALL HAVE AN OUTLET TEMPERATURE RANGE FROM 90 - 180°F WITH A LOCKABLE TEMPERATURE SETTING FEATURE. VALVE SHALL HAVE A LEAD FREE BRASS BODY AND FEATURE A SINGLE-SEAT DESIGN FOR POSITIVE SHUTOFF. MIXING VALVE SHALL BE OF WATTS SERIES LFN170-M3 OR APPROVED EQUIVALENT.

6. PLUMBING CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO INSURE THAT THE GENERAL CONTRACTOR IS AWARE OF ANY REQUIREMENTS FOR PATCHING/RESTORATION WORK WHICH AFFECT THE GENERAL CONTRACTOR'S WORK RESULTING FROM THE MECHANICAL WORK, PRIOR TO SUBMISSION OF BID PRICES. OMISSION OF WORK/COST DUE TO LACK OF COORDINATION WILL NOT BE ACCEPTABLE AS A BASIS FOR ADDITIONAL COST TO THE OWNER.

7. INSTALLATION AND REQUIREMENTS: PERFORM WORK USING PERSONNEL SKILLED IN THE TRADE INVOLVED. PROVIDE COMPETENT SUPERVISION. FURNISH NEW EQUIPMENT, FIXTURES,MATERIALS AND ACCESSORIES BEARING THE MANUFACTURER'S IDENTIFICATION AND CONFORMING TO RECOGNIZED COMMERCIAL STANDARDS. PROVIDE ACCESS PANELS FOR CONCEALED ITEMS PROVIDED UNDER THIS SECTION THAT REQUIRE MAINTENANCE, ADJUSTMENT OR INSPECTION. PROVIDE ALL EXTRA MATERIALS AND LABOR FOR A COMPLETE OPERABLE SYSTEM AT NO EXTRA COST TO THE OWNER.

8. PIPING INSTALLATION: CONFORM TO THE REQUIREMENTS OF THE UNIFORM PLUMBING CODE. TOOL MARKINGS ON POLISHED FITTINGS ARE NOT ACCEPTABLE. INSTALL PIPES PARALLEL TO THE WALL OF THE STRUCTURE AND PLUMB. INSTALL VALVES WITH STEMS ABOVE HORIZONTAL. PROVIDE PROPER SUPPORT AND ADEQUATE PROVISIONS FOR EXPANSION, CONTRACTION, SLOPE AND ANCHORAGE. PROVIDE DIELECTRIC UNIONS WHERE COPPER TUBING CONNECTS TO STEEL PIPE. WRAP PIPE OR TUBING WITH 1/4-INCH THICK FELT, SECURED WITH TAPE, WHERE THEY CONTACT OTHER MATERIALS. CAULK WATERTIGHT AROUND PIPES PASSING THROUGH FLOOR PENETRATION. WRAP PIPE WITH POLYETHYLENE TAPE WHERE IT PASSES THROUGH FLOOR PENETRATION AND WHEN IT CONTACTS CONCRETE OR MASONRY. GROUT WITH FIRE PROOF MATERIAL AROUND ALL PIPE PENETRATIONS THROUGH SLABS AND WALLS FULL LENGTH OF PENETRATIONS. PROVIDE CHROME PLATED BRASS ESCUTCHEONS, SET TIGHT ON THE PIPE AND TO THE WALL WHERE PIPES ARE EXPOSED IN FINISHED AREAS. PROVIDE CLAMPING COLLAR OR MEMBRANE FLANGE WHERE PIPE OR DRAINS PENETRATE WATERPROOF MEMBRANE.

9. PAINTING: ALL EXPOSED PIPING SYSTEMS INCLUDING, BUT NOT LIMITED TO PIPES FITTINGS, VALVES, INSULATION AND SUPPORTS SHALL BE PAINTED IN ACCORDANCE WITH PAINTING SECTION. COLOR SHALL BE SELECTED BY THE ARCHITECT.

10. FIELD QUALITY CONTROL: TEST PLUMBING SYSTEMS IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE. PERFORM TESTS IN THE PRESENCE OF, AND TO THE SATISFACTION OF INSPECTORS HAVING JURISDICTION OVER THE WORK. ASK FOR FINAL-INSPECTION BY THE ENGINEER AFTER ALL TESTS, ADJUSTMENTS AND BALANCING HAVE BEEN PERFORMED.

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SHEET TITLE MECHANICAL SPECIFICATION

NICHOLAS J. ALLOA
LICENSED PROFESSIONAL ENGINEER
No. 10018-M
HAWAII, U.S.A.

LICENSE EXPIRE: 4/30/24

This work was prepared by me or under my supervision and construction of this project will be under my observation (observation of construction as defined in Section 16-115 of the Hawaii Administrative Rules, Department of Commerce and Consumer Affairs entitled Professional Engineers, Architects and Surveyors of the State of Hawaii.

SIGNATURE

NOTE:
Contractor to check and verify all dimensions at job before proceeding with work.

NO.	REVISION
JOB NO.	–

SHEET M7.2

DATE January 31, 2024

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