APPENDIX 2. COORDINATION GUIDELINES

Selective coordination is both an art and a science. A perfectly coordinated system can not always be accomplished. It is the responsibility of the design engineer to maximize coordination to the extent practical. The following guidelines will assist in the process:

1. Minimize the number of protective devices between the main service disconnect and the last protective device. The use of an un-fused disconnect and elimination of main breakers at branch panel boards will assist in this process. However, in all cases a coordinated electrical system must comply with the National Electrical Code (NEC).

2. Consider using larger ampere frame circuit breakers to facilitate proper coordination. Ensure that available space limitations can accommodate physical circuit breaker sizes.

3. Consider the use of electronic programmable type circuit breakers.

4. 480 VAC for the distribution system voltage and derivation of smaller use voltages will aid in power system design.

5. Use the protective device coordination study to design a coordinated distribution system.

6. Use National standard designs as indicated in the Critical Power Distribution System Program Implementation Plan (P6980.00) wherever possible.

7. Verify short circuit ratings of components used in the electrical distribution systems are adequate for the application.

8. Elevators shall be coordinated in accordance with the National Electric Code.

9. Examination of the load's power continuity requirements shall be taken into account. As an example, if an interruption in a chiller motor on the essential bus of a manned facility will not effect the NAS, coordination may have less stringent requirements. If the power feeds equipment that directly controls the landing of airplanes, coordination must be followed to the extent possible.

10. When difficulty is encountered consult with appropriate regional or national authorities.

11. Protection always comes before coordination.

12. In instances of unmanned facilities where substantial time may elapse before a loss of power is identified, coordination is recommended.

13. Ground fault protection should be accomplished for circuits in accordance with the NEC. In these cases, the ground fault system should have a separate coordination study and analysis performed.

APPENDIX 2: COORDINATION GUIDELINES (CONTINUED)

14. Power distribution system protective devices should coordinate to a level such that no conductor, device, or circuit not directly critical to the safety or function of Air Traffic systems, should ever cause or allow an interruption in service to any device or circuit necessary for the safety or direction of Air Traffic.

15. Power distribution system protective devices should coordinate to a level such that a fault on the A bus of a dual redundant system will not disrupt or interfere with the operation of the B bus of the power system.

A perfectly coordinated system can not always be accomplished. It is the responsibility of the design engineer to maximize coordination to the extent practical.

FAA-STD-019e
December 22, 2005

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION STANDARD

LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT

ATTACHMENT J.10.
PAGE NO. 1 OF 102

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FOREWORD

All construction of Federal Aviation Administration (FAA) operational facilities and the electronic equipment installed therein shall conform to this standard. This document defines minimum requirements for all FAA facilities. When the specific needs of a facility exceed these minimum requirements, the facility shall be designed and installed to meet these specific needs. These needs are influenced by the equipment to be installed at the site, the configuration of the structures and location of the equipment, and by the physical environment present at the location.

The requirements contained in this document reflect investigation and resolution of malfunctions and failures experienced at field locations. The requirements thus are considered the minimum necessary to harden sites sufficiently for the FAA missions – to prevent delay or loss of service, to minimize or preclude outages, and to enhance personnel safety. Further, the requirements in the document have been coordinated with industry standards, and in some cases exceed industry standards where necessary to meet the FAA missions.

In this document the use of "shall" or verbs such as "construct", "weld", "connect", etc indicates a requirement necessitating mandatory compliance. In cases when implementation of certain requirements is not technically feasible, a National Airspace System (NAS) Change Proposal (NCP) must be submitted with adequate justification and technical documentation and approved by the NAS Configuration Control Board (CCB) before a deviation is permitted.

This document is organized in accordance with MIL-STD-962D.

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FAA-STD-032
August 1, 1996

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U.S. Department of Transportation

Federal Aviation Administration

Standard

DESIGN STANDARDS

FOR NATIONAL AIRSPACE SYSTEM FACILITIES

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PAGE NO. 1 OF 66

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FAA-C-1217f
February 26, 1996
SUPERSEDING
FAA-C-1217e,

US DEPARTMENT
01/25/91
OF TRANSPORTATION
Federal Aviation
Administration

U. S. Department of Transportation

Federal Aviation Administration

Specification

ELECTRICAL WORK, INTERIOR

ATTACHMENT J.12
PAGE NO. 1 OF 42

FORWARD

~~This document has been revised to reflect current technology changes and to~~ incorporate the latest commercial standards.

1. SCOPE

1.1 Scope.- This specification covers the ***minimum requirements*** for electrical work at FAA facilities. Where the phrase "unless otherwise indicated" or similar wording appears, it refers exclusively to other documents that are specific parts of the contract. Where there are requirements peculiar to specific FAA facility types, e.g., air route traffic control centers (ARTCCs), metroplex control facilities (MCFs), terminal radar control (TRACONs), etc., these requirements will be added following the appropriate paragraph.

2. APPLICABLE DOCUMENTS.- The current issues of the following documents 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.

2.1 Federal specifications

(Power,	J-C-30	Cable and Wire, Electrical Fixed Installation)
	~~W-C-375~~	~~Circuit Breakers, Molded Case;~~ Branch Circuit and Service
	W-F-414	Fixture, Lighting (Fluorescent, Alternating Current, Pedant Mounting)
	W-L-305	Light Set, General Illumination (Emergency or Auxiliary)
	W-P-115	Panel, Power Distribution
	WW-C-566	Conduit, Metal, Flexible
	QQ-W-343	Wire, Electrical, (uninsulated)

FAA-D-2494/b
March 14, 1984
SUPERCEDING
FAA-D-2494/1a
/2
/3
/4

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
SPECIFICATION

TECHNICAL INSTRUCTION BOOK MANUSCRIPT: ELECTRONIC, ELECTRICAL, AND MECHANICAL EQUIPMENT, REQUIREMENTS FOR PREPARATION OF MANUSCRIPT AND PRODUCTION OF BOOKS

Attachment J.13, FAA Order FAA-D-2494/b, is a 134 page document.
Only the cover sheet and index are attached to this SIR/RFP.
If a vendor is required to develop a technical instruction manual, as part of an installation Task Order, a compact disk containing the entire document will accompany the Task Order. This document is only needed where custom built ~~electrical or mechanical equipment is installed as directed by the Government.~~
All Government Furnished Equipment (GFE) and Commercial-Off the Shelf (COTS) equipment come with either Government produced Technical Instruction manuals or factory operation and maintenance manuals.

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ORDER

1050.15A

FUEL STORAGE TANKS AT FAA FACILITIES

April 30, 1997

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Distribution: A-W-1; A-W(AF/AS/PP/CO/CP/EE/AM/BA/VN)-2 ; A-X-2; A-X(AF/LG)-3
A-Y-2; A-Y(MP/LG)-3; A-Z-2; A-FAF-4/7 (Ltd)

Initiated By: AEE-200

RECORD OF CHANGES

1050.15A

CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL

FOREWORD

This order establishes agency policy, procedures, responsibilities, and implementation guidelines for compliance with regulations pertaining to underground storage tanks (UST) of the Federal Aviation Administration as required by the Resource Conservation and Recovery Act of 1976 (52 U.S.C. §6901 et seq.), as amended by the Hazardous and Solid Waste Amendments of 1984 (Public Law 98-616) and other acts, and as implemented by the U.S. Environmental Protection Agency's "Underground Storage Tanks; Technical Requirements and State Program Approval; Final Rules regulation, 40 CFR Parts 280 and 281." Although no one comprehensive Federal regulation on aboveground storage tanks (AST) existed prior to publication of this order, AST's are affected by various regulations such as the Oil Pollution Prevention regulation codified at 40 CFR Part 112. This order also addresses FAA policy on AST's until a single comprehensive regulation is promulgated.

The Congress of the United States has declared it to be the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment.

Barry L. Valentine
Acting Administrator

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PERFORMANCE BOND

(See instructions on Page 2.)

DATE BOND EXECUTED (Must be same or later than date of contract)	FORM APPROVED OMB NO.
	9000-0045

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (VRS), Office of Federal Acquisition Policy, GSA, Washington, D.C. 20405; and to the Office of Management and Budget, Paperwork Reduction Project (9000-0045), Washington, D.C. 20503.

PRINCIPAL (Legal name and business address)	TYPE OF ORGANIZATION ("X" one) ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☐ CORPORATION STATE OF INCORPORATION
SURETY(IES) (Name(s) and business address(es))	PENAL SUM OF BOND MILLION(S) | THOUSAND(S) | HUNDRED(S) | CENTS
	CONTRACT DATE | CONTRACT NO.

OBLIGATION:

We, the Principal and Surety(ies), are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The principal has entered into the contract identified above.

THEREFORE:

The above obligation is void if the Principal -

(a)(1) Performs and fulfills all the undertakings, covenants, terms, conditions, and agreements of the contract during the original term of the contract and any extensions thereof that are granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and (2) performs and fulfills all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of the contract that hereafter are made. Notice of those modifications to the Surety(ies) are waived.

(b) Pays to the Government the full amount of the taxes imposed by the Government, if the said contract is subject to the Miller Act, (40 U.S.C. 270a-270e), which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished.

WITNESS:

The Principal and Surety(ies) executed this performance bond and affixed their seals on the above date.

PRINCIPAL

	1.	2.	3.	
SIGNATURE(S)	(Seal)	(Seal)	(Seal)	Corporate Seal
NAME(S) & TITLE(S) (Typed)	1.	2.	3.	

INDIVIDUAL SURETY(IES)

	1.	2.
SIGNATURE(S)	(Seal)	(Seal)
NAME(S) & TITLE(S) (Typed)		

CORPORATE SURETY(IES)

SURETY A	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT
	SIGNATURE(S)	1.	2.	Corporate Seal
	NAME(S) & TITLE(S) (Typed)			

CORPORATE SURETY(IES) (Continued)

SURETY B	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (Typed)				
SURETY C	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (Typed)				
SURETY D	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (Typed)				
SURETY E	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (Typed)				
SURETY F	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (Typed)				
SURETY G	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) (Typed)				

BOND PREMIUM ▶	RATE PER THOUSAND	TOTAL

INSTRUCTIONS

1. This form is authorized for use in connection with Government contracts. Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3. (a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of the approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form insert only the letter identification of the Sureties.

(b) Where individual sureties are involved, a completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. The Government may require the surety to furnish additional substantiating information concerning its financial capability.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal", and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.

5. Type the name and title of each person signing this bond in the space provided.

ATTACHMENT 5.15

PAGE NO. 2 OF 2

PAYMENT BONL

(See Instructions on Reverse)

1. DATE BOND EXECUTED	*T NOT BE LATER THAN DATE OF CONTRACT.)*

2. PRINCIPAL *(LEGAL NAME AND BUSINESS ADDRESS)*	3. TYPE OF ORGANIZATION *("X" ONE)*
	☐ Individual ☐ Partnership
	☐ Joint Venture ☐ Corporation
	4. STATE OF INCORPORATION

5. SURETY(IES) *(NAME AND BUSINESS ADDRESS)*

a. Penal Sum of Bond					b. Bid Identification	
Percent of of Bid Price	Amount not to exceed				Bid Date	Invitation No.
	Million(s)	Thousand(s)	Hundred(s)	Cents		
					For (Construction , Supplies or Services)	

OBLIGATION:

We, the Principal and Surety(ies) are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The above obligation is void if the Principal promptly makes payment to al persons having a direct relationship with the Principal or a subcontractor of the principal for furnishing labor, material or both in the prosecution of the work provided for in the contract identified above, and any authorized modifications of the contract that subsequently are made. Notice of those modifications to the Surety(ies) are waived.

WITNESS:

The Principal and surety(ies) executed this bid bond and affixes their seals on the above date.

6. PRINCIPAL				
a. Signature(s)	(1) (seal)	(2) (seal)	(3) (seal)	Corporate Seal
b. Name(s) & Titles *(Typed)*	(1)	(2)	(3)	

7. INDIVIDUAL SURETY(IES)		
a. Signature(s)	(1) (Seal)	(2) (Seal)
b. Name(s) *(Typed)*	(1)	(2)

8. CORPORATE SURETY(IES)				
Surety A	a. Name & Address		b. State of Inc.	a. Liability Limit
	d. Signatures	(1)	(2)	Corporate Seal
	e. Name(s) & Title(s) *(Typed)*	(1)	(2)	

8. CORPORATE SURETY(IES) *(Continued)*

Surety B	a. Name & Address		b. State of Inc.	a. Liability Limit	Corporate Seal
	d. Signatures	(1)	(2)		
	e. Name(s) & Title(s) *(Typed)*	(1)	(2)		
Surety C	a. Name & Address		b. State of Inc.	a. Liability Limit	Corporate Seal
	d. Signatures	(1)	(2)		
	e. Name(s) & Title(s) *(Typed)*	(1)	(2)		
Surety D	a. Name & Address		b. State of Inc.	a. Liability Limit	Corporate Seal
	d. Signatures	(1)	(2)		
	e. Name(s) & Title(s) *(Typed)*	(1)	(2)		
Surety E	a. Name & Address		b. State of Inc.	a. Liability Limit	Corporate Seal
	d. Signatures	(1)	(2)		
	e. Name(s) & Title(s) *(Typed)*	(1)	(2)		
Surety F	a. Name & Address		b. State of Inc.	a. Liability Limit	Corporate Seal
	d. Signatures	(1)	(2)		
	e. Name(s) & Title(s) *(Typed)*	(1)	(2)		
Surety G	a. Name & Address		b. State of Inc.	a. Liability Limit	Corporate Seal
	d. Signatures	(1)	(2)		
	e. Name(s) & Title(s) *(Typed)*	(1)	(2)		

Instructions

1. This form, for the protection of persons supplying labor and material is used when a payment bond is required under the Act of August 24, 1935, 49 Stat. 793 (40 USC 270a-270e).
2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.
3. (a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the space (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

   (b) Where individual sureties are involved, a completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. The Government may require the surety to furnish additional substantiating information concerning its financial capability.
4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal;" and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.
5. Type the name and title of each person signing this bond in the space provided.