



FAA-C-2255
July 7, 1966

FEDERAL AVIATION AGENCY SPECIFICATION

BUILDING, REMOTE TRANSMITTER/RECEIVER FACILITY. MASONRY CONSTRUCTION

1. SCOPE

1.1 Scope.- This specification covers the requirements for the construction of a masonry remote transmitter/receiver facility building to include the installation of electrical and mechanical equipment, as required.

2. APPLICABLE DOCUMENTS

2.1 FAA documents.- The following FAA specifications, standard, and drawings, of the issues specified in the invitation for bids or request for proposals, form a part of this specification and are applicable to the extent specified herein.

2.1.1 FAA specifications

FAA-C-1217	Electrical Work, Interior
FAA-1391	Installation and Splicing of Underground Cable
FAA-C-2153	Installation of Sanitary System - Gas Incinerator Type
FAA- C-2256	Temperature and Humidity Control Equipment

2.1.2 FAA standard

FAA-STD-003	Paint Systems for Structures
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2.1.3 FAA drawings

C-3871-1, C-3871-2	Sectional Battery Rack for Engine-Generator
D-562	515 Gallon Fuel Storage Tank

D-2111-1	Fuel Tank Installation
D-5819-1 through D-5819-6	Remote Transmitter/Receiver Building - Air- Conditioned With Engine-Generator
D-5820-1 through D-5820-6	Remote Transmitter/Receiver Building - Ventilated With Engine-Generator

2.2 Federal publications.- The following Federal publications, of the issues in effect on the date of the invitation for bids or request for proposals, form a part of this specification and are applicable to the extent specified herein.

2.2.1 Federal specifications

QQ-S-775	Steel Sheets, Carbon, Zinc-Coated
TT-P-28	Paint, Aluminum, Heat Resisting (1200°F)

2.2.2 Federal standard

Fed. Std. 595 Colors

. 2.3 Other publications.- The following publications, of the issues in effect on the date of the invitation for bids or request for proposals, form a part of this specification and are applicable to the extent specified herein.

2.3.1 American Concrete Institute

ACI-318	Building Code Requirements for Reinforced Concrete
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2.3.2 American Society for Testing and Materials

A-15	Billet - Steel Bars for Concrete Reinforcement
A-123	Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strips
A-153	Zinc Coating (Hot-Dip) on Iron and Steel Products
A-185	Welded Steel Wire Fabric for Concrete Reinforcement
A-305	Minimum Requirements for the Deformations of Deformed Steel Bars for Concrete Reinforcement
A-307	Low-Carbon Steel Externally and Internally Threaded Standard Fasteners

A-385	Recommended Practice for Providing High Quality Zinc Coatings (Hot-Dip) on Assembled Products
C-55	Building Brick, Concrete
c-90	Concrete Masonry Units, 'Hollow Load-Bearing
C-145	Concrete Masonry Units, Solid Load-Bearing
C-270	Mortar for Masonry Units
C-476	Mortar and Grout for Reinforced Masonry

2.3.3 National Fire Protection Association

NFPA No. 31	Installation of Oil Burning Equipment
NFPA No. 70	National Electrical Code

(Copies of this specification and other applicable FAA specifications, standards and drawings may be obtained from the Contracting Officer in the Federal Aviation Agency Office issuing the invitation for bids or request for proposals. Requests should fully identify material desired, i.e., specification, standard, amendment, and drawing numbers and dates. Requests should cite the invitation for bids, request for proposals, or the contract involved or other use to be made of the requested material.)

(Information on obtaining copies of Federal specifications and standards may be obtained from General Services Administration offices in Washington, D.C., Seattle, San Francisco, Denver, Kansas City, Mo., Chicago, Atlanta, New York, Boston, Dallas, and Los Angeles.)

(Information on obtaining copies of the ACTI publication may be obtained from the American Concrete Institute, P. O. Box 4754, Redford Station, Detroit, Michigan 48219.)

(Information on obtaining copies of the ASTM publications may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa.)

(Information on obtaining copies of the NFPA publications may be obtained from the National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110.)

3. REQUIREMENTS

3.1 General.- The contractor shall construct a remote transmitter/receiver facility building as specified in the contract schedule.

3.2 Structural

3.2.1 Excavation, filling, and grading

3.2.1.1 Clearing and grubbing.- The contractor shall clear the site and remove all organic material therefrom.

3.2.1.2 Excavation.- Footing excavation shall be carried to the depth shown on the drawings or to a minimum depth of 12 inches below local frost line, whichever is greater. Where excavation is carried to a depth greater than required, the excess excavation shall be backfilled with concrete at no cost to the Government.

3.2.1.3 Fills.- The excavated areas around the foundation walls and under all slabs (interior and exterior) shall be backfilled to the required elevation with excavated material, placed in six (6) inch layers and compacted to a uniform density equal to or exceeding the density of the undisturbed sub-grade material. Finish grade shall slope away from the building to provide drainage. Fill under floating floor slabs shall consist of not less than 50 percent granular material ranging in size from 1/4 inch to 1-1/2 inches and not more than 50 percent sand. This fill shall be placed and compacted in the same manner as backfill.

3.2.2 Building construction

3.2.2.1 Concrete.- Concrete construction shall be as required on the applicable drawings and in accordance with the current issue of Building Code Requirements for Reinforced Concrete, American Concrete Institute - 318. Concrete shall develop a minimum strength of 2500 psi at 28 days with a maximum slump of 3 inches. Maximum aggregate sizes shall be 1-1/4 inches for footings and walls and 3/4 inch for floor, steps and equipment slabs.

3.2.2.2 Concrete placement and curing.- Concrete for footings shall be placed on undisturbed soil. All exposed surfaces above grade shall receive a rough trowel finish. After placement, the concrete shall be kept wet for at least five days and protected from freezing for at least 7 days.

3.2.2.3 Reinforcing steel.- All reinforcing steel shall be placed in accordance with the applicable drawings and inspected, checked in place, and approved by the Contracting Officer's representative before concrete is placed. Reinforcement bars shall be new intermediate grade billet steel having a minimum allowable tensile stress of 20,000 psi, conforming to ASTM A-15 and deformed in accordance with ASTM A-305. Necessary splices shall have a lap of 24 bar diameters with a minimum lap of 12 inches. Welded steel wire fabric shall conform to ASTM A-185. Necessary splices shall have a lap of two full mesh with a minimum lap of 12 inches. Reinforcing steel shall be supported in position by chairs or other approved methods and secured to prevent displacement during the placing of concrete. Steel shall be free of excessive rust and scale.

3.2.2.4 Anchor bolts.- Anchor bolts shall conform to ASTM A-307 grade A and shall be galvanized in accordance with ASTM A-123, A-153, or A-385.

3.2.2.5 Conduit.- Conduit shall be accurately placed and supported to maintain correct position during the placing of concrete, and checked to assure

that vertical extensions above the slab will be vertical. Threads shall be protected and open ends plugged to prevent entry of foreign material.

3.2.2.6 Floor finish.- The equipment room floor, steps, and utility slabs shall be poured monolithically and be given a wood trowel finish. The engine-generator room floor shall receive a steel trowel finish. There shall be no place where the space between the floor and a ten foot straight edge placed on it is greater than 1/4 inch. In the event a satisfactory surface is not obtained during the finishing, the contractor will be required to rub or grind the surface with appropriate equipment until a satisfactory surface is obtained. The floor in the engine generator room shall be treated with a transparent, quick drying, concrete sealing and floor hardener equal to "Clear Seal", manufactured by the A. C. Horn Company Division of the Sun Chemical Corporation. The floor hardener shall be applied in accordance with the manufacturer's recommendation. The floor of the equipment room shall be covered with a first quality dark green marbled-pattern vinyl-asbestos floor tile 1/8 inch thick. Black vinyl-asbestos moulded top-set cove base, 4 inches high, 1/8 inch thick, shall be placed at all walls in the equipment room.

3.2.2.7 Concrete masonry units.- Concrete masonry units shall be used in the locations and in conformity with the lines, dimensions, and details shown on the applicable drawings. The masonry work shall include building in anchors, furnishing and installing steel reinforcement for masonry, wall flashings, bond beams, lintels and necessary reinforcement. Completed exterior walls shall be watertight. Units that are exposed or painted in the completed building shall have a smooth texture. The hollow load bearing units shall conform to Grade A of ASTM C-90 with minimum compression strength of 800 psi. The solid load bearing units shall conform to Grade A of ASTM C-145 with minimum compression strength of 1600 psi. The concrete building brick shall conform to Grade A of ASTM C-55 with minimum compression strength of 2000 psi. The mortar for masonry units shall conform to mortar Type M of ASTM C-270 with a minimum compression strength of 2500 psi. The mortar for reinforcing masonry construction shall conform to mortar Type PM of ASTM C-476 with a minimum compression strength of 2500 psi in 28 days. The grout for reinforced masonry construction shall conform to the coarse grout type of ASTM C-476.

3.2.2.8 Masonry core insulation.- Hollow cores of the exterior masonry units which do not contain concrete and reinforcement shall be filled with a water-repellent vermiculite, or silicon treated perlite masonry fill insulation.

3.2.2.9 Roof.- Roof deck shall be light gage steel 4-1/2 inches deep, equal to Robertson Company "Q" Deck, Sec. 5-45, 18 gage. Decking shall be laid in accordance with the manufacturer's instructions and as shown on the applicable drawings. Deck units shall be adjusted in place before being permanently welded. Decking shall be welded to bearing plates with 3/4 inch diameter fusion welds at each rib. All welds shall be sound and upon cooling shall be given a coating of a galvanizing type of treatment equal to

"GALV-WELD" as manufactured by Galv-Weld Products, Bradenton, Florida. The side joints of the deck shall be pinched together at 3 feet - 0 inches on centers. Roof decking shall be galvanized in accordance with Federal Specification QQ-S-775, Type I, Class E. Panels shall be single length (unspliced). A 5-ply, 20-year bonded built-up roof with a smooth finish shall be placed over one inch thick rigid insulation, Celotex Corp., plain fiber-board, or equal, on the metal deck.

3.2.2.10 Hardware

3.2.2.10.1 Exterior door hinges.- Hinges shall be 4-1/2 inches ball tip, non-rising pin, bronze, brass or aluminum full mortise butts. Three hinges shall be provided for each door.

3.2.2.10.2 Exterior lock set.- Each set shall consist of wrought bronze entrance door handles with thumbpiece, designed to take a cylinder entrance door lock set with protected front; lock shall take standard FAA cylinder.

3.2.2.10.3 Exterior door stops.- Door stops shall be bronze, brass, or aluminum hook and keeper type.

3.2.2.10.4 Exterior door threshold.- The door threshold shall be a saddle type, solid brass, architectural bronze, or aluminum, minimum 4 inches wide by 1/2 inch-rise, non-skid type, recessed for weather-stripping.

3.2.2.11 Painting.- Painting shall be in conformance with the applicable requirements of FAA-STD-003. Exterior surfaces shall be painted white. Doors shall be painted gray, color 16187 of Federal Standard No. 595. Interior walls and ceiling shall be painted off-white, color 37778 of Federal Standard No. 595.

3.3 Mechanical equipment

3.3.1 Temperature and humidity control system.- The mechanical installation as required by the contract schedule shall be accomplished in accordance with Specification FAA-C-2256 and the applicable drawings.

3.3.2 Sanitary system.- The sanitary system as required by the contract schedule shall be installed in accordance with Specification FAA-C-2153 and the applicable drawings.

3.4 Engine-generator installation

3.4.1 General.- The contractor shall install an engine-generator as required by the contract schedule in accordance with the applicable drawings and instructions contained in the manufacturer's Operator's or Instruction Manual.

3.4.2 Vibration pads.- The engine-generator set shall be mounted on not less than 6 vibration pads. The pads shall be neoprene, 4-1/2 inches by 6 inches,

not less than 5/16 inch or more than 1-1/8 inches thick, grooved 1/8 inch deep longitudinally. The grooves on the top surface of the pad shall be at right angles to the grooves on the bottom surface of the pad.

3.4.3 Fuel tank installation.- Installation of a steel tank for underground storage of approximately 550 gallons of fuel (reference FAA Drawing D-562, 515 Gallon Fuel Storage Tank, for opening sizes and gage of shell and heads) shall be in accordance with FAA Drawing D-2111-1, Fuel Tank Installation, Underground, Gasoline and Diesel; The tank shall comply with the requirements of the National Fire Protection Association Standard No. 31, and shall be so labeled by the Underwriters Laboratories, Inc.

3.4.4 Exhaust pipe and muffler.- Engine exhaust pipe and fittings shall be standard weight black steel. The pipe shall be threaded to accommodate threaded flange couplings. The exhaust pipe fittings and muffler shall be painted with a heat resistant paint conforming to Federal Specification TT-P-28.

3.4.5 Battery rack.- Battery rack shall be constructed in accordance with FAA Drawing C-3871-1 and 2, Sectional Battery Rack for Engine-Generator.

3.5 Electrical installation.- The contractor shall accomplish all electrical work specified in the contract and any other work necessary to complete the building service connection in accordance with FAA-C-1217, FAA-1391 and local power company regulations.

4. QUALITY ASSURANCE PROVISIONS

4.1 Mechanical equipment.- Temperature and humidity control equipment shall be inspected and tested in accordance with Specification FAA-C-2256.

4.2 Engine-generator.- The manufacturer's instructions for placing the engine-generator set in operation shall be followed. The contractor shall connect the set, ready to operate, fill the crankcase with the correct grade of oil, and fill the cooling system, including a sufficient amount of permanent ethylene-glycol type rust inhibiting anti-freeze to protect the engine from freezing down to the minimum temperature expected at the facility. For gasoline engines the contractor shall fill the storage tank with not less than 100 gallons of standard grade (non-premium) gasoline having an octane rating of not less than 82. If the set is diesel-operated, a like amount of No. 2 diesel fuel of not less than 40 cetane rating shall be supplied. Before connecting the battery circuit, be sure that emergency stop and lockout switch is in the OFF position. The contractor shall notify the Contracting Officer's representative when the set is ready for operation. The contractor shall not attempt to start the engine generator for the first time until the installation has been completely checked for starting by a representative of the Federal Aviation Agency.

4.3 Electrical tests.- The interior electrical work shall be inspected and tested in accordance with Specification FAA-C-1217.

5. PREPARATION FOR DELIVERY

5.1 Not applicable.

6. NOTES

6.1 Note on information items.- The contents of the subparagraph below are only for the information of the Contracting Officer. They are not contract requirements, nor binding on either the Government or the contractor, except to the extent that they may be specified elsewhere in the contract as such. Any reliance placed by the contractor on the information in this subparagraph is wholly at the contractor's own risk.

6.1.1 Ordering data.- Invitation for bids and contracts should specify the following:

- (a) Type of facility to be constructed by listing the applicable drawing series as well as any secondary or reference drawings.
- (b) Items to be Government furnished.
- (c) Electric service requirements.
- (d) Sanitary requirements.
- (e) Heating design temperature.
- (f) Engine-generator anti-freeze protection temperature.

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SPECIFICATION ANALYSIS SHEET

This sheet is provided for obtaining information on the use of this specification by either Contractor or Government personnel. Recommendations should be based on actual or potential savings and advantages to the Government or users. Return of this form will be appreciated. Fold on lines on reverse side, staple closed, and mail.

SPECIFICATION NUMBER AND TITLE

CONTRACT NUMBER

SUBMITTING ORGANIZATION

ADDRESS

SPECIFICATION USED IN:

- Direct Government Contract - No: _____
- Government Subcontract - No: _____
- Other - _____

1. Has any part of the specification created problems or required interpretation?

A. Give paragraph number and wording.

B. Recommendations for correcting the deficiencies.

2. Comments on any specification requirement considered too rigid?

3. Is the specification restrictive? Yes; No

If "yes", in what way?

4. **REMARKS.** "Attach to this form any additional pertinent data which may be of use in improving this specification. Form with attachments should be mailed together in an envelope addressed as shown on reverse side".

SUBMITTED BY

DATE

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800 Independence Avenue, **S. W.**
Washington, **D. C. 20553**