ORDER

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

6700.17

30 Sep 1971

SUBJ: REHABILITATION CRITERIA - NAVIGATIONAL AIDS FACILITIES ACQUIRED FROM NON-FEDERAL OR OTHER FEDERAL SOURCES

1. PURPOSE. This order provides general criteria and guidance for rehabilitation and modification of FAA owned navigational aids facilities acquired from non-Federal or other Federal sources.

2. DISTRIBUTION. Washington headquarters Systems Maintenance, Facility Installation, Flight Standards, Air Traffic Services to division level; Aeronautical Center to division level; regional airway facilities to branch level; all airway facilities sectors (minimum).

3. CANCELLATION. Order IM 6700.1B, Non-Federal Navigational Facilities, Modification Policy, dated 3/4/64, is cancelled.

4. BACKGROUND. Over a period of years the FAA has assumed ownership, operation and maintenance of a number of navigational aids facilities of various design configurations from various sources (non-Federal, military, etc.). In many cases these facilities, upon takeover, did not incorporate all of the desirable features of standard FAA facilities. As a result, program requests have been submitted for rehabilitation of these facilities, which, in the absence of specific guidelines, have ranged from minor additions to major equipment replacements and new construction at correspondingly large differences in cost. This order defines the areas in which improvements may be authorized subject to submission and approval of estimates through the budget process. (Note: This order is not intended to establish the criteria under which the FAA may assume ownership of a facility, as this is the subject of a separate order for the case of non-Federal facilities; but merely to cover FAA acquired and operating facilities regardless of the source or circumstances of acquisition).

5. CRITERIA. Rehabilitation/modification of acquired facilities may be authorized for the following:

   a. To facilitate the accomplishment of the maintenance performance checks in accordance with the current SM maintenance handbook for the particular type of facility.

Distribution: WFI/SM/FS/AT-2;AC-2;RAF-3;FAF-2 (minimum) **Initiated By:** ~~FI-210~~ AOP-400

b. To provide compliance with FAA personnel safety standards.

c. To provide compliance with FAA equipment and personnel-working environment standards.

d. To provide compliance with the FAA requirements for facility accessibility, including all-weather roads.

e. To assure logistic support and interchangeability.

f. To accomplish authorized equipment modifications. (In the case of non-FAA type equipments, SM shall determine the extent to which modifications developed and issued by others may be implemented.)

g. To provide test and working equipment in accordance with current allowances.

h. To provide facility reliability, maintainability, system integrity, and productivity equivalent to that of standard FAA facilities.

6. FUNDING. Rehabilitation projects for navigational aids will generally be accomplished under the facilities and equipment program. Project submissions in response to the Facilities and Equipment Call for Estimates shall include cost estimates and detailed justification. This supporting justification shall consist of a complete description of existing conditions and citation of criteria or guidelines in this order which are applicable. The submission shall include an analysis of alternative courses of action when the scope or cost of the proposed project is significant. The procurement of supplies or equipment of a minor nature and minor improvements which can be accomplished by maintenance personnel may be eligible for funding under the operations program. Order 2500.8 provides guidelines for uniformly determining which appropriation shall be used to finance expenditures of various types.

7. FACILITY FEATURES. The following guidance is provided to help determine the extent of allowable improvements:

a. Plant Structure & Utilities.

(1) Enlargements. Every effort should be made to avoid enlarging equipment shelters.

(2) Insulation. Insulation of all shelters is recommended.

(3) Ventilation. Adequate ventilation of equipment and shelters should be provided at all locations. Disposable fiberglas filter elements for the intake fan housing should be substituted for original type filter, if possible.

(4) Lighting. Rearrangement, replacement and/or the addition of lights may be required to provide adequate lighting. Fluorescent lighting is recommended.

(5) Temperature Control. Room thermostats and outlet boxes should be installed if temperature control equipment is required to maintain FAA equipment ventilation and personnel-working environment standards.

(6) Electric Power.

(a) The incoming commercial power installation shall conform to N.F.P.A. No. 70 National Electrical Code (N.E.C.) as required in Specification FAA-C-1217c, Electrical Work, Interior.

(b) If an additional branch circuit(s) is required to accommodate the space heater, ventilation, lighting, etc., and no spare circuit breakers exist, a separate circuit breaker box shall be installed and connected to the main circuit breaker.

(c) A pellet type lighting arrester should be installed on the main circuit breaker box in accordance with N.E.C. requirements.

(7) Storage. Some facilities have very little space for storage cabinets or even storage shelves. Where this is the case, only the bare essentials should be kept at the facility with the lesser needed items stored at another facility. Any size or shape storage cabinet or shelf may be installed provided safety precautions are taken and passageways are not blocked; e.g., wall shelves below 6'3" along a passageway are considered dangerous.

(8) Floors. Concrete floors should be tiled.

(9) Roads. "All-weather" roads should be provided at all locations, where feasible. Facilities on airports shall have the access road paved for the first 300 feet adjoining a runway and taxiway. (See Order 6940.1, Access Roads to FAA Owned and Operated Facilities.)

(10) Telephone Service. FAA owned or leased lines shall be upgraded, if necessary, to meet current FAA standards.

(11) Ground Check Capability (VOR). Ground check capability shall be provided at all VOR facilities. Normally, counterpoise enlargement is not authorized. Standard FAA

positioner brackets installed on posts are to be used. Exceptions are facilities unable to obtain accurate repeatable ground check data and the cost of certification by flight inspection can be amortized over a reasonable amount of time. Supporting data and detailed cost analyses of requirements shall accompany the estimate required by paragraph 6.

b. Electronic Equipment.

(1) General. Replacement of individual equipment units with FAA type equipment is authorized if required to comply with the requirements specified in paragraph 5.

(2) R.F. Wattmeter Bodies. R.F. wattmeter bodies (thru-line) may be installed as required to facilitate accurate output power and VSWR measurements.

(3) Line Phasers. Line phasers (STAR #6020/6021 or equal) should be installed on all positioners and stubs to provide the means for making fine adjustments and insuring minimum VSWR.

c. Specific Type Facilities. Guidance for the Wilcox VOR, Types 482 & 476A, for which supplementary information is available, is contained in Appendix 1. Changes to this order will be issued to add more detailed information for other type facilities, as required.

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WILCOX VOR (Models 482 & 476A)

1. PLANT, STRUCTURE AND UTILITIES.

a. Insulation. Masonite (1/8") fastened to 2" x 2" wood strips with fiberglas insulation between the masonite and metal walls should be used. The masonite can also be fastened to the metal roof stiffeners for ceiling insulation.

b. Ventilation. The existing building ventilation system is generally satisfactory. However, the gravity ventilation of the antenna dome may not be satisfactory, except in the drier climates. A vent should be provided at the top of the dome at all locations where the present system is generally satisfactory. It may take the form of an inverted "J" pipe with a screen on the outside end. All parts shall be nonmetallic. At locations where humidity is high or temperature instability is encountered a forced air ventilation system, as shown in Figure 1, is recommended.

If the forced air system is used, the dome should not have any other air vents.

c. Lighting and Storage. Figure 2 depicts the recommended lighting arrangement, and also shows the location of some storage shelves, which provides maximum clear floor area. This is the preferred plan, even though it leaves only one passageway to the back of the racks.

2. ELECTRONIC EQUIPMENT.

a. Equipment Configuration.

(1) If dual equipment is installed, the number two transmitter and associated units should be removed to gain floor space. The remaining transmitter rack and monitor rack should be realigned as shown on Figure 2 and the antenna changeover relay box removed. (Equipment removed should be excessed in accordance with current procedures.)

(2) A 42-inch rack for the Tone Control/LRCO equipment shall be placed as shown on Figure 2. The short rack is necessary so as not to obstruct air flow from the building ventilator.

(3) The voltage regulator should be removed from its case and mounted in the bottom of the monitor rack to conserve floor space. However, an alternative location for the regulator (in its case) is in front of the pedestal between the transmitter and monitor racks.

b. Remote Monitor/Control. Tone control or DC direct system shall be implemented.

c. Phaser. A carrier phaser shall be installed at a location that is convenient for maintenance purposes. The recommended location is on the side of the transmitter rack adjacent to the center column.

d. RF Wattmeter Bodies. RF bodies shall be installed in the carrier and sideband feedlines. Location shall be as convenient as practical; the recommended arrangement is shown on Figure 3.

e. Adustable Stubs. The means for adjusting SB feedline VSWR in the equipment room shall be provided as described below:

(1) If fixed stubs are in use, remove stubs and TEE's and substitute straight through adapters.

(2) If adjustable capacitors are in use, set them to minimum capacity.

(3) Fabricate new variable stubs and mount them on the center column as shown on Figure 3.

(4) Cut feedlines at a point that will, when plugged into the new stubs, cause the center of the new stubs to be 360° from the center of the former stub TEE's. Adjust stubs for lowest reverse power.

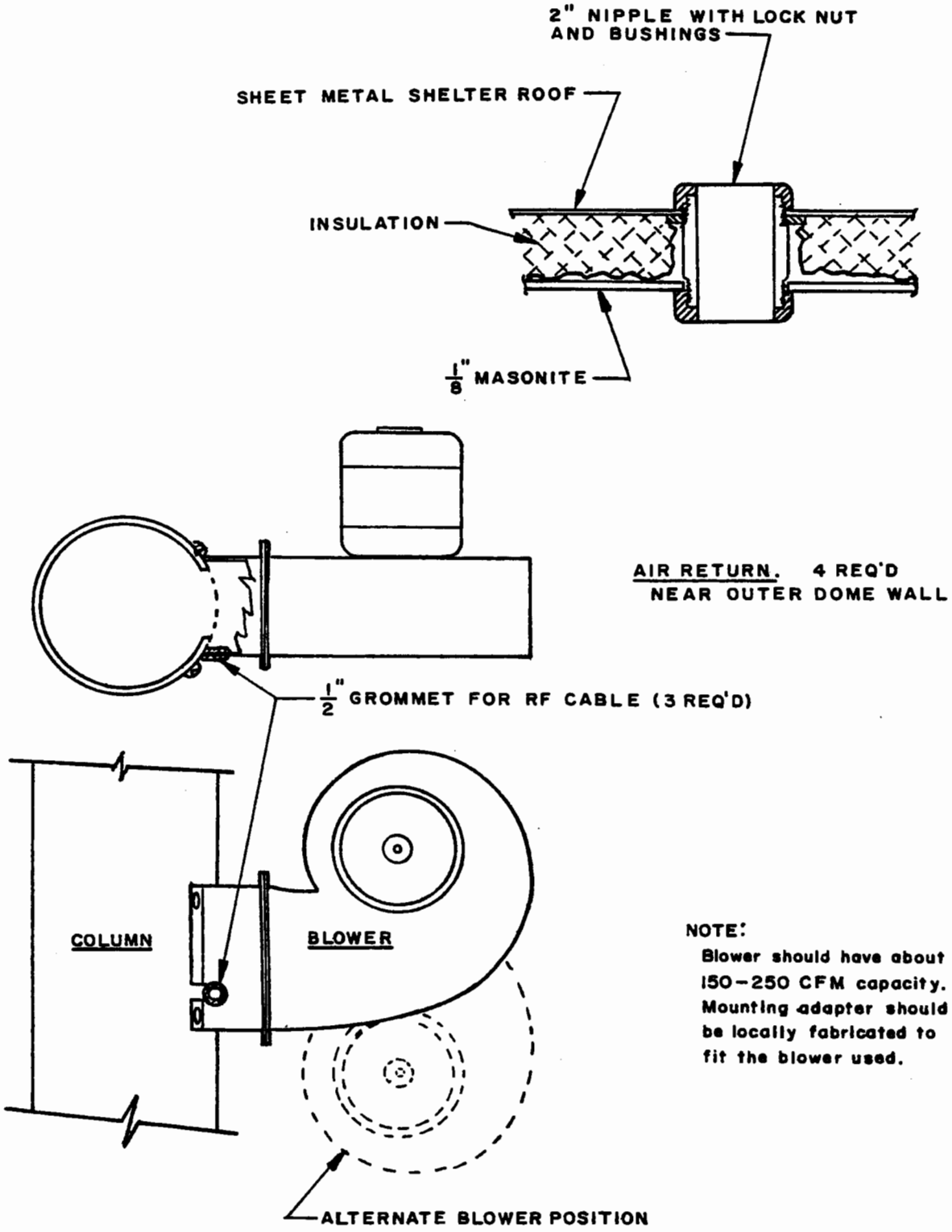

Figure 1 Forced Air Ventilation System for Antenna Dome

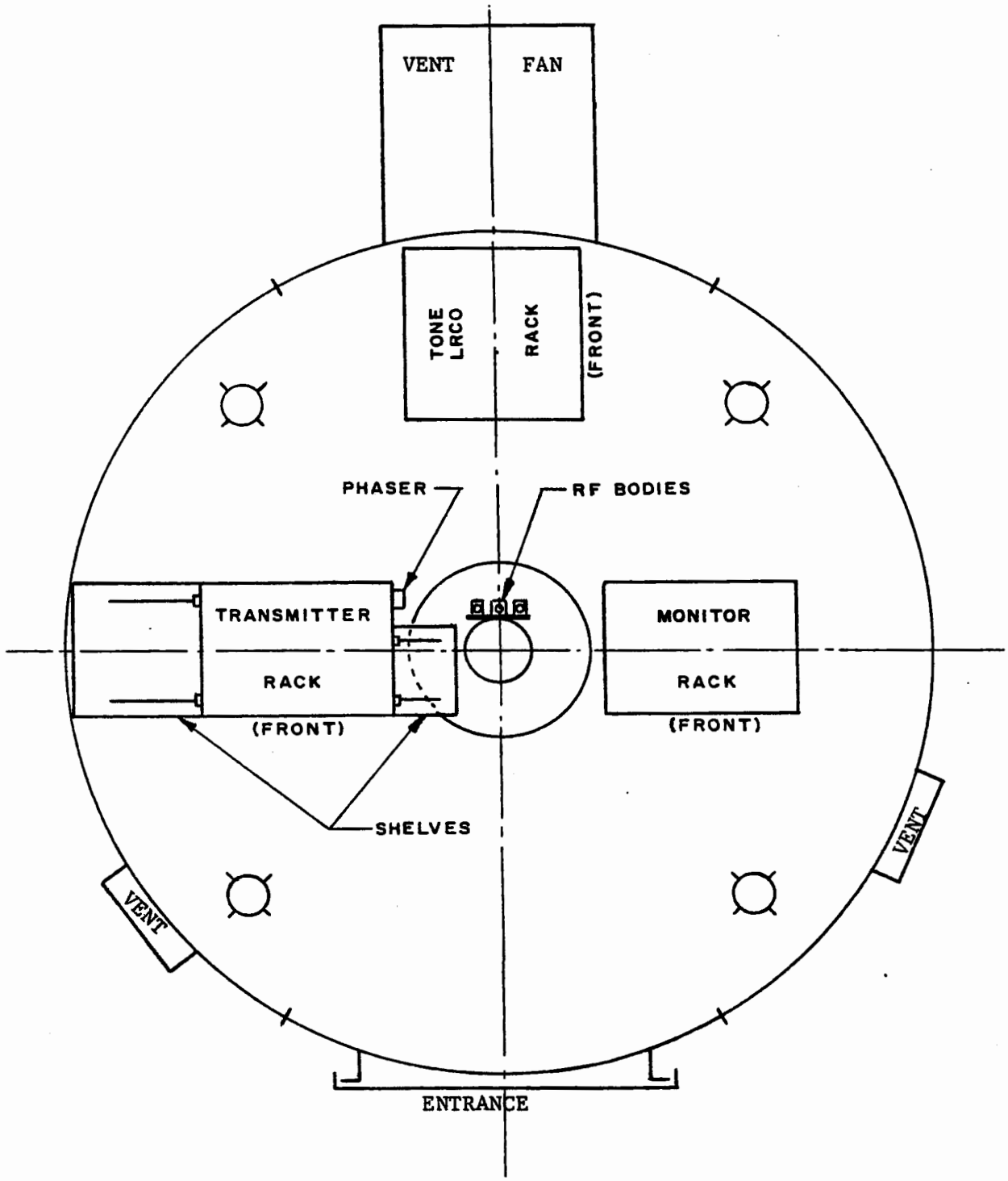

Figure 2 Single Wilcox 482 VOR Recommended Arrangement

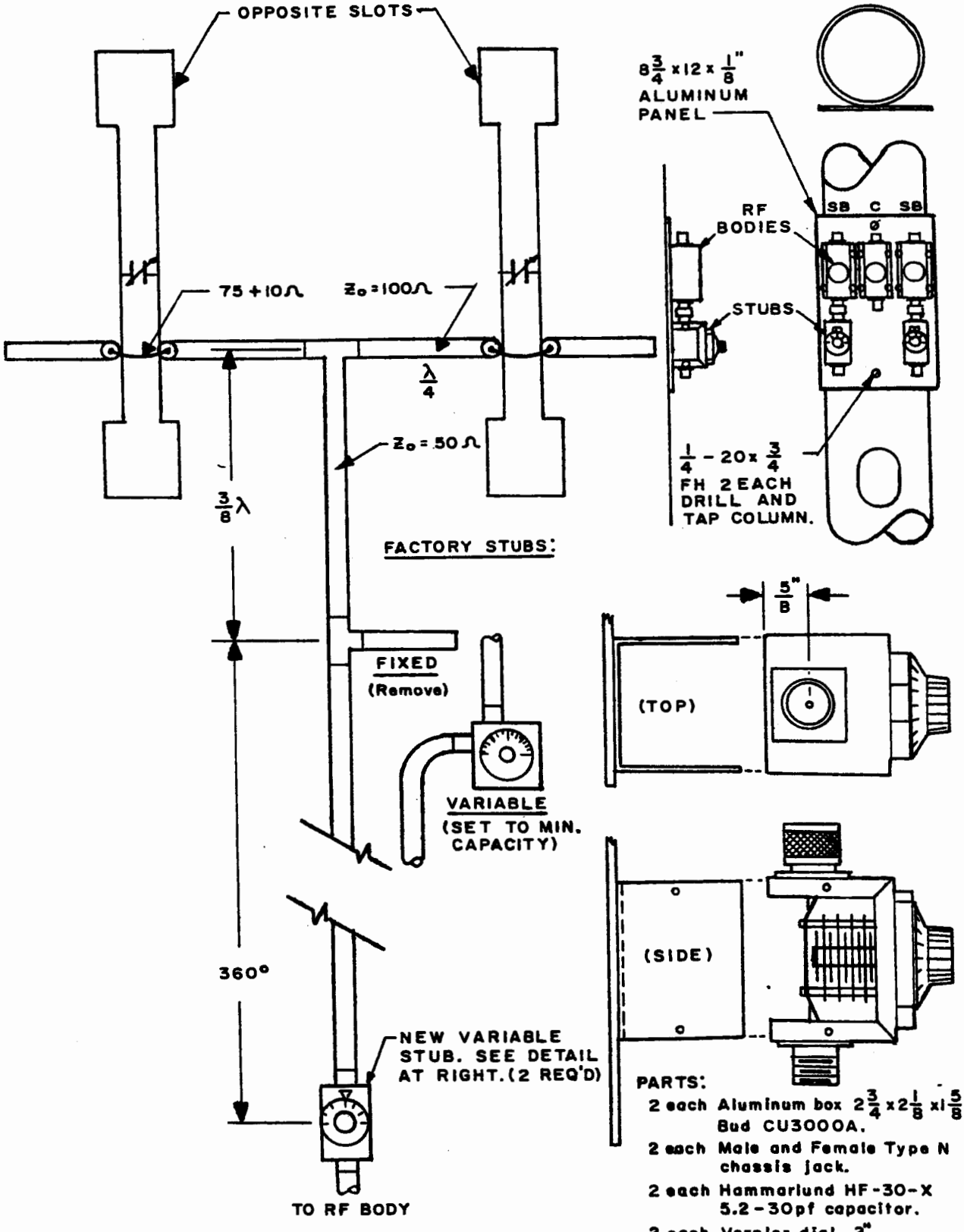

Figure 3 SB Feedline Stub Extension

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